KGHM AJAX MINING INC.
AJAX PROJECT

APPLICATION INFORMATION REQUIREMENTS / ENVIRONMENTAL IMPACT STATEMENT GUIDELINES

FOR THE KGHM AJAX MINING INC. APPLICATION FOR AN ENVIRONMENTAL ASSESSMENT / ENVIRONMENTAL IMPACT STATEMENT FOR COMPREHENSIVE STUDY

Rev	Description	Date
A	Issued in Draft	April 18, 2011
B	EAO Preliminary Comments	June 15, 2011
C	Public Comments Address	August 10, 2011
D	Working Group Comments	January 6, 2012
E	EAO and CEAA Agency Directions	January 11, 2013
F	Outstanding Directions Addressed	February 18, 2013
0	Issued for Final with Updates from Revision F	May 22, 2013
1	Issued in Final with direction from EAO and CEA Agency	June 3, 2013
1.A	Draft revisions proposed by KAM	June 30, 2014
1.B	Draft revisions based on Working Group comments	November 7, 2014

PREFACE TO THE AIR/EIS GUIDELINES

PURPOSE OF THE APPLICATION INFORMATION REQUIREMENTS/ ENVIRONMENTAL IMPACT STATEMENT GUIDELINES

In British Columbia, proposed major projects are required to obtain an Environmental Assessment Certificate (Certificate) in accordance with British Columbia's *Environmental Assessment Act* (BCEAA). An Application for an Environmental Assessment Certificate (the Application) must be made by the Project Proponent to the Environmental Assessment Office (EAO), and the Application must comply with all the information requirements set out in the Application Information Requirements (AIR) formally approved and issued by the EAO. The AIR specifies the information that will be needed to conduct a provincial environmental assessment (EA) and that will be provided by the Proponent, KGHM Ajax Mining Inc. (KAM), in their Application for a Certificate.

The *Canadian Environmental Assessment Act, 2012* (CEAA 2012) came into force on July 6, 2012. As the Ajax Project (the Project) was already underway when the new legislation came into force, it is subject to the transition provisions as set out in CEAA 2012. These transition provisions require that, as the Project is a comprehensive study that commenced since July 2010, it will continue to be assessed under the former *Canadian Environmental Assessment Act* (former CEAA) as if the former CEAA had not been repealed. The federal environmental assessment will continue to follow the requirements of the former CEAA with the Canadian Environmental Assessment Agency (CEA Agency) exercising the powers and performing the duties and function of the responsible authority. The CEA Agency has determined that the Project is subject to federal review because it is anticipated to require authorization from Fisheries and Oceans Canada and a license from Natural Resources Canada. The Project is subject to a comprehensive study EA under the Comprehensive Study List Regulations of the former CEAA because it is a proposed metal mine, other than a gold mine, with an ore production capacity of 3,000 tonnes per day or more, as well as a proposed gold mine that exceeds the ore production capacity threshold of 600 tonnes per day, and proposes construction of a metal mill that is anticipated to exceed the ore input capacity threshold of 4,000 tonnes per day. Proposed federal studies are outlined in an Environmental Impact Statement Guidelines (EIS Guidelines) document; information needed to complete the federal EA process is submitted to the CEA Agency for approval in an Environmental Impact Statement (EIS).

In line with the federal-provincial coordination process (described below) the provincial AIR document and the federal EIS Guidelines will be called the AIR/EIS Guidelines and the provincial Application and the federal EIS will be referred to as the Application/EIS throughout this document.

PROJECT DESCRIPTION

KGHM Ajax Mining Inc. proposes to develop the Ajax Project, an open pit copper-gold mine at the historic Afton Mining Camp, south-west of the City of Kamloops, British Columbia (BC). Engineering design of the Project is currently underway, and details of the design are subject to change as work continues. The numbers presented in the AIR/EIS Guidelines are based on the feasibility study and provided for general understanding of the project only since they will be refined as additional engineering is completed. Equipment descriptions are provided to give a general understanding of the project with final

equipment selections subject to change as project engineering progresses. At the time of submission, the Application/EIS will reflect the most current design considerations available.

The Project is located in the South-Central Interior of British Columbia, southeast of the junction of the Trans-Canada Highway No. 1 and the Coquihalla Highway (No. 5), within the Thompson Nicola Regional District. The coordinates for the centre of the Project area are approximately 50°36' N latitude and 120°24' W longitude. The primary components of the mine include: waste rock management facilities; processing facility and truck shop; process water intake and line; and tailings storage facility. These primary components will be located outside of the Kamloops city limits, largely on private land owned by KAM, with some utilisation of Crown land. Some ancillary facilities, including the exploration camp, administration building, and explosives storage, may be located just within the city boundaries. Access to the mine site will be via the Inks Lake Interchange off Highway 5 and then along service roads to the plant main access road (historic haul road from old Afton Mine).

The Project lies in the traditional territory of the Secwepemc Nation. Within the Secwepemc Nation, the Tk'emlúps te Secwepemc and the Skeetchestn Indian Band are the Aboriginal groups in closest proximity to the Project; both assert Aboriginal rights to the project area. Both bands are members of the Shuswap Nation Tribal Council. In a cooperative effort, the Tk'emlúps te Secwepemc and Skeetchestn Indian Bands have formed the Stk'emlupsemc te Secwepemc Nation (SSN), as a division of the greater Secwepemc Nation. The Ashcroft Indian Band and Lower Nicola Indian Band are First Nation government organizations of the Nlaka'pamux Nation, and also assert their Aboriginal rights to the project area - an area of common interest with SSN. Ashcroft Indian Band asserts Ashcroft proprietary rights and governing jurisdiction over its traditional Territory.

The proposed mine plan for the Project predicts an operation based on a mill throughput of 60,000 tonnes of ore per day from the Ajax Pit up to a 23 year mine life. Total material movement from the pit during the life of the mine is estimated at approximately 1,701 Mt. Average annual production of the mine is estimated at 106 million pounds of copper and up to 100,000 ounces of gold in concentrate, based on a conceptual mine plan supplying 21.9 million tonnes of ore per year to the mill. Ore and waste zones will be mined on 15 m benches with nominal 17.5 m deep holes drilled in a single pass. Waste material will be blasted to produce a suitable particle size distribution for loading and transportation in 300 tonne class trucks, or similar. Mineralized material will be blasted to comply with fragmentation requirements and a specified particle distribution. Primary loading of waste and ore on the full 15 m benches will be accomplished by electric rope and/or-hydraulic shovels.

The ore will be delivered from the mine by haul trucks to an ex-pit primary crusher. Ore will be crushed to the size which meets process requirements and will be transferred to the coarse ore stockpile by belt conveyors. Waste rock will be transported by haul trucks to the TSF embankment and waste rock storage facilities.

The processing facility will consist of stage-wise crushing and grinding, followed by a flotation process to recover and upgrade copper from the feed material. A gravity circuit will be included within the flotation circuit to enhance gold recovery. The flotation concentrate will be thickened and filtered and sent to the concentrate stockpile for subsequent shipping by truck to the Port of Vancouver.

The Tailings Storage Facility (TSF) will be located approximately 1 km south west of the open pit and east of Lac Le Jeune Road. The TSF shall be a conventional tailings storage facility including seepage collection ponds at the four embankments. Collection ditches along the embankments will direct surface run-off along the downstream face of the embankments to the seepage collection ponds for pumping back into the TSF. The maximum elevation of the tailings would be at about 1, 065 masl along the west side.

Five waste rock storage facilities (WRSF) are planned: the South Waste Rock Storage Facility (SWRSF), East Waste Rock Storage Facility (EWRSF), Tailings Embankment Waste Rock Storage Facility (TEWRSF), In-Pit Waste Rock Storage Facility (IPWRSF), and the Tailings Embankments. The SWRSF will store 450 Mt of waste and will have a final elevation of 1, 135 masl. The EWRSF will have a top elevation of 1,000 masl and hold up to 74 Mt of waste rock. The TEWRSF will store 137 Mt of waste and will reach an ultimate elevation of 990 masl. The IPWRSF will hold 187 Mt of waste rock. Overburden and topsoil will be stored in stockpiles on the East Waste Rock Storage Facility. These stockpiles are considered sufficient for reclamation cover. The material will be utilized when progressive reclamation is not active or storage is not possible within currently planned areas of disturbance.

Project components to be assessed are expected to include the following:

- Ajax Pit;
- Processing facility;
- Tailings storage facility;
- Waste rock management facilities;
- Water management facilities;
- Road and bridge upgrades;
- New access and haul roads;
- Existing access routes;
- Borrow sources;
- Transmission line and transformer upgrades;
- Explosives storage facility, including garage and wash bay facilities;
- Process and potable water systems, including the intake in Kamloops Lake;
- Concentrate storage and shipping area; and
- Concentrate transport to Port of Vancouver.

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

PROVINCIAL SCOPE OF PROJECT

The BCEAA, administered by the BC Environmental Assessment Office (EAO), is the legal framework for the province's environmental assessment process. The BCEAA is supported by several regulations, including the *Reviewable Projects Regulation*, as well as a variety of policy, procedural, and technical

guidelines. The Project constitutes a reviewable project under Part 3 of the *Reviewable Projects Regulation* (BC Reg.370/02), since the production capacity of the project will exceed 75,000 tonnes per year of mineral ore. As specified in the Section 10 Order issued by the EAO on February 25, 2011, KAM must complete the provincial EA process before proceeding with construction and operation of the Project. The Section 11 Order, issued to the Proponent on January 11, 2012, establishes the formal scope, procedures, and methods for conducting the EA of the Project.

In addition to the EA Certificate, KAM will require a number of provincial permits before construction of the Ajax Project can begin. KAM may apply for concurrent review of provincial permits in accordance with the Concurrent Approval Regulation (B.C. Reg. 371/2002) of the *BCEAA*. A decision on these approvals cannot be made until and unless the EA Certificate has been issued. Alternatively, KAM may initiate synchronous permitting through the Mine Development Review Committee.

FEDERAL SCOPE OF PROJECT

The Project will require an Environmental Assessment under the former CEAA, by virtue of it requiring federal permits and authorizations. This was confirmed in a letter from the CEA Agency to KAM on March 16, 2011.

It is anticipated that the Project will require Authorization from Fisheries and Oceans Canada (DFO) under the *Fisheries Act* Section 35(2), as well as a licence from Natural Resources Canada (NRCan) under Section 7(1) (a) of the *Explosives Act*.

The Canadian Environmental Assessment Act, 2012 (CEAA 2012) and associated regulations came into force on July 6, 2012. Nonetheless, the Ajax 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 had not been repealed. The federal environmental assessment will continue to follow the requirements of the former CEAA.

Under the former CEAA, there are five types of federal EA: screening, class screening, comprehensive study, mediation, and review panel. Because the Project as proposed will follow a comprehensive study review track as defined in Section 16 of the *Comprehensive Study List Regulations* (a metal mine with an ore production capacity of greater than 3,000 tonnes per day, and a metal mill with an ore input capacity of 4,000 tonnes per day or more) the Project will undergo a comprehensive study.

The Major Projects Management Office (MPMO) has designated the Project as 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 developed a Project Agreement on August 17, 2011 that is designed to track key milestones in the conduct of the federal environmental assessment.

FEDERAL – PROVINCIAL COORDINATION

Following the principles of the *Canada-BC Agreement for Environmental Assessment Cooperation (2004)*, a single joint coordinated EA process will be carried out for the Project. Under the coordinated

process, the provincial AIR document and the Application for an Environmental Assessment Certificate will also be used as the federal EIS Guidelines and the Environmental Impact Statement for a Comprehensive Study, respectively, thereby reducing duplication. The terms “Application Information Requirements” and “Environmental Impact Statement Guidelines” will have one and the same meaning, as will “Application for an Environmental Assessment Certificate” and “Environmental Impact Statement”. Other efficiencies between the two processes will be completed as feasible.

DEVELOPMENT OF THE AIR/EIS GUIDELINES

The purpose of the AIR/EIS Guidelines is to identify information that will be needed to conduct the environmental assessment and to provide this information in sufficient detail in the Application/EIS to allow evaluation of potential effects of the Project. Development of the AIR/EIS Guidelines followed the “Application Information Requirements Template” (Environmental Assessment Office, 2010).

In developing the AIR, KAM consulted with local, provincial, and federal government representatives, as well as Aboriginal groups, stakeholders, and the public. The purpose of the early consultation was to identify issues and concerns to be addressed in the AIR/EIS Guidelines and Application/EIS.

The following government agencies and community groups were consulted during development of the AIR/EIS Guidelines:

- Environmental Assessment Office;
- Canadian Environmental Assessment Agency;
- Major Projects Management Office;
- City of Kamloops;
- Rotary Club;
- Venture Kamloops;
- Thompson Nicola Regional District;
- Fish and Game Club;
- Kamloops Fly Fishing Club;
- Kamloops Astronomical Society
- Chamber of Commerce;
- Stockmen’s Group;
- Naturalists Club;
- Grasslands Conservation Council;
- Tk’emlúps te Secwepemc;
- Skeetchestn Indian Band;
- Stk’emlupsemc te Secwepemc Nation
- Lower Nicola Indian Band;
- Ashcroft Indian Band;
- Health Canada;
- Environment Canada;
- Transport Canada;
- Fisheries and Oceans Canada;
- Natural Resources Canada;

- Ministry of Environment;
- Interior Health;
- Ministry of Energy, Mines, and Natural Gas;
- Ministry of Forest, Lands and Natural Resource Operations; and
- Ministry of Transportation and Infrastructure.

Following submission of the first draft AIR/EIS Guidelines (dAIR/EIS Guidelines) to the EAO and the CEA Agency, the EAO circulated the document to the Working Group for review and comment. The Working Group is comprised of representatives from federal, provincial, and local governments, and Aboriginal groups.

The EAO also sought public input by posting the dAIR/EIS Guidelines on the EAO Project Information Centre (e-PIC) website and specifying a period and process for written input. Per the Section 11 Order issued on January 11, 2012, the public had a 75 day period to provide comment; the public comment period occurred between January 11 and March 12, 2012. Coordinating public comment periods, the CEA Agency concurrently posted a summary of the dAIR/EIS Guidelines on the Agency's Registry website for public comment, as well as a copy of the dAIR/EIS Guidelines. The EAO and CEA Agency hosted a two day information session in Kamloops on February 6 and 7 to explain the purpose and content of the dAIR/EIS Guidelines and to seek written input from the public on whether the proposed studies, methods, and information required satisfied public interests and concerns. The EAO will also direct the proponent to hold one or more public open houses in one or more locations near the Project site during the pre-Application/EIS period.

All federal and provincial agency, Aboriginal group, and public comments on the draft AIR/EIS Guidelines are posted on the e-PIC website. Response from KAM to the public comments are recorded in a tracking table and also posted on the e-PIC website. Comments were considered by both the EAO and CEA Agency and relevant issues have been incorporated into the final AIR/EIS Guidelines.

In August 2013, an internal evaluation was undertaken by KAM which identified opportunities to optimize the Project design; this resulted in changes to the Project's General Arrangement (GA) that the Proponent felt would address some of the concerns raised in earlier consultation processes. On May 29, 2014, KAM announced the 'Ajax South' GA. In June 2014, updates were made to the AIR to reflect changes in the Project layout.

NEXT STEPS IN THE ENVIRONMENTAL ASSESSMENT OF THE PROJECT

The approved AIR/EIS Guidelines is issued by the EAO and CEA Agency to KAM who will develop and submit to the EAO and CEA Agency an Application/EIS for screening, to ensure compliance with the AIR/EIS Guidelines. KAM expects to submit the Application/EIS at the end of the first quarter of 2015. If the Application/EIS successfully passes the screening, the EAO will initiate the 180-day environmental assessment review.

Once the review is completed, the EAO will prepare an assessment report for the Minister of the Environment and Minister of Energy, Mines and Natural Gas, which may include a recommendation on the issuance of an Environmental Assessment Certificate. Ministers have up to 45 days to render their

final decision on whether or not to issue an Environmental Assessment Certificate. If the Proponent requests concurrent permitting, and if the request is granted by the EAO, the relevant provincial permitting agencies must render a decision within 60 days of a Ministerial decision to issue an EA certificate, pursuant to Section 8 of the *Concurrent Approval Regulation,* on any approvals for which the proponent has appropriately filed the necessary applications.

Similarly, the CEA Agency will prepare a draft Comprehensive Study Report (CSR), containing conclusions on whether the project is likely to cause significant adverse environmental effects. The draft CSR will be posted on the CEA Agency Registry website for public comment. After the end of the public comment period, the final CSR along with a summary of the public comments will be submitted to the Federal Minister of the Environment for a decision pursuant to Section 23 of the former CEAA. Once the EA decision is issued, the project will be referred to the applicable federal agencies for their decision on whether or not to issue the federal authorizations required for the Project.

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APPENDICES

A list of all appendices referenced in the Application/EIS will be provided in this section.

PREFACE TO THE APPLICATION/ENVIRONMENTAL IMPACT STATEMENT

KAM commits to provide the following in the Application/EIS:

- That the Project is subject to review under the *British Columbia Environmental Assessment Act* (BCEAA). The Project constitutes a reviewable project pursuant to Part 3 of the *Reviewable Projects Regulation* (B.C. Reg. 370/02), since the Project is a proposed new mining facility that will have a production capacity of 75,000 tonnes or more of mineral ore per year,
- That the Project is subject to review under the transition provisions of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and will continue as a comprehensive study under the former CEAA. The Project has triggers under Section 5 of the former CEAA since it is anticipated that it will require an Authorization from Fisheries and Oceans Canada (DFO) under Section 35(2) of the *Fisheries Act*, as well as a licence from Natural Resources Canada (NRCan) under Section 7(1) (a) of the *Explosives Act*. The CEA Agency has determined that the Project is listed in the *Comprehensive Study List Regulations* of the former CEAA and therefore a comprehensive study will be required in accordance with the *Establishing Timelines for Comprehensive Study Regulations*,
- Information on any other EA approval processes the Project is undergoing (if applicable) especially if they interact/overlap with the former CEAA,
- Statement that the Application/EIS has been developed pursuant to the AIR/EIS Guidelines approved by the EAO and CEA Agency, and complies with relevant instructions provided in the Section 11 Order,
- Statement that the Application/EIS has been developed pursuant to federal information requirements that were communicated by the CEA Agency and/or federal Responsible Authorities (RAs), and
- Identification of the agencies, Aboriginal groups and other parties involved in the development of the Application/EIS.

KAM commits to providing a Table of Concordance in the Application/EIS presenting all requirements for content and methodological approaches in the approved AIR/EIS Guidelines that are to be addressed in the Application/EIS, with volume, section, and page references. The Table of Concordance will use the format presented below.

Table I Table of Concordance

AIR/EIS Guidelines Section	Description of Relevant Section and Subsections	Application/EIS Volume and Section	Page Reference
Example 1…	Example 1…	Example 1…	
Example 2…	Example 2…	Example 2…	

LIST OF ACRONYMS

A list of all acronyms and abbreviations used in the Application/EIS will be presented in this section. A preliminary list of acronyms and abbreviations used in the AIR/EIS Guidelines are indicated below.

AANDC	Aboriginal Affairs and Northern Development Canada
AIA	Archaeological Impact Assessment
AIR/EIS Guidelines	Application Information Requirements/Environmental Impact Statement Guidelines
AG	Acid generating
AN	Ammonium Nitrate
ANFO	Ammonium Nitrate Fuel Oil
AME	Abacus Mining and Exploration Corp.
Application/EIS	Application for an Environmental Assessment Certificate/Environmental Impact Statement for a Comprehensive Study
ASILs	Acceptable Source Impact Levels
BC	British Columbia
BCEAA	British Columbia Environmental Assessment Act
BMP	Best Management Practice
CCME	Canadian Council of Ministers of the Environment
CEA	Cumulative Effects Assessment
CEA Agency	Canadian Environmental Assessment Agency
CEAA	Canadian Environmental Assessment Act
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPD	Certified Project Description
dAIR	Draft Application Information Requirements/Draft Environmental Impact Statement Guidelines
DF	Dustfall
DFO	Fisheries and Oceans Canada
DQOs	Data Quality Objectives
EA	Environmental Assessment
EC	Environment Canada
EIS	Environmental Impact Statement for a Comprehensive Study
EMP	Environmental Management Plan
EMS	Environmental Management System
EWRSF	East Waste Rock Storage Facility
GHG	Greenhouse Gas
GPS	Global Positioning System
HC	Health Canada
HHERA	Human Health and Ecological Risk Assessment
HPGR	High Pressure Grinder Roll
IH	Interior Health
ILMB	Integrated Land Management Bureau

IPWRSF	In-Pit Waste Rock Storage Facility
IWMS	Identified Wildlife Management Strategy
KAM	KGHM Ajax Mining Inc. (the Proponent)
KGHM	KGHM Polska Miedź S.A.
KPL	Knight Piésold Ltd.
LOM	Life of Mine
LRMP	Land and Resource Management Plan
LSA	Local Study Area
MDL	Maximum Detection Limit
MEM	Ministry of Energy, Mines and Natural Gas
MIBC	Methyl Iso Butyl Carbonal
MFLNRO	Ministry of Forests, Lands, and Natural Resource Operations
ML/ARD	Metal Leaching/Acid Rock Drainage
MMER	Metal Mining Effluent Regulations
MNBC	Métis Nation BC
MOE	Ministry of Environment
MoTI	Ministry of Transportation and Infrastructure
MPMO	Major Project Management Office
MSDS	Material Safety Data Sheet
NAD	North American Datum
NAG	Non Acid Generating
NAPS	National Air Pollution Surveillance
New Gold	New Gold Inc.
NI	National Instrument
NMBM	Numerical Mass Balance Model
NPRI	National Pollutant Release Inventory
NPV	Net Present Value
NRCan	Natural Resources Canada
NSR	Net Smelter Return
NWRSF	North Waste Rock Storage Facility
PAX	Potassium Amyl Xanthate
PAG	Potentially Acid Generating
PM	Particulate Matter
PMP	Probable Maximum Precipitation
Project	Ajax Project
Proponent	KGHM Ajax Mining Inc.
QA	Quality Assurance
QC	Quality Control
RA	Responsible Authority
RIC	Resources Inventory Committee (Now RISC)
RISC	Resources Information Standards Committee
ROM	Run-of-Mine
ROW	Right-of-Way
RSA	Regional Study Area
SARA	Species at Risk Act
SSN	Stk'emlupsemc of the Secwepemc Nation

STS	Stk'emlupsemc te Secwepemc
SWRSF	South Waste Rock Storage Facility
TC	Transport Canada
TEM	Terrestrial Ecosystem Mapping
TFL	Tree Farm License
TNRD	Thompson Nicola Regional District
TRIM	Terrain Resource Information Mapping
TSF	Tailings Storage Facility
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
TTP	Thickened Tailings Plant
UTM	Universal Transverse Mercator
VC	Valued Component
WCP	Wetland Compensation Plan
WHMIS	Workplace Hazardous Materials Information System
WSC	Water Survey of Canada
WRSFs	Waste Rock Storage Facilities
ZOI	Zone of influence

LIST OF UNITS

Annum (year)	a
Billion	B
Billion tonnes	Bt
Centimetre	cm
Cubic centimetre	cm^3
Cubic metre	m^3
Day	d
Degree	°
Degrees Celsius	°C
Dollar (American)	US$
Dollar (Canadian)	Cdn$
Grams per tonne	g/t
Kilogram (thousand)	kg
Kilotonne	kt
Kilovolt-ampere	kVA
Kilowatt hours per tonne (metric ton)	kWh/t
Kilowatt hours per year	kWh/a
Litres per minute	L/m
Megawatt	MW
Metres above sea level	Masl
Metres per second	m/s
Metric ton (tonne)	T
Million	M
Million tonnes	Mt
Three Dimensional	3D
Tonne (1,000 kg)	T
Tonnes per day	t/d
Tonnes per hour	t/h
Tonnes per year	t/a
Volt	V
Wet metric ton	Wmt
Year (annum)	a

EXECUTIVE SUMMARY

KAM commits to provide the following in the Executive Summary of the Application/EIS:

- Project overview;
- Summary project description;
- Summary of the assessment process and consultations undertaken;
- Summary of the potential effects, mitigation and significance of residual effects;
- Summary of proposed environmental and operational management plans;
- Summary of the proposed compliance reporting;
- Summary of the Aboriginal groups information requirements;
- Summary of commitments; and
- Proponent conclusions.

The executive summary will be prepared in both English and French.

PART A - INTRODUCTION AND BACKGROUND

Part A of the AIR/EIS Guidelines and the Application/EIS will discuss the purpose of the Application/EIS and provide an overview of the Ajax Project (the Project) and the Proponent. The Ajax Project is defined to be inclusive of the proposed mine facility as well as the required baseline studies, regulatory processes, etc.; some components of the Project, such as the baseline works are currently ongoing. For the purposes of the AIR/EIS Guidelines and Application/EIS, reference to the Project will include the proposed mine facility as the subject of the Environmental Assessment.

SECTION 1.0 - PURPOSE OF THE APPLICATION/ENVIRONMENTAL IMPACT STATEMENT

In this section, the Proponent will summarize the purpose of the Application/EIS, and indicate that the Application/EIS fulfils the federal and provincial requirements for an EA decision.

The Application/EIS will also state the following:

- The Ajax Project is subject to review under the *British Columbia Environmental Assessment Act* (BCEAA). The proposed mine facility constitutes a reviewable project pursuant to Part 3 of the Reviewable Projects Regulation (B.C. Reg. 370/02), since the proposed mining facility that will have a production capacity of 75,000 tonnes or more of mineral ore per year.
- The Project is also subject to review under the former *Canadian Environmental Assessment Act* (former CEAA), with a trigger under Section 5 of the former CEAA due to the likely requirement for an authorization under the *Fisheries Act* related to potential impacts on fish and fish habitat, and a requirement for a licence under the *Explosives Act*. The CEA Agency has determined that the Project is listed in the *Comprehensive Study List Regulations* under the former CEAA and therefore a comprehensive study is required.
- For comprehensive studies, the Federal Minister of the Environment shall make a decision pursuant to Section 23 of the former CEAA, including consideration of the comprehensive study report, public comments, and identified mitigation measures.
- The decision will also include a formal assessment of whether the Project is likely to cause significant adverse environmental effects, taking into account proposed mitigation measures. The project will then be referred back to the federal, provincial, municipal and regional responsible authorities.

SECTION 2.0 - PROJECT OVERVIEW

2.1 PROPONENT DESCRIPTION

2.1.1 Proponent

The information presented in this section of the AIR/EIS Guidelines will also be updated and included in the Application/EIS. The numbers presented throughout this document are based on the feasibility study and provided for general understanding of the project only since they will be refined as additional engineering is completed. Equipment descriptions are provided to give a general understanding of the project with final equipment selections subject to change as project engineering progresses.

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, the ninth largest copper producer in the world. It was created as a state-owned company in 1961 and was privatized in 1991; 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. AME is a British Columbia-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 Ajax Project. It is a company in British Columbia and a Tier One issuer that trades on the TSX Venture Exchange under the symbol “AME”.

KAM currently controls approximately 97 km^2 of land in the Project area. KGHM Ajax has ownership of 57 mineral claims and 31 Crown Granted mineral claims. The ore body for the Ajax mine is within the Iron Mask batholith. 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 primary contacts for the project are:

Ms. Nicola Banton, Environmental Assessment Permitting Manager, Ajax Project
Mr. Clyde Gillespie, Project Development Manager

KGHM Ajax Mining Inc.
124 Seymour St.
Kamloops, BC. V2C 2G2

Phone: 250-374-5446
Fax: 250-374-5443
Email: info@ajaxmine.ca
Web: www.ajaxmine.ca

2.1.2 Consultants

The Application/EIS will include an identification and detailed summary of the consultants who have contributed to the AIR/EIS Guidelines and Application/EIS. Consultants who have contributed to the AIR/EIS Guidelines include:

- Knight Piésold Ltd. (climatology/meteorology, surface and ground water quality, fish and aquatic ecology);
- Keystone Wildlife Research Ltd. (wildlife and vegetation);
- BGC Engineering (hydrogeology and hydrology);
- Lorax (geochemistry);
- Terra Archaeology (Archaeological Impact Assessment);
- InterGroup Consultants Ltd. (social and economic assessment);
- VAST Resource Solutions Inc. (soils and reclamation, forage and range analysis);
- Stantec (air quality, noise and vibration, country foods);
- AMEC Environment and Infrastructure (Aboriginal engagement); and
- ERM Rescan (Application/EIS coordination, heritage resources).

2.2 PROJECT BACKGROUND

The following information will be included in the Application/EIS, and updated as necessary.

2.2.1 Provincial and Federal Triggers

Under the BCEAA a person cannot undertake or carry out any activity on a reviewable project without having an environmental assessment 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 tonnes per year of mineral ore, and therefore will trigger an EA under Part 3 of the Reviewable Projects Regulation.

The Project is subject to review under the former CEAA. It is anticipated that the Project will require an Authorization from Fisheries and Oceans Canada (DFO) under Section 35(2) of the *Fisheries Act*, as well as a licence from Natural Resources Canada (NRCan) under Section 7(1)(a) of the *Explosives Act*. The 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.

A comprehensive study is required when the project contains one or more components listed in the Comprehensive Study List Regulations. The Ajax 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 British Columbia, south-west of the city of Kamloops, within the Thompson Nicola Regional District as shown in Figures 2.2-1 and 2.2-2. The Project lies in an area identified as asserted traditional territories of the Stk'emlupsemc of the Secwepemc Nation (Tk'emlúps te Secwepemc and Skeetchestn Indian Band) as well as the asserted traditional territories of the Nlaka'pamux (Ashcroft and Lower Nicola Indian Bands) Nation. 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 Project facility to the neighbourhood of Aberdeen is the EWRSF at approximately 1.7 km. The proposed infrastructure will be located primarily on private land owned by KAM, with some utilisation of Crown land.

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

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). Midway through construction and during operations, access will be from Inks Lake Interchange off the Highway No. 5 to service roads connecting the interchange to the old Afton Mine Haul Road.

Figures showing the Project location, proposed facilities, roadways, and surrounding communities will be included in the Application/EIS with the most recent base mapping (i.e. orthophotos) and map scales, as appropriate.

2.2.3 Project History

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 Ajax 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 and 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.

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 historic Afton mine site, including the mill building and deactivated and decommissioned TSF, is situated ten kilometres west of the Ajax Project. 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 a 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 Mt of ore was mined and 13 Mt of ore was milled. The 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.

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 (NI) 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 tonnes of ore per day.

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*. Based on the work carried out for the feasibility study and the resulting economic evaluation, it was recommended that the Ajax Project proceed to the Detailed Engineering Design stage.

KAM currently controls approximately 97 km^2 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 Ajax Project is located on the footprint of the previous Ajax East and Ajax West pits and associated access and haul roads, reclaimed waste rock piles, and other mining infrastructure (Figure 2.2-1).

2.2.4 Project Schedule

The overall project construction duration, from commencement to plant commissioning, is expected to be approximately 3 years. The duration from commencement of field construction to substantial mechanical completion is approximately 2 years, which includes access roads and early earthworks.

The anticipated operational phase of the Project is 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 two years, followed by monitoring 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 closure and decommissioning activities are completed, as determined by the onsite plans and regulatory requirements. The post-closure assessment is defined as extending to the time when the active potential effects are predicted to be within background variation or are negligible, dependant on the VC of interest.

2.2.5 Environmental Management System

The Application/EIS will include a description of the Environmental Management System (EMS) that will be implemented during all phases of the Project.

The EMS will ensure that all Project-related activities, from construction to decommissioning, are conducted in an environmentally responsible manner. 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. KAM 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 environmental management system.
- 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.
- 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

The following information will be presented in the Application/EIS:

- A description of the scope of the Project to be assessed in the provincial EA (pursuant to the Section 11 Order) including a description of the Section 11 Order First Nation and Working Group First Nation consultation requirements.

2.4 FEDERAL SCOPE OF THE PROJECT

A project, as defined under the former CEAA, means, in relation to a physical work, any proposed construction, operation, modification, decommissioning, abandonment or other undertaking in relation to that physical work. The Application/EIS will describe the scope of the Project to be assessed as outlined in the AIR/EIS Guidelines.

2.5 ALTERNATIVE MEANS OF UNDERTAKING THE PROJECT

The following project components will be assessed in the alternative means assessment presented in the Application/EIS:

- Site access road;
- Water use;
- Open pit;
- Power supply and transmission line;
- Waste rock storage facilities;
- Explosives facility and magazine;
- Blasting schedules;
- Tailings management and location of tailings storage facility;
- Transport corridor route; and
- Analysis of different processing throughputs and rationale for current production configuration.

- Key issues in considering the alternative means of the Project;
- Discussion of alternative mining methods;
- An analysis of the alternative means of carrying out the Project that are technically and economically feasible, including closure implications of each option, such as consideration of back-filling of waste into the pit; and
- The rationale for selecting the preferred alternative.

To reduce duplication between the provincial and federal requirements for the alternatives assessment, this information will be presented in Section 17 of the Application/EIS.

2.6 PROJECT LAND USE

KAM commits to providing the following information in the Application/EIS:

- A description of the land ownership and land use regime including tenures, licenses, permits or other authorizations that would be potentially affected by the Project; and the status of consultations with holders of such tenures and permits, and private land owners including resolution of land tenure issues.
- A description of the Kamloops Land and Resource Management Plan (LRMP), and its management objectives.
- A summary of Aboriginal territories, land use plans or processes, and past, current and potential future land use by Aboriginal peoples. Details to be provided in Section 12.
- Existing and proposed management and monitoring programs or regional studies, including:
  - A description of the City of Kamloops Official Community Plan as it relates to the Project;
  - A description of the City of Kamloops Sustainable Kamloops Plan and how it relates to the Project;

  - A description of the Aberdeen Community Plan as it relates to the Project;
  - A description of the TravelSmart Plan as it relates to the Project including the contemplated Aberdeen Drive/Copperhead Drive extensions;
  - A description of any Thompson Nicola Regional District (TNRD) Official Community Plans, guidelines, and bylaws as they relate to the Project;
  - Description of the annual Sharp-Tailed Grouse population monitoring program conducted by regional Forests, Lands and Natural Resources Operations (FLNRO) biologists;
  - Description of the regional Burrowing Owl re-introduction program;
  - Description of the City's groundwater monitoring and open stability program as it relates to the Project;
  - Ministry of Environment (MOE) fish stocking program; and
  - A description of the Kamloops Airshed Management Plan (2012) as it relates to the Project.
- Boundaries of any proposed encroachment into City limits, including setbacks reasonably required for the protection of the public from risk;
- A summary of KAMs responsibilities and commitments with respect to the Agricultural Land Reserve exclusion application, and a delineation of how these plans are expected to meet the requirements of the Agricultural Land Commission.
- Identification of other developments that may result in overlapping impacts with the Project; and
- Identification of future developments which are reasonably foreseeable and sufficiently certain to proceed.

2.7 PROJECT BENEFITS

KAM commits to provide information regarding Project benefits in the Application/EIS, using the statistics available from provincial ministries. The Application/EIS will state all assumptions and will reference information sources for the reported information. Project benefits discussed in the Application/EIS will include:

- Initial capital construction cost estimates including:
  - Breakdown of costs for the land, buildings, and equipment associated with the Project; and
  - Indication of the potential for use of local facilities and an indication of whether they are currently under-utilized.
- Estimated operating costs over the life of the Project (for land, buildings and equipment) including:
  - Estimated annual operating costs (excluding labour);
  - Cost determination process and respective calculation methods;
  - An indication of how the costs are measured in current dollar values or net present values; and
  - Costs for decommissioning/closure/abandonment/reclamation.
- Employment estimates including:
  - Direct employment (number of person years as defined by a single person employed fulltime for one year) to be created, by major job category (e.g., labour, management, business services) during construction and operation, distinguishing among full-time, part-time and seasonal workers;
  - Wage levels, by major job category, for the construction and operating periods;
  - Breakdown of the number of people that will be hired (locally, provincially, nationally or internationally);
  - Potential to use currently under-utilized local human resources;
  - Indication of any relevant employment policies/practices including a local hiring strategy;

  - Indirect employment for the construction and operation phases of the Project;
  - Employment estimates for supplies of goods and services used; and
  - Any assumptions relating to industry specific multipliers and other multipliers used.
- Contractor supply services estimates will include:
  - List of the major types of businesses/contractors (local, provincial, and national level) that will benefit from the overall Project;
  - Value of supply of service contracts expected for both the construction and operation phases of the Project; and
  - Information about a local purchasing strategy.
- Estimated annual government revenues from the construction and operation phases of the Project including:
  - Local/municipal (property taxes, other);
  - Regional District (taxes, other);
  - Provincial (income tax, lease, license and tenure, royalties, other); and
  - Federal (income tax, Harmonized Sales Tax (HST), payroll taxes, other).
- Project contributions to healthy living.
- Project contributions to community development.
- A summary of non-confidential economic benefit, capacity-building, procurement, contracting and employment and training agreements they may have, or are in the process of developing with Aboriginal groups. Details to be provided in Section 12.

2.8 APPLICABLE PERMITS

The following will be included in the Application/EIS:

- A list of all applicable federal, provincial, and local government licenses, permits and/or approvals required for the construction, operation and decommissioning of the Project and the associated responsible regulatory agency;
- A request for a concurrent permitting process under the BCEAA pursuant to the *Concurrent Approval Regulation* (BC Reg. 371/2002), or a description of the synchronous permitting process through the Mine Development Review Committee; and
- A description of Aboriginal involvement in permitting processes.

SECTION 3.0 - DETAILED PROJECT DESCRIPTION

This section of the Application/EIS will provide a detailed, updated Project Description, supported with maps and figures at appropriate scales to demonstrate the proposed mine design and layout.

3.1 GEOLOGY

3.1.1 Regional Geology

The following information is from the Project Preliminary Assessment Technical Report (Wardrop 2009), updated with information provided in the Feasibility Study Technical Report (Wardrop 2011). This, or more up-to-date information, will be included in the Application/EIS.

The regional geology in the Project area is dominated by the approximately 5 km wide and 20 km long Upper Triassic Iron Mask batholith, which trends northwest through the region (Figure 3.1-1). The Iron Mask batholith intruded a sequence of Nicola Group flows and volcaniclastic rocks of mafic and intermediate composition. Near the contact with the Iron Mask batholith, the Nicola Group rocks are commonly basalt to andesite flows and flow breccias. Stratigraphically above the Nicola Group is a series of serpentinized picrite basalts, which are present within the batholith and are apparently localized along major structural corridors.

Multiple phases are recognized in the Iron Mask Batholith. The Pothook diorite is the oldest phase and consists of a medium to coarse-grained biotite pyroxene diorite. A hybrid unit is recognized where Nicola Group rocks have been incorporated into the Pothook. The Hybrid phase consists of up to 80% Nicola Group fragments within Pothook intrusive breccia.

The Cherry Creek phase dominates the north and east margins of the batholith and forms a pluton northwest of the batholith. The Cherry Creek postdates the Pothook and consists of a monzonite to monzodiorite. Ubiquitous K-feldspar generally gives the Cherry Creek a pinkish colour.

The Sugarloaf phase dominates the western margin of the batholith and also postdates the Pothook phase. The age relationship with Cherry Creek is uncertain. The Sugarloaf phase is commonly a fine-grained porphyritic hornblende diorite. Albite alteration is common near zones of mineralization. The Kamloops Group contains the youngest rocks in the region and consists dominantly of tuffaceous sandstone, siltstone, and shale with minor flows and agglomerates of basaltic and andesitic composition.

Copper-gold mineralization associated with the Iron Mask batholith is classified as alkaline porphyry copper-gold deposits and is associated with the Cherry Creek and Sugarloaf phases. Mineralization is generally localized along major fault zones and associated with albite and K-feldspar alteration.

3.1.2 Local Geology

The following information is from the Project Preliminary Assessment Technical Report (Wardrop 2009), updated with information provided in the Feasibility Study Technical Report (Wardrop 2011). This, or more up-to-date information will be included in the Application/EIS.

As many as 22 rock types have been recognized in the Project area, but these can generally be combined into three main rock types: Iron Mask Hybrid, Sugarloaf Diorite, and Nicola Volcanics (Figure 3.1-2). Outcrops are generally abundant in the Project area. The contact between the Sugarloaf Diorite and the Iron Mask Hybrid strikes southeasterly through the West Ajax area and changes to a northeasterly strike through the East Ajax area. The Sugarloaf-Iron Mask contact is truncated by a southeasterly striking fault at the north end of the East Project area. The contact between the Sugarloaf Diorite and Nicola Group generally strikes southeasterly through the Project area.

Sugarloaf Diorite is characteristically a fine to coarse-grained, light to medium gray porphyritic diorite containing euhedral hornblende phenocrysts. Unaltered Sugarloaf may contain up to 5% fine-grained magnetite. Locally, the Sugarloaf Diorite has assimilated rocks of the Nicola Group and is referred to as the Sugarloaf Hybrid. Albite and K-feldspar alteration is present in varying degrees. Strong albite alteration has commonly destroyed original textures locally. Sulphide mineralization is associated with albite alteration and consists predominantly of chalcopyrite and pyrite. Molybdenite, tetrahedrite, and bornite have been observed.

The Iron Mask Hybrid is considered to be an assimilation of the Nicola Group into the intruding Pothook Diorite. The Iron Mask Hybrid is coarse-grained and dioritic to gabbroic in composition. Weak propylitic alteration is common with K-feldspar and albite alteration occurring locally. The Iron Mask Hybrid may contain up to 10% magnetite and locally chalcopyrite and pyrite are present. The Nicola Group consists of picrite and various fine-grained and pyroxene porphyritic mafic volcanic rocks. A variety of steeply dipping, unmineralized dykes up to 5 m wide intrude the main rock types. Dykes are composed of aplite, monzonite, latite, and fine-grained mafic rocks.

3.1.3 Mineralization

The following information is from the Project Preliminary Assessment Technical Report (Wardrop 2009). This, or more up-to-date information, will be included in the Application/EIS.
The Iron Mask Batholith is host to more than 20 known mineral deposits and occurrences and mineralization is commonly copper-gold. Chalcopyrite is the dominant sulphide mineral. The presence of accessory sulphide minerals is highly variable and can include pyrite, bornite, tetrahedrite and molybdenite. Secondary copper oxides (e.g. chalcocite) and native copper have been observed locally. Mineralization is associated with regional fault zones that trend easterly or southeasterly through the area.

The mineralization in the Project area is associated with structural corridors of highly fractured sections of Sugarloaf and Sugarloaf Hybrid phases of the Iron Mask Batholith. Chalcopyrite is the dominant copper mineral and occurs as veins, veinlets, fracture fillings, disseminations, and isolated blebs in the host rock. Concentrations of chalcopyrite rarely exceed 5%. Accessory sulphide minerals include pyrite, magnetite, and molybdenite.

High-grade copper mineralization (>1.0% Cu) is confined to chalcopyrite vein systems. Copper grades decrease away from the chalcopyrite veins. High-grade mineralization can extend several metres from the vein structure. Low-grade copper mineralization (0.10% to 0.50% Cu) is generally associated with the

Sugarloaf-Iron Mask contact. Mineralization extends to depths exceeding 600 m and has measureable ore in a length exceeding 2,000 m.

It is common for gold concentrations to be directly correlated with copper concentrations. Gold mineralization increases slightly in areas where strong albite alteration occurs. The albite alteration is in part controlled by fault and vein structures. Minor palladium mineralization is associated with copper near the contacts of the Iron Mask Hybrid and Sugarloaf units.

