Request for Supplementary Information
Information Request No. 3

Project Assessment 2017-0083

BMC Minerals Inc.

Kudz Ze Kayah Project

YESAB
Yukon Environmental and Socio-economic Assessment Board

April 9, 2018

Prepared by
Executive Committee
Yukon Environmental and Socio-economic Assessment Board

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1.0 INTRODUCTION

The Executive Committee has reviewed the comments received during the public comment period as part of the screening of the Kudz Ze Kayah Project and have determined that supplementary information is required regarding the proposed project before preparing the Draft Screening Report. This report identifies where supplementary information is required.

The *Screening Rules* provide the proponent up to two years to either submit the requested supplementary information or to advise the Executive Committee in writing, when it will be submitting the supplementary information. The form and content of the supplementary information submission should comply with all applicable Rules and requirements of the Board, including the general filing requirements.

For questions or comments regarding this report, please contact Daniel Beaudoin, YESAB Senior Assessment Officer assigned for this Project, by telephone 867-668-6420, by email at daniel.beaudoin@yesab.ca, or in person at Suite 200 – 309 Strickland Street, Whitehorse, Yukon.

1.1. Acknowledgements

The public comment period was held from January 16 to March 16, 2018. Table 1 lists comments received from First Nations, Decision Bodies, and the public in relation to the Project. In addition, the Executive Committee held public meetings in Watson Lake on March 7 and Ross River on March 8, 2018. The Executive Committee has considered comments received and comments made at the public meetings in preparing this request for supplementary information.

Table 1: Comments received during public comment period

Party	Document Description	YOR Document #
Government of Yukon	YG Submission – March 15, 2018	2017-0083-264-1
Yukon Conservation Society	YCS Submission – March 16, 2018	2017-0083-265-1
Health Canada	Health Canada Submission – March 13, 2018	2017-0083-266-1
Lynx Track Farm	Lynx Track Farm Submission – March 13, 2018	2017-0083-267-1
Fisheries and Oceans Canada	DFO Submission – March 15, 2018	2017-0083-268-1
Natural Resources Canada	NRCan Submission – March 15, 2018	2017-0083-269-1
Public	Public Comment Submission – March 15, 2018	2017-0083-270-1
Public	Public Comment Submission – March 16, 2018	2017-0083-271-1
Public	Public Comment Summary – March 16, 2018	2017-0083-280-1

Party	Document Description	YOR Document #
Environment and Climate Change Canada	ECCC Comment Submission – March 23, 2018	2017-0083-281-1
Liard First Nation	LFN Comment Submission – March 28, 2018	2017-0083-282-1

In addition, to support drafting the supplementary information request, the Executive Committee retained two independent consultant teams to provide analysis and technical review of select comments as listed in Table 2. Consultants in their respective knowledge areas were requested to:

- review relevant comment submissions;
- identify areas where additional information may be required in order to conduct screening;
- identify possible approaches to address issues identified in comment submissions; and
- provide professional judgment on key aspects of the project proposal.

As a result of their review, consultants provided the Executive Committee with technical memorandums focused on supplementary information requirements. The Executive Committee considered the technical memorandums in preparing this request for supplementary information.

Table 2: Consultants retained by the Executive Committee

Knowledge Area	Independent Consultant
Hydrology and aquatic resources	EcoMetrix Inc.
Engineering design and geotechnical considerations	SNC Lavalin Inc.

1.2. Summary of Approach to Request for Supplementary Information

The following report is a request by the Executive Committee to the proponent for supplementary information because the Executive Committee has determined that additional information is required before concluding the screening. The Executive Committee developed this supplementary information request based on its review of the comments provided by Decision Bodies, First Nations, regulators, the public and its consultant teams as identified in Table 1 and 2 above. The request for supplementary information is divided in three columns: the reference for the comments, a description of the issue and rationale, and the information being requested. The reference of the comments also identifies the party that commented on the particular topic. However, in some cases the Executive Committee has altered specific questions to better address the information it requires.

