MEMORANDUM

To: Aberdeen Neighbourhood Association **Date:** March 31, 2017

From: KGHM Ajax Mining Inc.

CC: B.C. Environmental Assessment Office, Canadian Environmental Assessment Agency

Subject: Response to Ajax Project Application/EIS Public Comment Period Submissions

To the members of the Aberdeen Neighbourhood Association, thank you for your comments provided on the Ajax Project Environmental Application/Environmental Impact Statement (Application/EIS). This memo provides a response to the concerns you have raised.

1. INTRODUCTION

As part of the environmental assessment review process for the Ajax Project (the Project), the BC Environmental Assessment Office (EAO) and the Canadian Environmental Assessment Agency (CEAA) held a 75-day public comment period from January 26 to April 11, 2016. The following submissions were received from members of the Aberdeen Neighbourhood Association (ANA):

- Report entitled Review of the Ajax Mine Proposal submitted by ANA dated April 7, 2016
- Letter from Helen Newmarch (undated)
- Letter from Gordon Borgstrom (undated)
- Report entitled Review of the Ajax Mine Proposal – Selected Socio-Economic Value-Components dated April 11, 2016

KGHM Ajax Mining (KAM) appreciates the level of effort the ANA has put into review of the Project, and is pleased to provide the following response, which outlines KAM's understanding of ANA's key issues and summarizes how KAM is addressing these topics. Thank you for organizing the report into main areas of concern.

2. KEY ISSUES AND ACCESS TO INFORMATION

Consistent with the direction provided by the EAO, KAM reviewed all of the 3,845 public submissions received, analyzed and sorted them into 177 issues (see attached Document Map), then developed responses to these issues. These responses will be posted on the EAO ePIC website, and will be publicly available for review (see Section 5, Useful Links). This letter response is intended to

address your issues that were either not addressed under the public responses or that required KAM to provide additional information and detail not included in the public responses. As ANA has also been engaged in earlier stages of the environmental assessment, KAM would like to take this opportunity to directly respond to your submission. KAM's direct response to your submission is consistent with commitments made in the Community Consultation Plan (Appendix 4.7-A of the Application/EIS) and guidance provided by the EAO.

Following our review of your letter, we consider that your concerns expressed are related to the following key issues:

- hydrogeology impacts and risk of terrain hazards in Aberdeen
- air quality in Aberdeen
- noise, particularly to outlying areas of Aberdeen
- blasting impacts on structures and residents in Aberdeen
- visual impacts
- impacts to future development in the City of Kamloops
- Aberdeen property values
- tailings storage alternatives and risk
- monitoring and disclosure
- socio-economic effects assessment

KAM considers that many of ANA's interests are similar to the issues raised by others and therefore we recommend that ANA members review KAM's public response submission to the EAO for additional information. These topics have been identified below to assist you in finding the appropriate response. Topics raised in the ANA submittals which are not addressed in the general public responses or warrant additional discussion or evaluation are addressed in Section 3 of this letter. The sections of the response to public comments most applicable to the issues raised in your letter include:

- Project Description, Environmental Assessment, Other Pillar:
  - Section 2.1.3 Design/engineering of TSF and other components
  - Section 9.2.1 Downstream risks/impacts of an accident at the mine site
  - Section 9.2.4 Geotechnical/ground stability risks at the mine site
- Response to Public Comments – Environment Pillar:
  - Section 4.3.1 Potential effects on land stability in Aberdeen
  - Section 4.3.3 Critique of Geochemical model/calculations
- Response to Public Comments – Economic Pillar:
  - Section 5.5.1 Concern that property values will decline
  - Section 5.5.2 Critique of property values assessment
  - Section 5.6.2 Critique of economic modelling/assessment

  - Section 5.6.3 Request for cost-benefit analysis (or similar valuation analysis)
- Response to Public Comments – Social Pillar:
  - Section 6.2.1 Effects on nearby residences, schools and other facilities
  - Section 6.2.2 Blasting and other noise will disturb people living nearby
  - Section 6.2.3 Blasting/vibration may damage buildings and infrastructure
  - Section 6.2.4 Compensation/mitigation for people living near the Project
  - Section 6.2.5 Comment about a specific property/landowner
  - Section 6.6.1 Effects on recreation near the mine site
  - Section 6.6.4 Environmental impacts will affect enjoyment of community and outdoor/natural areas
- Health Pillar: Section 7.2 Air Quality (general):
  - Section 7.2.2: Kamloops' air quality is already poor, and the Project will make it worse
  - Section 7.2.3: Air quality in southwest Kamloops neighbourhoods (Knutsford, Aberdeen, Pineview Valley, Upper Sahali)
  - Section 7.2.4: It is unacceptable to exceed air quality standards
- Health Pillar: Section 7.3 Air Quality (dust and particulate matter):
  - Section 7.3.1: Increased levels of dust/particulate matter (general)
  - Section 7.3.2: Increased levels of $PM_{2.5}$
  - Section 7.3.3: Mineral content of dust and particulate matter
  - Section 7.3.4: Environmental implications of dust (e.g. contamination of soil and water)
  - Section 7.3.5: Dust control/management measures
  - Section 7.3.6: Particulate matter won't stop at Aberdeen Drive
- Health Pillar: Section 7.4 Air Quality (Studies and Models):
  - Section 7.4.1: AQ data collection/monitoring stations and available baseline data
  - Section 7.4.2: Critique of air quality modelling and calculations
- Health Pillar: Section 7.8 Noise and Vibration
  - Section 7.8.1: Blast tests have not been conducted
  - Section 7.8.2: Critique of noise and vibration studies
- Health Pillar: Section 7.10.2 Health impacts related to transmission line

In reviewing the public responses to issues, you will find that KAM has provided a substantial set of supplementary material to EAO and the Agency in response to comments received by technical reviewers on behalf of the City of Kamloops, Stk'emlupsemc Te Secwepemc Nation (SSN), provincial and federal agencies, and other Working Group members. Within these supplemental documents, there are a number of key updates to Project design, and new commitments to mitigation that KAM has made in response to the comments received. Some of the key areas include:

- Project Design:
  - Updated Peterson Creek Diversion System;
  - Updated Fish Habitat and Fishery Offsetting Plan;
- Mitigation Measures and Commitments:
  - Fugitive Dust Management Plan;
  - Peterson Creek streamflow;
  - Updated Wildlife Management and Monitoring Plan;
  - Grassland restoration and enhancement (>2,000 ha on Sugarloaf Ranch);
  - Ephemeral wetlands included in compensation calculation;
- Additional Analysis and Assessment:
  - Air quality modelling;
  - Groundwater, water balance, and water quality modelling;
  - Cumulative effects of water quality in Lower Peterson Creek;
  - Critical habitat for *Species at Risk Act* (SARA) listed and other wildlife species;

KAM has provided supplemental submissions to EAO/CEAA that are also relevant to the concerns you have included in your letter. The list of documents is attached at Appendix 1.

Recognizing that these supplemental submissions add to what is already a large volume of material; KAM has also developed a few tools to support technical reviewers, including a directory of supplemental memos, and a set of integrated summary memos, which summarize the key supplemental responses and their implications for the review process. While these tools were developed for technical reviewers, we anticipate that they may also help facilitate your review, and as such refer to Section 5 Useful Links, below.

3. RESPONSE

From KAM's perspective, your letters include concerns that can be largely grouped into 10 categories as previously listed in Section 2 of this letter. We believe the majority of your concerns are addressed in the supplementary information and responses to public comments listed above. Our responses to those comments not covered by supplemental information are summarized in this section. Please note that we did not respond to statements in your letter better answered by regulatory agencies.

3.1 Geologic Changes and its Impact on Soil Stability.

KAM Summary of ANA Concerns:

- *ANA asserts there is a history of groundwater related terrain instability in Aberdeen with the potential for the Ajax Project to exacerbate existing instability. As well, ANA notes that a system of faults provides groundwater conduits that may further destabilize the terrain near Aberdeen. Lastly ANA raised questions over validity of the soil baseline report.*

KAM Response: KAM's studies completed for the Application/EIS conclude that the risk of re-activation of historic landslides in the Aberdeen Hills area is negated by the 2.9-kilometre distance from the Ajax pit to Aberdeen and use of blasting best practices to minimize vibration effects.

As stated in Section 6.2.4.2 of the Application/EIS, one key issue identified by feedback was potential effects of pit blasting vibrations on the Aberdeen Hills area. An assessment was undertaken of the potential influence of production blasting at the Ajax Pit on slope stability in the Aberdeen Hills area. The stability model was modified to determine the sensitivity of the calculated Factor of Safety values (engineering design criteria) to possible increases in pore water pressure due to blasting. Pore water pressure is defined as the pressure of groundwater held within a soil or rock, in gaps between particles (pores). Slope stability is influenced by many factors, among which are subsoil structure and pore water pressure distribution. Our study results indicated there would be negligible effects of blasting vibrations on pore water pressure and slope stability in the Aberdeen area.

This finding is supported by a published case histories data set (Charlie, et. al. 1983[1]). Published cases show blasting with Peak Particle Velocity (PPV) of less than 10 mm/s do not result in induced porewater pressure. The PPV from the production blasts is predicted to reduce to less than 10 mm/s within one kilometre from the Open Pit; and is expected to be about 0.6 mm/s at Aberdeen Hills. It is concluded that small- and large-scale stability of the slopes in the Aberdeen Hills development will not be affected by production blasting for the Project. Please also refer to the discussion of potential effects related to groundwater at the Aberdeen Hills in Section 6.6.

In addition, detailed responses on the concerns of blasting and vibration and effects to groundwater and land stability have been provided in additional technical memos to the technical working group reviewing the Application/EIS. Memo 0429_KAM_Aberdeen_BGC-008 addresses concerns with several details of groundwater model assumptions. The topic of slope stability in Aberdeen related primarily to blasting and blasting effects on pore water pressures and land stability is addressed in Memo 0603_KAM_SLR020_BGC-016.

We are confident that the groundwater model predictions are robust regarding the potential for Project-related increases in groundwater levels within Aberdeen. However, KAM understands that slope stability within Aberdeen is a serious concern, and may be sensitive to relatively minor increases in groundwater levels. Therefore, the following has been proposed:

- Development and implementation of a groundwater monitoring plan between the Project site and Aberdeen prior to the construction phase and in consultation with the City of Kamloops.

[1] Charlie, W.A., G.E. Veyera, S.R. Abt, and H.D. Patrone. 1983. *Blast Induced Soil Liquefaction: State-of-the-Art.* The First Symposium on the Interaction of Non-Nuclear Munitions with Structures. U. S. Air Force Academy, Colorado Springs, Colorado, May 1983.

