



**SUMMARY OF PUBLIC COMMENTS AND
PROPONENT RESPONSES
ON THE
DRAFT APPLICATION INFORMATION
REQUIREMENTS / ENVIRONMENTAL IMPACT
STATEMENT GUIDELINES
FOR THE PROPOSED
KGHM AJAX MINING INC.
AJAX PROJECT**

May 22, 2013



Dear Interested Public,

The Ajax Project, a proposed copper and gold mine located on the southwest side of Kamloops, B.C. is progressing through the preliminary steps of the Environmental Assessment process. The mine, a component of the Ajax Project, is proposed to be constructed, operated, decommissioned, and closed as part of the overall Project, which includes the regulatory review processes and permitting. The Project is subject to review by both the provincial Environmental Assessment Office (EAO) and the federal Canadian Environmental Assessment Agency (CEA Agency) and is being carried out through a cooperative process.

As part of the Environmental Assessment process, a terms of reference document was developed to specify requirements for the eventual studies and analyses to be submitted for evaluation. The terms of reference document follows a template supplied by the EAO, and is called the Application Information Requirements (AIR) in the provincial process, and the Environmental Impact Statement (EIS) Guidelines in the federal process. As both levels of government have coordinated their review of the Ajax Project, one single document is developed to satisfy both processes. The document is typically referred to as the AIR/EIS Guidelines.

The draft AIR/EIS Guidelines (Revision D) was published on the EAO Project Information Centre and CEA Agency websites on January 11, 2012; a summary of the draft AIR/EIS Guidelines was also published on the CEA Agency website. The public was invited to submit written comments on the document to the EAO and CEA Agency during the 75 day public comment period that occurred between January 11 and March 27, 2012. The purpose of the public comment period was to capture public concerns and ensure that the final AIR/EIS Guidelines is a comprehensive document that dictates the issues that will be addressed in the environmental assessment and the information that must be included in the final application, such as baseline study results or the approach to assessing cumulative effects. In total, 345 public comments were received during the 75 day public comment period and tracked in a public comments tracking table.

In the attached Public Comments Summary document, we provide an overview of the key issues noted in the 345 public comments received on the draft AIR/EIS Guidelines. Following revision of the draft in consideration of comments received and at the direction of the EAO and CEA Agency, the AIR/EIS Guidelines are now finalized and approved. We will now proceed with completing the studies outlined, to be included in an Environmental Assessment report, submitted as both an Application for an Environmental Assessment Certificate for provincial review and an Environmental Impact Statement for federal review. There will be an additional public comment opportunity during review of the completed Application/EIS.

Sincerely,
KGHM Ajax Mining Inc.

Mr. Dan Ferriter
Vice President, Environment
KGHM Ajax Mining Inc.



**KGHM AJAX MINING INC.
AJAX PROJECT**

**DRAFT APPLICATION INFORMATION REQUIREMENTS / ENVIRONMENTAL IMPACT STATEMENT
GUIDELINES
SUMMARY OF PUBLIC COMMENTS**

TABLE OF CONTENTS

	PAGE
SECTION 1.0 - INTRODUCTION	1
1.1 BACKGROUND	1
1.2 PURPOSE	2
1.3 FINDING INDIVIDUAL COMMENTS IN THE TRACKING TABLE	2
1.4 EAO AND CEAA AGENCY REVIEW PROCESS	2
SECTION 2.0 - SUMMARY OF PUBLIC COMMENTS TRACKING AND RESULTS	4
2.1 PUBLIC COMMENT TRACKING METHODOLOGY FOR AJAX PROJECT DRAFT AIR/ EIS GUIDELINES	4
2.2 OVERVIEW OF PUBLIC COMMENTS	6
2.3 OVERVIEW OF PROPONENT RESPONSES	8
SECTION 3.0 - KEY PUBLIC ISSUES	9
3.1 EAO / CEA AGENCY / PROCESS COMMENTS	9
3.2 PROJECT COMMENTS	9
3.3 VALUED COMPONENTS COMMENTS	10
3.3.1 Environmental Assessment Category	13
3.3.2 Economic Assessment Category	24
3.3.3 Social Assessment Category	30
3.3.4 Health Assessment Category	34
SECTION 4.0 - AIR/EIS GUIDELINES REVISION	43
SECTION 5.0 - REFERENCES	45

TABLES

Table 1	Comment Type Designations	4
Table 2	Draft AIR/EIS Guidelines (Revision D) VCs for the Proposed Ajax Project	5
Table 3	Climate VC Key Concerns.....	14
Table 4	Geology, Landforms, and Soils VCs Key Concerns.....	14
Table 5	Surface Water Quality VC Key Concerns.....	16
Table 6	Surface Water Quantity VC Key Concerns	18
Table 7	Groundwater Quality VC Key Concerns.....	19
Table 8	Groundwater Quantity VC Key Concerns.....	20
Table 9	Fish and Fish Habitat VC Key Concerns.....	21
Table 10	Rare and Sensitive Ecological Communities VCs Key Concerns	21
Table 11	Mammal VC Key Concerns	23
Table 12	Labour Force VC Key Concerns.....	25
Table 13	Employment and Business VCs Key Concerns	26
Table 14	Housing VC Key Concerns.....	26
Table 15	Infrastructure and Transportation VC Key Concerns	28
Table 16	Economic Diversification VC Key Concerns.....	29
Table 17	Culture VC Key Concerns	30
Table 18	Community Health and Well-being VC Key Concerns	31
Table 19	Public Facilities and Services VC Key Concerns	32
Table 20	Land and Resource Use VC Key Concerns	32
Table 21	Visual Impact / Aesthetic Features VC Key Concerns	34
Table 22	Air Quality VC Key Concerns	35
Table 23	Noise/Vibration VC Key Concerns	39
Table 24	Preliminary and Final VCs for the Ajax Project	44

FIGURES

Figure 1	Tracking Table Template.....	2
Figure 2	Coordinated Federal and Provincial Review Steps	3
Figure 3	Proportion of Issues by Comment Type	6
Figure 4	Summary of Issues by Assessment Category.....	7
Figure 5	Summary of Issues by Project Component or Activity	7
Figure 6	Number of Issues by Preliminary VC	11
Figure 7	Project Effects Assessment Methodology	12
Figure 8	Conceptual Pathway of Effects for Project VC Interactions	13

List of Abbreviations and Acronyms

Ajax Project	the Project
Application for an Environmental Assessment Certificate	Application
Application Information Requirements	AIR
British Columbia	BC
British Columbia Environmental Assessment Act	BCEAA
Canadian Environmental Assessment Act	CEAA
Canadian Environmental Assessment Agency	CEA Agency
Environmental Assessment	EA
Environmental Assessment Certificate	Certificate
Environmental Assessment Office	EAO
Environmental Impact Statement	EIS
Environmental Impact Statement Guidelines	EIS Guidelines
Human Health and Ecological Risk Assessment	HHERA
KGHM Ajax Mining Inc.	KAM
Life of Mine	LOM
Ministry of Environment	MOE
Oil and Gas Commission	OGC
Project Information Centre website	e-PIC
Not applicable	n/a
Quality Assurance/Quality Control	QA/QC
Tailings Storage Facility	TSF
Technical Working Group	TWG
Thompson Nicola Regional District	TNRD

SECTION 1.0 - INTRODUCTION

1.1 BACKGROUND

The Ajax Project (the Project) is comprised of the regulatory process and permitting activity in support of a proposed open-pit copper-gold mine at the historic Afton Mining Camp, adjacent to and partially within the City of Kamloops, British Columbia (BC). The Proponent is KGHM Ajax Mining Inc. (KAM).

In BC, proposed major projects are required to obtain an Environmental Assessment Certificate (Certificate) in accordance with the BC *Environmental Assessment Act* (BCEAA). An Application for an Environmental Assessment Certificate (Application) must be made to the Environmental Assessment Office (EAO); the Application must comply with the terms of reference set out in an Application Information Requirements (AIR) document. Similarly, federal approval is required under the *Canadian Environmental Assessment Act* (CEAA), managed by the Canadian Environmental Assessment Agency (CEA Agency). Proposed federal studies are outlined in an Environmental Impact Statement Guidelines (EIS Guidelines) document; information needed to complete the federal Environmental Assessment (EA) process is submitted to the CEA Agency for approval in an Environmental Impact Statement (EIS). The federal-provincial coordination process allows submission of a single document to meet the needs of the AIR and EIS Guidelines. As part of the consultation process, a draft AIR/EIS Guidelines is reviewed by the EAO, CEA Agency, and Technical Working Group (TWG), comprised of members of municipal, provincial, and federal government agencies and First Nations groups, prior to being released for public review and comment. The public is invited to provide input focussing on issues that should be included in the assessment, and the information required to address those issues. Public input ensures that public concerns relevant to the assessment are identified so they may be examined and addressed where required (Environmental Assessment Office, 2011).

The Ajax Project AIR/EIS Guidelines (Revision D) document is available electronically on the EAO Project Information Centre website (e-PIC, [Environmental Assessment Office Home](#)). The AIR/EIS Guidelines and a summary of the document are available on the Canadian Environmental Assessment Registry website ([Canadian Environmental Assessment Registry](#)). The public comment period for the Ajax Project draft AIR/EIS Guidelines ran from January 11, 2012 to March 27, 2012, a period of 75 days. During this period, the EAO and CEA Agency held information sessions in Kamloops, B.C. on February 6 and 7, 2012. Environmental assessment representatives from the EAO and CEA Agency and technical experts from KAM were available at these information sessions to answer questions about the federal and provincial review process and discuss proposed information that would be included in the future Application/EIS.

All public submissions received by the EAO and CEA Agency on the Ajax Project draft AIR/EIS Guidelines during the public comment period were tracked by the Proponent in a Microsoft Excel spreadsheet (the “tracking table”) and addressed by the Proponent. In total, 345 submissions were received during the 75 day public comment period. After initial review by the EAO and CEA Agency, the draft tracking table was circulated to members of the TWG for comment on the adequacy and acceptability of Proponent responses. The Proponent then had an opportunity to revise any responses flagged by the TWG, EAO, and CEA Agency. The Final Public Comments Tracking Table (in Adobe

Acrobat portable document format) is posted on e-PIC after a detailed review by the EAO and CEA Agency.

1.2 PURPOSE

The purpose of this Public Comments Summary document is to provide an overview of the public comments received on the Ajax Project draft AIR/EIS Guidelines (Revision D); the major issues identified; and the Proponent responses to concerns. The focus of this document is on key issues; these key issues were selected primarily based on a large number of public comments received or at the direction of the EAO or CEA Agency. In some instances, due to the complexity of the issue, the tracking table format limited the Proponent’s ability to address the issue; in these cases a brief response is provided in the table and the reader is referred to this Public Comments Summary document for a more comprehensive explanation.

1.3 FINDING INDIVIDUAL COMMENTS IN THE TRACKING TABLE

All public comments received by the EAO and CEA Agency during the formal public comment period were posted by the EAO to e-PIC by chronological order. Submissions can be found on e-PIC in the Public Comments/Submissions file of the Pre-Application folder.

The Proponent transcribed the submissions into a Microsoft Excel spreadsheet following a template recommended by the EAO and CEA Agency (Figure 1), and each submission was assigned a unique number (Submission #). Where a submission exceeded the maximum character limits of an individual spreadsheet cell, or where more than one issue was raised in a submission, the submission was separated into multiple rows by issue. Each row was then assigned a unique identifier (Issue #).

Issue #	Submission #	Date Posted	Name	Location	Comment	AIR Section	Proponent Response	Discussed in Summary Document

Figure 1 Tracking Table Template

If you submitted a comment to the EAO or CEA Agency and would like to see the Proponent response in the tracking table, you can search the tracking table file by your name. If you submitted your comment anonymously, or requested that the EAO or CEA Agency not publish your name, you can search for your comment by date, since submission numbers were assigned in chronological order. Anonymous comments were entered as “Personal Information Withheld” in the tracking table.

1.4 EAO AND CEA AGENCY REVIEW PROCESS

Development of the AIR/EIS Guidelines is one step in what is considered the “Pre-Application” phase of the EA process. After the EAO and CEA Agency approve and issue the AIR/EIS Guidelines, the

Proponent proceeds with developing the approach to the effects methodology, collecting the baseline information, compiling the study results, and assessing the residual and cumulative effects. The results of the studies are included in an EA report, submitted as both an Application for provincial review and an EIS for federal review. The Proponent submits one document, known as the Application/EIS, which meets both the provincial and federal requirements. Figure 2, which was displayed at the Ajax Project information sessions in February 2012, illustrates the steps involved in the coordinated federal and provincial review process and the integration of the AIR/EIS Guidelines.

