

November 30, 2011

Parties to the Giant Mine Remediation Project Environmental Assessment

**Re:** Alternatives North Round Two Information Requests (EA 0808-001)

Please find attached the Round Two Information Requests for the Environmental Assessment of the Giant Mine Remediation Project from Alternatives North. The results of the review by EBA Engineering Consultants Ltd. (Ed Hoeve, Bill Horne and Don Hayley) of the Developer's Assessment Report, Round One Information Request responses, and the Technical Session materials is included in this round of Information Requests from Alternatives North.

Please note that these Round Two Information Requests are directed to Aboriginal Affairs and Northern Development Canada and GNWT, where appropriate, Environment Canada (#13) and the City of Yellowknife (#16).

We also wish to note that there was supposed to be a list of commitments made by the Developers in its responses to the Round One IRs and during the Technical Sessions. We are quite interested in reviewing such a document to ensure that it conforms to our analysis and recollections of the process to date.

We wish to acknowledge the financial support made available by the Department of Aboriginal Affairs and Northern Development through the participant funding offered for this Environmental Assessment. If it were not for this funding, Alternatives North would not be able to retain independent engineering expertise.

Should there be any questions regarding this letter or the attached Information Requests, I can be reached at 920-2765 (home, evenings) 669-9141 (work, daytime) or kor@theedge.ca

Sincerely,

Kevin O'Reilly Coordinator

**EA 0809-02: Giant Mine Remediation Project** 

# **Alternatives North IR# 1 List of Commitments**

# Reference

Not applicable

# **Terms of Reference Section**

ToR s.3.2.6 Consultation, s. 4 Deliverables

# **Preamble**

It is important to understand exactly what the Developers have committed to do as a result of this ongoing Environmental Assessment.

- 1. Please prepare a consolidated list of commitments and agreements the Developers have made in the Developer's Assessment Report, Round One Information Responses and during the Technical Sessions.
- 2. Please indicate what the commitment is, who will carry it out, when it will be accomplished and the appropriate reference in the public registry.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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# **Alternatives North IR #2 Emergency Site Work**

#### Reference

Technical Sessions Day Four transcripts, pgs. 227-230 and 232-236.

# **Terms of Reference Section**

ToR s.3.2.6 Consultation

# **Preamble**

During the Technical Sessions, the Developers described a number of situations and specific risks at Giant Mine that may require emergency work before the conclusion of this Environmental Assessment. It would be helpful to have this information consolidated in one place and communicated to the parties and the general public.

- 1. What are the emergency measures that the Developer anticipates are necessary at the site prior to the conclusion of this Environmental Assessment?
- 2. What are the anticipated licencing and permitting requirements for this work?
- 3. How will the above be communicated to the parties and the general public?

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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Alternatives North IR #3 Environmental Management Framework and Environmental Management Plans

#### Reference

Found in various locations of the Technical Session transcripts, especially Day Five.

#### **Terms of Reference Section**

ToR s.3.2.6.5 and 3.2.6.6 Consultation; 3.6.1 Monitoring, Evaluation and Management

#### **Preamble**

There were numerous discussions at the Technical Sessions on the organization, structure, content and framework for environmental management at Giant Mine. Some parties, including Alternatives North, suggested that the Developers adopt the framework set out in the recently released draft Guidelines for the Closure and Reclamation of Advanced Exploration and Mine Sites in the NWT by AANDC and the Land and Water Boards of the Mackenzie Valley (see <a href="http://mvlwb.com/files/2011/10/Draft-Closure-and-Reclamation-Guidelines\_INAC-and-LWBs\_Aug-11-2011.pdf">http://mvlwb.com/files/2011/10/Draft-Closure-and-Reclamation-Guidelines\_INAC-and-LWBs\_Aug-11-2011.pdf</a> ). This IR will allow the Developer to demonstrate how it intends to apply these guidelines to the remediation for the Giant Mine and to show the progress from the Technical Sessions.

- 1. Can the Developers commit to following the above Guidelines in preparation of its environmental management framework and environmental management plans for the Giant Mine?
- 2. Please provide the overall environmental management framework structure including a set of site-wide closure goals, component-specific objectives, measurable performance criteria (where known), and indicate where there are uncertainties. As part of this framework or table, please outline the anticipated design work and research completed to date, along with a schedule, anticipated funding and detailed tasks for any remaining work. The framework should also include details on anticipated monitoring (VEC's to be measured, locations, frequency, duration, reporting, thresholds for adaptive management and contingencies) or at a minimum, where this information can be located.
- 3. Please provide details on how the Developer anticipates public involvement and engagement in the development of the environmental management framework and environmental management plans.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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# Alternatives North IR #4 Regular Technology Assessment and Review

#### Reference

Review of Arsenic Management--Response to RB IR #19; Technical Sessions Day One first presentation, slide 19; Technical Sessions Day One transcript pg. 243.

