

Review of the 2009 DDMI Interim Closure and Reclamation Plan

Name of Review Organization: Environmental Monitoring Advisory Board

Due Date: February 18, 2010:

Please provide a brief summary of the overall quality of the document. This will help us to put your comments into context.

See cover letter

If appropriate, please recommend whether the document should be approved unconditionally, approved with conditions, or sent back to the company for revision.

See cover letter

For specific comments on the content, please use the table below:

ICRP Page No.	Issue with Rationale/Explanation	Recommendation
	CSR Closure Commitments	
	<p>Commitments made by DDMI and requirements set by Responsible Authorities during the environmental assessment process and included in the Comprehensive Study Report (CSR) have not been acknowledged or taken into account in the draft ICRP.</p> <p>The CSR concluded that “with implementation of mitigation measures and follow-up requirements described in this comprehensive study report, the Diavik Diamonds Project will not result in significant adverse environmental effects.” The CSR is the basis for approval of the project by the Minister of Environment. Where a commitment has been made by DDMI or a requirement has been set by the Responsible Authorities these are binding on DDMI. If there is a valid reason why these commitments/requirements cannot be met the onus is on DDMI to provide a detailed rationale, supported by studies showing the technical, engineering, environmental and financial implications.</p>	<p>DDMI should set out the commitments it made during the Comprehensive Study Report (CSR) in relation to closure, as well as any RA requirements, and show how this draft ICRP meets them.</p> <p>A list of commitments/requirements that EMAB found in the CSR during a brief review is attached.</p>

	In signing the Environmental Agreement DDMI further formalized its obligation to “include the mitigation measures outlined in DDMI’s Commitments and in the conclusions of the Responsible Authorities documented in the CSR” in all of its Environmental Management Plans including its Reclamation and Abandonment Plan (EA 6.2). “Commitments” are defined in EA 3.1.	
	<p>The draft ICRP does not acknowledge or address DDMI’s commitment in the CSR to: <i>Restore site as near as possible to original condition</i> (CSR p. 106).</p> <p>As shown above DDMI is required to fulfill these CSR commitments and further committed to do so when it signed the Environmental Agreement.</p>	<p>DDMI should show, for each mine component, how the ICRP meets this commitment. The onus should be on DDMI to demonstrate/justify why each mine component cannot be restored to its original condition.</p> <p>The WLWB should consider revising global objective 4 and objective 12, to better reflect DDMI’s commitment.</p>
	<p>The draft ICRP does not acknowledge or address DDMI’s commitment in the CSR not to bury equipment in the open pits (CSR p. 110) nor does it acknowledge that the Responsible Authorities went beyond DDMI’s commitment and concluded that <i>the approved A&R Plan will not allow burial of buildings, machinery and equipment on the mine site</i> (CSR p. 111).</p> <p>The current ICRP makes a number of references to onsite disposal of some buildings, machinery and equipment.</p>	<p>The draft ICRP should be revised to reflect the direction in the CSR.</p> <p>The WLWB should consider revising objective 15, to better reflect the RA requirement.</p>
	<p>The draft ICRP does not acknowledge or address DDMI’s commitment in the CSR to take climate warming into account for frozen structures (CSR p. 168-9). DDMI has not addressed the effect of climate warming on closure planning other than to identify it as an uncertainty related to the waste rock pile and PKC (see also Knapp, p. 10, attached).</p>	<p>Critical elements of the ICRP require mine components to freeze and stay frozen, so this question must be addressed as a major component of the Reclamation Research Plan (RRP) using up-to-date data and modeling for current and predicted trends. The worst-case scenario, that the components thaw later, or do not freeze at all, should be presented so it can be assessed.</p>
p. 14	<p>DDMI has included atmospheric data up to 2005 in the ICRP. DDMI collects meteorological data all year and uses it to prepare an Annual Meteorological Report, so the section on Atmospheric Environment should be updated to include the latest</p>	<p>Update the meteorological data to 2009.</p>

