

October 26, 2017

Angela Love
Regulatory Officer
Mackenzie Valley Land and Water Board
7th Floor, 4922 48th St.
PO Box 2130, Yellowknife, NT Canada | X1A 2P6

Dear Ms. Love:

Re: Submission of Criteria for the Gahcho Kué Mine Interim Closure and Reclamation Plan V.3 (MV2005L2-0015 and MV2005C032)

The Mackenzie Valley Land and Water Board (MVLWB) issued two letters to De Beers Canada Inc. (De Beers) on September 14, 2017, both concerning key aspects of the Interim Closure and Reclamation Plan (ICRP). The first letter granted approval of the Reclamation Research Plan and Options as submitted. The second letter directed De Beers to submit details on proposed closure criteria to reflect reviewer comments and responses.

De Beers is pleased to provide the MVLWB with further details supporting the proposed criteria as requested. In some cases we have added to, or revised, the proposed criteria in order to better address reviewer comments and increase the specificity of the proposed criteria. The revised criteria have been included in an updated Table 20 of the ICRP. Updated text is in red for clarity. Please find below for Board review and approval:

- Further details and rationale regarding the proposed criteria as per the comments issued by the MVLWB on September 14th (Table 1);
- Table 20 of the ICRP, containing the updated criteria, as well as the approved objectives, reclamation activities, monitoring, and research.

This submission addresses all comments received to date concerning the criteria. We believe it provides the additional clarity and detail that reviewers had requested and represents the most appropriate criteria for the mine at this time. If you have any comments or questions about this submission, please contact me at sarah.mclean@debeersgroup.com or 867-688-9227 at any time.

Respectfully,



Regulatory Specialist

DE BEERS CANADA

Table 1 Further Details and Rationale regarding the proposed criteria

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
Site-Wide Objectives & Criteria			
<p>SW1 Air quality levels safe for people, vegetation, aquatic life and wildlife.</p>	<p><i>Closure air quality criteria will be developed using territorial /federal guidelines or site-specific risk-based criteria.</i></p> <p><i>*Measurable criteria need to be established*</i></p>	<p>More information on site-specific risk-based assessment including how and when it will inform criteria and when reviewers will have an opportunity to provide comments and feedback is required.</p> <p>Stronger Rationale for the development of site-specific criteria is required if higher than territorial/federal guidelines given the development is in a formerly pristine environment.</p>	<p>As noted in De Beers Nov 25, 2016 response regarding ICRP v3, air quality at closure will achieve the most recent NWT and Canadian Ambient Air Quality Standards for total suspended particulate (TSP), fine Particulate Matter (PM2.5), and Nitrogen Dioxide (NO2). As of September 2017, the air quality criteria from these standards are as follows.</p> <ul style="list-style-type: none"> - Annual NO2 - 60 ug/m3 - 24 hour TSP - 120 ug/m3 - Annual TSP - 60 ug/m3 - 24 hour PM2.5 - 28 ug/m3 - Annual PM2.5 - 10 ug/m3 <p>It is anticipated that the final numeric air quality closure criteria will be presented in the Final Closure Plan, consistent with the approved criteria from the ICRP, but adhering to the most recent NWT and Canadian Ambient Air Quality Standards. Reviewers will have an opportunity to provide comments and feedback at that time.</p> <p>Inhalation of soil particulate is a direct soil exposure pathway that relates to air quality. This exposure pathway is considered in the derivation of human health soil</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			<p>quality guidelines, thus addressed in Objective I1.</p> <p>De Beers maintains the option to develop site-specific criteria because there may be site-specific factors that differ from what was assumed in the development of the generic guideline values.</p> <p>Site-specific criteria would offer <i>at least</i> equivalent level of protection to ecological receptors and to human health as are provided in the generic guideline. The use of site-specific criteria, instead of generic criteria, is standard practice and recognized in relevant territorial/federal guidelines, such as:</p> <ul style="list-style-type: none"> - GWNT (2003). Environmental Guidelines for Contaminated Site Remediation. - CCME (1996). Guidance Manual for Developing Site-Specific Soil Quality Remediation Objectives for Contaminated Sites in Canada. <p>Use of this approach ensures that the criteria are achievable and relevant to the environment in which we operate.</p>
SW2 Drainage pathways for surface runoff	No <i>significant</i> deformation and degradation is indicated at drainage	Please include a general definition of 'significant' including if and how that definition will	As noted in De Beers Nov 25, 2016 response regarding ICRP v3, 'significant' would be based on the professional engineer's judgement with regards to the performance of the drainage pathway to achieve its

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
are physically stable.	pathways by visual monitoring as part of site geotechnical inspections completed by a professional engineer. <i>Natural drainage has been re-established where feasible and as intended as identified as part of site geotechnical inspections completed by a professional engineer.</i>	need to be modified for each mine component and anticipated criteria. How will significant be measured? A criterion should be added to measure achievement of natural drainage reflective of pre-development conditions.	design function as visually observed during a geotechnical inspection. Drainage that is to be re-established will be documented in a final mine site drainage plan. Criterion for achievement of natural drainage will be conformance of the final mine site drainage plan to that constructed, as determined by the engineer of record, and reported within as-built documentation. This has been added to the proposed criteria as recommended. Criterion for physical stability is satisfaction of a qualified professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions. Satisfaction by a qualified professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two years. The method of measurement is visual inspection completed during the geotechnical inspection. This criterion would be applicable for all mine components.
SW3 Surface runoff	Closure water quality that meets	More information on site-specific risk-based	Surface runoff and seepage water that is within the catchment basin of Kennady Lake are addressed

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.</p>	<p>territorial/federal guidelines and/or site-specific risk-based criteria. <i>*Measurable criteria need to be established*</i></p>	<p>assessment including how and when it will inform criteria and when reviewers will have an opportunity to provide comments and feedback is required. More information on how the Post-Closure Seepage Quality and Quantity Research will help establish measurable criteria in a timely fashion is required – especially considering that final construction of waste rock piles is scheduled to occur prior to (2020 for the south pile) or coincide with the establishment of criteria through reclamation research (2024 for the west pile and the research). Criteria should be developed and provided for review prior to the</p>	<p>within Objective KL1. The Post-Closure Seepage Quality and Quantity Research pertains to criteria established for Objective KL1. The seepage and runoff from the mine rock and PK piles are within the catchment basin of Kennady Lake. Thus, setting water quality criteria for locations outside of this catchment basin to be completed prior to completion of the mine rock pile construction is considered inappropriate since there is no drainage connection to the mine rock piles.</p> <p>Water quality criteria will set to achieve CCME protection of aquatic life guideline values and therefore not expected to have adverse toxic effects to aquatic plants and animals. Where CCME guidelines are not available for a parameter, guidelines from another jurisdiction will be sought. Surface water quality may be a consideration in the evaluation of aquatic and wildlife effects.</p> <p>De Beers maintains the option to develop site-specific criteria. The criteria would be based on site-specific factors which may differ from what was assumed in the development of the generic guideline values. Site-specific criteria would offer at least equivalent level of protection to</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		<p>completion of mine rock pile construction. In addition to the PK Facilities and Mine Rock Piles, where else will surface water monitoring be carried out? This should be clearly identified. How will aquatic and wildlife effects monitoring inform the results of surface water quality – how is this measured? Stronger rationale for the development of site-specific criteria is required if higher than territorial/federal guidelines given the development is in a formerly pristine environment.</p>	<p>aquatic life. The use of site-specific criteria, instead of generic criteria, is standard practice and recognized relevant federal guideline, such as:</p> <ul style="list-style-type: none"> - CCME (2003). Guidance on the Site-Specific Application of Water Quality Guidelines in Canada: Procedures for Deriving Numerical Water Quality Objectives. - CCME (2007). A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life 2007. <p>Use of this approach ensures that the criteria are achievable and relevant to the environment in which we operate.</p> <p>Surface water monitoring at closure will be completed according to the Water Licence and documented within applicable plans, such as the Closure Water Management Plan and Aquatic Effects Monitoring Program.</p>