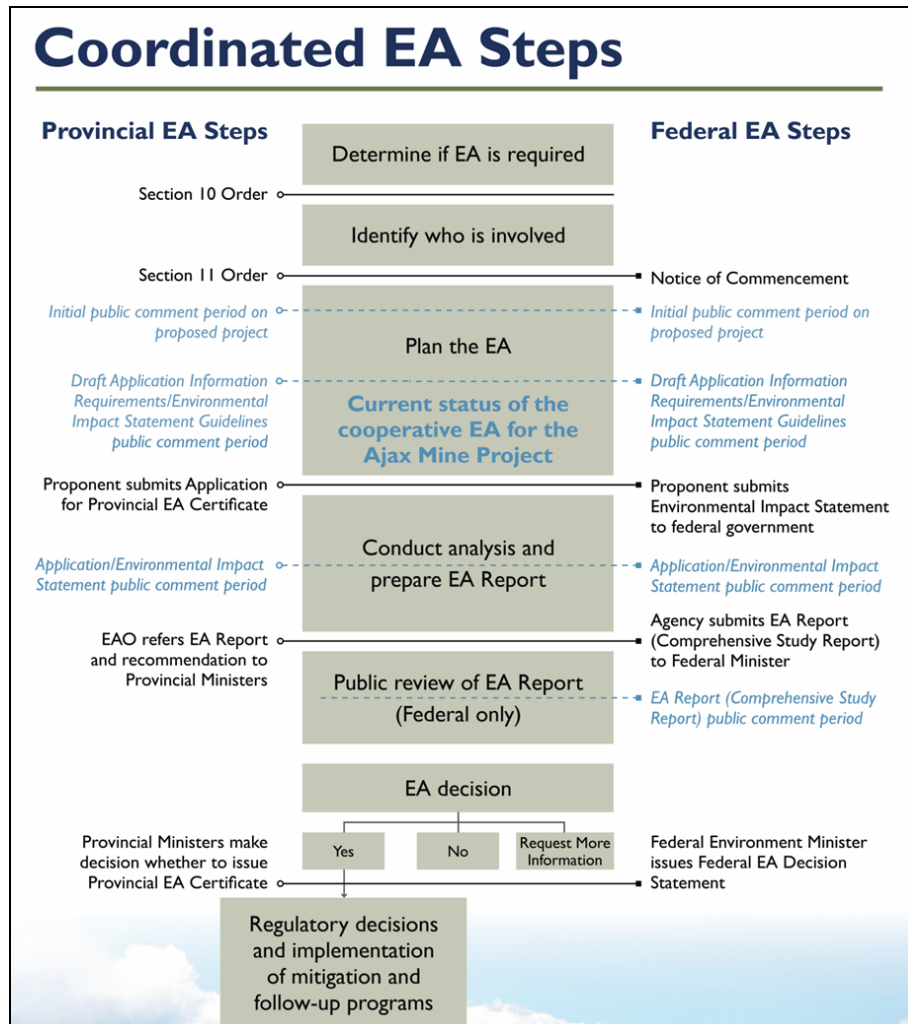


Figure 2 Coordinated Federal and Provincial Review Steps

Detailed information about the provincial environmental assessment process can be found on the EAO website ([Environmental Assessment Office Home](#)). The federal process is explained on the CEA Agency website ([Agence canadienne d'évaluation environnementale - Canadian Environmental Assessment Agency](#)).

SECTION 2.0 - SUMMARY OF PUBLIC COMMENTS TRACKING AND RESULTS

2.1 PUBLIC COMMENT TRACKING METHODOLOGY FOR AJAX PROJECT DRAFT AIR/ EIS GUIDELINES

In total, 345 unique public submissions were received during the 75 day comment period and tracked in the public comments tracking table for the proposed Ajax Project draft AIR/EIS Guidelines. As previously noted, each submission was assigned a submission number. In cases where submissions exceeded the maximum character limits of an individual Microsoft Excel spreadsheet cell, or where more than one point was raised in a comment, the submission was separated into more than one row, with each row being assigned a unique issue number, in order to track the key themes expressed regarding the draft AIR/EIS Guidelines.

Each issue was assigned a Comment Type based on the criteria presented in Table 1.

Table 1 Comment Type Designations

Comment Type	Criteria
EAO/CEA Agency/ Process Comment	<ul style="list-style-type: none"> • Comment directed to EAO/CEA Agency • Comment on environmental assessment process in general
Project Comment	<ul style="list-style-type: none"> • Referred to the potential effects of the Project but did not refer to the draft AIR/EIS Guidelines • Non-specific concern relating to the Project but did not refer to the draft AIR/EIS Guidelines (e.g., statement of support or statement of opposition). • Contextual statement
dAIR Comment	<ul style="list-style-type: none"> • Referred to a section of the draft AIR/EIS Guidelines • Requested additional information on a study proposed in the draft AIR/EIS Guidelines • Suggested a new issue for consideration in the dAIR

All issues were also classified based on project components and the preliminary Valued Components (VCs) presented in the draft AIR/EIS Guidelines, where possible. 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, and are discussed under five provincial Assessment Categories (Environment, Economic, Social, Heritage, Human Health). If one or more VCs presented in the draft AIR/EIS Guidelines were specifically noted in the comment, or if they could be inferred from the statement, they were listed, along with the relevant section or sub-section of the draft AIR/EIS Guidelines. If the concern expressed in the issue did not identify a specific VC but could be inferred to relate to one of the Assessment Categories, they were identified as Environment – General, Economic – General, etc. In cases where the issue did not specify a VC and one could not be easily inferred, the VC was categorized as not applicable (n/a). The preliminary list of VCs for the Ajax Project Application presented in the draft AIR/EIS Guidelines is provided in Table 2.

Table 2 Draft AIR/EIS Guidelines (Revision D) VCs for the Proposed Ajax Project

Assessment Category	Valued Component
Environment	Climate
	Geology, Landforms and Soils
	Surface water quality
	Surface water quantity
	Groundwater quality
	Groundwater quantity
	Fish populations and fish habitat
	Rare plant VCs
	Rare and Sensitive Ecological Communities
	Terrestrial Invertebrate VCs
	Amphibian VCs
	Reptile VCs
	Migratory Bird VCs
	Raptor VCs
	Non-migratory Gamebird VCs
	Bat VCs
Mammal VCs	
Economic	Labour force
	Education and training
	Income
	Employment
	Business
	Cost of living
	Housing
	Infrastructure
	Economic Diversification
Social	Culture
	Community health and well-being
	Public facilities and services, including transportation
	Dark sky / Shading
	Land and Resource Use
	Jacko Lake
	Visual Impact / Aesthetic Features
	Aboriginal community interests
Heritage	Heritage objects
	Heritage sites
Health	Air quality (Dustfall, PM10 and PM2.5)
	Water quality
	Noise and vibration
	Health education
	Healthy living

2.2 OVERVIEW OF PUBLIC COMMENTS

The 345 public submissions were parsed into 1,441 separate issues in order to track key concerns and ensure that any concerns relevant to the assessment were identified so they may be examined and discussed in the Application/EIS (Environmental Assessment Office, 2011). Figure 3 summarizes the proportion of issues by Comment Type.

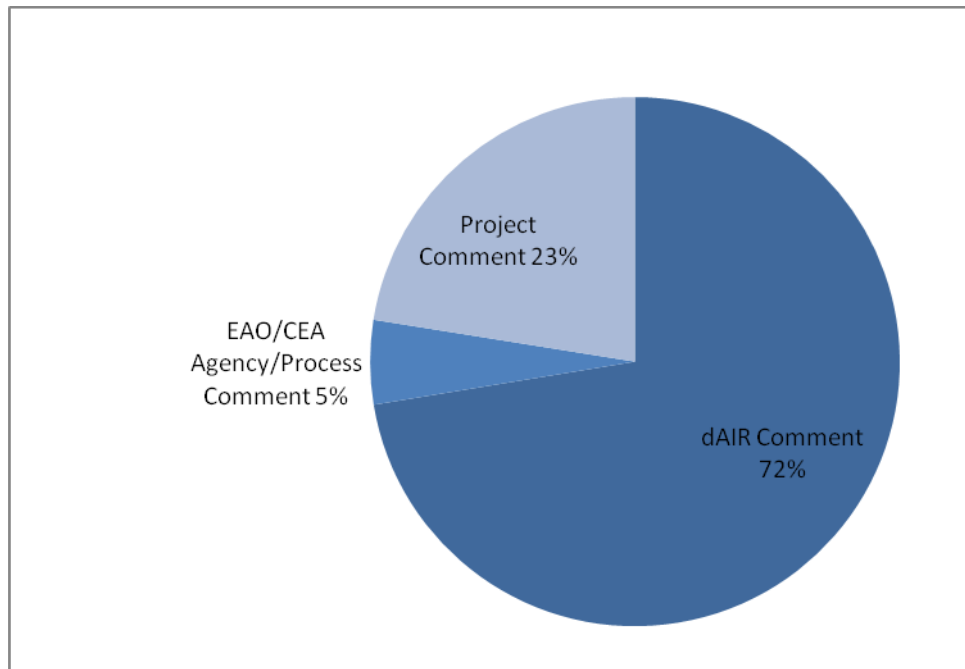


Figure 3 Proportion of Issues by Comment Type

Issues were tabulated by Assessment Category (Environment, Economic, Social, Heritage, and Health), by project component, and by VC. Environmental concerns were predominant, followed by human health concerns. The percentage of issues associated with a VC or general Assessment Category are shown on Figure 4. Any interaction between environmental VCs and human health VCs will be part of the impact assessment (e.g., the assessment on human health VCs will consider both direct effects of the Project as well as indirect effects from environmental VCs where an interaction between the two VCs could reasonably be expected to occur).

The majority of issues (1,125) did not identify a specific project component or activity. Blasting, the waste rock management facilities, and the Tailings Storage Facility (TSF) were the components or activities mentioned most often (Figure 5); many of the issues noted the proximity of the proposed project to local residents, especially those in the Aberdeen and Pineview Valley subdivisions, and the unusual circumstance of a mining project being within city limits.