	information. EMAB has not reviewed the AMR but notes that key statistics from it are referenced in each Environmental Agreement Annual Report. These data will be needed for modeling climate warming trends and it will be important to use the most current information.	
	Community Engagement	
8	<p>Lack of meaningful community engagement</p> <ul style="list-style-type: none"> • EMAB adopted a recommendation made by participants at our Closure workshop in January 2009 that: DDMI include consultations on the draft ICRP in each Affected Community prior to submission to the WLWB <ul style="list-style-type: none"> ○ DDMI responded in May that “We will be requesting an opportunity to meet with the Leadership of each of the Affected Communities in September 2009 to provide the community with information and solicit feedback regarding our approach and ideas around closure planning and ongoing involvement of the communities.” • The WLWB annotated outline for the ICRP that it directed DDMI to follow states that the section on community engagement: <i>Describes approach to building consensus among community leaders to integrate local community values into closure and reclamation planning, including any strategies for engaging community leaders and members into CRP development and implementation.</i> • In its December 14, 2009 letter to DDMI the WLWB said <i>the current ICRP does not describe the ongoing methods and approach to building consensus with communities, as required in Section 2.4 of our annotated outline</i> and directed DDMI to address this in a TK Research Plan. • On p. 8 DDMI states community engagement was done through EMAB and the DTC. This is incorrect and shows a misunderstanding of community engagement as well as DDMI’s responsibilities and the role of EMAB. • On p. 8 DDMI quotes the output from 	<p>DDMI should provide a description of the process to be used to meaningfully engage all Affected Communities on the draft ICRP, including provision of adequate information, opportunities for input, documentation of discussions and a schedule.</p> <p>Community engagement on the ICRP should be single-topic meetings chaired by an independent facilitator with adequate time provided for communities to develop a full understanding and provide meaningful responses and input.</p> <p>An initial round of engagements should take place within the next six months and the results be taken into account in a revised ICRP. The ICRP should show the input received from the engagement and how it has been addressed in the ICRP, or provide a rationale for not incorporating it.</p> <p>DDMI should provide documentation for each community engagement meeting on the current draft ICRP and any future community engagement including: number of participants, date, time, duration and meeting notes - topics discussed, questions asked, concerns raised and suggestions made.</p> <p>DDMI should also provide plans for future engagement as the ICRP becomes more detailed, or revisions are made.</p>

	<p>the closure criteria workshop as community engagement - one of the main messages from community participants at the workshop was that DDMI must go to each community and consult on the draft ICRP.</p> <ul style="list-style-type: none"> • It is EMAB’s understanding that the meetings between September and December 2009 that DDMI describes on p. 9 as “community engagement” consisted of a presentation on closure options DDMI was considering. We also understand that this short presentation was part of a larger presentation updating the community on many environmental aspects at the Diavik mine. DDMI has not provided any documentation of these meetings or the feedback following the presentations on the ICRP. It does not appear that enough information or time was provided to allow for meaningful community engagement as conceived by the WLWB or that any significant opportunity was provided for discussion (see attached email exchange between YKDFN and DDMI). • EMAB concludes that true meaningful community engagement on the ICRP has not occurred and observes that DDMI’s TKRP has not provided any concrete plans for it in the future. • In its TK research plan DDMI states that one of the remaining tasks is to develop a community meeting plan and implement it by 2011. It is not adequate to provide a plan to develop a plan two years from now. 	<p>The plan for community engagement should be a separate document from the plan for TK research. These are different processes with different goals and outcomes.</p> <p>There are many good references that may assist DDMI to improve its community engagement including:</p> <p><i>DIAND. 2009. Guidelines for designing and implementing aquatic effects monitoring programs for development projects in the Northwest Territories. V.1.</i></p> <ul style="list-style-type: none"> • <i>especially sections 3.2 & 7.</i> <p><i>Mining Association of Canada. 2003. A field guide for building shared understanding.</i></p> <p><i>A quick web search found many Canadian publications on this topic, including:</i></p> <ul style="list-style-type: none"> • Public consultation guide: changing the relationship between government and Canadians. 1997 http://dsp-psd.pwgsc.gc.ca/Collection/S_C94-62-19-1997E.pdf • A Learning Guide to Public Involvement in Canada http://www.chsrf.ca/kte_docs/LearningGuidetoPublicInvolvementinCanada.pdf • CEEA Public Participation Guide http://www.ceaa.gc.ca/default.asp?lang=En&n=46425CAF-1&offset=30&toc=show
	<p>TK Research</p>	
	<p>TK Research</p> <ul style="list-style-type: none"> • EMAB has reviewed the comments from SENES Consultants and finds they reflect the same experience EMAB has had with DDMI in relation to TK. 	<p>The TKRP does not provide adequate detail and should be revised. It should include a detailed timeline/workplan for the next two years.</p>