Review of Water Treatment Technology—Technical Sessions Day Two transcript, pg. 250.

# **Terms of Reference Section**

ToR s. 3.6.1.h Monitoring, Evaluation and Management

#### **Preamble**

The Developers made new commitments to periodically review management of the underground arsenic and water treatment technology in its first round IR responses and during the Technical Sessions. These are important commitments in the eyes of the public and some parties. Alternatives North is seeking additional information on how these reviews will be conducted in the hope that this will be done in a collaborative manner and subject to public review.

- 1. How do the Developers see the above referenced periodic technology reviews being conducted? Are the Developers committed to a collaborative approach that involves interested stakeholders and the public?
- 2. Will there be opportunities for public involvement and review in the technology reviews? Will the results of the technology reviews be made publicly available?

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# **Alternatives North IR #5 Perpetual Care Requirements**

# Reference

Report from the Giant Mine Perpetual Care Workshop sponsored by the Yellowknives Dene First Nation and Alternatives North (see

http://www.reviewboard.ca/upload/project\_document/EA0809-001 AN Giant Perpetual Care Workshop Report 1320858048.PDF)

#### **Terms of Reference Section**

ToR s. 3.6.1.3 Monitoring, Evaluation and Management

#### **Preamble**

There is a growing interest in better understanding exactly what the perpetual care requirements will be for the Giant Mine given the closure options and methods specified in the Developer's Assessment Report and subsequent filings. To better plan for the management of these requirements, it would be helpful to have a consolidate list and inventory of perpetual care requirements once the Giant Mine frozen block method has been fully implemented.

# Request

1. Please prepare a detailed table and inventory showing the perpetual care requirements for the site once the frozen blocks have stabilized. The table should show the mine component (e.g. frozen block, water management, tailings covers, open pits, etc.), monitoring requirements (general information on frequency of collection, analysis and reporting), human and financial resources and skill sets including certifications required to carry out this work, materials and specialized equipment or tools required for care and maintenance (including regular replacement schedules for equipment and facilities), and any other significant aspects of perpetual care requirements.

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# **Alternatives North IR #6 Design Standards**

# Reference

See Preamble below.

# **Terms of Reference Section**

ToR s. 3.2.2.3 Developer

# **Preamble**

Various standards appear to have been used in designing the facilities and aspects of the Remediation Plan such as 1 in 500 year event for a flood on Baker Creek (see slide 4 Day Two, first presentation) and 1 in 2,500 year earthquake for high consequence dams (see Review Board IR#9 response #1). Given that the Remediation Plan sets up a perpetual care situation requiring monitoring and management forever, the use of various periods for risk management should be fully justified and explained.

- 1. Please detail what standards have been used in the design of various components of the Remediation Plan and why?
- 2. Please explain how any specified design criteria meet the perpetual care needs for the site?

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# Alternatives North IR #7 Use of Best Available Technology in Water Treatment

## Reference

See Preamble below.

# **Terms of Reference Section**

ToR s. 3.5.2.8 Fish and Aquatic Habitat

# **Preamble**

The Developer has proposed various discharge criteria and performance criteria for a new water treatment plant at Giant Mine. A limited set of parameters were presented on Day Two of the Technical Sessions on slide 36 on Water Treatment. It would be helpful to know if the proposed effluent discharge criteria reflect the use of best available technology. Nitrates should also be included in the set of contaminants of interest due to the historical mining at the site and the requirement for additional underground workings for the frozen block method that will likely involve the further use of explosives.

- 1. For the Table shown on the slide referenced above, and adding in nitrates, please add a column that shows the expected effluent levels using best available technology (BAT).
- 2. Where there is any variance between the figures reflecting best available technology and those shown as the "Existing Maximum Criteria"? If so please explain why BAT is not being used.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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#### Alternatives North IR #8 Incremental Increase in Potable Water Treatment Cost

# Reference

NSMA IR #8 response; Technical Sessions Day Two transcripts pgs. 132-138.