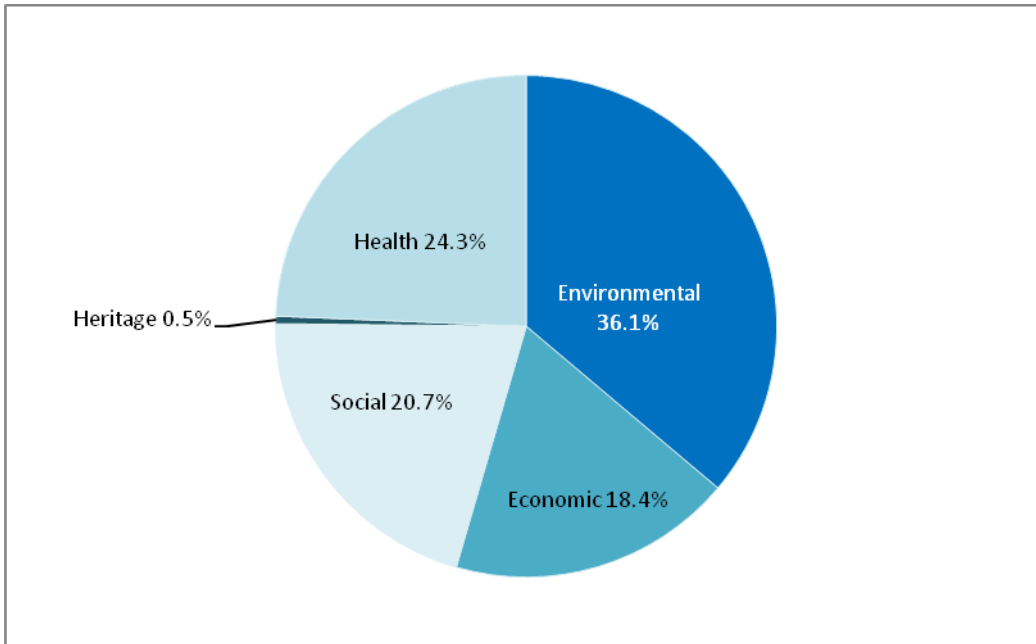


Figure 4 Summary of Issues by Assessment Category

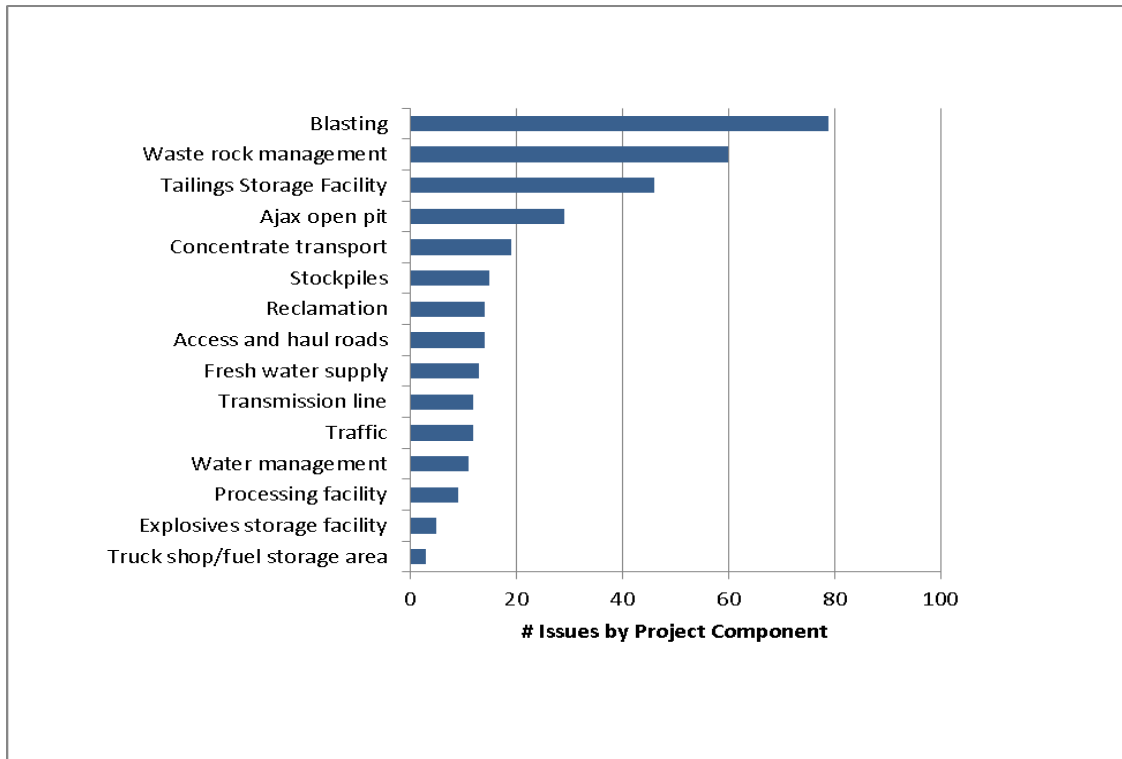


Figure 5 Summary of Issues by Project Component or Activity

2.3 OVERVIEW OF PROPONENT RESPONSES

All public comments were addressed by the Proponent in the tracking table. For studies presently included in the draft AIR/EIS Guidelines, the Proponent response indicates that the results of the assessment(s) will be presented in the Application/EIS. An example of this sort of comment or question and Proponent response is as follows:

Issue	Recreation - The location of the proposed mining operation has been a favorite recreational area for many local residents. What will be the effect on those recreational pursuits if this operation goes ahead? Access as well as the ability of this area to continue to offer the same quality of recreational opportunities are both concerns.
Proponent response	The impact of the project on recreational opportunities will be assessed in the Application/EIS.

Where the issue suggests inclusion of an additional VC or feasible additional indicators or metrics for one or more of the VCs currently presented in the draft AIR/EIS Guidelines, the Proponent response provides supplementary information as to how the suggestion will be considered in the final AIR/EIS Guidelines. For example:

Issue	Have there been any economic studies undertaken, to determine a loss of jobs in the agricultural, construction, tourism or professional sectors in the event that the mine limits population growth during the course of its lifetime? Have there been any economic studies undertaken, to determine the extent of mine related reduction in Tournament Capital Activities in the event that the Mine is approved?
Proponent response	Effects of project operation and decommissioning on the economy will be examined, including those relating to city image. Potential effects of the Project on local employment in the sectors identified, as well as Tournament Capital activities, will be examined.

For issues that were not considered in the dAIR/EIS Guidelines and are relevant to the EA, the Proponent response commits to including the information in the Application/EIS. An example of this follows:

Issue	6.14 Raptors Will bald eagles be added as a Valued Component?
Proponent response	Bald Eagles will be added under the 'Raptor' Valued Component. Potential effects on the eagle nest on Jacko Lake will be assessed.

Statements of opposition or statements of support were deemed out of scope of the review of the AIR/EIS Guidelines by EAO and CEA Agency. Where the public comment or question referred to regulatory process or was directed specifically to the EAO or CEA Agency (or both) the Proponent response is "Comment has been referred to the EAO and CEA Agency."

SECTION 3.0 - KEY PUBLIC ISSUES

3.1 EAO / CEA AGENCY / PROCESS COMMENTS

In total, 74 of the 1,441 issues were categorized by the Proponent as EAO/CEA Agency Process comments, and were deferred to the EAO and CEA Agency representatives for response. Many of the issues were directed to the EAO or CEA Agency or questioned the role and/or responsibility of the federal and provincial governments.

The approved Proponent Response to these issues in the tracking table is “Comment has been referred to the EAO and CEA Agency.”

The EA and CEA Agency have developed a “Response to Public Comments Received for the Proposed Ajax Mine Project” document, the purpose of which is to respond to many of the process-related comments received during the 2012 public comment period. Topics discussed in the document include:

- Purpose of environmental assessment;
- Projects requiring an environmental assessment;
- Coordinated federal-provincial review;
- Information requirements;
- Comments suggesting the rejection of the proposed project and cancellation of the EA;
- Comments requesting a referral of the proposed project to a joint federal/ provincial review panel;
- Comments regarding possible abandonment or expansion of the mine;
- Assessment methodology;
- EA statistics;
- Monitoring and enforcement;
- Public consultation in EA;
- Cumulative impacts; and,
- Next steps in the EA process.

This document is not intended to respond to all questions that have been directed to EAO or CEA Agency through public comments, but to provide a response to key questions and issues raised.

3.2 PROJECT COMMENTS

As previously noted, “project comments” were categorized as such because they either referred to the potential effects of the proposed Project or stated a non-specific concern related to the project, but did not make reference to the draft AIR/EIS Guidelines. “Project comments” accounted for 323 of the 1,441 issues. Project comments included statements of opposition or support; the approved Proponent response to these was “Statement of opposition/support - out of scope of the AIR/EIS Guidelines”.

Contextual statements included those that provided information on the background or history of the commenter or were introductory or closing remarks to a submission. Introductory and closing remarks to submissions were included in the table to allow members of the public to find their submission in the tracking table, especially for comments that were entered as “Personal Information Withheld”. Contextual

statements were noted as such in the approved Proponent responses; in some cases the Proponent response was expanded to refer the commenter to the section of the AIR/EIS Guidelines for information on the expressed general concern.

The approved Proponent response to statements of support or opposition in the tracking table is “Out of scope of the AIR/EIS Guidelines”. These comments were referred to the EAO and CEA Agency for consideration.

3.3 VALUED COMPONENTS COMMENTS

This section presents a summary of the key issues and responses related to VCs presented in Revision D of the draft AIR/EIS Guidelines. The concerns most frequently raised related to the Air Quality; Noise and Vibration; and Geology, Landforms, and Soils VCs (Figure 6). In some cases the responses provided in the tracking table are expanded on in this document; however, results of baseline studies or background information are not provided, as requested in some of the issues; this information will be provided in the Application/EIS. The purpose of the AIR/EIS Guidelines is to lay out both the issues that will be addressed in the EA and the information to address these issues, such as baseline study results or the approach to assessing cumulative impacts (Environmental Assessment Office, 2011). This Summary Document does not contain any commitments for studies or baseline information not currently included in the AIR/EIS Guidelines or tracking table.

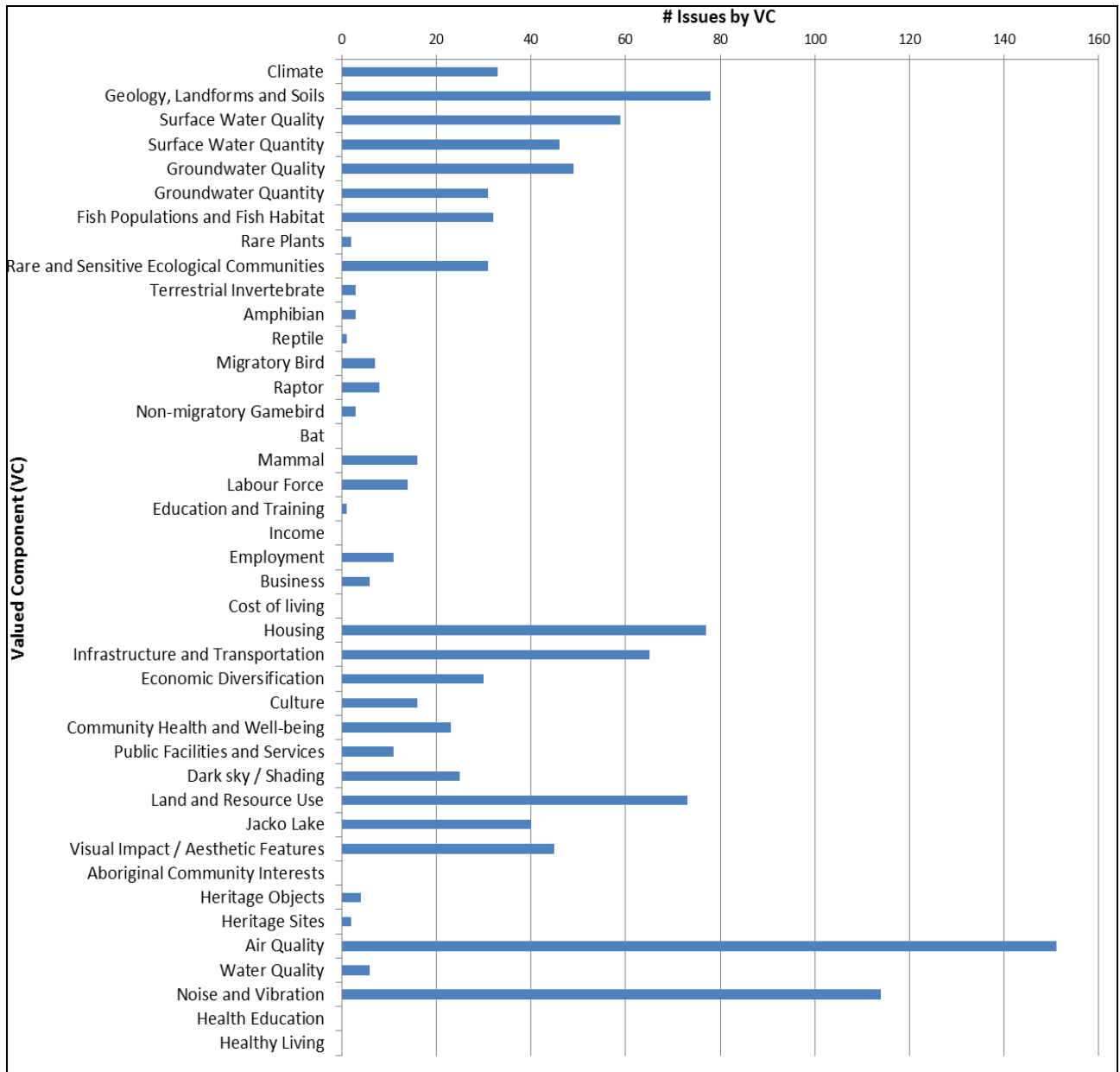
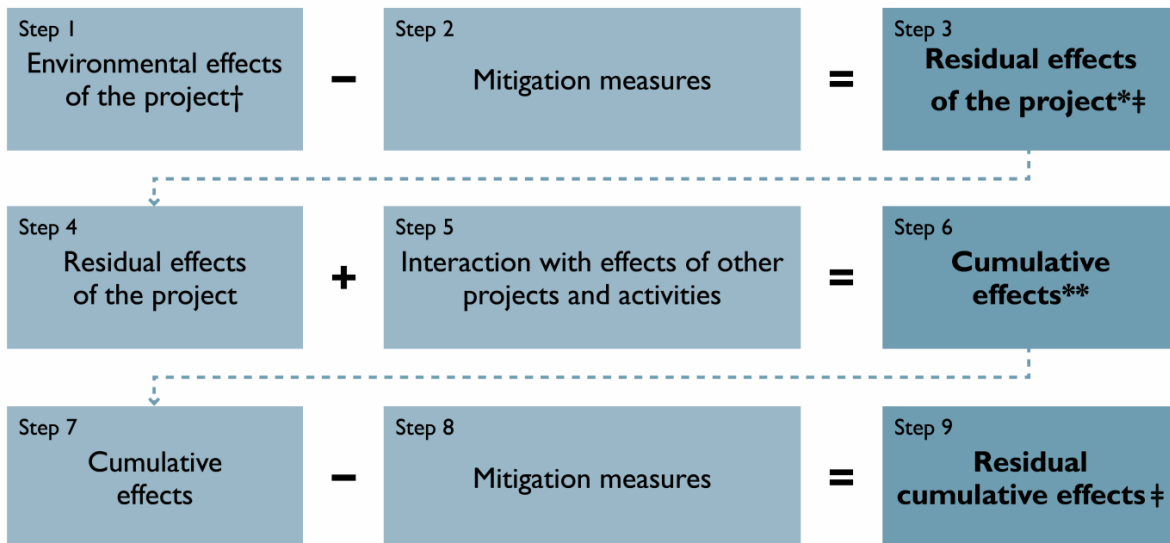


Figure 6 Number of Issues by Preliminary VC

The effects assessment for each VC will follow the same steps, as outlined in the AIR/EIS Guidelines (Figure 7).

EAO and CEA Agency Environmental Assessment Framework For Determining and Assessing Project Effects



† 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

Figure 7 Project Effects Assessment Methodology

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 and can be related to one or more project activities or components. A conceptual pathway of effects diagram is shown in Figure 8, illustrating how linkages will be made between VCs and assessed in the Application.