The Executive Committee analyzed all information provided by Decision Bodies, First Nations, regulators, the public and its consultant teams to determine whether the information requested is relevant to the screening of this project, later stages of the assessment or not relevant to this screening. Where appropriate, the Executive

Committee has combined similar requests from different parties into one request and also refined the questions to ensure they are relevant to the screening. All of these requests, which are required to be responded to, are listed in the request for supplementary information below.

1.3. Additional Information Requests Under Consideration

The Executive Committee may require additional information in relation to water and issues raised by Liard First Nation (LFN). If this is the case, we will issue further requests for supplementary information at a later time.

In both the Adequacy Review Report Information Request No. 1 and No. 2, the Executive Committee asked that BMC provide additional water related information prior to the Executive Committee's drafting of the screening report. In its responses to our information requests, BMC committed to providing the required information within that timeframe and, as such we are expecting it in the upcoming weeks.

The Executive Committee received numerous comments during the public comment period in relation to water. We are of the opinion that many of these comments, questions, and concerns may be addressed in the information yet to be provided by BMC. As such, in this information request, we are formally asking that BMC provide that updated water related information (see R3-1 below). Once we have received and reviewed the updated information, there may be additional information requests related to water.

In addition, we received a comment submission from LFN on March 28, 2018 outlining various concerns (YOR #2017-0083-282-1). The Executive Committee is currently reviewing this submission, which may result in additional information requests.

2.0 REQUEST FOR SUPPLEMENTARY INFORMATION

Source ***(YOR ref. number last 4 digits. 2017-0083-195-1)***	***Issue and Rationale***	***Information Request***
WATER		
195-1 YESAB IR No. 1 218-1 YESAB IR No. 2 264-1 YG Comments 265-1 YCS Comments 267-1 Lynx Track Farm Comments 269-1 NRCan Comments 281-1 ECCC Comments 273-1 to 278-1 Public Meeting Comments 280-1 Public Comments 282-1 LFN Comments	In both the Adequacy Review Reports Information Request No. 1 and No. 2, the Executive Committee had requested that BMC provide additional water related information prior to the Executive Committee drafting the screening report. In its responses to our information requests, BMC committed to providing the required information within that timeframe. The Executive Committee received numerous comments during the public comment period in relation to water. We are of the opinion that many of these comments, questions, and concerns may be addressed in the information being provided by BMC in the upcoming weeks. As such, in this information request, we are formally asking that BMC provide that updated water related information. Once we have received and reviewed the updated information there may be additional information requests related to water. We note that BMC has provided some updated modelling as part of their Response #2 to YESAB Executive Committee Adequacy Review of KZK Project Proposal, including: • Updated background water quality, water quality objectives, and source terms in Appendix R2-C KZK Project – Project Optimizations and Updated Water Quality Performance Expectations • Updated (“corrected”) water balance model in their Revised – Response to IR R2-35 – Operational Water Balance and Climate Variability and Sensitivity Analysis (December 12, 2017)	R3-1 Provide updated hydrometric baseline information, water quality baseline information, water quality objectives, and water models (e.g., water quality model, site and watershed balance models, surface water flows, etc.) for the site a. Updated baseline sampling should: i. Be conducted and reported on at least two sampling events, including one during low-flow conditions and one during high-flow conditions, for each year in which 5 samples are collected in 30 days. b. Updated water quality objectives should: i. Include, at minimum, the background water quality dataset used in *Appendix R2-C KZK Project – Project Optimizations and Updated Water Quality Performance Expectations.* c. The updated water balance model should: i. Include a sensitivity analysis for run-off coefficients. d. Updated water quality modelling should: i. Include, at minimum, updated COPI source terms updated based on laboratory-based kinetic tests reported to August 10, 2017, developed for *Appendix R2-C KZK Project – Project Optimizations and Updated Water Quality Performance Expectations*; ii. Incorporate, where possible, additional kinetic tests results from tests described in Section 2.1 of A*ppendix R2-C KZK Project – Project Optimizations and Updated Water Quality Performance Expectations*;