3.2 MINERAL RESOURCES

The following information is from the Feasibility Study Technical Report (Wardrop 2011). This, or more up-to-date information, will be included in the Application/EIS.

The mineral resources of the Ajax deposit were classified in accordance with Canadian Institute of Mining, Metallurgy and Petroleum definition standards and best practices referred to in NI 43-101 which have a reasonable expectation of economic extraction. The qualified person for the mineral resource estimate was Timothy O. Kuhl, SME Registered Member and an employee of AMEC. Mineral Resources are reported using a copper price of US $2.88/lb and a gold price of US$1,200/oz. The mineral resource estimate has an effective date of May 26, 2011.

The mineralization of the Project satisfies criteria to be classified into Measured, Indicated, and Inferred mineral resource categories. Mineral Resources are reported at a Base Case CuEq grade of 0.20%. The Measured and Indicated resource totals 512 Mt at an average grade of 0.31% Cu and 0.19 g/t Au, with an additional 73.7 Mt of Inferred at 0.27% Cu and 0.17 g/t Au. The 2011 resource model update showed an 11% increase in Measured and Indicated tonnes over the 2010 resource model, a reflection of the additional infill drilling. Copper and gold grades are similar between the 2011 and 2010 models.

These resources are sufficient for approximately 23 years of operation at an annual production rate of 60,000 tonnes per day.

A pre-tax economic model has been developed by Wardrop from the estimated costs and the open pit production schedule. The base case has an internal rate of return of 14.5% and a net present value (NPV) of US$416 million at an 8% discount rate for the 23-year life of mine (LOM). The payback of the initial capital is anticipated to be within 7.8 years.

3.3 SITE GEOCHEMISTRY

The Application/EIS will contain a discussion of geological and environmental aspects that could contribute to Metal Leaching and Acid Rock Drainage (ML/ARD) conditions in disturbed areas. Results of geochemical characterization will be incorporated into mine planning and used in the assessment of potential impacts to surface and ground water quality, as well as in waste management planning. The Application/EIS will present the ML/ARD prediction program and mitigation measures based on the following documents:

- Policy for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia, Ministry of Energy and Mines and Ministry of Environment, Lands and Parks, July 1998.

- Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia, Price and Errington, August 1998.
- Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material. MEND Report 1.20.1, 2009.

Materials at the Project that will be investigated for ML/ARD potential include overburden, pit walls, waste rock, ore, low grade ore, tailings and borrow material.

Geochemical data will be presented in sufficient detail to use as a basis for surface water and groundwater quality effects assessments. With respect to potential effects of ML/ARD on surface water and groundwater quality, the following information will also be presented in the Application/EIS:

a) Delineation of geochemical source terms and methods utilized in geochemical predictive modelling (including the use of any relevant geochemical analogues). Information will be presented in a clear and transparent manner.
b) Integration of results of the ML/ARD prediction work, water quality, hydrology, and water balance information to develop water quality predictions that will be used as a basis for impact assessment, to determine materials handling procedures, and to assess and develop ML/ARD mitigation/management requirements for the project. Water quality modeling will be presented in a clear and transparent manner and the methods, assumptions and rationale used to estimate water quality will be thoroughly explained.
c) A prediction of water quality will be made for major mine components (ore stockpiles, WRSF, soil and overburden stockpiles, and TSF), site surface water discharges, groundwater seepages and relevant receiving environment locations. Water quality predictions will be conducted for key flow conditions and relevant time-steps in the mine life (e.g., temporal boundaries will include operations, closure, post-closure, workings flooded and discharging, etc.).
d) Water quality predictions and effects assessment will include pH, alkalinity, sulphate, cations, major and trace metal/metalloids, nitrogen species, etc., and include comparison to all relevant water quality guidelines and objectives.
e) The lag time to ML/ARD onset will be assessed for all potentially ARD generating materials and this information will be utilized in the development of management plans.

The Application/EIS will also include a detailed discussion of mitigation requirements for ML/ARD effects, including but not limited to the following:

a) If waste rock segregation is proposed, the Application/EIS will demonstrate the feasibility of successfully segregating PAG and non-PAG mine waste materials during operations, propose geochemical segregation criteria, and identify operational methods to achieve geochemical characterization and segregation during operations (e.g., geochemical surrogates, on site lab, procedures needed etc.). The Application/EIS will include a sensitivity analysis to assess the effects of imperfect segregation of waste rock.
b) If a water cover is proposed for ML/ARD management, information will be provided to identify the types, volumes and geochemistry of mine waste to be flooded, the disposal methods and location, the time until full flooding will occur, information to demonstrate that mine wastes will remain flooded during extreme climatic events, measures to mitigate soluble contaminants that could affect water quality, an assessment of geochemical stability under flooded conditions, and monitoring and maintenance requirements to ensure geochemical and physical security of flooded mine wastes.

c) If engineered cover systems are proposed as a ML/ARD mitigation, a conceptual design will be provided including the design objectives and principles, the characteristics and volumes of cover materials required, construction methods, assessment of expected performance and long-term effectiveness under the expected range of climatic conditions, monitoring and maintenance requirements, contingency plans, cost of constructing, and long-term monitoring and maintenance plans.
d) If blending of PAG and non-PAG materials to produce a benign composite is proposed as a ML/ARD mitigation strategy, information will be presented on the geochemistry of individual wastes and mixed wastes including metal release characteristics, site specific management criteria for blending, detailed waste handling and placement plans, demonstration of adequate proportions of PAG and non-PAG wastes throughout mine life, an assessment of anticipated waste rock storage facility hydrology, proposed operational monitoring plans, and contingency plans for seepage water quality.
e) If drainage collection and treatment is proposed as a mitigation strategy, a conceptual design will be provided including location, characterization of influent and effluent chemistry and flow, demonstration of the effectiveness of the drainage collection and holding system, conceptual design information on the treatment process, predicted reagent use, assessed performance under the expected range of flow and climatic conditions, sludge disposal plan, the operating, monitoring and maintenance requirements to ensure successful treatment is sufficient to achieve long-term environmental protection requirements, and anticipated capital and operating costs.
f) ML/ARD prevention and management strategies are required for temporary closure or early-permanent closure scenarios.
g) Contingency plans will be provided where there are significant uncertainties or risks associated with the predicted water quality.
h) Concepts for operational and post-closure monitoring and maintenance plans will be provided.

3.4 AJAX PIT DEVELOPMENT

The proposed mine plan envisages a conventional open pit operation producing 60,000 t/d. The pit will be developed in multiple phases. The mine plan is based on the extraction of approximately 500 Mt of ore for processing during approximately 23 years of operation at an overall stripping ratio of approximately 2.3:1 waste to ore. Total material movement from the pit during the life of the mine is estimated at approximately 1,700 Mt.

The information will also be included in the Application/EIS, with detailed and updated information on the following:

- Description of the open pit development plan including pit phases and phase designs;
- Pit designs including slopes, haul road widths, design standards and geotechnical and hydrogeological considerations (e.g., pit wall management);
- Description of pit water management including inflow diversions and dewatering methods;
- Description of conceptual instrumentation and monitoring of the pit during operations;
- Description of the geohazards of influence to the pit;
- Discussion of blasting procedures and dust mitigation measures; and
- Discussion of ore grade and waste control.

3.4.1 Pioneering Work

Initial preproduction pit development will be accomplished with front-end-loaders, dozers, percussion drill, and rear end dump trucks. Activities during this stage include removing overburden, developing mine access roads suitable for large mining equipment, and "face-up" of the initial pit into productive set-ups for the large shovel and mining equipment. Suitable organic material will be temporarily stockpiled for reclamation use.

3.4.2 Pit Design

Pit designs are based on the following parameters:

- 15 m bench height, single-bench mining;
- 30 m double bench height between catch benches;
- 24 m double bench in final wall final bench height;
- 65 to 75° Bench face angle based on geotechnical design parameters;
- Berm width as per design sector;
- 35 m road width;
- 25 m road width at the bottom pit;
- +10% maximum grade uphill loaded; and
- -10% maximum grade downhill loaded.

The following information regarding the pit will be provided in the Application/EIS:

- Pit design criteria including applied design standards and justification;
- Detailed information regarding the implications of Jacko Lake on pit wall stability and on dewatering efforts, particularly on the west and southwest walls of the open pit;
- The impact of pit wall stability and pit dewatering on the short and long term viability of Jacko Lake; and
- Conceptual mitigation plans.

3.4.3 Drilling and Blasting

Blast-hole drilling will be performed with electric rotary production drills. Ore and waste zones will be mined on 15 m benches with nominal 17.5 m deep holes drilled in a single pass.

Blast damage to the pit walls will be minimized to preserve strength along bedding planes defining the potential failure blocks. A wall control program will consist of pre-splitting and trim blasts which will be carried out along all ultimate walls, including the intermediate pit phases if geotechnical conditions warrant. Trim pattern blast-holes will be drilled with the production drill rig and the pre-splitting blast-holes will be drilled with a diesel percussion drill rig. Waste material will be blasted to produce a suitable particle size distribution for loading and hauling. Mineralized material will be blasted to comply with fragmentation requirements and a specified particle distribution.

A mix of ammonium nitrate/fuel oil (ANFO) and emulsion explosives will be used for blasting.

3.4.4 Loading and Hauling

Traditional large scale trucks and shovels will load and transport material from full 15 m benches. A fleet of front end loaders will support the main production fleet by working on less productive faces, completing clean-up projects and serving as back-up.

3.5 MINE PRODUCTION SCHEDULE

The following information will be included in the Application/EIS with updates as available.

The proposed mine production schedule is based on a requirement of providing an ore production schedule of 60,000 tonnes per day, for a projected mine life of approximately 23 years.

Mine production will begin with a one and a half year development and pre-stripping phase. This phase will focus on road development, mining phase preparation, and exposure of ore. Following this phase, a ramp-up period in mining rates will take place over the course of two years until peak mining rates are achieved. The peak mining rates are designed to gain access to higher grade ore for processing while stockpiling lower grade for processing towards the end of the mine life. Approximately 100Mt of material will be moved in any given year during the mine life.

Mining activities will begin with the expansion of the existing East and West open pits during the initial years of production. After approximately five years of production, the two existing open pits will be merged into a single mining phase. Following this merger, the subsequent pushbacks will expand the pit limits to the East. Mining rates will gradually subside from their peaks levels beginning in the second half of the mine life. Development of the in-pit waste rock storage facility will begin in the last five years of operation.

3.6 PROCESS PLANT AND ORE PROCESSING

The following information will be included in the Application/EIS with additional updates as available.

The treatment plant will consist of stage-wise crushing and grinding, followed by a flotation process to recover and upgrade copper from the feed material. A gravity circuit will be included within the flotation circuit to enhance gold recovery. The flotation concentrate will be thickened and filtered and sent to the concentrate stockpile for subsequent sale and shipping to concentrate customers. The final flotation tailings will be pumped into the TSF. Process water used in Ore Processing is primarily from two recycled sources: from the TSF via a reclaim water pipeline and recovered from the overflow of the concentrate thickener; and supplemented with freshwater from Kamloops Lake. KAM is currently investigating potential use of City of Kamloops treated effluent as an additional supplemental source. Freshwater will be used for gland service, reagent preparation and gravity circuit fluidisation.

The process plant will consist of the following unit operations and facilities:

- Run-of-Mine (ROM) ore receiving and primary crushing;
- Covered coarse ore stockpile;
- Coarse ore stockpile ore reclaim;
- Secondary crushing;

- Covered High Pressure Grinder Roll (HPGR) feed stockpile;
- HPGR feed stockpile ore reclaim;
- HPGR crushing circuit;
- Ball mill grinding circuit incorporating cyclones for classification;
- Copper rougher flotation;
- Copper concentrate regrinding stages;
- Copper cleaner flotation;
- Gravity gold circuit;
- Copper concentrate thickening, filtration, and dispatch; and
- Tailings disposal to TSF.

The crushing and processing plants will be designed to operate on the basis of two 12-hour shifts per day, for 365 d/a.

3.6.1 Primary Crushing

ROM ore will be fed to a Primary Crusher- Gyratory type. The ore is then crushed and is conveyed to the coarse ore stockpile.

3.6.2 Coarse Ore Stockpile and Reclaim

The coarse ore stockpile is a production surge facility which will allow for a steady feed to the secondary crushing circuit. The major equipment and facilities in this area includes:

- Covered coarse ore stockpile;
- Reclaim apron/ belt feeders;
- Conveyor belts, metal detectors, self-cleaning magnets, and belt tear detectors;
- Belt scale; and
- Dust suppression system.

The Primary Crusher will have reduced the ROM material to 80% size of 150 mm. This material will be conveyed to the coarse ore stockpile. The coarse ore stockpile will have a live capacity of approximately 50,000 t. The material will be reclaimed from this stockpile by apron feeders. The apron feeders will feed a conveyor which in turn will feed the cone crusher screen at the head of the secondary crushing circuit.

The coarse ore stockpile and reclaim area will be equipped with a dust suppression system to control fugitive dust that will be generated during conveyor loading and the transportation of the feed material. The coarse ore stockpile cover will be a large dome structure with reinforced concrete ring footing and embedded metals.

3.6.3 Secondary Crushing

The secondary circuit will consist of cone crushers and the cone crushers will be operated in closed-circuit with sizing screens and be located inside a building.

The major equipment and facilities in this area includes:

- Cone crushers surge bin;
- Splitter chute;
- Double-deck vibratory screens;
- Cone crushers,
- Belt feeders;
- Conveyor belts, metal detectors, self-cleaning magnets and belt tear detectors;
- Belt scale; and
- Dust collection system.

Reclaimed material from the coarse ore stockpile will be conveyed to the secondary crushing facility. The circuit will contain a splitter chute which will dry feed two vibrating double-deck screens which will work in parallel. The screens will operate in closed circuit with two cone crushers. Screen oversize material will be directed by conveyor to the cone crusher surge bin, which will be choke fed using belt feeders. The cone crusher product will return to the screen feed conveyor where it will combine with fresh reclaimed material prior to feeding the vibratory double deck screens. The fine screened product will be delivered to the HPGR feed storage by conveyor.

3.6.4 HPGR Feed Storage and Reclaim

The major equipment and facilities in this area includes:

- HPGR feed stockpile or bin, covered;
- Reclaim belt feeders;
- Conveyor belts, metal detectors, self-cleaning magnets and belt tear detectors; and
- Dust collection system.

The HPGR feed surge capacity will have a combined live capacity of approximately 20,000 t. The feed material will be reclaimed from the stockpile or bins by belt feeders. The belt feeders will reclaim the material to feed a conveyor which in turn feeds the HPGR feed chutes. The HPGR tertiary crushing facility and the HPGR stockpile will be equipped with a dust collection system to control fugitive dust that will be generated during conveyor loading and the transportation of the crushed materials.

The HPGR feed bins will be within the secondary/tertiary building.

3.6.5 HPGR Crushing

Tertiary crushing will be done using HPGR units to crush the material to an appropriate product size prior to entering the grinding circuit. The major equipment and facilities in this area and located inside a building will include:

- Belt feeders;
- HPGR crushers
- HPGR screen surge bin; and
- Double-deck vibratory screens (wet screening).

The HPGR circuit will be in closed circuit with a vibrating double deck screen system. Screen oversize will be returned to the HPGR feed storage. Screen undersize will leave the crushing circuit as independent streams via a pipeline launder and report to the grinding circuit.

KAM is currently investigating the option of utilizing AG mills as an alternative to HPGR crushers in this circuit. The selected circuit will be outlined and assessed in the Application/EIS.

3.6.6 Grinding and Classification

The grinding circuit will consist of parallel ball mill circuits. Grinding will be a single stage operation with the ball mills in closed circuit with the classifying cyclones. The grinding will be conducted as a wet process. The grinding circuit will include:

- Ball mills;
- Cyclone feed pumpboxes;
- Cyclone feed slurry pumps;
- Cyclone clusters;
- Mass flow meters and nuclear density gauges;
- Particle size analyzers; and
- Sampler systems.

The HPGR product will flow by gravity to the individual grinding circuits using a pipeline launder system and will enter the grinding circuit via the cyclone feed pumpbox. The product from each ball mill will be discharged into its separate cyclone feed pumpbox combining with the respective HPGR screen discharge to constitute the cyclone feed. The slurry in each cyclone feed pumpbox will be pumped to a cyclone cluster for classification. The cut size for the cyclones will be a P80 of 214 µm, and the circulating load to the individual ball mill circuits will be 300% with the cyclone underflow returning to the ball mill as feed material.

The cyclone overflow from both classification circuits will be discharged into the respective copper flotation conditioning tanks ahead of the flotation process. The pulp density of the cyclone overflow slurry will be approximately 34% solids.

Provision will be made for the addition of lime to the cyclone feed pumpboxes for the adjustment of the pH of the slurry in the grinding circuit prior to the flotation process. Grinding media will be added to the mills in order to maintain the grinding efficiency. Steel balls will be periodically added to each mill.

3.6.7 Flotation and Regrind Circuits

The milled pulp will be subjected to flotation to recover the targeted minerals into a high-grade copper concentrate containing gold. The copper flotation circuit will include the following equipment:

- Conditioning tanks,
- Flotation reagent addition facilities;
- Rougher flotation tank cells,
- Rougher concentrate regrind mill, Isamill,
- Cleaner concentrate regrind mill, Isamill,
- Classification cyclone clusters (one for each regrind stage);

- First cleaner flotation tank cells
- First cleaner scavenger flotation tank cells
- Second cleaner flotation tank cells (Possible and optional)
- Pumpboxes and standpipes;
- Slurry and concentrate pumps;
- Particle-size analyzers, one for each regrind stage; and
- Sampling system.

The cyclone overflows from the grinding circuit will feed the flotation circuit conditioning tanks by gravity flow from the ball mill grinding circuit cyclone clusters. The slurry will be monitored for P80 particle size, and flotation feed samples will be taken periodically for process control and metallurgical accounting.

The rougher flotation circuit will consist of two six-cell flotation trains which will operate in the following manner:

- The cyclone overflow from each grinding circuit will discharge into a conditioning tank. Each conditioning tank will be equipped with an agitator. The conditioning tanks will also receive the first cleaner scavenger tailings which will report to the conditioning tanks from the first cleaner scavenger tailings distribution box for reprocessing. Flotation reagents (e.g., potassium amyl xanthate (PAX), Aero MaxGold 900, frothers, methyl-isobutyl carbinol (MIBC)) will be added to the conditioning tanks as defined through testing. Provision will be made for the staged addition of the reagents in the rougher circuit as well as in the cleaner stage of the flotation circuit.
- The conditioned slurry will overflow the conditioning tanks into the head end of the rougher flotation tank cell lines. Air injection will facilitate the flotation process. The copper minerals (mainly chalcopyrite) will be selectively floated into a rougher concentrate away from the other minerals and the gangue present in the slurry. The rougher concentrate will constitute approximately 7.2% mass of the plant feed. The rougher tailings will be sampled automatically prior to discharge into the final tailings pumpbox for process control and metallurgical accounting purposes; this stream will constitute the final tailings leaving the plant.
- The rougher concentrate streams will be combined to form a single feed which will continue to the regrind and cleaner flotation sections of the flotation circuit for further processing.
- To completely liberate the fine-sized grains of the copper minerals from the gangue constituents and to enhance upgrading of the copper concentrate, stage regrinding and cleaning will be incorporated in the cleaner flotation circuit. Regrinding and flotation cleaning will ensure that a final product of acceptable grade and recovery will be achieved.
- The rougher concentrates will flow from the launders to the rougher Isamill cyclone feed pumpbox and will be pumped to the rougher regrind densification cyclone cluster along with the first cleaner scavenger concentrate (optional). The rougher Isamill cyclones will be densification cyclones and will deliver the feed to the rougher Isamill at the required density.
- The rougher regrind circuit cyclone will separate the finely ground flotation concentrate into a cyclone overflow product according to the design particle size P80 of 60 µm. The coarser, denser cyclone underflow will be the feed for the rougher regrind Isamill. The Isamill product will discharge the finely milled material into the rougher Isamill discharge pumpbox. From here the finely ground product will be pumped to the first cleaner feed pumpbox where it will be recombined with the rougher regrind densifying cyclone overflow prior to reporting to the head of the first cleaner flotation cells.

- The rougher regrind circuit discharge will be combined with the second cleaner tailings to constitute the feed to the first cleaner flotation stage. This first cleaner stage will be directly followed by the first cleaner scavenger flotation stage. Tailings from the first cleaner scavenger flotation stage will report to the conditioning tank (option of diverting to final tails). The cleaner regrind circuit will have a similar design as the rougher regrind circuit although the design parameter in this circuit will be a particle size P80 of 18 µm. The cleaner regrind mill will have a design treatment rate of 29 t/h. A gravity concentration stage is included in the cleaner regrind circuit. The first cleaner concentrate will report to the gravity concentrator feed pumpbox and will be processed through the gravity concentrator. Tailings from the gravity concentration circuit will constitute the feed to cleaner regrind circuit.
- The cleaner regrind circuit discharge will be the feed to the second cleaner flotation stage. The second cleaner concentrate will be the final copper concentrate with a design copper grade of 25% copper. The copper concentrate will feed directly to the copper concentrate thickener for dewatering.

Provision will be made for the copper concentrate thickener overflow water to be reused in the grinding and flotation circuit as process water, providing it does not have a deleterious effect on the flotation of the copper and gold minerals.

3.6.8 Gravity Circuit

Either rougher or cleaner concentrate will constitute the feed to the gravity circuit. The regrind mill will be operating in open circuit for treatment of the entire feed stream to enable gravity gold to be recovered. This gravity circuit consists of one stream, equipped with a trash screen and a centrifugal gravity concentrator. The gravity concentrator will remove particles of gold and high density gold-bearing sulphide mineral particles. The gravity tailings will be discharged into the cleaner Isamill cyclone feed pumpbox for densification ahead of the regrind mill circuit. The gravity concentrate will periodically be flushed into the gravity concentrate tank. This tank will also control the intermittent transfer of gravity concentrate as feed to the concentrate thickener, which will be the final destination for the gravity concentrate.

3.6.9 Concentrate Handling

The cleaner flotation concentrate will be thickened, filtered, and stored prior to shipment to the concentrate customer. The concentrate handling circuit will have the following equipment:

- Concentrate thickener;
- Concentrate thickener overflow standpipe;
- Concentrate thickener underflow slurry pumps;
- Process water tank and pumps;
- Concentrate stock tank;
- Concentrate filter press feed pumps;
- Concentrate filter press;
- Filter press washing and filtrate handling equipment; and
- Dewatered concentrate storage and dispatch facility.

The concentrate produced will be pumped from the final cleaner flotation stage to the concentrate thickener where it will be combined with the gravity concentrate in the thickener feed well. Flocculant will

be added to the thickener feed to aid the settling process. The thickened concentrate will be pumped to the concentrate stock tank using thickener underflow slurry pumps. The underflow density will be 60% solids. The concentrate stock tank will be an agitated tank that will serve as the feed tank for the concentrate filter, which will be a filter press unit. Since filtration with a filter press unit will be a batch process, the concentrate stock tank will also act as a surge tank for the filtration operation. The filter press will dewater the concentrate to produce a final concentrate with a moisture content of about 10%.

The filtrate will be returned to the concentrate thickener and the filter press solids will be discharged directly onto the concentrate stockpile in a designated storage facility within the Process Plant building. Concentrate will be periodically loaded into trucks for dispatch off the property.

The Application/EIS will provide information regarding the need (or lack thereof) for emergency concentrate storage locations. The Application/EIS will discuss concentrate handling procedures in the event of unanticipated shipping interruptions.

3.6.10 Reagent Handling and Storage

Various chemical reagents will be added to the process slurry streams to facilitate the recovery of copper during the flotation process. The preparation of the various reagents will require:

- A bulk handling system;
- Mix and holding tanks;
- Metering pumps;
- Flocculant preparation facility;
- A Lime slaking and distribution facility;
- Eye-wash and safety showers; and
- Applicable safety equipment.

Chemical reagents will be added to the grinding and flotation circuit to modify the mineral particle surfaces and enhance the floatability of the valuable mineral particles into the copper-gold concentrate product. Fresh water will be used to make up or dilute the various reagents that will be supplied in powder or solid form, or which require dilution prior to the addition to the slurry. Solutions will be added to the addition points of the various flotation circuits and streams using metering pumps.

The PAX collector reagent will arrive at the plant in bulk bags and will be dumped into hoppers for withdrawal of pre-determined quantities for mixing with water to the required solution strength of 10%. The reagent will be made up in a mixing tank, and then transferred to the holding tank, from where the solution will be pumped to the addition points in the circuit. The frother reagent, MIBC, will be pumped directly from bulk containers using metering pumps. The Promoter will be delivered in liquid form and pumped into its respective storage tank.

Flocculant will be prepared as a dilute solution with 0.30% solution strength and will be further diluted in the thickener feed well.

Lime, as quick-lime, will be delivered in bulk and will be off-loaded pneumatically into a silo. The lime slurry will then be prepared in a lime slaking system as a 20% concentration slurry. This lime slurry will

be pumped to the points of addition using a closed loop system. The valves will be controlled by pH monitors that will control the amount of lime added.

The following measures will be implemented to ensure spill containment:

- Reagent preparation and storage facility will be located within a containment area designed to accommodate 110% of the content of the largest tank;
- Each reagent will be prepared in its own bunded area in order to limit spillage and facilitate its return to its respective mixing tank; and
- Storage tanks will be equipped with level indicators and instrumentation to ensure that spills do not occur during normal operation.

Each reagent line and addition point will be labelled in accordance with Workplace Hazardous Materials Information Systems (WHMIS) standards. All operational personnel will receive WHMIS training, along with additional training for the safe handling and use of the reagents. Appropriate ventilation, fire and safety protection, and Material Safety Data Sheet (MSDS) stations will be provided at the facility.

3.6.11 Assay and Metallurgical Laboratory

The assay laboratory will be equipped with the necessary analytical instruments to provide all routine assays for the mine, the concentrator, and the environment departments. The primary instruments are:

- Fire assay equipment;
- Atomic absorption spectrophotometer;
- X-ray fluorescence spectrometer; and
- Leco furnace.

The metallurgical laboratory will undertake all necessary test work to monitor metallurgical performance and, more importantly, to improve process flowsheet unit operations and efficiencies. The laboratory will be equipped with laboratory crushers, ball and stirred mills, particle size analysis sieves, flotation cells, filtering devices, balances, and pH meters.

Both laboratories will be located in a building near the Processing Plant building.

3.7 TAILINGS MANAGEMENT

The TSF will be located south west of the open pit east of Lac Le Jeune Road. The TSF shall be a conventional tailings storage facility including seepage collection ponds at the four embankments. Collection ditches along the embankments will direct surface run-off along the downstream face of the embankments to the seepage collection ponds for pumping back into the TSF. The approximate dimensions of the TSF embankments (at ultimate height) are:

- North embankment - length 3,620 m; height 130 m
- South embankment - length 1,500 m, height 40 m
- Southeast embankment - length 380 m, height 10 m
- East Embankment - length 1,220 m, height 110 m

The current TSF design has capacity to store approximately 440 million tonnes of tailings.

The TSF embankments will be constructed in a downstream manner, with tailings discharged from spigot points positioned along the northwest side of the facility to form a gentle slope toward the southeast side of the facility Waste rock from the open pit development will be used to construct the embankments.

Water management of the TSF will include water collection ditches around the TSF for collection of seepage and runoff.

The final crest elevations of the TSF embankments will provide sufficient storage capacity to safely contain the Probable Maximum Precipitation (PMP) event.

During the operational phase of the Ajax Project, water will be withdrawn from the TSF impoundment as make-up water for use in the processing plant.

Results from the on-going geotechnical investigation and stability assessment will be included in the design.

The following information regarding the TSF will be provided in the Application/EIS for all mine phases, as appropriate:

- Detailed information on siting considerations and constraints, surface area and height, foundation characteristics and geohazards in the area;
- Characterization of the overburden material beneath the TSF footprint including composition, distribution, thickness and hydraulic conductivity properties;
- Identification of areas of bedrock outcrop beneath the TSF footprint;
- Assessment of areas where bedrock outcrop may require grouting and/or placement of low permeable soil cover;
- Geotechnical characterization of any materials to be used in the construction of the TSF;
- Indication whether the TSF design will be to maintain a minimum soil thickness as a TSF base;
- Identification of areas where existing overburden thickness needs to be increased;
- A hydrogeologic assessment of the area around the base of the TSF;
- Embankment design criteria in accordance with the Canadian Dam Association Dam Safety Guidelines including, but not limited to:
  - Source of embankment construction material;
  - Hazard classification;
  - Seismicity;
  - Inflow design flood;
  - Storage capacity;
  - Factors of safety;
  - Layout; and
  - Tailing properties.
- Proposed borrow locations (if any);
- Consideration of potential impacts (if any) on the physical integrity of the TSF due to a failure of the SWRSF, including, but not limited to, the potential for an induced wave in the TSF;

- Description of operations;
- Description of the water reclaim system;
- Description of any structures designed to divert water from entering the TSF;
- Description of evaporation from the tailings water including quality and quantity;
- Description of the chemical composition of binding agents used in the tailings process;
- Description of tailings water seepage (potential flows, direction of flow, quality, prevention and planned management strategies) and surface drainage including their collection;
- Description of mitigation measures relating to fugitive dust emissions and aesthetic impacts;
- Description of conceptual instrumentation and monitoring of the TSF during operations;
- Proposed development stages including closure information (progressive reclamation etc.); and
- Construction methods, including base preparation and construction of TSF containment berm;
- Direction of groundwater flow;
- Management plan of control of dust/debris and other material; and
- Comprehensive drainage plan design and plan around the TSF.

3.8 WASTE ROCK STORAGE AND ORE STOCKPILES

3.8.1 Waste Rock Storage Facilities

Five waste rock storage facilities (WRSF) are planned: the South Waste Rock Storage Facility (SWRSF), the East Waste Rock Storage Facility (EWRSF), the Tailings Embankment Waste Rock Storage Facility (TEWRSF), TSF Embankment, and the In-Pit Waste Rock Storage Facility (IPWRSF).

The ex-pit WRSFs will be built in an incremental bottom-up methodology. The in-pit WRSF has been designed at an overall slope of 34^{o} and will be constructed by depositing from the pit rim. At the proposed capacity, approximately 1/6 of the pit volume would be backfilled.

The following table summarizes the waste rock maximum available storage capacities of all facilities.

Facility	Storage Capacity (Mt)	Approximate Height (m)
SWRSF	550	270
EWRSF	150	85
TEWRSF	200	140
IPWRSF	200	400 (within pit)
TSF Embankment	200	127

This information will be updated in the Application/EIS as design proceeds. The Application/EIS will also include:

- Detailed information on siting considerations and constraints, foundation characteristics, and geohazards in the area;
- Description of the WRSF water management components of the Project, including:
  - Design criteria;
  - Instrumentation and monitoring; and

  - o Water management and erosion control measures that will separate mine affected and non-mine affected drainages and seepages.
- Discussion of the WRSF management, incorporating geochemical characterization and ML/ARD issues, including mitigation strategies such as segregation for acid generating (AG) and potentially acid generating (PAG) material;
- Waste rock characteristics (including geology, results of static and kinetic leach tests, and metal leaching potential);
- Description of pre-production development;
- Details of the mitigation measures used to reduce the aesthetic impact during operation, decommissioning and closure and post-closure; and
- Proposed development stages.

Results from the feasibility level geotechnical and stability assessment will be included in the Application/EIS and considered in the design. The BC Mine Waste Rock Pile Research Committee Interim Guidelines will be referenced.

Information on waste rock characteristics such as geology, and results of static and kinetic leach tests, and metal leaching potential will be presented in Sections 3.1 and 3.3 of the Application/EIS, respectively.

3.8.2 Ore Stockpiles

Two stockpiles will be available for ore storage: low-grade stockpile and medium-grade stockpile. The stockpiles will be constructed in lifts in a bottom-up sequence. The stockpiles will be active throughout the mine life. The low-grade and medium-grade stockpiles will store lower grade ore until the end of mine life or to supplement run-of-mine ore. Once the pit reserves are exhausted, all ore stockpiles will be mined with production equipment in a top-down sequence and delivered to the mill for processing. The stockpiles will be constructed on a platform to provide a flat working area for mining equipment.

Stockpiles will be designed following the same principles/ level of design required for waste rock storage facilities. The BC Mine Waste Rock Pile Research Committee Interim Guidelines will be referenced.

Contingency measures for managing the ore stockpiles in the event of a temporary closure will be discussed in the Application/EIS.

3.9 OVERBURDEN AND TOPSOIL STOCKPILES

Progressive reclamation will be utilized whenever possible. When this is not possible, reclamation material will be stored within the ultimate footprints of the North Overburden stockpile and the WRSFs. The overburden tonnages in the two stockpiles are considered sufficient to cover the reclamation requirements for the SWRSF and EWRSF.

Conceptual designs including assessment of geotechnical stability will be completed. The following design information will be included:

- Slope angles;
- Slope heights; and

- Surface drainage considerations.

Stockpiles will be designed following the same principles/level of design required for waste storage facilities.

The following will be provided in the Application/EIS:

- Description of pre-production development; and
- Description of methods for stockpiling and storing surficial soils that ensure the preservation of native seedbanks to enhance ongoing and progressive reclamation practices.

3.10 MINING EQUIPMENT

Production and trim blast-holes will be drilled using a fleet of electric rotary drill rigs. Pre-split drilling for wall control blasting will be drilled with a smaller diameter diesel percussion drill rig. Primary loading of waste and ore will be accomplished by electric-rope shovels. Diesel front end loaders will be used to work on less productive faces, for muck pile clean-up, and as back-up. The haulage fleet will consist of 300 tonne class haul trucks, or similar. A fleet of diesel powered mobile support equipment will assist the main production equipment. This fleet will consist of track dozers, rubber-tire dozers, graders, front-end loaders, and backhoes.

The following will be provided in the Application/EIS:

- A list of mining equipment, including capacity, fleet size, fuel requirements, etc. for construction, operations, and closure.

3.11 EXPLOSIVES MANUFACTURING AND STORAGE

An explosives supplier will operate facilities to manufacture and store bulk products and explosives required for blasting. The bulk product manufacturing and storage facility will contain raw material storage for Emulsion production, Ammonium Nitrate storage silos, fuel oil storage, equipment repair shop, wash-bay, and office. Accessories will be stored in appropriate magazines located away from the bulk product facility and other infrastructure as per the necessary table of distances.

A varying blend of emulsion and ammonium nitrate fuel oil (ANFO) will be used for blasting, based on groundwater conditions. A minimum amount of bulk explosives and accessories will be stored at the Ajax site to supply blasting operations and maintain a reserve in case of delivery interruptions. All bulk product ingredients will be stored separately within the manufacturing and storage facility.

This information will be updated in the Application/EIS as design proceeds. The Application/EIS will also include:

- Description of the type, quantity, manufacturing, storage and use of bulk products and explosives;
- Description of infrastructure for manufacturing or storing explosives and bulk products, including magazines; fuel storage; ammonium nitrate storage; maintenance/wash area; mobile vehicles and their parking area; offices; warehouses; and buildings;
- The specified location of the various components of the facilities, with distances to vulnerable features including but not limited to dwellings, roads, and bodies of water;
- Spill contingency plans;

- Details on any temporary explosive facilities to be used during the proposed mine start-up;
- Description of the transportation method of explosives and bulk products;
- Description of the mine plan pertaining to blasting; and
- Description of the potential effluent.

The Application/EIS will demonstrate that safety distances required by the Explosives Regulatory Division of NRCan have been considered and met.

3.12 SITE WATER MANAGEMENT

A water management plan will be developed to control all surface water within the mine area. Goals of the plan include:

- Preservation of water quantity and quality downstream of the Project;
- Optimization of water use;
- Maximization of water re-use;
- Minimizing mixing of clean and mine-contact water;
- Managing seepage;
- Utilizing water diversion; and
- Eliminating uncontrolled releases.

The following will be provided in the Application/EIS:

- Summary of water management facilities for the pit, TSF, WRSF, ore stockpiles, overburden, mine infrastructure, and Jacko Lake/Peterson Creek;
- The Application/EIS will consider the potential for increased recharge to groundwater from the ore, overburden and topsoil stockpiles, and the WRSFs, and potential for additional seepage generated from the WRSFs and stockpiles;
- Site wide water balance/watershed model, during construction, operations, decommissioning and closure and post-closure. The model will take into account evaporation as well as volumes and seasonal water requirements for dust control; and
- Delineation of geochemical inputs and methods utilized in geochemical predictive modeling.

The Application/EIS will integrate results of the ML/ARD prediction work, surface water quality, hydrology (including extreme events such as low (7Q10 and 7Q10 summer) and high flow scenarios), hydrogeology, and water balance information to develop water quality predictions. Predictions will be used as a basis for effects assessment; to determine materials handling procedures; and to assess and develop ML/ARD mitigation/management requirements for the project.

Fresh (non-contact) water will be required for reagent preparation, gland sealing water, potable, process water make up, dust control, and for firefighting purpose. Fresh water will be pumped from Kamloops Lake and stored in a fresh/fire water tank. All water collected, recycled, and used on the project will require containment or storage in man-made structures. Contact water will be directed to and held in one of the collection ponds. The potential to recycle treated effluent from the City of Kamloops for use as process water is also being investigated.

Fresh and contact water will be available in varying quantities from the following sources:

- Fresh water via a pipeline from the Kamloops Lake pump station;
- Reclaim water from tailings storage facility overflow pumped directly to the mill process water tank;
- Reclaim water from plant site concentrate thickener pumped directly to the mill process water tank;
- Surface run-off, and tailings seepage water from the TSF ponds will be collected at the seepage ponds and pumped back to the TSF or the processing plant; as required;
- Pit groundwater inflow collection pumped to a central pond before being pumped to the TSF; and
- Pit runoff pumped to a central pond.

Run-off from other site facilities will be redirected to one of the western or central storage ponds before being pumped back to either the process plant or TSF, or to the process water tank, as follows:

- Reclaim concentrate thickener from the plant site and water from the process water tank;
- Contact water from the EWRSF and surface run-off water will be collected in a pond, and allowed to evaporate, or be pumped to a central pond.
- Contact water from the TEWRSF, SWRSF and Ore Stockpiles will be directed to a central pond before being pumped back into the TSF.
- Surface run-off from the Process Plant Area will be directed to a central pond before being pumped back to the TSF.

Final water balance estimates will be confirmed in the Application/EIS, however, it is anticipated the Project will have a negative water balance, with make-up water supplied from Kamloops Lake (see Section 3.14). It is anticipated that the Project will operate with zero surface discharge during Operation.

The Application/EIS will include design criteria for contact water collection ditches and non-contact water diversion channels including design flood, channel side slopes, and proposed armour or lining. This includes any proposed changes in the flow management plan, and associated infrastructure for Jacko Lake/ Peterson Creek.

Precipitation, seepage from pitwalls, and horizontal drains will introduce water into the pit. Some of this water will be absorbed by the broken rock and hauled with the rock out of the pit. Ditches will be used to route the remaining water to sumps where the solids can settle out, and the water can be pumped to a central water pond. A large collection system of ditches, pipes, sumps, pumps, and booster pumps will contain this water. The pit dewatering system is designed to handle a two-year return period rain storm. Rain events in excess of this will cause the lower areas of the pit to flood. Preliminary predicted groundwater inflow to the open pit will contribute an average of 6 L/s over the life-of-mine, with one year projected at nearly 24 L/s.

The pit drainage and dewatering system will perform the following tasks:

- Maintain pit wall stability via horizontal depressurization holes;
- Drain water and prevent water pressures from building up behind the pit walls;
- Control surface water and runoff that enters the pit;
- Capture precipitation and drain it away from road running surfaces and active mining areas; and
- Remove surface water that is collected in sumps.

3.13 ANCILLARY INFRASTRUCTURE

The Application/EIS will include a description of the proposed site ancillary infrastructure, including:

- Warehouse (including storage of any hazardous materials);
- Truck shop;
- Mine equipment and employee vehicle parking;
- Mine dry;
- Administration building;
- Fuelling facilities;
- Fire protection;
- Sanitary sewage;
- Domestic waste disposal (type and amount monthly and annually; disposal options; recycling programs) and wildlife protection/control;
- Communications; and
- Property security and medical services.

3.14 WATER SUPPLY

Water supply systems for fresh water and process water will be provided to support the operation. The following will be provided in the Application/EIS:

- A description of how the existing water supply facilities used by the old Afton Mine will be upgraded to supply fresh water from Kamloops Lake;
- Proposed extraction/use volumes for all development phases including frequency, timing and duration of extraction;
- Contingencies for excess or additional water; and
- Sharing and off-take agreement accommodation with New Gold.

3.14.1 Fresh water supply system

Fresh water will be supplied to a fresh/fire water storage tank from Kamloops Lake for the following uses:

- Fire water for emergency use;
- Cooling water for mill motors and mill lubrication systems;
- Gland service for the slurry pumps;
- Reagent make-up;
- Gravity circuit fluidisation water;
- Potable water supply;
- Truck Wash; and
- Dust Suppression at key area of the process plant.

Approximately 1,700 m^3/h water was established as the design requirement of the Project. A multiple stage pumping system will be used to extract water from Kamloops Lake, comprised of the following components:

- New water intake booster pump station;
- Existing lake pump station (with new pumps added);

- Existing Booster Pump Station No. 1 (with new pumps added);
- New booster Pump Station No. 2; and
- Other booster stations as required.

Fresh water will be pumped through multiple pumping stages to a fresh/fire water tank at the proposed plant site. The fresh/fire water tank will be equipped with a standpipe which will ensure that sufficient fire water is available.

Potable water from the fresh water source will be treated and stored in a potable water storage tank prior to delivery to various service points.

3.14.2 Process water supply system

Some process water generated in the flotation circuit as concentrate thickener overflow solution will be re-used in the process circuit via the process water tank. Reclaimed water will also be pumped from the tailings storage facility to the process water tank for distribution to points of usage.

3.15 POWER SUPPLY

Power will be provided from a new tap point from the existing BC Hydro 230 kV transmission line 2L265 to the east of the project area. Approximately 9 km of 230 kV pole structured overhead line will be constructed and will tie in to a new 230 kV step down substation.

The Application/EIS will include a description of the power line, including:

- Power line route and all relevant design criteria;
- Width of the right-of-way;
- Stream crossing structures (if any);
- Staging areas to facilitate the construction process;
- Size of poles;
- Power capacity of the line;
- Communication requirements; and
- Construction methods.

This section of the Application/EIS will reference guidance and best practices that will be applied for installation and maintenance of powerlines (e.g., http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html), including a description and quantification of the riparian vegetation along the proposed right of way(s) adjacent to fish bearing streams. Watercourse crossings will also be assessed against the Minor Works (*Navigation Protection Act*) Order.

3.16 ACCESS AND SITE ROADS

Staff, concentrate trucks, and mine delivery vehicle traffic is proposed to access the mine site via the Inks Lake Interchange off Highway 5 and then along service roads to the plant main access road (historic haul road from old Afton Mine). Highway 5 westbound traffic will exit at Inks Lake interchange and access the plant main access road via a service road on the west side of the Coquihalla Highway before turning onto

the plant main access road, crossing under the Coquihalla highway at the existing overpass for the historic haul road from old Afton Mine. Highway 5 eastbound traffic will exit at Inks Lake Interchange and access the plant main access road via a service road on the east side of the Coquihalla Highway before turning onto the plant main access road. Access to the plant site main access road from Lac Le Jeune Road will be via an interchange at the intersection of the plant main access road and Lac Le Jeune Road (at the existing tunnel for the historic haul road to old Afton Mine). A thorough description of the proposed road use, including the use of Inks Lake Road and Lac Le Jeune Road will be included in the Application/EIS.