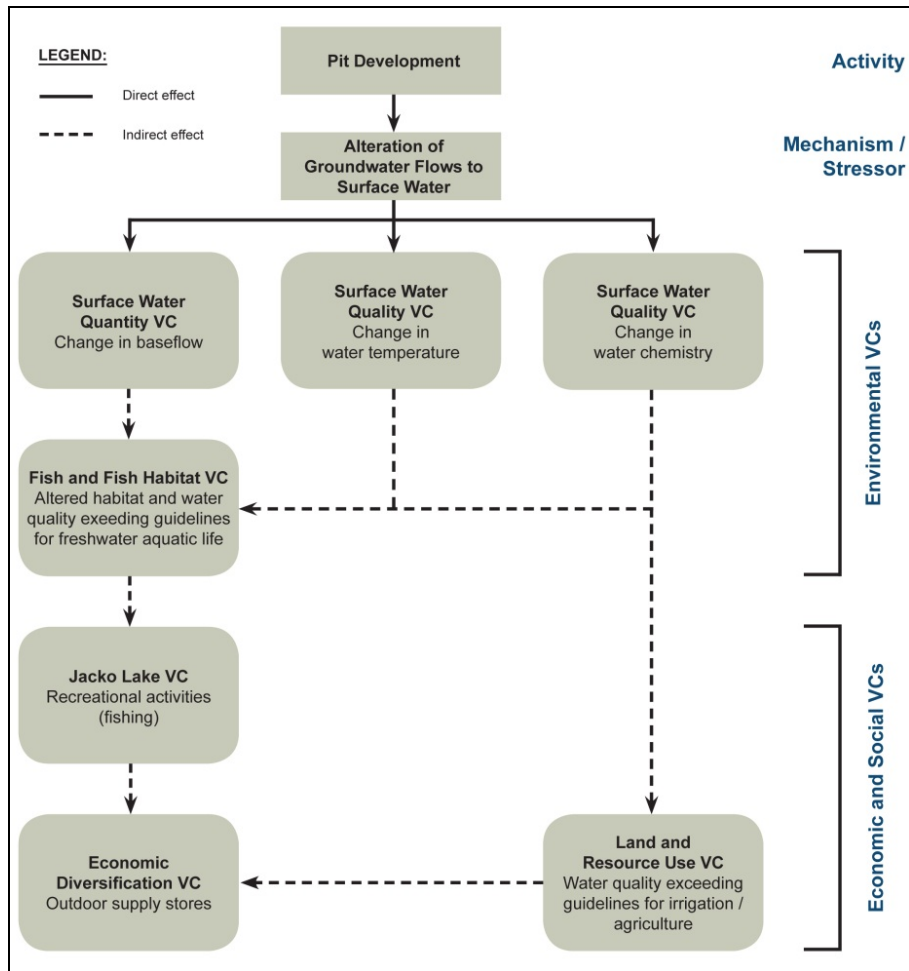


Figure 8 Conceptual Pathway of Effects for Project VC Interactions

3.3.1 Environmental Assessment Category

In total, the greatest number of issues were categorized as Environmental VCs. Of these, few issues were raised regarding rare plants, terrestrial invertebrates, or amphibians and reptiles; therefore, they are not discussed in this Summary Document. Individual responses to such issues can be found in the tracking table.

3.3.1.1 Climate

The concerns frequently identified in relation to the Climate VC and Proponent responses are summarised in Table 3. Meteorological data will be presented in the Application/EIS for assessment of potential climate change impacts and for input into the air quality, noise, and water quantity modelling. Descriptions of these models are presented in subsequent sections.

Table 3 Climate VC Key Concerns

Key Issues	Summary of Proponent Responses
Evaporation, fog / humidity, haze, reduced solar insolation affecting vegetation; local road use economic; local road use safety implications; Chemical composition of fog, rain and snow	The normal evaporative process on site from wetted surfaces is not expected to result in a substantial increase in the incidence of fog compared to what is presently experienced, since there is not a large source of moisture such as a cooling tower on site. However, potential interactions between the project and atmospheric indicators will be identified and assessed in the Application/EIS.
Number and location of meteorological stations inadequate and not representative of Project site	The present location of the Ajax meteorological station was chosen to satisfy basic information needs respecting the site-wide water balance. A three-dimensional CALMET wind field model will be used to drive the CALPUFF air quality dispersion model. The CALMET data are based on surface measurements at four locations in the airshed and upper air data from resolution detailed meteorological model. The CALMET data set captures all possible hourly meteorological conditions over the period 2003-2005.
Climate change/increased greenhouse gas emissions	Discussion of Greenhouse Gas (GHG) emissions to be presented in the Application will follow guidance documents recommended by regulatory bodies. Best management practices will be followed to minimize Project-related GHG emissions.
Changing wind patterns - Safety implications due to blowing snow affecting visibility (Coquihalla Hwy, Lac Le Jeune Rd.)	Any change in snow drift patterns will be accommodated in the course of normal highway maintenance activities. Changing wind patterns will not be assessed as a VC in the Application/EIS.

The Climate VC has been renamed Greenhouse Gas Management in the final AIR/EIS Guidelines.

3.3.1.2 Geology, Landforms and Soils

The concerns frequently identified in relation to the Geology, Landforms and Soils VC and Proponent responses are summarised in Table 4.

Table 4 Geology, Landforms, and Soils VCs Key Concerns

Key Issues	Summary of Proponent Responses
Weight of TSF, Waste Rock Management Facilities, Stockpiles affecting groundwater pressure; slope stability; structural damage to	The potential effects of the proposed project on groundwater flow and quantity will be assessed. If results of this assessment indicate the potential for significant change then mitigation and/or additional study will be proposed as part of the assessment. This assessment process would be applied to the potential for slope instability, structural damage

Key Issues	Summary of Proponent Responses
residential properties in Aberdeen sub-division and Knutsford; municipal infrastructure (existing and proposed Coal Hill Reservoir)	to existing residential properties and municipal infrastructure in the vicinity of the project. The assessment will include discussion of the known issues and existing stability risks as documented in the City of Kamloops Risk Management Plan.
Soil erosion from altered watercourses and drainage patterns	Construction water management for site access and ancillary mine infrastructure (e.g. truck shop, plant site, TTP) will be focused on storm water control using best management practices (BMPs) (e.g. silt fences, hay bales, sedimentation basins). A site wide water management plan will be included in the Application/EIS.
Pit water seepage into surrounding areas affecting aquifers (change in groundwater direction)	Precipitation, seepage from pitwalls, and horizontal drains will introduce water into the pit. During operation a pit drainage and dewatering system will maintain pit wall stability; drain water and prevent water pressures from building up behind the pit walls; and remove surface water that is collected in sumps. At closure the pit will be allowed to fill with runoff from groundwater inflows and precipitation. The Application/EIS will include the project water balance model and water management plan, which will discuss any changes in groundwater discharge.
Vibration effects from blasting resulting in potential damage to public infrastructure, including question of who covers costs of updates as required	The potential off-site vibration effects associated with project activities such as blasting, rock crushing, and vehicle movement is being assessed. These results will be compared to known thresholds for acceptable vibration levels on building foundations. The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects.
Composition of rock, soil, etc.	The mineral composition of the ore and waste rock will be presented in the Application/EIS.
Compensation for damage to property	The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects.
Effect of blasting on Kinder Morgan pipeline	Results of the vibration assessment will be used to predict potential effects of the Project on the Kinder Morgan pipeline. The Application will identify monitoring and mitigation measures required in the event that project effects on the pipeline are predicted.

3.3.1.3 Surface Water Quality

The concerns frequently identified in relation to the Surface Water Quality VC and Proponent responses are summarised in Table 5. Results of the surface water quality model will be used in the assessment of impacts on other VCs such as Fish and Fish Habitat. All potential linkages between VCs will be discussed in the Application/EIS.

Table 5 Surface Water Quality VC Key Concerns

Key Issues	Summary of Proponent Responses
Water quality impacts on fish, wildlife, livestock, human health	<p>The potential effects of construction, operation and closure on water quality will be assessed in the Application/EIS. Results from a numerical mass balance water quality model will be compared to applicable provincial and federal guidelines or standards for the protection of aquatic life, drinking water, agriculture, and irrigation. Mitigation measures will be implemented should modelling predict exceedances of guidelines or standards.</p> <p>Monitoring programs to be developed and implemented as part of the project Environmental Management System will ensure that measures and controls are in place to minimize the potential for environmental degradation. The following plans described in the AIR/EIS Guidelines relevant to this concern include:</p> <ul style="list-style-type: none"> • Surface Water Quality Management and Monitoring Plan • Groundwater Quality Management and Monitoring Plan • Erosion and Sediment Control Plan • Acid Rock Drainage Management Plan • Water Management and Hydrometric Monitoring Plan • Fisheries And Aquatic Life Monitoring Plan <p>Follow up programs are also required under federal legislation. As described in the AIR/EIS Guidelines, the purpose of follow up programs 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.</p>
Metal Leaching and Acid rock Drainage (ML/ARD)	<p>Assessment and prediction of ML/ARD potential will be conducted according to applicable policy and guidelines documents, including:</p> <ul style="list-style-type: none"> • 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. <p>The ML/ARD prediction program will include:</p> <ul style="list-style-type: none"> • Identifying and describing all geological materials excavated, exposed or otherwise disturbed. • Predicting the ML/ARD potential, and • Developing a mitigation and monitoring program based on the ML/ARD potential.

Key Issues	Summary of Proponent Responses
<p>Definition of 'zero discharge' facility and how it will be achieved</p> <p>Pit water quality at closure</p>	<p>The goal of the project is to have zero surface water discharge to the environment during operation. Water management mechanisms and procedures will be described in detail in the Application/EIS. Water management mechanisms will include ditches for collection of seepage and runoff for contact water. All water collected, recycled, or used on the project will require containment or storage in existing ponds or in man-made structures.</p> <p>At closure, water will be stored in the pit and discharged if necessary and if it meets government guidelines or site-specific water quality objectives. If site-specific water quality objectives need to be established for the project area (Water quality objectives are concentrations necessary to protect the most sensitive designated use of water at a specified site) the provincial guidance report "Water Quality Methods for Deriving Site-Specific Water Quality Objectives in British Columbia and Yukon" (Ministry of Environment, Environmental Protection Division) will be followed.</p> <p>The Environmental Management Act permit required to operate the mine will set criteria for any water discharged from the mine; no provincial or federal permits are granted until a project receives federal and/or provincial EA approval. Monitoring requirements will be specified in the permit.</p>
<p>Rationale for selection of water quality models that will be used, expected accuracy</p>	<p>Water quality models are used as predictive tool; models vary in complexity, and the choice of a model depends primarily on study objectives. A mass balance numerical model will be used for predicting any changes in water chemistry resulting from the activities and infrastructure associated with the proposed project. A numerical (mathematical) model uses a series of equations to relate input parameters and variables to quantified outputs. As noted in the AIR/EIS Guidelines, the Application/EIS will include a discussion of the assumptions that underlie any model used, the quality of the data, and the degree of certainty of the modelled results.</p>
<p>Airborne contaminants from blasting (nitrates, particulates)</p>	<p>The results of air dispersion modelling for several parameters of interest will be incorporated into the water quality model to assess the potential effects of dust deposition on soil and water quality. A description of how air dispersion modelling will be included in surface water modelling will be included in dAIR, including naming the parameters of interest that will be identified following the air quality assessment.</p>

3.3.1.4 Surface Water Quantity

The concerns frequently identified in relation to the Surface Water Quantity VC and Proponent responses are summarised in Table 6.

Table 6 Surface Water Quantity VC Key Concerns

Key Issues	Summary of Proponent Responses
Effects on existing water licences (Peterson Creek, Jacko Lake, Kamloops Lake)	The significance of any change in surface and/or ground water levels as a result of the project will be assessed with respect to the effects on existing licenced water users.
Processing water volume	The Application will describe expected changes to surface hydrology resulting from infrastructure development and freshwater withdrawal requirements for the proposed Project. A site wide water balance will describe water movements within the proposed 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. The Application will also identify mitigation strategies, including conservation measures, to minimize the effects of Project development on the regional hydrological regime, including those of extreme events (e.g., low flows).
Global warming impacts	The potential impacts of climate change on the hydrologic cycle will be discussed in the Application.
Effects of Peterson Creek diversion on downstream flows	The Application will describe expected changes to surface hydrology resulting from infrastructure development and freshwater withdrawal requirements for the proposed Project. A site wide water balance will describe water movements within the proposed Project area and effects on downstream flows. The significance of any change in surface and/or ground water levels as a result of the project will be assessed with respect to the effects on existing water users.

3.3.1.5 Groundwater Quality

The concerns frequently identified in relation to the Groundwater Quality VC and Proponent responses are summarised in Table 7.