	<ul style="list-style-type: none"> • The community engagement process should include a dedicated component to discuss the application of TK to the closure planning process and appropriate ways to collect it. • The WLWB directed DDMI to <i>ensure that available traditional knowledge is incorporated into the plan, including TK related to other sites</i> (letter of May 7/09). In spite of this the draft ICRP did not include any review of the available TK literature or provide any documentation of meaningful discussions with Affected Communities on use of TK, topics with TK applications, methodologies etc. Following submission of the draft ICRP the WLWB gave direction to DDMI in December to prepare a TK research plan. • The TK research plan (TKRP) includes a literature review for other sites to be completed by 2010, along with a review of regulatory requirements and past projects, followed by development of a plan to develop a community meeting plan and schedule <u>with communities</u> by 2011. The description of how the plan will be developed, how the communities will be involved and, importantly, a schedule, are not provided. • DDMI has had more than a year to engage with communities on the ICRP and begin discussions on collection and use of TK. The current draft includes only general references to collection and possible application of TK and no information on community input to the ICRP. 	<p>DDMI should engage TK expertise to assist it with development of the TK research plan, and with collection of TK for the draft ICRP. It is not enough to assign a staff person to this work unless they have the appropriate training and experience and adequate resources. TK research is a professional field and requires expertise to design and carry out sound research.</p> <ul style="list-style-type: none"> • DDMI, with the assistance of appropriate expertise, should engage communities in a meaningful way on the topics that TK could be applied to (see Simmons, p. 2, attached) • DDMI, with the assistance of appropriate expertise, should develop a framework for TK research on the ICRP (see Simmons, p. 3, attached) <p>There are a number of examples of accepted, rigorous TK research methods that would assist DDMI in developing its TK research program for the ICRP. The soon-to-be-released draft <i>Toolbox for Including Traditional Knowledge in Aquatic Effects Monitoring Programs (AEMPs) in the NWT</i> and appendices that will accompany <i>DIAND. 2009. Guidelines for designing and implementing aquatic effects monitoring programs for development projects in the Northwest Territories</i> includes many reference documents and examples.</p>
	Closure Objectives	
	<p>Lack of relationship/linkage between closure objectives and all permanent closure options - ICRP does not identify how the proposed options meet the objectives.</p> <p>The objectives-based approach to reclamation planning is based on the ICRP and the reclamation activities meeting the objectives set. The objectives should drive</p>	<p>Closure “requirements in the body of the ICRP should state explicitly how they meet the associated closure objectives, and how the closure criteria will measure the success of the option selected. As a reference on how this process was achieved during closure of the Colomac mine please see the</p>

	<p>the development of options and the selection of the preferred option so the ICRP should include some identification of the linkage. Similarly the objectives and option selected should drive the development of the closure criteria. In the current plan the objectives and criteria are not listed in the main body of the ICRP, but provided as a separate appendix.</p> <p>The WLWB was clear in its rejection of the 2006 draft ICRP (Aug 7/08) that among other issues, the draft plan did not meet the requirement of WL Part L(1)(b) - “a description of the detailed plans for reclamation, measures required, or actions to be taken to achieve the objectives stated in Part L, Item 1 (a) for each mine component...”</p> <p>DDMI had produced closure factors and closure strategies but they lacked a focused objective which may attribute to the lack of a clear link between what action will be taken to fulfill what objective.</p> <p>The WLWB was also clear on its expectations for the 2009 draft ICRP in its letter of May 7, 2009. It defined closure options as: <i>Closure options are the actions that are proposed to successfully achieve the closure objective. Clarification: A set of options (or alternatives) should be evaluated for each mine component objective.</i> In the ICRP template it attached the WLWB stated: <i>Establishing closure objectives is perhaps the most important part of developing a successful closure and reclamation plan as <u>it guides the entire planning process.</u></i></p>	<p>attached document <i>Closure of the Colomac Mine - a first nations - mine owner collaboration.</i></p>
<p>Appendix V – Tables v-1 to v-5</p>	<p>Qualifiers on some closure objectives appear to be contributing to confusion as to the intent of the objective. In particular, terms such as “where appropriate” and “guided by” leave a lot of room for interpretation. These qualifiers were added to the objectives after the closure objectives workshop was completed and draft objectives had been circulated and commented on. EMAB has not formally commented on the revised objectives.</p>	<p>Wek’èezhìi Land and Water Board should consider reviewing objectives 3, 4, 8, 11, 12, 14, 16, 27, 28, 31 and 42 to determine whether more specific language would be helpful.</p>