A remote-control gate located at the entrance to the access roads will provide access to the mine site during mine operations. Access roads will also be constructed to connect the various on-site buildings. Haul roads are designed for traffic within the pit and between the pit and ore crusher, WRSF, overburden stockpiles, construction areas, and truck shop. The roads are proposed as cut-and-fill balance inside the ultimate pit limit and as mainly-fill roads outside the ultimate pit limits. Large rear-end-dump haul trucks (300 tonne class) will be used for hauling both ore and waste to their destinations.

The haul road design will follow the criteria of 3.5 times the width of the widest haul equipment, a safety berm of 0.5 times the diameter of the tires, and a small allowance for potential water runoff. Competent waste rock will be used for road base and capping material for both access and site roads. Safety berms and drainage channels will be regularly maintained. Road travelling surfaces will be maintained by graders and wheel dozers.

The Application/EIS will include a description of road access to and within the Project area, including:

- Alignment and relevant design criteria of Project site roads and crossings;
- Location of any temporary and ancillary Project site roads;
- Proposed borrow sources for Project site roads;
- Construction methods to be used for Project site roads; and
- The size and type of vehicles to be used.

Information regarding access and access management strategies will be included based on a Traffic Impact Study, to be developed with the Ministry of Transportation and Infrastructure, and consultation with the City of Kamloops.

3.17 PROJECT SUPPLIES AND CONCENTRATE TRANSPORT CORRIDOR

The Application/EIS will include a description of the transport corridor for the Project, including:

- Description of public roads used for access/transport between the proposed mine site and the Port of Vancouver and between Kamloops and the proposed mine site;
- Use of transport corridor during Project construction and operations;
- The size and type of vehicles to be used;
- An estimate of the types and quantities of goods to be moved, including fuel products or other hazardous material;
- The frequency and approximate timing of trips, including trucks carrying concentrate, fuel and other supplies; and
- Traffic safety planning.

3.18 CLOSURE AND RECLAMATION

The BC *Mines Act* legislates requirements for closure and reclamation bonding. Section 10 of the *Mines Act* dictates that, as a condition of receiving a permit to commence mining, the owner give a security deposit for mine reclamation and protection of watercourses and cultural heritage resources in the amount and form specified by the Chief Inspector of Mines. The owner must also deposit an annual security to ensure that sufficient funds are available to complete all permit conditions related to reclamation.

The following will be provided in the Application/EIS:

- Description of the regulatory framework and requirements and government agreements that are needed with respect to the closure and reclamation phase of the Project;
- An overview of the proposed conceptual closure and reclamation plan;
- Description of the measures to be implemented through the mine site reclamation plan to mitigate long-term adverse effects of the Project;
- An Invasive Plant (Noxious Weed) Prevention and Control plan for all phases of the Project, including an inventory of, and control plan for, existing infestations as well as prevention activities and contingency plans for potential introductions;
- An outline of the end land use objectives, taking into consideration the recommendation of Ministry of Energy and Mines (MEM) that the reclamation program be aimed at ecological restoration of naturally occurring grassland communities, as well as information on re-vegetation species (including the possibility of cultivation of native grass seed for reclamation purposes), proposed reclamation methods and expected capability of the reclaimed area for vegetation and wildlife, especially wildlife and plant species identified as valued components;
- Description of the proposed development site at closure and after reclamation;
- A list of operational, decommissioning and closure, and reclamation components and activities intended to stabilize surface materials with a vegetation cover as quickly as possible; and
- A plan for temporary closure (including a description of the conditions under which temporary closure will occur).

It is estimated that mine closure will proceed over a two year period, followed by a monitoring phase. Actual closure and monitoring procedures and timing will follow requirements of relevant regulatory agencies at the time. The reclamation will not be considered complete until a site reclamation report stating that it successfully meets applicable standards has been signed off by qualified professionals.

3.18.1 Tailings Storage Facility Closure

General considerations that are likely to be incorporated in the closure plan for the TSF include the following:

- Removal and restoration of disturbed areas including structure footprints, access roads, conveyance structures, pipelines, etc.;
- Stabilization, shaping, contouring, and re-vegetation of disturbed surfaces; and
- Monitoring activities to confirm the design assumptions adopted for closure.

At closure, the reclamation of the tailings storage facility will consist of pumping the remaining water from the facility and depositing the water into the pit. Any remaining water left on the surface after pumping would remain to evaporate. A closure dry cover will be placed over the entire tailings surface area. Options for managing surface runoff that is collected on top of the closure cover are being evaluated, and will be presented in the Application/EIS. . The proposed closure cover will minimize wind and water erosion, and reduce infiltration into the TSF, eventually reducing seepage from the toe of the TSF. Seepage will continue to be collected and monitored at seepage collection ponds during closure/post-closure. The TSF pond will be decommissioned once discharge requirements are met and stable conditions are attained.

3.18.2 Waste Rock Management Facilities Closure

Concurrent reclamation of the WRSF will be undertaken during operations as sufficient area becomes available. Preliminary reclamation activities identified for the WRSF include construction of erosion control structures during operation to avoid material dispersion. Following closure, re-contouring of the slopes will be carried out to increase the physical stability of the facilities, followed by placement of topsoil, seeding and mulching.

3.18.3 Ajax Pit Closure

Following closure, site drainage will be altered to allow the open pit to be filled with water. The Application/EIS will include modelling of water level and water quality in the open pit. Current preliminary estimates indicate the pit will not completely fill, but will achieve a relatively stable water level. As the pit fills up, water quality sampling will be conducted to verify the accuracy of the model and, if necessary, define water treatment requirements to meet established discharge criteria. Passive and active treatment strategies will both be considered as potential treatment options, if treatment is required. As a safety measure, an earthen berm will be constructed around the open pit to prevent accidental entry into the flooded area.

3.18.4 Processing Plant Closure

All of the buildings and structures will be dismantled and/or demolished and then removed from the mine site. Salvageable material will be re-used, recycled, or transformed into other useful forms.

All materials removed from the site will be disposed of in accordance with applicable legislation and regulations. Any contaminated material (e.g., petroleum hydrocarbons or heavy metals) will also be stored, handled, and disposed of in accordance with applicable legislation and regulations.

Once the buildings and structures have been removed, the areas will be re-contoured, covered with growth medium, and vegetated with appropriate plant species.

3.18.5 Access Road Closure

This section will include a general restoration plan which outlines the range of typical restoration measures to be considered, in the event that access to the site will not be required following closure. The following activities will be conducted to decommission the access road:

- Removal of any bridges, culverts, and other watercourse crossing structures;
- Restoration of affected stream banks and riparian areas; and
- Re-vegetation.

SECTION 4.0 - ASSESSMENT PROCESS

4.1 PROVINCIAL EA PROCESS

The following information regarding the provincial EA process during the pre-Application/EIS stage will be included in the Application/EIS:

- A list of agencies, departments, and organizations involved in the EA;
- A list of applicable milestones, including the issuance of Section 10 and 11 Orders, Technical Working Group meetings, public comment periods, and open houses;
- Tracking tables, or other appropriate approaches, used to document issues and concerns raised and the degree to which issues are considered resolved or addressed by the Proponent and other parties during the preparation of the Application/EIS. One tracking document will be prepared for each of the following groups:
  - Public; and
  - Technical Working Group (including Aboriginal, local, provincial, and federal government).

4.2 FEDERAL REVIEW

In this section, the Application/EIS will provide:

- A list of federal agencies, departments, and organizations involved in the review, and their roles;
- A list of applicable federal milestones; and,
- Reference to the issues tracking procedure used to document issues and concerns raised during the preparation of the Application/EIS, as presented in Section 4.1.

4.3 ABORIGINAL INFORMATION DISTRIBUTION AND CONSULTATION

This section will include cross references to Section 15 in Part C, which will provide details on and refer to Aboriginal consultation.

In this section of the Application/EIS, KAM commits to provide the following:

- A summary of proponent consultation activities undertaken with the identified Aboriginal groups potentially affected by the Project (as identified in the Section 11 Order and/or any Section 13 Order or by the federal government);
- A summary of issues and concerns in issue tracking tables and explanation of how these matters were addressed;
- The First Nations Consultation Plan developed for the Project including the Pre-Application/EIS Consultation, Application/EIS Review, and Permitting stages; and
- Documentation of the proposed methods and process to resolve outstanding issues.

4.4 PUBLIC AND AGENCY INFORMATION DISTRIBUTION AND CONSULTATION

The Application/EIS will provide the following:

- A summary of consultations with public and other key stakeholders, federal, provincial and local government agencies;
- A description of the means of information distribution and consultation used including the following:

- Public meetings and open houses;
- One-on-one meetings with interested parties;
- Publication of articles in the media, enclosures and community newspapers;
- Interviews on local radio and television; and
- Participation in community events.

- A summary of issues, concerns, and interests identified during the consultations and how these matters were addressed.

4.4.1 Pre-Application/EIS Consultation

The Application/EIS will provide an outline of consultation activities undertaken in accordance with the Public Consultation Plan in the pre-Application/EIS stage, covering both the preparation of the AIR/EIS Guidelines and Application/EIS, specifically:

- A summary of consultation activities with public and other key stakeholders;
- A summary of consultation activities with federal, provincial, and local government representatives; and
- The tracking procedure (described in Section 4.1) used to document issues and concerns raised by the public and government agencies, and the degree to which issues are considered resolved or addressed by the Proponent and other parties during the preparation of the AIR/EIS Guidelines and the Application/EIS.

4.4.2 Consultation Planned During Application/EIS Review

The Application/EIS will provide the following:

- A description of the Public Consultation Plan proposed for the Application/EIS review stage of the EA process;
- A description of the proposed programs for consultation with government agencies; and
- Documentation of the proposed methods and process to resolve outstanding issues.

PART B - ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION MEASURES, AND SIGNIFICANCE OF RESIDUAL EFFECTS

Part B of the Application/EIS will describe the assessment methodology and summarize the assessment of potential effects of the Project on environmental, social, economic, health, and heritage values. KAM will indicate the anticipated effects of the Project during construction, operation, decommissioning and closure, and, post-closure, and describe these effects using appropriate criteria.

SECTION 5.0 - EFFECTS ASSESSMENT

In order to adequately assess potential Project effects, the environmental, economic, social, heritage and health baseline will be characterized to a level of detail sufficient to delineate the pathway of effects (e.g., any interaction between project activities and environmental, economic, social, heritage and health components that lead to a change, or effect, in that component) following relevant provincial and federal guidance documents, and determine the significance of the impacts.

The assessment methodology presented in the Application/EIS will include the following:

- Scope of the EA;
- A description of the agencies, Aboriginal groups, and stakeholders that reviewed and commented on the AIR;
- A list of the guidance documents recommended by agencies used to develop the assessment methodology, including justification for their use, for the relevant Valued Components (VCs), including but not limited to:
  - Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators;
  - Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities;
  - Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.
- A description of standards used for baseline studies and EA analysis;
- A list of all VCs considered in the EA, including justification for their selection and justification for the study areas used;
- Methods used for assessing potential effects of the Project, including the evaluation of the significance of effects (using the criteria of magnitude, geographic extent, duration and frequency, reversibility, context, and probability) for construction, operation, decommissioning and closure, and post-closure phases of the Project;
- Traditional ecological or community knowledge, including Aboriginal information, where available; and
- Reference to, and justification for use of, applicable best management practices, guidance documents, policies, regulations, legislation or other guidance that will be followed.

Community knowledge will be gathered through public and Aboriginal consultation.

In predicting and assessing the Project's effects, KAM will:

- Clearly state the elements and functions of the environment that may be affected, specifying the location, extent, and duration of these effects and their overall impact;
- Use best available information and methods, and substantiate all conclusions;

- Discuss the assumptions that underlie any model used, the quality of the data, and the degree of certainty and confidence of the modelled results; and
- Identify any mitigation measures and residual effects, and discuss the significance of the residual effects.

5.1 PROJECT EFFECTS ASSESSMENT METHODOLOGY

The Proponent will provide in the Application/EIS a description of the assessment methodology used to determine whether the Project would have significant adverse environmental, social, economic, heritage and health effects, taking into account proposed mitigation measures.

5.1.1 Valued Components

This section of the Application/EIS will describe the rationale, justification, methodology, and criteria used to identify VCs. Valued Components are aspects of the environment considered important by the Proponent (KAM and its consultants), the public, Aboriginal groups, and government agencies involved in the EA process. Importance may be determined on the basis of Aboriginal interests, scientific concern, regulatory concern, biodiversity concern, and sensitivity to Project effects.

Identified VCs are summarized in Table 5.1-1. During review of the draft AIR, KAM consulted with Aboriginal groups, the public, and government to ensure that all appropriate VCs were identified for inclusion in the final and approved AIR.

The Application/EIS will provide the rationale and justification for choosing and assessing each VC, based on:

- Federal or provincial listing or regulation (including relevant legislation or policy concerning the VC);
- Aboriginal interest;
- Public or other stakeholder input; and
- Scientific/professional knowledge.

VCs will be discussed under five assessment categories:

- Environment;
- Economic;
- Social;
- Heritage; and
- Health.

The assessment of effects on any VC will consider the direct effects of any project components or activities on that VC, as well as any indirect effects on other VCs that may be linked to or interact with the VC of interest. Linkages can be across assessment categories (environment, social, economic, heritage, health) and can be related to one or more project activities or components.

Background information will be the foundation for the effects assessment, forming the point of reference for all predicted impacts. The Application/EIS will therefore provide for each VC:

- Relevant qualitative, semi-quantitative, or quantitative background data for respective regional and local study areas;
- Aboriginal information relevant to that VC, where available.
- Description of all standards and guidelines followed in collecting and analysing data; and
- Limitations or uncertainties and assumptions associated with any analysis, and reliability, variability, and confidence in the results.

The background information for each VC will include a summary of relevant Aboriginal information including any non-confidential traditional use, traditional knowledge, or other local knowledge provided by Aboriginal groups, where available. A description of how the information influenced the selection or development of the VC will be provided. Sections 12, 13, and 14 will include a description of how information received from Aboriginal groups was considered in, and influenced, development of the VCs. These sections will include a summary of any specific methodologies used to assess the interaction between potential effects and Aboriginal interests (including potential rights including title).

Table 5.1-1 Valued Components for the Ajax Project

Assessment Category	Proposed Valued Component
Environment Valued Components	1. Greenhouse Gas Management 2. Geology, Landforms and Soils 3. Surface water quality 4. Surface water quantity 5. Groundwater quality 6. Groundwater quantity 7. Fish populations and fish habitat 8. Rare plants 9. Rare and Sensitive Ecological Communities 10. Grasslands 11. Terrestrial Invertebrates 12. Amphibians 13. Reptiles 14. Migratory Birds 15. Raptors 16. Non-migratory Gamebirds 17. Mammals
Economic Valued Components	1. Economic Growth 2. Labour Force, Employment and Training 3. Income 4. Business 5. Property Values 6. Economic Diversification
Social Valued Components	1. Community Health and Well-being 2. Infrastructure, Public Facilities and Services 3. Dark Sky 4. Visual Impact/Aesthetic Features (including Shading) 5. Land and Resource Use 6. Outdoor Recreation
Heritage Valued Components	1. Heritage Objects 2. Heritage Sites
Health Valued Components	1. Air Quality 2. Domestic Water Quality 3. Country Foods 4. Human Health 5. Noise and Vibration 6. Healthy Living and Health Education

5.1.2 Spatial Boundaries

The Application/EIS will include criteria used to determine the extent of spatial boundaries for each VC. For the purpose of the EA, the following definitions will be used to define the study areas:

- Local study area (LSA) is defined as the project footprint and surrounding within which there is a reasonable potential for immediate impacts to occur to the specific VC due to project components or activities.
- Regional Study Area (RSA) is defined based on the Cumulative Effects Assessment Practitioners Guide (CEA Agency 1999):

  "*the spatial area within which cumulative effects are assessed (i.e., extending a distance from the project footprint in which both direct and indirect effects are anticipated to occur)*."

Study areas will be developed based on review of existing information, potential effects, and feedback received during consultation activities. The spatial boundary for the assessment of each VC in the Application/EIS will be discussed and illustrated on figures provided in Section 6 through Section 10 of the Application/EIS. A justification for the selection of spatial boundaries will be provided for each VC.

5.1.3 Temporal Boundaries

This section of the Application/EIS will describe the rationale and criteria for selecting temporal boundaries, or the period of time to be examined in the assessment, for each of the VCs in the EA. Temporal boundaries will be described for each phase of the Project:

- Construction;
- Operations;
- Decommissioning and closure;
- Post-closure.

The establishment of temporal boundaries will consider the characteristics of environmental components or populations, including:

- Magnitude, frequency, and trends in the natural annual or seasonal variation of a population or ecological component, or biophysical constraints on the VC (e.g., migration patterns, breeding patterns, freeze-thaw cycles);
- The time required for a biological, physical, and/or chemical effect to become evident; and
- The time required for a population or ecological system to recover from an effect and return to its pre-impact state.

5.1.4 Potential Effects of the Project and Proposed Mitigation

The Application/EIS will describe the approach to identification and analysis of potential project effects. Assessment of effects on VCs will include consideration of direct effects from project components or activities, and effects arising from direct effects on other VC (indirect effects) on the selected VC for each project phase. The Application/EIS will use the following approach to identify direct and indirect effects on a selected VC for each project phase:

- Interpretation of baseline information for each VC;
- Identification of project components or activities;

- Determination of whether there is an interaction between any of the project components or activities and the selected VC;
- Determine if there is an environmental effect: an environmental effect is described as any change that the project may cause in the environment, or any change in the environment that has the potential to change any economic, social, heritage, or health conditions;
- Identification of mitigation measures for each effect, including those considered in the design of the proposed mine, and those developed through the EA process; and
- Assessment of the potential for residual adverse effects, taking into account mitigation measures identified.

The components to be included when describing the approach to implementation of mitigation measures will also be in accordance with the applicable federal direction as described in Section 17.7.

5.1.5 Residual Effects and their Significance

The Application/EIS will include an assessment of whether any adverse residual effects to a VC would be significant by analysing the following factors:

- Magnitude: refers to the severity of the impact. Impacts can be high magnitude or low magnitude.
- Geographical extent: refers to the area over which the predicted impact is expected to occur. The geographic extent of effects can be local or regional.
- Duration: refers to the length of time the effect lasts. Can be defined as short term or long term.
- Frequency: refers to how often an effect is expected to occur (may be described as frequent or infrequent, or may be quantified).
- Reversibility: refers to the ability of the VC to return to its original state once the stressor is removed. Effects can be reversible or permanent.
- Context: refers to the ability of the environment to accept change. For example, the effects of a project may have an impact if they occur in areas that are ecologically sensitive, with little resilience to imposed stresses.
- Probability: the likelihood that an adverse effect will occur.

The definition of each factor being analyzed (i.e. ‘high’ and ‘low’) specific to the VC will be provided in the Application/EIS.

The Application will articulate whether or not the residual effect is expected to be significant, and provide the rationale for that determination in sufficient detail.

The Application will indicate how or whether consideration of likelihood has influenced the determination of significance. If likelihood is a key factor in the determination of significance, the Application will document the rationale for this determination.

Residual effects will be carried forward into the cumulative effects assessment.

5.1.6 Cumulative Effects Assessment

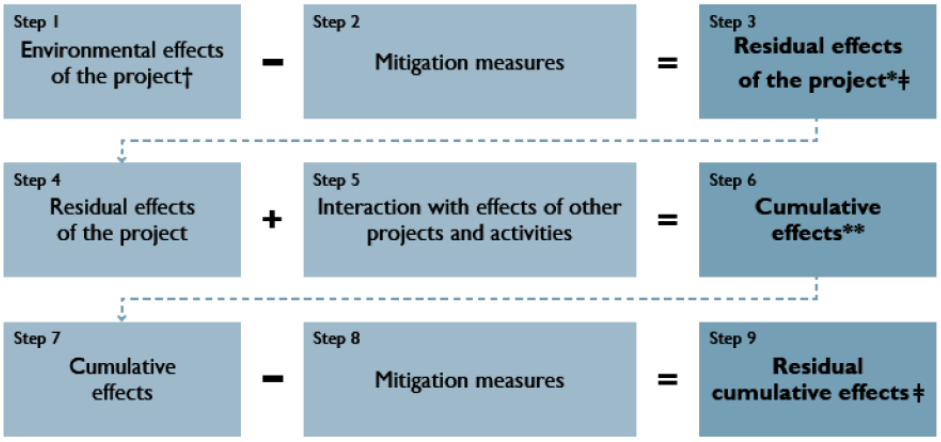
This section of the Application/EIS will discuss the provincial and federal government methodologies for Cumulative Effects Assessment (CEA). The following guidelines and standards will be referenced in the CEA:

- Cumulative Effects Assessment Practitioners Guide. CEA Agency, 1999.
- A Reference Guide for the Canadian Environmental Assessment Act. Addressing Cumulative Environmental Effects. CEA Agency, 1994.
- Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act. Operational Policy Statement. CEA Agency, 2007a.

The scope and methodology of the CEA will be designed to satisfy regulatory requirements set forth by both the BC EAO and the Canadian Environmental Assessment Agency as follows (CEA Agency, 1999):

- Determine if the Project will have an effect on a VC;
- If such an effect can be demonstrated, determine if the incremental effect acts cumulatively with the effects of other actions, either past, existing or future; and
- Determine if the effect of the Project, in combination with the other effects, may cause a significant change now or in the future in the characteristics of the VC after the application of mitigation for that project.

The CEA will identify the residual effects of the Project with the potential to interact with the residual effects of other projects or activities, and assess whether this interaction is likely to result in a greater impact to the identified VC, as illustrated on the following schematic:



† Including direct and indirect effects

‡ A final determination of significance is made by the EAO and CEA Agency by applying the Six Factors for Evaluating the Significance of Adverse Effects

* If there are no residual effects, no further steps are needed

** If there are no cumulative effects, no further steps are needed

5.1.6.1 Potential Interaction between Residual Project Effects and Other Projects or Activities

The Application/EIS will identify and describe other projects and activities with the potential to interact with the residual Project effects. The Application/EIS will include a rationale for including or excluding potentially relevant projects from the CEA, the information sources used, and documentation of efforts made to obtain the best available information. The Application/EIS will describe the methodology for identifying potential interactions between residual Project effects and other project activities.

The CEA will consider certain and reasonably foreseeable past, present, and future projects and activities. For this assessment:

- 'Certain' projects will include past and on-going projects and activities as evidenced by existing disturbance areas and facilities, current land use tenures and activities, and traditional knowledge and use.
- 'Reasonably foreseeable' projects will be projects and activities that:
  - Have entered into a formal project approval or permitting process; or
  - Have not entered a formal process but that have been discussed publicly by proponents; or
  - Have been specified through discussion with regulators, Aboriginal groups, and/or other stakeholders, and
  - Possess sufficient project-description information to inform a cumulative effects assessment.

A systematic screening methodology will be used to identify and evaluate potential projects. On a VC specific basis, the zone of influence (ZOI) of residual Project effects will be compared with the ZOI of effects from other projects and activities to assess the potential for spatial or temporal interaction or overlap of VCs with other projects and actions. Cumulative effects will be identified where an interaction is determined.

For a project or activity to be included in the CEA, the following conditions must be met:

- The project or action may result in a residual effect on a selected VC; and
- The Project-specific residual effect on that VC is likely to act in a cumulative fashion with the residual effects of other past, present, or reasonably foreseeable future projects and activities.

A preliminary list of other projects and activities that have been identified for consideration in the CEA includes (but is not limited to):

- Land Use Plans:
  - Kamloops Land and Resource Management Plan (2001).
  - TNRD Official Community Plans.
- Designated Areas:
  - Kamloops Community Watershed Resource Management Zone – as designated by the Kamloops Land and Resource Management Plan (LRMP), Peterson Creek is regulated in terms of the conservation of water quality and quantity, and timing of flow.
  - Lac Le Jeune Provincial Park – a 213 ha recreational park located approximately 19 km south of the Project.
- Industry:
  - The New Afton (New Gold) mine – located approximately 9 km northwest of the Project.
  - Highland Valley Copper Mine (active) – located approximately 31 km southwest of the Project.
  - Vidette Lake Mine (decommissioned 1939) – located 34 km northwest of the Project.

  - Domtar Kamloops Pulp Mill (active) - located approximately 9 km north of the Project.
  - Tolko-Hefey Creek Plywood and Veneer (active) – located in Hefley, 19 km north of the Project.
  - LaFarge Cement plant (active) – located approximately 14 km northeast of the Project.
  - Kinder Morgan pipeline (potential relocation)
  - Surrounding mineral rights.
- Forestry: Kamloops Forest District (active) –within 4 km of the Project.
- Agriculture and ranching (active).
- Air Transport
  - Kamloops airport (active) – located approximately 10 km north of the Project.
  - CN and CP Rail Yards and rail lines/traffic
- City of Kamloops
  - Municipal discharge into the Thompson River (sewage effluent, storms drains).
  - Domestic water supply – water extraction from wells and the Thompson River.
  - Subdivision expansion, City growth.
- Tourism and Commercial Recreation Activities
  - Recreational Hunting, Fishing, and Foraging.
  - Lac Le Jeune Resort – 19 km south of the Project.
  - Tobiano Golf Course – 22 km NW of the Project.
- Aboriginal use, including asserted rights including title and potential Aboriginal land and resource planning that has been undertaken.
- Climate Change.

5.1.6.2 Cumulative Effects Mitigation Measures

The Application/EIS will describe additional practicable mitigation measures, including management and compensation plans, which will be implemented to address cumulative effects. This will include a specific breakdown of the project design, mitigation, or enhancement measures to avoid or minimize any potential risks to environmental, economic, social, heritage, and health components. The Application/EIS will then assess whether there are any adverse cumulative effects, after the application of mitigation measures, and will describe the methodology for making this assessment (as described in Section 5.1.5).

5.1.6.3 Cumulative Effects Significance Assessment

The Application/EIS will include analysis of the significance of the overall residual cumulative effects of the Project considering magnitude, geographic extent, duration and frequency, reversibility, context, and probability.

SECTION 6.0 - ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

This section of the Application/EIS will present the assessment of effects on the environmental VCs identified in Table 5.1-1.

6.1 GREENHOUSE GAS MANAGEMENT

6.1.1 Rationale

KAM will provide the rationale for choosing and assessing Greenhouse Gas Management as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

The preliminary rationale for selecting Greenhouse Gas Management as a VC is as an indicator of environmental health. Effects of the proposed mine on greenhouse gas emissions will be used to assess the VC. Greenhouse Gas Management information will also be used to inform the assessment of other relevant VCs, as applicable.

Current rationale for selecting Greenhouse Gas Management as a VC is summarized in Table 6.1-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.1-1 Summary of Rationale for VC: Greenhouse Gas Management

Federal or Provincial Regulation/ Guidelines	Greenhouse Gas Reduction Targets Act (Cap and Trade); Carbon Tax Act; AIR/EIS Guidelines Canada - British Columbia Agreement in Principle on Climate Change Emerging Provincial Guidelines
Applicable Government Agencies	EAO CEA Agency Working Group (Environment Canada, MOE, BC Ministry of Energy, Mines and Natural Gas, Stk'emlupsemc of the Secwepemc Nation, AIB, IH)
Stakeholder Input	Public (Kamloops Food Policy Council, Kamloops 350.org, Kamloops Area Preservation Association)
Information Sources	Professional judgement based on best practices Available information on mining operations Greenhouse Gas Inventory Reporting Regulation Facilities Emission Report Summaries
Spatial scope	Province of British Columbia
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components or activities contributing to greenhouse gas emissions relating to effects on climate change.

6.1.2 Background

This section of the Application/EIS will present an introduction to the baseline information collection program (sample sites, sample frequency, etc.) for meteorology as it pertains to greenhouse gas emissions in the Project area. A detailed meteorological report will be provided in the Application/EIS appendices.

Data will be compiled from the regional and site climate stations for:

- Mean monthly and annual temperature;
- Mean monthly and annual precipitation;
- Probable maximum precipitation;
- Mean monthly and annual solar radiation;
- Relative humidity;
- Wind speed and direction;
- Other comparable greenhouse gas contributing facilities in the Province; and
- Community energy efficiencies inventory.

Meteorological stations at Kamloops Airport and on the project site are illustrated on Figure 10.1-1; further figures will be provided in the Application/EIS.

6.1.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA and an identification of the sources of GHGs within the study area and comparable GHG sources in the Province; and
- Description of the period of time to be examined in the VC assessment.

The local study area for the Greenhouse Gas Management VC will be the Project footprint. The regional study area is the Province of BC as the emissions from the mine are to be compared to the overall provincial GHG targets and other comparable mining and industrial facilities in the Province.

6.1.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will identify:

- Project components that will be considered in the effects analysis;
- Project components or activities that could cause greenhouse gas emissions;
- Mitigation measures that will be utilized to minimize project effects; and
- Residual effects.

The potential effects assessment of the Project on BC greenhouse gases (GHG) emissions will be adapted from methodology presented in “Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners” (Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment, 2003), as compared to total BC GHG emissions and targets and emissions from other comparable mining and industrial facilities in the Province. The general procedure is as follows:

- Preliminary scoping for GHG considerations;
- Identifying GHG considerations:
  - Collect industry and project-specific information;
  - Clarify magnitude, intensity and timing of emissions;
  - Compare project specifics with industry profile;
  - Assessing GHG considerations (describe direct and indirect emissions and related effects);
  - Deforestation and removal of other vegetation;
  - Management Plans; and
  - Monitoring, follow-up, and adaptive management.
- Verify GHG emission forecasts;
- Determine effectiveness of GHG mitigation measures;
- Implement remedial actions as necessary; and
- Revise monitoring or management procedures to reflect remedial measures.

The Proponent will commit to reviewing best practices as identified by the B.C. Climate Action Secretariat regarding GHG emissions and climate change impacts for the Project and identify in the Application/EIS how these considerations will be incorporated in the design.

6.1.5 Residual Effects and their Significance

The residual effects and significance of GHG emissions remaining after implementation of Management Plans, and any monitoring, follow-up, and adaptive management programs will be assessed following methodology presented in Section 5.1.5.

6.1.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects in relation to provincial GHG emissions totals and emissions from other comparable mining and industrial facilities in the Province; and
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.1.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.2 GEOLOGY, LANDFORMS AND SOILS

6.2.1 Rationale

KAM will provide the rationale for choosing and assessing geology, landforms, and soils as VCs in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Potential effects of the project on slope stability including on the Aberdeen Hills area, soil erosion, and existing geohazards will be assessed.

Current justification for selecting Geology, Landforms, and Soils as a VC is summarized in Table 6.2-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.2-1 Summary of Rationale for VC: Geology, Landforms, and Soils

Applicable Government Agencies	EAO CEA Agency Working Group (NRCan, AIB)
Stakeholder input	Public (Kamloops Area Preservation Association) Kamloops Stockmen's Association
Information Sources	Professional judgement based on relevant best practices
Spatial scope	Figure 3.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including blasting/vibration on rock fracturing, pitwall and slope stability, pit dewatering and tailings discharge to the TSF, landforms and soil erosion, and geohazards.

6.2.2 Background

This section of the Application/EIS will present a summary of the baseline information collection program and results for geology, landforms and soils in the Project. A more detailed report will be provided in the Application/EIS appendices.

Data will be compiled on the regional and site geology for the following:

- Stratigraphy;
- Rock properties;
- Faults and fractures;
- Mineral deposits; and
- Geohazard baseline (seismic activity, karst, etc.).

Data will be compiled on the regional and site landforms such as:

- Topography;
- Surficial geology; and
- Signs of terrain instability (mass movements).

Data will be compiled on the regional and site soils such as:

- Soil types; and
- Erosion (vulnerability).

The Application/EIS will include baseline soils information and outline the plans for stripping and stockpiling of the appropriate soil horizons for use in reclamation and restoration of the long term agricultural capacity of the site after the mine is decommissioned.

Geologic, landform and soils information will be illustrated by maps and cross sections at appropriately detailed scales.

6.2.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary local and regional study area is shown on Figure 3.1-1. Figures depicting the final extents of the LSA and RSA geology, landforms and soils will be provided in the Application/EIS.

6.2.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will identify:

- Project components that will be considered in the effects analysis;
- Project activities leading to effects for each components;
- Mitigation measures that will be utilized to minimize project effects; and
- Residual effects.

The potential effects assessment of the Project will include the effects of blasting on rock fracturing, pitwall and slope stability; project effects on landforms and soil erosion; the effects of the Project on geohazards; remedial actions that will be implemented as necessary; and monitoring or management procedures to confirm the accuracy of the predictions and to reflect effectiveness of remedial measures.

6.2.5 Residual Effects and their Significance

The residual effects and significance on geology, landforms and soils remaining after implementation of management plans, and any monitoring, follow-up, and adaptive management programs will be assessed following methodology presented in Section 5.1.5.

6.2.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.2.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;

- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.3 SURFACE WATER QUALITY

6.3.1 Rationale

The Application/EIS will provide the rationale for choosing and assessing surface water quality as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Surface water quality was selected as an Environmental VC for its importance to fish and wildlife, and use by humans for drinking water, livestock and irrigation water, and recreation; however, any water quality changes will be assessed in relation to the aquatic resources, human health, wildlife, and recreation VCs, where guidelines exist, in the relevant sections of the Application/EIS.

Current justification for selecting Surface Water Quality as a VC is summarized in Table 6.3-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.3-1 Summary of Rationale for VC: Surface Water Quality

Federal or provincial listing or regulation/ Guidelines	Canadian Water Quality Guidelines - Canadian Environmental Quality Guidelines. Canadian Council of Ministers of the Environment. Approved and Working Water Quality Guidelines (Criteria) Reports. Ministry of Environment, Environmental Protection Division. Fisheries Act Drinking Water Protection Act Public Health Act Water Act Water Protection Act Waste Management Act Water Sustainability Act (expected April 2015)
Applicable Government Agencies	EAO CEA Agency Working Group (DFO, MOE, MEM, NRCan, Interior Health (IH), FLNRO, Lower Nicola Indian Band, AIB)
Stakeholder input	Public (Kamloops Area Preservation Association)
Information Sources	Baseline Studies (Water Quality Baseline Study) Professional judgement based on relevant best practices
Spatial scope	Figure 6.3-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including site clearing and grading, soil salvage and topsoil storage, excavation, explosives storage and use, stream crossings and access roads, water management, Ajax Pit, TSF, Peterson Creek stream diversion around open pit, WRSFs, fugitive dust, ML/ARD, ore and tailings processing (chemical additives), civil structures, and reclamation activities.

6.3.2 Background

Baseline water quality in the Project area will be characterized through a project-specific monitoring program and any regional and historical data, where available. The objectives of the water quality monitoring program are to:

- Quantify the baseline water quality conditions within the proposed mine footprint, up-gradient, and down-gradient of the proposed facilities, and within the existing facilities;
- Develop a conceptual understanding of the relationship between surface water and groundwater quality;
- Assess potential changes to water quality (surface and ground) as a result of mine development through development of a numerical mass balance model (NMBM);
- Establish water quality objectives or safe targets to be met in the receiving water during construction, operation and decommissioning; and

- Determine safe wastewater discharge limits.

This section of the Application/EIS will:

- Describe baseline surface water quality for all potentially affected waters in the Project area and in reference areas.
- Contain maps showing locations of all surface water monitoring stations in relation to Project components.
- List all relevant provincial and federal standards and guidelines used in data collection and interpretation.
- Describe sampling frequency and methods used in collection and analysis of the data.
- Describe the Quality Assurance/Quality Control (QA/QC) program and data quality objectives (DQOs) and provide an analysis of the performance of the data.
- Present results in tabular and/or graphic format and compare them to current provincial and federal water quality standards for protection of aquatic life.
- Reference the applicable appendices where raw data can be found.
- Provide a summary and interpretation of key parameters for baseline water quality data.
- Outline the activities and commitments to maintaining the water resources onsite and to the neighbouring areas, including for agricultural production.

Monitoring sites have been selected to characterize spatial variability in water chemistry. Monitoring stations are shown on Figure 6.3-1. The baseline characterization will be completed based on watershed and subdivided, for ease of interpretation, by natural features (creeks, lakes and ponds) and historical mine features (seepage collection ponds, open pits, etc.).

Samples are collected monthly (where flows allow), with weekly sampling during freshet.

Measurements of *in situ* temperature, specific conductance, dissolved oxygen, pH, and oxidation/reduction potential (ORP) will be recorded at each of the sites. Water samples for laboratory analysis will be collected and sent to an accredited laboratory. Parameters to be analyzed are provided in Table 6.3-2.

Table 6.3-2: Water Quality Parameters

Physical Tests	MDL		Metals - Total & Dissolved	MDL
Acidity to pH 8.3 (as CaCO3)	1		Aluminum	0.005 - 0.01
Alkalinity (Total as CaCO3)	1 - 2		Antimony	0.0005 - 0.001
Bicarbonate Alkalinity	1		Arsenic	0.0005 - 0.001
Carbonate Alkalinity	1		Barium	0.02
Color TCU	5		Beryllium	0.001 - 0.002
Conductivity (µS/cm)	2		Boron	0.1
Hardness (Dissolved)	0.7		Cadmium	0.000017 - 0.000034
Hydroxide Alkalinity	1		Calcium	0.1
pH (pH units)	0.01		Chromium	0.001 - 0.002
Total Dissolved Solids	10-13		Cobalt	0.0003 - 0.0006
Total Suspended Solids	3		Copper	0.001 - 0.002
Turbidity (NTU)	0.1		Iron	0.03
Dissolved Anions	MDL		Lead	0.0005 - 0.001
Bromide (Dissolved)	0.05		Lithium	0.005 - 0.01
Chloride (Dissolved)	0.5		Magnesium	0.1
Fluoride (Dissolved)	0.02		Manganese	0.0003 - 0.0006
Sulphate (Dissolved)	0.5		Mercury	0.00002
Nutrients	MDL		Molybdenum	0.001 - 0.002
Ammonia (Total)	0.005 - 0.02		Nickel	0.001 - 0.002
Nitrate (as N)	0.005		Potassium	2
Nitrite (as N)	0.001		Selenium	0.001 - 0.002
Nitrogen Kjeldahl (Total)	0.05		Silver	0.00002 - 0.00004
Orthophosphate	0.001 - 0.01		Sodium	2
Phosphate (Total)	0.002 - 0.1		Thallium	0.0002 - 0.0004
Cyanide	MDL		Tin	0.0005 - 0.001
Cyanide (Free)	0.005		Titanium	0.01
Cyanide (Total)	0.005		Uranium	0.0002 - 0.0004
Cyanide (WAD)	0.005		Vanadium	0.001 - 0.03
Organics – Total & Dissolved	MDL		Zinc	0.005 - 0.01
Carbon Organic	0.5			

Note:
MDL – Method Detection Limit

An *in situ* temperature and dissolved oxygen depth profile will be recorded at each lake, and water samples will be collected near the surface and at depth.

6.3.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary LSA for surface water quality is defined to include any potential effects on water quality to a point downstream where the effects fall within the range of background variability. The extent of the LSA may be modified and the final LSA will be presented in the Application/EIS. Preliminary LSA and RSA are shown on Figure 6.3-1.

6.3.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will identify:

- Project components that will be considered in the effects analysis;
- Project components or activities that could interact with and potentially change surface water quality; and
- Mitigation measures that will be utilized to minimize project effects.

The Application/EIS will quantify potential changes to surface water quality from construction, operation, decommissioning and closure, and post-closure of the Project on the Peterson Creek watershed.

Based on the current infrastructure layout, no direct effects to water quality in the Cherry Creek watershed are anticipated. Results from air dispersion and groundwater modelling will be reviewed, and if the results indicate potential for measureable indirect effects to water quality, the assessment area will be expanded to include Cherry Creek watershed.

Project aspects or activities that will be considered in the effects assessment include:

- Site clearing and grading;
- Soil salvage and topsoil storage;
- Excavation;
- Explosives storage and use;
- Stream crossings and access roads;
- Water management;
- Ajax Pit development;
- TSF;
- Peterson Creek stream diversion around open pit;
- Waste rock management facilities;
- Dust control;
- Geochemical predictions for metal leaching and acid rock drainage;
- Ore stockpiling;
- Ore and tailings processing (chemical additives);
- Civil structures; and

- Closure and reclamation activities.

The effect of the Project will be assessed locally with a numerical mass balance model. The objective of the model will be to predict the concentration of parameters within the Project catchments, in surrounding surface water, and in the underlying groundwater that will receive direct discharge and/or seepage from mine facilities during the construction, operations, decommissioning and closure, and post-closure Project phases. The model will be prepared based on the proposed mine water balance and site wide water balance, incorporating both surface and groundwater components and mitigation measures, where applicable. The full list of parameters to be modelled, model inputs, source terms, solubility limits, and all assumptions will be provided in the Application/EIS. Contact water source terms will also be provided by the geochemical characterization for the Project. The model outputs will be compared to baseline data and to the relevant guidelines and the Application/EIS will provide a discussion of exceedances. The potential effects of the changes to water quality will be addressed under the relevant sections of the Application/EIS that pertain to the specific VCs. The impact of dust from the site falling on local lakes and streams will also be addressed in the Application/EIS.

The Application/EIS will identify mitigation strategies and treatment processes required to maintain water quality and discuss the effectiveness of proposed mitigation measures; these will be integrated into the numerical mass balance model for the determination of residual changes to water quality. Progressive reclamation activities will also be discussed as they pertain to surface water quality mitigation. A water management plan will address the planning and design of water management infrastructure, as well as addressing sediment and erosion control measures to minimize concentrations of suspended sediments in the receiving environment, and any monitoring programs, including the establishment of additional far field monitoring sites if trends at the near field sites are evident.

6.3.5 Residual Effects and their Significance

The Application/EIS will identify, describe and quantify potential residual effects to surface water quality, which will be provided as input for the assessment of the significance of the potential residual effects under the aquatic resources, human health, wildlife, and recreation VC sections of the Application/EIS. The assessment of residual effects and significance will follow the methodology presented in Section 5.1.5.

The predicted water quality results will be tabulated in an appendix to the Application/EIS and provided as inputs to the various potentially affected VCs for assessment of residual effects. The detailed discussion included in this section of the Application/EIS will focus on the predicted residual water quality changes. These predicted values will be compared to baseline conditions and to the provincial and federal guidelines for the protection of aquatic life:

- Canadian Water Quality Guidelines for the Protection of Aquatic Life. Canadian Environmental Quality Guidelines. Canadian Council of Ministers of the Environment.
- Approved and Working Water Quality Guidelines (Criteria) Reports for freshwater aquatic life. Ministry of Environment, Environmental Protection Division.

The predicted values and comparisons will also be used to inform the relevant VCs in other applicable sections of the Application/EIS. The guidelines may include, but are not limited to, the following:

- British Columbia Ministry of Environment Approved and Working Water Quality Guidelines for the following:
  - Drinking Water Supply;
  - Livestock Water Supply;
  - Irrigation Water Supply;
  - Wildlife; and
  - Recreation and Aesthetics.
- Canadian Environmental Quality Guidelines for the following:
  - Water Quality Guidelines for the Protection of Agricultural Water Use (Irrigation and Livestock).
- Health Canada
  - Guidelines for Canadian Drinking Water Quality; and
  - Guidelines for Canadian Recreational Water Quality.