Table 7 Groundwater Quality VC Key Concerns

Key Issues	Summary of Proponent Responses
<p>Potability of water from seepage of contact water into groundwater and aquifers; need to line/seal TSF ponds.</p>	<p>Baseline groundwater sampling has been conducted in wells situated around the project site. The baseline program design, study area, methodology, assumptions, and results will be presented in the Application/EIS.</p> <p>A site wide water balance will describe water movements within the proposed Project area and effects on downstream and in the vicinity of flows. The significance of any change in surface and/or ground water levels as a result of the project will be assessed with respect to the effects on existing water users. Results from numerical water quality models will be compared to applicable provincial and federal guidelines or standards for the protection of aquatic life, drinking water, agriculture, and irrigation. Mitigation measures will be implemented should modelling predict exceedances of guidelines or standards.</p> <p>Monitoring programs to be developed and implemented as part of the project Environmental Management System will ensure that measures and controls are in place to minimise the potential for environmental degradation. The following plans described in the AIR/EIS Guidelines relevant to this concern include:</p> <ul style="list-style-type: none"> • Surface Water Quality Management and Monitoring Plan • Groundwater Quality Management and Monitoring Plan • Erosion and Sediment Control Plan • Acid Rock Drainage Management Plan • Water Management and Hydrometric Monitoring Plan • Fisheries And Aquatic Life Monitoring Plan <p>Follow Up programs are also required under federal legislation. As described in the AIR/EIS Guidelines, the purpose of follow up programs 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.</p>
<p>Metal Leaching and Acid rock Drainage (ML/ARD)</p>	<p>Assessment and prediction of ML/ARD potential will be conducted according to applicable policy and guidelines documents, including:</p> <ul style="list-style-type: none"> • 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. <p>The ML/ARD prediction program will include:</p> <ul style="list-style-type: none"> • Identifying and describing all geological materials excavated, exposed or otherwise disturbed.

Key Issues	Summary of Proponent Responses
	<ul style="list-style-type: none"> • Predicting the ML/ARD potential, and • Developing a mitigation and monitoring program based on the ML/ARD potential.
Requests for groundwater well inventory and monitoring	KAM has initiated a groundwater well inventory program in the Project area. Baseline groundwater sampling has been conducted in wells situated around the Project site. The baseline program design, study area, methodology, assumptions, and results will be presented in the Application.

3.3.1.6 Groundwater Quantity

The concerns frequently identified in relation to the Groundwater Quality VC and Proponent responses are summarised in Table 8.

Table 8 Groundwater Quantity VC Key Concerns

Key Issues	Summary of Proponent Responses
Potential for groundwater to discharge into the open pit	Precipitation, seepage from pitwalls, and horizontal drains will introduce water into the pit. During operation a pit drainage and dewatering system will maintain pit wall stability; drain water and prevent water pressures from building up behind the pit walls; and remove surface water that is collected in sumps. At closure the pit will be allowed to fill with runoff from groundwater inflows and precipitation. The Application/EIS will include the project water balance model and water management plan, which will discuss any changes in groundwater discharge.
Financial compensation for infrastructure and residential damage in Aberdeen, Knutsford.	The potential effects of the proposed project on groundwater flow and quantity will be assessed. If results of this assessment indicate the potential for significant change then mitigation and/or additional study will be proposed as part of the assessment. This assessment process would be applied to the potential for slope instability, structural damage to existing residential properties and municipal infrastructure in the vicinity of from the project.
Effect of blasting on groundwater levels	The potential effects of the proposed project on groundwater flow and quantity will be assessed. If results of this assessment indicate the potential for significant change then mitigation and/or additional study will be proposed as part of the assessment. This assessment process would be applied to the potential for slope instability, structural damage to existing residential properties and municipal infrastructure in the vicinity of from the project.

3.3.1.7 Fish Populations and Fish Habitat

The concerns frequently identified in relation to the Fish and Fish Habitat VC and Proponent responses are summarised in Table 9.

Table 9 Fish and Fish Habitat VC Key Concerns

Key Issues	Summary of Proponent Responses
Kamloops Lake water withdrawal effects on salmon stocks (potential decreased water levels, increased temperature, decreased oxygen)	Hydrological analysis of the volume of water to be extracted for mine process and potable water on Kamloops Lake fish stocks will be presented in the Application/EIS. The hydrologic analysis will consider the volume of water extracted and timing (surface water quantity VC). Mitigation measures will be explored and identified within the Application. The effects assessment on fish stocks will be informed by the surface water quantity VC and surface water quality VC (including water temperature).
Cumulative effects of water withdrawal	The VC will be assessed for both direct and indirect effects as well as cumulative effects. Mitigation and monitoring strategies will be proposed as part of the assessment, as described in the AIR.
Effects of blasting on Jacko Lake	Operations will adhere to regulations and guidance set out under the Explosives Act (e.g. quantity/distance regulations) and federal fisheries guidelines (Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters, Fisheries and Oceans Canada, 1998) for blasting in and around water. Effects on surface water quality (blasting restudies, contaminants) will be assessed as part of the surface water quality VC; the significance of any alterations will be assessed with respect to water quality guidelines for the protection of aquatic life.
Benthic invertebrate productivity	Aquatic invertebrates will be assessed in the Application/EIS as they relate to fish populations and fish habitat (e.g., primary and secondary productivity indicators).

3.3.1.8 Rare and Sensitive Ecological Communities VCs

The concerns frequently identified in relation to the Rare and Sensitive Ecological Communities VC and Proponent responses are summarised in Table 10.

Table 10 Rare and Sensitive Ecological Communities VCs Key Concerns

Key Issues	Summary of Proponent Responses
Loss of grasslands	Mitigation measures to address the loss of grasslands will be included in the Application/EIS. The primary concern revolved around the difficulty of re-establishing native occurring grassland communities. The Application/EIS will include an outline of end land use objectives, taking into consideration the recommendation of Ministry of Energy, Mines and Natural Gas that the reclamation program be aimed at ecological restoration of naturally occurring grassland communities. A Conceptual Reclamation and Closure Plan will be

Key Issues	Summary of Proponent Responses
	described in the Application/. The plan will identify baseline studies and on-going reclamation research that will be conducted throughout mine life.
Reclamation	<p>Biological soil crusts are very fragile and sensitive to disturbances by humans, livestock, wildlife (ungulates) and vehicle traffic. The Proponent recognizes that it may be difficult and impractical to salvage soil crusts and that it may take several decades for them to re-establish.</p> <p>The baseline soil characterization study that will be completed as part of the Conceptual Reclamation and Closure Plan, and included in the Application/EIS, will identify and classify the volumes of available soil that are suitable for reclamation use. A Soil Handling Plan will be developed to guide the stripping, salvage and stockpiling of soil materials for subsequent use in reclamation. The volume required will be calculated using the dimensions of the areas to be reclaimed (e.g. waste rock facilities, TSF, etc.).</p> <p>All seed and plant types required to achieve the planned post-closure end land use objectives will be acquired. If applicable, the plan will identify protocols to “build”, amend and/or acquire additional soil material for use in reclamation.</p> <p>The number of years mandated post mine closure to ensure successful reclamation, including consideration of new remedial information, will be addressed in the reclamation permitting conditions issued by the Ministry of Energy, Mines and Natural Gas if the project is approved. Annual reclamation reports would be required and the Ministry would be responsible for routine site inspections to ensure the reclamation plan is implemented.</p>
Loss of wetlands	A site wide water balance and water quality model will be used to assess the effects of the proposed project on surface water quality. Any wetlands and alkali ponds potentially impacted will also be included in the water quality assessment. Wetlands will be assessed in relation to any wildlife species habitat associations.
Noxious weed management plan	Mitigation and monitoring measures for invasive plant species during project operation will be included in the Wildlife/Vegetation Monitoring Plan. Noxious and invasive plant management strategies will be included in the Conceptual Reclamation and Closure Plan. These will both be included in the Application/EIS.

Because of the interest expressed in grasslands by the public and the regulatory agencies, Grasslands will be assessed as a stand-alone VC in the Application/EIS. The final AIR/EIS Guidelines is revised to reflect the new naming convention. Where relevant, the assessment of other VCs will reference the results of the Grasslands assessment, including but not limited to Mammals and Raptors in the environmental VCs, and Land and Resource Use (including ranching) in the Social VCs.

3.3.1.9 Bird VCs

The issues relating to the migratory birds, non-migratory gamebirds, and raptor VCs expressed an interest in seeing the following species added to the list of species to be studied:

- Swans;
- Red Winged Blackbird;
- Yellow Winged Blackbird;
- Yellow headed Blackbird;
- Ducks;
- Blue Bird;
- Barn Swallow;
- Clay-Coloured Sparrow (Locally Rare);
- Horned Lark;
- Lark Sparrow;
- Dusky Grouse;
- Bald Eagle;
- Burrowing Owl;
- Great Gray Owl; and
- Upland game birds.

Bald Eagles and Burrowing Owls have been added as Raptor VCs to be assessed in the Application/EIS (including potential effects on the eagle nest on Jacko Lake). Point-count bird surveys and waterfowl surveys have been done across the Project area to record use by all bird species; however, species chosen as VCs are generally at-risk species or those that are managed on the landscape. Species such as the Great Gray Owl are not federally or provincially at risk, therefore will not be included in the assessment. The use of VCs in environmental assessments is standard practice, helping to focus resources on meaningful measures of environmental change. Common, widespread species are generally not selected as VCs, due to the absence of any measureable endpoint for the assessment.

3.3.1.10 Mammal VCs

The concerns frequently identified in relation to the mammal VC and Proponent responses are summarised in Table 11.

Table 11 Mammal VC Key Concerns

Key Issues	Summary of Proponent Responses
Displacement of wildlife onto private lands as a result of project infrastructure and activities (bear, deer, moose, coyote)	<p>The potential effects of the Project on mammals, including potential displacement, will be described in the Project Application. A program to prevent and deal with problem wildlife on the Project property will be developed as part of the Wildlife/Vegetation Monitoring Plan to be included as part of the Environmental Management System. The Proponent does not have authority to apply a problem wildlife program outside of its own property.</p> <p>Problem coyotes and bears in residential areas generally result from issues regarding improper storage and management of garbage, fruit tree and pet food</p>

Key Issues	Summary of Proponent Responses
	<p>attractants in those areas.</p> <p>Losses of natural habitat result from many human activities including urbanization, road-building, industrial development and conversion to agricultural fields and golf courses, all of which are occurring within Kamloops.</p> <p>The BC Ministry of Agriculture's Agriculture Wildlife Program provides assistance to forage, grain and livestock producers in the province of British Columbia for verified crop and livestock losses due to wildlife.</p>
Altered migration patterns and loss of habitat for moose	<p>The potential effects of the Project on ungulates and their habitat will be discussed in the Application/EIS. The effects of the project on ungulate winter range will be quantified.</p> <p>The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects.</p>
Fugitive dust impacts on habitat suitability	<p>A Human Health and Ecological Risk Assessment (HHERA) will be conducted to assess the effects of potential air and water quality contamination on wildlife. Results will be presented in the Application/EIS.</p>
Wildlife mortality	<p>The potential effects of the Project on mammals will be described in the Project Application, as well as mitigation measures and residual effects.</p>
White tailed deer as a VC	<p>White-tailed deer numbers are low in the area as they have colonized it relatively recently. The Ministry of Environment has indicated, in discussion with project biologists, that the needs of white-tailed deer in this area are covered adequately in management for mule deer, so white-tailed deer were not included as a separate VC.</p>

Bats were a stand-alone VC in the draft AIR/EIS Guidelines; they are included in the Mammal VCs in the final AIR/EIS Guidelines.

3.3.2 Economic Assessment Category

The VCs proposed for study in the Economic Assessment Category in Revision D of the AIR/EIS guidelines were the following:

- Labour force;
- Education and training;
- Income;
- Employment;
- Business;
- Cost of living;
- Housing;
- Infrastructure; and
- Economic Diversification.

No issues were identified as being associated with the Income or Cost of Living VCs, and the Education and Training VC was only referenced once, therefore these VCs are not discussed in this Summary Document. There was considerable overlap in concerns associated with certain VCs, such as Labour Force and Employment. Based partially on review of the public issues and through engagement with the EAO and CEA Agency, the definitions and parameters of the economic VCs have evolved and been refined to provide a better framework for the effects assessment of the proposed project; as such, some VCs have been renamed and others have been combined with or integrated into other VCs. In addition, a new VC, Economic Growth, was proposed through engagement with the EAO, since it was seen as a logical place to insert insights and information flowing from a proposed input-output model for the Project and provide a basis for the discussion of the other Economic VCs.

This section of the Summary Document presents the key concerns and Proponent responses to the Economic VCs presented in Revision D of the draft AIR/EIS Guidelines.

3.3.2.1 Labour Force VC

The concerns frequently identified in relation to the Labour Force VC and Proponent responses are summarised in Table 12.