- Development of a data-sharing agreement with the City to allow timely implementation of new groundwater-related information as it becomes available within any models and analyses.

Regarding faults in the area and their relation to groundwater and potential Project effects, a number of faults in the Project area are described in detail in Section 3.3 – Geology of the Application/EIS to provide geologic context to mineralization and structure of the ore body. In addition, these faults were described for geotechnical characterization used for design of the Open Pit (Appendix 3-C Ajax Project Open Pit Geotechnical Slope Design Parameters) and the Tailings Storage Facility and Mine Rock Storage Facilities (Supplementary Report 0324_KAM_Geotechnical Report -TSF and MRSF). A fault mapped by the BC Geological Survey underlies the proposed location of the Tailings Storage Facility, South and West Mine Rock Storage Facilities, Jacko Lake and Edith Lake. The fault is referred to as the Edith Lake Fault Zone. KAM contracted a geotechnical engineering consultant to conduct a site investigation and characterization program to determine the presence of the fault and its properties to provide input to the geotechnical and hydrogeological (groundwater) assessments for the Project. Appendix 6.2-B provides the Edith Lake Fault Zone Investigation and Characterization Report. The faults located beneath the proposed TSF, including the Edith Lake Thrust Fault are not tectonically active features and due to their steep dips, any loading of these structures will not result in increased stability risks including those related to seismic effects.

With respect to your concerns and comments regarding the soil baseline data, soils investigations for the Project have been completed by qualified professionals with relevant regional understanding, and mine planning and reclamation experience. Soils information is presented and used in a number of different components of the Application/EIS.

The primary soils study (Appendix 3-E of the Application/EIS. Section 3.2.4) provides information on the data analysis and mapping methods used. All soil and site inspection data (526 sites) were entered into a geodatabase (data presented in Appendix A of Appendix 3-E), which was used to query and analyze specific landscape, parent material and soil variables that consistently occurred together to depict soil landscape patterns.

In addition to the database, a variety of mapping tools were used collectively to develop the soil map units (SMUs) for the Project (Section 4.3) and are described in accordance with the Canadian System of Soil Classification (CSSC). The data from this soils study is particularly important for closure planning, and thus is used in Section 3.17 (Closure and Reclamation) and Section 11.26 (Landscape Design and Restoration Plan) of the Application/EIS.

In regards to comments related to a lack of samples throughout the City to provide adequate control sites, baseline soils data were collected from community gardens, schools, and parks within five residential areas throughout the city (Aberdeen, Sahali, West End/Downtown, North Shore, and Brocklehurst) to support the Human Health and Ecological Risk Assessment (HHERA). This information is provided in Appendix 10.4-A of the Application/EIS, and is incorporated into the assessment of country foods and human health.

While soils information is referenced in other supporting documents (e.g., Appendix 6.2-A, Appendix 6.6-A), and detailed critique has been offered by some commenters, the primary purpose of these reports was assessment of terrain stability and groundwater, respectively, and thus reference and characterization of soils was not necessarily completed to the same level of detail as would be completed for a pure soils evaluation. This does not invalidate or reduce the quality of the work completed for its designated purpose.

3.2 Air Quality

KAM summary of ANA Concerns*:* the following items are concerns raised in your report related to Air Quality related effects. Many bullets are excerpted directly from your report.

- *ANA provides a critique of the Air Quality Effects Assessment by a number of working group members including Dr. Steyn retained by Kamloops Moms for Clean Air a Community Advisory Group for the Ajax Environmental Assessment*
- *ANA criticizes of the use of data from 2003 for the basis for the air quality assessment and the use of 90% mitigation effectiveness for PM2.5*
- *ANA calls to rerun the air quality model using additional baseline data and reduced mitigation measure effectiveness scenario assumptions*
- *ANA concerns regarding Project effects on fog, ice and winter inversions*
- *ANA requests additional baseline data collection including PM2.5*
- *ANA request for "real life" test of the model*

KAM Response:

The air quality model developed for the Project is more complex than what has typically been developed for other mining projects in the province. KAM has met with the Technical Working Group on multiple occasions to discuss the selected modelling approach, to walk through example calculations, and to discuss the findings of the air quality studies. The air quality assessment was done with a thorough understanding of local meteorology, including a predominant wind direction that frequently places the City downwind of the Project and the presence of inversions in the area at times. MOE reviewed and approved the Detailed Modelling Plan and confirmed that it met all the requirements outlined in the Guidelines for Air Quality Dispersion Modelling in British Columbia[2]. Please refer to Response to Public Comments – Health Pillar Section 7.4.2 (Critique of air quality modelling/calculations) for additional detail on modelling.

- *Critique of the Air Quality Effects Assessment by a number of working group members, including Dr. Steyn retained by Moms for Clean Air a Community Advisory Group for the Ajax Environmental Assessment*

[2] http://www.bcairquality.ca/pdf/bc-dispersion-modelling-guideline-2015.pdf

In April 2016, retired UBC Professor Dr. Douw Steyn prepared and publicly released a document entitled "KGHM Ajax Review Report". It provides comments on the air quality modelling for the Application/EIS. The Review Report addresses Section 10.1 (Air Quality) of the Application/EIS and Appendix 10.1-A (Air Quality Technical Data Report) and Appendices A to I of Appendix 10.1-A (generically referred to as "the report" by Dr. Steyn in the Review Report. In general, Steyn's review report questions aspects of Stantec's work that are not done to specifications presented in Steyn & Ainslie (2012).

Stantec Consulting Ltd. was retained by KAM to complete the Air Quality effects assessment for the Project, including the air quality model. Stantec prepared a memorandum responding to Dr. Steyn's review, which is publicly available on BC EAO's e-Pic site. Overall, Stantec addresses concerns put forward by Dr. Steyn, including recommended modeling methods and critique of conclusions of the air quality assessment. In the memorandum, Stantec responds to each of Steyn's arguments.

In addition, outside experts have been hired by the Proponent to conduct a third-party review of the Application/EIS and appendices. This review of Stantec's work was conducted by two professional engineers and one senior scientist at Rowan Williams Davies and Irwin Inc. (RWDI). RWDI is a first-tier firm of consulting engineers and scientists, and one of Stantec's chief competitors in the Western Canada market for air quality services. RWDI has addressed many of the same topics covered in Steyn's review report, but reached entirely different conclusions. The three memorandums that comprise the RWDI instead focus on areas for improvement, most of which Stantec has since taken into account.

- *Criticism of the use of data from 2003 for the basis for the air quality assessment and the use of 90% mitigation effectiveness for $PM_{2.5}$*

The year 2003 was selected as the basis for the air quality assessment as this year demonstrated conditions resulting in unusually poor dispersion (thinning out of emissions) compared to other years evaluated, leading to higher emission predictions. The approach taken follows exactly the detailed model plan which was approved by BC Ministry of Environment prior to completing the study. It is important to note that 2003 was used as the meteorological data input into the model, which differs from the air quality emissions data. Additional discussion on data collected for the model can be found in Response 7.4.1 (AQ data collection/monitoring stations and available baseline data).

KAM committed to a rigorous dust mitigation and management program, which includes intensive mitigation on the haul roads (in and out of the pit) and the access road, as these are the greatest contributor of emissions from the Project and are in the closest proximity to the community of Kamloops. The proposed mine plan includes one main haul road in the pit and five main haul roads out of the pit.

The assumed 90 per cent dust control efficiency is consistent with the range of values recommended by the US Environmental Protection Agency[3] . Please refer technical memo 0706_KAM_Combined Stantec Responses to EAO 001-006 for additional information. This technical memo includes a number of studies that indicate 90 per cent dust control efficiency is attainable.

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3 US EPA AP 42 (US EPA AP42 Chapter 13.2.2 Figure 13.2.2-2) https://www3.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf

One misconception of the air quality modelling is that 90 per cent mitigation efficiency was applied to all sources of dust from the Project. In actuality, this factor has only been applied to the road dust calculations and not to the entire mine property.

The model conservatively assumes no mitigation which over predicts potential effects. Dust has been modelled without applied mitigation in excess of that provided by nature (e.g., precipitation). This includes soil stockpiles, mine rock storage facilities, the plant site, etc.

- *Calls to rerun the air quality model using additional baseline data and reduced mitigation measure effectiveness scenario assumptions*

Through the Application/EIS review process, technical reviewers requested that additional sensitivity analyses be completed in the air quality model in order to ensure that modelling specialists understand and have reasonable confidence in the model behaviour and reliability. This analysis included evaluating the effectiveness of mitigation for road sources. The analysis was done to demonstrate that the model is reliable and giving reasonable results when changing model inputs. Scenarios of lower effectiveness (e.g., 70 per cent or 80 per cent) are considered failure modes that would be infrequent and short duration episodes, especially when tracked through an effective monitoring and adaptive management system. The results of the additional sensitivity analyses are documented in supplemental memo 0725_KAM_Combined Stantec Responses to EAO 001-006 and the Integrated Summary Memo – Air Quality which provides summaries that integrates KAM's response to key issues raised by technical reviewers as part of 'Round 1' comments in the review of the Ajax Application/EIS.

The additional sensitivity analyses show that effective mitigation of dust on the haul roads will be key to successfully minimizing emissions from the operating the mine. This is consistent with KAM's earlier conclusions, which are what drove the proactive commitment to design for a high degree of mitigation as part of the original Application/EIS submission. Please refer to Response 7.3.5 (Dust control/management measures) for discussion on how KAM will achieve dust control mitigation commitments.

- *Project effects on fog, ice and winter inversions*

The potential for haze or fog generation from the Project was raised early in the Application/EIS process in the first stages of development of the Detailed Air Quality Modelling Plan. As the Project does not include cooling towers or near-saturated discharges of water vapour (e.g., wet scrubbers) it was determined that there was little potential for generation of fog or haze.

Water consumption on site is limited to normal evaporation from water storage facilities and wetted surfaces (e.g., portions of the TSF surface, roadways sprayed with water for dust control). As such, fogging and icing episodes attributable to water evaporation associated with Project activities are not expected to occur more than those instances when fogging and icing already occurs naturally.

The largest potential contributor to evaporation from the Project is the TSF. Although fogging and icing as a result of the Project were determined to be very unlikely, a recent change to thickened

tailings technology has resulted in smaller operating pond volume, resulting in less surface area exposed to evaporative conditions, further decreasing the likelihood for fog or haze generation.