	It is expected that, where appropriate, this information will be incorporated in the updated information provided to the Executive Committee prior to drafting the Screening Report.	iii. Include most recent site and receiving environment water balance assumptions; iv. Include most recent assumptions for long term loadings including acidic drainage from Class A and B materials; v. Provide water quality predictions for Geona Creek (KZ-37), Upper Finlayson Creek (KZ-15), Lower Finlayson Creek (KZ-26) and South Creek (KZ-13); vi. Provide water quality predictions for all phases of the Project; vii. Provide water quality predictions for closure with and without CWTS for Geona Creek (KZ-37), Upper Finlayson Creek (KZ-15), and Lower Finlayson Creek (KZ-26); and viii. Compare water quality predictions to most recent pWQOs
GEOTECHNICAL / ENGINEERING		
269-1 NRCan Comments IR#4 IR#5	The surficial geology maps presented in the report (Figs. 11-2 and -3) are extracted from a 1:100 000 scale surficial geology map of the Geological Survey of Canada. The map is of regional scale and does not present a level of detail sufficient for the Project. Of particular concern is the absence of glaciolacustrine sediments on the map, although glaciolacustrine sediments are reported in the local study area. The presence of glaciolacustrine sediments stratigraphically below other surface sediments is of concern in the local study area because their potential to fail or liquefy could result in damage to infrastructure and impacts on the environment. The presence of glaciolacustrine sediments near the site of the proposed lower water management pond is of concern because they likely correspond to the low density soils with potential for liquefaction identified in the west slope and valley bottom of the lower management pond area.	R3-2 Provide a surficial geology map (1:10,000) for the footprint of the mine with the following: a. a description of the surficial geology elements; b. surface extent of glaciolacustrine sediments; and c. greater detail for surface and sub-surface extent and the thickness of glaciolacustrine sediments than what is currently provided in Fig. 11-2 [2017-0083-034-1] R3-3 Provide an indication of the presence of glaciolacustrine sediments stratigraphically below other surface sediments based on the geotechnical drill holes completed in the local study area. This information is required only for sites where surface sediments will not be removed to bedrock prior to the construction of infrastructure. R3-4 In the event that glaciolacustrine sediments are present below infrastructure, discuss the potential implications of liquefaction and what measures will be implemented to avoid or mitigate this risk.
265-1 YCS Comments	Once again this project has yet to fully define the type of technology to be used on a critical aspect of the mine. Depending on the type of liner to be used, different water quality issues downstream of the Class A Storage Facility can arise.	R3-5 Provide details on how the synthetic pond liners will be inspected, deficiencies repaired and the liner replaced.

Pg. 5 of 12	Yukon Conservation Society (YCS) recognizes that technology and costs could change thus resulting in something other than vacuum filtration being used, however it does raise the issue of a radically different process being used. This process will not have gone through the YESAB assessment and could have impacts on the amount of tailings being created and/or the water being discharged from the Class A Waste Storage Facility.	R3-6 In the event that pond(s) need to be taken out of operation for liner repair or replacement, describe measures that will be taken to ensure water collection can continue.
264-1 YG Comments MRB - 2.1	Mineral Resource Branch (MRB) recommends the Proponent describe changes, if any, to the geotechnical stability and net percolation of the Class A Storage Facility during operations and closure if tailings are deposited underground as paste backfill during part of the mine life and a portion of the Class A waste rock is not comingled or encapsulated by tailings. Cemented paste tailings is mentioned as an activity of the Krakatoa Underground Mining project Component in the project Description (Statement of Scope with Maps – Jan 15). MRB acknowledges that cemented paste tailings can be an effective tailings storage strategy during operations and closure that would reduce the volume of tailings stored on surface and the long-term environmental liability. However, the estimated volumetric tailings to Class A waste ratio of 5:4 for the project suggests there could be a deficit of tailings to fully encapsulate all of the Class A waste rock. The Proponent described the Class A waste rock to be comingled and encapsulated by tailings throughout the project proposal: “a minimum setback distance from the outer limits of the final facility profile will be incorporated into the deposition plan where Class A waste will not be placed” (R2-4 in the Proponent’s response to the YESAB Executive Committee Adequacy Review Request No.2).	R3-7 Describe how geotechnical stability and net percolation of the Class A Storage Facility will be ensured and what measures will be implemented if there is insufficient tailings to meet design requirements.
ADAPTIVE MANAGEMENT PLANS		
264-1 YG Comments ENV-6.1, 6.2 and 7.1	Adaptive management plans are referenced throughout proposal documentation in relation to wildlife. The proposal indicates that species specific details in relation to adaptive management plans are to be determined at a later stage of the project.	R3-8 Provide available triggers and corresponding actions related to any adaptive management plans for wildlife to be considered in this assessment.