6.3.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.3.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.4 SURFACE WATER QUANTITY

6.4.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing surface water quantity as a VC. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Surface water quantity was identified as a VC based on potential effects to existing water supplies used for drinking water, irrigation and livestock, and for its importance to aquatic and terrestrial biota (fish, fish habitat, wildlife).

Current justification for selecting Surface Water Quantity as a VC is summarized in Table 6.4-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.4-1 Summary of Rationale for VC: Surface Water Quantity

Federal or provincial listing or regulation/ Guidelines	Water Act Water Protection Act Approved and Working Water Quality Guidelines (Criteria) Fisheries Act Water Sustainability Act (expected April 2015)
Applicable Government Agencies	EAO CEA Agency Working Group (MOE, IH, City of Kamloops, AIB)
Stakeholder input	Public, Kamloops Stockmen's Association
Information Sources	Baseline Studies (Water Quantity Baseline Study) Professional judgement based on relevant best practices
Spatial scope	Figure 6.4-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including site clearing and grading, soil salvage and topsoil storage, excavation, water management, explosives storage and use, process water required for dust control, water withdrawal from Kamloops Lake, open pit development, TSF development, waste rock management facilities, and civil structures.

6.4.2 Background

This section of the Application/EIS will provide a summary of the surface hydrology of the Project area and the source of the information. Background information will include baseline data obtained from hydrology stations established in the Project area and regional Water Survey of Canada stations, and traditional ecological or community knowledge where available.

The locations of hydrology monitoring stations are shown on Figure 6.4-1.

6.4.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary Surface Hydrology LSA and RSA boundaries are shown on Figure 6.4-1.

6.4.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project using a site wide water balance. It will include effects of construction, operation, decommissioning and closure, and post-closure activities;
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects; and
- Describe the seepage from the WRSFs and TSF (acid generation, seepage, water quality, etc.).

Project activities that could affect the hydrological regime include:

- Site clearing and grading;
- Soil salvage and topsoil storage;
- Excavation;
- Water management;
- Explosives storage and use;
- Process water required for dust control;
- Water withdrawal from Kamloops Lake;
- Peterson Creek relocation;
- Infilling of northeast arm of Jacko Lake;
- Ajax Pit development;
- TSF development;
- Ore stockpiling;
- Waste rock management facilities; and
- Civil structures.

The Application/EIS will describe expected changes to surface hydrology resulting from infrastructure development and freshwater withdrawal requirements for the Project. A site wide water balance will describe water movements within the Project area, including characterization of water levels, inflows and outflows from water management infrastructure, water withdrawal requirements, and reuse and reclaim water requirements for mine processes. A pit lake water balance will estimate mine pit water filling and discharge following mine closure. Mine seepage and base flow analysis will be used to assess surface and groundwater interactions (done in conjunction with the groundwater quantity assessment). The Application/EIS will also identify mitigation strategies to minimize the effects of Project development on the regional hydrological regime, including those of extreme events (e.g., low flows measured as 7Q10 and 7Q10-Summer, as well as on lowest flows recorded in the last 50 years) and on water supplies and water license holders. A trend analysis will be included in the assessment to determine if winter and summer low flows are increasing or decreasing over time.

6.4.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects; and

- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

6.4.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

Other projects or activities that may affect surface water quantity include authorized withdrawals for surface and groundwater sources for drinking water, agriculture, commercial and industrial use; and decommissioned and active mining projects in the area. These activities have the potential to affect the following hydrological aspects:

- Flow paths and drainage areas – changes to drainage areas and flow paths can affect downstream flow rates.
- Annual flow volumes – water diverted around Project components or withdrawal from local surface waters for processing requirements will affect water available for aquatic and terrestrial life, influencing fish migration between habitats and supply of nutrients to downstream areas.
- Seasonal distribution of flow: withdrawal from local surface waters for use or storage will affect hydrological regimes in local and regional watersheds, including frequency and duration of high and low flow events.

6.4.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.5 GROUNDWATER QUALITY

6.5.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing groundwater quality as a VC. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Groundwater quality was selected as a VC for its importance to humans for drinking water, and livestock and irrigation water; the water quality effects will be assessed in relation to human health, in the relevant section(s) of the Application/EIS.

Current justification for selecting Groundwater Quality as a VC is summarized in Table 6.5-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.5-1 Summary of Rationale for VC: Groundwater Quality

Federal or provincial listing or regulation/ Guidelines	Water Act (Ground Water Protection Regulations) Water Sustainability Act (expected April 2015)
Applicable Government Agencies	EAO CEA Agency Working Group (FLNRO, IH, NRCan, AIB)
Stakeholder input	Public (Kamloops Area Preservation Association) Kamloops Stockmen's Association
Information Sources	Baseline Studies (Water Quality Baseline Study) Professional judgement based on relevant best practices
Spatial scope	Figure 6.5-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including Water management (surface runoff diversions, storage for process water), open pit construction, open pit dewatering, WRSFs, ML/ARD, Ore and tailings processing (chemical additives), dust control, explosives storage and use, processing facility, concentrate, ore, and overburden stockpiling, and TSF.

6.5.2 Background

The Application/EIS will include a characterization of the baseline groundwater quality in the study area that will include:

- Identification of and rationale for the location of the groundwater monitoring wells installed on site.
- Sampling depth, parameters, and sampling frequencies for groundwater well monitoring at wells installed on site.
- Analysis of groundwater results and comparison to relevant BC Water Quality Guidelines and Canadian Council of the Ministers of Environment (CCME) standards.
- Interpretation of any potential relationships between groundwater quality results and geology as well as the identification of any potential spatial and temporal variations.

The locations of groundwater monitoring wells are shown on Figure 6.5-1. The groundwater monitoring wells were established to characterize groundwater water quality and hydrology in the preliminary LSA.

They include wells up-gradient and down-gradient of the proposed facilities, wherever possible. Additional monitoring wells will be installed as required to adequately address potential impacts from facilities as the mine plan is advanced. All wells will be constructed, maintained or closed in accordance with the Ground Water Protection Regulation. Qualified and provincially registered well drillers and pump installers will be hired to do work on any of the Project's groundwater monitoring and production wells. Any wells that are no longer in use will be closed by backfilling and sealing the well in accordance with the Ground Water Protection Regulation. Any test holes no longer required will be closed in accordance with the Ground Water Protection Regulation.

Background information may include traditional ecological or community knowledge (e.g., data from existing water wells and monitoring wells in the LSA and RSA, if of sufficient quality) relating to the VC, where available. The proponent will work with the City of Kamloops and FLNRO to identify existing groundwater wells and their owners in the area.

6.5.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the EA relative to the VC;
- Maps outlining the spatial extent of the RSA and LSA of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary LSA and RSA are shown on Figure 6.5-1; boundaries will be confirmed in the Application/EIS based on the results of groundwater modelling. Groundwater monitoring wells were established to characterize water quality in the LSA. They include wells upstream and downstream of the proposed facilities.

The temporal boundary will assess the periods from operations through post-closure.

6.5.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will identify:

- Project components that will be considered in the effects analysis;
- Project components or activities that could interact with and potentially change groundwater quality through all phases of the Project (construction through post-closure); and
- Mitigation measures that will be utilized to minimize project effects.

The project components and activities that will be considered in the effects analysis for groundwater quality during construction, operation, decommissioning and closure, and post-closure include:

- Water management (surface runoff diversions, storage for process water);
- Open pit construction;
- Pit dewatering;
- Waste rock management facilities;
- Geochemical predictions for ML/ARD;
- Ore and tailings processing (chemical additives);

- Dust control;
- Explosives storage and use;
- Processing facility;
- Concentrate, ore, and overburden stockpiling;
- TSF
- Seepage potential from the WRSFs (including but not limited to acid rock drainage, seepage, water quality, etc.).

The effect of the Project will be assessed locally with a numerical mass balance model. The objective of the model will be to predict the concentration of parameters within the Project catchments, in the surrounding surface water and underlying groundwater that will receive direct discharge and/or seepage from mine facilities during the construction, operations, decommissioning and closure, and post-closure Project phases. The model will be prepared based on the proposed mine water balance and site wide water balance, incorporating both surface and groundwater components and mitigation measures, where applicable. The full list of parameters to be modelled, model inputs, source terms, solubility limits and all assumptions will be provided in the Application/EIS. Contact water source terms will also be provided by the geochemical characterization for the Project. The model outputs will be compared to baseline data and to the relevant guidelines and the Application/EIS will provide a discussion of exceedances. The potential effects of the changes to water quality will be addressed under the relevant sections of the Application/EIS that pertain to the specific VCs.

The provincial “Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities” (MOE, 2012a) and “Water and Air Resource Protection Guidelines for Mine Proponents and Operators Baseline Monitoring" (MOE, 2012b) will be referenced and followed in the Application. A discussion of model uncertainties, data gaps and data limitations will be included in the Application/EIS.

The Application/EIS will identify mitigation strategies and treatment processes required to maintain water quality and discuss the effectiveness of proposed mitigation measures and these will be integrated into the numerical mass balance model for the determination of residual changes to water quality. Progressive reclamation activities will also be discussed as they pertain to surface water quality mitigation. A water management plan will address the planning and design of water management infrastructure, as well as addressing sediment and erosion control measures to minimize concentrations of suspended sediments in the receiving environment, and any monitoring programs, including the establishment of additional far field monitoring sites if trends at the near field sites are evident.

6.5.5 Residual Effects and their Significance

The Application/EIS will identify, describe and quantify potential residual effects to groundwater quality, which will be provided as input for the assessment of the significance of the potential residual effects under human health in the applicable section of the Application/EIS. The assessment of residual effects and significance will follow methodology presented in Section 5.1.5

The predicted water quality results at key locations will be tabulated in an appendix to the Application/EIS and provided as inputs to the human health effects assessment. The detailed discussion included in this

section of the Application/EIS will focus on the predicted residual water quality changes. These predicted values will be compared to baseline conditions and to the relevant provincial and federal drinking water quality guidelines:

- British Columbia Ministry of Environment Approved and Working Water Quality Guidelines for Drinking Water; and
- Health Canada Guidelines for Canadian Drinking Water Quality.

Additionally, the predicted groundwater quality will be tabulated in comparison to the water quality guidelines specific to agricultural (livestock and irrigation) water uses, and for the protection of aquatic life, which are as follows:

- British Columbia Ministry of Environment Approved and Working British Columbia Water Quality Guidelines for the following:
  - Livestock Water Supply;
  - Irrigation Water Supply; and
  - Protection of Aquatic Life.
- Canadian Environmental Quality Guidelines for the following:
  - Water Quality Guidelines for the Protection of Agricultural Water Use (Irrigation and Livestock); and
  - Water Quality Guidelines for the Protection of Aquatic Life.

6.5.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

Other projects or activities that may affect groundwater quality include authorized withdrawals for surface and groundwater sources for drinking water, agriculture, commercial and industrial use; and decommissioned and active mining projects in the area.

6.5.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.6 GROUNDWATER QUANTITY

6.6.1 Rationale

KAM will provide the rationale for choosing and assessing groundwater quantity as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Groundwater quantity was selected as a VC for its importance to humans for drinking water, and livestock and irrigation water.
Current justification for selecting Groundwater Quantity as a VC is summarized in Table 6.6-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.6-1 Summary of Rationale for VC: Groundwater Quantity

Federal or provincial listing or regulation/ Guidelines	Water Act (Ground Water Protection Regulation) Water Sustainability Act (expected April 2015)
Applicable Government Agencies	EAO CEA Agency Working Group (FLNRO, City of Kamloops, EC, AIB)
Stakeholder input	Public, Kamloops Area Preservation Association, Kamloops Stockmen's Association
Information Sources	Baseline Studies (Water Quantity Baseline Study) Professional judgement based on relevant best practices
Spatial scope	Figure 6.5-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including water management (surface runoff diversions, storage for process water), open pit construction, open pit dewatering, process mill, concentrate, ore and overburden stockpiling, WRSFs, and TSF.

6.6.2 Background

The Application/EIS will include a characterization of the existing groundwater regime to support the definition of potential impacts, mitigation measures, monitoring and contingency planning as mine planning proceeds. The following baseline groundwater quantity information for the study area will be provided:

- Identification of the location of drill holes installed as part of groundwater and geotechnical programs;
- Installation details of groundwater monitoring wells and piezometers;
- Groundwater level measurements with an examination of seasonal fluctuations and hydraulic gradients;
- Assessment of the occurrence of groundwater and pre-development rate of groundwater recharge beneath the TSF and waste rock features;

- Description of the methodology, analysis and results of hydraulic testing such as falling and rising head tests;
- Incorporation of the regional and study area geology, including interpretation of aquifer and aquitard locations in the study area;
- Characterization of overburden and bedrock hydrostratigraphic units (e.g., rationale and basis for defining hydrostratigraphic units that may include discrete or multiple lithologies – mapped aquifers, including Peterson Creek Aquifer) and the assignment of hydrogeologic parameters (i.e., hydraulic conductivity, porosity and storage properties) to these units;
- Available City of Kamloops well data, drill logs, and other relevant QC-reviewed groundwater data;
- Estimates of the rate and direction of groundwater flow; and
- Expected interaction of groundwater with surface water.

Existing well locations are shown on Figure 6.5-1.

A review of the existing groundwater use and information in the study area will be carried out, including:

- Published geology and hydrogeology reports and aerial photographs;
- Soils and geologic maps and aquifer classification mapping;
- Previous drilling/test pitting and hydraulic testing;
- Inventory of neighbouring well users and regional groundwater use (including Aboriginal users) and surface water use (water licences). (The inventory of groundwater users will include some level of ground-truthing such as verifying with local personnel about their knowledge of the area, site visit and inspection of recent air photos.);
- On site photographs;
- Climate data; and
- Historical mine operations and site studies (e.g., Aberdeen area studies).

6.6.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary LSA and RSA are shown on Figure 6.5-1. Groundwater monitoring wells were established to characterize water quality and quantity in the LSA. They include wells upslope and downslope of the proposed facilities. Characterization of the local flow regime will include these wells, piezometers and wells installed adjacent to the pit, historical performance from past mining activities and development of a watershed model that includes surface water and groundwater components. Additional monitoring wells will be installed as required to adequately address potential impacts from facilities as the mine plan is advanced.

6.6.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project, including potential for increases in piezometric levels in the Aberdeen Hills area that may adversely impact slope stability in that area, and potential impacts on Jacko Lake and Peterson Creek. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate any potential adverse effects.

The project components that will be considered in the effects analysis for groundwater quantity during construction, operation, and closure include:

- Water management (surface runoff diversions, storage for process water);
- Open pit construction;
- Pit dewatering;
- Process mill;
- Concentrate, ore and overburden stockpiling;
- Waste rock management facilities; and
- TSF (including evaporation rates).

The Application/EIS will predict the rate of tailings pore water leakage through the base of the TSF and WRSF features becoming groundwater recharge and will evaluate the resulting groundwater quality due to this leakage. The potential for TSF and WRSFs to compact soils and affect underlying aquifers will also be discussed.

The Application/EIS will describe the methods and results of assessments to evaluate potential effects associated with mine development, operations, decommissioning and closure, and post-closure, on groundwater quantity, including:

- A site-wide water balance model that incorporates baseline conditions as well as the components and phases of the mine development under a range of climatic conditions. All parameters (e.g. precipitation, temperature, evapotranspiration, groundwater flows, and stream-flows) that are reported will include the source of information (empirical or estimated). The results of the water balance calculations will be reported as well as references to selected methodologies and assumptions used in the water balance (see also Section 6.4). The results of the water balance model will be used to define boundary conditions in the site wide, 3D numerical groundwater flow model that will be developed for the site.
- A 3D numerical groundwater flow model developed for the site and calibrated to baseline hydrogeologic and hydrologic data. The groundwater flow model will be used to evaluate the potential impacts of the waste rock management facilities and the open pit on the groundwater flow system.
- An analytical and/or numerical seepage model developed for the Tailings Storage Facility and WRSFs areas. The model(s) will be used to identify main areas of potential seepage from these facilities. The total seepage along the periphery of the TSF impoundment and the WRSFs will be calculated.

The Application/EIS will provide a description of the measures that will be considered to mitigate Project effects on groundwater quantity.

The primary tool for this study will be the 3D numerical groundwater flow model developed for the Project. The groundwater flow model will be developed based on the following data:

- Water levels at measured well sites, in streams, wetlands, springs and ponds;
- Available groundwater pumping test data;
- Stream flow measurements to identify gaining and losing stream reaches as well as base flow contributions;
- Meteorological data to address net precipitation available for groundwater recharge and runoff; and
- Where long-term surface and groundwater data are available for the Aberdeen neighbourhood, they will be utilized in the watershed model.

A conceptual groundwater model will be developed at the outset of the study and refined throughout the course of the investigations to strengthen and clarify the site understanding. The conceptual model will be developed using key hydrogeologic features and properties such as:

- Hydrogeological cross sections and mapping showing the interpreted geological setting including the known or inferred extent and continuity of stratigraphic units, aquifers and aquitards, and groundwater levels.
- Standard plots showing the relationship between hydraulic conductivity estimates and depth, rock type and spatial area.
- Standard time series plots of water levels to evaluate seasonal fluctuations as well as piezometric contoured surfaces for periods of low and high flow groundwater levels to assess groundwater flow paths.

The provincial “Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities” (MOE, 2012a) and “Water and Air Resource Protection Guidelines for Mine Proponents and Operators Baseline Monitoring" (MOE, 2012b) will be referenced and followed in the Application/EIS.

A discussion of model uncertainties, data gaps and data limitations will be included in the Application/EIS.

The modeling input and output files will be provided to the EAO, including all electronic files used to develop, calibrate and apply the numerical model(s) as well as relevant base map files and calibration data sets.

6.6.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

6.6.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.6.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.7 FISH POPULATIONS AND FISH HABITAT

6.7.1 Rationale

KAM will provide the rationale for choosing and assessing fish populations and fish habitat as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Fish populations and fish habitat was identified as a VC based on its importance to the recreational fishery and as an indicator of ecosystem health. Current justification for selecting Fish Populations and Fish Habitat as a VC is summarized in Table 6.7-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.7-1 Summary of Rationale for VC: Fish Populations and Fish Habitat

Federal or provincial listing or regulation/ Guidelines	Fisheries Act Fish Protection Act Canadian Environmental Quality Guidelines. CCME. Approved and Working Water Quality Guidelines (Criteria) Reports. Ministry of Environment, Environmental Protection Division
Applicable Government Agencies	EAO CEA Agency Working Group (MOE, DFO, FLNRO, Lower Nicola Indian Band, AIB)
Stakeholder input	Public (Kamloops Area Preservation Society) Kamloops Fly Fishers Kamloops and District Fish and Game Association Thompson Watershed Coalition Thompson Institute of Environmental Studies
Information Sources	Baseline Studies (Fisheries Baseline Report, Aquatics Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.7-1 (preliminary)

Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Potential change in habitat to Peterson Creek Jacko Lake, Keynes Creek, Humphrey Creek, Goose Lake Potential change in habitat in Kamloops Lake as a result of water intake upgrades

6.7.2 Background

This section of the Application/EIS will provide detailed baseline information on aquatic ecology in the project area, and the source of the information. Background information will include fish and fish habitat assessments in the Project area, historical data, and traditional ecological or community knowledge, where available.

The following will be considered in the assessment:

- Rainbow trout population abundance, distribution and life history characteristics and fish habitat utilization (spawning, rearing, overwintering) in:
  - Jacko Lake;
  - Jacko Creek;
  - Peterson Creek.
  - Goose Lake;
  - Keynes Creek; and
  - Humphreys Creek.
- Information on any other fish species (e.g., forage fish species) captured during baseline studies in the above waterbodies will also be described.
- Where preliminary monitoring indicates possible fish absence, the effort made to confirm this will be clearly described.
- Fish habitat utilization (spawning, rearing, overwintering, migration corridor) and critical or important habitat in Kamloops Lake adjacent to the footprint of the freshwater intake and pump station, as well as migratory corridors downstream of the intake in the Thompson River Species present in Kamloops Lake as identified in the provincial database and potentially affected by project activities include:
  - Rainbow trout;
  - Sockeye salmon;
  - Coho salmon;
  - Chinook salmon;
  - Pink salmon;
  - White sturgeon;
  - Lake whitefish;
  - Bull trout;
  - Burbot;
  - Largescale sucker;
  - Dolly Varden;
  - Mountain whitefish;

- o Northern pikeminnow;
- o Peamouth chub;
- o Prickly sculpin; and
- o Redside shiner.

Aquatic resources information (sediment quality, periphyton diversity and biomass, and benthic macroinvertebrate diversity) will be reported for all stream sites. Sediment quality, benthic macroinvertebrate diversity, and phytoplankton and zooplankton diversity will be reported for Jacko Lake and Goose Lake. Fish tissue metals loading will be reported for tissue samples collected from Jacko Lake.

The locations of aquatic sampling sites are shown on Figure 6.7-1. Aquatic sampling sites are co-located with surface water sampling sites where conditions permit.

6.7.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Preliminary local and regional study areas are presented on Figure 6.7-1. The local study area will encompass: the footprint of the Project on Jacko Lake and Peterson Creek and the area adjacent to the water intake site on Kamloops Lake. The regional study area will include the Peterson Creek watershed and a buffer along the access road and water supply pipeline.

6.7.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

The Project components that will be considered in the effects analysis for fish and fish habitat during construction, operation and closure include:

- Water management (water withdrawal from Kamloops Lake, collection of contact water and storage for process water, diversion of non-contact water);
- Open pit development, including potential for seepage or drainage of Jacko Lake into the pit;
- Waste rock management facilities;
- TSF;
- Peterson Creek diversion;
- Site and access road stream crossings;
- Water pipeline crossings; and
- Transmission line stream crossings.

Potential effects to be assessed include:

- Loss of habitat in Peterson Creek related to the open pit and the EWRSF;
- Impact of mining dust and vibrations on the fish in Jacko Lake;
- Loss of habitat and altered fish distribution and abundance in Peterson Creek downstream of the Project area resulting from reduced flow;
- Loss of habitat in northeast arm of Jacko Lake related to pit development;
- Loss of habitat in Kamloops Lake as a result of water intake upgrades;
- Loss of habitat in Jacko Lake as a result of seepage or drainage of lake water into the adjacent open pit;
- Water temperature variation;
- Direct mortality or sub-lethal effects to fish as a result of altered water quality (increased metals loading, increased temperatures, decreased dissolved oxygen concentration, etc.) or blasting activities resulting during Project construction, operation and decommissioning;
- Direct and indirect mortality of fish in Kamloops Lake resulting from water withdrawal; and
- Altered productive capacity (periphyton, aquatic macrophytes, plankton community, benthic invertebrates) resulting from changes in water quality (nutrients, temperature, suspended solids).

Fish and fish habitat effects assessment will consider results of the:

- Surface water quality and quantity assessment;
- Groundwater quality and quantity assessment;
- Human Health and Ecological Risk Assessment.

The Application/EIS will identify measures to avoid or minimize adverse effects on fish and fish habitat, and will recommend mitigation measures for protection of surface and groundwater quality and quantity. If serious harm to fish or fish habitat is unavoidable, the Application/EIS will describe the serious harm and will propose a fish habitat offsetting plan. If at the time of Application/EIS submission concurrent permitting is being considered, the Application/EIS will include a detailed assessment of fish and fish habitat impacts including final design drawings of proposed fish habitat offsetting options being proposed. The guidance material provided by Fisheries and Oceans Canada will be considered in the development of a Fish Habitat Offsetting Plan.

6.7.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

6.7.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;

- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.7.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.8 RARE PLANTS

6.8.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing rare vascular and nonvascular plants and lichens. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation will include:

- Lists of Red and Blue-listed plant taxa thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre;
- Information on known location records of Red or Blue-listed taxa in or near the study area (provided by the BC Conservation Data Centre); and
- Information on SARA- and COSWEIC listed taxa available from the Government of Canada.

Justification of this VC as it relates to the Ajax Project will be further developed in the Application; Table 6.8-1 summarizes the current information supporting Rare Plants as a VC.

Table 6.8-1 Summary of Rationale for VC: Rare Plants

Federal or provincial listing or regulation/ Guidelines	Red and Blue-listed plant taxa SARA-listed taxa
Applicable Government Agencies	EAO CEA Agency Working Group (EC, AIB)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices

Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.8.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of rare plant taxa; and
- Assess habitat associations of rare plant taxa within mapped areas.

Surveys will be conducted according to recognized standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using Global Positioning System (GPS) receivers and recorded in North American Datum (NAD) 83 Universal Transverse Mercator (UTMs). Representational habitats and any significant habitat features will be photographed.

6.8.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97.

6.8.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

The EIS will describe where project activities/disturbances associated with the Project are likely to cause a negative impact on identified rare vascular and nonvascular plants and lichens. Mitigation measures could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, Best Management Practices (BMPs), legislative requirements (provincial and federal Acts) and species-specific recovery strategies (where available, including those in draft). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.8.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects; and
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.8.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.
- Identification and description of monitoring programs that will be conducted to assess cumulative effects deemed significant.

6.8.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.9 RARE AND SENSITIVE ECOLOGICAL COMMUNITIES

6.9.1 Rationale

KAM will provide the rationale for choosing and assessing rare and sensitive ecological communities, which include wetlands, alkali ponds, old-growth forest, and rock outcrops in the Application/EIS. Grasslands are not included in this section as they are considered as a separate VC. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;

- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed ecological communities (excluding grasslands) thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed ecological communities in or near the study area (provided by the BC Conservation Data Centre);
- SARA Schedule 1, 2 and 3 and COSEWIC listings; and
- Communities of regional concern.

Current justification for selecting Rare and Sensitive Ecological Communities as a VC is summarized in Table 6.9-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.9-1 Summary of Rationale for VC: Rare and Sensitive Ecological Communities

Federal or provincial listing or regulation/ Guidelines	Lists of Red and Blue-listed ecological communities (excluding grasslands) thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010); Information on actual known location records of Red or Blue-listed ecological communities in or near the study area (provided by the BC Conservation Data Centre); SARA Schedule 1, 2 and 3 and COSEWIC listings; and Communities of regional concern.
Applicable Government Agencies	EAO CEA Agency Working Group (EC, AIB)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.9.2 Background

Sensitive Ecosystems are plant community driven. A plant community is a group of climactic plants that occur together in a given area (e.g., climactic stage of succession) and that can occur in a number of biogeoclimatic subzones and site series. Potentially important sites within the study area include remnant old-growth forests in otherwise heavily logged (or beetle affected) areas, riparian habitat, wetlands, and rock outcrops.

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available. The Application/EIS will describe Terrestrial Ecosystem Mapping (TEM) procedures and methodologies (including map product scale, etc.), cite list of standards to be used, and describe ground-truthing ecosystem surveys in support of TEM work.

Field surveys will be used to:

- Confirm presence of ecological communities, and
- Confirm accuracy of the typed polygons within mapped areas.

All surveys will be conducted according to RISC standards. Field sampling procedures for the ecosystem map truthing will follow the "Field Manual for Describing Terrestrial Ecosystems" (MELP and MOF 1998). Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.9.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.9.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, and decommissioning and closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Where project activities/disturbances associated with the Project are likely to cause a negative impact on rare ecological communities, riparian habitat, wetlands, old-growth forest, or rock outcrops, practicable mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats (avoidance), specification of vegetation clearing schedules, noxious weed control, and dust management (mitigation), and compensation. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and recovery strategies, including those in draft. Where any impacts to any wetlands cannot be avoided, mitigation strategies for wetlands will be proposed in accordance with the Federal Policy on Wetland Conservation, including any requirements for a Wetland Compensation Plan (WCP). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.9.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;

- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.9.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.9.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.10 GRASSLANDS

6.10.1 Rationale

KAM will provide the rationale for choosing and assessing Grasslands as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input such as grassland conservation council, Kamloops Naturalists club, Kamloops Stockmans Association and Kamloops Fish and Game Club;
- Municipal interest;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Information on actual known location records of Red or Blue-listed grassland ecological communities in or near the study area (provided by the BC Conservation Data Centre); and
- Communities of regional concern.

Current justification for selecting Grasslands as a VC is summarized in Table 6.10-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS. Grasslands in British Columbia form less than 1% of the provincial land base. Only about 0.3% is considered part of the bunchgrass zone, the rest appears within several of the other biogeoclimatic zones such as Ponderosa Pine and Interior Douglas-fir zones. The majority of grasslands in the Project area appear to be Interior Douglas-fir grassland phases which contain plant communities not found in most other grassland types.

This grassland type is presently under threat from urbanization, industrial use, grazing, ATV use, and noxious weed invasion.

Environment Canada has identified grasslands, including those not in pristine condition and/or being actively grazed, as ecosystem to be assessed. Environment Canada has noted that nearly all the grasslands in this region are grazed but remain sensitive ecosystems that support large numbers of species, including federally listed species.

Table 6.10-1 Summary of Rationale for VC: Grasslands

Federal or provincial listing or regulation/ Guidelines	Lists of Red and Blue-listed grassland ecological communities thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010); and Information on actual known location records of Red or Blue-listed grassland ecological communities in or near the study area (provided by the BC Conservation Data Centre)
Applicable Government Agencies	EAO CEA Agency Working Group (EC, AIB)
Stakeholder input	Public Grassland Conservation Council Kamloops Stockman's Association Kamloops Naturalists Club Kamloops and District Fish and Game Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices Kamloops Land Resource Management Plan Grasslands of British Columbia by Grasslands Conservation Council, April, 2004 Land For Nature Project: Endangered Spaces in the Kamloops Area. Kamloops Naturalists Club. 1992.
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.10.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC (ecosystems and plant communities in the project area) and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available. The

Application/EIS will describe Terrestrial Ecosystem Mapping (TEM) procedures and methodologies (including map product scale, etc.), cite list of standards to be used, and describe ground-truthing ecosystem surveys in support of TEM work.

Field studies and resultant mapping will occur to determine:

- Biogeoclimatic zones, subzones and variants;
- Associated soil types;
- Seral stages;
- Plant species and communities present;
- Probable value for wildlife habitat for a select group of species.

Mapping will be used to reflect the findings of the field studies and aid in determining best location for project facilities. All surveys will be conducted according to RISC standards. Field sampling procedures for the ecosystem map truthing will follow the "Field Manual for Describing Terrestrial Ecosystems" (MELP and MOF 1998). Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.10.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and terrestrial ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.10.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, and decommissioning and closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Where project activities/disturbances associated with the Project are likely to cause a negative impact on a VC, practicable mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats (avoidance); specification of vegetation clearing schedules, invasive plant control, and dust management (mitigation), reclamation and compensation. The potential effectiveness of each strategy will be discussed. Mitigation

strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies, including those in draft. In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.10.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

Grasslands links to numerous other valued components, including most vegetation and wildlife species listed as value components, recreation, land use and income. The interrelationships between grasslands and these valued components will be discussed.

6.10.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:
Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project, as indicated in Section 5.1.6.

An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.10.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.11 TERRESTRIAL INVERTEBRATES

6.11.1 Rationale

Baseline surveys of dragonflies and butterflies were conducted in accordance with provincial standards (MELP and MOF 1998). Thirty-six invertebrate species were identified, including five dragonfly/damselfly taxa and thirty-one butterflies. The monarch, Nevada skipper, common sooty wing, California hairstreak and the olive clubtail are selected as focal species considering the presence of suitable/capable habitat, the availability of sufficient species knowledge to produce a meaningful assessment, federal or provincial listing, and likely interactions with the project (geographically and ecologically).

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed terrestrial invertebrates (presently dragonfly and butterfly species) thought to occur within the Kamloops Forest District as provided by the BC Conservation Data Centre (2010);
- Information on known location records of Red or Blue-listed species in or near the study area (provided by the BC Conservation Data Centre); and
- Information on SARA- and COSEWIC-listed species available from the Government of Canada.

Current justification for selecting Terrestrial Invertebrates as a VC is summarized in Table 6.11-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.11-1 Summary of Rationale for VC: Terrestrial Invertebrates

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC
Applicable Government Agencies	EAO CEA Agency Working Group (EC, AIB)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.11.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target species; and
- Confirm habitat associations of target species.

All wildlife/habitat surveys will be conducted according to applicable RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using

GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.11.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.11.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
    - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
    - road traffic and transportation of mined rock, ore, personnel and supplies;
    - noise from blasting and from construction machinery and personnel;
    - artificial lighting; and
    - disruption of daily or seasonal movements;
- mortality resulting from:
    - collisions with vehicles or construction equipment;
    - collisions with power lines; and
    - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on the focal species, mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive

habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies, including draft (where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.11.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects; and
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.11.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.11.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.12 AMPHIBIANS

6.12.1 Rationale

The following focal species were selected based on recorded observations of the species in the Project area during baseline studies, incidental observations or reported historical presence, or on the presence of suitable habitat:

- Western toad;
- Great Basin spadefoot;
- Pacific chorus frog; and
- Columbia spotted frog.

Focal species are selected considering the presence of suitable/capable habitat, the availability of sufficient species knowledge to produce a meaningful assessment, likely interactions with the project (geographically and ecologically) and in consideration of one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the species.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed amphibians thought to occur within the Kamloops Forest District as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed amphibians in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed amphibians available from the Government of Canada;
- Amphibians listed as part of the Identified Wildlife Management Strategy (IWMS);
- Taxa of regional concern; and
- Data from targeted wildlife surveys and from incidental observations.

Current justification for selecting Amphibians as a VC is summarized in Table 6.12-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.12-1 Summary of Rationale for VC: Amphibian VCs

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (EC, FLNRO, AIB)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.12.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target amphibian species; and
- Confirm habitat associations of target amphibian species.

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.12.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.12.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
    - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:

  - road traffic and transportation of mined rock, ore, personnel and supplies;
  - noise from blasting and from construction machinery and personnel;
  - artificial lighting; and
  - disruption of daily or seasonal movements;
- mortality resulting from:
  - collisions with vehicles or construction equipment;
  - collisions with power lines; and
  - lethal control of problem wildlife.

Where project activities/disturbances associated with the Project are likely to cause a negative impact on a focal species, practicable mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies, including draft (where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.12.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects; and
- An assessment of the significance of the residual effects to the VC following methodology presented in Section 5.1.5.

6.12.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.12.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.13 REPTILES

6.13.1 Rationale

The Great Basin gophersnake, North American racer, western rattlesnake, and northern rubber boa were selected as focal species based on recorded observations of the species in the Project area during baseline studies, incidental observations or reported historical presence, or on the presence of suitable habitat, and in consideration of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed reptiles thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed reptiles in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed reptiles available from the Government of Canada;
- Reptiles listed as part of the Identified Wildlife Management Strategy (IWMS);
- Reptiles of regional concern; and
- Data from targeted wildlife surveys and from incidental observations.

Current justification for selecting Reptiles as a VC is summarized in Table 6.12-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.13-1 Summary of Rationale for VC: Reptile

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (EC, Ashcroft Indian Band)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.13.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target wildlife and vegetation species and ecosystems; and
- Confirm habitat associations of target species.

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.13.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.13.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
  - introduction of potentially toxic contaminants;
  - introduction or deposition of substances that physically alter habitats such as silt or dust;
  - introduction and dispersal of noxious weeds;
  - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
  - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
  - road traffic and transportation of mined rock, ore, personnel and supplies;
  - noise from blasting and from construction machinery and personnel;
  - artificial lighting; and
  - disruption of daily or seasonal movements;
- mortality resulting from:
  - collisions with vehicles or construction equipment;
  - collisions with power lines; and
  - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on a focal species, mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies including draft (where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.13.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.13.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects following methodology presented in Section 5.1.6.

6.13.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.14 MIGRATORY BIRDS

6.14.1 Rationale

Under the Migratory Birds Convention Act (MBCA), a migratory bird is defined as the following groups of bird species: waterfowl, cranes, rails and coots, shorebirds, gulls, terns, pigeons, doves, insectivorous songbirds (excluding blackbirds), seabirds, loons, grebes, herons, egrets and bitterns. A preliminary list of migratory birds was compiled based on professional experience and comments from the public and regulatory agencies. The list was refined based on the biogeoclimatic subzone and habitat types present in the Project area as identified by ecosystem mapping and known ranges of the taxa. Baseline bird surveys were conducted in accordance with provincial guidelines; in total, 134 bird species were detected. The following were selected as focal species/species groups:

- American Bittern;
- Common Nighthawk;
- Great Blue Heron;
- Lewis's Woodpecker;
- Long-billed Curlew;
- Sandhill Crane;
- Williamson's Sapsucker;
- Songbirds (including Barn Swallow and Olive-sided Flycatcher); and
- Waterfowl.

Justification for inclusion of these focal species/species groups will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed wildlife taxa thought to occur within the Kamloops Forest District as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed taxa in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed taxa available from the Government of Canada;
- Taxa listed as part of the Identified Wildlife Management Strategy (IWMS); and

- Taxa of regional concern; and data from targeted wildlife surveys and from incidental observations.

Current justification for selecting Migratory Birds as a VC is summarized in Table 6.13-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.14-1 Summary of Rationale for VC: Migratory Bird VCs

Federal or provincial listing or regulation/ Guidelines	Migratory Birds Convention Act Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (EC, FLNRO, Ashcroft Indian Band)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.14.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of focal wildlife species; and
- Confirm habitat associations of focal species/species groups (including staging, wintering, and breeding areas, where appropriate).

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Field sampling procedures for the ecosystem map truthing will follow the “Field Manual for Describing Terrestrial Ecosystems” (MELP and MOF 1998). Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.14.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.14.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects (e.g., direct effects (habitat loss), reduced habitat effectiveness (zones of influence effects), and mortality risk, including effects on birds landing on the TSF, resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
    - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
    - road traffic and transportation of mined rock, ore, personnel and supplies;
    - noise from blasting and from construction machinery and personnel;
    - artificial lighting; and
    - disruption of daily or seasonal movements;
- mortality resulting from:
    - collisions with vehicles or construction equipment;
    - collisions with power lines; and
    - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on a focal species/species group, mitigation strategies will be identified where possible. Mitigation strategies will reference any available recovery strategies (including those in draft). Potential strategies that would be recommended could include minor adjustments of project footprints to avoid

particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies (draft or final, where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity. Requirements for monitoring and mitigation management will be described and detailed in the Application/EIS.

6.14.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.14.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.14.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.15 RAPTORS

6.15.1 Rationale

The following species were selected as focal species for the Raptor VC based on their inclusion on provincial lists (Red/Blue, Conservation Framework priority), Federal lists (SARA, COSEWIC) or regional priorities lists (Regionally Important, IWMS):

- Flammulated Owl;
- Bald Eagle;
- Burrowing Owl;
- Peregrine Falcon;
- Prairie Falcon;
- Great Gray Owl;
- Rough-legged Hawk

- Short-eared Owl; and
- Swainson's Hawk.

Focal species were chosen on the basis of the presence of suitable/capable habitat, the availability of sufficient species knowledge to produce a meaningful assessment, and likely interactions with the project (geographically and ecologically). Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed raptors thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed taxa in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed taxa available from the Government of Canada;
- Taxa listed as part of the Identified Wildlife Management Strategy (IWMS); and
- Taxa of regional concern; and data from targeted wildlife surveys and from incidental observations.

Current justification for selecting Raptors as a VC is summarized in Table 6.14-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.15-1 Summary of Rationale for VC: Raptors

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (FLNRO, AIB)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.15.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target wildlife and vegetation species and ecosystems; and
- Confirm habitat associations of target species.

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.15.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with the all Project facilities, buffered by a minimum distance of 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.15.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and

  - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
  - road traffic and transportation of mined rock, ore, personnel and supplies;
  - noise from blasting and from construction machinery and personnel;
  - artificial lighting; and
  - disruption of daily or seasonal movements;
- mortality resulting from:
  - collisions with vehicles or construction equipment;
  - collisions with power lines; and
  - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on a focal species, practicable mitigation strategies will be identified. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies (where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.15.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

6.15.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.15.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.16 NON-MIGRATORY GAMEBIRDS

6.16.1 Rationale

The Sharp-tailed Grouse and Ruffed Grouse were selected as focal species based on recorded observations of the species in the Project area during baseline studies, incidental observations or reported historical presence, or on the presence of suitable habitat, and in consideration of:

- Federal or provincial listing or regulation;
- Regional significance;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed taxa thought to occur within the Kamloops forest district as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed taxa in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed taxa available from the Government of Canada;
- Taxa listed as part of the Identified Wildlife Management Strategy (IWMS); and
- Taxa of regional concern; and data from targeted wildlife surveys and from incidental observations.

Current justification for selecting Non-Migratory Gamebirds as a VC is summarized in Table 6.16-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.16-1 Summary of Rationale for VC: Non-Migratory Gamebirds VCs

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (FLNRO, Ashcroft Indian Band)
Stakeholder input	Public Kamloops Naturalist Club
Information Sources	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.16.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target wildlife species; and
- Confirm habitat associations of target species.

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.16.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with the pit, processing plant, TSF, and WRSF, buffered by a minimum distance of 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.16.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
    - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
    - road traffic and transportation of mined rock, ore, personnel and supplies;
    - noise from blasting and from construction machinery and personnel;
    - artificial lighting; and
    - disruption of daily or seasonal movements;
- mortality resulting from:
    - collisions with vehicles or construction equipment;
    - collisions with power lines; and
    - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on a focal species, mitigation strategies will be identified where possible. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies (where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.16.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.16.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.16.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.17 MAMMALS

6.17.1 Rationale

The fringed myotis, spotted bat, Townsend's big-eared bat, western small-footed myotis, moose, badger, Great Basin pocket mouse, and mule deer were selected as focal species based on recorded observations of the species in the Project area during baseline studies, incidental observations or reported historical presence, or on the presence of suitable habitat, and in consideration of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Federal or provincial listing or regulation selection will include:

- Lists of Red and Blue-listed taxa thought to occur within the Kamloops Forest District as provided by the BC Conservation Data Centre (2010);
- Information on actual known location records of Red or Blue-listed taxa in or near the study area (provided by the BC Conservation Data Centre);
- Information on SARA- and COSEWIC-listed taxa available from the Government of Canada;
- Taxa listed as part of the Identified Wildlife Management Strategy (IWMS); and
- Taxa of regional concern; and data from targeted wildlife surveys and from incidental observations.

Focal species were selected considering the presence of suitable/capable habitat, the availability of sufficient species knowledge to produce a meaningful assessment, and likely interactions with the project (geographically and ecologically).

Current justification for selecting Mammals as a VC is summarized in Table 6.17-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 6.17-1 Summary of Rationale for VC: Mammal

Federal or provincial listing or regulation/ Guidelines	Provincial lists (Red/Blue, Conservation Framework priority) Federal lists - SARA, COSEWIC Regionally Important, IWMS
Applicable Government Agencies	EAO CEA Agency Working Group (EC, FLNRO, Ashcroft Indian Band)
Stakeholder input	Public Kamloops & District Fish and Game Association Kamloops Naturalist Club Grasslands Conservation Council Thompson Watershed Coalition
Scientific/professional knowledge (Information Sources)	Baseline Studies (Terrestrial Wildlife and Vegetation Baseline Report) Professional judgement based on relevant best practices
Spatial scope	Figure 6.8-1
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Areas of disturbance associated with the project components and activities including the Ajax Pit, Processing Plant, TSF, WRSFs, and transmission line.