- *Request for additional baseline data collection*

The Application/EIS is founded on a substantial baseline dataset, which includes long-term meteorology and air quality data that we consider to be complete for the purposes of the assessment. KAM continues to collect baseline air quality data to add to the existing baseline database that will be used to compare future air quality data in order to detect any changes that may be a result of the Ajax Project. The meteorology stations measure wind speed, wind direction, temperature, delta temperature, barometric pressure, precipitation (including snowfall), relative humidity, and solar radiation. The air quality components measure NO_x, O_3, $PM_{2.5}$, and PM_{10}. All instrumentation uses continuous monitoring technology. Data is processed into 15 minute averages and uploaded to an online network for easy access and data management purposes. Data is automatically filtered to identify outliers and equipment malfunctions so that any problems can be rectified. Monthly inspections and quarterly calibrations are carried out by KAM consultants.

Meteorology baseline data has been collected for the Project at an automated meteorology station (AJAXMET) and long-term regional meteorology stations operated by Environment Canada and BC Ministry of Forests, Lands and Natural Resource Operations. Data were collected at the AJAXMET station from August 2010 through November 2014. Ambient air quality and meteorology monitoring began at the Ajax Upwind Station in August 2014. This station is located on Lac Le Jeune Road approximately 7.5 km southwest of Aberdeen. The purpose of the station is to provide baseline data for effects assessment analysis as well as upwind monitoring data during Construction and Operation. Ultimately, the system will form part of an air quality monitoring network for the Project that will include one upwind station and two downwind stations. The meteorological components were installed in August 2014. A precipitation gauge upgrade was installed in December 2014 with a full suite of air quality monitoring instrumentation.

The objective of the air quality monitoring program is to evaluate and document if the Air Quality Management Plan successfully achieves its performance objectives of minimizing Project-related adverse effects on air quality. KAM continues to operate air quality monitoring stations in the Project area and utilize data from other existing stations in the region. Detailed monitoring requirements will reflect the conditions established in the BC *Environmental Management Act* Air Discharge Permit (ADP) by the BC MOE (if received) and may include continuous ambient air quality monitoring, stationary source testing and dustfall monitoring requirements.

An air quality and meteorology monitoring station was installed and commissioned by BC MOE in the Upper Aberdeen neighbourhood, next to Pacific Way Elementary school, during mid-October 2015. The data will be used both for on-going BC MOE air quality research in the Kamloops airshed and for baseline data if the proposed Ajax Mine receives an Environmental Assessment Certificate and other necessary approvals to proceed. The station will remain in this location for at least two years, after which BC MOE will decide whether to keep it there, modify it, or move it elsewhere (BC MOE 2015c). The decision will be based on analysis of the data collected. The current air quality and meteorology readings from this station are available at http://www.bcairquality.ca/readings/index.html.

Background dustfall was monitored monthly at 13 Project-specific dustfall monitoring stations between August 2007 and September 2008, after which quarterly sampling was initiated until October 2009. Seven of the stations were relocated in October 2009 and the sampling frequency returned to monthly. In total 276 dustfall measurements were collected at 20 locations on or near the Project for the period from August 2007 to August 2012. Thirteen dustfall monitoring stations were established around the old Afton Mine Site in August 2007. During October 2009, seven of the dustfall stations were then relocated to characterize baseline conditions in the local study area (LSA) and the sampling frequency returned to monthly at that time. The location of the dustfall monitoring stations is summarized in Figure 7.1-1. Future dustfall monitoring requirements will reflect the conditions set in the BC EMA Air Discharge Permit (ADP) by the BC MOE.

- *Request for "real life" test of the model*

Model prediction confidence is evaluated and described in Appendix 10.1-A: Air Quality Technical Data Report (TDR). Please refer to Section 6 of the TDR which includes a section on model prediction uncertainty, a comparison of predictions and measurements, QA/QC checks of the model and model prediction confidence. In addition, Section D.8 of Appendix D of the TDR entitled CALPUFF Performance provides a description of model prediction certainty including an analysis of predicted-to-measured concentrations of multiple parameters including $PM_{2.5}$.

The predicted results of the air quality model were compared with ambient measurements and indicated that the model performs well at predicting $PM_{2.5}$, SO_2 and NO_2 concentrations. The ability of the model to predict concentrations for other parameters depends on the level of confidence associated with estimating these other emission rates. Emission rates used in the modelling were estimated based on standard methods that use a combination of emission factors, manufacturer equipment specifications and engineering estimates. In reality actual emissions vary from hour to hour and day to day; however, due to the nature of this approach of emission estimation, there is a high degree of confidence held by our contractor that emissions are over-estimated.

In addition to model predictions of air contaminant concentrations, two responses have been prepared by Stantec that indicate the model has good accuracy with the prediction of wind direction. Please refer to supplemental memos 0331_KAM_CALMET Wind Rose_Ajax Upwind and 0331_KAM_CALMET Wind Rose_Kamloops Airport. In general, both measured and predicted wind roses show good agreement with each other.

3.3 Noise Effects

KAM Summary of ANA Concerns*:*

- *ANA asserts that KAM provided insufficient baseline monitoring data in the Application/EIS*
- *ANA asserts that KAM used inadequate methods for the noise effects assessment including criticism of model inputs and inclusion of specific sensitive noise receptor locations*
- *ANA recommends that the proposed monitoring of noise and vibration be augmented to include more than one monitoring location that would monitor noise in Aberdeen.*

KAM Response:

The Application/EIS includes an in-depth assessment of the potential noise impacts associated with the Project using experienced, technically qualified professionals. The noise baseline monitoring program collected baseline information to quantify the acoustic environment for communities near the Project area including Aberdeen. The baseline monitoring program included six locations that represented different developed and undeveloped areas. Two locations are near the Aberdeen community development boundary (i.e., the boundary of the area planned for future residential development) and are representative of a rural to suburban area transition. Two other locations are within the suburban residential community of Aberdeen. The remaining two locations are in a rural environment. The noise assessment (Section 10.5 and Appendix 10.5-A of the Application/EIS) included 37 noise receptors when evaluating sound levels at various locations. Noise receptors in the assessment included Aberdeen residences, schools (Pacific Way and Aberdeen Elementary schools), daycares (All Aboard Childcare), outdoor areas in and around Aberdeen, hospitals and potential residential development areas identified in KAMPLAN in and around Aberdeen. In addition to this assessment, the blasting analysis completed as part of the Noise and Vibration assessment includes predicted ground vibration and air blast sound levels for 31 areas of concern in and around the Project area. Areas of concern include Pacific Way Elementary, residences in Knutsford, Royal Inland Hospital and TLC Pet Boarding as well as other locations.

The measured sound levels are based on approximately one week of measurement data and provide an indication of the average baseline acoustic environment for the area. Longer monitoring periods (monthly or annually) or a permanent monitoring program would provide a larger statistical sample; however, the week-long program is considered sufficient for an evaluation of the existing acoustic environment in most locations. The BC Oil and Gas Commission and Health Canada guidelines do not prescribe minimum monitoring duration for baseline sound level program. The Alberta Energy Regulator noise regulation[4] recommends a monitoring period from 9 to 24 hours, depending on the type, time, and duration of the noise; this agency requires a minimum of 3 hours per daytime or nighttime period of acceptable data for the baseline monitoring to be considered valid. Based on professional judgement, the 5- to 6-day monitoring program provides a reasonable amount of data for an evaluation of the existing acoustic environment at the monitoring locations. Noise monitors will also be installed prior to construction for additional baseline data to best understand noise levels immediately prior to the commencement of the Project.

The nighttime baseline level for receptors along the city development boundary is 36 dBA (Table 2-7 in Noise and Vibration Technical Data Report, provided in Appendix 10.5-A of the Application/EIS). This level was based on seven continuous days of noise monitoring at the south end of Aberdeen development, end of Pacific Way (Location 1 in Figure 2-1 of TDR). The sound level of 36 dBA is considered as a quiet acoustic environment, same value as the nighttime sound level measured at Jacko Lake. It is KAM's perspective that the baseline sound level used for all city development boundary locations is not overstated.

[4] Alberta Energy Regulator, Directive 038: Noise Control

In addition to the baseline data collected for the Application/EIS, noise monitoring stations will be in place prior to the start of construction which will provide supplementary data before Project activities begin generating noise. Please refer to Section 11.22.4 of the Application/EIS for a summary of proposed noise and vibration monitoring stations.

Noise modelling in the assessment is based on sound propagation calculations in accordance with internationally established standards[5], which are commonly used by noise practitioners and are accepted by BC OGC and Health Canada. The noise model considers the following factors:

- Equipment type, emission levels, quantity, schedule
- Terrain
- Weather conditions (i.e. wind, temperature, humidity)
- Ground surface conditions

The mine traffic noise effects, in combination with other Project-related noise effects (i.e. mine pit and processing plant during the operation years) were quantified in the assessment. The number of haul trucks, travel speed, and haul road length were accounted for in the noise model for different phases. The ground terrain elevations, with 50 m by 50 m grid[6], were applied in the noise model outside the Project boundary. During the different phases of the Project, the terrain elevation in mine area and noise sources elevations were based on the mine plans for Years 1, 2 and 4. All federal and provincial noise guidelines and guidance are based on equivalent sound level (i.e. average daytime or nighttime); therefore, the assessment focused on average levels over the daytime and nighttime rather than maximum or peak level at any given time. However, supplemental memorandum 1219_KAM_EAO Request_Maximum Noise Assessment Results provides the results of additional studies that KAM has conducted in regard to maximum sound levels.

Lastly, regarding criticism that the noise assessment did not include meteorological parameters, this assertion is inaccurate. KAM would like to highlight details about the software and the model parameters that were used in our assessment. As stated in Appendix 10-5-A of the Application/EIS, the latest version of the CadnaA computer modelling program (Version 4.5.145) from DataKustik (2015), which incorporates ISO 9613 algorithms, was used for the noise assessment. The software model accounts for the following factors:

- Geometric spreading
- Screening effects
- Atmospheric absorption
- Source size, location, and elevation
- Light to moderate wind from the Project area to receptors and/or temperature inversion
- Source directivity

[5] ISO Standards 9613 Part 1 and Part 2 (ISO 9613-1 1993, ISO 9613-2 1996)
[6] Based on the Canadian Digital Elevation Data

Noise modeling parameters included:

- Temperature
- Relative humidity
- Wind speed
- Noise source identification
- Noise source data in octave-band center frequency
- Acoustic modelling software
- Noise Propagation Standard
- Ground conditions and attenuation factor
- Terrain Parameters (terrain resolution)
- Reflection parameters

Please review Appendix 10-5-A of the Application/EIS for details.