	Further, the proposal also indicates that adaptive management plans will be used for unforeseen effects. However, adaptive management plans anticipate potential effects through the use of thresholds and corrective actions. Without any details on the thresholds/triggers and corresponding actions, the Executive Committee is unable to consider adaptive management plans as reducing, controlling, or eliminating effects of the project.	
GRIZZLY BEARS		
264-1 YG Comments ENV - 8.3	Department of Environment (ENV) finds the assessment of grizzly bear use in the non-denning season inadequate. The Proponent states that the main purpose of the grizzly bear monitoring program is to prevent the disturbance of mining on hibernating bears. ENV does not concur that the grizzly bear monitoring program should be limited as such. The Proponent suggests that they cannot complete habitat suitability mapping for growing habitat in spring, summer, and fall since habitat data are not available; however, examples exist of Proponents of large scale projects in Yukon providing adequate data, at the appropriate scale to be utilized for habitat mapping. Secondly, the Proponent rationalizes that there is insufficient information on grizzly bear distribution and habitat use in the regional study area to validate the model. This is often the case for many environmental assessments in many jurisdictions; however, models are built and utilized as the best available information. It is accepted that there will likely not be substantial data (GPS locations from bears, etc.) to validate models, and models are often based on relationships that are understood and have been examined/validated in literature. The concept is to utilize best available information and methodologies to inform mitigation measures. Furthermore, the Proponent assesses direct and indirect growing season habitat loss; however, there is no indication of how that has been, or will be, measured.	R3-9 Identify seasonally important habitats (foraging, travel corridors, etc.), and indicate how disturbance to these important habitats will be avoided or minimized. Assessment of project impacts should not be limited to the denning season. R3-10 Provide maps at an appropriate scale that show modeling of security (including core security areas) and linkage zones. R3-11 Assess population metrics, such as density, mortality rates, and trends at the scale of the Bear Management Unit.
FISH		

268-1 DFO Comments 1	Pertaining to the proponent's plan involving restoration of fish passage for the Robert Campbell Highway culvert crossing of Finlayson Creek, sufficient baseline data will be required to demonstrate that the proposed offsetting measure is actually an offsetting measure.	R3-12 Provide information on the types and amounts of fish habitat to made accessible by the restoration of fish passage for the Robert Campbell Highway culvert crossing of Finlayson Creek and a habitat assessment of areas of stream habitat to be made accessible.
268-1 DFO Comments 2	Flow alterations have the potential to impact fish and fish habitat depending on the magnitude, timing and duration of the alterations as well as the spatial extent of the changes. The Proponent has characterized impacts to fish habitat in terms of alterations in water flow. Example: The Proponent has identified that 800 m^2 of fish habitat will be created from the diversion of Fault Creek into South Creek during the operations phase. During the closure phase, when Fault Creek flow is directed back into the Genoa Creek watershed, this 800 m^2 of habitat will be lost.	R3-13 In order to understand the potential impacts to fish habitat from flow alterations, the following information is requested: the monthly percent change in flow from existing conditions at each phase in flow changes and at a series of locations within impacted watercourses to demonstrate downstream attenuation and extent; a consideration of and accounting for potential effects between each phase of flow alterations; Information on the magnitude and areal extent (m2) of altered fish habitat likely resulting in negative impacts to fish or fish habitat, including an accounting of this area by habitat type and reach.
268-1 DFO Comments 3	A discussion of the impacts on fish and fish habitat and the associated affects to Commercial, Recreational or Aboriginal (CRA) Fisheries that would result from a catastrophic failure of the water management ponds on Genoa Creek has not been provided. The expectations for this analysis would be a robust assessment of potential impacts and risks to CRA Fisheries that would include modelling of wave inundation and erosional forces associated with an event that occurred during a dry or wet year in combination with a dry (piping) or wet (precipitation) event. This assessment would include discussion of how far the inundation wave would travel, how far erosional forces would extend, the range of potential effects.	R3-14 Provide a discussion of the impacts on fish and fish habitat and the associated effects to Commercial, Recreational or Aboriginal Fisheries that would result from catastrophic failure of the water management ponds in Genoa Creek.
BIRDS		
281-1 ECCC Comments S-46	The South Lakes system is expected to have lower than baseline water levels at closure as a result of pit dewatering and reduction of the aquifer. During Construction and Operations the flows are expected to increase as a result of the diversion of Fault Creek and the inputs from the south diversions.	R3-15 Discuss the extent of water level fluctuation expected in the South Lakes system over the duration of the project in terms of potential impacts to nesting waterfowl and shorebirds.