# **Terms of Reference Section**

ToR s. 3.5.1.2 Water

# **Preamble**

It is fully understood that the Developers' objective in site water treatment should improve water effluent discharged from Giant Mine. The City of Yellowknife is planning to move its potable water intake to Yellowknife Bay. The City and some residents have expressed concerns over the potential impacts on potable water given that there will be direct discharge of Giant Mine water effluent into Yellowknife Bay. There is some potential for malfunctions and accidental releases of contaminated water from Giant Mine. Such events may result in increased incremental costs for potable water treatment and it is unclear who would be responsible these costs.

# Request

1. Is there a commitment from the Developers to pay for any incremental water treatment costs for the City of Yellowknife should there be upset conditions with the water treatment system at Giant Mine or accidental water releases?

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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Alternatives North IR #9 Incremental Increase in Electricity Costs for Yellowknife Residents and Businesses

#### Reference

Technical Sessions Day Two transcripts pg. 135; DAR s. 8.11.5.3

# **Terms of Reference Section**

ToR s. 3.2.4.13 Development Description

#### **Preamble**

It is fully understood that the Developers' wish to reduce power use and consumption as part of cost avoidance and that every effort will be made to avoid the need for additional local power capacity. Given that the project is at an early stage in design of the frozen block method and the current Freeze Optimization Study power requirement analysis has not been completed, there is some potential for a need for increased electricity generation capacity. The City of Yellowknife and some residents have expressed concerns over who would be responsible for the cost of such increased capacity.

# Request

1. Is the Developer committed to pick up any incremental costs associated with its power demands at the Giant Mine to avoid any cost increases to other residential and business consumers in the City of Yellowknife?

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# Alternatives North IR #10 Diffuser Study Design

# Reference

Technical Sessions Day Two pgs. 259-260.

# **Terms of Reference Section**

ToR s. 3.2.4.9 Development Description

# **Preamble**

The effects of the diffuser on ice thickness and water quality in Yellowknife Bay are concerns that have been expressed many times as part of the Environmental Assessment. In committing to provide the Review Board and parties with the major design changes to the development as part of Undertakings 3 and 9, a summary of the diffuser design study was to be provided and is not in the materials filed by the Developer.

# Request

1. Please provide a summary of the diffuser design study promised during the Technical Sessions Day Two as recorded on pages 259-260 of the transcripts.

Mackenzie Valley Environmental Impact Review Board

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#### Alternatives North IR #11 Institutional Land Use Controls

# Reference

EC IR#3 response; Technical Sessions Day Three transcripts pgs. 257-258; Day 5 presentation second last slide.

#### **Terms of Reference Section**

ToR s. 3.4.1 Economy

#### **Preamble**

The Giant Mine Remediation Plan involves burying some hazardous wastes, covers on tailings, open pits, and other work that will render some areas of the mine site unfit for short and long-term use by humans. Although the Developers have described some measures to prevent or limit human access to such areas, there is little description on the role institutional land use controls may play in directing future land use. The may include tools available through the municipal, territorial and federal orders of government.

- 1. Please provide a description of the various tools available for institutional land use controls for future land use at the Giant Mine.
- 2. Please provide some analysis of the advantages and disadvantages of each tool and how the Developers will decide which to pursue.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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# Alternatives North IR #12 Consideration of Intended Future Municipal Land Uses

# Reference

City IR #1 question 5 response; Technical Sessions Day Three transcript pgs. 142-148 and 155-156

# **Terms of Reference Section**

ToR s. 3.4.1.7 Human Environment

# **Preamble**

The City of Yellowknife has an interest in Giant Mine remediation flowing from a surface lease covering the old townsite area. In June 2006 the City developed a Giant Mine Lease Area Land/Water Use Plan filed with the Review Board in April 2008 (see

http://www.reviewboard.ca/upload/project\_document/EA0809-

001 Giant%20Mine%20Lease%20Area%20Land-

<u>Water%20Use%20Plan%20OPTIMIZED\_1209684298.pdf</u>). Pages 107-109 of this Plan show proposed land uses including residential and commercial uses for the area covered by the lease and the adjacent shoreline.

- 1. Please explain how the Developers considered the above Plan and proposed land uses in preparing the Developer's Assessment Report.
- 2. Please provide the estimated costs for the remediation of the City's lease area that would allow the proposed land uses to be achieved.

Mackenzie Valley Environmental Impact Review Board Round Two Information Request to Environment Canada EA 0809-02: Giant Mine Remediation Project

Alternatives North IR #13 Environment Canada's Use of Air Quality Data and Methodologies

# Reference

EC IR responses 12, 13 and 14.