Table 12 Labour Force VC Key Concerns

Key Issues	Summary of Proponent Responses
Local population does not have the skills required to fill the jobs, requiring company to bring in employees from elsewhere.	A breakdown of anticipated employment opportunities (including numbers and durations of jobs, income) and anticipated employee sources (local or otherwise) will be provided in the Application/EIS. Details regarding hiring preferences will be included.
Use of remote control haul trucks resulting in fewer jobs	The Application/EIS will include a breakdown of anticipated employment opportunities to be taken up by Kamloops residents and others.
Indirect employment numbers	If suitable data exists, estimates will be provided for indirect/spin-off employment; estimates of the number of hires coming out of Kamloops will be provided. Details regarding hiring preferences will be communicated and incorporated into the assessment

The topics of labour force, employment, education and training are closely linked. As such, they are best served by dealing with them collectively as a VC entitled Labour Force, Employment and Training in the final AIR. While the term 'education' has been removed, the assessment will include any form of training, 'educational' or otherwise, that could relate to the Project.

3.3.2.2 Employment and Business VCs

The concerns identified in relation to the Employment VC and Business VC showed considerable overlap and revolved primarily around the anticipated inability of the city of Kamloops to attract professionals and businesses in other sectors of the economy due to the presence of the mine (Table 13).

Table 13 Employment and Business VCs Key Concerns

Key Issues	Summary of Proponent Responses
Resource-based economy employment vs. “professional” employment (e.g., tourism, university)	The Application/EIS will include a description of the number and nature of jobs associated with the Project and an estimate of income related to those jobs. It will also include a description of employment trends (including key sectors in the City). Potential effects on other types of employment in the area will be considered as well.
Loss of jobs in other sectors due to reduced population growth because of the mine.	The Application/EIS will consider indirect economic benefits (expenditures and employment as feasible), economic diversification, population demographics, community health and well-being and perceptions regarding the City.
Compensation for doctors that will be needed.	The Application/EIS will include a description of the number and nature of jobs associated with the Project and an estimate of income related to those jobs. It will also include a description of employment trends (including key sectors in the City). Potential effects on other types of employment in the area will be considered as well.

The topics of labour force, employment, education and training are closely linked. As such, they are best served by dealing with them collectively as a new VC entitled Labour Force, Employment and Training. .

3.3.2.3 Housing VC

The concerns frequently identified in relation to the Housing VC and Proponent responses are summarised in Table 14.

Table 14 Housing VC Key Concerns

Key Issues	Summary of Proponent Responses
Property values of nearby homes from noise and dust	Potential effects pathways between the proposed project and receptors (direct and indirect) will be provided in the Application. Dispersion modelling will be used to predict the composition and quantity of particulate matter in various parts of the City. The Application will include commitments for the implementation of mitigation measures where linkages are identified between project components or activities. Monitoring strategies will be proposed where residual effects are predicted.

Key Issues	Summary of Proponent Responses
Loss of residential land for future development	Property values and city expansion, as per city of Kamloops land use and development planning, will be included in the assessment presented in the Application/EIS.
Property value of residential, commercial, industrial properties; property assessments and compensation for homeowners	Potential effects of the Project on housing and property values will be considered in the assessment (beneficial or adverse). The assessment of economic effects will reflect current methodological standards. Quantitative data will be used when available, supplemented by qualitative sources. Individual property assessments will not be included in the analysis.
Compensation for structural damage caused by blasting	Potential effects pathways between the proposed project and receptors (direct and indirect) will be provided in the Application. The Application will include commitments for the implementation of mitigation measures where linkages are identified between project components or activities. Monitoring strategies will be proposed where residual effects are predicted.
Quantitative study (hedonic modelling) vs. qualitative study	The assessment of economic effects will reflect current methodological standards. Quantitative data will be used when available, supplemented by qualitative sources.
Structural stability of homes	The potential off-site vibration effects associated with project activities such as blasting, rock crushing, and vehicle movement is being assessed. These results will be compared to standard thresholds for acceptable vibration levels on building foundations

A wide range of concerns came out of the public consultation process related to potential effects of the Project on property values in the area, particularly around the Aberdeen and Pineview Valley subdivisions. While this might otherwise be captured under a 'Housing' VC, it was deemed preferable to assess Property Value as a standalone VC. As per the EAO/CEA Agency direction, in addition to residential property value, the assessment will also include consideration of commercial, institutional, and industrial property value.

Other housing considerations (e.g., general housing characteristics, temporary accommodations) will be captured under an amalgamated Infrastructure, Public Facilities and Services VC to be included as a Social VC.

3.3.2.4 Infrastructure and Transportation VC

The concerns frequently identified in relation to the Infrastructure and Transportation VC and Proponent responses are summarised in Table 15.

Table 15 Infrastructure and Transportation VC Key Concerns

Key Issues	Summary of Proponent Responses
Safety concerns and economic impacts of increased traffic on Lac Le Jeune Road, Goose Lake Road,	<p>A traffic impact study developed in consultation with relevant public stakeholder agencies, including the City of Kamloops and the Ministry of Transportation and Infrastructure, will be included in the Application/EIS. The following roads surrounding the mine are included within this scope of work:</p> <ul style="list-style-type: none"> • Highway 5 (Coquihalla Highway); • Lac Le Jeune Road; • Sugarloaf Road; • Frontage Road (Versatile Drive); • Copperhead Drive; • Goose Lake Road; • Inks Lake Road; and • Haul Road.
Taxpayer dollars spent on infrastructure to accommodate future City growth	A description of the city of Kamloops Official Community Plan as it relates to the Project will be included in the Application/EIS; this will include the Aberdeen Area Plan.
Use of municipal services (e.g. fire protection) for the project	The Application will include discussion of requirements for fire protection and other municipal emergency services.
Cost of and responsibility for upgrades to Lac Le Jeune Road to accommodate mine traffic	<p>The route for concentrate transport to Vancouver will be discussed in the Application/EIS and will include:</p> <ul style="list-style-type: none"> • 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 proposed Project that are technically and economically feasible; and • The environmental effects of any such alternative means. <p>The Proponent is not responsible for maintenance or upgrades to provincial infrastructure.</p>
Altered weather patterns, fugitive dust deposition on road safety and maintenance	Fugitive dust dispersion modelling will be completed for the Application/EIS. Mitigation measures will be implemented to address potential impacts of entrained dust
Costs for maintenance of publicly funded infrastructure	The project will contribute to government revenues through municipal, regional, provincial and federal taxes.
Cost of transmission line and power supply	The Proponent will pay for the transmission line to the project site. The Application/EIS will include details regarding government incentives/subsidies.

The proposed new Infrastructure, Public Facilities and Services VC will be included as Social VC, and will include issues related to transportation.

3.3.2.5 Economic Diversification VC

The concerns frequently identified in relation to the Economic Diversification VC and Proponent responses are summarised in Table 16. Overlap was found between issues expressed relating to the Economic Diversification VC with the Employment and Business VCs.

Table 16 Economic Diversification VC Key Concerns

Key Issues	Summary of Proponent Responses
Cost-benefit approach should be used and include tax breaks and government subsidies	A socio-economic impact assessment approach will be used rather than a cost benefit analysis, reflecting current methodological standards. Quantitative data will be used when available, supplemented by qualitative sources. To the extent practical, the specific issues identified will be considered.
Premature mine closure, drop in metal prices effects on economic benefit	The projected 23 year life of mine (LOM) is based on commodity prices, among other things. The Application will include a discussion of factors which may influence the LOM, such as metallurgical recoveries, geotechnical characteristics of the rock mass, capital and operating cost estimates, etc.
Inability to attract businesses and professionals from other sectors because of the perception of the city as a mining town.	Effects of project operation and decommissioning on the economy will be examined, including those related to city image and the campaign to brand Kamloops as the Tournament Capital of BC.
Economic benefits of direct and indirect revenues from sporting events	The Application/EIS will include assessment of indirect economic benefits (expenditures and employment as feasible), perceptions regarding the City (e.g., from a tourism context). The EA will also include an examination of City of Kamloops vision, planning and related documents and processes.
Processing of natural resources in Canada instead of shipping overseas (smelting)	The Application/EIS will discuss the copper concentrate market; a smelter is not included in the project design.
Compensation of land developers for loss of investment and planning costs of the purchase of lands adjacent to the	A description of the land ownership and land use regime including tenures, licenses, permits or other authorizations that would be potentially affected by the proposed Project; and the status of consultations with holders of such tenures and permits, and private land owners including resolution of land tenure issues will be included in the Application/EIS. The Application/EIS will discuss estimated annual government revenues from the construction and operation phases of the

Key Issues	Summary of Proponent Responses
proposed project area.	proposed Project, including local/municipal property taxes and regional district taxes. The EA will include examination of City of Kamloops vision and planning documents and processes in the context of the Project.
Methodology – should use key person interviews	Insights are expected to come from key person interviews, including professionals in the medical, university and other fields. Other case study projects will be used where feasible and comparable.

3.3.3 Social Assessment Category

The VCs proposed for study in the Social Assessment Category in Revision D of the AIR/EIS guidelines were the following:

- Culture;
- Community health and well-being;
- Public facilities and services, including transportation;
- Dark sky / Shading;
- Land and Resource Use;
- Jacko Lake;
- Visual Impact / Aesthetic Features; and
- Aboriginal Community Interests.

No issues were received relating to Aboriginal Community Interests therefore it will not be discussed in this Summary Document. Based on direction from the EAO/CEA Agency, Aboriginal Community Interests was removed as a discrete VC. All issues associated with Aboriginal community interest will be addressed in the Aboriginal Interests section of the Application/EIS.

Similar to the Economic VCs, the preliminary Social VCs have evolved and been refined to provide a better framework for the effects assessment of the Project. This section of the Summary Document presents the key concerns and Proponent responses to the Social VCs presented in Revision D of the AIR/EIS Guidelines. Where relevant, any revised or renamed VCs are discussed in the following sections and will be carried forward into the final AIR/EIS Guidelines and subsequent Application/EIS.

3.3.3.1 Culture VC

The concerns identified in relation to the Culture VC and Proponent responses are summarised in Table 17.

Table 17 Culture VC Key Concerns

Key Issues	Summary of Proponent Responses
Quality of life (rural lifestyle)	Quality of life will be considered within the context of the Application/EIS. Topics to be covered under the biophysical disciplines noted are expected to inform socio-economic VCs.

Key Issues	Summary of Proponent Responses
City image/reputation as a mining town, industrial town	The scope of the assessment will include commentary on potential effects on community perception and quality of life related to the Project. The Application/EIS will consider potential effects related to the City of Kamloops being perceived as a 'mining town' as well as issues related to 'boom and bust'.

Based on direction from the EAO/ CEA Agency, Culture was removed as a discrete VC. The issues identified with the Culture VC will be assessed as part of the Community Health and Well-Being VC in the final AIR/EIS Guidelines and Application/EIS.

3.3.3.2 Community Health and Well-Being VC

The concerns frequently identified in relation to the Community Health and Well-Being VC and Proponent responses are summarised in Table 18.

Table 18 Community Health and Well-being VC Key Concerns

Key Issues	Summary of Proponent Responses
Health and wellbeing of current residents who live close to the proposed project	The Application/EIS will provide commentary regarding community health and well-being. Where comparable conditions exist with respect to other operations, insights from these will be used to inform the current assessment.
Quality of life (silence, clean air, peace, worry about health issues)	A Human Health and Ecological Risk Assessment will be included in the Application/EIS to address concerns relating to potential adverse environmental impacts.
Transparency of study methodology (key person interview selection)	The assessment of social and economic effects will reflect current methodological standards. Quantitative data will be used when available, supplemented by qualitative sources.
Health issues of power line	A World Health Organization (WHO, 2012) review of the scientific literature examining the potential links between exposure to Electromagnetic Fields (EMF) and health effects in humans concluded that: Although some members of the public have attributed a broad range of symptoms to exposures to EMFs, to date, scientific evidence does not support a link between these symptoms and EMF exposure. No studies are proposed for inclusion in the Application/EIS
Lifestyle, balance (recreation, outdoor activities) and community need to define itself	The scope of the assessment will include commentary on potential effects on community perception and quality of life related to the Project. The assessment will include a consideration of City of Kamloops planning and development (current and anticipated), and also consider the potential effects of the Project on way of life and other economic activities.

3.3.3.3 Public Facilities and Services VC

The concerns frequently identified in relation to the Public Facilities and Services VC and Proponent responses are summarised in Table 19.

Table 19 Public Facilities and Services VC Key Concerns

Key Issues	Summary of Proponent Responses
Subsidized hydroelectric power for the proposed project	The Application/EIS will include details regarding government incentives/subsidies.
Impact on professional recruitment and retention	Potential effects of the project on other infrastructure and services in the City will also be considered, including health sector-related professions.

This VC will be rolled into the new Infrastructure, Public Facilities and Services VC as the topics are closely linked and will benefit from consideration together.

3.3.3.4 Dark Sky/Shading VC

The effect of light pollution on human health and the use of the Kamloops Astronomical Society observatory at Stake Lake were the major themes expressed in the issues relating to the Dark Sky VC. The effects of project lighting on the darkness of the night sky in areas adjacent to the mine as well as at the Stake Lake Observatory will be assessed, with results presented in the Application/EIS.