DE BEERS CANADA

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>SW4 Mine areas are physically stable for use by people and wildlife.</p>	<p>No significant deformation and degradation is indicated at drainage pathways, Mine Rock Piles, PK areas, and/or any other remaining engineered structures confirmed by visual monitoring as part of site geotechnical inspections completed by a professional engineer.</p>	<p>Please include a general definition of 'significant' including if and how that definition will need to be modified for each mine component and anticipated criteria. How will significant be measured? Criteria could be expanded based on Reclamation Research to include habitat functions (and associated wildlife) that are supported by closed mine components.</p>	<p>Criteria to satisfy physically stable Mine areas are addressed through the following objectives:</p> <ul style="list-style-type: none"> - Drainage pathways- Objective SW2 - Mine rock facility side slopes - Objective MR1 - PK facility side slopes - Objective PK2 - Disturbed areas of the Mine - I1 <p>The term significant is addressed in each of the above listed objectives. SW4 relates to areas of the Mine outside of that covered in the other Mine area specific objectives.</p> <p>Reclamation research is planned (see Appendix E, Section 2.3) to evaluate closure options to ensure safe use of the Mine for caribou and other local wildlife. The research will inform the selection of the preferred closure option for the site and Mine areas.</p> <p>Final landforms that are safe for use, with consideration to habitat function, will be informed by the reclamation research (Appendix E, Section 2.3) for inclusion in a final plan for grading/contouring the site.</p> <p>Criterion for achievement of the grading/contouring will be conformance of the final plan to that constructed, as determined by</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			<p>a qualified professional engineer. A final grading/contouring plan will be developed for each Mine Rock Pile and PK facility, as well as, a plan that addresses the remainder of the Mine outside these facilities.</p> <p>Criterion for physical stability is "satisfaction of a qualified professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions". Satisfaction by a qualified professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two years. The method of measurement is visual inspection completed during the geotechnical inspection. This criterion would be applicable for all Mine components.</p>

DE BEERS CANADA

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>SW5 Safe passage and use for Caribou and other wildlife.</p>	<p>No buildings or equipment remain above surface grade following final closure; re-contouring of surface materials to reduce ground hazards and reflect surrounding topography where possible; satisfactory results of post-closure wildlife risk assessment completed by a qualified person. <i>Final landforms safe for use as identified by a qualified professional and representative of affected Aboriginal Parties.</i> <i>*Measurable criteria need</i></p>	<p>Criteria need to be expanded to reflect the minimum requirements necessary for safe use. More information on how and when landform options to support wildlife habitat will be available to inform these criteria should be provided. Criteria could also be expanded based on Reclamation Research to include habitat functions (and associated wildlife) that are supported by closed mine components. Criteria should also reflect the intended final ecological land classification sought for closure conditions for each disturbed site. This can include specifics</p>	<p>Reclamation research is planned (see Appendix E, Section 2.3) to evaluate closure options pertaining to safe passage and use of the Mine for caribou and other local wildlife. The research will inform the selection of the preferred closure option for each mine component. Habitat quality is a component of the reclamation research and will include habitat function criteria such as forage availability, cover, predator escape (risk), and insect relief (caribou).</p> <p>Final landforms that are safe for passage and use will be informed by the reclamation research for inclusion in a final plan for grading/contouring of the site.</p> <p>Criterion for achievement of the grading/contouring will be conformance of the final plan to that constructed, as determined by the engineer of record. A final grading/contouring plan will be developed for each Mine Rock Pile and PK containment facility, as well as, a plan that addresses the remainder of the Mine outside these facilities.</p> <p>Criterion for safe passage and use will be evaluated by a qualified professional and representatives of affected Aboriginal Parties of the post-closure site conditions to</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
	<i>to be established*</i>	<p>on species composition compared to pre-disturbance conditions. More information on the post-closure wildlife risk assessment including how and when it will inform criteria is required. Please explain how a Final CRP is to be submitted and approved with criteria 24 months prior to closure if a post-closure risk assessment is designed to inform that criteria. Please describe how the post-closure wildlife risk assessment will be conducted, what valued components will be included in the assessment and what will qualify as a satisfactory result.</p>	<p>determine if the conditions are satisfactory. This will include a visual inspection for a minimum of two consecutive years.</p> <p>Satisfactory safe passage and use will consider the results of post-closure wildlife risk assessment completed by a qualified person. The risk assessment will conform to CCME (1996) A Framework for Ecological Risk Assessment: General Guidance. The valued components to be assessed as part of the wildlife risk assessment will consider those evaluated during the Environmental Impact Statement and documented in Table 2.1-1 of the 2012 Wildlife Ecological Risk Assessment (De Beers 2012). The selected valued components were informed by the Terms of Reference for the Mine's Environmental Impact Statement (Gahcho Kué Panel, 2007), which were developed based on input from public and regulators and included caribou, mammalian carnivores, other ungulates, and species at risk and birds.</p> <p>It is not possible to return are mine-affected areas to a pre-disturbance condition as some features will be lost permanently. The ability of areas to return to pre-disturbance ELC state will be a function of mine-related and natural</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			<p>environmental conditions and processes at the time when reclamation activities are complete. Vegetation and wildlife monitoring at the mine will allow changes in wildlife and vegetation communities to be tracked through time and provide a benchmark of existing conditions of ELCs at closure. Reclaimed and reference areas can then be compared to determine whether reclaimed areas provide habitat functions for wildlife.</p>
Open Pit Objectives & Criteria			
<p>OP1 The backfilled and/or flooded pits will not adversely impact establishment and/or maintenance of sustainable aquatic ecosystems and life in the overlying Kennady Lake and downstream</p>	<p>Water and sediment quality in the flooded/backfilled pits will not adversely affect Kennady Lake water quality such that it prevents re-establishment <i>and/or maintenance</i> of the aquatic ecosystem in Kennady Lake; establishment <i>and maintenance</i></p>	<p>Applicable water and sediment quality standards identified for KL1 should be identified here. How will the linkage between the open pit water quality and its influence on Kennady Lake water quality will be strengthened and measured? Criteria or monitoring for the re-establishment of the aquatic ecosystem should also be included if the criteria is to</p>	<p>As noted in De Beers Feb 17, 2017 response to the MVLWB, OP1 and KL1 are linked in that OP1 is a requirement for KL1. For example, the aquatic habitat in Kennady Lake over the backfilled and/or flooded pits would need to be suitable to allow Kennady Lake to establish a sustainable functioning aquatic ecosystem similar to the pre-disturbance condition and support traditional uses.</p> <p>The re-filled Kennady Lake will be different to its pre-disturbance state as the lake will be subject to different influences in terms of the post-mine watershed and bathymetric features, and possess a volume that is more than double the original volume. The ability of the lake to possess habitat similar</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
am waterbodies.	of meromictic conditions within the flooded Tuzo pit. <i>*Measurable criteria need to be established*</i>	not prevent it. Numerical criteria for the meromictic conditions should be established though the Research Plans in a timely manner. How will conditions be adaptively managed if post-closure monitoring does not show the water quality in Kennady Lake and meromictic conditions anticipated?	<p>to its pre-disturbance state will be a function of mine-related and natural environmental conditions and processes at the time when reclamation activities are complete. Aquatic monitoring (e.g., sediment quality, water quality, lower trophic organisms) of the lake during its refilling and early closure phases (before reconnection to the downstream) will allow the lake conditions and habitat to be tracked through time and the data used to validate assessment projections and inform research and closure criteria. Comparison to data collected concurrently from reference areas and adjacent core lake environments (Lake N11 and Area 8) will also be informative. Similarly, monitoring physical limnology conditions through depth in Tuzo pit during refilling and into early closure will provide data to confirm the establishment of stratified conditions and inform research and closure criteria.</p> <p>Reclamation research (Appendix E, Section 4) will be completed to establish numerical closure criteria for the mixolimnion. Additional metrics will be developed to confirm meromictic conditions and its stability and resistance to mixing.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			Reclamation research (Appendix E, Section 5) will update refilling predictions, assess the refilling of Kennady Lake, its options and implication to closure. Adaptive management will be addressed in the Closure Water Management Plan that is required by the Water Licence.
OP2 Physically stable pit walls to limit risk of a failure impacting people and aquatic life.	Final conditions of the open pit walls confirmed to be within approved design constraints by a professional engineer; no visual indications of significant deformation and degradation is observed during a final inspection by a professional engineer.	Please include a general definition of 'significant' including if and how that definition will need to be modified for each mine component and anticipate criteria. How will significant be measured? Results of the Closure Risk Assessment will be required to define what an 'unacceptable risk' is.	The final condition of the open pit walls being physically stable will be acceptance of access conditions as per the WSCC NWT Mines Act requirements. The open pit will be designed and inspected in accordance with the NWT Mines Act and associated regulations and will be constructed and inspected by a professional engineer. A closure risk assessment has not been proposed for this objective.
Kennady Lake Objectives & Criteria			
KL1 Return Kennady Lake to a state that	Complete all agreed upon fish habitat compensation in accordance	More information on site-specific risk-based assessment including how and	Reclamation research (Appendix E, Section 5) will develop: - Water quality closure criteria for Kennady Lake to satisfy KL1. Criteria will be developed to