	Fluctuating water levels may impact the nesting success of shorebirds and waterfowl. This was not discussed in the effects assessment for waterfowl and shorebirds. The South Lakes system was included in the baseline surveys for wetlands. The Proponent has determined that there will be no significant impacts to waterfowl and shorebirds.	
SOCIO-ECONOMIC		
264-1 YG Comments HSS-1.9	While ongoing exploration activities by the Proponent and other companies may delay the decline of mining activities in the area, an eventual decrease in the level of mining activity is inevitable. If this is not replaced by other sources of income/employment for the local area and Yukon at large, this may result in some of the adverse effects associated with a boom and bust cycle.	R3-16 Describe measures to mitigate potentially significant adverse effects associated with the loss of employment at the end of the mine's operational life. R3-17 How will employees and contractors be meaningfully supported through the transition from operations to closure and closure to post-closure?
264-1 YG Comments HSS-1.5a	Health and Social Services (HSS) suggests that there may be adverse effects on housing availability and affordability associated with the project. Housing is an important determinant of health, and impacts on availability and affordability may be felt most severely by low income / vulnerable households. In addition to potential adverse effects on these households, this could result in increased demand on income supports and/or relevant other social services	R3-18 Provide a quantitative analysis that includes the following: a. The estimated workforce by National Occupational Classification (NOC) classification, will be hired from local communities. The proportion should be based on local capacity to fill each classification. If former Wolverine Mine employees are assumed as potential employees, evidence should be given to support their availability. b. A justifiable prediction of what proportion of the workforce, by NOC classification, is expected to live outside Yukon c. A justifiable prediction of what proportion of the workforce, by NOC classification, is expected to move to Yukon. d. Rationale supporting the assumption that local hires will have adequate housing within their communities of residence.
264-1 YG Comments HSS-2.1a	The Proponent has indicated that blasting will occur four times per week, but it is not clear whether there would be multiple blasts per day – as a result, it is difficult to assess the significance of sleep-related adverse effects associated with this activity.	R3-19 During days with blasting, during what hours and how frequently will blasting occur?
264-1 YG Comments HSS-2.3c	While some level of on-site first aid / medical support is identified in this conceptual plan, it is also clear that there will be some reliance on external services. The level and type of care provided by the on-site medic is not outlined in detail, leaving	R3-20 Provide information on the level and capacities of medical care that will be available on site (including for multiple casualty events). Include any proposed infrastructure, staffing requirements, etc.