3.4 Vibration and Air Blast Overpressure

KAM Summary of ANA Concerns*:*

- *ANA criticism of vibration and air blast overpressure predictions and assessment*
- *ANA request for validation of vibration and air blast predictions using test blasts*
- *ANA insistence of adherence to proposed mitigation measures to prevent adverse impacts to Aberdeen residents*
- *ANA recommendation of additional mitigation measures including implementation of the ground vibration/air blast monitoring program, including response to requests from home owners within a 5 km radius of the mine*

KAM Response:

- *Criticism of vibration and air blast overpressure predictions and assessment*

We have extensively studied the potential impacts from blasting by contracting an experienced blasting expert and consulting with explosives manufacturers that have decades of experience with blasting and the use of explosives throughout the world. Their studies and analyses include a project specific blast design program engineered to reduce noise, vibration and overpressure effects from the Ajax pit. Modeling results show that this blasting program will not affect homes or neighbourhoods, even those closest to mine operation. Importantly, the blast designs are modifiable in the unlikely event that monitoring indicates vibration is higher than that anticipated by the model.

The contractors assessment uses internationally recognized and industry accepted approaches for noise and vibration modelling. To account for uncertainty in the modelling, conservative assumptions were adopted that likely over-predict potential effects from blasting. Our confidence in

the predictions is high, since the analytical approach and methodology used in the assessment have been tested and verified in thousands of blast audits worldwide. Nevertheless, KAM is currently working with subject matter experts as part of the regulatory review to verify the assessment presented in the Application/EIS.

- *Validation of predictions using test blasts*

We are committed to ensuring that the predicted effects of blasting are representative of real life operations. To that end, a test blast was performed in 2011. The test blast was intended to quantify technical aspects of the blast performance. Generally, the blast performed as expected and the results informed further development of the blasting parameters. Refinements to the parameters ultimately led to those included in the Application/EIS. Based on the Project's blasting parameters and known site conditions, additional test blasts were not required to accurately model the effects of blasting. The test blast was deemed adequate by the Canadian Explosives Research Laboratory (CERL) in a letter to Natural Resources Canada. The head of the explosion effects group stated in the letter that CERL "believes that the method proposed by Orica is a credible means of establishing the potential hazards to the local community…"

During operations, a Blast Management Plan will be in place which will include the following:

- Blasting practices will "scale up" from a small blast in the initial project phase.
- Vibration monitoring locations will be setup in a linear array from the pit to the closest residences to provide daily record of blast effect at different distance.
- The Project will have targeted maximum levels of ground vibration (5 mm/s) and airblast overpressure (115 decibel). If 80% of one of these thresholds is obtained, an investigation will be conducted to determine if the trends will continue on future blasts. Appropriate blast design changes will be made, when warranted, to stay below these thresholds.
- Daily blast effect records provide opportunities for corrective action if the effect approaches the design target.

The active daily monitoring and the "scaling up" approach during the initial project phase will provide the noise and vibration data to ensure compliance with regulatory requirements and predictions made in the Application/EIS. The measured blasting performance will enable the implementation of adaptive follow-up programs as needed.

Structural damage can be associated with vibration from blasting. In order to minimize vibration from blasting activities at the mine site, KAM can control the following factors (which have the most influence over the level of vibration that results):

- Time delays between blast holes;
- Use of electronic detonators to control blast sequence; and
- Amount of explosives used per blast hole.

No residential homes or neighbourhoods are expected to experience measurable levels of vibration. The noise and vibration assessment (Section 10.5 of the Application/EIS) used a vibration threshold for structural damage of 10 mm/s for ground vibration and 120 linear decibel for air blast overpressure.

Annoyance threshold were also considered, of 5 mm/s (ground vibration) and 115 decibel (air blast). Blast-related vibration estimates were calculated conservatively, based on the smallest potential distance between the blast and receptor, and the largest potential amount of explosives. For comparison, ground vibration of 1-2 mm/s is equivalent to the vibrations generated by a person walking across an uncarpeted floor.

Results of the vibration assessment (as described in Section 10.5 of the Application/EIS) are summarized as follows:

- At the edge of the mine site (i.e. Jacko Lake), maximum ground vibration as a result of blasting is predicted to be 12.3 mm/s, while air blast is predicted to be 128 mm/s. There are no residential or other structures in this area.
- Vibration effects at the edge of Aberdeen are modelled to be significantly less due to the greater distance from the open pit compared with the distance to Jacko Lake. As an example, Pacific Way Elementary is modelled to have vibration amplitude of approximately one mm/s, well below the threshold for damage or annoyance. Similarly, the air blast overpressure at Pacific Way Elementary is 109 decibel, well below the structural damage or annoyance thresholds.
- At the City of Kamloops' urban growth boundary (south of Aberdeen), the maximum ground vibration will be two mm/s, and air blast will be 113 decibel. Again, these are below the thresholds for both structural damage and annoyance.

As a result of the above conclusions, and considering the highly conservative estimates that were used in the model predicting blast vibrations, we are confident that structural damage to buildings or other infrastructure will not occur.

- *Insistence of adherence to proposed mitigation measures to prevent adverse impacts to Aberdeen residents*
- *Recommendation of additional mitigation measures including implementation of the ground vibration/air blast monitoring program, including response to requests from home owners within a 5 km radius of the mine*

Despite the high confidence in this assessment, we have committed to an extensive monitoring program to ensure that blasting activity does not negatively impact neighbouring properties and residents. Vibration monitoring is proposed once the full-scale production blasts are started. Six seismograph stations will verify predictions that levels are below guidelines. Three seismographs will be arranged in a linear array from the pit edge towards the Aberdeen neighbourhood. Portable seismographs will monitor vibrations levels toward residences to the east and west of the blasting areas. The monitoring stations will trigger ground vibration and air blast overpressure measurement once a pre-determined trigger level is exceeded. If the monitoring results indicate that noise or vibration effects exceed the threshold, site activities or blasts design will be adjusted to mitigate any

exceedance and ensure that vibration levels stay below the thresholds. Section 11.22 of the Application/EIS further outlines the vibration management plan.

KAM plans to establish a Community Liaison Group, which will provide a mechanism for communication and engagement activities between KAM, regulators, and key stakeholders, among others, related to monitoring activities, disclosure of monitoring results, and addressing community concerns. Section 11.29.4 of the Application/EIS provides further information about the Community Liaison Group.

This forum will be well suited to address broader community issues including property damage from mining operations. Individual complaints of any blast damage will be addressed through a public complaints policy. We have also proposed provision of monitoring results via website so that important notices such as blast times, site weather conditions and other events can be readily available to the public. In addition monitoring data will be posted to the website for public use.

3.5 Visual Impacts and Aesthetics

KAM summary of ANA Concerns*:*

- *ANA assertion that visual impacts will be greater than stated in the Application/EIS*
- *ANA concerns regarding the proposed 230 kV powerline related to human health and property values*

KAM Response: Changes to views and landscapes were assessed in Section 8.3 (Visual Quality and Aesthetic Features) of the Application/EIS. The assessment used on-site photographs, quantitative analyses, and provided visual simulations of what views of the Project will look like from various vantage points. These photo simulations can be found in Plates 8.3-2 to 8.3-8 in the Application/EIS, and include viewpoints from the Coquihalla Highway, Jacko Lake, Coal Hill, and other areas. We do not agree with the assertion that predicted visual impact representations have been "skewed so that the vertical backdrop appears less severe than what it would actually be."

Due to proximity to the Project, the changes in views from Jacko Lake, Lac le Jeune Road, Edith Lake Road, and Coal Hill will be the most notable. Views from the Coquihalla Highway are much less noticeable due to distance and the nature of the surrounding landscape (including the influence of topography and vegetation). By changing the general arrangement of the project to the Ajax South layout, visual quality was improved, and the Project will be less visible from the Coquihalla Highway. However KAM recognizes that some of the Project infrastructure and facilities will be visible by users of Jacko Lake, which may change recreational experiences of those users. We believe that these impacts will be temporary and largely mitigated post mine closure through facility reclamation.

The Project will not be visible to people in Aberdeen or other parts of the city of Kamloops, as it is behind Coal Hill, but it will be visible from various locations from grasslands south of Coal Hill However much of this land is private and closed to the public. KAM also recognizes that some individual landowners in the Knutsford area may experience visual quality effects, and will work with these landowners on an individual basis to identify and address concerns.

Although not explicitly stated in the comments, a common public concern regarding transmission lines relates to perceived health impacts from electromagnetic fields (EMF). In close proximity to people EMF effects from power lines can cause weak electric currents to flow through the human body, however the magnitude of the currents is small and is not associated with any known obvious short- or long-term health risks or impacts[7]. The World Health Organization (WHO) concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However the WHO acknowledges that there are some gaps in knowledge about the biological effects and require further research. That said because the state of the science cannot confirm existence of low level electromagnetic health effects, no potential health effects related to the proposed transmission line are assessed in the Application/EIS. No effects on human (or animal) health—for residents or land users—are expected to result from EMF or other aspects of powerline construction and operation.

The majority of the nine-kilometre 230 kV overhead powerline will occur within existing road corridors. As the proposed right-of-way for the powerline is almost completely on private land, KAM has engaged with the limited individual landowners that would be most directly affected by the proposed powerline alignment.

3.6 Land and Resource Use

KAM summary of ANA Concerns*:*

- *ANA assertion that the Ajax Project, if it were to proceed, would dramatically affect the City of Kamloops's ability to implement KAMPLAN*
- *ANA criticism of the land use (residential) assessment conclusions and characterization of the Project's effects on future residential land uses, in particular in the southwest sector of the city*
- *ANA insists that the Proponent can and must include real life examples of both larger and smaller sized communities, including Malartic Quebec, in determining the resulting interactions of open pit mines in identifying the impacts to these future development lands*

KAM Response:

- *The Ajax Project, if it were to proceed, would dramatically affect the City of Kamloops's ability to implement KAMPLAN*
- *Criticism of the land use (residential) assessment conclusions and characterization of the Project's effects on future residential land uses, in particular in the southwest sector of the city*

KAM acknowledges the objectives, priorities and planning stated in KAMPLAN. We do not agree that the Ajax Project will dramatically affect the City's ability to implement the plan. Respectfully, we believe that the concerns regarding air quality, noise, vibration, visual aesthetics and other potential effects are misunderstood or exaggerated. Potential effects of the Project on land use in the

[7] World Health Organization "The EMF Project – Summary of Health Effects" webpage http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html

immediate vicinity (LSA) and wider area throughout Kamloops were assessed as part of the Application/EIS and found by KAM to be not significant.