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
will support a functioning aquatic ecosystem and traditional uses.	with DFO authorization(s) (Table 2); water quality that meets territorial/federal or site specific risk-based criteria for use as a source of drinking water; criteria linked to health-based targets, not aesthetic; water quality that meets acceptable criteria for the reconnection of Kennady Lake to the surrounding waters and the return of lake trout, northern pike and arctic grayling populations; aquatic biota monitoring indicates ecosystem recovery is occurring on	when it will inform criteria and when reviewers will have an opportunity to provide comments and feedback is required. Stronger rationale for the development of site-specific criteria is required if higher than territorial/federal guidelines given the development is in a formerly pristine environment. Reference or summary of ‘agreed upon fish habitat compensation’ should be provided including measurable criteria that define the success of that compensation and the recovery of aquatic biota. If the criteria for KL1 encompass riparian vegetation, this should be clearly	<p>support the objective of a functioning aquatic ecosystem and traditional uses.</p> <ul style="list-style-type: none"> - Criteria to define the successful use of fish habitat features at appropriate life stages, as well as, quantity of fish within Kennady Lake (to satisfy KL1 and DFO Authorization 03-HCAA-CA6-00057.1) <p>Section 6 of the Reclamation Research Plan provides a timeline to complete development of criteria.</p> <p>De Beers committed (see Table 1, ICRP v3) to the following traditional uses of Kennady Lake:</p> <ul style="list-style-type: none"> - Use as a source of drinking water (health-based targets, not aesthetic). This will be assessed through water quality monitoring. - Reconnection of Kennady Lake to surrounding waters. This will be achieved upon breach of upstream and downstream dykes. - Return of lake trout, northern pike and arctic grayling populations. This will be assessed through the Fish Habitat Validation Plan (subject to DFO approval) <p>These aspects are addressed within the proposed criteria for KL1.</p> <p>Further, specific to fish habitat, please see the following De Beers</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
	<p>a trajectory consistent with EIS or updated predictions. <i>*Measurable criteria need to be established*</i></p>	<p>identified, with measureable goals for its establishment. What constitutes a successful trajectory consistent with EIS predictions? This should be better defined. Applicable water and sediment quality standards should be identified. When will measurable criteria be established to measure the success of KL1? How will the linkage between the open pit water quality and its influence on Kennady Lake water quality will be strengthened and measured? Though the intent of applying conservatism is to address uncertainties, there have been many cases in the industry where</p>	<p>ICRP response that was provided to the Board in Nov, 2016: Condition 4.1 of De Beers Fisheries Act Authorization relating to offsetting specifies that “Fish habitat shall be re-established in Kennady Lake at mine closure through the re-filling of Kennady Lake and breaching of dykes, allowing fish to migrate back to the lake and utilize fish habitat that was de-watered but not physically altered during mine operation”. This indicates that the habitat in Kennady Lake that was dewatered, but not physically altered, is required to return to functional fish habitat as a condition of the Authorization.</p> <p>Condition 5.1.6 related to monitoring for the above specifies “Once Kennady Lake is re-filled, and fish survey information indicates that a sufficient number of fish have returned to Kennady Lake, a representative sample of the fish habitats in the areas of Kennady Lake which were de-watered but not physically altered shall be evaluated. Photographs and data from fisheries and fish habitat surveys shall be provided by December 1st in each year of monitoring to demonstrate, for each species of fish that inhabited Kennady Lake pre-development, that the physical characteristics of</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		<p>conservative estimates still underestimate actual water quality for various reasons. Should monitoring suggest a trajectory that is inconsistent with EIS provided predictions, De Beers must provide, in Annual Closure and Reclamation Reports, a discussion as to why there is a variance and what effects this variance may have on adaptive management measures, updated predictions and closure criteria. Criteria should be established to support a functioning aquatic ecosystem and therefore reflect EIS predictions (conservative) or better. That</p>	<p>the habitat are such that they would support fish use, and that fish are confirmed to be using the habitat. A Fish Habitat Validation Plan will be submitted to DFO for approval prior to final construction of the fish habitat features in Kennady Lake which will include defined monitoring objectives.” Similar to Part 1), the details of the monitoring program have not yet been determined, but are required to be developed as part of the Fish Habitat Validation Plan which must be developed in consultation with DFO prior to the final construction of the fish habitat features in Kennady Lake at or near closure. De Beers feels that the DFO Fisheries Authorization very clearly describes what monitoring is required to confirm that fish have re-established in Kennady lake, and that the habitat is aquatic functioning as expected.</p> <p>With regards to the definition of a functioning aquatic ecosystem, De Beers provided in the Nov, 2016 ICRP review response the following: "Throughout the EIS and subsequent EIR and permitting processes, De Beers has indicated that the closure objective is that Kennady Lake returns to a state that supports a functioning aquatic ecosystem that is similar to that characterized in pre-Mine</p>

DE BEERS CANADA

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		<p>should be the goal and if that is not being met, water should be adaptively managed to meet that goal – this means measurable, numerical criteria should be established sooner rather than later. EIS predictions should be clarified and included as criteria within the ICRP. Please provide more clarity on De Beers’ definition of a 'functioning aquatic ecosystem' as it pertains to Kennady Lake. The criteria do not provide a mechanism for demonstrating that the traditional uses can be undertaken successfully.</p>	<p>conditions. This is De Beers definition of a 'functioning aquatic ecosystem' as it pertains to Kennady Lake. That is, the aquatic ecosystem possesses similar aquatic assemblages in its post-closure state to those present in the pre-Mine state. The EIS also indicated that the ecosystem could potentially be a little more productive compared to pre-Mine conditions for the initial post-closure period as a result of slightly elevated nutrients, which could potentially lead to larger and greater numbers of aquatic biota. "</p> <p>Other items:</p> <ul style="list-style-type: none"> - As noted in De Beers Feb 17, 2017 response to the MVLWB, OP1 and KL1 are linked in that OP1 is a requirement for KL1. For example, the habitat in Kennady Lake over the backfilled and/or flooded pits would need to be suitable to allow Kennady Lake to establish a sustainable functioning aquatic ecosystem and support traditional uses. - De Beers will provide discussion within the ACRPPR of whether the closure and reclamation planning and implementation remains on schedule and consistent with EIR predictions. It will also include a description of key research results that will be used to inform continued closure planning