	uncertainty as to the effectiveness of these measures. Inadequate planning and/or on-site resources may place pressure on local and regional health care services, resulting in a potential reduced quality of services. Workers and/or other citizens may be at risk if adequate and appropriate care cannot be provided in a timely fashion.	
281-1 ECCC Comments S-33	In order to validate calculations, confirm whether the number of heavy duty vehicles (HDVs) and light duty vehicles (LDVs) per day is the number of trips per day for each road segment. If not, please provide the number of trips per day.	R3-21 Provide the number of one-way trips per day for both heavy-duty vehicles (HDVs) and light duty vehicles (LDVs) for each road segment. Road segments include: a. the Robert Campbell Highway between Watson Lake and the start of the Tote Road, b. the start of the Tote Road to the mine site, c. the start of the Tote Road to the Finlayson Lake airstrip, d. Highway 37 from Watson Lake to Stewart, e. the start of the Tote Road to Faro. f. the start of the Tote Road to Whitehorse via the Klondike Highway, and g. other major road segments used to conduct mining activities for the duration of the project.
264-1 YG Comments HSS-3.2.2	Groundwater monitoring should be conducted on the camp drinking water supply, ensuring that criteria are below the applicable Drinking Water Standards (or that treatment effectively brings the criteria below those levels). In case water does not meet the criteria at any point during the project activities, the Proponent shall identify an alternate safe supply for drinking water and other potable water needs.	R3-22 Describe process for testing to ensure that drinking water is potable for the life of the Project. R3-23 Identify an alternate safe supply for drinking water and other potable water needs.
266-1 Health Canada Comments HC-S-06	The project proposal states: "...given the low levels of particulate that are predicted in the Air Quality Model (Chapter 6 of the Project Proposal). It is unlikely that concentrations in soils (from dust from the Project facilities) will increase. As such, there is low potential for changes in soil quality to affect the quality of country foods (i.e. vegetation or wildlife) during all Project phases." There is not adequate justification within the assessment to claim that particulate matter accumulation over time would not result in any appreciable increase in metals in the impacted environment and no subsequent changes to vegetation concentrations from soil uptake.	R3-24 Provide rationale and references to support the claim that levels of particulate would not result in appreciable increases to metal concentrations in soil. R3-25 Provide a sensitivity analysis to demonstrate how any changes to the assumptions would impact the resulting conclusions and which of these changes will have the biggest impact on total suspended particles (TSP) levels in air and soil. R3-26 Discuss how the increases of total suspended particles (TSP) as a result of the project will not cause increases of metal in soil over the life of the project.

	Note that in Chapter 6 (Air Quality), it is referenced that modelled TSP concentrations at the camp receptor location exceed YAAQS during the operations phase, and that annual concentrations in the operations phase are 15-16 times greater than baseline conditions	
266-1 Health Canada Comments HC-S-07	The project proposal states: *"Based on this review, changes in air, soil, water and vegetation are not likely to result in a change in the quality of country foods.*[...]*Monitoring programs for the environmental media will confirm this and an adaptive management program will be implemented (threshold values will be developed during the preparation of the application materials to support the permitting of the Project)."* Health Canada suggests that human health based target levels or screening levels (and the rationale for the selection of such levels) be developed so that action can be taken if monitoring shows that levels are approaching or exceeding target values. Moreover, target values should be set at levels lower than those that pose risks so that action can be taken prior to putting human health at risk.	R3-27 Provide human health based target levels or screening levels and rationale explaining why these levels are appropriate in respect to the potential for adverse human health effects.
266-1 Health Canada Comments HC-S-08	Inadequate rationale is provided in the Revised Preliminary Quantitative Risk Assessment (PQRA) to support the claim that all single exposure pathways (soil ingestion, soil dermal absorption, particulate inhalation, vapor inhalation, water dermal exposure, water ingestion, berry ingestion, fish ingestion, and wild game ingestion) are inoperable for Receptors of Concern as summarized in Tables 3-1 and 3-2.	R3-28 Provide additional rationale to support single exposure pathways shown in Table 3-1 and Table 3-2 as inoperable.
266-1 Health Canada Comments HC-S-08	The PQRA with combined multi-media risks may still underestimate health risks as the assessment does not evaluate other media that may be relevant. For example, Contaminants of Potential Concern (COPCs) that may be present in the air as a result of contaminated windblown dust from on-site soils impacted by site activities and/or direct emissions (e.g. ore dust from blasting, stockpiles, tailings, etc.) are not addressed. Health Canada suggests including COPCs that exceed soil quality guidelines (or may exceed soil quality guidelines if soils are impacted over time) and may be elevated in air, as well as including COPCs that may be emitted	R3-29 Provide rationale as to why additional media and additional contaminants of potential concerns (COPCs) were not considered.