	<p>EMAB takes the position that in general the onus should be on DDMI to provide a defensible rationale for not fulfilling an objective rather than using qualifiers that blur the intent of the objective (see also our comments under bullet 1 of CSR requirements/commitments above).</p> <p>EMAB appreciates the WLWB's statement that <i>changes to the closure objectives will be made if warranted, with the involvement of all parties.</i></p> <p>If there is concern about whether certain objectives can be met there are some possible options for development of satisfactory wording:</p> <ul style="list-style-type: none"> • Change back to the original WLWB proposed objective and add a qualifier that requires DDMI to demonstrate to the Board's satisfaction the degree to which the objective cannot be met. <ul style="list-style-type: none"> ○ This is the approach the WLWB directed DDMI to use at its closure options workshop for the discussion on the pros and cons of removing vs. decommissioning roads. • Convene a follow-up closure objective workshop focused on those objectives that DDMI commented might not be achievable 	
p. 5 & 71	<p>Global and mine component-specific objectives for wildlife</p> <p>The final landscape at the Diavik minesite will be significantly different than pre-development. As noted by DDMI, wildlife movement, particularly for caribou, relates to the entire post-closure landscape as well as to individual mine components. In addition attraction of wildlife to the site, and predation opportunities, are important concerns. These will be affected by revegetation and by choices regarding the final landscape, so need to be addressed at the whole-site level as well as for individual components.</p> <p>Appendix VIII-2 addresses wildlife movement and safety in very general terms but provides little specific information or proposals for the research.</p>	<p>Appendix VIII-2 needs to be expanded and more specific information provided:</p> <ul style="list-style-type: none"> • Literature reviews on wildlife movement and wildlife safety, including in reclaimed landscapes. This would include both scientific and TK information. • A process for engaging communities in reviewing the options for final landscape design and proposing approaches • A TK research component
	Closure Criteria	

p. 73 for example	<p>Vague closure criteria In the ICRP, DDMI states that it recognizes that the closure criteria are not as specific as they should be and says it will look for opportunities to improve them in the future.</p>	DDMI should provide a workplan, including a timeline, for making the closure criteria sufficiently specific, including a substantial component of community engagement.
Appendix V Criteria for objectives 9, 23, 35, 58	<p>No rationale is provided for use of Table v-7, or for choice between Table v-7 and risk-based criteria.</p> <p>Discussion at the closure options workshop reached consensus that any risk-based assessment would begin with DDMI proposing a process and timeline for review by all interested parties (this was discussed in the context of safe dust levels but was expanded to apply to any RBA).</p>	<p>DDMI should provide a more detailed rationale for the use of Table v-7 and explain what is meant by “or risk-based criteria met”</p> <p>DDMI should provide for a draft process and timeline for the development of wildlife risk-based criteria for water quality for review.</p>
Appendix V Criteria for objectives 10, 24, 36, 59, 65	No rationale is provided for use of Table v-6	DDMI should provide a more detailed rationale for the use of Table v-6
Appendix V Criteria for objectives 12 & 14	<p>Objective 12 and Objective 14 have the same criteria proposed for them, most of which do not meet the intention of the objectives, which is to return the site to as near as possible to pre-development conditions.</p> <ul style="list-style-type: none"> The intent of these objectives is to restore the original landscape - topography, including drainage, and vegetation, as well as to remove any added source of contamination, to the degree possible. The criterion regarding the size of the disturbed area should be better supported/referenced. None of the criteria address returning the mine infrastructure areas to their original topography or vegetation. biodiversity should not be compared to the RSA, which is about 14,000 sq. km., but to the minesite. The entire minesite is less than 0.1% the size of the RSA. The intent is to return to pre-development conditions, including original vegetation, at the site. <p>X The revegetation procedures are not developed. Appendix VIII-10 does not provide a clear link between the current research program and the development</p>	<p>Re-vegetation procedures need to be developed and discussed. Scheduling and follow-up to assessment of confidence in Appendix VIII-10 should be expanded with more detail.</p> <p>A proposed revegetation plan showing proposed locations/species is needed. This should be added to Appendix VIII-10 or as another component of the RRP.</p> <p>Mine infrastructure areas re-graded to pre-development topography to satisfaction of WLWB</p> <p>Revegetation to represent pre-development conditions</p> <p>The intent was that no additional land be disturbed post-closure so there is a need to better justify the 13 sq. km. Figure.</p> <p>DDMI to provide information on removing vs. decommissioning roads as directed by WLWB (May</p>