We respectfully disagree with ANA's opinion regarding these residual effects and our ability to adequately mitigate adverse effects that may in turn affect the implementation of KAMPLAN. Future concerns regarding development can also be addressed through a proposed Community Liaison Group. KAM has proposed the development of a Community Liaison Group prior to the start of construction. The CLG will provide a key mechanism for communication and engagement between KAM, regulators, public, service providers, and other stakeholder groups, related to Project activities, and addressing community concerns.

The CLG will also provide a forum for participants to raise concerns and questions directly to KAM, and for KAM to provide information to the community. KAM wants members of the CLG to help define the specific topics that the group would tackle and champion; this would occur through the development of a Terms of Reference. However, KAM would welcome the inclusion of aspects related to proactive risk management and emergency communications.

We understand that KAMPLAN is the City of Kamloops' official community plan (OCP) and sets the direction and priorities to guide decisions on planning and land use management within the jurisdiction of the City. According to the City's website, KAMPLAN was last updated in 2004 and as the website states that much has changed in the last 12 years. "The City faces new challenges including climate change, rising energy costs, concerns around affordable housing, growth management, economic development, and other emerging issues. The City needs an updated OCP to successfully plan for the future of Kamloops," says the website. We acknowledge that if the Project proceeds the City may wish to include revised assumptions and priorities in KAMPLAN, however we have not heard to date that identification of new areas for urban growth and housing away from Aberdeen is one of them.

KAMPLAN is currently undergoing a four phase review and update process and is now in Phase 2 which largely consists of seeking public input on land use and development, the environment, infrastructure, transportation and mobility, housing, recreation and open space, economic development, arts and culture, community well-being, health and safety and the transportation master plan. Some of the existing policies from KAMPLAN 2004 remain relevant, according to the City's website, and the plan isn't being re-written from scratch. Per the website "Minor updates" are required and the City will develop new policies to address new emerging issues for planning and future development.

With that in mind, it is clear that KAMPLAN is intended to be a living document, a plan that adapts and changes to the needs and challenges of a growing community. It is also apparent that the City is aware of Ajax and the need for KAMPLAN to contemplate the Project, as the issue surfaced in public KAMPLAN surveys and consultation efforts in 2014 and 2015, according to the City.

KAMPLAN aims to support quality of life for Kamloops' residents through building strong and diverse neighbourhoods, providing a variety of housing types, encouraging healthy and active lifestyles, supporting cultural and athletic pursuits, diversifying economic and educational opportunities, and maintaining sustainable environmental stewardship. We believe that development of the Ajax Project does not conflict with KAMPLAN'S vision for the future of

Kamloops and in fact, will contribute to the vision by helping to grow a more secure, economically sound foundation. The development of the Ajax Project will directly support economic and educational opportunities, the transportation master plan and the environment by providing net gains of grassland, wetland and fish habitat.

We are committed to operate in accordance with industry best practices for environmental and social performance, and to make a positive contribution to the community of Kamloops and surrounding area. We intend that this contribution will go beyond the generation of jobs and business opportunities, and will include on-going support for cultural, recreational, social, educational, and other initiatives.

- *ANA asks that the Proponent include real-life examples of both larger- and smaller-sized communities, including Malartic, Quebec, in determining the resulting interactions of open pit mines in identifying the impacts to these future development lands*

Regarding the critique of the land and resource use assessment providing inadequate examples of mines located near communities with similar population size as Kamloops, there are limited examples of similarly sized mining operations in proximity to a City that matches the size and topography of Kamloops. All projects have a unique context in terms of the environment, community, means of operation etc. Exact replicas do not exist for any mining project. That said, we find it critical to learn from other operations that have similar features, as we have been learning from numerous mines that we operate as well as others such as Malartic and Mount Polley. The mining industry, like others, has its share of examples of projects that have not fulfilled commitments and caused adverse socio-economic and environmental impacts that taxpayers have ultimately been responsible for. For every bad example, there are many more projects that have been responsible members of the communities that they neighbour providing economic, environmental and cultural benefits that are a major support of community goals and objectives.

There are no perfect examples to compare the potential effects of the Project on Aberdeen, as each individual mine has its own unique challenges and environmental requirements. However, we believe the Project design selected will greatly reduce or prevent adverse effects and we have developed flexible management plans that can adapt to unanticipated effects. Furthermore, we fully expect that approvals, if received, will include appropriate operating conditions to safeguard the community, environment and employees. We seek a positive relationship and respectful partnership with the City of Kamloops including the residents of Aberdeen.

Another consideration is that the proposed Ajax Project is not a green-field site in pristine condition. The site was previously an operating mine in the same proximity to Kamloops, although at a smaller scale. Residents during the operation of the previous mine have commented that they did not experience adverse effects from the Project and many of the mine employees lived in the area. The scale of the proposed Project is larger than previous operations and includes additional facilities (e.g. tailings storage and mineral processing plant); however other components and activities that have the potential to impact Aberdeen will be similar such as blasting and mining operations.

The situation in Malartic, Quebec is substantively different from Ajax in that the entire town (with a population of less than 3,500 people) is within approximately 2 km of the Malartic pit.

In comparison, the Ajax Project is on the outskirts of Kamloops, more than 2 km from the nearest residential subdivision, and the natural landscape shields the mine site from direct view of the vast majority of the city. Thus, the effects of the Malartic project are not comparable.

Each mining project is different and must be assessed and reviewed based on its unique characteristics. Given that Malartic has been cited as an example in many public comments, KAM has been in contact with the mining operator in Malartic to learn from their experience. Based on these discussions, KAM recognizes the challenges faced by the Malartic mine in its first years of operation. These challenges resulted in various instances of regulatory non-compliance. In particular, the mine faced challenges with dust emissions, noise, and vibration. However, informed by strong monitoring plans, adaptive management practices, and a collaborative relationship with regulators and the community, mitigation measures were modified and the mine has significantly improved its regulatory compliance performance following the first years of operation.

A significant amount of information has been portrayed about the Malartic mine which is not fully accurate. Following adjustments to mitigation measures, the mine has been operating successfully for many years, and community surveys show overwhelming community support for the mine. The mine has consulted with a large portion of the local and regional population. In fact, neighbourhoods closest to the mine appear to be most supportive as a result of being most informed about the actual impacts of the mine. In addition, support in the community is so strong that residents have independently launched a campaign supporting the mine called Malartic Positive. The objective of this committee is to show support for the mine and counteract the anti-mine groups.

Current accusations of non-compliance are based on the initial exceedances which occurred during start-up of the Malartic mine. However, as mentioned, things have significantly improved. The adjusted mitigation measures have resulted in air quality and vibration levels dropping to six times below thresholds and municipal noise thresholds are being met. Studies have not shown any linkage between the mine's impact on air quality and negative health effects. Another study evaluated the effects of vibration on houses and infrastructure. A specialist co-selected by the monitoring committee concluded the blast vibrations are not strong enough to create damage or worsen existing damage to houses and infrastructure, including old infrastructure based on dated building codes.

The mine has brought economic benefits to the town of Malartic. Studies show that the mine contributes approximately $100M per year to the local community through taxes, employment, and business opportunities. The mine directly employs approver 600 people with an annual payroll of over $61M and another 600 as contractors. 30% of these jobs are from Malartic and the remainder from the regional area. The average annual salary is $87,000 which is 66% higher than elsewhere in the Vallee-de-l'Or Regional County Municipality. Furthermore, house prices in Malartic have increased with the opening of the mine.

Some commenters stated that doctors have left the town of Malartic on account of the mine opening. This is not entirely correct. While doctors have left the town, they left due to the closure of the local clinic as part of a consolidation of services. Some doctors left the region or relocated to the town of Val d'Or, also a mining town and 27 km from Malartic.

KAM feels it is important to highlight the factual circumstances pertaining to numerous accusations against the Malartic mine. With a strong leadership team willing to commit to environmental and social stewardship, the operation has been able to safely operate the mine adjacent to the town of Malartic. KAM can take advantage of lessons learned on adaptive management practices at Malartic and incorporate the learnings in project design and operational plans.

3.7 Property Value Impacts

KAM summary of ANA Concerns*:*

- *Failure to conduct a robust baseline study that includes real examples of communities in close proximity to a mine*
- *Failure to objectively examine potential impacts*
- *Failure to properly include and disclose appropriate data sources*
- *Failure to suggest proper mitigation measures*
- *Failure to provide clear, objective conclusions*

KAM Response:

Failure to conduct a robust baseline study that includes real examples of communities in close proximity to a mine

Item 7i from Executive Summary of your report raises a concern that the property value assessment in the Application/EIS is flawed because it fails to conduct a robust baseline study that includes real examples of communities in close proximity to a mine. Additionally the report states there is both confusion and lack of explanation in the choice of indicators.

KAM hired a consultant with expertise conducting socio-economic assessment of major projects. Together with this consultant we collected information about the current state of the real estate market from interviews with real estate professionals and research of additional literature. Establishment of a baseline by a property appraiser was considered, but KAM's consultants determined that a more appropriate and useful approach was to assess the potential Project-related pathways by which property values may be affected. While consideration of individual property values effects could occur in the future, assessing effects to individual properties (and the need to attribute Project-related activities in the appraisal of properties) was not a practical undertaking for the purposes of the Application/EIS.

As stated above, review of literature and relevant environmental assessments did not identify Projects that are directly comparable to Ajax. There are examples of industrial projects that have been associated with decreased, increased and no change to property values. Good analogs with which to compare the potential effects of the Project on Aberdeen property values do not exist, as each project has its own unique challenges and environmental requirements. In addition to differences between the type and scale of projects, variable site conditions, land uses, topography, meteorology, buffer width, adjacent population demographics, etc. do not make it possible to find a comparable project

to accurately predict effects to property values. However we believe the Project design selected will greatly reduce or prevent adverse effects and we have developed flexible management plans including the Socio-Economic Monitoring Plan described below that can adapt to unanticipated effects. We discuss other mining projects such as Malartic and Bingham Canyon mines above.

Another consideration is that the proposed Ajax Project is not a greenfield site in pristine condition. The site was previously an operating mine in the same proximity to Kamloops, although at a smaller scale. Residents during the operation of the previous mine have commented that they did not experience adverse effects from the Project and many of the mine employees lived in the area. The scale of the proposed Project is larger than previous operations and includes additional facilities (e.g. tailings storage and mineral processing plant); however other components and activities that have the potential to impact Aberdeen will be similar such as blasting and mining operations.

