



Giant Mine Environmental Assessment

IR Response

Round One: Information Request - Review Board #11

June 17, 2011

INFORMATION REQUEST RESPONSE

EA No: 0809-001

Information Request No: Review Board #11

Date Received

February 14, 2011

Linkage to Other IRs

Alternatives North IR #15

Date of this Response

June 17, 2011

Request

Preamble:

The feasibility of the proposed project depends in part on financial resources. The certainty of cost predictions and committed financial resources are important in evaluating project feasibility. The DAR mentions a fixed, and very precise, budget of the running costs (i.e. 1.91M\$/yr). This figure is based on several assumptions, such as the adequacy of passive freezing to maintain the frozen block over the long term. However, in Document J and other texts there are numerous references to uncertainties and adaptation without ever estimating any variability in project costs.

Question:

1. Please describe the uncertainties linked to these costs estimates.
2. Is it possible to define an order of magnitude of variability?
3. Please describe how project financing will cope with possible variations in costs for perpetuity.
4. Please reconcile possibility of ever-increasing water treatment cost (Dec. 13, 2010 Deficiency Response, reply to item 1, page 4) with the very precise budget and scheduling defined in the report.

Reference to DAR (relevant DAR Sections)

s.6.13.6 Financial Resource Requirements

Dec. 13, 2010 Deficiency Response, reply to item 1 page 4

“Again assuming no response, the above situation would continue indefinitely, with ever increasing water treatment costs, but no uncontrolled release of arsenic into the surrounding environment.”





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Reference to the EA Terms of Reference

s. 3.2.4 Development Description

Estimated capital, operating, monitoring and maintenance costs (the latter presented by year for the life of the development) of the approval process.

Response 1 Summary

Uncertainties in the cost estimates include the effects of inflation and escalation of cost inputs, changes to the design, and changes in management structure and/or contracting policies. Broader “project risks” also generate cost uncertainties.

Response 1

The cost estimates reported in Table 6.13.4 of the Developer’s Assessment Report (DAR) were based on estimates generated in 2007 during preparation of the Giant Mine Remediation Plan (Remediation Plan). To reflect cost increases over the period 2007-2010, the original estimates were increased by 8% per year. With the effect of compounding, the estimates in the DAR are approximately 26% higher than the original estimates.

As Table 6.13.4 shows, the estimates include significant contingencies, ranging up to 50% of the estimated direct and indirect cost. The contingencies provide for uncertainties in the estimated quantities and unit costs.

There are other uncertainties in this class of cost estimate. They include the effects of inflation and escalation of cost inputs, changes to the design, and changes in management structure and/or contracting policies. Sources of “project risk” can also generate significant cost uncertainties. A list of “project risks” typical of projects of this scope includes the following (ICE 2005):

- Insufficiently defined objectives leading to scope drift;
- Hidden, unstated or untested assumptions;
- Timing and restrictions of regulatory approvals;
- Opposition from third parties;
- Improved construction or leading edge technology;
- Loss of key personnel;
- Insolvency of contractor;
- Disagreement amongst sponsors;
- Force majeure; and
- Obtaining finance.





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Response 2 Summary

Cost estimates at this stage of planning are normally considered to be accurate to $\pm 30\%$. However, uncertainties in the Giant Mine Remediation Project, details, and implementation plans as well as “project risks” could result in changes beyond that range.

Response 2

Cost estimates at this stage of planning are normally assumed to be accurate to $\pm 30\%$. However, at the time the estimates were prepared, there remained significant uncertainties in the project details, and implementation plans. Uncertainties in the Remediation Project, for example the plans for Baker Creek, are expected to be resolved through the environmental assessment, community consultation and water licensing processes. Uncertainties about design details, for example the selection amongst active, passive and hybrid freezing methods, will be resolved through the further engineering studies that are currently in progress. Uncertainties about project implementation will be resolved through the project definition and procurement processes that will follow licensing and engineering. One or more of these processes could easily change the project details and/or schedule such that the final cost estimates could be more than 30% different from the DAR estimates.

Reference:

Institution of Civil Engineers, 2005. *Risk Analysis and Management for Projects (RAMP)*. 2nd Edition, November 2005, ISBN 978-0-7277-3390-0

Response 3 Summary

The budget estimates outlined in the DAR were established based on the best available information at the time and could be revised if required, based on changing circumstances or new information.

The Governments of Canada and the Northwest Territories (NWT), in selecting the preferred remediation option for the site, have recognized and accepted that the Giant Mine Remediation Project includes long-term care, maintenance and monitoring.

In INAC's view, the budgeting process and approval of expenditures, required for all government projects, are the appropriate mechanisms to address any possible variations in costs going forward.