# **Terms of Reference Section**

ToR s. 3.6 Monitoring, Evaluation and Management

# **Preamble**

Environment Canada retains a mandate and some expertise with regard to air quality. The above Information Requests resulted in a significant amount of data and information on air quality predictions and effects analysis.

- 1. What did Environment Canada do with the data and information provided in the response to its IRs 12, 13 and 14?
- 2. Has Environment Canada conducted a review or assessment of the air quality predictions in the DAR? If so, please provide a copy.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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Alternatives North IR #14 Reduction in Arsenic Discharges into Back Bay as a Result of North Diversion Contingency

#### Reference

Technical Sessions Day Three transcripts, pgs. 83-84.

# **Terms of Reference Section**

ToR s. 3.2.4.9 Development Description

#### **Preamble**

Although the North Diversion Contingency for Baker Creek is at an early conceptual stage, the Developers undertook to provide additional information on it including a rough assessment of any potential reduction in arsenic loading to Back Bay. The response provided to Undertaking 5 does not include this information.

# Request

1. Please provide an assessment, with quantitative figures where possible, of any changes in arsenic loadings to Back Bay as a result on the North Diversion Contingency compared to current levels and those anticipated with the implementation of the development.

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# **Alternatives North IR #15 Municipal Approvals for the Development**

# Reference

Technical Sessions Day Three transcripts, page 141.

# **Terms of Reference Section**

ToR s. 3.2.2.3 Developer and 3.2.4.17 Development Description

# **Preamble**

The Developers position on the applicability of municipal approvals to the development was unclear as they stated that s. 98 determination under the *Mackenzie Valley Resource Management Act* was required. This was concluded on August 18, 2011 (see <a href="http://mvlwb.com/files/2011/07/City-of-Yellowknife-Determination-August-18-2011.pdf">http://mvlwb.com/files/2011/07/City-of-Yellowknife-Determination-August-18-2011.pdf</a>) and confirmed the City's authority to continue to issue development permits even for activities that may require a land use permit.

- 1. Please confirm that it is the intention of the Developers to fully comply with all municipal by-laws in carrying out the development including any requirements for development, demolition and building permits.
- 2. Please provide a list of all municipal permits, licences and authorizations that will be required apply for the development as required in the ToR s. 3.2.4.17.

Mackenzie Valley Environmental Impact Review Board Round Two Information Requests to City of Yellowknife EA 0809-02: Giant Mine Remediation Project

# Alternatives North IR #16 Municipal Landfill Design Standards

#### Reference

Technical Sessions Day Three transcripts pgs. 153-154.

#### **Terms of Reference Section**

ToR s. 3.2.2.3 Developer and 3.2.4.17 Development Description

#### **Preamble**

The City of Yellowknife committed to file design standards used in its municipal landfill to assist the Developers in designing waste disposal sites at the Giant Mine. There has been no response to date to Undertaking #6 noted in the above transcripts.

# Request

1. Please provide a copy of the landfill standards used by the City of Yellowknife in designing and seeking approvals for its municipal landfill.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada and GNWT

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# **Alternatives North IR #17 Worst Case Scenario**

# Reference

Technical Sessions Day Four transcripts, pgs. 130-143, pgs. 181-190, pgs. 222-224 and pgs. 249-254; Day Five transcript pg. 22.

# **Terms of Reference Section**

ToR s. 3.2.5 Accidents and Malfunctions

## **Preamble**

The Developers provided a good impromptu worst case scenario if water flooded the underground workings prior to completion of the frozen block method. Most parties and the Review Board representatives were of the view that this was a very useful exercise and may be helpful to compile for public communications.

- 1. Please describe the worst case scenario for a failure at the mine site prior to completion of the frozen block method.
- 2. Please describe the environmental effects of the worst case scenario.
- 3. Please outline the public communications that would be made and by whom in the event of the worst case scenario.
- 4. Please describe what mitigation and contingency measures would be required in the worst case scenario and a timeline for their implementation.

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# **Alternatives North IR #18 Future Risk Assessments**

# Reference

Technical Sessions Day Four transcripts.

# **Terms of Reference Section**

ToR s. 3.2.5 Accidents and Malfunctions

# **Preamble**

There was extensive discussion of the Failure Mode Effects Critical Analysis submitted by the Developers in fulfillment of Review Board IR #12 at the Technical Sessions. It appeared that the Developers were committing to a more collaborative approach with regard to future risk assessments so that local values and priorities would be better reflected.