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>KL2 Physically stable constructed banks of Kennady Lake to limit risk of failure that would impact aquatic life, wildlife, and people.</p>	<p>No significant deformation and degradation indicated at constructed banks, confirmed by visual monitoring as part of site geotechnical inspections completed by a professional engineer.</p>	<p>Please include a general definition of 'significant' including if and how that definition will need to be modified for each mine component and anticipate criteria. How will significant be measured? Results of the Closure Risk Assessment will be required to define what an 'unacceptable risk' is. How will the linkage between the aquatic biota development (KL1) and improved bank stability though the establishment of riparian habitat be strengthened and measured?</p>	<p>Objective KL2 addresses physical stability of constructed banks. Aquatic biota, and the characteristics of Kennady Lake (i.e., riparian habitat) is addressed in Objective KL1. Thus, the linkage for the constructed banks is KL2 addresses physical stability and KL1 addresses aquatic biota.</p> <p>As noted in De Beers Nov 25, 2016 response regarding ICRP v3, 'significant' would be based on the professional engineer's judgement with regards to the performance of constructed banks to achieve its design function as visually observed during a geotechnical inspection.</p> <p>Criterion for achievement of the constructed banks will be conformance of the final design to that constructed, as determined by the engineer.</p> <p>Criterion for physical stability is "satisfaction of a professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions". Satisfaction by a qualified professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			<p>years. The method of measurement is visual inspection completed during the geotechnical inspection.</p> <p>Bank stability is important in the establishment of riparian habitat. Both physical stability and re-establishment of riparian habitat will be monitored and where there is interaction between the two (e.g. a shore-line slump leading to erosion and disturbance of emergent vegetation), this will be documented in the Annual Closure and Reclamation Plan report and corrective measures identified and implemented.</p>
<p>KL3 Kennady Lake is reconnected with the upstream and downstream and small craft navigation is possible within the Kennady Lake basin through the dyke</p>	<p><i>External dykes (A,E,F,G) are breached therefore connecting Kennady Lake with the upstream and downstream Internal dykes (B,J,K,N) are breached to 418 masl to allow for small craft navigation within Kennady Lake</i></p>	<p>Wording clarified based on comments and responses. How does De Beers know that final water levels will match original conditions? What is the contingency in the event that water levels are lower than anticipated?</p>	<p>The internal dykes will be breached to allow for small craft navigation within Kennady Lake. The breached level is anticipated to be 418 masl based on analysis completed at time of the EIR. During refilling of Kennady Lake, a comparison of the measured and predicted water quantity in Kennady Lake will be completed annually and reported in the Annual Water Licence Report (Part B, Item 10). An analysis of differences between measured and predicted water quality and quantity data will be documented, along with any recommendations and/or updates to the model predictions.</p> <p>The outlet at Kennady Lake (A8)</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
and pit areas.			sits at the same elevation as pre-disturbance. The water level of Kennady Lake is anticipated to reach the same maximum as at pre-disturbance - 420.7 masl, regulated by the same outlet channel.
		A Commitment from the EIR states that: Objectives for Areas 2 to 7, which include the Water Management Pond (WMP), will be developed as part of the Closure and Reclamation Plan process. Please explain how De Beers sees this being completed though the objectives and criteria under review.	Closure objectives for Areas 2 to 7, which includes the WMP, are addressed in Objectives KL1, KL2 and KL3.
Mine Rock Objectives & Criteria			
MR1 Physically stable slopes to limit risk of failure that would impact	No significant deformation and degradation is indicated at Mine Rock Piles by visual monitoring as part of site geotechnical	Please include a general definition of 'significant' including if and how that definition will need to be modified for each mine component and anticipate criteria. How will	As noted in De Beers Nov 25, 2016 response regarding ICRP v3, 'significant' would be based on the professional engineer's judgement with regards to the performance of the structure to achieve its design function as visually observed during a geotechnical inspection. Criterion for achievement of stable

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
people or wildlife.	inspections completed by a professional engineer. <i>At Mine Rock Piles, access and haul roads within the footprint of the mine rock piles have been scarified, and salvaged overburden applied if available, consistent with the outcomes of the Final Landform and Revegetation components of the Reclamation Research Plan.</i>	significant be measured? More information on how and when the Revegetation Research will help establish reclamation activities/techniques and measurable criteria in a timely fashion is required. Results of the Closure Risk Assessment will be required to define what an 'unacceptable risk' is. Criteria need to be expanded to reflect the minimum requirements necessary for safe use. More information on how and when landform options to support wildlife habitat will be available to inform these criteria should be provided.	slopes will be conformance of the mine rock pile approved design to that constructed, as determined by the engineer. Criterion for physical stability is "satisfaction of a professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions". Satisfaction by a qualified professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two years. The method of measurement is visual inspection completed during the geotechnical inspection. This criterion would be applicable for all mine components. Other aspects: - The mine rock pile slope stability is not dependent on the outcomes of the revegetation research. The piles are designed to be stable long-term without revegetative cover. - A closure risk assessment is not considered necessary and not proposed. - Criteria associated with safe use and landforms is addressed with SW5 Objective.

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>MR2 Contaminated rock and non-hazardous waste disposal areas within piles will be safe for aquatic life, people or wildlife.</p>	<p>Management of contaminated rock and nonhazardous waste during mining is completed as per approved management plans (De Beers, 2016b); results of a post-closure risk assessment completed by a qualified person indicate that chemical risks at site are consistent, or less than, EIS impact predictions. *Measurable criteria need to be established*</p>	<p>Please explain how the monitoring programs will confirm the criteria, as written, have been achieved. In addition to confirmation that the waste rock piles were constructed as planned and approved, we need to know that they are performing as anticipated. Measurable criteria to confirm that contaminated rock and non-hazardous wastes have been sequestered should be developed (i.e seepage quality triggers). What are the EIS impact predictions and how are they measured? More information on the post-closure risk</p>	<p>This objective addresses the solids portions of the contaminated rock and non-hazardous waste. The liquid portion (e.g., seepage water) is addressed within KL1.</p> <p>Contaminated rock and non-hazardous waste will be deposited within the mine rock pile according to the approved design (De Beers 2015. Final Detailed Construction Plan South Mine Rock Pile and Overburden Stockpile, v1) and management plan (De Beers 2017. Waste Management Plan, v5.2). The contaminated rock will be deposited near the non-hazardous waste locations within the mine rock piles and will be encapsulated with till (see Section 5.3.1.1 of De Beers 2015. Final Detailed Construction Plan South Mine Rock and Overburden Stockpile, v1).</p> <p>The placement of contaminated rock and non-hazardous waste are documented annually within the Water Licence annual report.</p> <p>See SW5 for EIS wildlife risk assessment details.</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		assessment including how and when it will inform criteria is required. Please explain how a Final CRP is to be submitted and approved with criteria 24 months prior to closure if a post-closure risk assessment is designed to inform that criteria.	
MR3 Chemically stable mine rock piles that are safe for aquatic life, humans and wildlife.	<i>*Measurable criteria need to be established* Final landforms safe for use as identified by a qualified professional and representative of affected Aboriginal Parties.</i>	New objective proposed by GNWT-ENR and accepted by De Beers. MR2 refers to waste buried within the piles, MR3 refers to the Mine Rock piles themselves. Closure criteria, activities, monitoring and research plans (if applicable) need to be identified in support of this objective.	This objective addresses the solids portion (e.g., PAG rock) of the mine rock piles. The liquid portion (e.g., seepage water) is addressed within KL1. During construction and operations of the mine rock piles, rock will be subject to geochemical testing as per the approved Geochemical Characterization Plan (De Beers, 2015 v3) to evaluate PAG and non-PAG rock quality. The construction of the mine rock piles will be in accordance with the approved designs. The final design of the South Mine rock pile has been completed (De Beers 2015 Final Detailed Construction Plan South Mine Rock Pile and Overburden Stockpile, V1) and West Mine Rock Pile will be completed at a future date. As per the rock pile design, PAG materials are to be