	<p>of a revegetation procedure. The outcome of Appendix VIII-10 is the information to assess confidence in developing a revegetation procedure based on the information collected and identification of further data required. It doesn't describe how a revegetation procedure will be developed.</p> <p>X There is no revegetation plan showing areas that will be vegetated or discussion of how such a plan will be developed. We note that figure 9-4 seems to address a possible final re-vegetated landscape but we were unable to find references to it in the text, so are not clear as to its purpose.</p> <ul style="list-style-type: none"> • A major point of discussion during the development of the objectives was regarding removal of roads and the WLWB gave direction to DDMI to <i>provide information regarding environmental, engineering, logistical, and other aspects of removing roads on-site vs. decommissioning roads (scarification, etc.) at the upcoming Closure Options and Criteria workshop</i>. This information was not provided at the workshop and is not provided in the ICRP. <p>EMAB notes that DDMI has re-defined <i>roads</i> as part of the <i>wasterock and till</i> mine component (formerly roads were part of <i>mine infrastructure</i>) without providing any supported justification. Regardless, objectives 12 & 14 and any others in the mine infrastructure component continue to apply to roads, and the requirement for DDMI to provide the above information remains.</p>	<p>7/09) as a basis for options and development of criteria</p> <p>Roads should be classified as part of the mine infrastructure component, or if roads are sufficiently different from infrastructure it may be necessary to identify them as a separate component with specific objectives.</p>
<p>Appendix V Criteria for objective 13</p>	<p>The proposed criterion is unacceptable as presented. Having a satisfactory inspection by a professional engineer may be a requirement or an action, but is not a criterion in itself. The WLWB defines closure criteria as: <i>Standards that measure whether closure objectives have been met</i>. The criteria must link directly to the options proposed.</p> <p>The proposed criterion may be an indication that the objective is not specific enough and be reviewed.</p> <p>During the closure options workshop it was suggested that DDMI do some research on</p>	<p>DDMI should provide criteria that relate more directly to its closure options: what are the key things that DDMI expects a professional engineer, qualified in assessing landscape in relation to safety of people and wildlife, would be looking for to be satisfied that the landscape is safe for people and wildlife.</p> <p>WLWB consider reviewing this objective to determine whether it provides sufficiently specific direction to DDMI.</p>

	<p>this topic in relation to wildlife and it was noted that there was existing research done as part of the re-alignment of the Yellowknife-Behchoko road.</p>	<p>Add landscape safety for wildlife to Appendix VIII-2 and use results to develop wildlife safety criteria.</p>
<p>Appendix V Criteria for objective 15</p>	<p>See discussion above on RA requirement that there be no onsite burial of buildings, machinery or equipment.</p> <p>The use of CCME Guidelines (industrial) as a criterion for this objective, or others, is not justified. These guidelines were developed for pre-existing contaminated sites that were developed using practices that would largely be unacceptable now. In its <i>Guidance Manual for Developing Site-Specific Soil Quality Remediation Objectives for Contaminated Sites in Canada. 1996.</i>, CCME states: <i>“It is the philosophy of the CCME to encourage remediation to the lowest level practicable, considering the intended land use and other factors, such as technological limitations. Environmental quality guidelines are not intended to establish maximum levels of contamination acceptable at contaminated sites. Where the quality of site conditions is considered superior to the Canadian environmental quality guidelines, degradation of existing site conditions should be avoided.”</i></p> <p>Further, the guidelines identify four land use categories: agricultural, parkland, commercial and industrial. The industrial standard, which DDML proposes, is the lowest (easiest to meet). The two relevant CCME land use categories are defined as follows:</p> <p><i>Agricultural land use: lands used for growing crops or producing livestock, and that are agricultural in nature. These also include lands that provide habitat for resident and transitory wildlife and native flora (e.g., transition zones).</i></p> <p><i>Industrial land use: lands where the primary activity involves the production, manufacture, construction, or assembly of goods.</i></p> <p>Clearly of the two defined uses <i>agricultural</i> applies best to Diavik’s situation, particularly since ingestion of vegetation is</p>	<p>See recommendation above on RA requirement that there be no onsite burial of buildings, machinery or equipment</p> <p>If DDML wishes to propose using the CCME Guidelines as a standard for site remediation, it should provide thorough justification supported by research.</p> <p>If research supports use of CCME guidelines the site should be remediated to the agricultural standard, the one most applicable to the Diavik mine setting.</p>