- 1. Please describe how the Developers see future risk assessment exercises working for the development.
- 2. Please describe how stakeholders would be involved and what timeframes would be used given that the Remediation Plan is based on perpetual care.
- 3. Describe how the precautionary principle and sustainability would be reflected in these future risk assessments.

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# Alternatives North IR #19 Oversight Committee Meeting Summaries

# Reference

AN IR#1, question 3 response.

# **Terms of Reference Section**

ToR s. 3.2.2.4 Developer

# **Preamble**

The meeting summaries of the Oversight Committee are helpful in understanding the relationship between GNWT and AANDC and the evolution of the development. In the response to the above referenced first round IR, two meeting summaries were missing and it would be of some assistance to receive more recent summaries.

- 1. Meeting summaries for the March 16 and December 3, 2009 meetings are missing from those provided in response to the above mentioned IR. Please provide copies of these missing meeting summaries.
- 2. Please provide copies of any more recent meeting summaries past the July 9, 2010 as submitted in response to the above mentioned IR.
- 3. Will the Developers continue to make meeting summaries for the Oversight Committee available to the public?

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# **Alternatives North IR #20 Clarification of Responsible Ministers**

# Reference

AN IR#1, question 1 response.

# **Terms of Reference Section**

ToR s. 3.2.2.4 Developer

#### **Preamble**

It would be helpful to know exactly who the Responsible Ministers will be for the purposes of this Environmental Assessment. As GNWT Municipal and Community Affairs has some responsibilities as the owner of the surface lands covering Giant Mine, it is unclear whether this Minister will be a Responsible Minister for this Environmental Assessment. The same applies to the Minister of Natural Resources Canada who may have some responsibilities over licensing the storage and use of explosives at Giant Mine. NRCan also possesses valuable expertise with regard to permafrost and mineral processing technologies and it would have been helpful if this could be considered as part of this Environmental Assessment.

# Request

1. Please confirm whether the GNWT Minister of Municipal and Community Affairs and the federal Minister of Natural Resources will serve as Responsible Ministers for the purpose of this Environmental Assessment.

Round Two Information Requests to Aboriginal Affairs and Northern Development Canada

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Alternatives North IR #21 Separation of Functions and Staff within Aboriginal Affairs and Northern Development Canada

#### Reference

NSMA IR#2 response page 3 last two paragraphs and Technical Sessions Day Five transcripts pg. 222.

## **Terms of Reference Section**

ToR s. 3.2.2.4 Developer

# **Preamble**

There has been substantive discussion and concerns raised regarding the inherently conflicting roles within Aboriginal Affairs and Northern Development Canada (AANDC). AANDC is the proponent for Giant Mine remediation, overall land and water steward (including inspection and enforcement), and has responsibilities for Aboriginal peoples and promotion of economic development. The Minister is responsible for signing off on water licences and is a Responsible Minister for this Environmental Assessment. AANDC has stated that it is committed to fairness, transparency and accountability in the context of the Giant Mine Remediation but has not provided any evidence to support this position.

# Request

1. Please provide any written policies, directives or other guidance that has been provided to AANDC staff and managers regarding any separation of function and communications within the Department with regard to Giant Mine.

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# Alternatives North IR #22 Independent Oversight Commitments

# Reference

Review Board IR#27, Technical Sessions Day Five transcripts pgs. 85-91 and 93.

# **Terms of Reference Section**

ToR s. 3.2.2.4 Developer

# **Preamble**

The Developers clearly indicated that they were undertaking an assessment of independent oversight bodies and experiences as part of the Developer's Assessment report during the Scoping Hearing, in letters to parties to this Environmental Assessment, and in a Ministerial letter to a NWT Member of the Legislative Assembly. When the DAR was submitted, there was no information on its assessment of independent oversight and no proposals for such in the context of this development. The issue was raised during the Technical Sessions but there was no response from the Developers.

# Request

1. Please explain why the Developers did not carry through with their commitment to cover independent oversight experience and case studies in the Developer's Assessment Report.

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# Alternatives North IR #23 Freeze Optimization Study Initial Findings

# Reference

Undertaking #1 response.

# **Terms of Reference Section**

ToR s. 3.3 Arsenic Containment

# **Preamble**

The Initial Findings report was submitted after the Technical Sessions were completed. It was clear that there is much interest in the Freeze Optimization Study as it will inform the design of the frozen block methods and there are other lessons learned from this pilot project. It may be helpful for the Developers to consider hosting a meeting on the Initial Findings report to allow for a better exchange of information.