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
			<p>sequestered within the rock pile to address chemical stability aspects (see Section 5.3.1.2 of De Beers 2015. Final Detailed Construction Plan South Mine Rock and Overburden Stockpile, v1.</p> <p>Thus, the criterion to address Objective MR3 is "satisfactory results from the Rock Placement Verification Program as evaluated by a qualified professional". As per the Processed Kimberlite and Mine Rock Management Plan (De Beers 2015), location and quantities of PAG material will be monitored and reported.</p>
Processed Kimberlite Objectives & Criteria			
<p>PK1 Prevent PK from entering the surrounding terrestrial and aquatic environment.</p>	<p>Performance monitoring results and final inspection of rock covers and dykes by a professional engineer indicate the engineered structures are performing as per design; no significant deformation and degradation indicated at</p>	<p>Please include a general definition of 'significant' including if and how that definition will need to be modified for each mine component and anticipate criteria. How will significant be measured? More information on how and when the Physical Stability Research and the results of research from other existing diamond mines in</p>	<p>This objective addresses the solids portion (i.e., PK) of the PK piles. The liquid portion (e.g., seepage water) is addressed within KL1.</p> <p>As noted in De Beers Nov 25, 2016 response regarding ICRP v3, 'significant' would be based on the professional engineer's judgement with regards to the performance of the structure to achieve its design function as visually observed during a geotechnical inspection.</p> <p>Criterion for achievement of stable slopes and cover will be conformance of the PK facility cover and facility designs to that constructed, as determined by the engineer. (De Beers, 2016 -</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
	<p>PK facilities, confirmed by visual monitoring as part of site geotechnical inspections completed by a professional engineer. <i>*Measurable criteria need to be established*</i></p>	<p>the NWT will help establish reclamation activities/techniques and measurable criteria in a timely fashion is required. Measurable criteria to confirm that processed kimberlite has been sequestered should be developed (i.e seepage quality triggers).</p>	<p>Coarse PK Facility Final Detailed construction Plan; De Beers 2017 - Final Detailed Design Plan Dykes A1, G,H, I, J, K, and L, v4; De Beers, 2017 - Final Detailed Design Plan Dykes B, D, E, F and Perimeter Berms, v2)</p> <p>Criterion for physical stability is "satisfaction of a professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions". Satisfaction by a professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two years. The method of measurement is visual inspection completed during the geotechnical inspection. This criterion would be applicable for all mine components.</p> <p>Physical stability of the cover and PK facility is required to achieve Objective PK1. Reclamation research is proposed on the topic of physical stability of engineered covers (Appendix E, Section 3). The research will result in information that will inform the cover design options and preferred final design. Appendix E, Section 6 provides the timelines to complete the research.</p>
PK2 Physically	Geotechnical stability	Please include a general definition	As noted in De Beers Nov 25, 2016 response regarding ICRP v3,

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>stable PK disposal areas to limit risk of facility failure.</p>	<p>analysis will be completed as part of the detailed design of rock covers by a professional engineer for the Fine PKC Facility and Coarse PK Pile; performance monitoring results and final inspection of rock covers and dykes by a professional engineer indicate the engineered structures are performing as per design.</p>	<p>of 'significant' including if and how that definition will need to be modified for each mine component and anticipate criteria. How will significant be measured? Results of the Closure Risk Assessment will be required to define what an 'unacceptable risk' is. What are acceptable 'performance monitoring results'? Criteria need to be expanded to reflect the minimum requirements necessary for safe use. More information on how and when landform options to support wildlife habitat will be available to inform these criteria</p>	<p>'significant' would be based on the professional engineer's judgement with regards to the performance of the structure to achieve its design function as visually observed during a geotechnical inspection.</p> <p>Criterion for achievement of stable slopes and cover will be conformance of the PK facility cover and facility designs to that constructed, as determined by the engineer.</p> <p>Criterion for physical stability is "satisfaction of a professional engineer, with consideration given to deformation, degradation and/or erosion and sedimentation which may contribute to physically instable conditions". Satisfaction by a professional engineer is required for a minimum of two geotechnical inspections occurring over a duration of at least two years. The method of measurement is visual inspection completed during the geotechnical inspection. This criterion would be applicable for all mine components.</p> <p>Other aspects: - A closure risk assessment is not considered necessary and not proposed. - Criteria associated with safe use and landforms are addressed with SW5 Objective.</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		should be provided.	
<p>PK3 Chemically stable Processed Kimberlite Facilities (Piles) that do not endanger human, wildlife, or environmental health and safety.</p>	<p><i>*Measurable criteria need to be established*</i></p>	<p>New objective proposed by GNWT-ENR. Closure criteria, activities, monitoring and research plans (if applicable) need to be identified in support of this objective.</p>	<p>This objective addresses the solids portion (e.g., PK) of the PK Facilities. The liquid portion (e.g., seepage water) is addressed within KL1.</p> <p>During construction and operations of the PK Facilities the material will be subject to geochemical testing as per the approved Geochemical Characterization Plan (De Beers, 2015 v3) to evaluate PAG and non-PAG quality. The construction of the PK facilities will be in accordance with the approved designs and constructed using non-PAG material (De Beers, 2016 - Coarse PK Facility Final Detailed construction Plan; De Beers 2017 - Final Detailed Design Plan Dykes A1, G,H, I, J, K, and L, v4; De Beers, 2017 - Final Detailed Design Plan Dykes B, D, E, F and Perimeter Berms, v2). The PK deposited is non-PAG.</p> <p>Thus, the criterion to address Objective PK3 is "confirmation of non-PAG rock and PK as documented through the bi-annual geochemical audit that is completed by a qualified professional".</p>
Infrastructure Objectives			
I1 Disturbed	Removal of all potentially	More information on site-specific	Final site inspection by a professional engineer or qualified

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
<p>areas will be safe for people, wildlife, and vegetation.</p>	<p>hazardous materials and satisfactory final inspection by a professional engineer or geoscientist; disturbed areas at the Mine are remediated to applicable federal/territorial soil quality guidelines or site-specific risk-based criteria as required. <i>Final landforms safe for use as identified by a qualified professional and representative of affected Aboriginal Parties.</i></p>	<p>risk-based assessment including how and when it will inform criteria is required. Stronger rationale for the development of site-specific criteria is required if higher than territorial/federal guidelines given the development is in a formerly pristine environment. Criteria need to be expanded to reflect the minimum requirements necessary for safe use. More information on how and when landform options to support wildlife habitat will be available to inform these criteria should be provided. Criteria could also be expanded based on Reclamation Research to</p>	<p>professional to confirm removal of all potentially hazardous materials.</p> <p>Final landforms that are safe for use will be informed by the reclamation research (Appendix E, Section 2.3) for inclusion in a final plan for grading/contouring the site. Physical safety is addressed as part of Objective SW4.</p> <p>Selecting soil criteria that are derived for the protection of environmental and human health addresses how soil quality interacts with the receptors of people, wildlife, and vegetation. An Environmental Site Assessment will be completed to identify areas of potential contamination and a Remedial Action Plan will be developed to achieve the closure criteria. As required to execute a Remedial Action Plan, soils will be remediated in accordance with the GNWT Environmental Guidelines for Contaminated Site Remediation or applicable CCME guidelines that are derived for the protection of environmental and human health. Should a criteria for a parameter not exist from these two sources, criteria from an alternate jurisdiction will be considered. Criteria for achievement is the removal or management of soil that exceeds criteria from the Mine and/or implementation of a</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		<p>include habitat functions (and associated wildlife) that are supported by closed mine components. More information on the post-closure wildlife risk assessment including how and when it will inform criteria is required. Please explain how a Final CRP is to be submitted and approved with criteria 24 months prior to closure if a post-closure risk assessment is designed to inform that criteria. Please describe how the post-closure wildlife risk assessment will be conducted, what valued components will be included in the assessment and what will qualify as a satisfactory result. How does the Remedial Action</p>	<p>remediation strategy that achieves protection of environmental and human health. The agricultural land use category is considered the most applicable for the anticipated post-closure condition of the Mine, which is expected to resemble the original wildland that existed prior to mining, with similar functions (i.e., habitat for wildlife and native flora with limited human presence).</p> <p>De Beers maintains the option to develop site-specific criteria through execution of a risk assessment. The site-specific criteria would be based on site-specific factors which may differ from that assumed in the development of generic guideline values. Site-specific criteria would offer at least equivalent level of protection to ecological receptors and to human health. The use of site-specific criteria, instead of generic criteria, is standard practice and recognized relevant territorial/federal guidelines, such as:</p> <ul style="list-style-type: none"> - GWNT (2003). Environmental Guidelines for Contaminated Site Remediation. - CCME (1996). Guidance Manual for Developing Site-Specific Soil Quality Remediation Objectives for Contaminated Sites in Canada. <p>The 2012 Wildlife Ecological Risk</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		Plan identified as a closure activity fit in?	Assessment (De Beers, 2012- see Section 2.2.2) provides a summary of criteria applicable for closure. See SW5 for additional wildlife risk assessment details.
I2 Re-vegetation targeted to priority areas.	<p>Available surface materials have been salvaged and applied as a growth substrate; compacted soil surfaces (e.g., roads, pads) have been scarified; and native species have been applied to disturbed areas. Additional criteria may be included based on the outcome of research trials.</p> <p>*Measurable criteria need to be established*</p>	<p>New objective in response to comments on former SW5 (Promote accelerated natural recovery of vegetation at disturbed areas). If 'establishment' is the objective then criteria need to be established to measure the successful growth of vegetation and not simply the actions imposed in support of that establishment. Criteria should also reflect the intended final ecological land classification sought for closure conditions for each disturbed site. This can include specifics on species composition</p>	<p>Priority areas will be informed through completion of reclamation research on revegetation and landforms (Appendix E, Section 2.1 and 2.3 respectively). As informed by the research, a revegetation plan for the site will be developed for the Mine with a goal to promote accelerated natural recovery. Criterion for achievement of revegetation at targeted areas will be conformance of the revegetation plan to that constructed, as determined by a qualified professional. As-constructed documentation will be produced. Development of revegetation closure criteria is a planned research activity (Section 2, Task 4). The criteria will be selected based on achievable coverage of plants for the environmental setting at the Mine.</p> <p>Figure E.1 of the reclamation research plan includes a timeline for completion of research.</p>