- *Failure to objectively examine potential impacts*

Item 7ii of the executive summary in your letter states that "there are several factors which could adversely impact property values, e.g. increased dust, noise, ground instability, etc. In addressing these impacts, InterGroup chooses to employ fairly weak and vaguely defined qualitative terms. This is inadequate given that property value is an inherently quantitative concept."

As described in Section 7.5 of the Application/EIS, KAM acknowledges that the Project has the potential to adversely affect property values for rural properties near the perimeter of the Project site—and possibly in Knutsford and Aberdeen—as a result of real and perceived dis-amenity (or nuisance) factors, including decreased air quality, increased noise levels, increased vibration, and visual impacts. These potential effects that may in turn result in adverse effects to property values were assessed as part of the Application/EIS and used for the property values assessment in Section 7.5. The quantitative assessment of potential effects on the above valued components is included in the Application/EIS. KAM has received similar comments regarding concerns about the effects of the Project on property values and as a result summarized the results of the technical/quantitative studies that were considered as part of the property values assessment. Please refer to supplemental memorandum 0707_KAM_Property Values. Section 3 of this memo summarizes the results of the technical studies (air quality, noise/vibration, and visual quality) that were considered as part of the assessment, in the context of potentially affected residential properties.

In regard to quantitative evaluation methods for property value effects, hedonic pricing models[8] can determine the intrinsic value of each attribute that contribute to the expected overall transaction value of a property. For the Application/EIS, a hedonic pricing approach was considered but determined to be of limited value due to a lack of known properties with historic sales data and similar attributes to potentially affected properties near the Project. In the context of this Project, it

[8] To generate a hedonic model, data must first be collected on properties that have known transaction prices and have similar attributes to the subject being analyzed. A regression analysis is conducted on the known properties to determine the correlation for each of the attributes to the transaction prices. These correlations are then used to develop the hedonic pricing model to predict the expected price of the subject properties.

would be difficult to consistently and objectively examine quantitative measures of attributes that may affect property values. It is doubtful that a meaningful and statistically valid model could be developed. Use of hedonic models developed for other study sites, for which sufficient data is available, would not be valid because model results are highly site-specific, and are typically not able to be applied in different contexts.

Review of literature and relevant environmental assessments did not identify directly comparable projects. As Section 7.5 of the Application/EIS notes: "*The qualitative approach to this assessment was confirmed through discussions with individuals knowledgeable about the real estate market in Kamloops; an examination of hedonic modelling, which stakeholders inquired about through public engagement to date; and a review of other regulatory filings. Considering these three sources of information, a qualitative approach was determined to be the most suitable in light of the multitude of external factors that can influence property values.*"

Consequently, the assessment adopted a qualitative approach.

- *Failure to properly include and disclose appropriate data sources*

Item 7iii of the executive summary in your letter states that "much of the baseline data collected seems to have no bearing on the relationship between project impacts and property values. Furthermore, very few pertinent studies/articles are cited and no data or testimonials from operating mines are included. Even more puzzling is the choice of comparative examples which do not remotely resemble the Ajax project. There is questionable selection of information and, in a number of instances, data which is either improperly identified or not referenced".

Review of literature and relevant environmental assessments did not identify directly comparable projects. The Application/EIS acknowledges that Keystone XL Pipeline, Northwest Transmission Line, and Deep Geologic Repository do not share the same attributes as the Project: "The Keystone XL Pipeline and Northwest Transmission Line are both linear developments, which is different from the Project … The Deep Geologic Repository (DGR), in some regards, is more similar to the Project because it is not a linear development." The effects assessments for these projects were examined for potential approaches (e.g., qualitative or quantitative) that had been used recently in regulatory documents and the methods employed for these assessments of effects on property values guided the approach selected for the Application/EIS. As the Application/EIS notes: "The qualitative approach to this assessment was confirmed through discussions with individuals knowledgeable about the real estate market in Kamloops; an examination of hedonic modelling, which stakeholders inquired about through public engagement to date; and a review of other regulatory filings. Considering these three sources of information, a qualitative approach was determined to be the most suitable in light of the multitude of external factors that can influence property values." As stated previously in this letter response, other mining projects that would be considered good analogs with which to compare the potential effects of the Project on Aberdeen property values do not exist, as each project has its own unique challenges and environmental requirements.

KAM and its contractors are confident that the data sources and methods used are the best available to represent potential effects of the Project on property values. However KAM acknowledges that

accurate prediction of these effects is challenging due to the nature the potential effects that may include those that are real and perceived.

- *Failure to suggest proper mitigation measures*

Item 7iv of the executive summary in your letter states "Regarding (iv), InterGroup [KAM consultant] refers to mitigation measures in other sections of the application, e.g. noise and vibration, dust control etc., but does not specifically address any mitigation measures for property values. The assumption is that mitigation measures have adequately addressed property values when in fact the mitigation sections make no specific linkage to how they have addressed property values. There is also mention of "adaptive management" as playing a role in resolving forthcoming issues but such after-the-fact measures do not really qualify as mitigation".

KAM shares your view regarding the importance of protecting property values. To that end, KAM has committed to developing a Socio-Economic Monitoring Plan (SEMP) which includes Project effects on property values. This commitment is in addition to the mitigation measures and management plans to minimize Projects effects on nuisance factors (including air quality, noise and vibration, aesthetics, and vegetation) listed in the Application/EIS. A Community Liaison Group (CLG) will be established by KAM to review results of the SEMP. If monitoring shows unforeseen effects to property values, KAM will work with CLG to develop adaptive management strategies to address any unforeseen Project effects. These may include:

- engaging with local real estate professionals and property appraisers to identify key factors influencing public risk perception in relation to properties in the vicinity of the Project
- including public participation in ongoing monitoring
- publically communicating results of ongoing monitoring in accordance with risk communication best practices
- assessing perceived risk and evaluate efficacy of communication program
- contributing to the enhancement of amenities in affected communities to offset perceived dis-amenity effects

Because adverse effects to property value are not predicted, no additional mitigation is proposed to directly offset a potential loss of property value. KAM is confident that the environmental and health risks and impacts of the Project will be suitably mitigated and managed by measures described for other valued components (e.g. air quality, noise and vibration, etc.), and believes that these measures will reduce concerns and misperceptions that could adversely influence property values. However the above adaptive strategies will be employed in the event there are negative effects on property values.

KAM respectfully disagrees that adaptive management measures do not "really qualify as mitigation". Given the challenges with accurately predicting potential effects on property values due to the complexities of multiple factors including human perception, adaptive management strategies have been proposed to mitigate unforeseen adverse effects to property values. Specific adaptive management measures will serve as mitigation for these effects if they are observed and are attributed to the Ajax Project.

- *Failure to provide clear, objective conclusions*

Item 7v of the executive summary in your letter states: "InterGroup's conclusions seem more speculative than objective. Generally, the analysis in their report appears more designed to support a conclusion of and limit exposure to liability. They conclude that areas in Knutsford and Aberdeen may experience property value decreases due to real or perceived changes yet they later state 'none of these effects are anticipated to be significant.' They also state that any impacts to property values will be short-term and 'reversible.' On what scientific basis do they derive these conclusions? And what financial mitigation will be offered to those that may be affected during the 'short-term' if they are forced to sell when property values are down or are not reversible? A properly formulated Property Value Protection Plan is required and would protection for residents and provide proper financial mitigation for residents negatively impacted by the proponent's Project."

KAM acknowledges your opinion regarding the conclusions of the Application/EIS with respect to the property values effects assessment. The assessment provides a conservative prediction that there may be some fluctuations in property values, especially when there is a notable change in Project activities (e.g., the shift from construction to operations); however, it is expected that once monitoring results are available and either the predictions in the Application/EIS hold true or adaptive management measures are implemented, the market will self-correct if reductions in property values due to the Project materialize. This determination of significance is conservative and the effect may not be as pronounced, especially since the Project may support increased residential property values because of in-migration workers during the Operations Phase. We do not find the conclusions of the assessment to be speculative and respectfully disagree with the assertion.

Regarding financial compensation for those that may be affected "during the short-term if they are forced to sell when property values are down," KAM does not assume that the Project of and in itself will "force" homeowners to sell at any point during the Project life. Therefore the nature of this concern is not well understood. Homeownership includes financial risk in all markets and is subject to many factors beyond the control of KAM. While we respect that the Project may adversely impact property values the assessment concludes this will be short term and reversible. Similar to factors that influence real estate values, the decision to sell a home is also made after consideration of many factors. These factors and the decisions to sell will be entirely out of KAM's control. Therefore, KAM has not contemplated financial compensation in this scenario.

Regarding the request for a Property Value Protection Plan that would serve as a residential compensation fund, based on the results of the environmental assessment, KAM does not envision the inclusion, contemplation or creation of such a plan. Regardless, we understand that many in the community are concerned about protecting investment in personal property from loss. The most effective way for KAM to safeguard the interests of property owners closest to the Project is through effective mitigation, monitoring and adaptive management efforts designed to limit the impacts of noise, vibration, dark sky effects, and dust caused by mine operations. The Project's management and mitigation plans describe the efforts we will undertake to limit the effects of operations and therefore, prevent impacts to neighbours. Although other, indirect factors can also affect property

value (e.g. personal tastes and preferences, local attractions, access to city infrastructure, and broader market forces), these factors are beyond our ability to influence or control.

3.8 Tailing Storage Alternatives and Risk of Failure

KAM summary of ANA Concerns*:*

- *ANA request for risk assessment of tailings thickener malfunction*
- *ANA critique of tailings storage facility alternatives assessment*
- *ANA request for disclosure of arsenic and mercury content of rock types and tailings*

KAM Response:

- *Request for risk assessment of tailings thickener malfunction*

Benefits of thickened tailings include lower Project raw water consumption, increased tailings facility dam stability and reduced fugitive dust from the tailings surface. These are described in Section 17.4.9 of the Application/EIS. A detailed operating and maintenance manual will be required for the tailings storage facility including the thickener during the permitting phase of the Project, which will specify measures to be taken during emergency or upset conditions. In the event of a thickener malfunction, KAM will manage tailings within the confines of the tailings design and permit conditions. In a worst case scenario mill production may be constrained for repairs however un-thickened tailings would continue to be pumped to the TSF temporarily with additional cycling of tailings spigots to prevent changes to tailings beach development. Pumping un-thickened tailings would be temporary while repairs to the thickener are made.