	directly to air for which there were no criteria. Measured or predicted (modelled) point-of-impingement concentrations of the COPCs are compared with applicable air quality guidelines/ standards where they exist. If the measured or predicted concentration exceeds the screening air quality concentration or guideline/ standard, the COPC is retained for further evaluation in the HHRA. However, the absence of an applicable guideline/standard is not a sound rationale for excluding a chemical from further assessment. This is discussed in greater detail in Health Canada's "Supplemental Guidance on Human Health Risk Assessment of Air Quality, Version 2.0" (2017).	
266-1 Health Canada Comments HC-S-08	The PQRA does not currently address COPC exposure through fish and wild game ingestion. Rather, integrating COPC exposure from potential key country foods is currently proposed to be contingent on outcomes of the vegetation and tissue monitoring and adaptive management strategies during the permitting phase. As a result, the current assessment may underestimate the human health risks resulting from the Project. A sensitivity analysis for each exposure pathway (e.g. soil ingestion, soil dermal absorption, particulate inhalation, vapor inhalation, water dermal exposure, water ingestion, berry ingestion, fish ingestion, wild game ingestion) may be warranted to be included in the uncertainty analysis of the PQRA in order to identify and anticipate which pathways carry the most weight to the overall risk.	R3-30 Provide a sensitivity analysis, included as part of the uncertainty analysis for each exposure pathway (e.g. soil ingestion, soil dermal absorption, particulate inhalation, vapor inhalation, water dermal exposure, water ingestion, berry ingestion, fish ingestion, wild game ingestion) in order to identify and anticipate which pathways carry the most weight to the overall risk. Explain how results of the sensitivity analysis have been incorporated into the effects assessment.
266-1 Health Canada Comments HC-S-09	The proponent chose a toddler for the evaluation of non-carcinogenic risks and adult for the evaluation of carcinogenic risk. However, no workers were included in the assessment as they are protected by "...worker health and safety plan and associated WBC regulations…". Health Canada considers worker camps as residential communities, as off-duty workers spend a portion of their time at the camp for meals, recreation and sleeping, and advises the assessment of the potential impacts of the project on the health of off-duty workers. Due to the close proximity of the camp to airborne emission sources, inhalation of airborne emissions is likely to be the main route of exposure of off-duty workers to particulate matter and other airborne contaminants. Additionally, the PQRA indicates that off-duty workers are exposed to modelled air quality that has	R3-31 Include off-duty workers as a receptor in the human health risk assessment. R3-32 Provide additional rationale as to why the inhalation pathway is excluded from the assessment.

	exceedances during the operation phase. Although these exceedances are mentioned to be less than 1% of the time over a 24-hour period, this is not sufficient rationale to omit this receptor and pathway in the PQRA. For example, short term increases in particulate matter have been associated with increased morbidity and mortality in epidemiological studies. It is stressed that short-term health effects may range from slight and reversible (mild irritation) to severe and irreversible effects (including death), and therefore the full range of effects needs to be considered. The potential for acute and sub-chronic effects should not be ignored, if relevant, and should be evaluated in a thorough and scientifically defensible manner in a quantitative risk assessment. All receptor exposure populations and scenarios should be thoroughly assessed before ruling them out.	
264-1 YG Comments EMR-OGR – 2	A Liquefied Natural Gas (LNG) facility shall have a risk assessment performed that addresses risks to members of the public, personnel, the environment and property.	R3-33 Describe how the effects assessment of accidents and malfunctions considered the risks associated with the LNG/Diesel power plant facility.
ROADS AND TRANSPORTATION		
YESAB	BMC has indicated that for a period of approximately 6 weeks in the spring/early summer, portions of the Robert Campbell Highway have load restrictions in place to ensure safety and limit long term impacts to the infrastructure. BMC identified that an optional reload facility would be established to “top-up” from the 75% restricted load to the 100% load outside of the road weight restriction areas during this period.	R3-34 Describe the optional reload facility, including details on: a. location, storage capacity, and size, b. timeline of construction, operations, decommissioning c. any associated infrastructure that would be required, d. equipment required for reloading and top-up, and e. the number of vehicles that would be “topped” up at a given time. R3-35 Describe the anticipated impact that this facility would have on projected traffic volume on the highway. R3-36 Describe any safety measures that will be implemented to ensure safety risks have been addressed.
264-1 YG Comments ENV-2.1 AND	While the deactivation of the access road has been identified, there are concerns about the long term tenure of the road and how access will continue to be limited. The ultimate end use is therefore uncertain; it is likely unreasonable to plan for the road to be completely deactivated (to a point of it being inaccessible) given the continual long term monitoring associated with a mine and other exploration in this	R3-37 The proposal confirms that the road will be reclaimed and decommissioned when access to the site is no longer required. This proposed measure poses three questions.