	a concern.	
Appendix V Criteria for objective 16	<p>Criteria do not fully address the objective ie. to protect water quality, limit erosion and enable safe use.</p> <p>This objective also relates to removal of parts of roads so should be addressed as part of the information required to assess removal vs. decommissioning of roads discussed under objectives 12 & 14 above.</p>	Criteria should be expanded to address the entire intent of the objective.
Appendix V Criteria for objectives 17, 25, 39	<p>It is not clear what this criterion means or how the closure options will be designed to achieve it.</p> <p>Research on safe passage for caribou, and monitoring of safe passage for caribou appears to be included in Appendix VIII-2 however this is not referenced in appendix V. The research question as currently presented in VIII-2 is too narrow and there is no schedule or workplan. The literature review is very narrow and does not include any TK; the interpretation of results should be reviewed by an expert.</p> <p>These objectives also relate to some of the comments on roads as discussed above.</p>	<p>DDMI should elaborate on this criterion so it can be assessed.</p> <p>Appendix VIII-2 needs to be expanded to address other wildlife using the area, with broader research objectives that address the research questions, and explicitly include collection of TK and local knowledge. A detailed schedule and workplan are required. A thorough literature review, including TK, should be the first step. The results of this literature review would be the basis for development of further options and criteria for these objectives; interpretation of the results should be reviewed by an expert.</p>
Appendix V Criteria for objectives 18, 32	<p>This criterion is not adequate - the issue is whether there are increased opportunities for predation at the site compared to pre-development, not whether this increases the predation rate on the entire herd.</p> <p>These objectives also relate to some of the comments on roads as discussed above.</p> <p>It is likely that this objective also applies to the PKC component.</p>	Whether and how different designs could increase opportunities for predation should be added to the RRP, either as an additional item or an expansion of Appendix VIII-2 (see comments above)
Appendix V Criteria for objectives 19, 29, 40, 50, 68	<p>This objective is intended to apply to closure as well as post-closure</p> <p>It was agreed at the closure options workshop that the Canadian Ambient Air Quality Objectives are not appropriate as they are essentially aesthetic, and that DDMI would provide a proposed process and timeline for a risk-based analysis in the ICRP. Presumably the criterion would be meeting the RBA levels. This appears to be addressed in Appendix VIII-12.</p>	DDMI should submit a proposed process and timeline for a risk-based analysis for safe dust levels by 2010 Q2 as proposed in Appendix VIII-12.
Appendix	The proposed criterion does not directly	A component should be added to

V Criteria for objectives 20, 30, 41, 51, 69	address the objective.	the RRP to develop an appropriate monitoring procedure to assess palatability of vegetation to wildlife feeding on it as affected by dust on the vegetation.
Appendix V Criteria for objectives 21 & 33	The proposed criterion does not directly address the objective. See comments/recommendation on same criterion under objectives 12 & 14 above	
Appendix V Criteria for objective 22	See comments/recommendations on CCME Guidelines as discussed under objective 15.	
Appendix V Criteria for objective 26	See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion. The wildlife safety component relates to the discussion on Appendix VIII-2 under objective 17 above.	
Appendix V Criteria for objective 27	The proposed criteria only address the objective to a very limited degree. Opportunities for community engagement and TK input on shaping and appearance of the wasterock and till piles, including revegetation are needed, as well as the relationship to wildlife movement and safety discussed above.	Appendix VIII-2 should be expanded to address the objective, or a separate research component should be developed. The outcome of this research should then be used to develop more specific criteria.
Appendix V Criteria for objective 28	See comments/recommendations regarding revegetation procedures and a revegetation plan under objectives 12 & 14 above. EMAB disagrees with the biodiversity criterion - see comments/recommendation on objectives 12 & 14 above. Criteria regarding revegetation procedures imply that only the till pile will be re-vegetated. Further discussion and review is required, including community engagement. In addition the proposed revegetation procedures and revegetation plan are required.	
Appendix V Criteria for	Criteria do not fully address the objective ie. to protect water quality, limit erosion and enable safe use.	Criteria should be expanded to address the entire intent of the objective.

objective 31	Criteria do not address channelling of runoff from waste rock and till piles.	Develop criteria regarding channelling of runoff from waste rock and till piles.
Appendix V Criteria for objective 34	See comments/recommendations on CCME Guidelines as discussed under objective 15.	
Appendix V Criteria for objective 37	<p>This objective seems too general; more in the nature of a goal. DDMI appears to have interpreted it as being related to contamination, so partially duplicating objective 35.</p> <p>In the WLWB revision of objectives an element was to ensure no uptake of contaminants in PKC by vegetation. It is not clear that the proposed criteria relate to this.</p> <p>See also comments/recommendations on CCME Guidelines as discussed under objective 15.</p>	<p>WLWB consider rewording this objective to ensure intent is clear and not duplicative of other objectives.</p> <p>Uptake of PKC contamination by vegetation should be added to the RRP.</p>
Appendix V Criteria for objective 38	<p>The proposed criterion is inadequate. The expected freezing action of the tailings and the continued frozen state of the dams are critical to fulfilling this objective. A number of uncertainties have been identified that need to be addressed: pore water monitoring, consolidation of tailings, seepage rates and quality, development of ice lenses, freezing and effect of climate change on frozen structures.</p> <p>See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion.</p>	Expand Appendix VIII-1 to ensure uncertainties identified are thoroughly studied. In particular the effect of climate warming on frozen structures needs to be added to the RRP. Results of the research should be used to develop criteria.
Appendix V Criteria for objective 42	Criteria do not fully address the objective ie. to protect water quality, limit erosion and enable safe use.	Criteria should be expanded to address the entire intent of the objective.
Appendix V Criteria for objective 43	<p>It is not clear how the filter drain prevents PK from entering the environment.</p> <p>Revegetation is not mentioned in any of the criteria for the PKC component.</p> <p>Stability of containment structures is a critical requirement to meet this objective, but is not mentioned, particularly in</p>	<p>See recommendations regarding revegetation procedures and a revegetation plan.</p> <p>The RRP must include a component to investigate the effects of climate warming on the closure designs.</p>