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
		<p>compared to pre-disturbance conditions. More information on how and when the Revegetation Research will help establish reclamation activities/techniques and measurable criteria in a timely fashion is required. Please explain how the submission of as-built conditions will inform the success of criteria.</p>	
<p>I3 Aesthetic conditions of the infrastructure areas are similar to surrounding natural conditions .</p>	<p>No visible buildings, equipment or non-local materials on surface; final grading reflects surrounding topography and re-establish natural drainage pathways where possible;</p>	<p>New objective in response to comments on former SW7 (Aesthetic conditions of the Mine area are similar to surrounding natural conditions). If De Beers plans to achieve this objective then criteria need to be established to measure the</p>	<p>The objective addresses aesthetics of the Mine. Habitat function is addressed in Objective I1 and I2. Revegetation is addressed in Objective I2.</p> <p>A final plan for grading/contouring the site, that incorporates the removal of all buildings, equipment and non-local materials on the surface, will be developed. Final landforms at the Mine will be informed by the reclamation research (Appendix E, Section 2.3) for inclusion in a final plan for grading/contouring the site.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
	<p>native vegetation species applied at final closure using methods informed by the research findings. At Mine Rock Piles, remaining access roads have been scarified, and salvaged overburden applied, if available. Additional criteria for all areas may be included based on the outcome of revegetation research trials. <i>Criteria may be included based on the outcome of research trials (can include biomass, plant diversity,</i></p>	<p>success of its activities and not simply provide a check box list of the actions completed. Criteria could be expanded based on Reclamation Research to include habitat functions (and associated wildlife) that are supported by closed mine components. More information on how and when the Revegetation Research will help establish reclamation activities/techniques and measurable criteria in a timely fashion is required. These should be developed to describe the cover type and performance required for successful closure. Please explain</p>	<p>Criterion for achievement will be conformance of the final plan for grading/contouring to that constructed, as determined by the engineer of record, and reported within as-built documentation.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Gahcho Kué ICRP Objectives	Gahcho Kué ICRP Criteria (MVLWB Sept.14)	MVLWB Comments (MVLWB Sept.14)	De Beers Response: Further Details and Rationale
	<i>vegetation cover, etc.).</i> <i>*Measurable criteria need to be established*</i>	how the submission of as-built conditions will inform the success of criteria.	

DE BEERS CANADA

Table 20 (updated Oct.26, 2017). Closure objectives, criteria, method of measurements to evaluate achievement of criteria, and any planned reclamation research.

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
SW1 – Air quality levels safe for people, vegetation, aquatic life and wildlife.	<p>Ambient air quality shall not exceed the NWT Ambient Air Quality Standards for total suspended particulate (TSP), fine Particulate Matter (PM_{2.5}), and Nitrogen Dioxide (NO₂).</p> <p>As of September 2017:</p> <ul style="list-style-type: none"> - Annual NO₂ - 60 µg/m³ - 24 hour TSP - 120 µg/m³ - Annual TSP - 60 µg/m³ - 24 hour PM_{2.5} - 28 µg/m³ <p>Site-specific criteria may be developed if site-specific factors differ from what was assumed for the generic guideline values therefore affecting the applicability of the generic criteria.</p>	<p>Engineering design and construction of a cover placed over the fine PK deposited within the Fine PK Facility.</p> <p>Engineering design and construction of a cover placed over the coarse PK deposited within the Coarse PK Facility.</p> <p>Cessation of mining and construction activities (e.g. diesel combustion, surface vehicle traffic, blasting, material crushing and handling, etc.) will play a large role in diminished air emissions.</p>	<p>Air quality monitoring for suspended particulates will be completed during the summer for three years post-closure.</p> <p>Geotechnical monitoring of the constructed covers will occur to ensure long-term performance as a barrier. See Closure Objective PK1&2 for more detail regarding monitoring activities.</p>	None.
SW2 – Drainage pathways for surface runoff are physically stable.	<p>No significant signs of deformation, degradation and/or erosion and sedimentation which could contribute to physically unstable conditions as visually observed during geotechnical inspections by a qualified professional engineer on a minimum of two geotechnical inspections occurring over a</p>	<p>Final grading where required to promote positive drainage.</p> <p>Drainage pathways (e.g. spillway at the Fine PKC Facility) will be established as per design and QA/QC.</p> <p>QA/QC protocol completed by a professional engineer.</p>	<p>Geotechnical inspections (visual) of the drainage pathways will occur post-closure in concert with the site geotechnical inspection and monitoring program.</p> <p>Surface water quality monitoring will be completed post-closure at applicable drainage pathways to ensure all relevant closure objectives and criteria have</p>	None.

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	duration of at least two years. Natural drainage conforms to the final site plan, as determined by a qualified professional engineer.		been met. See Closure Objective SW3 for more detail on this monitoring program.	
SW3 – Surface runoff and seepage water quality that is safe for people, vegetation, aquatic life, and wildlife.	Closure water quality that meets territorial/federal guidelines and/or site-specific risk-based criteria to be specified in the Final Closure Plan. ¹	Construction materials will be non-PAG. Drainage pathways will be established for long-term stability to mitigate against erosion. All potentially hazardous materials and equipment will be removed from site.	Water quality monitoring (runoff and seepage at locations of concern across the site) Aquatic and Wildlife effects monitoring (select receptors which are present at the site following reclamation).	None.
SW4 – Mine areas are physically stable for use by people and wildlife.	No significant deformation and degradation, and/or erosion and sedimentation is indicated at drainage pathways, Mine Rock Piles, PK areas, and/or any other remaining engineered structures confirmed by visual monitoring as part of site geotechnical inspections completed by a professional engineer on a minimum of two geotechnical inspections	Final grading/contouring will promote positive drainage towards pre-disturbance drainage pathways where possible (e.g. water within controlled area will flow to Kennady Lake). Drainage pathways will be established for long-term stability to avoid issues with erosion. A final grading/contouring plan will be developed for each Mine Rock Pile and PK facility, as well as, a plan	Geotechnical inspections (visual) of the site will occur post-closure in concert with the site geotechnical inspection and monitoring program. Additional monitoring will occur at the Mine Rock Piles and PK areas (See MR and PK closure objectives below)	Appendix E, Section 2.3: Final Landform Options to Support Wildlife Habitat Research interests: Final landforms that are safe for use, with consideration to habitat function.