- *Critique of tailings storage facility alternatives assessment*

Section 17.4.8 of the Application/EIS includes the assessment for Tailings Storage Facility alternatives. Six mine development concepts were identified as candidate sites for a TSF and a ranking matrix was developed to numerically rank specific criteria for the alternatives (Appendix 17.4 A). Three of the mine development concepts meet the tailings management objective described above and were carried forward as alternatives for this assessment. One of the sites evaluated is the existing Afton TSF. While not outside a 10 km radius of the proposed Ajax pit as requested in your letter, it will be located approximately 7.5 km away. This site was considered for the entire Project life or for the first few years to provide an opportunity to develop other long term sites. The layout and cost estimates for this alternative are from a report titled "Scoping Level Design for Preliminary Assessment" (Appendix 17.4 A). For technical and proponent cost criteria, Site A1 is "challenging" (rating 1 and 2) for the criteria of tailings pipeline length; expansion potential; access requirements and logistical complexity. The alternative is considered "acceptable" (rating 3 and 4) for all other technical and proponent costs criteria. For natural environment criteria, the location is considered "preferable" as it utilizes an existing facility; however, if used in the early years of the Project life, it would mean that two TSF sites are developed, potentially in different catchments, which has negative environmental consequences.

Importantly, the selected TSF site is the best location for least geotechnical risk, simplest water management, and access/traffic impacts compared to other alternatives. The risk of tailings dam failure and release of tailings downstream is effectively mitigated by the design which includes a rock buttress of the tailings dams and proposed tailings beach development. The proximity of the TSF to the Open Pit makes the design of a rock buttress technically and economically feasible. With respect to air quality and dust generation from the tailings surface, KAM has proposed a number of mitigation measures that are proven to effectively reduce tailings surface fugitive dust as part of the Air Quality assessment.

- *Request for disclosure of arsenic and mercury content of rock types and tailings*

Assay data is provided in the Application/EIS for the purposes of the assessment. The focus is upon elements that may pose environmental or health concerns, including heavy metals. The Application/EIS incorporates both assay data (Appendix 3-A) and statistical information (Appendix 10.4-A). This information provides a conservative bound for geochemical characteristics, such that, from KAM's perspective, the assessments likely over-predict environmental and health effects.

The Ajax exploration drill hole database has been assembled over a period of many years from a large number of drilling programs focused on outlining an economic mineral deposit at Ajax. All samples were collected by geologists following industry standard QA/QC protocols in drill data management. These samples were collected by various mining and exploration companies since 1981 and analyzed by at least 5 different analytical laboratories over that period.

There are two key pathways through which assay data is used in the environmental assessments. The first is through geochemical and water quality assessments, which investigate the potential for metals and other chemicals to become mobilized from the ore, mine rock and tailings. The other pathway is through mobilization of dust containing substances of concern into the air, which could ultimately affect human health; this has been assessed as part of the human health and ecological risk assessment.

The geochemical work considered environmental impacts such as Acid Rock Drainage and Metal Leaching (ARD-ML) and involved analysis of more than 1,000 drill core samples that were selected to be representative of the different lithologies to be mined. Analyses included:

- Acid Potential (AP) calculated for each sample;
- Neutralizing Potential (NP) measured for each sample; and
- Analysis for a minimum of 30 elements including arsenic, bismuth, cadmium, chromium, copper, mercury, molybdenum, lead, antimony, uranium.

Results for all 1,000 plus core samples are included in the Application/EIS submission, in Appendix 3A – Ajax Geochemical Characterization Study.

In addition to the geochemical studies, the scientists working on health assessment had access to all the exploration drill core data that was available in 2012. These data comprised 50,084 samples each consisting of 2 - 3 metres of drill core cut in half. These data are representative of the deposit. The 2012 cut-off date for inclusion in health studies remains appropriate as exploration data is almost continuously added to the database and is reviewed for consistency and quality control. In

some cases, the 2012 data over-estimates the actual values; the result of higher Lower Detection Limits (LDLs) in pre-2012 data. This adds an additional degree of conservatism to the impact assessments. These assessments can be found in Chapter 10.4 of the Application/EIS. Statistical data for all elements analyzed for all 50,084 samples found in Volume 20, Appendix 10.4-A.

Geochemical test work results for tailings is also included in the Geochemical Characterization Study, metals results may be referenced in Appendix C-2.2 of the Appendix 3A – Ajax Geochemical Characterization Study of the Application/EIS. Seven laboratory kinetic tests were conducted on the Ajax floatation tailings to understand the geochemical leaching behavior under more reducing conditions. Please see section 3.1.4.3 of the Geochemical Characterization Study for a description of the methods employed to analyze the geochemistry of Ajax tailings.

3.9 Monitoring and Disclosure

KAM summary of ANA Concerns*:*

- *ANA request for public disclosure of monitoring data, blast timing, Jacko Lake access restrictions, permit applications and supporting documentation*
- *ANA request for more detailed emergency response plan*
- *ANA request for additional information regarding public complaint procedures*
- *ANA request for additional information regarding the Community Liaison Group*

KAM Response:

- *Request for public disclosure of monitoring data, blast timing, Jacko Lake access restrictions, permit applications and supporting documentation*

KAM agrees that transparency is an important component of a strong community relationship and has worked to make information available to the public through on-line tools such as an dedicated website for the Application/EIS, small group sessions, providing access to consultants, open houses, etc.

During Operations, monitoring results will be available to the public through an on-line platform and through regular reporting to the Ministry of Energy and Mines and the Community Liaison Group. The website will include air quality, noise, vibration, meteorological and water monitoring data amongst other results. In addition the website will serve as a means to communicate blasting events and access restrictions on Jacko Lake for the safety of recreational users. It is anticipated that a Community Liaison Group will provide a venue for discussion of monitoring results. It is also anticipated that an Independent Environmental Monitor will be a condition of the Environmental Assessment Certificate should one be granted.

Regarding permit applications, KAM understands that public involvement during the permitting process differs from the Environmental Assessment process. The purpose of Environmental Assessment is to serve as a planning process in support of Project design and may allow for a Project to proceed to a permitting stage. The Environmental Assessment process results in a number of

conditions that are to be considered by statutory decision makers as part of the permitting process. KAM respects the Government's permitting process and will abide by it as required.

With respect to your request for additional information regarding the restrictions on Jacko Lake, we are developing a blast clearance procedure to establish standard procedures for clearing the blasting area (including Jacko Lake) of mine personnel, equipment, and lake users to protect the safety of individuals from blasting related hazards. The means of the best way to clear the blast safety zone is under discussion with the Ministry of Energy and Mines and will be determined as part of the permitting process.

Jacko Lake is located within the proposed *Mines Act* Permit Area boundary. The Mine Manager is responsible for the health and safety of persons within this boundary. Therefore, the Mine Manager is required to take action to ensure the health and safety of persons within blast areas is protected. It is proposed that Jacko Lake will be partially cleared when the blast area extends into portions of the lake. This is anticipated to occur for approximately 13 years of the mine life.

Figure 1 below shows the maximum blast clearance limit in Jacko Lake for blasting at the further western extent of the open pit. The location of these limits will be reviewed once blasting activities begin to move away from Jacko Lake (approximately year 5 of operations) and will be removed entirely once mining progresses east and the 500 m clearance area from blast zone no longer reaches the lake. Access restrictions imposed during blasting will be temporary lasting for several hours. KAM will schedule blasts after consideration of those potentially impacted by noise, vibration or access restrictions.

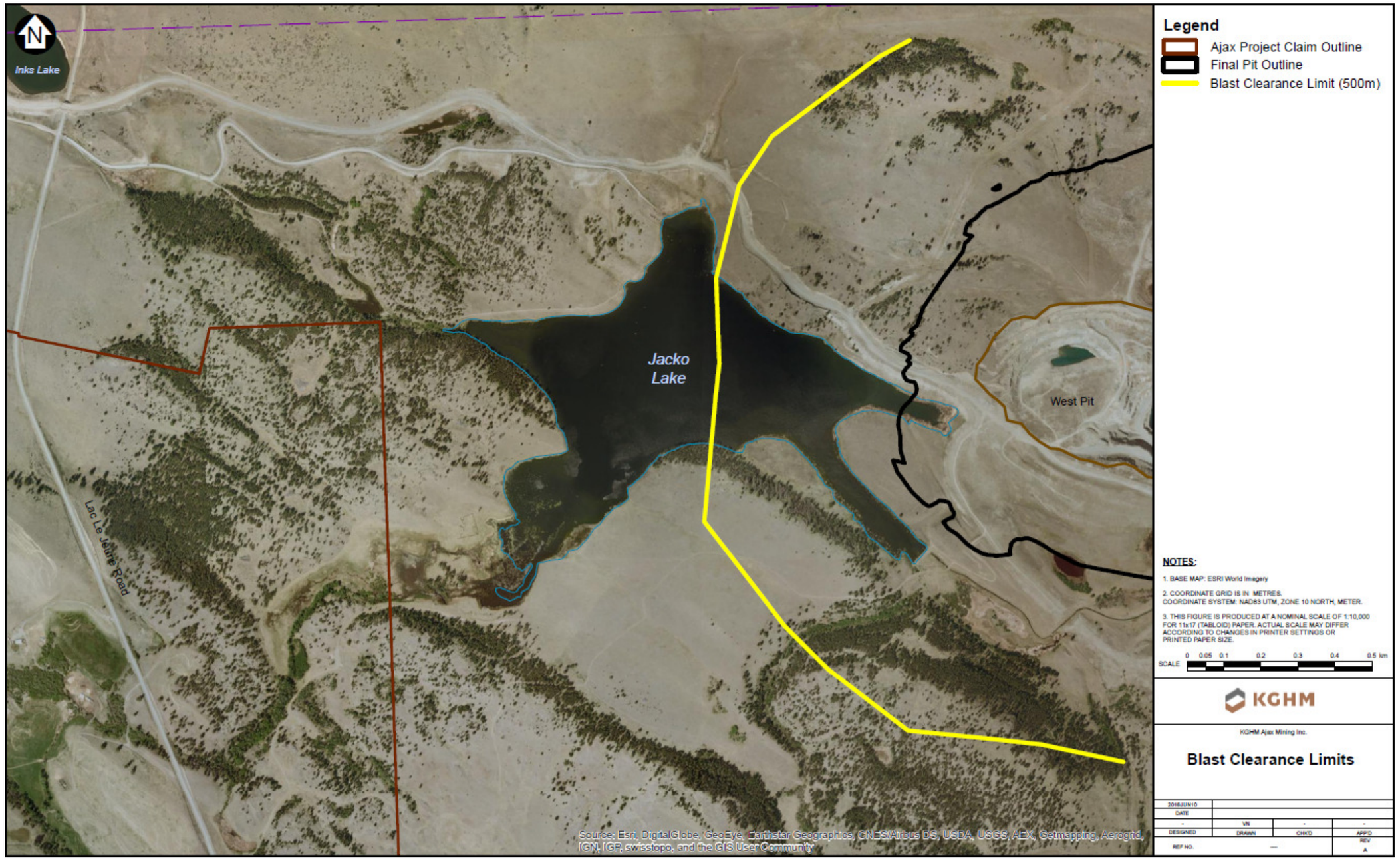
- *Request for more detailed emergency response plan*

As requested in your letter, KAM is developing a detailed emergency response plan as required by the *Mines Act* and *Environmental Management Act*. The objectives of the Emergency Response Plan for the Ajax Project are to provide KAM employees, contractors and their employees with guidance to prepare and respond to an emergency situation in an organized and effective manner thereby containing and controlling the situation, and mitigating consequences to people, property and the environment. The plan will outline the response procedures and preventive measures for prompt and effective management of an emergency situation.