	<p>relation to effect of climate warming.</p> <p>See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion.</p>	
Appendix V Criteria for objective 44	<p>The effect of meromixis is not addressed in the criterion. Meromictic conditions would not be sustainable for aquatic life. Is there any aquatic life that may be affected by the meromixis?</p>	<p>Options for prevention of meromixis should be added to the RRP. Conditions under which a meromictic layer might mix with the upper layer should be included.</p> <p>DDMI should address whether any aquatic life in Lac de Gras could be affected by meromixis in the pits.</p>
Appendix V Criteria for objective 45	<p>Objective 44 could be seen to qualify Objective 45 by setting criteria for how similar water quality in the flooded pits must be to Lac de Gras. The criteria should clarify that Table V-6 is a minimum standard, not a pollute-up-to limit.</p> <p>The criteria do not directly address the objective.</p>	<p>Results of Appendix VIII-5 should be used to set water quality criteria.</p> <p>WLWB should consider combining objective 44 & 45 or clarifying the relationship between the two.</p>
Appendix V Criteria for objective 49	<p>See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion.</p> <p>This objective is similar to objectives 13 and 17 and research is required.</p>	<p>Add safety of pit area, dike area and islands for wildlife to Appendix VIII-2 research and use results to set criteria.</p>
Appendix V Criteria for objective 52	<p>See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion.</p>	
Appendix V Criteria for objective 53	<p>Need to define natural fluctuations to include both changes in levels and period over which the changes occur ie. how quickly does the lake level change.</p>	
Appendix V Criteria for objective 54	<p>Need to define natural fluctuations to include both changes in levels and period over which the changes occur ie. how quickly does the lake level change.</p>	
Appendix V Criteria	<p>The criterion does not directly address the intent of the objective ie. to plan and prepare to ensure there are no wildlife mortalities during the filling of the pits</p>	<p>The RRP should include research for development of a plan to keep wildlife safe during filling of the pit.</p>

for objective 55	including: directing wildlife away from pits during filling, removing wildlife from pits prior to filling and preparations to rescue wildlife caught in pit during filling.	
Appendix V Criteria for objective 56	See comments/recommendations on CCME Guidelines as discussed under objective 15. There is no information on the predicted quality of the minewater or how it will contribute to pit water quality and Lac de Gras water quality.	The RRP should include a component to develop predictions of underground minewater and how it will affect pit water quality. This should be added to Appendix VIII-5.
Appendix V Criteria for objective 57	This may be a chicken and egg situation but the determination of whether or not reconnection of the NI is possible is based on NI sediment quality so the criteria should include water and sediment quality that is safe for aquatic life, wildlife and people. In addition to understanding the sediment quality it is also necessary to understand the physical characteristics of the water treatment sludges in the NI (volume, density, depth etc.) and alternative disposal options for the sludges. As presented at the objectives workshop there are three general approaches to the North Inlet. In order of preference: <ul style="list-style-type: none"> • fully reconnect NI to LdG so water and fish can move freely • if the NI cannot be made safe for aquatic life due to sediment quality then reconnect NI to LdG so that water can move freely but fish are blocked • if water quality in the NI is not sufficient to allow free movement of water then keep the NI separate from LdG. It appears that objectives 62 to 66 cover the first approach and objectives 58 to 61 cover the second and third. At least two of the criteria for meeting the second approach are not the same as for the third because water and sediment quality in the third would be different, and because the water balance in the NI would be independent of LdG.	Additional criteria should be based on results of Appendix VIII-9. Physical characterization of the NI sludges should be added to the research in Appendix VIII-9. Alternative disposal options for the sludges should also be added to the research in Appendix VIII-9.
Appendix V Criteria for objective 59	See comments above on Table V-6. This criterion does not address the third possibility, that the NI has to be kept separate from LdG. In this situation the closure options would need to address the possibility that water levels in the NI would	Criteria should be developed to address the possibility that the NI has to be kept separate from LdG. A research component to address this scenario is also needed.