Response 3

Table 6.13.4 of the Developer's Assessment Report (DAR) presents a summary of estimated costs for the implementation phase of the Giant Mine Remediation Project, and Table 6.13.5 presents a summary of estimated annual costs over the long-term. These estimates were established based on the best available information at the time. Going forward, these estimates could be revised if required, based on changing circumstances or new information. For example, as with any large engineering project the





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estimates will become more precise as plans are advanced and more detailed analysis is completed. This includes normal cost escalations associated with long-term operations (e.g., inflation, rising costs for labour, parts etc.).

The funding for the Remediation Project of the Giant Mine site is provided by the Federal Contaminated Sites Action Plan (FCSAP). As a part of FCSAP, all financial requirements for the Giant Mine Remediation Project will need to be outlined and defined. This definition of costs will be an opportunity to address or clarify any variations in cost that might be required. In addition, all government projects, including the remediation of the Giant Mine site, require detailed budgeting and the approval of expenditures. These required processes are the appropriate mechanisms to address and approve any variations in costs.

The Governments of Canada and the Northwest Territories, in selecting the preferred remediation option for the site, have recognized and accepted that the Giant Mine Remediation Project includes long-term care, maintenance and monitoring. The DAR also states clearly that several elements of the project will be required to be addressed in perpetuity. Long-term care, maintenance and monitoring are essential components of the remediation approach at the Giant Mine site that will protect human and environmental health and safety and ensure the integrity of Canada's investment.

In INAC's view, the budgeting process and approval of expenditures, required for all government projects, are the appropriate mechanisms to address any possible variations in costs associated with the Giant Mine Remediation Project.

Response 4 Summary

The "ever-increasing water treatment costs" referenced in this question are a part of an unlikely and improbable worst case scenario related to a complete failure of the operations, monitoring and governance related to the Frozen Block Method.

The budget estimates in the DAR were established based on the best available information at the time and could be revised if required, based on changing conditions or new information.

In INAC's view, the budgeting process and approval of expenditures, required for all government projects, are the appropriate mechanisms to address any possible variations in costs associated with the Giant Mine Remediation Project under any scenario.

Response 4

This question specifically references the possibility of ever-increasing water treatment costs that would be associated with a malfunction or failure of the Frozen Block Method as outlined in the December 13, 2010 Response to MVEIRB DAR Deficiency #1 (page 4). The "ever-increasing water treatment costs" here are discussed under a worst case scenario that would involve a complete failure of the frozen blocks over the long term. The chain of events required for this scenario to occur would include:

- Ineffective thermosyphons that would go unnoticed or unmitigated for at least 20 years;





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- Unnoticed or ignored failure of the temperature monitoring devices;
- Lack of analysis or recognition of changes at the water treatment plant; and
- No response from the site operator and responsible authorities.

To reach this scenario, there would have to be a complete failure of operations and governance over many years. Given the length of time involved, it was considered reasonable to expect that any of the steps leading to this type of failure would be detected and corrective action would be taken. As a result, the likelihood of such an occurrence was judged to be very low.

Although very unlikely, there are mechanisms in place (i.e., requirements of all government projects), which would allow for variations in costs to be addressed. These processes described below would be utilized under all scenarios going forward, worst-case or otherwise.

The funding for the Remediation Project of the Giant Mine site is provided by the Federal Contaminated Sites Action Plan (FCSAP). As a part of FCSAP, all financial requirements for the Giant Mine Remediation Project will need to be outlined and defined. This definition of costs will be an opportunity to address or clarify any variations in cost that might be required. This would include normal cost escalations associated with long-term operations (e.g., inflation, rising costs for labour, parts etc.). In addition, all government projects, including the remediation of the Giant Mine site, require detailed budgeting and the approval of expenditures. These required processes are the appropriate mechanisms to address and approve any variations in costs.

The “precise budget and schedule” refers to Table 6.13.4 of the Developer’s Assessment Report (DAR) that presents a summary of estimated costs for the implementation phase of the Giant Mine Remediation Project, and Table 6.13.5 that presents a summary of estimated annual costs over the long-term. These estimates were established based on the best available information at the time. Going forward, these estimates could be revised if required, based on changing circumstances or new information. For example, as with any large engineering project the estimates will become more precise as plans are advanced and more detailed analysis is completed. Any changes would then be considered as a part of the budgeting and expenditures approval process described above.

The Governments of Canada and the Northwest Territories, in selecting the preferred remediation option for the site, have recognized and accepted that the Giant Mine Remediation Project includes long-term care, maintenance and monitoring. The DAR also states clearly that several elements of the project will be required to be addressed in perpetuity. Long-term care, maintenance and monitoring are essential components of the remediation approach at the Giant Mine site in order to protect human and environmental health and safety and to ensure the integrity of Canada’s investment.

In INAC’s view, the budgeting and approval of expenditures process, required for all government projects, are the appropriate mechanisms to address any possible variations in costs associated with the Giant Mine Remediation Project under any scenario.