6.17.2 Background

This section of the Application/EIS will provide detailed baseline information on the VC and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Field surveys will be used to:

- Confirm presence of target wildlife; and
- Confirm habitat associations of target species.

All wildlife/habitat surveys will be conducted according to RISC standards. Survey results identifying all species encountered, including timing of survey, will be provided as part of the Application/EIS. Locations of field studies and of any special habitat features will be documented using GPS receivers and recorded in NAD 83 UTMs. Representational habitats and any significant habitat features will be photographed.

6.17.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Using a combination of existing map sources and ecosystem mapping, an assessment of the expected area of disturbance associated with all Project facilities, buffered by a minimum 500 m, is proposed as the Local Study Area (Figure 6.8-1). The transmission line route will be assessed using existing mapping. The Regional Study Area will include the South Kamloops Landscape Unit and a portion of the Campbell Landscape Unit, including areas south of the Thompson River and west of Highway 97 (Figure 6.8-1).

6.17.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Potential effects will include:

- habitat alteration and loss associated with:
    - introduction of potentially toxic contaminants;
    - introduction or deposition of substances that physically alter habitats such as silt or dust;
    - introduction and dispersal of noxious weeds;
    - changes in drainage pattern that affect quality or quantity of surface or ground water available to wetlands or riparian habitats; and
    - removal of vegetation, or altering vegetation by mowing;
- disturbance and displacement associated with:
    - road traffic and transportation of mined rock, ore, personnel and supplies;
    - noise from blasting and from construction machinery and personnel;
    - artificial lighting; and
    - disruption of daily or seasonal movements;
- mortality resulting from:
    - collisions with vehicles or construction equipment;
    - collisions with power lines; and
    - lethal control of problem wildlife.

Where project activities/disturbances associated with construction and operations are likely to cause a negative impact on a focal species, mitigation strategies will be identified where possible. Potential strategies that would be recommended could include minor adjustments of project footprints to avoid particular sensitive habitats, specification of vegetation clearing schedules, garbage management, noxious weed control, and dust management. The potential effectiveness of each strategy will be discussed. Mitigation strategies will include proven methods, BMPs, legislative requirements (provincial and federal Acts) and species-specific recovery strategies (draft or final, where available). In addition to mitigating potential impacts, opportunities for site restoration and enhancement will be explored to help offset potential losses and improve biodiversity.

6.17.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects to the VC, following methodology presented in Section 5.1.5.

6.17.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

6.17.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

6.18 SUMMARY OF ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

Potential environmental effects will be summarized by Project phase in a table with the following format:

Table 6.18-1 Example Summary Table of Potential Environmental Effects

Valued Component	Potential Effects	Key Mitigation Measures	Summary Statement of Significance Analysis of Residual Effects

SECTION 7.0 - ASSESSMENT OF POTENTIAL ECONOMIC EFFECTS

There are inherent linkages between the economic and social environments, and as such, the study areas used for these VCs are similarly defined. The spatial boundaries were selected in order to compare those areas with the highest potential to experience impacts. For the purposes of baseline data collection, they are comprised largely of either a single or grouped census subdivisions, although in some instances data were collected within these regions as appropriate to each VC. Limitations or variances to data collection will be described for each VC.

The Local Study Area is for each of the economic VCs comprised of the City of Kamloops and Savona, which, combined, comprise the TNRD-J Copper Desert Country Census subdivision, Tk'emlúps te Secwepemc, and Skeetchestn Indian Band. Characterization of the LSA was undertaken through consideration of potential Project effects to socio-economic indicators and is considered as the area where most Project effects are likely to accrue. The Thompson Nicola Regional District (TNRD) was chosen as the Regional Study Area for all the economic VCs since the mine is within its political, financial, and administrative jurisdiction. The TNRD also represents the communities that are farther afield than the LSA that the mine could draw upon for employment. The defined LSA and RSA are shown on Figure 7.1-1.

7.1 ECONOMIC GROWTH

7.1.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Economic Growth as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Economic growth in the Application/EIS will include discussion regarding the estimated economic impact of the project on the region 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). Discussion of tax revenues (e.g., corporate, income) will also be included. Discussion on this VC will be informed by the Labour Force, Employment and Training VC and others as appropriate.

Current justification for selecting Economic Growth as a VC is summarized in Table 7.1-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 7.1-1 Summary of Rationale for VC: Economic Growth

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public
Scientific/professional knowledge (Information Sources)	Baseline Studies (Socio-Economic Baseline) British Columbia Input-Output Model Professional judgement based on relevant practice
Spatial scope	British Columbia
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.1.2 Background

Background information specific to this VC relates to numerous economic indicators discussed in detail under other VCs, for example employment, income, business and contract opportunities and economic diversification. As such, this section will focus on identifying where information relating to the BC Stats Input/Output model can be found in other parts of the Application/EIS.

7.1.3 Spatial and Temporal Boundaries

The spatial boundaries for the Economic Growth VC are not limited to the LSA or RSA as defined in Section 7.0, but rather forecast economic growth at a broader scale, including the impact of the Project on the overall B.C. economy. Economic growth within the LSA will also be considered as shown on Figure 7.1-1.

The temporal boundaries for the effects assessment are limited to the construction, and operation, decommissioning and closure and post-closure phases.

7.1.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify potential economic impacts using the input-out model developed by B.C. Stats.

7.1.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;

- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

7.1.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.1.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.2 LABOUR FORCE, EMPLOYMENT AND TRAINING

7.2.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing the local and regional Labour Force, Employment and Training as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Labour Force, Employment and Training are standard components of socio-economic impact assessments; they will be assessed together due to their interconnections. The key consideration with respect to labour and employment is the ability of the project to employ local residents. It is important to determine the percentage of the construction and operations workforce expected to be drawn from the local labour pool as it influences Project effects in other areas (e.g., infrastructure, public facilities and services). In addition, the number of employment positions and the skill sets that would be required provide potential opportunities for cooperation with local educational/training institutions. Discussion on this VC will help to inform discussion on several other VCs, including Economic Growth, Income, Infrastructure, Public Facilities and Services. The Business and Economic Diversification VCs will consider the outcomes of the Labour Force, Employment and Training assessment.

Current justification for selecting Labour Force, Employment and Training as a VC is summarized in Table 7.2-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 7.2-1 Summary of Rationale for VC: Labour Force, Employment and Training

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public
Information Sources	Baseline Studies (Socio-Economic Baseline) Professional judgement based on relevant practice Knowledge and experience of key personnel
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.2.2 Background

This section of the Application/EIS will provide a summary of the local and regional work force and employment base as well as current education, training and skills in the local and regional workforce. Background information will include traditional ecological or community knowledge relating to the VC, where available.

The construction, operation and decommissioning of the Project provides an economic pathway of effects through the creation of employment, training opportunities, and business expenditures. The ability of people to benefit from these effects is linked to their level of education and training, as well as their ability to access the opportunities.

7.2.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC,
- Maps outlining the spatial extent of the regional and local study areas of the EA, and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as described in Section 7.0 and shown on Figure 7.1-1.

The temporal boundaries of the assessment will be focused on the construction, operation, decommissioning and closure and post-closure.

7.2.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project relating to employment, including out-migration. It will include effects of construction, operation, decommissioning and closure, and post-closure activities.
- Identify and analyze benefits resulting from the Project relating to employment, including economic spin offs and population growth projections (based on local labour availability, consequent in-migration to take up Project related and spin off jobs and the family characteristics of in-migrants)
- Describe measures the Proponent will commit to undertaking to mitigate the identified potential adverse effects.
- Describe the Corporate Policy for education, training and skills development particular to the Project.

7.2.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects following methodology presented in Section 5.1.5.

7.2.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.2.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.3 INCOME

7.3.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Income as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Income is a standard component of socio-economic impact assessments and is linked to labour force and employment. It will be important to determine how much of the total income generated by the Project will be earned by residents of the LSA. The employment opportunities at the mine typically fall within a relatively high income range, which will benefit the LSA through direct, indirect and induced economic effects. Discussion on this VC will help to inform discussion on several other VCs, including Economic Growth and Economic Diversification. Inputs will come from discussion regarding the Labour Force, Employment and Training VC.

Current justification for selecting Income as a VC is summarized in Table 7.3-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 7.3-1 Summary of Rationale for VC: Income

Applicable Government Agencies	EAO CEA Agency Working Group
Stakeholder input	Public
Information Sources	Professional judgement based on relevant practice. Income data to be provided by proponent.
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.3.2 Background

This section of the Application/EIS will provide a summary of the local and regional income and the source of the information. Background information will include community knowledge relating to the VC, where available.

7.3.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC,
- Maps outlining the spatial extent of the regional and local study areas of the EA, and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as describe in Section 7.0 and shown on Figure 7.1-1.

The temporal boundaries of the assessment will address all project phases and are anticipated to focus on the operation phase of the Project.

7.3.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities, and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

7.3.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

7.3.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.3.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.4 BUSINESS

7.4.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Business as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Business opportunities are standard components of socio-economic impact assessments. The Project is expected to provide opportunities for local businesses during both construction and operation and, in-turn, create additional employment opportunities. The Project may also have other effects to certain business sectors, such as agriculture (including all sectors potentially affected). Discussion on this VC will help to inform discussion on several other VCs, including Economic Growth.

Current justification for selecting Business as a VC is summarized in Table 7.4-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 7.4-1 Summary of Rationale for VC: Business

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public
Scientific/professional knowledge (Information Sources)	Baseline Studies (Socio-Economic Baseline) Venture Kamloops Professional judgement based on relevant practice Knowledge and experience of key personnel
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.4.2 Background

This section of the Application/EIS will provide a summary of local and regional businesses and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

The construction, operation and decommissioning of the Project provides an economic pathway of effects through the creation of employment, training opportunities, and business expenditures.

7.4.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as describe in Section 7.0 and shown on Figure 7.1-1.

The temporal boundaries of the assessment will be focused on the construction, operation, decommissioning and closure and post-closure phases of the Project.

7.4.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities, and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

7.4.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

7.4.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.4.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.5 PROPERTY VALUES

7.5.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Property Values as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;

- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Property Values are included as a VC as the topic was raised by the public, including residents and administrators from the City of Kamloops, real estate agents, developers and landowners in the vicinity of the Project. Specific areas of concern included, but were not limited to, the Aberdeen, Upper Sahali, Knutsford and Pineview Valley neighbourhoods. This discussion will include consideration of residential, commercial, industrial, agricultural and other relevant property designations where feasible. Discussion on this VC will be informed by the Labour force, Employment and Training VC (through estimation of the potential population increase associated with the Project), as well as outcomes from the Air Quality, Noise and Vibration VCs and others as required (i.e., factors that could potentially affect property values). Impacts of the proposed power line will be considered in this VC.

Current justification for selecting Property Values as a VC is summarized in Table 7.5-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 7.5-1 Summary of Rationale for VC: Property Values

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public Aberdeen Highlands Development Corporation
Scientific/professional knowledge (Information Sources)	Baseline Studies (Socio-Economic Baseline) Professional judgement based on relevant practice
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.5.2 Background

This section of the Application will provide a summary of the local and regional property values and the source of the information. Potential effects on property value can be associated with pathways through demographic change (e.g., changes in population resulting from project-related in-migration or out-migration), potential project effects (e.g., dust, employment opportunities) and real estate market conditions in general.

In addition, modeling for noise (overpressure) and vibration (ground acceleration) will be referenced to assess the potential effects on neighbouring property values. Blasting typically represents the most

substantial source of vibration and noise; secondary sources of vibration and noise include haul truck movement, rail transport, and ore processing equipment such as crushers, mills, etc. Inputs to the noise and vibration model will include but not be limited to a review of blast plans to determine maximum total explosive charge per delay. Blast vibration predictions relative to the distance to receptor points will then be performed.

7.5.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as describe in Section 7.0 and shown on Figure 7.1-1.

The temporal boundaries of the assessment will be focused on the construction, operation, closure and decommissioning, and post-closure phases of the Project.

7.5.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project, including impact to housing affordability and availability. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

The socio-economic baseline will include a description of trends in property value. The effects assessment will attempt to characterize the impact of the mine on real estate prices and availability. This will be done through a review of similar studies/projects as well as a consideration of the different types of factors that can impact on real estate (e.g., forecast employment and business opportunities, potential nuisance or perception issues, and housing market conditions in general).

7.5.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

7.5.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;

- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.5.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.6 ECONOMIC DIVERSIFICATION

7.6.1 Rationale

The Application/EIS will include the rationale for including Economic Diversification as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Economic Diversification is included as a VC as public concerns have been raised which center around the risks of being too dependent on the mining sector. This section will include an assessment of the relative dependence of the RSA on mining, compared to other industries (e.g., tourism, government services). Discussion on this VC will be informed by discussion on other relevant VCs, including Income.

Justification of this VC as it relates to the Ajax Project will be further developed in the Application; Table 7.6-1 summarizes the current information supporting Economic Diversification as a VC.

Table 7.6-1 Summary of Rationale for VC: Economic Diversification

Applicable Government Agencies	EAO CEA Agency Working Group (NRCan)
Stakeholder input	Public, Kamloops Area Preservation Association
Scientific/professional knowledge (Information Sources)	Baseline Studies (Socio-Economic Baseline) Professional judgement based on relevant practice Relevant data inputs to be provided by proponent
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

7.6.2 Background

This section of the Application/EIS will provide a description of current trends in economic diversification and discuss relevant drivers of change.

7.6.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the area in which economic diversification is being considered.
- A description of the period of time over which relevant changes in the area's economy are being considered.

The study areas are those defined as the socio-economic LSA and RSA as describe in Section 7.0 and shown on Figure 7.1-1.

The temporal boundaries of the assessment will address construction, operations, closure, and post-closure.

7.6.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will contain a discussion of how the project will contribute to or impact economic diversification in the region through interaction with economic drivers including but not limited to:

- Forestry
- Ranching

- Operation and development of other mines in the area
- Tourism
- Promotion of the City as the tournament capital of BC through investment in sports facilities, and
- Thompson Rivers University and the influence of international students on the Kamloops economy.

7.6.5 Residual Effects and their Significance

The residual effects and significance of the Project on the economic diversity of the area will be assessed following methodology presented in Section 5.1.5.

7.6.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

7.6.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

7.7 SUMMARY OF ASSESSMENT OF POTENTIAL ECONOMIC EFFECTS

Potential economic effects will be summarized by Project phase in a table with the following format:

Table 7.7-1 Example Summary Table of Potential Economic Effects

Valued Component	Potential Effects	Key Mitigation Measures	Summary Statement of Significance Analysis of Residual Effects

SECTION 8.0 - ASSESSMENT OF POTENTIAL SOCIAL EFFECTS

There are inherent linkages between the economic and social environments, and as such, the study areas used for these VCs are similarly defined. The spatial boundaries were selected in order to compare those areas with the highest potential to experience impacts. For the purposes of baseline data collection, they are comprised largely of either a single or grouped census subdivisions, although in some instances data were collected within these regions as appropriate to each VC. Limitations or variances to data collection will be described for each VC.

The Local Study Area (LSA) is comprised of the City of Kamloops and Savona, which, combined, comprise the TNRD-J Copper Desert Country Census subdivision, Tk'emlúps te Secwepemc, and Skeetchestn Indian Band. Characterization of the LSA was undertaken through consideration of potential Project effects to socio-economic indicators and is considered as the area where most Project effects are likely to accrue. The Thompson Nicola Regional District (TNRD) was chosen as the Regional Study Area (RSA) since the mine is within its political, financial, and administrative jurisdiction. The TNRD also represents the communities that are farther afield than the LSA that the mine could draw upon for employment. The defined LSA and RSA are shown on Figure 7.1-1.

8.1 COMMUNITY HEALTH, AND WELL – BEING

8.1.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Community Health and Well-Being as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Issues of community health and well-being are standard components of socio-economic impact assessments, and were identified as being important during public consultation. Given the complex array of factors that can affect community health and well-being, this VC has linkages to other VCs, including Air Quality, Water Quality, Country Foods, and Noise and Vibration. Aboriginal and non-Aboriginal community health and well-being, including perceived changes to community image, changing economic situations, and Aboriginal Culture, will be assessed where information is available. Other VCs considered with respect to indirect effects to community health and well-being include economic VCs like income, social VCs such as infrastructure and services (e.g., availability of health services), and linkages to healthy living and health education. The overall quality of life for residents of Kamloops and surrounding areas will be addressed in this VC and will take into account information from other VCs such as Air Quality, Noise and Vibration, Aesthetics, Property Values, etc. Impacts on the desirability of the surrounding neighbourhoods (Aberdeen, Knutsford and Pineview Valley) will be evaluated.

Current justification for selecting Community Health and Well-Being as a VC is summarized in Table 8.1-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 8.1-1 Summary of Rationale for VC: Community Health and Well-Being

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public
Information Sources	Baseline Studies (Socio-Economic Baseline) Professional judgement based on relevant practice
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement

8.1.2 Background

This section of the Application/EIS will provide a summary of local and regional community health and the source of the information. This will include a review of health indicator data, health services indicators, socio-economic indicators of community health (e.g., the Community Well-Being Index), Aboriginal health issues, and community image. Background information will include community knowledge gathered during the key person interview program relating to the VC, where available.

8.1.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC,
- Maps outlining the spatial extent of the regional and local study areas of the EA, and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as describe in Section 7.0 and shown on Figure 7.1-1.

Consideration will be given to the construction, operation, decommissioning and closure and post-closure phases.

8.1.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities, and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

8.1.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

8.1.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

8.1.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.2 INFRASTRUCTURE, PUBLIC FACILITIES, AND SERVICES

8.2.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Infrastructure, Public Facilities, and Services, including all forms of transportation potentially affected, as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Infrastructure, public facilities, and services are standard components of socio-economic impact assessments. Potential effects within the LSA and RSA, primarily on the City of Kamloops, associated with the Project would be the presence/influx of Project workers, and indirect effects from changes in Environmental VCs and Economic VCs such as Income. An increase in population can create additional pressures on municipal facilities, municipal infrastructure, and services such as health care, emergency services, public transportation, and recreation facilities. It can also influence the availability of housing stock and temporary accommodations and cause changes to local traffic patterns.

Current justification for selecting Infrastructure, Public Facilities, and Services as a VC is summarized in Table 8.2-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

This valued component may have linkages to other VCs, including: Outdoor Recreation, Grasslands, Heritage Sites and Heritage Objects, and wildlife VCs.

Table 8.2-1 Summary of Rationale for VC: Infrastructure, Public Facilities, and Services

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops)
Stakeholder input	Public
Information Sources	Baseline Studies (Socio-Economic Baseline) Aboriginal Information, where available Professional judgement based on relevant practice
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure
Interaction with Project/Potential Effects	Project activities or components relating to Project workforce, population, housing, public facilities, public services; and transportation.

8.2.2 Background

This section of the Application/EIS will provide a summary of the local and regional infrastructure, public facilities and services, including transportation, and discuss the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

Infrastructure, public facilities, and services are commonly used to describe the regional and local areas and the communities located within. The pathway of effects between the Project and infrastructure, public facilities and services are generally through the presence (and/or influx) of construction and operation-related workers and their associated incomes. Higher incomes are often associated with improvements in housing, health and wellbeing to project workers and their families. The topics generally considered for the local and regional study areas in support of these pathways include:

- Population;
- Housing;
- Public facilities;
- Public services (including health and emergency services); and
- Transportation.

8.2.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC,
- Maps outlining the spatial extent of the regional and local study areas of the EA, and
- Description of the period of time to be examined in the VC assessment.

The study areas are those defined as the socio-economic LSA and RSA as described in Section 7.0 and shown on Figure 7.1-1.

Consideration will be given to the construction, operation, and decommissioning phases.

8.2.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities, and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

8.2.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

8.2.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

8.2.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.3 DARK SKY

8.3.1 Rationale

KAM will provide the rationale for assessing the quality of darkness of the night skies as a VC in the Application/EIS. Justification for inclusion is based on specific concerns expressed by the public, including residents of Kamloops and the Kamloops Astronomical Society. Based on this concern the EAO and CEA Agency have directed the Proponent to assess Dark Sky as a stand-alone VC.

Current justification for selecting Dark Sky as a VC is summarized in Table 8.3-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 8.3-1 Summary of Rationale for VC: Dark Sky

Applicable Government Agencies	EAO CEA Agency Working Group (EC)
Stakeholder input	Public, Kamloops Astronomical Society
Information Sources	Baseline Studies Aboriginal Information, where available Professional judgement based on relevant practice City of Kamloops, Kamloops Astronomical Society
Spatial scope	Figure 8.3-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure
Interaction with Project/Potential Effects	Project component and activities affecting lighting in the Project Area.

8.3.2 Background

This section of the Application/EIS will summarize existing light levels in proximity to the Project, including the Aberdeen, Knutsford, Sahali, and Pineview Valley subdivisions, and existing light levels at the Stake Lake observatory, Edith Lake Road and Lac Le Jeune Provincial Park.

8.3.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

Consideration will be given to the construction, operation, and decommissioning and closure phases. The preliminary local and regional study boundary is shown on Figure 8.3-1.

8.3.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will identify:

- Description of the Project components that may contribute to changes to dark sky;
- Effects of 24-hour operations on the surrounding neighbourhoods (existing and proposed) with respect to mine lighting with a focus on light levels during non-daylight hours;
- Mitigation measures that will be utilized to minimize project effects; and
- Residual effects.

8.3.5 Residual Effects and their Significance

The residual effects and significance of light remaining after implementation of mitigation measures will be assessed. The requirement for any monitoring and management plans, and follow-up and adaptive management programs will be discussed. Assessment of residual effects and significance will follow methodology presented in Section 5.1.5.

8.3.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

8.3.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.4 VISUAL IMPACT/ AESTHETIC FEATURES

8.4.1 Rationale

The Application/EIS will provide the rationale for including Visual Impact/Aesthetic Features as a VC in the Application/EIS. Justification for inclusion will be based on one or more of the following:

- Public or other stakeholder input;
- Relevant legislation or policy concerning the VC; and
- Aboriginal interest.

The visual impact of the Project was raised as a concern by the public and by local governments. Assessment of the potential visual impact of the Project will include consideration of changes to the view-shed and changes associated with shading for residents and local special interest groups.

Current justification for selecting Visual Impact/Aesthetic Features as a VC is summarized in Table 8.4-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 8.4-1 Summary of Rationale for VC: Visual Impact/Aesthetic Features

Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops, NRCan, MFLNRO)
Stakeholder input	Public Grasslands Conservation Council Kamloops Naturalist Club Kamloops & District Fish and Game Club
Scientific/professional knowledge (Information Sources)	Baseline Studies (Visual Impact Baseline, including Dark Sky Analysis) Professional judgement based on relevant practice and activities with potential for visual impacts Visual Quality Objectives from the Land and Resource Management Plan for the area Input from the public Input from the Working Group Input from Forests, Lands, Natural Resource Operations (FLNRO)
Spatial scope	Figure 8.4-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Potential changes to the visual landscape from Project components or activities relating to potential changes to the visual landscape including the WRSFs, ore/overburden stockpiles and TSF.

8.4.2 Background

This section will describe the current view-shed where the Project is situated. The analysis will be a visual impact assessment that examines various sight lines from different locations, including residential, recreational areas (including Jacko Lake), transportation routes (including the Coquihalla Highway, Lac le Jeune Road, Highway 5, Highway 5A, Goose Lake Road, Long Lake Road, and Edith Lake Roads, etc.) and commercial areas. The specific sight lines used in the visual impact assessment will be selected based on input from the public, Working Group members and information in the Visual Quality Objectives (VQOs) for the mine area. All input for sight line locations that have been given to the Proponent will be listed and the selected sight lines for the assessment will be justified with clear rationale, focussing on areas that are likely to be most impacted. Background information will include a summary of comments received during key person interviews regarding valued viewsheds.

The Application/EIS will also assess the potential for the Project to shade neighbouring properties. The assessment will utilize digital maps showing the potential direct sunlight and solar energy on the landscape for various time periods.

8.4.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description and map of:
    - Area in which views will be affected;
    - Lines of site; and,
    - Visual Quality Objectives.
- A description of the locations where shading is expected to lead to decreases in direct sunlight, at different points during the year at project completion; and
- A description of the period of time over which visual impacts will be assessed.

The study area for the visual impact assessment is focused on the socio-economic LSA and VQOs, (adjustments recommended on figure) and where effects are likely to be measureable or are important to people. The extent of effects will vary somewhat depending on whether visual impacts, or shading are being assessed; all locations for measurements for each will be identified.

Consideration will be given to the construction, operation, decommissioning and closure, and post-closure phases. The preliminary local and regional study boundary is shown on Figure 8.4-1.

8.4.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will contain:

- Description of the project components and activities (including blasting, as applicable) that may contribute to changes to the aesthetic environment including consideration of the viewshed, and shadows related to all components of the proposed operations and all phases of the Project;
- Results from visual impact assessment, including justification for selection and analysis of all lines of site;
- Visual simulations from key viewpoints showing project components and their predicted visual impacts during all phases of the Project;
- Shading effects from the WRSFs, ore/overburden stockpiles and the TSF;
- Mitigation measures, including site design considerations, approaches and features, and visual buffers that will be based on results of the visual impact assessment, and for which impacts exceed the established VQO, or are expected to be beyond public threshold ;
- Residual effects; and
- Description of: the retention targets in the VQOs for the area; working group input; public input; best practices; and professional judgement that was used for the assessment of effects and design of mitigation measures.

8.4.5 Residual Effects and their Significance

The residual effects and significance of visual impacts including changes associated with shading in the project area will be assessed. Information regarding monitoring programs and/or management plans will also be covered in this section. Assessment of residual effects and significance will follow methodology presented in Section 5.1.5

8.4.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology outlined in Section 5.1.6.

8.4.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.5 LAND AND RESOURCE USE

8.5.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Land and Resource Use as a VC. Justification for inclusion will be based on one or more of the following:

- Aboriginal interest;
- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Land and resource use is a standard component of socio-economic impact assessments. The Project could result in changes to the physical, terrestrial and aquatic environments, thereby having implications for land and resource use, including Aboriginal use (harvesting, practices, traditions, or customs), cattle ranching, forestry, mining and community land use. This section will include discussion of relevant municipal and regional land use plans and processes (e.g., City of Kamloops Official Community Plan, Aberdeen Area Plan, Kamloops Land and Resource Management Plan, City of Kamloops Agriculture Area Plan and others) and how the Project can be integrated with the overarching objectives of these plans. The assessment of effects to land and resources use will consider the indirect effects of various Environment VCs as appropriate (e.g., consideration of effects to ranching will consider potential effects to mammals).

Current justification for selecting Land and Resource Use as a VC is summarized in Table 8.5-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 8.5-1 Summary of Rationale for VC: Land and Resource Use

Applicable Government Agencies	EAO CEA Agency Working Group (TNRD, NRCan)
Stakeholder input;	Public Kamloops Area Preservation Association Kamloops Stockmen's Association Grasslands Conservation Council
Information Sources	Baseline Studies (Socio-Economic Baseline) Baseline data for grass, hayland and cattle production Kamloops Land and Resource Management Plan Professional judgement based on relevant practice Local knowledge and experience
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project activities or components relating to Project workforce, business (mining, forestry, etc.), recreational land use, agricultural land uses

8.5.2 Background

This section of the Application/EIS will provide a summary of local and regional land and resource use. Background information will include traditional ecological or community knowledge relating to the VC, where available.

The construction, operation, and decommissioning of the Project is anticipated to have effects on the physical and biophysical environments. The extent to which physical undertakings result in changes to the physical, terrestrial and aquatic environments may have implications for land and resource use and resource users in the local and regional study areas. In support of these potential pathways, the assessment will consider:

- Other Land and Resource Use;
- Recreational use;
- Community land and resource use planning and associated processes;
- Aboriginal use;
- Residential land use within or in proximity to the Project site;
- Agricultural land use, including ranching;
- Mining; and
- Forestry.

8.5.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional extent of the assessment relative to the VC,
- Maps outlining the spatial extent of the regional and local study areas of the EA, and
- Description of the period of time to be examined in the VC assessment.

The socio-economic local and regional study areas are as described in Section 7.0 and shown on Figure 7.1-1. Consideration will be given to the construction, operation, decommissioning and closure, and post-closure phases.

8.5.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities, and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

8.5.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology outlined in Section 5.1.5.

8.5.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology outlined in Section 5.1.6.

8.5.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.6 OUTDOOR RECREATION

8.6.1 Rationale

Outdoor Recreation was proposed as a VC through engagement with the EAO. The topic was deemed of sufficient concern to the general public to be assessed separately from Land and Resource Use. Public concerns related largely to the potential for lost or compromised recreational opportunities, primarily those associated with Jacko Lake, Inks Lake, Goose Lake and Goose Lake road. Activities taking place elsewhere in the vicinity of the Project will also be considered. Potential Project effects include access restrictions to currently used areas and perceived degradation of recreational experiences. Indirect effects of the Project on other VCs included in the environment and health disciplines will be considered in the assessment as appropriate (e.g., effects to Fish and Fish Habitat will be considered with respect to fishing).

Current justification for selecting Outdoor Recreation as a VC is summarized in Table 8.6-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 8.6-1 Summary of Rationale for VC: Outdoor Recreation

Applicable Government Agencies	EAO CEA Agency Working Group (TC)
Stakeholder input;	Public Kamloops Trails Alliance Kamloops Outdoors Club Kamloops Ridge Runners Overlander Ski Club Grasslands Conservation Council Kamloops Naturalist Club Kamloops & District Fish and Game Club Thompson Watershed Coalition
Information Sources	Baseline Studies (Socio-Economic Baseline) Professional judgement based on relevant practice Local knowledge and experience
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project activities or components relating to outdoor recreation by the Public including Parks and protected areas, hunting, trapping and fishing, mountain biking, hiking and birdwatching, astronomical observation, off-road vehicle use, navigation, cross-country skiing, snowshoeing, snowboarding and other recreational activities.

8.6.2 Background

This section of the Application/EIS will summarize the outdoor recreational opportunities around the Project area, and describe the values associated with them from a socio-economic perspective for the local and regional study areas. The following activities will be included in the category of outdoor recreation:

- Parks and protected areas;
- Hunting, trapping and fishing;
- Mountain biking, hiking and birdwatching;
- Astronomical observation;
- Off-road vehicle use;
- Navigation; and
- Cross-country skiing, snowshoeing and snowboarding.

8.6.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description and map of the location of areas that currently provide outdoor recreation opportunities; and
- A description of the period of time over which potential impacts to outdoor recreation will be assessed.

The socio-economic local and regional study areas are as described in Section 7.0 and shown on Figure 7.1-1.

Consideration will be given to the construction, operation, decommissioning and closure, and post-closure phases.

8.6.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Describe the potential effects of the Project on areas currently used for outdoor recreation and mitigation measures;
- Describe the perception of potential effects identified in key person interviews with recreational users of the area including Jacko Lake, Inks Lake, and multi-use roads and trails in proximity to the Project; and
- Address the intrinsic value of the area to recreational users, tourists, and others.

8.6.5 Residual Effects and their Significance

The residual effects and significance of disturbance to activities will be assessed following methodology presented in Section 5.1.5. Information regarding monitoring programs and/or management plans will also be covered in this section.

8.6.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

8.6.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.7 SUPPORTING TOPIC - JACKO LAKE

8.7.1 Rationale

The EAO originally directed the Proponent to assess Jacko Lake as a VC, based on input from the Technical Working Group. Treatment as a social VC, however, is problematic given the challenge of assessing the significance of an intangible issue – that being the perception of the effect of the proposed mine on Jacko Lake.

Currently a wide range of VCs associated with Jacko Lake will be assessed. With respect to the biophysical environment, Jacko Lake is considered in the context of Fish and Fish Habitat, Groundwater Quantity, Surface Water Quality and Surface Water Quantity VCs. Jacko Lake will also be assessed as part of the socio-economic VCs, including Outdoor Recreation, Land and Resource Use, Community Health and Well-being, Visual Impacts/Aesthetic and Economic Diversification. Consideration will also be given to health VCs such as Country Foods. Because of the variety of VCs that include Jacko Lake within their assessments, KAM proposes that Jacko Lake be treated as a supporting topic rather than a VC itself. This section will summarize the effects, mitigation measures, residual effects and determination of significance as appropriate to each related VC. Jacko Lake as a supporting topic will serve as a roll-up for discussion of the lake in the context of the other VCs and will allow the reader to refer to a single section for all issues related to Jacko Lake.

8.7.2 Background

This section of the Application/EIS will summarize the historical context of Jacko Lake, including a description of its uses over time. An overview of the importance of the lake based on key person interviews will be included. The section will also include a directory as to where other information regarding Jacko Lake can be found throughout the Application/EIS.

8.7.3 Spatial and Temporal Boundaries

Spatial and temporal effects to Jacko Lake will be delineated as appropriate to each VC. A summary of these boundaries will be provided here for context. Consideration will be given to the construction, operation, decommissioning and closure, and post-closure phases.

8.7.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will draw from other VCs and summarize:

- Potential effects specific to Jacko Lake as described in other parts of the Application;
- Discussion on the perceived effects to the lake as identified in key person interviews (e.g., recreational users);
- Suggested mitigation measures as described in other parts of the Application; and
- If required, other mitigation measures to address overall effects to the lake that are not captured by other VCs.

8.7.5 Residual Effects and their Significance

The residual effects and significance of disturbance to activities related to Jacko Lake (as addressed in other VC sections) will be summarized and discussed. Information regarding monitoring programs and/or management plans will also be summarized in this section. Assessment of residual effects and significance will follow methodology presented in Section 5.1.5

8.7.6 Cumulative Effects Assessment

KAM will provide a summary the following VCs related to Jacko Lake in the Application/EIS, as described in relevant sections:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

8.7.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

8.8 SUMMARY OF ASSESSMENT OF POTENTIAL SOCIAL EFFECTS

Potential socio-economic effects will be summarized by Project phase in a table with the following format:

Table 8.8-1 Example Summary Table of Potential Social Effects

Valued Component	Potential Effects	Key Mitigation Measures	Summary Statement of Significance Analysis of Residual Effects

SECTION 9.0 - ASSESSMENT OF POTENTIAL HERITAGE EFFECTS

9.1 HERITAGE OBJECTS

9.1.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing heritage objects as VC, considering baseline data, consultation activities, and any available and relevant traditional ecological or community knowledge.

Archaeological resources, including Aboriginal and non-Aboriginal heritage objects, in BC are protected under the *Heritage Conservation Act*. The following definitions are provided in the Act:

- *heritage object means, whether designated or not, personal property that has heritage value to British Columbia, a community or an aboriginal people, and*
- *heritage value means the historical, cultural, aesthetic, scientific or educational worth or usefulness of a site or object*.

Aboriginal interests related to heritage objects and potential project effects on those objects, and related mitigation will be described in Sections 13 and 14, as appropriate.

Current justification for selecting Heritage Objects as a VC is summarized in Table 9.1-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 9.1-1 Summary of Rationale for VC: Heritage Objects

Federal or provincial listing or regulation/ Guidelines	*Heritage Conservation Act*
Applicable Government Agencies	EAO CEA Agency Working Group (Skeetchestn Indian Band)
Stakeholder input	Public Grasslands Conservation Council Kamloops Stockman's Association Kamloops Naturalist Club
Information Sources	Archeological Impact Assessment Professional judgement based on relevant best practices
Spatial scope	Figure 9.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Area of disturbance in the Project footprint.

9.1.2 Background

This section of the Application/EIS will provide a general description of the local and regional heritage environment and the source of the information. Background information will include information obtained from an archaeological assessment and traditional ecological or community knowledge relating to the VC, where available.

An archaeological assessment will include an Archaeological Impact Assessment (AIA).

An AIA consists of surface examination and subsurface testing conducted under the authority of a *Heritage Conservation Act* Inspection Permit for the purpose of identifying previously unrecorded archaeological sites or reassessing known sites. An AIA includes description of any anticipated project impacts and management measures.

The "Reference Guide on Physical and Cultural Heritage Resources" (CEA Agency, 1996) will be considered and referenced when cultural heritage resources are assessed.

9.1.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area is on Figure 9.1-1. The area is defined as the direct area where cultural heritage resources may be physically impacted.

9.1.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects on heritage objects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Mitigation is undertaken in cases where unavoidable conflicts between archaeological resources and a proposed development are identified. Mitigation may involve project redesign or systematic data recovery (e.g., archaeological excavation) and follow-up analysis of any recovered artifacts or recorded features.

9.1.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;

- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

Significance will be assessed in relation to the heritage value, as defined under the *Heritage Conservation Act*, of the site.

9.1.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects; and
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

9.1.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

9.2 HERITAGE SITES

9.2.1 Rationale

Each Aboriginal community in BC has a unique interpretation of cultural heritage resource values. The Application/EIS will describe the rationale for selecting and assessing Aboriginal and non-Aboriginal Heritage Sites as a VC, considering baseline data, consultation activities, and any shared and relevant community knowledge.

Archaeological resources, including heritage sites, in BC are protected under the *Heritage Conservation Act*. The following definitions are provided in the Act:

- *heritage site means, whether designated or not, land, including land covered by water, that has heritage value to British Columbia, a community or an aboriginal people, and*
- *heritage value means the historical, cultural, aesthetic, scientific or educational worth or usefulness of a site or object*.

Section 10 of the Forest Planning and Practices Regulation of the *Forest and Range Practices Act* outlines the government objective for cultural heritage resources that are the focus of a traditional use by an Aboriginal people and not regulated under the *Heritage Conservation Act*. Many natural resources such as plants, animals, and habitat types have cultural values. According to the Forest and Range Evaluation Program a cultural heritage resource is defined as (FREP Cultural Heritage Resource Value Data Management Guidelines, 2011):

"*An object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people*"

Therefore heritage sites will be considered a VC in the Project assessment. The proponent will work with Aboriginal groups to identify any additional heritage resources that are not captured within the environmental, economic, social, or health assessment categories.

Current justification for selecting Heritage Sites as a VC is summarized in Table 9.2-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 9.2-1 Summary of Rationale for VC: Heritage Sites

Federal or provincial listing or regulation/ Guidelines	Heritage Conservation Act
Applicable Government Agencies	EAO CEA Agency Working Group (Skeetchestn Indian Band)
Stakeholder input;	Public
Information Sources	Archeological Impact Assessment Professional judgement based on relevant best practices
Spatial scope	Figure 9.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Area of disturbance in the Project footprint.

9.2.2 Background

This section of the Application/EIS will provide a general description of the local and regional heritage environment and the source of the information. Background information will include information obtained from an archaeological assessment and traditional ecological or community knowledge relating to the VC, where available.

An archaeological assessment will include an Archaeological Impact Assessment.

The "Reference Guide on Physical and Cultural Heritage Resources" (CEA Agency, 1996) will be considered and referenced when cultural heritage resources are assessed.

9.2.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;

- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area is on Figure 9.1-1.

9.2.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects on heritage sites resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Mitigation is undertaken in cases where unavoidable conflicts between archaeological sites and a proposed development are identified. Mitigation may involve project redesign and follow-up analysis of any recovered artifacts or recorded features.

9.2.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following methodology presented in Section 5.1.5.

Significance will be assessed in relation to the heritage value, as defined under the *Heritage Conservation Act*, of the object, and in consultation with affected Aboriginal groups.

9.2.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects; and
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

9.2.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

9.3 SUMMARY OF ASSESSMENT OF POTENTIAL HERITAGE EFFECTS

Potential heritage effects will be summarized by Project phase in a table with the following format:

Table 9.3-1 Example Summary Table of Potential Heritage Effects

Valued Component	Potential Effects	Key Mitigation Measures	Summary Statement of Significance Analysis of Residual Effects

SECTION 10.0 - ASSESSMENT OF POTENTIAL HEALTH EFFECTS

A Human Heath and Ecological Risk Assessment (HHERA) is being completed; the HHERA will include the potential effects of the Project with regards to chemicals of concern, relevant human ecological receptors, and exposure pathways. The HHERA will be provided as an appendix to the Application/EIS and the findings of the HHERA will inform the assessment of the Human Health VC, the Country Foods VC, and applicable environmental VCs (Section 6). The HHERA will be completed based on guidance documents from Health Canada (see information sources listed in Table 10.4-1).

10.1 AIR QUALITY

10.1.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Air Quality as a VC. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Criteria Air Contaminants will be assessed because of the potential risks to human health. Federal and provincial governments have ambient air quality objectives to ensure long-term protection of human health, an especially important issue for the Ajax Project due to its proximity to Kamloops. The components used to measure Air Quality are described in Section 10.1.4.

Current justification for selecting Air Quality as a VC is summarized in Table 10.1-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS. The impacts of the mine on the Kamloops Airshed Management Plan (2012) will be addressed.

Table 10.1-1 Summary of Rationale for VC: Air Quality

Federal or provincial listing or regulation/ Guidelines	Government of Canada; National Ambient Air Quality Objectives (NAAQO). British Columbia Ministry of Environment; Provincial Air Quality Objective Information Sheet (Updated August 12, 2013). Environment Canada; Canadian Ambient Air Quality Standards British Columbia Ministry of Environment; Guidelines for Air Quality Dispersion Modelling in British Columbia
Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops, IH, HC, MOE, EC)
Stakeholder input;	Public (Kamloops Area Preservation Association) Kamloops Food Policy Council
Information Sources	Baseline Studies (Air Quality Baseline) HHERA Kamloops Airshed Management Plan Professional judgement based on relevant best practices
Spatial scope	Figure 10.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities that will be considered in the effects analysis for air quality and human health include: • Trucks and heavy equipment direct emissions; • Indirect emissions from mine activity and haul-road/access road traffic (e.g., fugitive road dust); • Emissions from blasting activities; • Stationery equipment (e.g., crushers, conveyors, generators); and Emissions from area sources such as exposed tailings, disturbed land surfaces, and waste rock piles; and • Indirect impact through related VCs.

10.1.2 Background

This section of the Application/EIS will provide a summary of local and regional air quality and discuss the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, including the Kamloops Airshed Management Plan (2012), where available.

The Application/EIS will present background information on air quality in the local and regional air shed. The baseline dustfall monitoring program will follow the 2004 revision of the “Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter)” (ASTM International Designation D 1739-98).

Long-term baseline information on particulate matter (PM) is available for the project area from the National Air Pollution Surveillance Program (NAPS), a combined federal, provincial, and municipal program established in 1969 to assess ambient air quality in populated regions in Canada. The NAPS Brocklehurst station is located approximately 7 km from the northern edge of the project footprint. Additionally, baseline air quality information for fine particulate matter has been made available by the BC Ministry of Environment for ten locations in the area.

Information on industrial facility pollutant releases and disposals to air, water and land are also available for the region from the National Pollutant Release Inventory (NPRI) of Environment Canada, under authority of the Canadian Environmental Protection Act. NPRI also provides emission estimates for motor vehicles, agricultural activities, and forest fires. The Application/EIS will present a summary of PM and trends compiled from NAPS and NPRI datasets relevant to the Project area.

The emission inventory will include all substances of interest (Criteria Air Contaminants) listed in Section 10.1.4. The Federal or Provincial guidance documents listed in Table 10.1-1 will be referenced as a guiding principle in the development of the air quality assessment program.