	need to be managed to prevent any possibility of overtopping the dam.	
Appendix V Criteria for objective 60	See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion. This criterion does not address the third possibility, that the NI has to be kept separate from LdG. In this situation the closure options would need to address the possibility that fluctuating water levels in the NI could cause adverse effects on wildlife and people.	Criteria should be developed to address the possibility that the NI has to be kept separate from LdG. A research component to address this scenario is also needed.
Appendix V Criteria for objective 61	See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion. Specific criteria for the rock fill that will prevent fish from entering the NI are not provided.	DDMI should provide specific criteria for the rock fill that will prevent fish from entering the NI. If these are not known, then this should be added as a research component.
Appendix V Criteria for objective 62	See also comments on objective 57 above. Either criteria for objective 57 or criteria for objective 62 must address required water and sediment quality to allow reconnection.	Criteria must be provided to address objective 62.
Appendix V Criteria for objective 63	Criterion does not address objective.	Criteria must be provided to address objective 63.
Appendix V Criteria for objective 64	Not clear that this criterion addresses the objective.	DDMI should clarify the meaning of this criterion so it can be assessed.
Appendix V Criteria for objective 65	Table v-6 does not address sediment quality – relates to objectives 57 & 62 Also see above comments on criteria for objectives 10, 24, 36, 65	DDMI to provide criteria for sediment quality for objectives 57 & 62.
Appendix V Criteria for objective 66	See comments for criteria for objective 13 regarding a satisfactory inspection being a criterion.	
Appendix V	See comments for criteria for objective 13 regarding a satisfactory inspection being a	

Criteria for objective 67	critterion.	
	Underground workings	
p. 73-83	Information on the expected level the mine will flood to and whether there would be a discharge to Lac de Gras has not been provided. This would include expected volumes and predicted water quality. How would a discharge to Lac de Gras be managed? Is there a potential for contamination of ground waters? (see Knapp, p. 6, attached)	DDMI should provide the missing information.
	Open Pit	
p. 79	DDMI has proposed meromictic conditions in the flooded pits as its preferred option. This is not a preferred condition and a meromictic layer does not fulfil the objective of water quality that is sustainable for aquatic life.(see Knapp, p. 6, attached)	DDMI should investigate options to avoid meromictic conditions in the flooded pits. It should also investigate conditions under which a meromictic layer could mix with waters above, such as weather effects (temperature, wind etc) or the effect of a large piece of the pit wall breaking off.
	Wasterock piles	
p. 93-96	<p>DDMI's basis for major changes to its plans for grading and covering the wasterock piles need to be better supported. The proposed new plan to leave steeper sides and not cover with Type 3 rock with till, and to not cover Type 2 rock is being implemented already and will be complete by 2012, precluding other options (see Knapp, p.4, 5, 7-8 attached).</p> <p>DDMI has provided an inventory of cover materials but needs to provide minimum and maximum cover requirements. It also needs to take into account other potential demands for the various cover materials, such as Type 1 rock being used in the paste backfill for the underground.</p> <p>This situation presents a significant concern if it turns out that DDMI's assumptions are incorrect.</p>	<p>DDMI should follow the precautionary principle and not undertake decisions and activities on the wasterock piles now that preclude future actions that may be necessary in order to meet closure objectives.</p> <p>DDMI should develop a plan for managing wasterock that allows for the contingency of preventing contaminated drainage from Type 2 and 3 wasterock, if it develops.</p> <p>DDMI should provide a minimum and maximum requirement for the various cover materials (including revegetation). It's cover material inventory should also take into account competing demands such as paste backfill.</p>
	North Inlet sludges	
Appendix VIII-9	DDMI does not provide data on the physical characteristics of the North Inlet treatment plant sludges in the NI, or options for alternate disposal. The amount of sludge and its location in the NI will have a major	Expand Appendix VIII-9 to include physical characteristics of the sludges in the NI and options for alternate disposal such as an onland sludge pond, dewatering

	effect on the options for closure of the NI (see Knapp, p. 5, 10, 11)	and disposal and dewatering with use as a cover material.
	Revegetation	
	DDMI does not present any plans for revegetation of the PKC, wasterock and till piles, roads or infrastructure. The objectives or returning the site to as close as possible to pre-development conditions and matching aesthetics of the surrounding area require revegetation, and it is considered best practice to revegetate tailings areas (see Knapp, p. 4, 7, 9, 10). Discussions on revegetation at the objectives workshop and options workshop were inconclusive and it was noted that community engagement is needed on this issue and that TK might be applied to it.	DDMI should provide a proposed revegetation plan for review and include this as part of its community engagement on the ICRP.
	Reclamation Research Plan	
Appendix VIII	A number of proposed additions and clarifications to the RRP have been proposed in EMAB's comments. A number of the plans lack sufficient detail to assess the proposed research approach, workplan, schedule or anticipated results/outcome.	Reclamation research plan should be revised to add additional components and provide necessary detail on methods, workplans and schedules.