The potential effect of the proposed mine infrastructure on the amount of sunlight on neighbouring properties was noted as a concern; this will be assessed in the Application/EIS as part of the Shading VC.

Based on discussion with the EAO/CEA Agency, issues associated with Shading will be addressed as part of the Visual Impact/Aesthetics VC, as the study methodologies are similar. Dark Sky is a stand-alone VC in the final AIR/EIS Guidelines and in the Application/EIS

3.3.3.5 Land and Resource Use VC

The concerns frequently identified in relation to the Land and Resource Use VC and Proponent responses are summarised in Table 20.

Table 20 Land and Resource Use VC Key Concerns

Key Issues	Summary of Proponent Responses
Compliance with Kamloops Official Community Plan (OCP)	The Application/EIS will include a description of any management and monitoring programs or regional studies, including the City of Kamloops Official Community Plan and Sustainable Kamloops Plan, as well as the Thompson Nicola Regional District (TNRD) Official Community Plans, guidelines, and bylaws as they relate to the Project.

Key Issues	Summary of Proponent Responses
Compliance with Agricultural Land Reserve	The Proponent is in discussion with the Agricultural Land Commission to address the use of lands within the Agricultural Land Reserve.
Recreational use of surrounding area (Jacko Lake, Inks Lake, etc.)	<p>The impact of the project on recreational opportunities will be assessed in the Application/EIS.</p> <p>Access to Jacko Lake will be preserved during operation; however, recreation in and around Jacko Lake will be restricted during blasting for public safety - this will be discussed in the Application/EIS.</p> <p>Recreational opportunities in and around Inks Lake will be interrupted for the life of mine for public safety reasons, since it is proposed that Inks Lake be used as a seepage collection and process water pond. The significance of effects on recreation will be assessed in the Application/EIS.</p>
Private land in surrounding areas	A description of the land ownership and land use regime including tenures, licenses, permits or other authorizations that would be potentially affected by the proposed Project; and the status of consultations with holders of such tenures and permits, and private land owners including resolution of land tenure issues will be included in the Application/EIS.
Future capability for agriculture. garden crops, livestock from the dust/mineral uptake and soil changes	<p>As per Mines Act requirements, pre-disturbance vegetation studies will be conducted to determine baseline productivity (biomass), diversity (species composition) and metals content. Similarly, baseline soils data (morphological and chemical) must be submitted as part of the Conceptual Reclamation and Closure Plan. End land use will be identified in the reclamation and closure plan.</p> <p>A Human Health and Ecological Risk Assessment will be included in the Application/EIS. Country Foods will be added as a VC to specifically address concerns related to dust deposition on surrounding terrain.</p>

None of the issues received identified the Kinder Morgan pipeline as a Land and Resource Use VC concern; however, the EAO/CEA Agency have directed the Proponent to include the existing pipeline in the effects assessment. As well, the EAO and CEA Agency have stressed the need to incorporate considerations related to local land and resource planning documents/processes (Kamloops Official Community Plan, Thompson Nicola Regional District plans, etc.) in this section of the Application/EIS as well as in Section 2 of the Application/EIS (Project Land Use)

Concerns relating to recreational use of the surrounding area will be assessed under a new VC entitled Outdoor Recreation, as it was identified through engagement with the EAO and CEA Agency that the topic is of sufficient concern to warrant a separate presentation.

3.3.3.6 Jacko Lake VC

The EAO/CEA Agency originally directed the Proponent to assess Jacko Lake as a VC, based on input from the Technical Working Group. Treatment as a stand-alone 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 the effects of the proposed mine on Jacko Lake will be assessed in terms of several Environmental (Surface Water Quality and Quantity; Groundwater Quantity; Fish and Fish Habitat), Social and Economic (Economic Growth; Economic Diversification; Community Health and Well-Being; Visual Impact/Aesthetic Features), and Human Health (Country Foods) VCs. The Proponent therefore proposed that Jacko Lake be discussed as a “supporting topic” within the Application/EIS. Jacko Lake as a supporting topic will serve as a summary discussion of the lake in the context of the other VCs and allow the reader to refer to a single section for all issues related to Jacko Lake. An overview of the importance of the lake based on key person interviews will also be included, with a discussion on the perceived effects to the lake.

3.3.3.7 Visual Impact/Aesthetic Features

The concerns frequently identified in relation to the Visual Impact/Aesthetic Features VC and Proponent responses are summarised in Table 21.

Table 21 Visual Impact / Aesthetic Features VC Key Concerns

Key Issues	Summary of Proponent Responses
Lack of physical 3D model to conduct a visual quality assessment	The visual impact assessment will rely upon computer modelling from viewpoints selected in consultation with the City of Kamloops and the TNRD, and conceptual drawings. KGHM Ajax has had a 3D model of the project site constructed; the model is available in the KGHM Ajax office in downtown Kamloops.
Impact on city image	The assessment will include a consideration of potential impacts of the Project on Kamloops tourism and recreation, perceptions of the City, and community development and planning, a component of which would be a visual impact study. The assessment will consider visual aesthetics, noise and vibrations in the context of community health and well-being using standard methodologies.

Assessment of the potential visual impact of the proposed project will include consideration of changes to the view-shed and consideration of potential changes associated with shading resulting from proposed mine features. Assessment of the Visual Impact/Aesthetic Features VC will incorporate discussion from other VCs such as Outdoor Recreation, Economic Diversification (e.g., tourism) and others as appropriate.

3.3.4 Health Assessment Category

No issues were received relating to the Health Education and Healthy Living VCs; therefore it will not be discussed in this Summary Document. The two VCs will be amalgamated into a single VC called Healthy Living and Health Education in the Application/EIS. A new VC entitled Country Foods was added to the final AIR/EIS Guidelines in the human Health Assessment Category in response to public and TWG concerns related to potential effects dust deposition on the surrounding terrain, including backyard gardens.

3.3.4.1 Air Quality

Public Concerns

The public identified several key issues related to air quality. These key issues and Proponent responses are summarised in Table 22. Due to the size limitations of the Microsoft Excel spreadsheet cells and the complexity of the explanation of how the Proponent will assess the potential effects of the proposed mine on air quality in the Application/EIS, supplementary information on the modelling plan and the parameters that will be modelled is provided following Table 22 in this Summary Document.

Table 22 Air Quality VC Key Concerns

Key Issues	Summary of Proponent Responses
Dust deposition on property values	Results of air quality dispersion modelling will be used in the effects assessment for the Property Values VC.
Location of weather stations used for air quality modelling	It is not necessary to have site-specific surface meteorological measurements for each source region to adequately characterize dispersion meteorology using the CALPUFF modelling program. A three-dimensional CALMET wind field will be used to drive the CALPUFF model. These CALMET data are based on surface measurements at four locations in the airshed and upper air data and were supplied by the BC Ministry of Environment.
Alternative project design to mitigate dust on private property	Project design alternatives will be presented in Section 17.4 of the Application/EIS. Mitigation measures will be included in Section 3 (Project Description) for each of the project components and activities. The technically and economically feasible ways that the proposed Project could be implemented will be provided. The rationale for siting the waste rock management facilities as proposed will be discussed.
Chemical composition of fugitive dust arising from the site	<p>The composition and quantity of particulate matter from mobile, fugitive, and area source emissions will be calculated using published emission factors and facility engineering design estimates and modelled using the CALPUFF modelling system, as approved by the BC Ministry of Environment.</p> <p>Potential effects of the mine on the safety of food from backyard gardens, in particular the effects of fugitive dust, was identified as a concern in the public issues. A HHERA will evaluate potential metal uptake from dustfall into locally grown produce and forage and from forage into locally raised livestock. Assessment of metal concentrations in locally grown produce is intended as part of the baseline study, and could, if necessary be continued during operations if the HHERA identifies potential concerns related to produce consumption.</p> <p>The composition of the particulates will be determined based upon a list of substances detected in test results provided by KGHM Ajax Mining Inc. A sub-set of parameters, selected by the project toxicology based upon the toxicity of the mobile portion of each substance that represents a potential human exposure or possibility for uptake into plants will be modelled.</p>

Key Issues	Summary of Proponent Responses
Respiratory illness in humans	<p>A HHERA will assess potential health effects based on the predicted incremental change in overall air quality (not on total air quality). The HHERA will evaluate exposure to particulate matter that may be released as a result of mining operations and assess the potential health effects that could be associated with these exposures in the context of local pre-existing air quality. Where necessary, attention will be given to potential interactions between specific particulates and biological systems. The HHERA will determine the likelihood that the levels of mine-related particulates represent potential concerns for sensitive members of the population.</p> <p>The list of metals and other chemicals of potential concern associated with the mining operations will be listed in the HHERA documents. The toxicological benchmarks used to evaluate potential human health effects associated with exposures to materials associated with mine activities, will be taken from Health Canada.</p>
Magnesium and chloride	<p>Design details regarding dust suppression for various activities and mine components will be provided in the Project Description section of the Application/EIS.</p>
Air quality monitoring	<p>If the Ajax Project receives regulatory approval, the number, placement, and specifications of the air quality monitoring program will be developed with the BC Ministry of Environment as a condition of any discharge permits.</p>
Strong winds	<p>Dispersion modelling will be used to predict the composition and quantity of particulate matter in various parts of the City. These levels will be evaluated against provincial or federal standards and guidelines to ensure that exposures do not result in deleterious effects. The application of mitigation measures will ensure that these effects are not meaningful in terms of the human, ecological, and health outcomes.</p>

Air Quality Dispersion Modelling

The EA for the proposed project requires that the Proponent conduct an air quality assessment consistent with the “Guidelines for Air Quality Dispersion Modelling in British Columbia” (BC Ministry of Environment, 2008). The guidelines call for development of a Detailed Model Plan and Air Quality Technical Data Report. The model plan sets out the steps to follow in completing the assessment, including delineating the size of the modelling area and the parameters that will be modelled. The plan is submitted for approval to the regional Ministry of Environment (MOE) Air Quality Meteorologist prior to initiation of the study.

The guidelines describe air quality dispersion models as “mathematical descriptions of the behaviour of air contaminants in the atmosphere” (BC MOE, 2008). Dispersion models have been developed for a wide range of terrain and land surface conditions which result in “complex flow” and dispersion patterns; CALPUFF is one of the core refined models recommended for use in BC (BC MOE, 2008). The following explanation of the program can be found in the guidelines:

“CALPUFF is a modelling system comprised of three component submodels: CALMET (meteorological model), CALPUFF (calculates output), CALPOST (analysis and display of output). The meteorological

fields used by CALPUFF are produced by CALMET — a meteorological model that includes a diagnostic wind field model. This model contains treatments of slope flows, valley flows, terrain blocking effects, kinematic terrain effects (i.e., speed up over hills), lake and sea breeze circulations, and a procedure to insure mass is conserved in the domain. CALMET inputs include surface and upper-air meteorological data as well as the option to use the gridded meteorological fields produced by mesoscale meteorological models.”

The following explanation of CALMET, a diagnostic three-dimensional meteorological model, can be found in the guidelines (BC MOE, 2008):

“The meteorological fields used by CALPUFF are produced by CALMET — a meteorological model that includes a diagnostic wind field model. This model contains meteorological model that includes a diagnostic wind field model. This model contains treatments of slope flows, valley flows, terrain blocking effects, kinematic terrain effects (i.e., speed up over hills), lake and sea breeze circulations, and a procedure to insure mass is conserved in the domain. CALMET inputs include surface and upper-air meteorological data as well as the option to use the gridded meteorological fields produced by mesoscale meteorological models.”

Levelton Consultants Ltd. was retained in 2008 by BC MOE to conduct the CALMET modelling work: their report provides detailed modelling setup and results analysis at selected locations within the CALMET domain. To better understand the model performance, quality assurance/quality control (QA/QC) was performed for the full three year CALMET dataset.

In accordance with the guideline, the CALPUFF Version 6.112, and CALMET Version 5.8, will be used. The guidelines dictate that a Level 3 assessment is appropriate for the proposed mine, since multiple sources will be evaluated.

Not all project components result in substantial emissions to the atmosphere, or emit substances that are meaningful from a human or ecological health perspective. Therefore, the planned dispersion assessment considers only those sources and substances of interest for which effects are reasonably contemplated, including:

- Diesel exhaust from haul trucks and other heavy equipment;
- Fugitive dust from access and haul roads;
- Dust mechanically induced by traffic;
- Fugitive dust from conveyances and transfer points;
- Fugitive dust from land areas such as the Ajax open pit, the TSF, and the waste rock management facilities; and
- Dust and other emissions from blasting.

Project emissions will be calculated using published emission factors and facility engineering design estimates. Where filterable and condensable particulate fractions are present and included in the published emission factors they will be considered in the modelling exercise.

The CALPUFF modelling domain (the domain where air quality impacts will be assessed) is shown in the AIR. Justification for the chosen domain area will be included in the Application/EIS. 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 TWG) in the modelling domain are:

- Total Dustfall;
- Total Suspended Particulate Matter;
- Inhalable Particulate Matter;
- Respirable Particulate Matter;
- Sulphur Dioxide;
- Total Oxides of Nitrogen; and
- Carbon Monoxide.