10.1.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area boundary, shown on Figure 10.1-1, is a 30 km by 30 km area. This area is a sub-set of a CALPUFF modelling domain 70 km wide by 55 km long and centered on the Project site. The Application/EIS will clearly define the study area and the criteria used to determine the boundaries used for assessing potential human health effects. The study area description will identify potential receptors (residential, commercial and industrial land uses) and sensitive sub-populations, as well as the distance from each to project construction and operational components. Sensitive receptors have been identified in consultation with the EAO, CEA Agency, members of the Technical Working Group, stakeholders, and the public.

10.1.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project during operations;
- Clearly describe ambient air quality in the study area and the projected emissions from the project; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

Project components and activities that will be considered in the effects analysis for air quality and human health include:

- Trucks and heavy equipment direct emissions;
- Indirect emissions from mine activity and haul-road/access road traffic (e.g., fugitive road dust);
- Emissions from blasting activities;
- Stationery equipment (e.g., crushers, conveyors, generators); and
- Emissions from area sources such as exposed tailings, disturbed land surfaces, and waste rock piles.

Fugitive dust may be generated during all phases of the Project, from drilling, blasting, and traffic along unpaved haul roads and access roads. Dust from the TSF and waste rock management facilities could also be mobilized on windy days. Air quality dispersion modelling will be used to predict ambient air quality during Project operation. The Application/EIS will list and/or provide in an appendix all substances of interest (air quality) that will be assessed.

The model used will be in accordance with Guidelines for Air Quality Dispersion Modelling in British Columbia (MOE 2008) using three years of prognostic meteorological data (2003-2005). As per the Guideline the CALPUFF Version 6.112, an air quality dispersion model and CALMET Version 5.8, a diagnostic 3-dimensional (3D) meteorological model, will be used. CALMET will use surface meteorological observations from four stations (two in the valley and two outside the valley), upper air data, and prognostic meteorological data. These data include all meteorological phenomenon that occurred in those years, including inversions, topographically-generated winds (katabatic and anabatic winds), frontal passages, rain and snow events and strong convective heating.

The CALPUFF modelling domain is the area within which air quality impacts will be assessed. The substances of interest (Criteria Air Contaminants) emitted from Project emission sources that will be included in dispersion modelling for all gridded receptors (locations identified in the model plan based on input from the technical working group) in the modelling domain are:

- Total Dustfall (DF);
- Total Suspended Particulate Matter (TSP);
- Inhalable Particulate Matter (PM_{10});
- Respirable Particulate Matter ($PM_{2.5}$);
- Sulphur Dioxide (SO_2);
- Total Oxides of Nitrogen (NO_x); and
- Carbon Monoxide (CO).

These were selected based upon the quantities emitted and previous experience with similar projects. Ultrafine particles (<1.0 µm in diameter) are a sub-set of $PM_{2.5}$ and of emerging interest from a human health perspective. These particles are a sub-set of $PM_{2.5}$, and are thus captured in the current scope of the assessment and the HHERA will include discussion on ultrafine particles.

The substances of interest emitted from Project emission sources that will be included in dispersion modelling only at discrete ‘special receptors’ are:

- Metals in Dustfall and Total Suspended Particulate Matter including:
  - Antimony;
  - Arsenic;
  - Cadmium;

- Chromium;
- Cobalt;
- Copper;
- Lead;
- Mercury;
- Molybdenum;
- Nickel;
- Selenium;
- Tin;
- Vanadium; and
- Uranium.

- Plus, as a proxy for 'diesel particulate matter' (for which there are no applicable criteria):
  - Polynuclear Aromatic Hydrocarbon species expressed as Benzo (a) Pyrene (B(a)P) equivalent.

These substances were selected because they were present in test results and because there is the potential for human exposure or uptake into plants from the mobile portion of the substances. Substances that have not been assessed owing to their not meeting a minimum concentration threshold for inclusion in the HHERA will be identified and a rationale as to why they were not assessed will be included. These substances will be modelled to produce output suitable for use in other VC analysis. The locations of the special receptors were identified by the toxicologists performing the HHERA and include:

- Sensitive ecosystems (e.g. a lake);
- Nearby homes; and
- Places frequented by sensitive sub-populations of the community (e.g. children, the elderly, and those under medical care, such as schools, medical treatment facilities, daycare facilities, and retirement homes).

The standards or benchmarks used towards the assessment of the human health significance of the described ambient and emission inventories and fugitive dust will be clearly presented in the Application/EISand will include:

- Government of Canada; National Ambient Air Quality Objectives (NAAQO).
- British Columbia Ministry of Environment; Provincial Air Quality Objective Information Sheet (Updated August 12, 2013).
- Environment Canada; Canadian Ambient Air Quality Standards

The effects assessment will consider a modelling domain 30 km by 30 km centered on the Project site. As per the MOE's direction the CALPUFF regulatory dispersion model for the year that results in the highest predictions will be used, except in the case where regulatory criteria specify a 3-year averaging interval. Particulars include:

- For the entire domain seven parameters will be modelled (DF, TSP, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO)

- For a series of 200+ special receptors (nearby homes, schools, and places of interest) speciated DF and $PM_{2.5}$ results (e.g., specific metals listed above) will be presented. Results will be an input to the HHERA model.

Mitigation measures will be discussed to minimize the release of fugitive dust and particulate matter during all phases of construction, operation, and decommissioning and closure as well as post-closure. As a mitigation measure, a complaint response and resolution policy will be developed. Progressive reclamation measures that control dust generation will also be included as mitigation. Monitoring programs, including assessment of the effectiveness of mitigation measures throughout the life of the mine and into the post-closure period, will include annual reporting requirements.

10.1.5 Residual Effects and their Significance

The assessment of residual effects related to air quality and the determination of their significance will be addressed in the Human Health VC (Section 10.4) where the residual effects and the significance of these effects will be based on the assessment of human exposures to Project-related chemicals from multiple sources (air, drinking water, country foods, local produce, etc.).

10.1.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following methodology presented in Section 5.1.6.

The cumulative effects assessment will consider existing industrial, commercial, and residential activities in the region. These will be included in the assessment trough dispersion modelling of existing sources, and then mathematically added to the results of the proposed project dispersion modelling results. Existing activities that may contribute to background air quality in the Kamloops area near the Project site will be assessed as per Section 5.

10.1.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of nature and likelihood of the residual and cumulative effects.

10.2 DOMESTIC WATER QUALITY

10.2.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Domestic Water Quality as a VC. Justification for inclusion will be based on one or more of the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

The Government of British Columbia has a goal of leading the way in North America in healthy living and fitness. There are many factors affecting healthy living and fitness; however, one of the key factors with respect to the Project is environmental health, which includes potable water quality. This section of the Application/EIS will assess potential effects of the project on water sources used for drinking water, irrigation and livestock water, and recreation. This will also include an assessment of local aquifers in comparison to drinking water standards a map of their locations in relation to the project area.

Current justification for selecting Domestic Water Quality as a VC is summarized in Table 10.2-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 10.2-1 Summary of Rationale for VC: Domestic Water Quality

Federal or provincial listing or regulation/ Guidelines	Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Agricultural Water Uses Health Canada – Guidelines for Canadian Drinking Water Quality Health Canada – Guidelines for Recreational Water Quality Approved, Working Water Quality Guidelines (Criteria) Reports for drinking water, irrigation, and recreation and aesthetics
Applicable Government Agencies	EAO CEA Agency Working Group (HC, IH, MOE)
Stakeholder input;	Public (Kamloops Area Preservation Association)
Information Sources	Baseline Studies (Water Quality Baseline) Professional judgement based on relevant best practices
Spatial scope	Figure 6.3-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities including site clearing and grading, soil salvage and topsoil storage, excavation, explosives storage and use, stream crossings and access roads, water management, open pit development, TSF, Peterson Creek stream diversion around open pit, WRSFs, fugitive dust, ML/ARD, Ore and tailings processing (chemical additives), Civil structures, and closure and reclamation activities.

10.2.2 Background

This section of the Application/EIS will provide a summary of the local and regional water quality and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available. Included in this section will be a discussion of the potable water supply for the Project, including treatment of any source water, compliance with the Drinking Water Protection Act, and reference to the Guidelines for Canadian Drinking Water Quality Summary Table (Federal-Provincial-Territorial Committee on Drinking Water, Federal-Provincial-Territorial Committee on Health and the Environment, December 2010).

10.2.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area for the human health effects assessment is the same as for the surface water quality effects, as shown on Figure 6.3-1.

10.2.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects on water quality of drinking water sources (surface and groundwater) used by any human receptor, including Aboriginal people, resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure;
- Results of the assessment of potential adverse effects on drinking water quality will be incorporated into the human health assessment VC (Section 10.4), where the potential adverse health effects associated with exposures from multiple sources (drinking water, country foods (wild meat, vegetation, fish), air, soil, local produce *etc.* will be determined; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

This section will include a discussion of airborne contaminants of potential concern and the potential effects of these on domestic water quality throughout the life of the mine, including post-closure, and proposed mitigation.

Results will be assessed against the Guidelines for Canadian Drinking Water Quality Summary Table (Federal-Provincial-Territorial Committee on Drinking Water, 2010). The Application/EIS will outline the proposed mitigation measures with respect to any exceedances of the Guidelines for Canadian Drinking Water Quality and other applicable guidelines and legislation for the LOM as well as the post-closure period. Mitigation measures will include a complaint response and resolution policy.

10.2.5 Residual Effects and their Significance

The assessment of residual effects related to the consumption of domestic water and the determination of their significance will be addressed in the Human Health VC (Section 10.4) where the residual effects and the significance of these effects will be based on the assessment of human exposures to Project-related chemicals from multiple sources (air, drinking water, country foods, local produce, etc.).

10.2.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following the methodology outlined in Section 5.1.6.

10.2.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- Discussion of significance of the contribution that domestic water makes to the residual and cumulative effects from all Project-related exposure sources on human health.

10.3 COUNTRY FOODS

10.3.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Country Foods as a VC. Justification for the inclusion of Country Foods will be based on one or more of the following:

- Federal or provincial guidance;
- Aboriginal interest;
- Public or other stakeholder input; and
- Scientific/professional knowledge;

Country Foods is included as a VC in the effects assessment based on direction received from Health Canada in consultation with the Technical Working Group. Trapping, hunting, fishing and harvesting of country foods on the mine site has been identified by Aboriginal groups and the public as well as community and backyard gardens that may be potentially impacted by mine activities.

Current justification for selecting Country Foods as a VC is summarized in Table 10.3-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 10.3-1 Summary of Rationale for VC: Country Foods

Applicable Government Agencies	EAO CEA Agency Working Group (IH, MOE, HC)
Stakeholder input;	Public (Kamloops Area Preservation Association) Kamloops Food Policy Council First Nations
Information Sources	Health Canada's Useful Information for Environmental Assessments Guidance Document Federal Contaminated Site Risk Assessment in Canada: Supplemental Guidance on Human Health Risk Assessment for Country Foods – HC 2010 HHERA A Framework for Ecological Risk Assessment – Canadian Council of Ministers of the Environment (CCME 1996). Professional judgement based on relevant best practices
Spatial scope	Figure 10.3-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Disturbance area within the project footprint Indirect impact through related VCs (such as air quality and water quality, dust deposition on backyard gardens)

10.3.2 Background

This section of the Application/EIS will provide a summary of local and regional sources of Country Foods and the source of the information. Background information will include traditional ecological and community knowledge relating to the VC, where available.

In the assessment, the definition of Country Foods will be in accordance with the Health Canada guidance documents as follows: "Country foods, also known as traditional foods, include those foods trapped, fished, hunted, harvested or grown for subsistence or medicinal purposes, or obtained from recreational activities such as sport fishing and/or game hunting. Country foods do not include foods produced in commercial operations (large farms, greenhouses, etc.)." However, all potential ingestion routes, and rationalization for inclusion/exclusion as a pathway of significance, will be included in the Application/EIS.

The assessment will consider all potential exposure pathways for ecological receptors, including those used as sources of country foods (wild meat, vegetation and fish). The assessment will provide scientifically sound rationale to support the inclusion of exposure pathways that contribute to exposures to Project-related chemicals for country foods. It will also provide scientifically sound rationale to support the exclusion of exposure pathways that do not contribute to exposures to Project-related chemicals in the Application/EIS.

10.3.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area for the country foods assessment is the same as for the air quality effects, as shown on Figure 10.1-1.

10.3.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects on Country Foods from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities;
- Show results of detailed quantitative modelling of metal concentrations in plant and animal tissues, focussing on those plants and animals used as sources of Country Foods;
- Serve as a data source on metal concentrations in Country Foods to be used in the Human Health assessment (Section 10.4) as one of the exposure pathways considered in the assessment of potential adverse health effects;
- Discuss the limitations or uncertainties associated with any analysis and modelling, including assumptions, reliability or variability of the results, and confidence in the results, in accordance with the methodology presented in Section 5.1.1; and
- Describe measures the Proponent will commit to undertaking to mitigate potential adverse health effects specific to the consumption of country foods.

10.3.5 Residual Effects and their Significance

The assessment of residual effects related to the consumption of country foods and the determination of their significance will be addressed in the Human Health VC (Section 10.4) where the residual effects and the significance of these effects will be based on the assessment of human exposures to Project-related chemicals from multiple sources (air, drinking water, country foods, local produce etc.).

10.3.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects on ecological health and on metal levels in Country Foods for inclusion in the human health assessment;
- An assessment of the significance of the cumulative effects, following the methodology outlined in Section 5.1.6.

10.3.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects;
- A discussion about the confidence in the modelled results; and
- Discussion of significance of the residual and cumulative effects.

10.4 HUMAN HEALTH

10.4.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Human Health as a VC. Justification for the inclusion of Human Health will be based on one or more of the following:

- Federal or provincial guidance;
- Aboriginal interest;
- Public or other stakeholder input; and
- Scientific/professional knowledge;

Human Health is included as a VC in the effects assessment based on direction received from Health Canada in consultation with the Technical Working Group, and from response received to date through First Nations and public engagement.

Current justification for selecting Human Health as a VC is summarized in Table 10.4-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 10.4-1 Summary of Rationale for VC: Human Health

Applicable Government Agencies	EAO CEA Agency Working Group (IH, MOE, HC)
Stakeholder input;	Public (Kamloops Area Preservation Association) Kamloops Food Policy Council First Nations
Information Sources	Federal Contaminated Sites Risk Assessment in Canada, Part I: Guidance on Human Health Risk Preliminary Quantitative Risk Assessment (PQRA), Version 2.0 (Health Canada 2010a); Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values(TRVs) and Chemical-Specific Factors, Version 2.0 (Health Canada 2010b); Federal Contaminated Sites Risk Assessment in Canada, Part V: Guidance on Complex Human Health Detailed Quantitative Risk Assessment for Chemicals ($DQRA_{CHEM}$) (Health Canada 2010c); Health Canada. 2010d. Federal Contaminated Site Risk Assessment in Canada. Supplemental Guidance on Human Health Risk Assessment for Country Foods ($HHRA_{AIR}$). Draft. Version 1.2. October 2010. Contaminated Sites Division – Health Canada Health Canada. 2010e. Federal Contaminated Site Risk Assessment in Canada. Supplemental Guidance on Human Health Risk Assessment for Country Foods ($HHRA_{FOODS}$). Draft. Version 1.2. October 2010. Contaminated Sites Division – Health Canada A Framework for Ecological Risk Assessment – Canadian Council of Ministers of the Environment (CCME 1996). Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Agricultural Water Uses Health Canada – Guidelines for Canadian Drinking Water Quality Health Canada – Guidelines for Recreational Water Quality Approved, Working Water Quality Guidelines (Criteria) Reports for drinking water, irrigation, and recreation and aesthetics Professional judgement based on relevant best practices
Spatial scope	Figure 10.1-1 (preliminary)

Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Disturbance area within the project footprint Indirect impact through related VCs (such as air quality and water quality, dust deposition on backyard gardens)

10.4.2 Background

This section of the Application/EIS will provide a summary of baseline human health as it related to human exposures to chemicals released to the environment by the Project. Background information will include traditional ecological and community knowledge relating to the VC, where available.

The human health assessment will follow standard human health risk assessment (HHRA) protocols as outlined in the guidance documents listed in Table 10.4-1). The HHRA will consider all potential exposure pathways (including, air, drinking water and country foods such as wild meat, vegetation, fish and traditional medicines), for human receptors for Aboriginal and non-Aboriginal people for all age groups and will consider sensitive members of the population (young children, the elderly, pregnant women *etc.)*. The HHRA will provide scientifically sound rationale to support the inclusion of exposure pathways that contribute to exposures to Project-related chemicals. It will also provide scientifically sound rationale to support the exclusion of exposure pathways that do not contribute to exposures to Project-related chemicals in the Application/EIS.

10.4.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The preliminary study area for the HHRA assessment is the same as for the air quality effects assessments, as shown on Figure 10.1-1.

10.4.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Show results of modelling of deposition of metals into soils from airborne particulate matter over the lifetime of the project;
- Assess cumulative uptake of metals from soil into garden produce and other plant-based country foods, and
- Conduct a detailed quantitative human health risk assessment that evaluates human exposures to Project-related chemicals from multiple sources (air, soil, domestic water, local produce, country foods *etc.*), including the cumulative contaminant loads into soils and the effect that this has on chemical levels in local produce, country foods and forage over the full predicted operating life of the Project.

- Identify and analyze potential adverse health effects associated with the multi-media exposures (country foods, water, air, local produce, soil) to Project-related chemicals. It will include effects of construction, operation, decommissioning and closure, and post-closure activities,
- Discuss the limitations or uncertainties associated with any analysis and modelling, including assumptions, reliability or variability of the results, and confidence in the results, in accordance with the methodology presented in Section 5.1.1; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

10.4.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects, following the methodology outlined in Section 5.1.5.

10.4.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects, following the methodology outlined in Section 5.1.6.

10.4.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects;
- A discussion about the confidence in the modelled results; and
- Discussion of significance of the residual and cumulative effects.

10.5 NOISE AND VIBRATION

10.5.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing Noise and Vibration as a human health VC. It addresses vibration (ground and air) and noise from daily blasting and other mine activities. Justification for inclusion will be based on the following:

- Federal or provincial listing or regulation;
- Aboriginal interest;
- Public or other stakeholder input;
- Scientific/professional knowledge; and
- Relevant legislation or policy concerning the VC.

Due to the proximity of the project to the City of Kamloops and to rural residences, noise and vibration effects have been identified as a concern. The noise and vibration assessment for potential human health effects will cover a broad area with a wide array of residential receptors ranging from urban and suburban to rural and quiet rural locations.

Current justification for selecting Noise and Vibration as a VC is summarized in Table 10.5-1.

Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 10.5-1 Summary of Rationale for VC: Noise and Vibration

Federal or provincial listing or regulation/ Guidelines	Noise • The British Columbia Noise Control Best Practices Guideline. BC Oil and Gas Commission. 2009. • Health Canada Useful Information for Environmental Assessments document 2010 • WHO (World Health Organization) 2009. Night Noise Guidelines for Europe; and • American National Standards Institute (ANSI) S12.9-2005 Vibration • Ontario Ministry of Environment Model Municipal Noise Control By-Law, Noise Pollution Control, Section 119 (NPC-119) (1978). • • US Bureau Mining • Environmental Code of Practice for Metal Mines. Environment Canada 2009. • Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Fisheries Act) • City of Toronto Construction Vibration Limit (ByLaw-514)
Applicable Government Agencies	EAO CEA Agency Working Group (City of Kamloops, IH, HC, MOE, TNRD)
Stakeholder input;	Public Kamloops Area Preservation Association Kamloops Stockmen's Association Grasslands Conservation Council
Information Sources	HHERA Professional judgement based on relevant best practices
Spatial scope	Figure 10.4-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project components and activities relating to noise and vibration including: • Drilling and blasting; • Heavy equipment operation (excavators, shovels, loaders, etc.); • On-site vehicle traffic (concentrate trucks, fuel delivery trucks, etc.); • Conveyors; • Crushing; • Milling; and • Screening. • Indirect impact through related VCs

10.5.2 Background

This section of the Application/EIS will provide a summary of the local and regional background and the source of the information. Background information will include traditional ecological or community knowledge relating to the VC, where available.

A Type 1 or Type 2 integrating/datalogging sound level meter or similar will be used to monitor baseline daytime and night time sound levels at receptor locations. The study will involve direct 24-h continuous monitoring of comprehensive sound parameters ("slow" response, "A"- weighting network, one minute intervals). A weather resistant enclosure reduces the potential for wind-induced noise.

The baseline sound level measurements and blasting noise and vibration assessment will be consistent with:

- ISO 1996-2:2007. Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.
- Ontario Ministry of Environment Model Municipal Noise Control By-Law, Noise Pollution Control, Section 119 (NPC-119) (1978).

10.5.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The study area is shown on Figure 10.4-1. Sound levels will be compiled from manufacturer's equipment data sheets and applicable acoustical databases to refine the local and regional study areas based on sound propagation and attenuation. Receptor populations will be identified in consultation with the EAO, CEA Agency, Technical Working Group, stakeholders and the public, and will include sensitive sub-population identification.

10.5.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential adverse effects resulting from the Project. It will include effects of construction, operation, and decommissioning and closure activities, as well as post-closure; and
- Describe measures the Proponent will commit to undertaking to mitigate the potential adverse effects identified above.

10.5.4.1 Noise Assessment

The Application/EIS will identify and evaluate potential effects of the Project on noise levels and propose mitigation measures for all phases of the Project to minimize the identified effects. During construction and operation of the Project noise will be generated from several activities, including:

- Drilling and blasting;

- Heavy equipment operation (excavators, shovels, loaders, etc.);
- On-site vehicle traffic, including all operating conditions and the use of engine brakes and back-up alarms (concentrate trucks, fuel delivery trucks, etc.);
- Loading and unloading of trucks;
- Conveyors;
- Crushing;
- Milling; and
- Screening.

A description of the blasting regime (schedule, number of holes, etc.) will be included in the Application/EIS.

The CadnaA Version 4.4.145 (2014) (Computer Aided Noise Abatement) will be used to assess the noise impact from the project at the sensitive receptors. A noise modelling domain 20 km by 15 km will be used. The key technical requirements are the following:

- The sound propagation algorithms will be based on International Organization for Standardization (ISO) 9613-1 and ISO 9613-2, which are internationally recognized standards and accepted by the BC OGC for sound propagation modelling.
- Modelling will be based on representative ground terrain and conservative meteorological conditions that enhance sound propagation from the sources to the receivers (e.g., downwind and mild temperature inversion conditions).
- Predicted effects will be evaluated relative to the guidelines or guidance as presented in Table 10.5-1.

10.5.4.2 Assessment of Vibration and Overpressure from Daily Blasting Activities

There are a number of potential sources of vibration associated with mining operations. Blasting typically represent the most substantial source of vibration and overpressure. Secondary sources of vibration which include haul truck movement, and ore processing equipment such as crushers, mills, etc., can also be important.

The vibration assessment will focus on airborne/airblast and ground-borne effects for area residences (rural and suburban), recreation areas, communication towers, industrial structures, and historic underground working areas. The assessment will compare the predicted levels to guidelines and guidance as outlined in Table 10-4.1. The common descriptors of vibration include peak particle velocity specified in mm/s or in/s and used to characterize single events such as blasts of vehicle pass-bys; and vibration acceleration measured in m/s^2 or vibration acceleration level measured in dB, often used to characterize continuous sources such as operating machinery. The common descriptors of overpressure (P) is in pascals (Pa).

Vibration from blasting will be assessed using the charge-per-delay method. Under this method, the vibration level is a function of the distance between the blast site and the point of reception and the maximum total explosive charge at or over an 8-milisecond time interval. It is generally accepted that two blasts are independent or separated in time if the time interval between them is 8 milliseconds or greater. Correspondingly, the maximum vibration level (PPV) is estimated using the following expression:

$$PPV = K_1 \times \left[\frac{D}{\sqrt[2]{w}}\right]^{\alpha_1}$$

The maximum overpressure level (P) is estimated using the following expression:

$$P = K_2 \times \left[\frac{D}{\sqrt[3]{w}}\right]^{\alpha_2}$$

where *D* is the distance to the receptor, *w* is the total explosive charge per delay, and *K* and α are constants.

The main steps of the vibration assessment will be:

- Conduct a thorough blast review, using the rock properties, mine plans and technical changes.
- Develop blast designs to eliminate structural damage and minimize annoyance effects from blast induced ground vibrations and airblast, which could emanate into the nearby communities, residential homes, businesses, towers and other free standing structures.
- Develop blast designs to protect marine life in Jacko Lake during the spawning period, by complying with the maximum allowable ground vibration level of 13 mm/s, and the maximum allowable airblast level of 100 kPa, as stipulated by the DFO (Department of Fisheries and Ocean Canada).
- Predict the ground vibration and airblast amplitudes at 30 other areas of concern within the nearby communities.
- Provide recommendations on mitigation measures, monitoring, and a complaint mechanism.

10.5.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:

- Identification and description of any potential residual effects;
- An assessment of the significance of the residual effects following methodology presented in Section 5.1.5.

Predicted noise and vibration levels will be assessed in accordance with the guidelines or guidance summarized in Table 10.4-1.

10.5.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:

- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects following methodology presented in Section 5.1.6.

10.5.7 Conclusion

KAM commits to provide the following in the Application/EIS:

- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

10.6 HEALTHY LIVING AND HEALTH EDUCATION

10.6.1 Rationale

The Application/EIS will describe the rationale for selecting and assessing healthy living and health education as VC. Justification for inclusion will be based on one or more of the following:

- Public or other stakeholder input; and
- Relevant legislation or policy concerning the VC.

Broadly defined, healthy living is the inter-related undertaken practices that support, improve, maintain, and/or enhance health. In particular, the Public Health Agency of Canada (2012) concentrates on healthy eating, physical activity, and maintaining a healthy weight as the critical components for leading a healthy life. Health Education is being included as a part of the healthy living VC with respect to its role in the continuation and expansion of opportunities for health education for employees of the Project as well as others visiting or using the area. These two topics are typically included in BC assessments.

Current justification for selecting Healthy Living and Health Education as a VC is summarized in Table 10.5-1. Justification of this VC as it relates to the Ajax Project will be further developed in the Application/EIS.

Table 10.5-1 Summary of Rationale for VC: Healthy Living and Health Education

Applicable Government Agencies	EAO CEA Agency Working Group
Stakeholder input;	Public Kamloops Area Preservation Association
Information Sources	Professional judgement based on relevant best practices HHERA Best practices Public Health Agency of Canada Healthy Living Strategies
Spatial scope	Figure 7.1-1 (preliminary)
Temporal scope	Construction Operations Decommissioning and Closure Post-Closure
Interaction with Project/Potential Effects	Project workforce and community integration/engagement Indirect impact through related VCs

10.6.2 Background

This section of the Application/EIS will provide a summary of local and regional health education programs, as well as a summary of the local and regional health, recreation, and fitness levels and the source of the information. Background information will include traditional and community knowledge relating to the VC, where available.

10.6.3 Spatial and Temporal Boundaries

The Application/EIS will include the following:

- A description of the local and regional spatial extent of the assessment relative to the VC;
- Maps outlining the spatial extent of the regional and local study areas of the EA; and
- Description of the period of time to be examined in the VC assessment.

The socio-economic local and regional study areas are as described in Section 7.0 and shown on Figure 7.1-1. Consideration will be given to the construction, operation, decommissioning and closure phases.

10.6.4 Potential Effects of the Project and Proposed Mitigation

This section of the Application/EIS will:

- Identify and analyze potential effects resulting from the Project. It will include effects of construction, operation, decommissioning and closure, and post-closure activities.
- Within the context of healthy living, describe those physical activities and outdoor recreation opportunities that may be impacted as well as the mitigation measures that are proposed to minimize

or otherwise replace opportunities to carry out those activities with respect to opportunities for physical activity;
- Information and/or education programs that encourage healthy living lifestyles for workers employed at the Project; and
- Describe measures the Proponent will commit to undertaking to mitigate the identified potential adverse effects.

10.6.5 Residual Effects and their Significance

KAM will provide the following in the Application/EIS:
- Identification and description of any potential residual effects following methodology presented in Section 5.1.5; and
- An assessment of the significance of the residual effects.

10.6.6 Cumulative Effects Assessment

KAM will provide the following in the Application/EIS:
- Identification and description of existing or reasonably foreseeable projects or activities that have the potential to interact with the Project;
- Identification and description of any potential cumulative effects;
- An assessment of the significance of the cumulative effects.

10.6.7 Conclusion

KAM commits to provide the following in the Application/EIS:
- A summary of potential residual effects;
- A summary of potential cumulative effects; and
- Discussion of significance of the residual and cumulative effects.

10.7 SUMMARY OF ASSESSMENT OF POTENTIAL HEALTH EFFECTS

Potential health effects will be summarized by Project phase in a table with the following format:

Table 10.6-1 Example Summary Table of Potential Health Effects

Valued Component	Potential Effects	Key Mitigation Measures	Summary Statement of Significance Analysis of Residual Effects

SECTION 11.0 - SUMMARY OF PROPOSED ENVIRONMENTAL AND OPERATIONAL MANAGEMENT PLANS

11.1 ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental and operational monitoring and management plans will be developed as part of the Environmental Management System (EMS) to ensure that measures and controls are in place to minimise the potential for environmental degradation during all phases of Project development. The components of the EMS, including a series of monitoring and management plans, will be described in the Application/EIS.

The EMS will outline:

- Personnel responsibilities, including the role of the Independent Environmental Monitor;
- Reporting structure and responsibilities of personnel involved with environmental management;
- Preliminary procedures for reporting on environmental management and performance;
- Impact avoidance measures;
- A preliminary list of anticipated compliance monitoring obligations associated with permits and licences issued by Local, Provincial and Federal governments;
- Environmental awareness training programs that will be implemented for all personnel and contractors; and
- Training and professional development programs for Project employees and contractors.

11.2 ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

An Environmental Management Plan (EMP) will provide clearly defined actions and procedures to ensure that human and environmental health and safety is accounted for through all phases of the Project (construction, operations, closure and post-closure). The monitoring and management plans that will be developed for the Project include, as appropriate:

- Surface Water Quality Management and Monitoring Plan;
- Groundwater Quality Management and Monitoring Plan;
- Erosion and Sediment Control Plan;
- Construction Waste Management Plan;
- Acid Rock Drainage Management Plan;
- Air Quality Monitoring and Dust Control Plan;
- Water Management and Hydrometric Monitoring Plan;
- Fisheries And Aquatic Life Monitoring Plan;
- Contaminated Sites Management Plan;
- Solid Waste Management Plan;
- Hazardous Waste Management Plan (including liquid effluent disposal);
- Accidents and Malfunctions Plan (including potential effects on the Kinder Morgan pipeline);
- Natural Hazards Management Plan (e.g. landslides, floods);
- Emergency Response Plan;
- Fire Hazard Abatement Plan;
- Landscape Design and Restoration Plan;

- Soil Salvage and Handling Plan;
- Wildlife/Vegetation Monitoring Plan (including invasive plant management and metal uptake by plants);
- Archaeological Sites Management Plan;
- Reclamation and Closure Plan;
- Dark Sky Management and Monitoring Plan;
- Transportation Management Plan;
- Access Management Plan; and
- Noise Management Plan.

The Application/EIS will include a general description of each of the plans for all phases of the Project, as applicable. The reclamation plans will outline effective and scientifically defensible long-term monitoring programs. Contingency plans for remedial action will be provided where there are significant uncertainties associated with reclamation success.

11.3 COMPLIANCE REPORTING

The Application/EIS will present the reporting structure as identified within the EMP. The reporting structure will include the type and frequency of reports to be submitted to the EAO and other regulatory federal or provincial agencies.

PART C – ABORIGINAL GROUPS INFORMATION REQUIREMENTS

Part C of the Application/EIS will discuss Aboriginal considerations pertaining to the Project. This section will rely on guidance found in EAO's "Environmental Assessment Office User Guide" (EAO 2010a), AIR Template, and "Proponents Guide for to First Nation Consultation in the Environmental Assessment Process" (EAO 2013).

The Section 11 Order pursuant to the BCEAA defines the Tk'emlúps te Secwepemc and the Skeetchestn Indian Band as "First Nations." The Section 11 Order delegates procedural aspects of provincial Crown consultation with the Tk'emlúps te Secwepemc and the Skeetchestn Indian Band (the "First Nations") to KAM. The Tk'emlúps te Secwepemc and the Skeetchestn Indian Band are represented by the Stk'emlupsemc te Secwepemc Nation (SSN). KAM will engage with the Tk'emlúps te Secwepemc and Skeetchestn Indian Bands to identify their perspectives and opinions about the Project and potential effects of the Project on their Aboriginal interests including the SSN's asserted Aboriginal rights and title.

The Section 11 Order defines the Lower Nicola Indian Band and the Ashcroft Indian Band as "Working Group First Nations" who may participate in the Working Group established for the Environmental Assessment. KAM will provide the Lower Nicola Indian Band and the Ashcroft Indian Band copies of the Application/EIS.

The CEA Agency or the EAO may at any time notify KAM that one or more additional Aboriginal groups are required to be engaged for the purposes of the environmental assessment. The CEA Agency and EAO may at any time notify KAM that one or more additional Aboriginal groups are required to be engaged for the purposes of the environmental assessment.

KAM will respond to the comments received from First Nations and Working Group First Nations during their review of the Application/EIS and those comments the EAO or CEA Agency determine are within the scope of the assessment.

Métis Nation BC (MNBC) was identified by the CEA Agency as potentially having interests in the vicinity of the Project. In addition to fulfilling federal legislative requirements to collect information about the MNBC's members' current use of lands and resources (in the vicinity of the Project area) for traditional purposes, Métis Nation BC was also identified as being potentially affected by the Project. KAM will respond to the comments received from Métis Nation BC that the CEA Agency determines are within the scope of the assessment

The potential effects of the Project will be assessed for each Aboriginal group. The Application/EIS will consider the potential effects of the Project on each of the Aboriginal group's interests.

The Aboriginal groups currently identified by the EAO and CEA Agency for the Application/EIS are as follows.

Stk'emlupsemc te Secwepemc Nation (SSN) (Section 11 Order "First Nations"):

- Tk'emlúps te Secwepemc (Tk'emlúps Indian Band); and
- Skeetchestn Indian Band.

Nlaka'pamux Nation bands (Section 11 Order "Working Group First Nations"):

- Lower Nicola Indian Band, and;
- Ashcroft Indian Band.

Additional Aboriginal group identified by the CEA Agency:

- Whispering Pines Clinton Indian Band, and;
- Métis Nation BC.

During the Application/EIS period, procedural aspects of consultation and engagement to be undertaken by KAM may be adjusted through a provincial Section 13 Order or as directed by the EAO or CEA Agency. Procedural aspects of consultation and engagement with each Aboriginal group will vary depending on direction in the Section 11 Order, Section 13 Order, or as directed by the EAO or CEA Agency. Part C of the Application/EIS will provide detailed summaries of KAM's procedural consultation and engagement efforts in the pre-application stage, as well as a summary of KAM's First Nations Consultation Plan and the procedural aspects of consultation proposed for the Application/EIS review stage. Part C will also include statements confirming that KAM is committed to complete, to the extent possible, the procedural aspects of consultation described in the First Nations Consultation Plan.

Part C will include a clear statement describing KAM's commitment to ensure confidentiality of information identified as confidential and shared by Aboriginal groups prior to, during and following the environmental assessment.

Part C of the Application/EIS will describe and consider the potential adverse impacts of the Project on potential rights (including title). In addition, information regarding potential effects of changes in the environment caused by the Project on current uses of lands and resources for traditional purposes, by Aboriginal groups identified by the Section 11 order and the CEA Agency, will be considered.

SECTION 12.0 - BACKGROUND AND ABORIGINAL GROUP SETTINGS

This section of the Application/EIS will provide non-confidential background information about each Aboriginal group including traditional knowledge and traditional use information provided by or identified by each Aboriginal group, or collected from other readily available public sources. The Aboriginal groups whose Aboriginal interests may be affected by the Project are as follows:

Stk'emlupsemc of the Secwepemc Nation (Section 11 Order "First Nations"):

- Tk'emlúps te Secwepemc (Tk'emlúps Indian Band); and
- Skeetchestn Indian Band.

Nlaka'pamux Nation bands (Working Group "First Nations")

- Lower Nicola Indian Band, and;
- Ashcroft Indian Band.

Additional Aboriginal group identified by the CEA Agency:

- Whispering Pines Clinton Indian Band, and;
- Métis Nation BC.

This section of the Application/EIS will describe the traditional territory, history, historical and contemporary use of the project area (if available), language, land use setting and planning, governance, economy and reserves of each Aboriginal group.

To satisfy requirements of the former CEAA, a description of the current use of lands and resources for traditional purposes by Aboriginal persons will be included, where available. Additional information may (where readily available in public realm) include any change the Project may cause in the environment that may have an effect on the current use of lands and resources for traditional purposes by Aboriginal persons for each of the Aboriginal groups.

Information in this section will come from a range of readily available, public primary and secondary data sources, as well as non-confidential information identified by Aboriginal groups during consultation or from studies that may be undertaken. A summary of relevant, non-confidential traditional knowledge and traditional use information provided by or identified by each Aboriginal group, or collected from other readily available public sources will be presented in this Section.

SECTION 13.0 - ABORIGINAL INTERESTS (RIGHTS AND TITLE)

This section will identify the potential effects or adverse impacts of the Project on Aboriginal interests (which for the purpose of the Application/EIS includes potential rights including title). Indirect effects on Aboriginal groups will also be presented in this section, as required by the CEA Agency.

Aboriginal rights are practices, tradition, and customs integral to the distinctive culture of the Aboriginal group claiming the right that existed prior to contact with the Europeans. Aboriginal title is an Aboriginal right to the exclusive use and occupation of land at the time of asserted British sovereignty (1846). KAM and its consultants will use these definitions to guide understanding of potential Aboriginal rights in the vicinity of the Project, and for the identification of potential adverse impacts on potential rights including title.

This section of the Application/EIS will describe the methodology used by KAM and its consultants to identify potential adverse impacts to Aboriginal rights and title, as well as to current use and cultural heritage. Methodological approaches will include where and how traditional knowledge and traditional use information as well as considerations of potential Aboriginal rights including title were incorporated into the overall assessment of the Project. This will include a discussion of how these factors contributed to selecting VCs, predicting effects, describing mitigation and accommodation measures and considering alternatives.

This section of the Application/EIS will present KAM's understanding of Aboriginal rights including title of the potentially affected Aboriginal groups. Potential Aboriginal rights including title will be identified through research using information identified by the Aboriginal groups and public information sources where readily available, and in non-confidential results or reports on traditional use, traditional knowledge or other local knowledge provided by Aboriginal groups including Aboriginal claims to rights or title expressed by Aboriginal groups. Cooperative engagement with Aboriginal groups is an important aspect of collecting this information and identifying interrelationships between Valued Components (including the specific information collected as part of the Valued Component) and potential Aboriginal rights, including title, which KAM will endeavour to facilitate. KAM will identify, track and present as part of the Application/EIS the potential Aboriginal rights including title that have been identified.

KAM will review and consider both direct impacts of the project on potential Aboriginal rights as well as the results of the effects assessments on the VCs to describe if there are potential direct adverse impacts or indirect environmental effects from the Project on potential Aboriginal rights including title. KAM will discuss key features that are related to potential Aboriginal rights, including title. Aboriginal interests (including potential rights including title) as they relate to Jacko Lake and the Hunting Blind Complex will be thoroughly discussed in this section in recognition of the particular importance of these sites. KAM will link the potential Aboriginal rights, including title, to the particular project components that are the potential causes of direct impacts, as well as to the relevant VCs that indicate potential indirect effects, where applicable. For potential direct adverse impacts and indirect environmental effects of the Project on potential Aboriginal rights, including title, KAM will propose measures to avoid, mitigate, or otherwise accommodate the adverse effects, working directly with Aboriginal groups where appropriate.

In summary, KAM will utilize information that has been obtained to:

- Identify practices, traditions, or customs that have been engaged in by Aboriginal groups in the past (at time of contact or declaration of sovereignty) in the vicinity of, or in relation to, the area in which the proposed project would be situated.
- Identify what practices, traditions or customs are currently engaged in by Aboriginal groups in the vicinity of, or in relation to, the area in which the proposed project would be situated.
- Identify how the proposed project might potentially impact the practices, traditions or customs identified above.
- Identify measures that could be used in the proposed project's design or operation to avoid, mitigate or otherwise address those potential impacts.
- Identify opportunities for all or some of the practices, traditions and customs to be engaged in elsewhere within the First Nation's asserted traditional territory. Describe Aboriginal group views as to whether these practises would still be meaningful if engaged in elsewhere within the traditional territory.

In addition, KAM will undertake research and analysis in order to:

- Investigate direct impacts of the project on potential Aboriginal rights that are not otherwise captured by the analysis of environmental effects ("direct impacts").
- Investigate the interaction between environmental effects (on VCs), other direct impacts of the project, and the exercise of Aboriginal rights, through research that includes soliciting input from Aboriginal groups about their historical and current exercise of Aboriginal rights in the vicinity of the project.
- Describe measures that could be used in the Project's design or operation to avoid, mitigate or otherwise address potential adverse direct impacts.
- Identify any types of asserted Aboriginal rights that may not be specific or limited to the vicinity of the project site and which could potentially be exercised elsewhere within the Aboriginal group's asserted traditional territory. Provide Aboriginal groups' views on the relative opportunity cost of exercising certain asserted Aboriginal rights elsewhere within the traditional territory

Results of the information collection will be described in detail in issues tracking tables or another appropriate format in this section of the Application/EIS. The tables will be organized to clearly present information noted above, and identify: VC (as appropriate), potential effect of the Project on the VC, impacted potential Aboriginal right(s) including title, the correlation between effects on a VC and impacts on the opportunity to exercise an Aboriginal right, potential direct impacts on potential Aboriginal rights, KAM's response including attempts to mitigate or otherwise address potential adverse direct impacts and environmental effects on potential Aboriginal rights including title (for example this may include avoidance or mitigation measures, management plans, proactively informing the relevant parties and other mitigation or accommodation measures). The information will be summarized in a format appropriate to the final content. Cooperative engagement with Aboriginal groups is an important aspect of completing this work which KAM will endeavour to facilitate.

SECTION 14.0 - OTHER POTENTIAL EFFECTS ON ABORIGINAL INTERESTS

This section will identify the potential effects of the Project on other Aboriginal interests. Other Aboriginal interests are those interests that are not directly associated with potential Aboriginal rights (including title). Indirect effects on Aboriginal groups will also be presented in this section, as required by the CEA Agency. KAM and its consultants will use this definition to guide identification of Aboriginal interests and for completing the review of potential effects on other Aboriginal interests.

This section of the Application/EIS will describe methodology, including where and how information on other Aboriginal interests was gathered and was used to identify the potential effects of the Project. Cooperative engagement with Aboriginal groups will be an important aspect of collecting this information and identifying inter-relationships between Valued Components (including the specific information collected as part of the Valued Component) and other potential Aboriginal interests, which KAM will endeavour to facilitate.