¹ Surface runoff and seepage water that is within the catchment basin of Kennady Lake are addressed more specifically within KL1. The Mine Rock Piles and PK Facilities are within the Kennady lake catchment basin.

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	<p>occurring over a duration of at least two years.²</p> <p>Grading/contouring conforms to the final site plan, as determined by a qualified professional engineer.</p>	<p>that addresses the remainder of the Mine outside these facilities.</p> <p>Engineered earthen structures remaining at the site (i.e. Mine Rock Piles, Fine PK Facility and Coarse PK Pile) will be physically stable. See MR and PK closure objectives below for details specific to stability of mine waste areas.</p>		
<p>SW5 – Safe passage and use for Caribou and other wildlife.</p>	<p>No buildings or equipment remain above surface grade following final closure.</p> <p>Confirmation by the engineer of record that the grading/contouring conforms to the final site plan.</p> <p>Satisfactory results of post-closure wildlife risk assessment completed by a qualified professional with input from Aboriginal representatives.</p> <p>Use of the site by wildlife (i.e. birds, mammals) as documented through a minimum of two years of post-closure monitoring.</p>	<p>Removal of all buildings, equipment, and surface hazards.</p> <p>A final grading/contouring plan will be developed for each Mine Rock Pile and PK facility, as well as, a plan that addresses the remainder of the Mine outside these facilities.</p> <p>Re-contouring of surface materials to reduce ground hazards and reflect surrounding topography where possible.</p> <p>Engineered earthen structures remaining at the site (i.e. Mine Rock Piles, Fine PK Facility and Coarse</p>	<p>Final landscape inspected by a qualified professional and representatives of affected Aboriginal Parties for a minimum of two consecutive years.</p> <p>Submission of as-built conditions in a summary report completed by a qualified person.</p> <p>Water quality monitoring (runoff and seepage at locations of concern across the site).</p> <p>Wildlife monitoring at the Mine area post closure.</p> <p>Geotechnical inspections (visual) of the site will occur post-closure in concert with</p>	<p>Appendix E, Section 2.3: Final Landform Options to Support Wildlife Habitat</p> <p>Research Interest: Closure options (e.g. ramps and/or activities to support revegetation on Mine Rock Piles) that would provide potential benefit for caribou and other local wildlife.</p> <p>This research focuses on refining the reclamation activities where possible to provide habitat features which would improve habitat quality and provide a measurable benefit for select wildlife.</p>

² Criteria to satisfy physically stable Mine areas are also addressed through the following objectives: Drainage pathways - SW2; Mine rock facility side slopes - MR1; PK facility side slopes - PK2; Disturbed areas of the Mine - I1

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
		<p>PK Pile) will be physically stable. See MR and PK closure objectives below for details specific to stability of mine waste areas.</p> <p>The risk assessment will conform to CCME (1996) A Framework for Ecological Risk Assessment: General Guidance.</p>	<p>the site geotechnical inspection and monitoring program.</p>	
<i>Open Pits</i>				
<p>OP1 – The backfilled and/or flooded pits will not adversely impact establishment of sustainable aquatic ecosystems and life in the overlying Kennady Lake and downstream waterbodies.</p>	<p>Water and sediment quality in the flooded/backfilled pits will not adversely affect Kennady Lake water quality such that it prevents re-establishment of the aquatic ecosystem in Kennady Lake.</p> <p>Establishment and maintenance of meromictic conditions within the flooded Tuzo pit.</p> <p>Additional criteria may be developed in the Final Closure Plan consistent with the outcomes of the reclamation research program.</p>	<p>Poor quality and high TDS water encountered throughout mining will be managed in the WMP, then pumped into the bottom of the Tuzo pit at closure. Meromictic conditions will establish within Tuzo.</p>	<p>Post-closure water quality and sediment quality monitoring of Kennady Lake.</p> <p>Post-closure monitoring of meromictic conditions throughout the vertical depth profile within the flooded Tuzo pit.</p>	<p>Appendix E, Section 4.1: Stability of Chemocline within Flooded Pits</p> <p>Research Interest: Development and stability of the meromictic conditions predicted, which will isolate poor quality water within the flooded Tuzo pit and partially backfilled Hearne pit.</p> <p>This research will focus on refining impact predictions, which in turn will inform development of numerical closure criteria for the bottom of Kennady Lake and transition with Open Pits.</p> <p>Appendix E, Section 5.1: Timeline for reconnection of Kennady Lake to Surrounding Waterbodies</p>

DE BEERS CANADA

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
				Research Interest: This research will update refilling predictions, assess the refilling of Kennady Lake, its options and implication to closure.
OP2 – Physically stable pit walls to limit risk of a failure impacting people and aquatic life.	Final conditions of the open pit walls confirmed to be within approved design constraints by a professional engineer. no visual indications of significant deformation and degradation is observed during a final inspection by a professional engineer. Confirmation by the WSCC NWT Mines Act Inspector that access conditions meet the NWT Mines Act requirements prior to final closure of the pits.	Backfilling at the 5034 pit will be completed with consideration to slope stability at the adjacent Tuzo pit wall. No additional reclamation efforts are expected to be required at final closure, but options will be assessed following final inspection.	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer. The open pit will be designed and inspected in accordance with the NWT Mines Act and associated regulations and will be constructed and inspected by a professional engineer.	None.
<i>Kennady Lake</i>				
KL1 - Return Kennady Lake to a state that will support a functioning aquatic ecosystem and traditional uses.	Complete all agreed upon fish habitat compensation in accordance with DFO authorization(s) (03-HCAA-CA6-00057.1) . Water quality that meets territorial/federal (Health Canada's Guidelines for Canadian Drinking Water Quality (August 2012 edition)) or site-specific risk-	Management and mitigation of potential risk from mine waste products in accordance with approved engineering designs and management plans. Construction of fish habitat as per DFO authorization. Discharge of poor quality water into the bottom of the Tuzo pit, establishment of	Confirmation by DFO that fish habitat compensation requirements have been met. Post-closure water quality and sediment quality monitoring of Kennady Lake. Aquatic biota monitoring within the refilled Kennady	Appendix E, Section 5.1: Timeline for Reconnection of Kennady Lake to Surrounding Waterbodies Also see Appendix E, Sections 2.2 and 4.1. Research Interest: Water quality within the WMP at the end of mining, water management options at closure, and the timeline

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	<p>based criteria for use as a source of drinking water; criteria linked to health-based targets, not aesthetic;</p> <p>Water quality that meets the water quality criteria for the reconnection of Kennady Lake to the surrounding waters as stipulated in the Final Closure Plan.</p> <p>The return of lake trout, northern pike and arctic grayling to Kennady Lake documented through a minimum of two years of monitoring.</p> <p>Aquatic biota monitoring indicates ecosystem recovery is occurring on a trajectory consistent with EIS or updated predictions.</p>	<p>meromictic conditions to inhibit the upward transport of potentially harmful water quality constituents.</p> <p>Breaching of perimeter dykes allowing Kennady Lake to refill. Supplemental pumping from up gradient lakes to shorten the time required for flooding.</p>	<p>Lake to assess recolonization.</p>	<p>required for the recovery of the WMP/Kennady Lake water quality to allow reconnection with the surrounding waterbodies.</p> <p>This research will focus on refining water quality predictions, which would inform closure criteria and identify if additional reclamation activities are required (i.e. pumping residual WMP water into the bottom of Tuzo).</p> <p>Research Interest: Criteria to define the successful use of fish habitat features at appropriate life stages, as well as, quantity of fish within Kennady Lake (to satisfy KL1 and DFO Authorization 03-HCAA-CA6-00057.1)</p>
<p>KL2 – Physically stable constructed banks of Kennady Lake to limit risk of failure that would impact aquatic life, wildlife, and people.</p>	<p>No significant deformation and degradation, erosion or sedimentation indicated at constructed banks, confirmed by visual monitoring as part of site geotechnical inspections</p>	<p>Banks constructed within Kennady Lake (e.g., interface of lake and mine rock piles) will be physically stable.</p> <p>Aquatic biota, and the characteristics of Kennady Lake (i.e., riparian habitat) is addressed in Objective KL1.</p>	<p>Geotechnical inspections (visual) of the site will occur post-closure in concert with the site geotechnical inspection and monitoring program. Additional monitoring will occur at the Mine Rock Piles and PK areas (See MR and PK closure objectives)</p>	<p>None.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	completed by a professional engineer. ³ Constructed banks conform to the final design as determined by the engineer of record.			
KL3 – Kennady Lake is reconnected with the upstream and downstream and small craft navigation is possible within the Kennady Lake basin through the dyke and pit areas.	External dykes (e.g. A,E,F,G) are breached connecting Kennady Lake with the upstream and downstream. Internal dykes (B,J,K,N) are breached to 418 masl to allow for small craft navigation within Kennady Lake.	The downstream slope of Dykes B, J, N, and K will be flattened and covered with a 1 m thick erosion protection material layer (2028). Dykes B, N, and K will be partially breached to a final crest elevation of 417.0 masl (2029), then completely breached, along with the entirety of Dyke J, to 418 masl.	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer.	None.
<i>Mine Rock Piles</i>				
MR1 – Physically stable slopes to limit risk of failure that would impact the people or wildlife.	No significant deformation, degradation, and/or erosion is indicated at Mine Rock Piles by visual monitoring as part of site geotechnical inspections completed by a professional engineer for a minimum of two geotechnical inspections	Engineering design including stability analysis that meets design criteria for factor of safety as per industry guidelines (Piteau Associates Engineering Ltd., 1991). Construction and operation have been completed as per the approved Mine Rock Pile designs (De Beers,	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer. Geotechnical inspections (visual) of the site will occur post-closure in concert with the site geotechnical inspection and monitoring program.	None.