These substances of interest were selected based upon the estimated quantities of the substances that could be emitted from the proposed mine, and previous experience with similar projects. “Background” values will be derived from ambient air quality measurements and added to modelled concentrations to approximate the additive effects of the modelled source and sources not included in the modelling (e.g., other industries, traffic emissions, natural sources). Cumulative levels will be provided (background plus the predicted increment from the modelled emission).

The substances of interest emitted from Project emission sources that will be included in dispersion modelling only at discrete “special receptors” include:

- Metals in Dustfall and Total Suspended Particulate Matter:
 - Antimony;
 - Arsenic;
 - Cadmium;
 - Cobalt;
 - Copper;
 - Lead;
 - Mercury;
 - Molybdenum;
 - Nickel; and
 - Selenium.
- 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. These substances will be modelled to produce output suitable for the Country Food VC analysis. The locations

of the special receptors were identified by the toxicologists performing the Country Foods assessment 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 BC MOE has stated that any Ozone and Secondary PM_{2.5} formation will occur far outside the modelling domain, by which time they will be sufficiently dispersed and of no concern. Therefore, Ozone and Secondary PM_{2.5} will not be modelled in this assessment.

The Air Quality Technical Data Report results will be included in the Application/EIS and, in addition to supporting the Country Foods VC assessment will inform other Environmental, Social, Economic and Heritage VCs as required.

3.3.4.2 Noise and Vibration

Public Concerns

The public identified several human health issues related to noise and vibration. These key issues and Proponent responses are summarised in Table 23. Due to the size limitations of the Microsoft Excel spreadsheet, and the complexity of the explanation of how the Proponent will assess the potential effects of the proposed mine on noise and vibration levels, supplementary information on the modelling plan and the parameters that will be modelled is provided following Table 23 of this Summary Document.

Table 23 Noise/Vibration VC Key Concerns

Key Issues	Summary of Proponent Responses
Property values in surrounding areas	The potential off-site vibration effects associated with project activities such as blasting, rock crushing, and vehicle movement will be assessed. These results will be compared to standard thresholds for acceptable vibration levels on building foundations. Potential effects pathways between the proposed project and receptors (direct and indirect) will be provided in the Application. The Application will include commitments for the implementation of mitigation measures where linkages are identified with project components or activities. Monitoring strategies will be proposed where residual effects are predicted.
Quality of life in surrounding areas	Effects pathways will be included in the Application. The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects. The Proponent cannot guarantee that no noise will be heard at nearby residences. The Application will discuss the effectiveness of noise mitigation measures from all project activities. A noise complaint response and resolution policy will be established and implemented as part of the environmental management system.

Key Issues	Summary of Proponent Responses
Noise study methodology	<p>A Detailed Noise Modelling Plan has been developed to guide the noise impact assessment for the proposed project. In regard to assessing the effects of noise, the EAO typically references Health Canada Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (2011) and occasionally BC Oil & Gas Commission Noise Control Best Practices Guideline (2009). The noise assessment will cover a broad area with a wide array of residential receptors ranging from urban and suburban to rural and quiet rural locations.</p> <p>Effects pathways will be included in the Application. The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects. The results for blasting noise and vibration assessment will include: airblast overpressure (noise) and peak particle velocity (ground vibration) predictions for the nearest and most critical residential receptors. The noise assessment will include mobile equipment off the mine site, including the impact of trucks traveling on Lac Le Jeune Road and subsequent impacts on area residents and livestock.</p>
Vibration effects on human health	<p>The AIR will include a more detailed explanation of the methodology for the assessment of potential vibration effects, including the guidance documents or standards used in development of the methodology. The vibration effects assessment will include discussion of the radius in which vibration will be measureable.</p> <p>Effects pathways will be included in the Application. The Application will include discussion of mitigation measures the Proponent will commit to taking to avoid or minimize significant adverse effects. The results for blasting noise and vibration assessment will include: airblast overpressure (noise) and peak particle velocity (ground vibration) predictions for the nearest and most critical residential receptors.</p>
Test blast size	<p>It is not feasible to conduct a "full size operational blast" prior to operation. Modelling is sufficient to predict blasting peak particle velocity and air overpressure. Vibration characteristics can be accurately related to the charge weight and distance - such a relationship is site specific and can be used to model blast vibrations from a production blast at the same site. From the recorded waveforms, the ground resonant frequency and the range of vibration frequencies that the ground supports can be estimated.</p>
Blasting schedule	<p>It is currently anticipated that blasting will occur once per day, at around noon, coinciding with shift change. The Application will include discussion of mitigation measures the Proponent is prepared to take to avoid or minimize significant adverse effects. Alternate blasting schedules will be discussed in the Application/EIS.</p>
Vibration effects on Kinder Morgan pipeline, Jacko Lake	<p>Vibration effects from blasting on existing infrastructure, including the Kinder Morgan pipeline and the outlet dam on Jacko Lake will be assessed under the Geology, Landforms and Soils VC.</p> <p>The following plans presented in Section 11 of the dAIR will be included in corresponding sections of the Application/EIS to reduce and manage the risks of</p>

Key Issues	Summary of Proponent Responses
	impacts on existing infrastructure: <ul style="list-style-type: none"> • Hazardous Waste Management Plan • Accidents and Malfunctions Plan • Natural Hazards Management Plan • Emergency Response Plan • Fire Hazard and Abatement Plan

Noise and Vibration Assessment Methodology for Human Health

The noise assessment described in this document will cover a broad area with a wide array of residential receptors ranging from urban and suburban to quiet rural locations. A Detailed Noise Modelling Plan has been developed to guide the noise impact assessment for the proposed mine. Health Canada originally provided the “Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise” (Health Canada, 2011) and recommended it as the primary guidance document for acceptable methodologies and evaluation of human health effects due to noise (including blasting). The BC Oil & Gas Commission (OGC) Noise Control Best Practices Guideline (BC Oil and Gas Commission, 2009) is also used for similar projects. The two guidelines differ fundamentally in approach. The Health Canada guidance represents an annoyance based criteria where an incremental increase in noise levels is said to incrementally increase the percentage of the population that is “highly annoyed” (%HA). The project is deemed acceptable if such an increase in %HA is less than 6.5% at all receptors. Health Canada, however, advises that using this measure alone may not be predictive of possible human health effects, i.e., the change in %HA may not exceed 6.5% but the receptors may experience sleep disturbance. The BC OGC Guideline represents the threshold based criteria where maximum cumulative noise levels at the receptors are prescribed; the assessments in accordance with the guideline may be more predictive of possible human health effects. Both documents address the issue of low frequency noise. The noise effects study will be performed in accordance with the recommendations and requirements of both Health Canada and BC OGC guidelines to ensure a comprehensive assessment.

The major activities associated with the noise assessment include:

- Review mine/site plans, equipment lists, information from major equipment vendors, and topographical data for the area around the mine.
- Identify all noise sensitive receptors around the mine including the urban and suburban residential locations in the City of Kamloops and the rural residences to the east, south and west of the site.
- Establish noise assessment criteria and targets for all residential receptors.
- Identify modelling scenarios (operation and construction) that will reflect the worst case scenario in terms of noise emissions.
- Identify all substantial noise sources associated with the proposed mine for the modelling scenarios and establish corresponding sound power levels.
- Measure existing ambient sound levels at selected receptors and develop a map for ambient sound levels.
- Develop an acoustic model for the mine and surrounding area for each modelling scenario.
- Assess the effects of the proposed mine on the acoustic environment and assess noise emissions for compliance with noise limits.

- Provide noise mitigation and noise management recommendations, where effects are predicted.
- Assess the effects of blasting activities on the acoustic environment.

The model will assess the effects of blasting on the acoustic environment at the proposed mine site. The blasting assessment will be performed for the worst case as identified in consultation with KAM. The blast assessment will focus on airborne effects (air-blast overpressure, (noise)) and ground-borne effects (peak particle velocity (vibration)). The blast model will assess these effects on the area residences for possible disturbance. Recently collected field data from the test blasts will be used to validate the model.

The baseline sound level measurements associated with the project will be consistent with ISO 1996-2:2007. Acoustics – Description, measurement and assessment of environmental noise –Part 2: Determination of environmental noise levels. The blasting noise and vibration assessment will be performed in accordance with the Ontario Ministry of Environment Model Municipal Noise Control By-Law, Noise Pollution Control, Section 119 (NPC-119) (1978). The assessment will compare the predicted levels to the Ontario Ministry of Environment guidelines as outlined in NPC-119. Depending on the modelling results, periodic blast monitoring may be performed.

Under the BC OGC Guideline ambient sound levels are calculated on the basis of dwelling density and proximity to transportation, since ambient sound levels are largely a function of dwelling density and proximity to busy roadways, which can be reasonably estimated. Health Canada Guidance advises that measured or valid estimates of baseline (ambient) sound levels for both daytime and nighttime hours at receptor locations be assessed and reported. For the proposed mine, establishment of baseline sound levels will be done through a combination of longer-term continuous monitoring (24 to 48 hours in duration) at two representative locations; shorter duration spot measurements (10 to 15 minutes in duration) at numerous locations; and estimated default levels in accordance with the BC OGC Guideline.

Predictive noise modelling will be carried out using the CadnaA computer software by Datakustik GmbH, which is designed to predict outdoor noise in accordance with International Organization for Standardization (ISO) 9613 Parts 1 and 2: Attenuation of Sound During Propagation Outdoors (ISO 9613), as well as several international and European acoustic standards. On a broad-band basis, the ISO 9613 calculation standard is accurate to within ± 3 dBA for propagation distances of up to 1 km and source heights of up to 30 m. The ISO 9613 standard is common among noise practitioners and has been subjected to years of scrutiny. Noise sensitive receptors will be established at locations shown in the AIR. If the effects of blasting are predicted to cause some disturbances, mitigating measures will be proposed.

SECTION 4.0 - AIR/EIS GUIDELINES REVISION

Based on the concerns noted in the 345 submissions received during the 75 day public comment period, and engagement with the EAO, CEA Agency, and members of the TWG the Ajax Project AIR/EIS Guidelines has been revised to ensure that key concerns are addressed in the Application/EIS. Table 24 lists both the VCs that were included in the draft AIR/EIS Guidelines and those that are included in the final AIR/EIS Guidelines.

The Proponent will proceed with completing the studies outlined in the final and approved AIR/EIS Guidelines, and present the results in an Environmental Assessment report. The Environmental Assessment will be submitted as both an Application for an Environmental Assessment Certificate for provincial review and an Environmental Impact Statement for federal review.

Table 24 Preliminary and Final VCs for the Ajax Project

Assessment Category	Valued Component AIR Rev D	Valued Component Final AIR
Environment	Climate	Greenhouse Gas Management ²
	Geology, Landforms and Soils	Geology, Landforms and Soils
	Surface water quality	Surface water quality
	Surface water quantity	Surface water quantity
	Groundwater quality	Groundwater quality
	Groundwater quantity	Groundwater quantity
	Fish populations and fish habitat	Fish populations and fish habitat
	Rare plant VCs	Rare plants
	Rare and Sensitive Ecological Communities	Rare and Sensitive Ecological Communities
	Terrestrial Invertebrate VCs	Grasslands ³
	Amphibian VCs	Terrestrial Invertebrates
	Reptile VCs	Amphibians
	Migratory Bird VCs	Reptiles
	Raptor VCs	Migratory Birds
	Non-migratory Gamebird VCs	Raptors
	Bat VCs ¹	Non-migratory Gamebirds
	Mammal VCs	Mammals
Economic	Labour force ⁴	Economic Growth
	Education and training ⁴	Labour force, Employment and Training
	Income	Income
	Employment ⁴	Business
	Business	Property Values ³
	Cost of living ⁵	Economic Diversification
	Housing	
	Infrastructure ⁶	
Social	Economic Diversification	
	Culture ³	Community Health and Well-Being
	Community health and well-being	Infrastructure, Public Facilities and Services
	Public facilities and services, including transportation ⁶	Dark Sky
	Dark sky/Shading ⁷	Visual Impact/Aesthetic Features (including Shading)
	Land and Resource Use	Land and Resource Use
		Outdoor Recreation ³
Heritage	Visual Impact/Aesthetic Features	
	Jacko Lake	
	Aboriginal community interests ⁸	
	Heritage objects	Heritage Objects
Health	Heritage sites	Heritage Sites
	Air quality (Dustfall, PM ₁₀ and PM _{2.5})	Air Quality
	Water quality	Domestic Water Quality ²
	Noise and vibration	Country Foods ³
	Health education ⁹	Noise and Vibration
Healthy living ⁹	Health Education and Healthy Living	

1	Combined with Mammals	6	Combined into Infrastructure, Public Facilities and Services
2	Renamed	7	Shading assessed as part of Visual Impact/Aesthetic Features
3	New VC	8	No longer a VC but assessed in alternate section of EA
4	Combined into Labour force, Employment and Training	9	Combined into Health Education and Healthy Living
5	Combined with Income		

SECTION 5.0 - REFERENCES

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