This plan will outline the responsibilities and duties of a Mine Rescue Emergency Response Team as required by KAM in the event of an emergency at the Project and meet the following objectives:

- Provide a pre-determined course of action during a mine site emergency situation;
- Provide a listing of the duties and responsibilities of personnel and the reporting structure;
- Provide appropriate training to personnel and tools/methods to assist them in determining appropriate responses to emergency situations;
- Prevent and minimize personal injury during a mine-site emergency situation;
- Enact a proactive health and safety culture to prevent emergencies and minimize its effects, should one occur;
- Provide initial first aid treatment of injured personnel;

Figure 1. Maximum Blast Clearance Limit in Jacko Lake



- Provide initial emergency response to minimize damage to property, equipment and the environment;
- Enable communication and co-operation between corporate personnel, site personnel, mutual aid organizations, agency officials, and the community at large;
- Provide guidelines for ensuring the safety of site personnel, visitors, and community members;
- Provide resources needed to address emergencies;
- Reduce the magnitude of environmental impacts;
- Assist response personnel to determine and perform remedial actions quickly;
- Comply with legal requirements in response related matters in case of emergencies;
- Reduce recovery time and cost;
- Inspire confidence in response personnel;
- Ensure procedures are in compliance with Health, Safety, Security and Environmental (HSSE) requirements; and
- Restore operations to normal.

The plan is proposed to cover all Project facilities and work areas, which include the access roads, construction, mine site operations areas and off site facilities (e.g. explosives facility, pump house, transmission line, employee park and ride). The plan will also include the advance preparation and preventive measures for potential emergencies and will be activated when responding to a project-related emergency and/or incident on the Project site.

- *Additional information regarding public complaint procedures*

It is anticipated that as the Ajax Project moves from planning into construction and operations, there may be complaints from the public related to Project activities. There may be complaints about noise, traffic, or dust caused by mine activities, for example. Others may have specific issues or concerns regarding limitations to access to lands controlled by the Ajax Project, including Jacko Lake.

KAM will develop a complaints procedure prior to construction that details the steps that would be taken upon receipt of any complaint. The complaints protocol would describe what is to be done — as well as why it is to be done and when it will be done — when a complaint is received from a member of the public. This policy will apply to all complaints received by KGHM Ajax or its employees, in whatever form a complaint is made. All complaints, concerns, grievances, protests or objections related to Ajax Project activities at site or in the community would be subject to this policy.

As with all operational management plans and procedures, this complaint procedure will be a living document adaptable to changes required by regulatory agencies, KAM, and the public, if it is not serving its intended purpose, which is timely acknowledgement and response to complaints. The company will strive to seek a resolution that is accepted as fair and reasonable by all parties,

including the complainant. Some complaints might require corrective actions be taken on the part of KAM, and the company commits to take such corrective steps to resolve complaints.

- *Additional information regarding the Community Liaison Group*

KAM is committed to the creation of a Community Liaison Group (CLG) to facilitate issues resolution, communicate socio-economic and environmental monitoring results, to provide a venue for identifying partnerships, and to provide input on options for adaptive management. For the purposes of the Application/EIS, this has been developed to a conceptual level, but KAM intends to work with stakeholders, including the City of Kamloops, to better define the mandate, scope, and composition of the Community Liaison Group.

Community liaison (or advisory) groups are increasingly common in the mining industry (and other sectors including forestry, community development, healthcare, etc.) and provide a point of access and dialogue between the proponent and the community. Such groups are recognized as good industry practice to promote meaningful public involvement.

To improve effectiveness, the proposed Ajax Project Community Liaison Group will:

- be independent
- be formed as early as possible
- allow the community to take the initiative in the group's formation and operation
- provide access to technical expertise/advisors
- recognize what is achievable and work within those limits

The mandate and terms of reference for the proposed Ajax Community Liaison Group will be established by Community Liaison Group members. KAM will be a member of the Community Liaison Group, and anticipates that other members will include the City, TNRD, special interest groups (social services, housing, recreation, tourism, business, environment, etc.), provincial and federal authorities, police, etc.

An Independent Environmental Monitor may also be a member of the Community Liaison Group. KAM will be responsible for implementing recommendations in partnership with other relevant parties (i.e. depending on the nature of the action), and for funding of Community Liaison Group administration.

4. CONCLUSION

We value the feedback received to date regarding the Project and the conclusions of the environmental assessment. As a result of your comments, we have committed to additional mitigation measures, which together will help to minimize the environmental, social and economic effects of the Project. We hope that the information provided in this letter and in other public responses, continues to show you our commitment to being an accountable and transparent operator of an environmentally responsible mining operation.

We trust that the Project can be developed in a manner that maintains the ability of Kamloops to grow in the southwest sector, without adverse impacts to property values and without adverse impacts to health and the values enjoyed by residents of Aberdeen. We also believe that the reality of actual impacts or lack thereof will quickly negate the predicted perceived effects that lend to your concerns. Through our consultation efforts, KAM intends to build long-lasting and productive relationships with Kamloops residents and key stakeholders to ultimately reach mutually beneficial levels of understanding of everyone's needs and aspirations.

Rather than create adverse impacts, we are confident that the Ajax Project will provide economic opportunity while supporting community sustainability and ecological diversity throughout the Thompson-Nicola region.

We appreciate the comments received from the ANA and look forward to continued collaboration. Thank you for taking the time to contribute to the Application/EIS process and providing input to support our goal of continual improvement.

5. USEFUL LINKS

The responses provided in this document make reference to a range of other related materials. For ease of reference, links to the following materials are provided. Specific cross-references are also provided in the text.

KGHM Ajax Mining Inc.
http://ajaxmine.ca

EAO e-PIC site for the Ajax Mine Project
https://projects.eao.gov.bc.ca/p/ajax-mine/detail

Ajax Project Application/EIS
https://projects.eao.gov.bc.ca/p/ajax-mine/docs?folder=161

Plain Language Summaries of the Application/EIS
http://application.ajaxmine.ca/Home.aspx

Responses, including supplemental technical memorandum, provided to the Technical Working Group
https://projects.eao.gov.bc.ca/p/ajax-mine/docs?folder=220

— Appendix 1 —

Supplemental Documents

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APPENDIX 1. SUPPLEMENTAL DOCUMENTS

- 0324_KAM_IRB Comments on TSF Design: provides the findings of the Independent Review Board after evaluation of the Tailings Storage Facility design
- 0324_KAM_Geotechnical Report -TSF and MRSF: provides additional geotechnical data for the Tailings Storage Facility and Mine Rock Storage Facilities
- 0324_KAM_Geochem Information Responses: memo responding to a set questions from the Ministry of Energy and Mines regarding geochemical characterization
- 0324_KAM_Fleet Equipment Adjusted Sound Power Summary: Updated table of Sound Power Levels for Equipment used in noise model
- 0331_KAM_Geochem Information Responses updated: memo responding to a set questions from the Ministry of Energy and Mines regarding geochemical characterization
- 0331_KAM_Air dispersion model outputs: Clarification on approach and decisions related to air quality model
- 0331_KAM_Air Dispersion modelling_CALMET FILES: Clarification on approach to land use and precipitation inputs to air quality model
- 0601_KAM Geochemistry Response_SSN 888: addresses test methods used in the geochemical assessment of the Ajax mine rock and tailings
- 0603_KAM_SLR020_BGC-016: Addresses concerns pertaining to methods used to assess slope stability in Aberdeen Hills Area
- 0609_KAM_Lorax Geochemical Response Set 2: responses to Ministry of Energy and Mines follow up comments regarding waste rock characterization and management
- 0615_KAM_2016 Source Term Update: provides revised geochemical source terms requested by the Ministry of Energy and Mines
- 1207_KAM_Fugitive Dust Mitigation Plan: includes additional detail regarding how KAM will manage fugitive dust from the Project site
- 0429_KAM_Aberdeen_BGC-008: Addresses questions on Project effects on groundwater quantity in the Aberdeen Hills
- 0510_KAM_AQ 17 Mar 2016 Meeting Minutes: Notes from follow-up meeting held on March 17, 2016 to clarify Air Quality emissions factors
- 0510_KAM_Applied Mitigation Descriptions: summarizes the proposed mitigations applied to the emission calculations for the Project
- 0516_KAM Response to EAO 005: provides additional information on the relative contribution of sources of particulates at key locations
- 0624_KAM_Stantec CALPUFF Source Locations: provides the spatial extent of the area and volume source locations employed in the CALPUFF air emissions dispersion assessment
- 0705_KAM_Revised Project Alone Case Dispersion Modelling: provides revised "Project Alone case" dispersion modelling results

- 0706_KAM_ ELFZ_Model_BGC-002: includes an analysis of the influence of the mapped Edith Lake Fault Zone (ELFZ) on groundwater flow paths
- 0706_KAM_ Instream Works: provides response to DFO concerns regarding blasting and pile driving effects to fish
- 0707_KAM_Property Values: provides additional information regarding effects of the Project on property values in Kamloops
- 0721_KAM_Model Sensitivity_EAO004: Includes 0525_KAM_ Air Quality Modelling Addendum EAO004 as Attachment A
- 0725_KAM_Combined Stantec Responses to EAO 001-006: Addresses EAO comments regarding air quality modelling and mitigation measures