- 1. Please provide a copy of the 2010a As-Built Report.
- 2. Given the difficulties associated with instrumentation reliability (see pg. 54, 3.5% of thermistors have already malfunctioned in less than a year) and data reliability (see Executive Summary and last SRK Draft Memo dated October 26, 2010), how do the Developers propose to ensure long-term monitoring capability and success?
- 3. The report provided does not cover any lessons learned from the overall FOS such as spill response, safety, project management, or other matters. Please provide a written response on lessons learned from the FOS.
- 4. The Developers state they are gaining clarity around thermal properties, and that they have developed 2D and 3D models. The 3D modelling is something EBA Engineering consultants for Alternatives North are looking for. As the 3D model is developed will it incorporate new information, and will there also be an effort to more rigorously model the energy balance at the ground surface?
- 5. It is noted that thermal diffusivity of the rock is higher than expected. This is beneficial for freezing, as the rock is freezing more quickly than estimated. However, this is potentially detrimental for thawing. Will the estimated durations for thawing in the event of system failure also be revised, in light of the findings from the FOS? Are there

any other lessons learned from the FOS that have implications for the reversibility of the frozen blocks?

6. From both the installation phase and now the operating phase of the FOS, what is the impact on the estimated cost of implementation of the frozen block alternative on this development?

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# Alternatives North IR #24 Contingencies for Frozen Block Failure

# Reference

Undertakings #2 and #4 responses.

# **Terms of Reference Section**

ToR s. 3.3 Arsenic Containment

# **Preamble**

During the Technical Sessions, the Developers appeared to acknowledge that the frozen block method is a long-term, but not permanent solution. From the information provided in the Technical Sessions, and regardless of the details of the climate change assumptions made, it is reasonably foreseeable that passive thermosyphons, as presently arranged, will not be sufficient to maintain the frozen block probably in the second century following implementation.

- 1. What is the plan or contingency in place for the eventuality that climate change will overtake the capacity to maintain the frozen blocks with thermosyphons?
- 2. The current plan appears to intentionally pass the burden of a solution on to future generations to grapple with. Is this consistent with the principle of sustainable development, and more specifically, inter-generational equity?

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Alternatives North IR #25 Risk Assessment Workshop on Pit Subsidence and Icing Events

# Reference

Undertaking #5 responses.

# **Terms of Reference Section**

ToR s. 3.2.5 Accidents and Malfunctions

# **Preamble**

A risk assessment workshop is to be conducted in early 2012 on the B1 pit subsidence and Baker Creek icing events.

- 1. Will interested stakeholders be involved in this session and will there be a report?
- 2. Will the report from this risk assessment be filed with the Review Board?

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# Alternatives North IR #26 Tailings Cover Trial Reference

Undertaking #8 responses.

#### **Terms of Reference Section**

ToR s. 2.1 Scope of Development

#### **Preamble**

New information is presented in the Tailings Cover Trials 2010 Data Summary. This is a helpful report but it also raises further questions about cover design.

- 1. What are the next steps in the Tailings Cover Trial? Please provide a list of remaining tasks and a schedule for their completion.
- 2. How has the work to date advanced the cover design or assisted with identification of cover objectives and performance criteria?

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# Alternatives North IR #27 Arsenic Wetting Research and Plan

#### Reference

Undertaking #10 responses.

# **Terms of Reference Section**

ToR s. 3.3 Arsenic Containment

#### **Preamble**

It is unclear how the frozen block method will be implemented as the method and impacts from arsenic wetting is the subject of further research and planning. During the Technical Sessions the Developers were requested to provide information on this work that is crucial to the success of the frozen block method.

- 1. Will the arsenic wetting research include an assessment of the feasibility and desirability of the frozen block method versus a frozen shell option?
- 2. What degree of saturation is necessary to carry out the frozen block method? Is wetting versus saturation sufficient?
- 3. It was our understanding that there will be an opportunity for interveners to have input into the trial and assessment. This is not spelled out in the response. What are the plans for consultation and review?
- 4. Given that this work is critical to the frozen block method and that the work is to be completed, AFTER the EA is completed, what assurances can the Developers provide now that the frozen block can be properly designed and implemented?

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# **Alternatives North IR #28 Failure Mode Effects Criticality Analysis**

# Reference

Undertaking #11 responses.

# **Terms of Reference Section**

ToR s. 3.2.5 Accidents and Malfunctions

# **Preamble**

The revised wording to s. 2.1.2 still does not properly explain that the risk assessment is a valid method for assessment of any 100 year period following the successful implementation of the frozen block method.

# Request

1. Can the Developers provide any further clarification?