Aboriginal interests that are not directly associated with potential Aboriginal rights, including title, will be identified through direct engagement with Aboriginal groups, research using information identified by the Aboriginal groups and public information sources where readily available, and in non-confidential results or reports on traditional use, traditional knowledge or other local knowledge provided by Aboriginal groups. KAM will identify, track and present as part of the Application/EIS the identified other Aboriginal interests including community well-being and other Aboriginal community interests. KAM will use the results of the effects assessments on the VCs, completed in Part B of the Application/EIS, to describe inter-relationships between VCs and other Aboriginal interests, including potential effects of the Project on other Aboriginal interests. KAM will discuss key features that are important to Aboriginal groups, such as Jacko Lake and the Hunting Blind Complex. KAM will link and describe the inter-relationships between the other Aboriginal interests and relevant social, environmental, economic, health and heritage VCs, where appropriate. For potential adverse effects of the Project on other Aboriginal interests, KAM will, where practicable, propose measures to avoid or mitigate the adverse effects.

KAM will utilize available information to:

- Identify other Aboriginal interests in the vicinity of, or in relation to, the area of the Project.
- Describe how the Project could potentially affect other Aboriginal interests.
- Describe measures that could be used in the Project's design or operation to avoid, mitigate or otherwise address those potential effects.

Outcomes of the assessments will be described in detail in issues tracking tables or another appropriate format in this section of the Application/EIS. The tables will identify: VC (as appropriate), potential effect of the Project on the VC, potentially effected other Aboriginal interests, KAM's response including attempts to mitigate or resolve potential adverse effects on other Aboriginal interests including mitigation measures and management plans. The information will be summarized in a format appropriate to the final content. Cooperative engagement with Aboriginal groups is an important aspect of completing this work which KAM will endeavour to facilitate.

A description of the process used to disseminate Aboriginal information to KAM's assessment specialists and how this information was incorporated into the effects assessments and Application/EIS will be provided. Information dissemination will consider confidentiality provisions.

As required by the former CEAA, indirect effects on Aboriginal groups will be discussed in this section of the Application/EIS. An indirect effect is a secondary environmental effect that occurs as a result of a change that a project may cause in the environment. An indirect effect is at least one step removed from a project activity in terms of cause-effect linkages (CEA Agency, 2006). The results of the environmental effects assessment in Section 6 of the Application/EIS will be used to describe indirect effects on Aboriginal groups. KAM will link the indirect effects on Aboriginal groups to the relevant VCs, where appropriate. The Application/EIS will present the indirect effects on Aboriginal groups that result from environmental changes caused by the Project on the following factors:

- Health and socio-economic conditions;
- Physical and cultural heritage;
- Current use of lands and resources for traditional purposes; and
- Structures, sites or things that are of historical, archaeological, paleontological or architectural significance.

SECTION 15.0 - PROCEDURAL ASPECTS OF ABORIGINAL CONSULTATION

This section will document all pre-application and proposed Application/EIS review stage consultation. This section will serve as a comprehensive summary of procedural consultation efforts and will include all consultation-related information presented in Sections 4.3, 13, 14 and 17.11.

Section 15.1 will document the methods and activities employed by KAM to ensure Aboriginal groups were provided current and relevant project information during the pre-application stage. It will also describe efforts made during the pre-application stage to engage and consult with Aboriginal groups and to identify Aboriginal interests, including potential existing rights including title, other Aboriginal interests (as described in Section 14), traditional knowledge and traditional use.

Section 15.2 will summarize methods and activities KAM plans to employ, during the Application/EIS review stage to distribute information to, collect information from, and consult with, Aboriginal groups who may be affected by the Project.

Section 15.2 will include a statement confirming that KAM will implement, and to the extent possible, complete the consultation described in the First Nations Consultation Plan.

15.1 PRE-APPLICATION/EIS CONSULTATION

This section will provide a summary of pre-application information sharing methods and activities KAM has undertaken with the Aboriginal groups who may potentially be affected by the Project. The summary in this section will include the preparation of the Application/EIS, Project Description, AIR/EIS Guidelines and the First Nations Consultation Plan. Key issues relevant to the Application/EIS and identified during pre-application consultation with Aboriginal groups will be summarized in this section along with KAM's response to the issue raised.

Confidentiality requirements agreed to with Aboriginal groups regarding traditional knowledge and traditional use information will be summarized in this section.

A tracking table, documenting issues raised during consultation, and KAM's responses to these will be provided, including a description of the efforts to address them where applicable.

15.2 CONSULTATION DURING APPLICATION/EIS REVIEW

This section will describe KAM's plans for information sharing, engagement and consultation during the Application/EIS review stage and will describe the proposed methods and processes to resolve any outstanding issues where practical and economical.

This section will include a summary of the First Nations Consultation Plan and a description of KAM's commitment to implement and complete the consultation described in the First Nations Consultation Plan. The consultation plan and this section will address such things as:

- Consultation objectives;
- Consultation methods and timing; and

- KAM's Principles for Sustainable Relationships with First Nations.

Section 15.1 will include a description of how Aboriginal groups were included in the development of the First Nations Consultation Plan.

SECTION 16.0 - SUMMARY

This section of the Application/EIS will summarise the results of Sections 12, 13, 14, and 15. The summary will include the following:

- KAM's understanding of issues and suggestions raised by Aboriginal groups.
- KAM's understanding of potential effects on Aboriginal interests, including potential rights (including title).
- KAM's understanding of potential effects on other Aboriginal interests.
- KAM's understanding of potential indirect effects on Aboriginal groups as per the former CEAA.
- Presentation of linkages between VCs and effects related to affected Aboriginal interests, including potential rights (including title), other Aboriginal interests, and indirect effects on Aboriginal groups, as appropriate.
- Specification of direct or indirect effects to Aboriginal groups at each stage of the Project (Construction, Operations, Decommissioning and Closure, Post Closure).
- KAM's response to the identified potential effects on Aboriginal groups.
- Potential accommodation including avoidance, mitigation, minimization, and compensation measures raised by Aboriginal Groups, as appropriate.

The information will be summarized in a table with a format appropriate to final content and similar to Table 16.0-1.

Table 16.0-1: Summary of Effects on Aboriginal Groups and Mitigation or Accommodation Measures

Potential Effects	Key Mitigation or Accommodation Measures

PART D – FEDERAL INFORMATION REQUIREMENTS

SECTION 17.0 - FEDERAL ENVIRONMENTAL ASSESSMENT REQUIREMENTS

As the Project will require a comprehensive study under the former CEAA, the Application/EIS will combine the information requested in Sections 17 and 18 of the AIR/EIS Guidelines Template into one section in Part D of the Application/EIS. The Canadian Environmental Assessment Act, 2012 (CEAA 2012) and associated regulations came into force on July 6, 2012. Nonetheless, the Ajax 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 had not been repealed. The federal environment assessment will continue to follow the requirements of the former CEAA. As defined in the former CEAA Section 16 (2), every comprehensive study, mediation, or review panel must include consideration of factors in addition to those set out in Section 16 (1), including purpose of the project, alternative means of carrying out the project, need for a follow-up program, and the capacity of renewable resources that are likely to be significantly affected by the Project. The Application/EIS will provide a detailed discussion of these factors.

17.1 ENVIRONMENTAL EFFECTS

An examination of the potential environmental effects of the Project, including any change that the Project may cause in the environment corresponding to the federal scope, will be provided in the Application/EIS.

Environmental effect means, in respect of the project:

- Any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individual of that species, as those terms are defined in subsection 2(1) of the *SARA*;
- Any effect of any change in the environment caused by the project on:
  - Health and socio-economic conditions;
  - Physical and cultural heritage;
  - The current use of land and resources for traditional purposes by Aboriginal persons; or
  - Any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.
- Any change to the project that may be caused by the environment, as described in Section 17.5 below.

The Application/EIS will identify any anticipated effect to a listed wildlife species or its critical habitat and propose measures to avoid or lessen those effects and to monitor them. The measures will be consistent with any applicable recovery strategy and action plan. Where a species at risk has been described in Section 6, this section of the Application/EIS will reference the appropriate subsection.

Sections 13 and 14 will include summaries of potential direct and indirect environmental effects on Aboriginal rights and interests.

17.2 FEDERAL COMPONENTS

The Application/EIS will contain a description of any environmental effects that the Project may cause in the environment corresponding to the federal scope. Valued components and potential impacts on these components will be described in detail in previous sections of the Application/EIS. This section will make reference to the applicable subsections of Sections 6 through 10 in order to minimize redundancy.

It is anticipated that the components to be considered in the federal scope could include:

- Migratory Birds;
- Air quality;
- Geology, landforms and soils;
- Rare and Sensitive Ecological Communities;
- Mammals;
- Surface water, domestic water and groundwater quality and quantity;
- Aquatic environment (e.g. aquatic life, fish, fish habitat);
- Flora at Risk (as defined under and in accordance with the *SARA*);
- Fauna at Risk (as defined under and in accordance with the *SARA*);
- Greenhouse Gas Management;
- Heritage and archaeological resources;
- Aboriginal traditional use (current and historic);
- Land and resource use;
- Outdoor Recreation (Navigation);
- Noise and vibration; and
- Human health.

17.3 NEED FOR, PURPOSE OF, AND ALTERNATIVES TO THE PROJECT

The “need for” the project is defined as the problem or opportunity that the Project is intending to solve or satisfy and establishes the fundamental justification or rationale for the project. The “purpose of” the project is defined as what is to be achieved by carrying out the project.

The “alternatives to” the project are the functionally different ways to meet the project need and achieve the project purpose. The “alternatives to” assessment will:

- Identify the alternatives to the project that were considered, including any consideration given to scheduling production during a more favourable economic climate;
- Develop criteria to identify the major environmental, economic and technical costs and benefits of the alternatives; and
- Identify the preferred alternatives to the project based on the relative consideration of the environmental, economic and technical costs and benefits.

This section of the Application/EIS will be developed in accordance with:

- Addressing "Need for", "Purpose of" "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act (CEA Agency, 2007b).

17.4 ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT

"Alternative means" of carrying out the Project are defined as the various technically and economically feasible ways that the Project could be implemented. This section of the Application/EIS will be developed in accordance with:

- Addressing "Need for", "Purpose of" "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act. CEA Agency, 2007b.
- Guidelines for the Assessment of Alternatives for Mine Waste Disposal. Environment Canada. September 2011.

The Application/EIS will include:

- A description of the alternative means of carrying out the Project;
- The reasons for selecting the preferred option;
- An analysis of the alternative means of carrying out the Project that are technically and economically feasible; and
- The environmental effects of any such alternative means.

Procedural steps for addressing alternative means will include:

- Identify the alternative means to carry out the project.
  - Develop criteria to determine the technical and economic feasibility of the alternative means.
  - Describe each alternative means in sufficient detail.
  - Identify those alternative means that are technically and economically feasible.
- Identify the environmental effects of each alternative means.
  - Identify those elements of each alternative means that could produce effects in sufficient detail to allow a comparison with those effects of the project; and
  - The effects referred to above include both environmental effects and potential adverse impacts on potential Aboriginal rights, including title, and related interests.
- Identify the preferred means.
  - Identify the preferred means based on the relative consideration of environmental effects; and of technical and economic feasibility;
  - Determine and apply criteria that identify alternative means as unacceptable on the basis of significant adverse environmental effects; and
  - Determine criteria to examine the environmental effects of each remaining alternative means to identify a preferred alternative.

Any potentially adverse impacts of the technically and economically feasible alternatives on potential Aboriginal rights should also be identified.

17.5 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The Application/EIS will:

- Identify the environmental factors deemed to have possible effects on the Project, such as:
  - Extreme weather events (lightning, heavy precipitation, extreme temperatures, flooding, drought, fire and high winds, wind);
  - Natural seismic events and associated effects such as liquefaction, subsidence, etc.;

  - Fire;
  - Slope stability and mass wasting events (e.g., debris flows/torrents; rock fall; snow avalanche);
  - Winter (freezing temperatures, ice jams, etc.); and
  - Climate change.
- Identify any changes or effects on the Project that may be caused by the above-mentioned environmental factors, whether the changes or effects occur within or outside of Canada;
- Identify the likelihood and severity of the changes or effects based on different probability patterns;
- Identify mitigation measures, including design and construction strategies, planned to avoid or minimize the likelihood and severity of the changes or effects;
- Longer-term effects of climate change will be discussed up to the projected post-closure phase of the project and will include a description of climate data used; and
- The sensitivity of the project to long-term climate variability and effects will be identified and discussed.

17.6 ACCIDENTS OR MALFUNCTIONS

The Application/EIS will:

- Use the Failure Modes Effects Analysis (FMEA) approach (based on guidance in Robertson and Shaw, n.d.) to qualitatively identify and assess potential risks of events in a structured and transparent manner.
- Through the FMEA, the analysis will:
  - Identify and describe the potential accidents, malfunctions and unplanned events that could occur in any phase of the Project, including discussion of the following parameters:
    - Geographical and temporal boundaries of the accident or malfunction
    - Form and characteristics of materials to be released;
    - Quantity;
    - Mechanism; and
    - Rate
  - Describe the likelihood and circumstances under which these events could occur, based on historic experience/trends;
  - Describe the potential effects, particularly effects on the surrounding ecosystem, and consequences that may result from such events, assuming contingency plans are not fully effective and the worst case scenarios and the effects of these scenarios.
  - Describe how each potential accident, malfunction or unplanned event would be managed or mitigated, immediately and/or in the long term (i.e. contingency and response plans).
  - Describe the measures to decrease the likelihood or to mitigate for accidents and malfunctions (reference emergency and environmental management plans, Section 11) and the safeguards that will be established to protect against such occurrences.
  - Describe the conclusions on the potential risk (likelihood and consequence to be considered) of the accident or malfunction.

Accidents or malfunctions (including evaluation of worst case scenarios) that will be discussed in the Application/EIS include:

- Fire;
- Pit failure;
- Contamination of soils and/or water due to spill, leaks, etc. (e.g., fuel spills, reagents);

- Failure of Tailings Storage Facility;
- Leakage from Tailings Storage Facility, seepage collection and runoff ponds;
- Failure of the waste rock storage facilities;
- Kinder Morgan Pipeline leakage or failure;
- Accidental leakage of effluent;
- Power outages;
- Flying rock from blasting;
- Motor vehicle accidents;
- Flooding, erosion and/or burial due to containment structure failures;
- ML/ARD;
- Sediment transport into watercourses; and
- Accidental explosion.

The scenario evaluating a worst case TSF failure will include a quantitative dam break and inundation study consistent with technical guidance from the Canadian Dam Association, and the Dam Safety Guidelines. Each TSF embankment will be assessed individually and dam break studies will be conducted accordingly. Two failure modes will be considered: a 'sunny day' failure, and a 'flood-induced' failure. The methods and assumptions used to complete the analysis, and the associated uncertainties will be clearly documented.

Using the results of the dam break analysis, an assessment of the environmental effects of a catastrophic TSF dam failure, will be completed, including assessment of potential impacts to relevant Valued Components.

17.7 MITIGATION MEASURES

The Application/EIS will identify mitigation measures that are technically and economically feasible that would avoid or mitigate the environmental effects described in Section 17.2.

Potential impacts and proposed mitigation measures will be described in Sections 6 through 10 of the Application/EIS. This section will make reference to previous applicable subsections in order to minimize redundancy.

The following components will be included when describing the approach to implement mitigation measures:

- Reduction of the effects at the source will be considered and described;
- Description of standard mitigation practices, policies and commitments that constitute mitigation measures that will be applied;
- Description of the EMPs and EMS, through which the plan will be delivered;
- Overall perspective on how potentially adverse effects will be minimized and managed over time;
- Discussion of the mechanisms that will be used to require contractors and sub-contractors to comply with these commitments and policies and with auditing and enforcement programs;

- Description of actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the project's various construction and operation phases to eliminate or reduce the significance of adverse effects;
- Inclusion of an impact statement presenting an assessment of the effectiveness of the proposed mitigation measures. The reasons for determining if the mitigation measure reduces the significance of an adverse effect shall be made explicit;
- Description of other technically and economically feasible mitigation measures considered, including the various components of mitigation, and rationale for the reasons they were rejected; and
- Identification of the extent to which technology innovations will help mitigate environmental effects.

Where mitigation measures have been identified in relation to species and/or critical habitat listed under the SARA, the mitigation measures should be consistent with any applicable recover strategy and action plans.

17.8 RESIDUAL ENVIRONMENTAL EFFECTS

The Application/EIS will provide a description of residual environmental effects that would remain following the implementation of mitigation measures described in Section 17.7. Residual environmental effects will be described in Sections 6 through 10 of the Application/EIS. This section will make reference to previous applicable subsections in order to minimize redundancy.

The Application/EIS shall include a summary of the Project's residual effects to clearly describe the consequences of the Project, the degree to which effects can be mitigated and which effects cannot be mitigated or compensated. The residual effects, even if very small or deemed insignificant will be described.

17.9 SIGNIFICANCE ASSESSMENT/ANALYSIS

The Application/EIS will provide a discussion of the significance of the residual environmental effects identified in Section 17.8. The assessment of significance will be conducted in accordance with the methodology described in Section 5, and the results of the significance assessment will be presented in Sections 6 through 10. This section of the Application/EIS will make reference to previous applicable subsections in order to minimize redundancy.

The significance assessment will follow the guidelines outlined in the reference guide for the Canadian Environmental Assessment Act titled "Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects" prepared by the Federal Environmental Assessment Review Office (1994).

17.10 CUMULATIVE ENVIRONMENTAL EFFECTS

A Cumulative Effects Assessment (CEA) will be conducted for each of the previously identified VCs following the methodology presented in Section 5.

The scope and methodology of the CEA will be designed to satisfy regulatory requirements set forth by both the BC EAO and the CEA Agency; therefore, this section of the Application/EIS will reference Sections 6 through 10 of the Application/EIS for the discussion of cumulative effects for individual VC.

17.11 ABORIGINAL ENGAGEMENT AND CONSULTATION

This section of the Application/EIS will list all Aboriginal groups which the Crown has identified as requiring consultation or engagement. The objective will be to identify any changes that the Project may cause in the environment and the resulting effects of any such changes on the current use of lands and resources for traditional purposes by Aboriginal persons. This section of the Application/EIS will refer to Section 15 for a summary of the consultation activities, where applicable.

Where the federal list of Aboriginal groups differs from the provincial one, the following information will be presented for the federally-identified groups, as provided in Part C of the Application/EIS:

- Background information;
- Aboriginal Interests (Rights and Title);
- Other Potential Aboriginal Effects; and
- Procedural Aspects of Aboriginal Consultation.

This section will include a summary of discussions, the issues or concerns raised, and describe any potential Aboriginal rights, including title. It will document the potential impact of the project on potential Aboriginal rights, including title, and the measures to prevent, mitigate, compensate or accommodate those potential effects.

The CEA Agency may at any time notify KAM that one or more additional Aboriginal groups are required to be engaged for the purposes of the environmental assessment.

17.12 FOLLOW-UP PROGRAMS

The Application/EIS will provide information regarding follow-up program(s) as required based on Section 38(1) of the former CEAA. The purpose of the follow-up program is to:

- Verify the accuracy of the environmental assessment of the project; and
- Determine the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

Follow-up program design and implementation will be developed using:

- Operational Policy Statement: Follow-up Programs under the CEAA. CEA Agency. November 2007c.
- Operational Policy Statement: Adaptive Management Measures under the Canadian Environmental Assessment Act. CEA Agency. March 2009.

The Application/EIS will include the following information regarding follow-up programs:

- A discussion on the need for and requirements of a follow-up program and its objectives;
- A description of the main components of the program and each monitoring activity under that component;

- A discussion of the objectives the monitoring activity is fulfilling (e.g., confirmation of mitigation, confirmation of assumptions; verification of predicted effects);
- The structure of the program;
- A schedule for the finalization and implementation of the follow-up program;
- A description of the roles and responsibilities for the program and its review process, by both peers, Aboriginal groups, and the public;
- Possible involvement of independent researchers;
- The sources of funding for the program; and
- Information management and reporting.

17.13 CAPACITY OF RENEWABLE RESOURCES

This section of the Application/EIS will include an analysis of the capacity of renewable resources to meet the needs of the present and those of the future where these resources are likely to be significantly affected by the Project.

The Application/EIS will identify those resources likely to be significantly affected by the project, and describe how the project could affect their sustainable use. The Application/EIS will also identify and describe any criteria used in considering sustainable use, based on ecological considerations such as integrity, productivity, and carrying capacity.

17.14 BENEFITS TO CANADIANS OF THE FEDERAL ENVIRONMENTAL ASSESSMENT PROCESS

The Application/EIS will describe how the EA process for the Project provided a benefit to Canadians. Categories of potential benefits to Canadians from an EA process to be considered for the Ajax Mine Project EA specifically include:

- Prevention or reduction of environmental effects: Project redesign, relocation and the identification of mitigation measures (e.g., fish or wildlife habitat compensation strategies) that can prevent negative impacts on the environment (e.g., cumulative effects and indirect effects on health and socio-economic conditions, and physical or cultural heritage) or reduce a project's overall environmental footprint.
- Maximized environmental benefits: Modifications to the project that can increase ecosystem health (e.g., productivity, resiliency and adaptability), maintain biodiversity, reduce habitat fragmentation (e.g., establishment of parks and/or protected areas), and ensure the long-term viability and/or recovery of species (including Species at Risk).
- Technological innovations: Innovations in technology applied to address impacts identified in the EA that can lead to reduced environmental impacts and improvements to other projects using the same technologies.
- Reduction in project costs: Modifications to a project design can reduce project costs and increase efficiency, resulting in economic benefits to proponents.
- Protection of Aboriginal interests: Consultation with Aboriginal groups through their participation in the EA process can result in information and decisions which help avoid or reduce potential effects on the current use of lands and resources for traditional purposes by Aboriginal persons. Modifications to project design can also avoid or reduce potential impacts on existing or potential treaty and Aboriginal rights.

- Increases in scientific knowledge: Field studies, monitoring and other scientific programs carried out within an EA process can yield new and enhanced scientific information in key areas such as fisheries, wildlife, water quality and ecosystem functioning. This knowledge improves decision-making at the conclusion of the EA and can benefit the assessment of other projects including, for example, improvements in fish and wildlife habitat mitigation measures to minimize environmental impacts.
- Increase in community and social benefits: Modifications made to project design in order to address potential environmental effects can result in distinct indirect benefits to communities and can maximize social benefits. Such benefits can include increased community knowledge, awareness and engagement.
- Protection of public health and safety: Through assessment of potential indirect effects of projects on human health and well-being, and through consideration of such factors as accidents and malfunctions, the protection of public health and safety can be enhanced. For example, public health can be protected by the incorporation of specific plans and procedures into project design and implementation, such as contingency and emergency response planning.

PART E – CONCLUSIONS

SECTION 18.0 - SUMMARY OF RESIDUAL EFFECTS

18.1 SUMMARY OF RESIDUAL EFFECTS

This section of the Application/EIS will provide a summary of the residual effects presented in tabular format. This table will provide summary information for each environmental, economic, social, heritage or health effect that cannot be completely avoided or mitigated through the re-design or relocation of the Project or through Proponent commitments. The table will have the following format:

Table 18.1-1 Summary of Residual Effects

Project Phase	Project Activity	Potential Effect	Mitigation	Significance of Residual Effect
Assessment Category (Environmental, Economic, Social, Heritage Or Health)				

SECTION 19.0 - SUMMARY OF COMMITMENTS

19.1 SUMMARY OF COMMITMENTS

This section of the Application/EIS will provide a summary of the Proponent's commitments to minimize the potential for the Project to generate environmental, economic, social, heritage or health effects, presented in a table with the format below.

Table 19.1-1 Proponent's Table of Commitments

Commitment Number	Commitment Description	Project Phase/Timing	Source of Commitment	Responsible Agency	Status

SECTION 20.0 - CONCLUSION

This section of the Application/EIS will provide:

- A summary of the Proponent's understanding of the BC EA process in promoting sustainable development while minimizing effect to environmental, economic, social, heritage and health values.
- A description on how the Project aligns with the goal of the BC EA process and, the CEAA process; and,
- A request for an EA Certificate for the Project and the successful completion of the federal EA and subsequent permitting/ authorization processes prior to proceeding with Project construction, operation and decommissioning.

SECTION 21.0 - REFERENCES

A list of references used in the Application/EIS will be provided.

ASTM International Designation D 1739-98. 2004. Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).

BC Oil and Gas Commission. 2009. The British Columbia Noise Control Best Practices Guideline.

CCME. 2007. Guidance Document on Continuous Improvement (CI) and Keeping-Clean-Areas-Clean (KCAC). Canada-wide Standards for Particulate Matter and Ozone. PN 1389. ISBN 978-1-896997-72-8 PDF.

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CEA Agency. 1999. Cumulative Effects Assessment Practitioners Guide. Prepared by The Cumulative Effects Assessment Working Group and AXYS Environmental Consulting Ltd.

CEA Agency. 2006. Canadian Environmental Assessment Agency: Glossary. Available at: http://www.ceaa-acee.gc.ca/

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City of Kamloops. No Date. Sustainable Kamloops Plan, Information Package on Air Quality (Final Version). Available at: http://64.114.94.71/environment.htm.

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Environment Canada. 2011. Guidelines for the Assessment of Alternatives for Mine Waste Disposal. Guidelines for the Assessment of Alternatives for Mine Waste Disposal.

Federal Environmental Assessment Review Office. 1994. Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects. A Reference Guide for the Canadian Environmental Assessment Act.

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Federal-Provincial-Territorial Committee on Drinking Water. 2010. Guidelines for Canadian Drinking Water Quality Summary Table. Federal-Provincial-Territorial Committee on Health and the Environment, December 2010

Fisheries and Oceans. 2007. Overhead Line Construction (Version 3.0). Fisheries and Oceans Canada Pacific Region Operational Statement. DFO/2007-1283.

Fisheries and Oceans. 2007. Maintenance of Riparian Vegetation in Existing Rights-Of-Way. Fisheries and Oceans Canada Pacific Region Operational Statement. DFO/2007-1283.

Forest and Range Evaluation Program. 2011. Cultural Heritage Resource Value Data Management Guidelines, 2011.

International Standards Organization (ISO). 2003. Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures. CAN/CSA-ISO 1996-1-05 (Adopted ISO 1996-1:2003, Second Edition, 2003-08-01)

Ministry of Environment, Lands, and Parks and Ministry of Forests (MELP and MOF). 1998. Field Manual for Describing Terrestrial Ecosystems.

Ministry of Environment, Lands and Parks (MELP). 1997. Terrain Classification System for British Columbia. Version 2.

Ministry of Energy and Mines (MEM) and Ministry of Environment, Lands and Parks (MELP). 1998. Policy for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

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MOE. 2012a. Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities. Prepared by Robertson Geoconsultants Inc. and SRK Consulting for Water Protection and Sustainability Branch.

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Ministry of Water, Land and Air Protection (MWLAP). 2003. British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples.

Price, W.A. and Errington J.C. 1998. Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. Ministry of Energy and Mines.

Robertson A. and Shaw S. Mine Closure, Infomine E-book, http://www.infomine.com/library/publications/docs/e-book%2002%20mine%20closure.pdf. Accessed October 2014.

U.S. Environmental Protection Agency. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. US EPA Report no. 550/9-74-004.

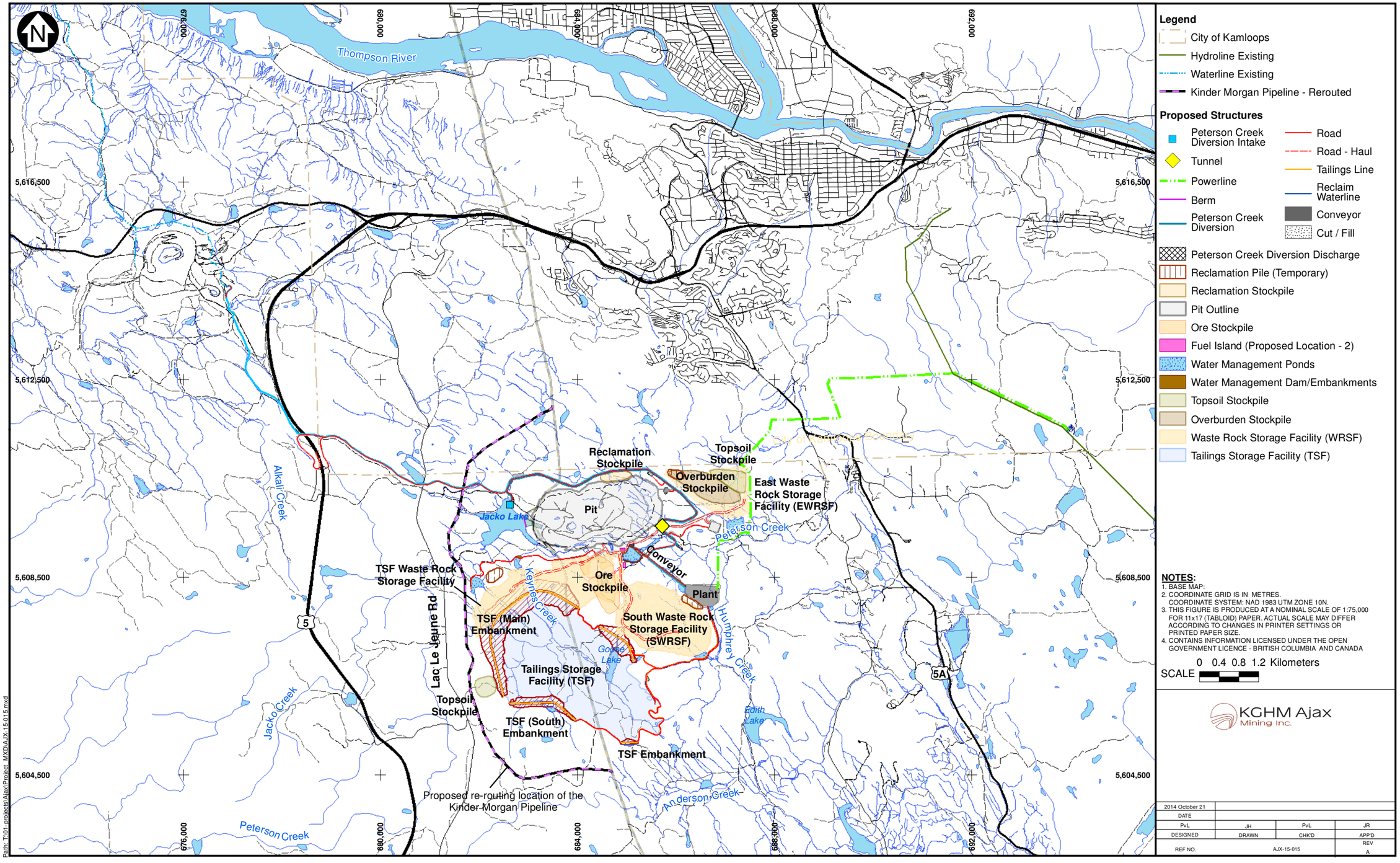
Wardrop. 2009. Ajax Copper/Gold Project, Kamloops, British Columbia – Preliminary Assessment Technical Report. Document No. 0854610100-REP-R0001-02.

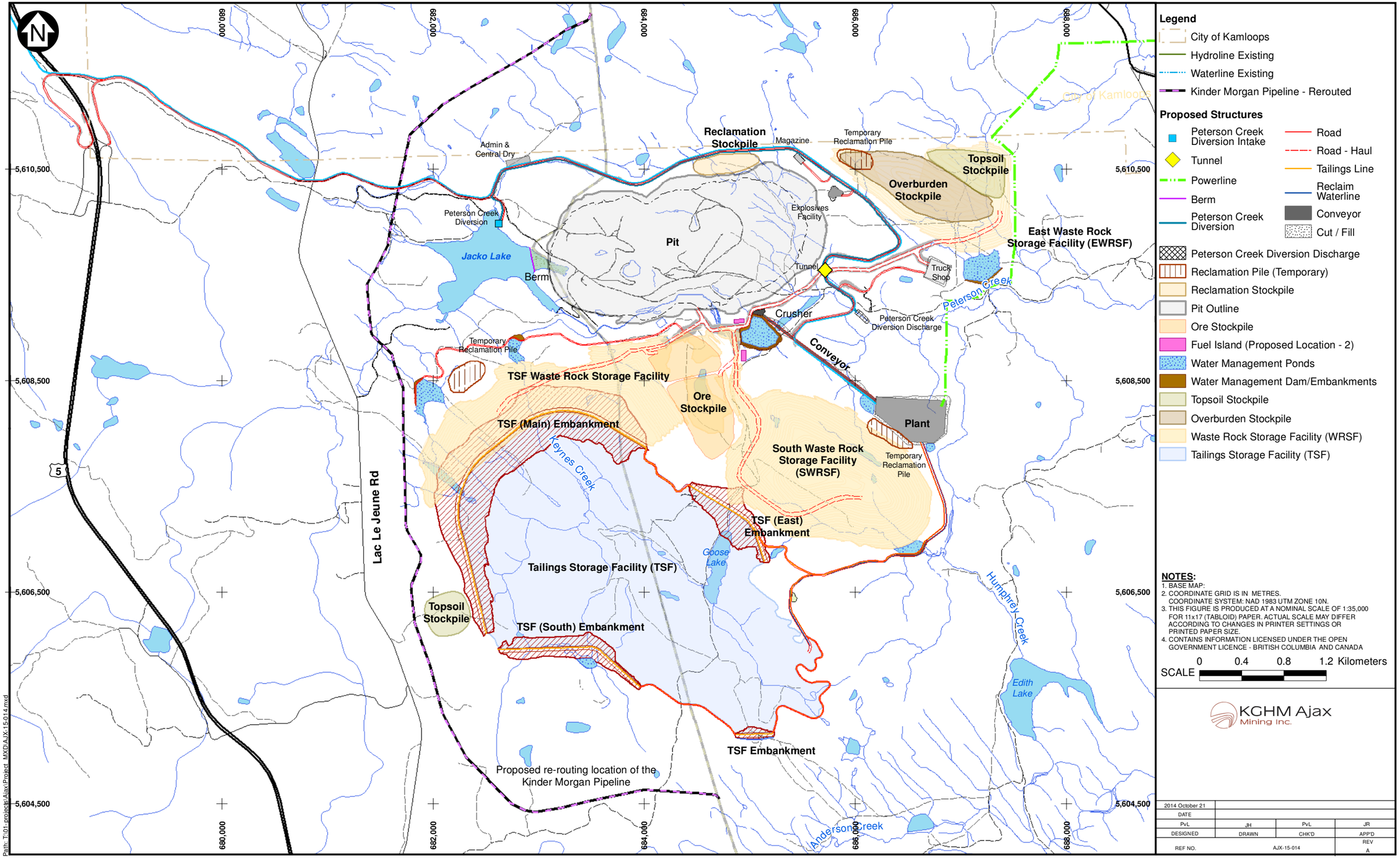
Wardrop. 2011. Ajax Copper/Gold Project – Kamloops, British Columbia. Feasibility Study Technical Report. Document No. 1054610300-REP-R0004-00.

World Health Organization. 1999. Guidelines for Community Noise.

FIGURES

Figure 2.2-1
Project Location




N
680,000
682,000
684,000
686,000
688,000
5,610,500
5,608,500
5,606,500
5,604,500
Admin & Central Dry
Reclamation Stockpile
Magazine
Temporary Reclamation Pile
Topsoil Stockpile
Overburden Stockpile
City of Kamloops
Peterson Creek Diversion
Explosives Facility
Pit
Jacko Lake
Berm
Tunnel
Truck Shop
East Waste Rock Storage Facility (EWRSF)
Peterson Creek
Crusher
Peterson Creek Diversion Discharge
Conveyor
Temporary Reclamation Pile
TSF Waste Rock Storage Facility
Ore Stockpile
Plant
TSF (Main) Embankment
Keynes Creek
South Waste Rock Storage Facility (SWRSF)
Temporary Reclamation Pile
TSF (East) Embankment
Goose Lake
Tailings Storage Facility (TSF)
Topsoil Stockpile
TSF (South) Embankment
Humphrey Creek
Edith Lake
TSF Embankment
Proposed re-routing location of the Kinder Morgan Pipeline
Anderson Creek
Lac Le Jeune Rd
5
Legend
City of Kamloops
Hydroline Existing
Waterline Existing
Kinder Morgan Pipeline - Rerouted
Proposed Structures
Peterson Creek Diversion Intake
Tunnel
Powerline
Berm
Peterson Creek Diversion
Road
Road - Haul
Tailings Line
Reclaim Waterline
Conveyor
Cut / Fill
Peterson Creek Diversion Discharge
Reclamation Pile (Temporary)
Reclamation Stockpile
Pit Outline
Ore Stockpile
Fuel Island (Proposed Location - 2)
Water Management Ponds
Water Management Dam/Embankments
Topsoil Stockpile
Overburden Stockpile
Waste Rock Storage Facility (WRSF)
Tailings Storage Facility (TSF)
NOTES:
1. BASE MAP:
2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.
3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:35,000 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
0 0.4 0.8 1.2 Kilometers
SCALE
KGHM Ajax Mining Inc.
2014 October 21
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PvL
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REF NO.
AJX-15-014
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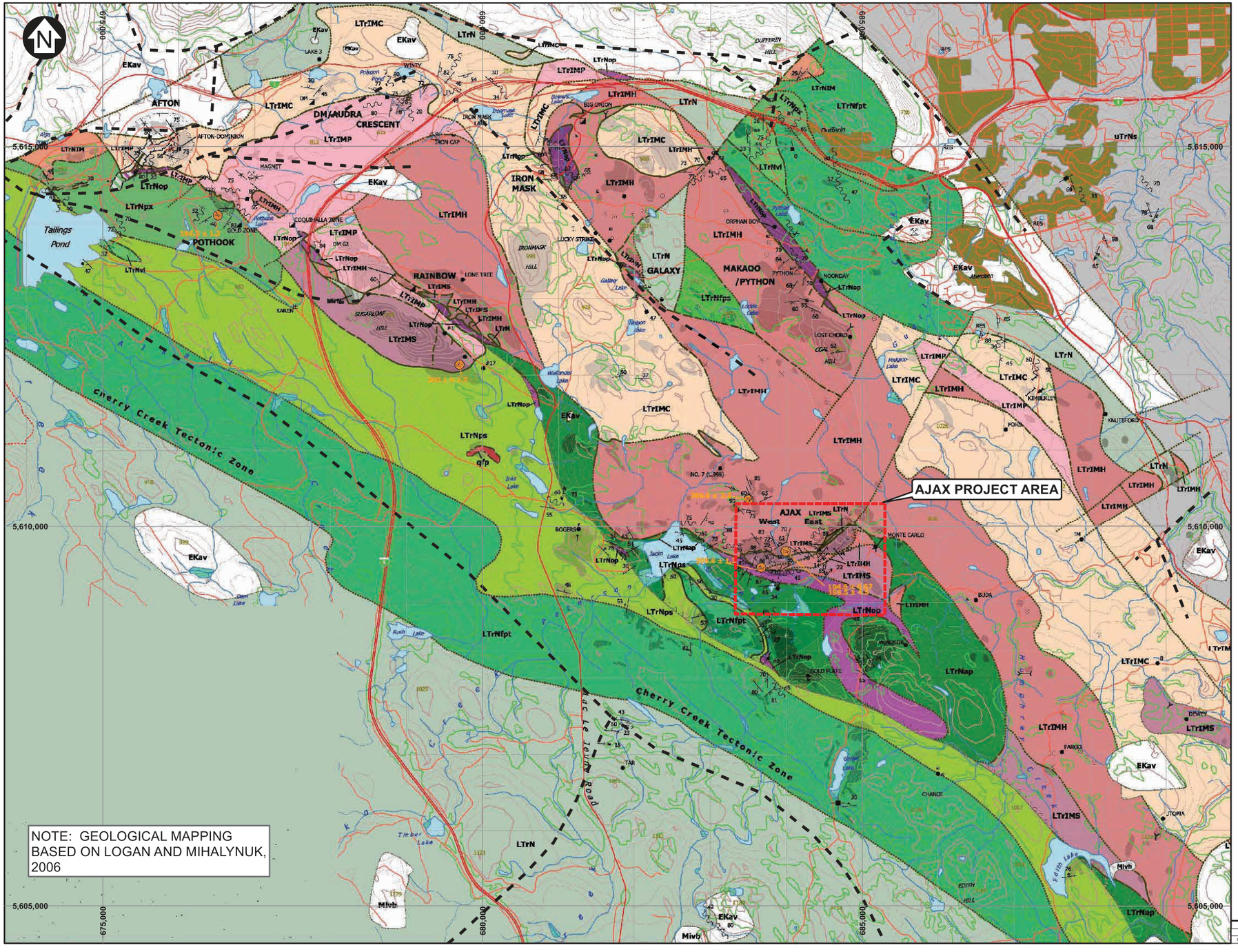


LEGEND:

GENERAL

- RIVER
- LAKE
- CITY OF KAMLOOPS
- ROAD
- CONTOUR

GEOLOGY

- LTrIMS - SUGARLOAF: PORPHYRITIC HOMBLENDE DIORITE
- LTrIMC - CHERRY CREEK: BIOTITE MONZONITE TO MONZODIORITE
- LTrIMP - POTHOOK: COARSE BIOTITE PYROXENE DIORITE
- LTrIMH - AFTON UNDERGROUND ORE ZONE: >0.5% EQUIVALENT
- LTrNfpt - FELDSPARt> PYROXENE- PORPHYRITIC LAPILI TUFF
- LTrNop - PICRITE, BRECCIA
- LTrNap - COARSE AUGITE PORPHYRY
- LTrNps - SEDIMENTS WITH AUGITE PORPHYRY SOURCE
- LTrN - UNDIVIDED VOLCANIC AND SEDIMENTARY ROCKS

NOTES:

1. BASE MAP: GEOLOGICAL DATA OBTAINED FROM BC GEOLOGICAL SURVEY "GEOLOGY OF THE IRON MASK BATHOLITH".

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:50,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 0.5 0.25 0 0.5 1 1.5 2 2.5 km

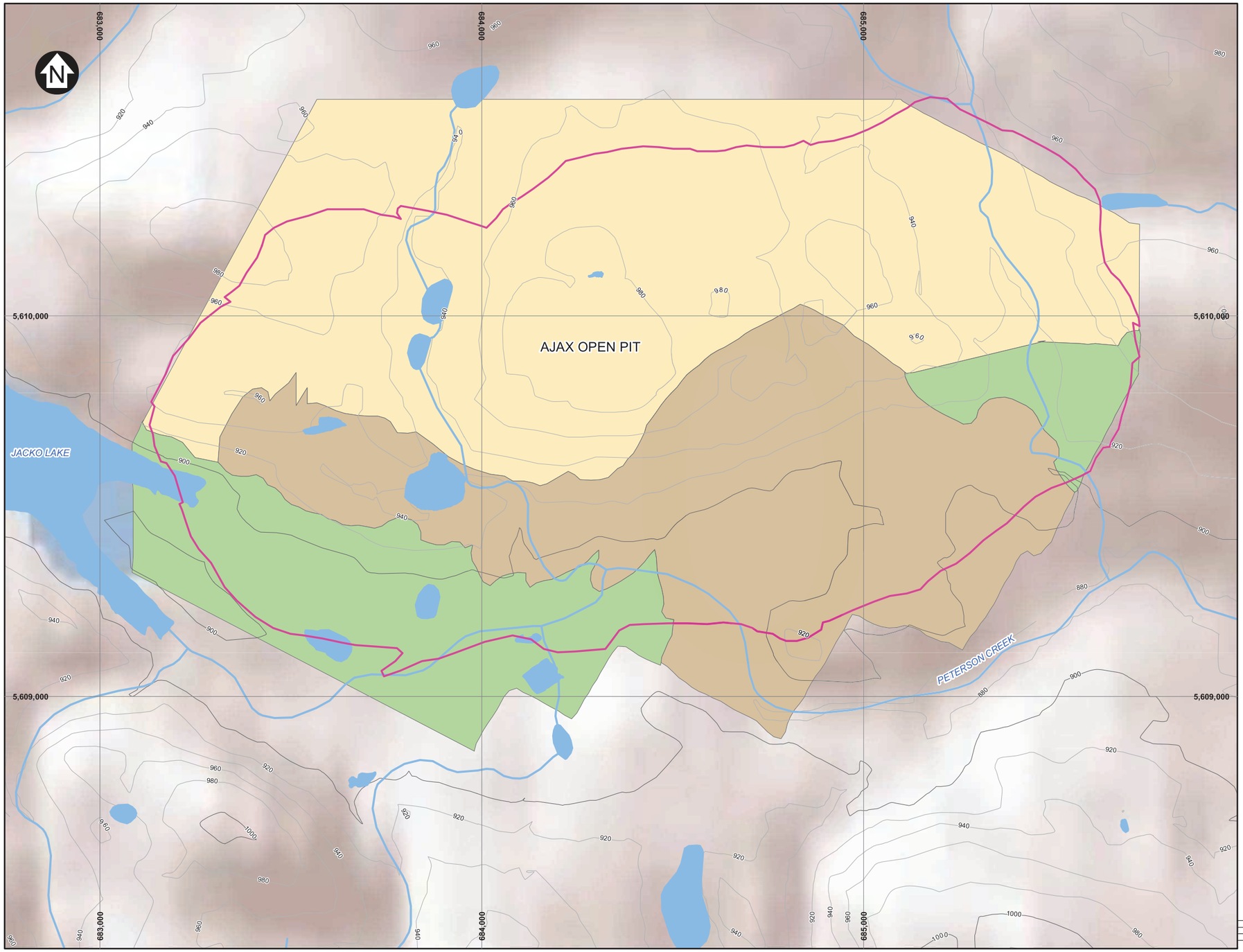
KGHM AJAX MINING INC.