265-1 YCS Comments Pg. 11 of 12	area. Resulting in additional concerns related to increased hunter access and harvest mortalities.	a. First, this deactivation and associated techniques will be implemented over time. Outline the projected timelines and how the below two elements are considered as part of these timelines. b. Second, this project requires long-term water treatment and/or monitoring. Confirm that the access road will continue to have restricted access and the nature of that restricted access (e.g. a manned-gate) during the post-closure stage to support water treatment and/or monitoring activities. c. Third, this road potentially provides access to other resources in the area. Describe how the proposed measure to reclaim and decommission the road have considered other uses for the road, potential requests to maintain its existence and the roles of BMC, Yukon Government and First Nations in determining its end use.
YESAB	The Robert Campbell Highway is narrow in many areas, with poor sightlines, limited passing opportunities, pull outs, turning lane and presents travel concerns in all seasons. An increase in truck traffic throughout the construction, operation and active closure of the mine has resulted in a series of safety concerns being raised.	R3-38 Describe the various safety concerns with the proposed use of the Robert Campbell Highway and BMC's role in addressing those concerns.
HAZARDOUS MATERIALS		
264-1 YG Comments EMR-OGR-Table 1	Currently it is not specified if glycol heating fluid will be used for LNG vaporization. Concerns pertaining to the contamination of ground and surface water – as a result of a Glycol spill. Ensure that glycol containment is provided for equipment and the site.	R3-39 Demonstrate how glycol will be contained and managed on site if glycol is proposed to be used for LNG vaporization. Where glycol will be used, specify the type of glycol considered.
YESAB 264-1 YG Comments EMR-OGR-Table 1	The power plant layout may be impacted by certain hazards and risks associated with LNG operations. Information should be provided on the analyses performed to identify and mitigate these hazards and risks in the design of the power plant. For example, the proximity of the diesel tank and LNG facility must be of sufficient distance to prevent the diesel tank from being impacted by thermal radiation in the event of an LNG pool fire.	R3-40 Provide a map of the power plant showing proposed equipment layout and LNG storage area with supporting rationale for positioning in relation to other facilities and site features.

	This additional information will enable the Executive Committee a more complete understanding of potential significant risks and the proponent's ability to mitigate for those effects	
281-1 ECCC Comments S-39	Environment Canada suggests BMC Develop a comprehensive Cyanide Management Plan that aims to prevent the release of cyanide to the environment via applicable mitigation and management measures, principles and standards of practice. Specifically, such a management plan should ideally include the transportation, handling, storage, use, emergency spill response measures, environmental monitoring and facility decommissioning. The International Cyanide Management Code (http://www.cyanidecode.org/) is a good reference for this. Environment and Climate Change Canada (ECCC) is of the opinion that the Proponent's project proposal does not currently meet adequacy requirements. The "consideration of the effects" of malfunction or accidents cannot be adequately understood without the Proponent demonstrating their ability to mitigate potential environmental consequences via their emergency preparedness planning abilities and associated response capacities.	R3-41 Provide details on BMC Minerals overall cyanide management strategy for the Project. Details should include: a. timeline for the development of the Cyanide Management Plan and other required cyanide management-related plans and procedures; b. transportation of cyanide including description of transportation route(s) and security of shipments; c. description of unloading process for solid sodium cyanide (NaCN); d. details on storage of NaCN; e. details on transferring and use of NaCN at the site; and f. safety requirements at site. R3-42 Provide a list of key training requirements (i.e. general CN awareness, CMP, specific standard operating procedures, cyanide emergency preparedness and response, etc.) that the cyanide management plan (CMP) and cyanide-related plans and procedures will require to be given to employees and other workers during the construction phase, operations phase, and project decommissioning phase. Employees and workers include the following classifications: 1) cyanide truck drivers, 2) BMC's in-house First Responders, 3) processing plant personnel, 4) Open pit mine operations personnel, 5) Mineshop / warehouse personnel, 6) Camp and kitchen workers, 7) Technical staff, 8) visitors, 9) Contractors.