AJAX PROJECT

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHKD	APPD
1	17MAY'13	ISSUED WITH REPORT	TS	CC	SJL	RCB
0	22JUL'10	ISSUED WITH REPORT	TS	JPN	TS	RCB

Figure 3.1-2
Ajax Pit Geology

Knight Piésold CONSULTING



LEGEND:

- 20m CONTOUR
- AJAX OPEN PIT OUTLINE
- LAKE

GEOLOGY:

- IRON MASK HYBRID
- NICOLA VOLCANICS
- SUGARLOAF DIORITE

NOTES:

1. BASE MAP: LIDAR CONTOUR AND WARDROP GEOLOGICAL MAPPING

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:10,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

4. CONTOUR INTERVAL IS 20 METRES. DATA SOURCED FROM BC TRIM MAPPING.

SCALE 0.1 0.05 0 0.1 0.2 0.3 0.4 0.5 km

KGHM AJAX MINING INC.

AJAX PROJECT

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
3	17MAY13	ISSUED WITH REPORT	TS	JN	TS	RCB
2	13FEB13	ISSUED WITH REPORT	TS	CC	SJL	RCB
1	24JAN13	ISSUED WITH REPORT	TS	AMD	SCE	RCB

Figure 6.3-1
Surface Water Quality Effects Study Area

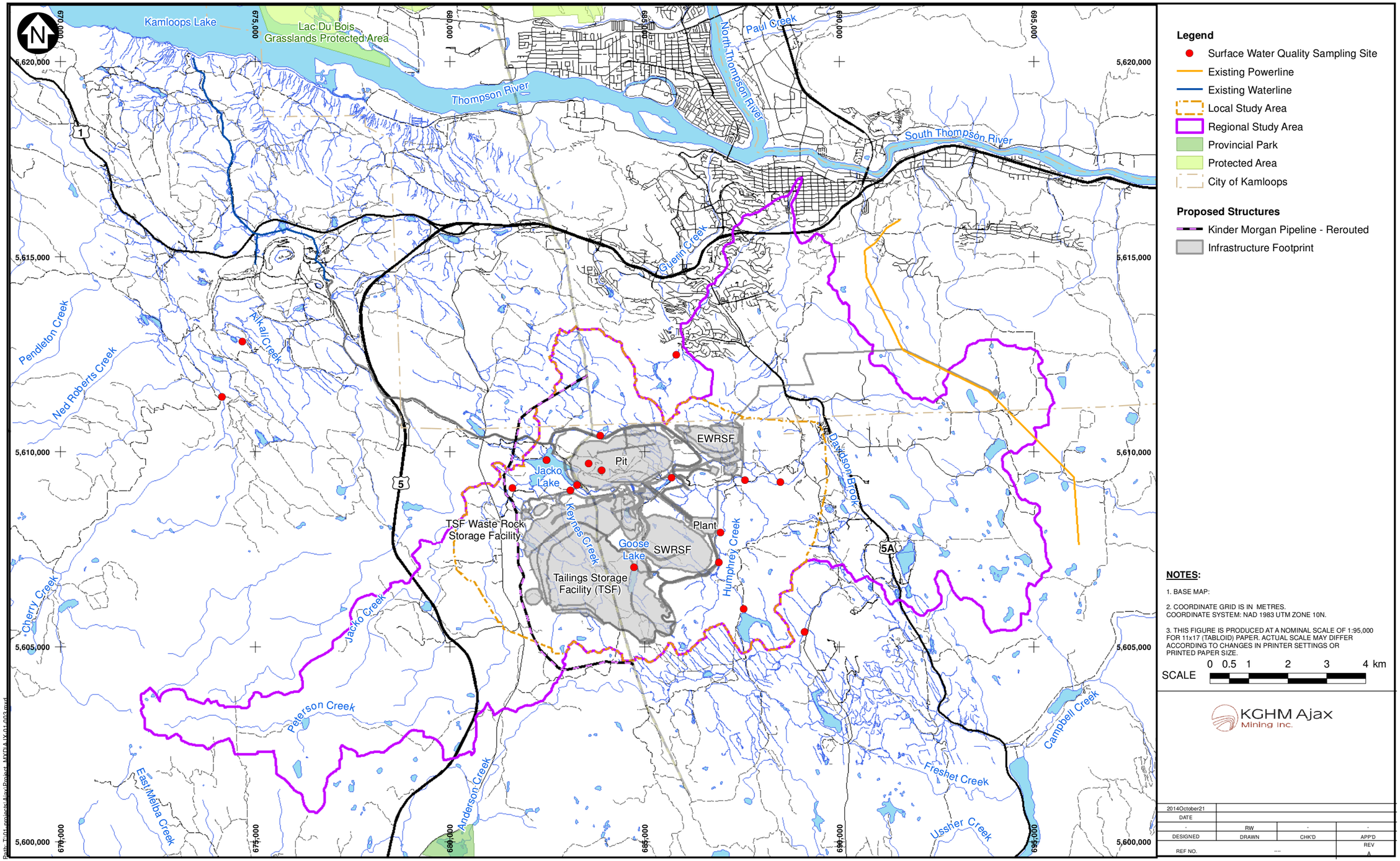
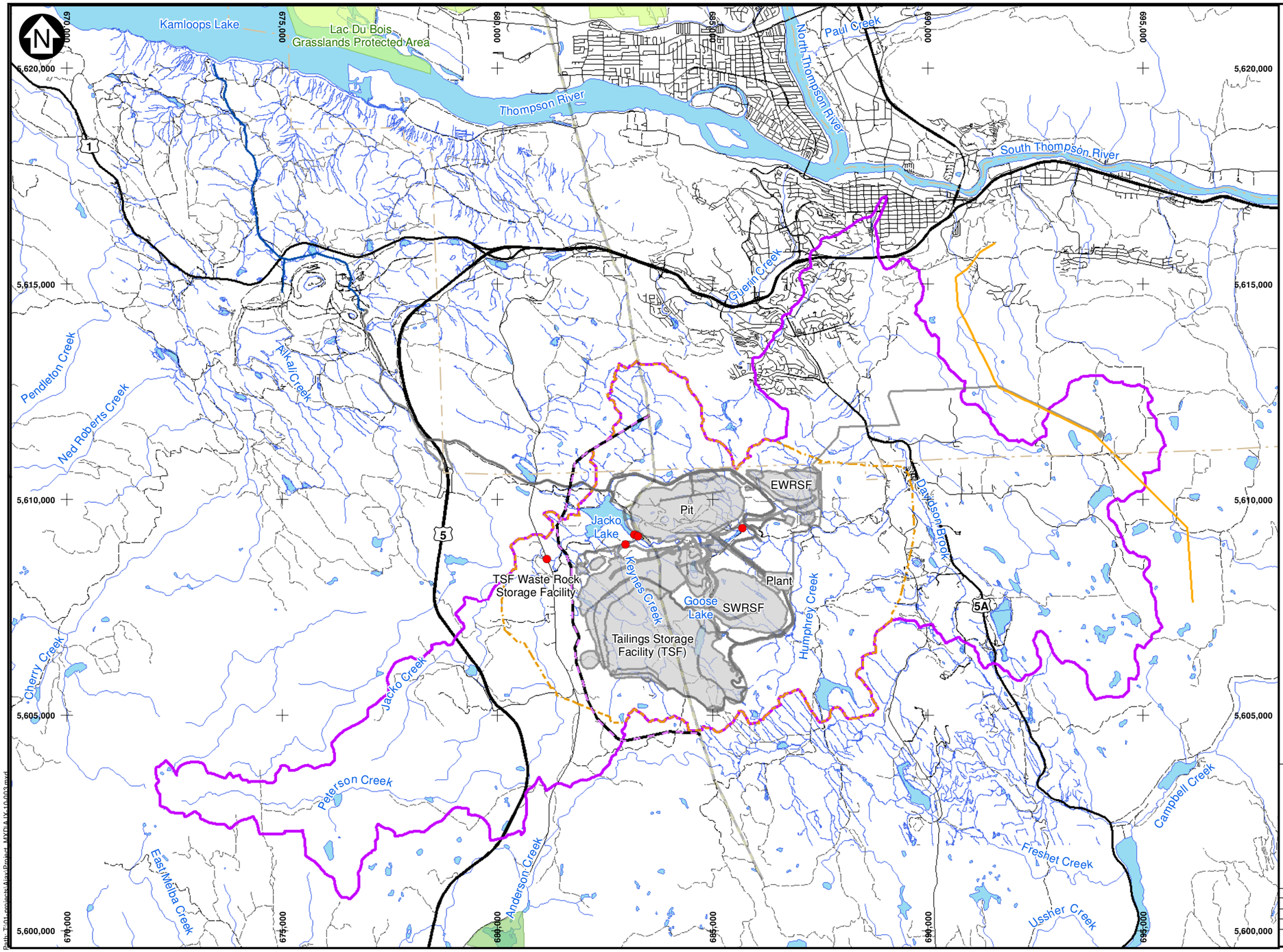


Figure 6.4-1
Surface Hydrology Effects Study Area

ERM



Legend

- Stream Flow Sampling Site
- Existing Powerline
- Existing Waterline
- Local Study Area
- Regional Study Area
- Provincial Park
- Protected Area
- City of Kamloops

Proposed Structures

- Kinder Morgan Pipeline - Rerouted
- Infrastructure Footprint

NOTES:

1. BASE MAP:

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:95,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

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KGHM Ajax Mining Inc.

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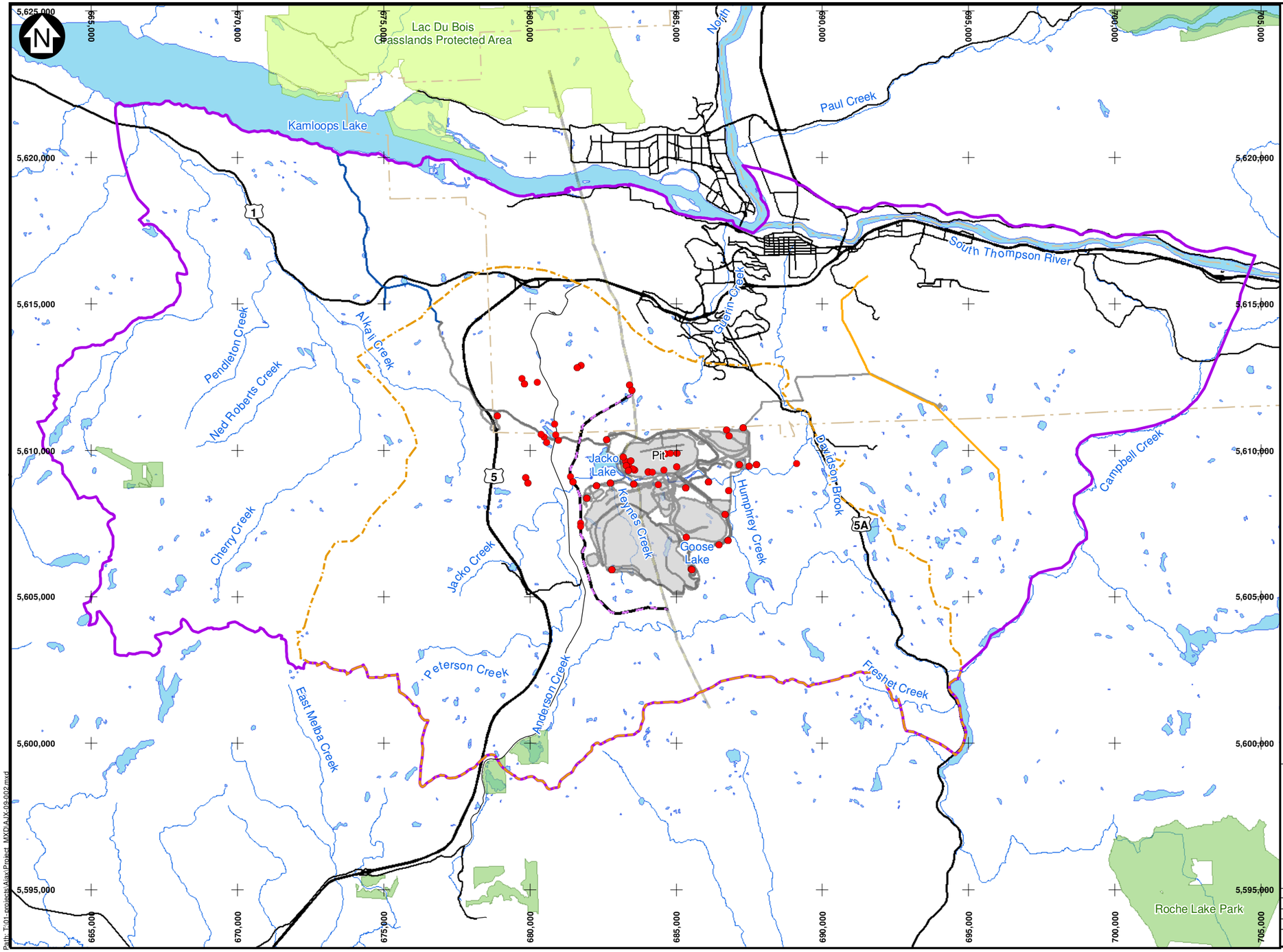
Figure 6.5-1
Groundwater Effects Study Area



Legend

- Groundwater Well
- Existing Powerline
- Existing Waterline
- Local Study Area (LSA)
- Regional Study Area (RSA)
- Provincial Park
- Protected Area
- City of Kamloops

Proposed Structures

- Kinder Morgan Pipeline - Rerouted
- Infrastructure Footprint

NOTES:

1. BASE MAP:

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:140,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 0 1 2 3 4 km

KGHM Ajax Mining Inc.

2014October20			
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Figure 6.7-1
Aquatics Effects Study Area

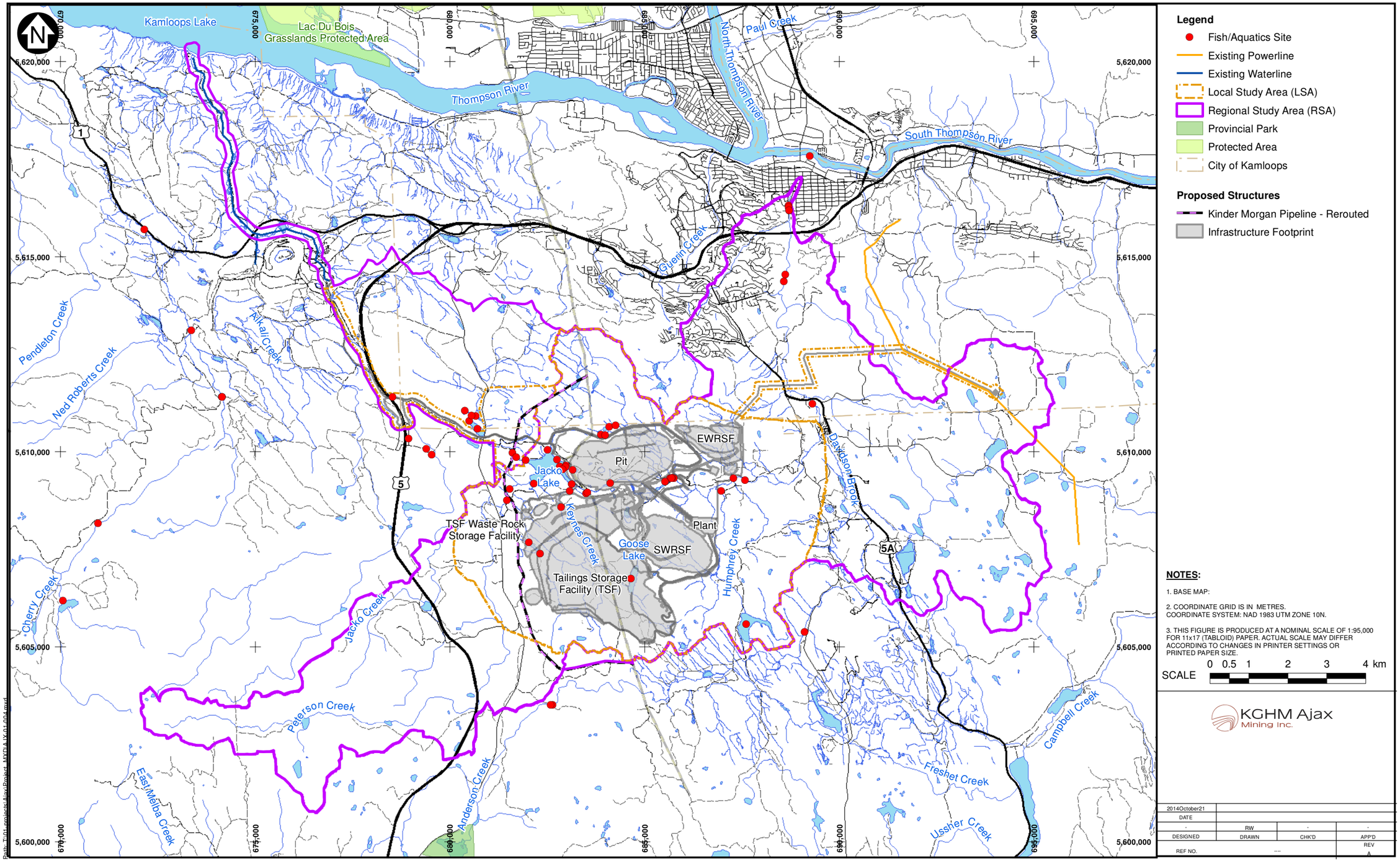
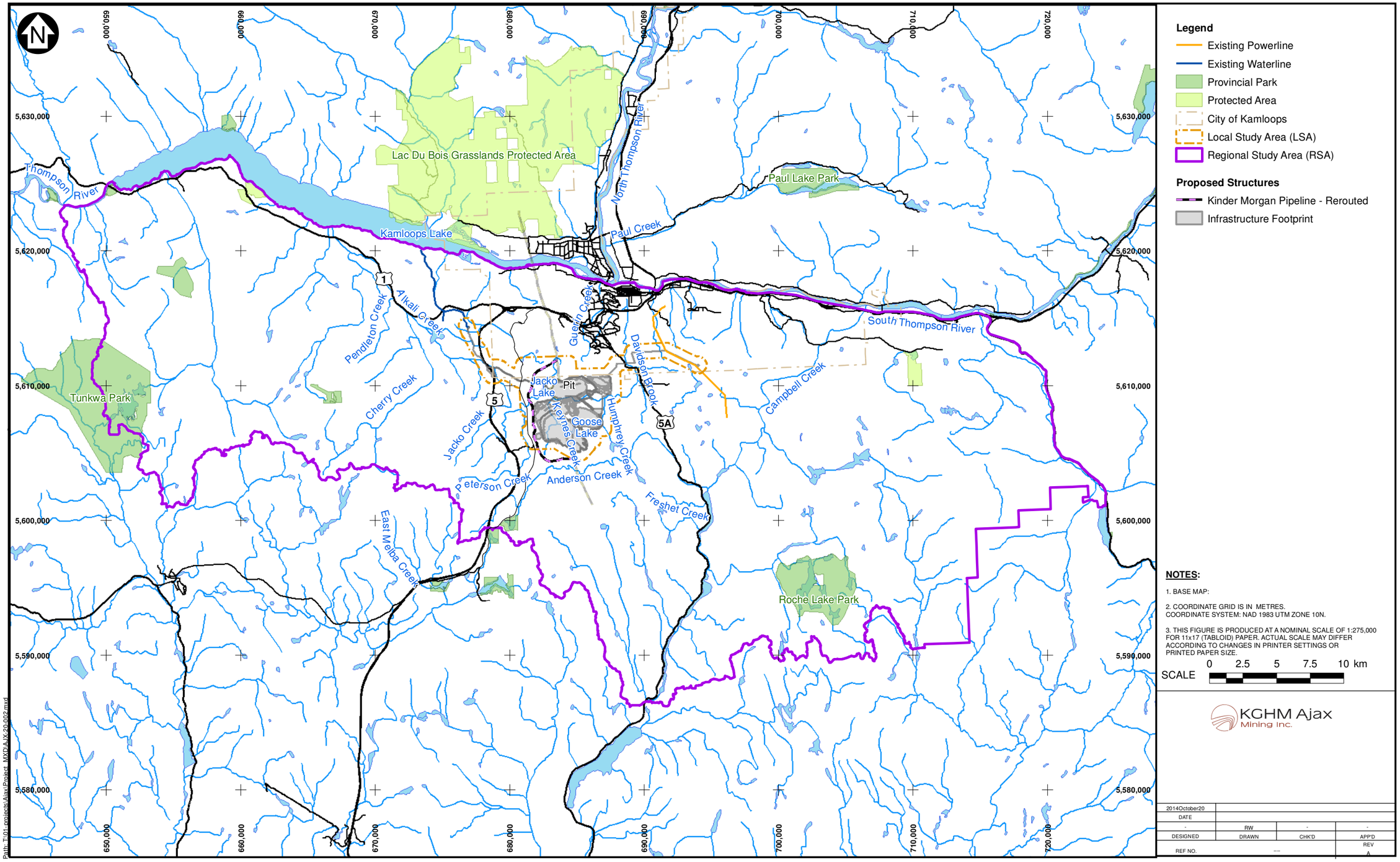


Figure 6.8-1
Terrestrial Biophysical Effects Study Area



Legend

- Existing Powerline
- Existing Waterline
- Provincial Park
- Protected Area
- City of Kamloops
- Local Study Area (LSA)
- Regional Study Area (RSA)

Proposed Structures

- Kinder Morgan Pipeline - Rerouted
- Infrastructure Footprint

NOTES:

1. BASE MAP:

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:275,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

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KGHM Ajax Mining Inc.

2014October20			
DATE			
-	RW	-	-
DESIGNED	DRAWN	CHK'D	APP'D
REF NO.	---		REV A

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Figure 7.1-1
Economic and Social Effects Study Area

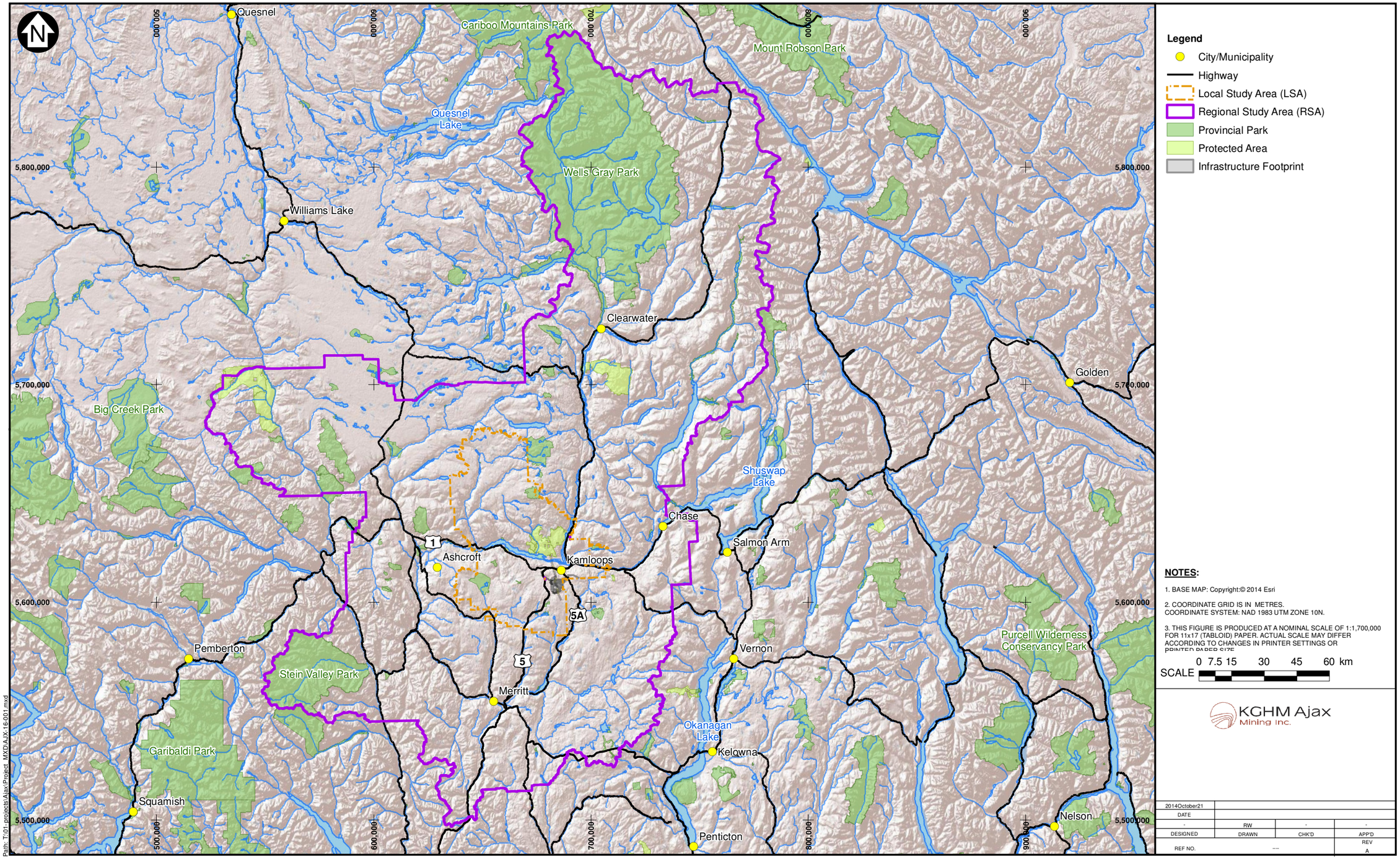


Figure 8.3-1
Dark Sky Effects Study Area

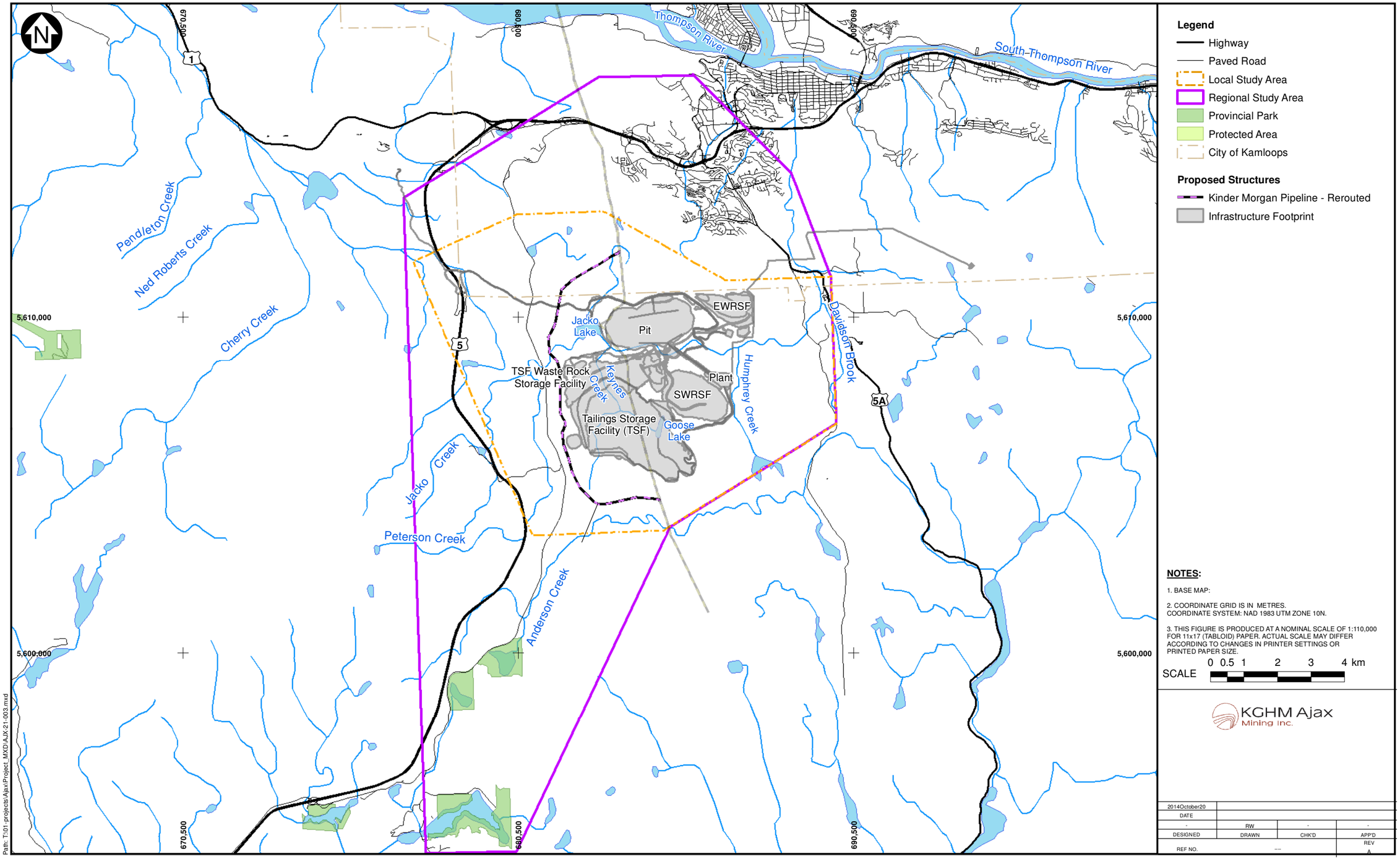


Figure 8.4-1
Visual Impact / Aesthetics Effects Study Area

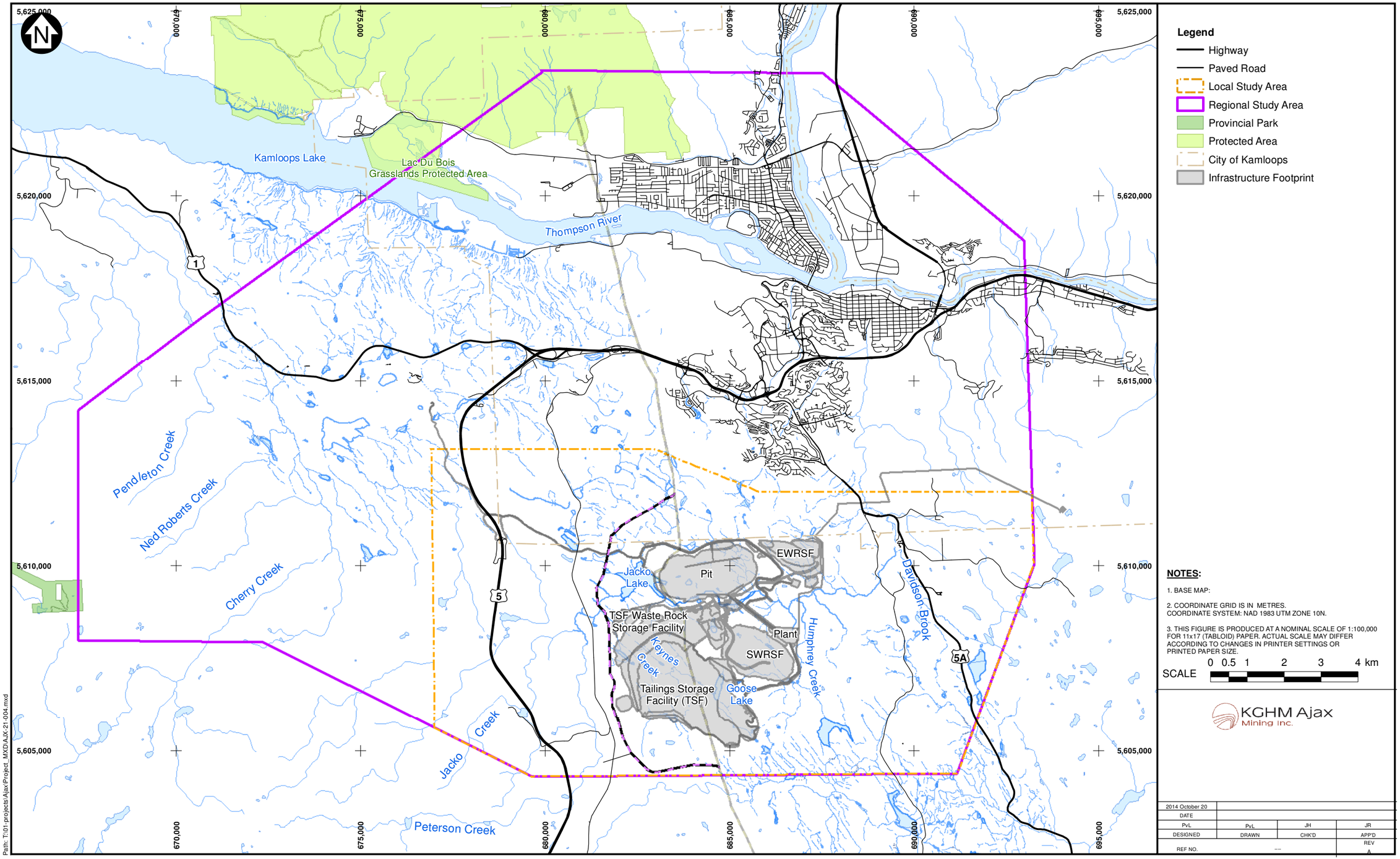


Figure 9.1-1
Heritage Effects Study Area

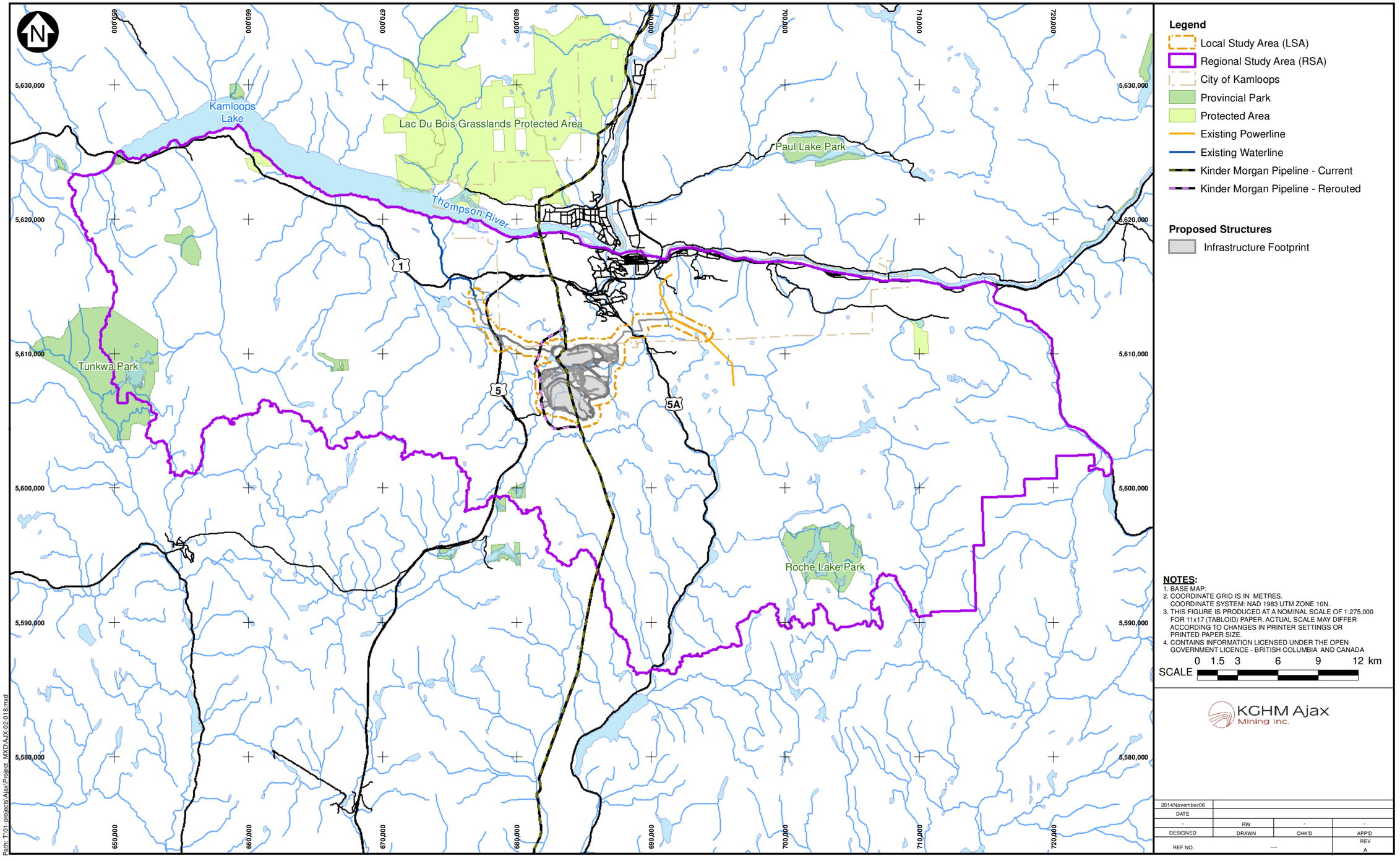
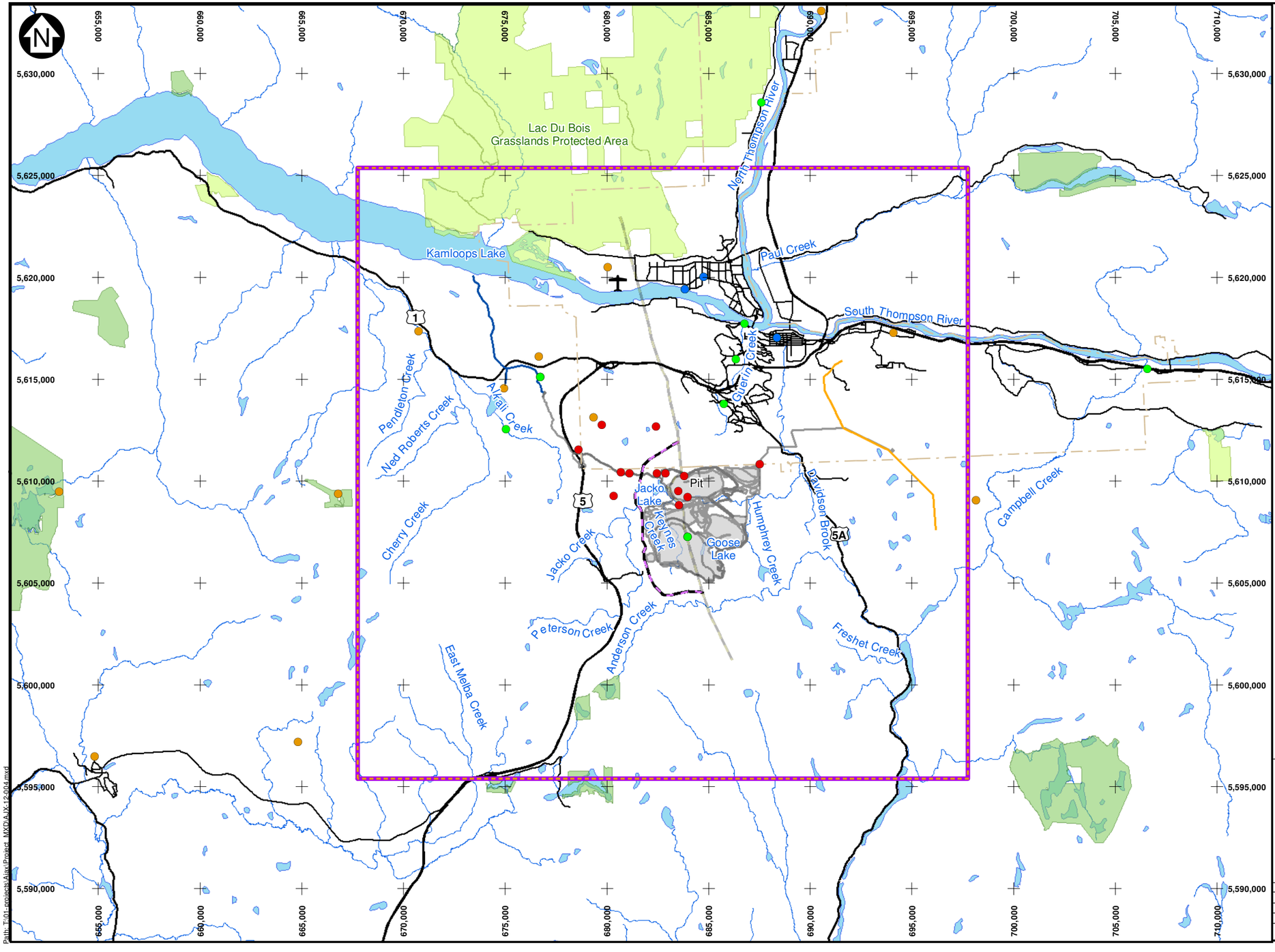


Figure 10.1-1
Air Quality Effects Study Area and Monitoring Locations

ERM



Legend

- Regional Climate Monitoring Station
- Continuous Monitoring Station
- Intermittent Monitoring Station
- Dustfall Monitoring Station
- Kamloops Airport
- Existing Powerline
- Existing Waterline
- Provincial Park
- Protected Area
- Local Study Area (LSA)
- Regional Study Area (RSA)
- City of Kamloops

Proposed Structures

- Kinder Morgan Pipeline - Rerouted
- Infrastructure Footprint

NOTES:

1. BASE MAP:

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:200,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

SCALE 0 1 2 3 4 km

KGHM Ajax Mining Inc.

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Figure 10.4-1
Noise and Vibration Effects Study Area