³ Criteria to satisfy physically stable Mine areas are also addressed through the following objectives: Drainage pathways - SW2; Mine rock facility side slopes - MR1; PK facility side slopes - PK2; Disturbed areas of the Mine - I1.

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	<p>occurring over a duration of at least two years.⁴</p> <p>Mine rock pile and cover constructed as per the approved design, and QA/QC plan as determined by the engineer of record, or other professional engineer.</p> <p>Construction documented in an as built report completed by a professional engineer.</p>	<p>2015j) and construction management plans (De Beers, 2015i)</p>	<p>Thermal monitoring will be completed using at least three thermistors that will be installed in each Mine Rock Pile. Permafrost establishment is not required to achieve stable slopes, but may enhance it.</p>	
<p>MR2 – Contaminated rock and non-hazardous waste disposal areas within piles do not pose an unacceptable risk to aquatic life, people or wildlife.</p>	<p>Management of contaminated rock and nonhazardous waste during mining is completed as per approved management plans (De Beers, 2016b) and confirmed annually in the water licence report.</p> <p>Results of a post-closure risk assessment completed by a qualified person indicate that chemical risks at site are consistent, or less than, EIS impact predictions.</p>	<p>This objective addresses the solids portions of the contaminated rock and non-hazardous waste. The liquid portion (e.g., seepage water) is addressed within objective KL1.</p> <p>Isolation of contaminated rock and non-hazardous waste disposal areas within the interior of Mine Rock Piles. Contaminated rock and non-hazardous waste will be deposited within the mine rock pile according to the approved design (De</p>	<p>The placement of contaminated rock and non-hazardous waste are documented annually within the Water Licence annual report.</p> <p>Thermal monitoring will be completed using at least three thermistors that will be installed in each Mine Rock Pile.</p> <p>Water quality monitoring of seepage will occur from downgradient water control</p>	<p>None.</p>

⁴ Criteria to satisfy physically stable Mine areas are also addressed through the following objectives:

- Drainage pathways - SW2
- Mine rock facility side slopes - MR1
- PK facility side slopes - PK2
- Disturbed areas of the Mine - I1

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
		<p>Beers 2015. Final Detailed Construction Plan South Mine Rock Pile and Overburden Stockpile, v1) and management plan (De Beers 2017. Waste Management Plan, v5.2). The contaminated rock will be deposited near the non-hazardous waste locations within the mine rock piles and will be encapsulated with till (see Section 5.3.1.1 of De Beers 2015. Final Detailed Construction Plan South Mine Rock and Overburden Stockpile, v1).</p> <p>Waste areas will be covered with low permeability material to reduce infiltration.</p> <p>Permafrost is predicted to aggrade within the interior of the piles to reduce permeability.</p>	<p>structures (i.e. sumps and collection ponds).</p>	
<p>MR3 – Chemically stable mine rock piles that are safe for aquatic life, humans and wildlife.</p>	<p>Results of a post-closure risk assessment completed by a qualified professional geologist indicate that chemical risks at site are consistent, or less than, EIS impact predictions. Confirmation of placement of PAG rock in the designated PAG rock</p>	<p>This objective addresses the solids portion (e.g., PAG rock) of the mine rock piles. The liquid portion (e.g., seepage water) is addressed within KL1. During construction and operations of the mine rock piles, rock will be subject to geochemical testing as per</p>	<p>As per the Processed Kimberlite and Mine Rock Management Plan (De Beers 2015), location and quantities of PAG material will be monitored and reported. The placement of contaminated rock and non-hazardous waste are</p>	<p>None.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	placement zones, confirmed annually in the annual water licence report.	the approved Geochemical Characterization Plan (De Beers, 2015 v3) to evaluate PAG and non-PAG rock quality. As per the rock pile design, PAG materials are to be sequestered within the rock pile to address chemical stability aspects (see Section 5.3.1.2 of De Beers 2015. Final Detailed Construction Plan South Mine Rock and Overburden Stockpile, v1.	documented annually within the Water Licence annual report. Thermal monitoring will be completed using at least three thermistors that will be installed in each Mine Rock Pile. Water quality monitoring of seepage will occur from downgradient water control structures (i.e. sumps and collection ponds).	
<i>PK Disposal Areas</i>				
PK1 – Prevent PK from entering the surrounding terrestrial and aquatic environment.	Performance monitoring results and final inspection of rock covers and dykes by a professional engineer indicate the engineered structures are performing as per design; no significant deformation and degradation indicated at PK facilities, confirmed by visual monitoring as part of site geotechnical inspections completed by a professional engineer. PK facility cover conforms to the design as determined by the engineer of record.	This objective addresses the solids portion (i.e., PK) of the PK piles. The liquid portion (e.g., seepage water) is addressed within KL1. Construction of the Fine PKC Facility and Coarse PK Pile in accordance with the engineering design and management plans. Deposition of the fine PK within the Fine PKC Facility, which will include a material cover at closure, or into Hearne pit.	Geotechnical inspections (visual) of the site will occur post-closure in concert with the site geotechnical inspection and monitoring program. Thermal monitoring will be completed using thermistor cables installed in the Fine PKC Facility and Coarse PK Pile. Water quality monitoring of seepage will occur at the Mine Rock Piles and PK areas as outlined in the SNP. This monitoring will continue as long as these collection areas are	Appendix E, Section 3.1: Physical Stability of Engineered Rock Covers Research Interest: Long term physical stability and performance as an erosion resistant barrier of the rock covers to be constructed overlying fine and coarse PK within the PKC and PK Pile, respectively. This research seeks to optimize the reclamation activity, to minimize/eliminate the need for post-closure maintenance on engineered

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
		Coarse PK will be disposed of within the Coarse PK Pile, Hearne and 5034 pits.	accessible (prior to Kennady Lake refilling).	structures in order to achieve closure objective.
PK2 – Physically stable PK disposal areas to limit risk of facility failure.	Geotechnical stability analysis completed as part of the detailed design of rock covers by a professional engineer for the Fine PKC Facility and Coarse PK Pile; performance monitoring results and final inspection of rock covers and dykes by a professional engineer indicate the engineered structures are performing as per design.	Construction of the Fine PKC Facility and Coarse PK Pile in accordance with the engineering design and management plans.	Area inspected and as-built drawing is deemed acceptable and signed-off by a professional engineer. Geotechnical inspections (visual) of the site will occur post-closure in concert with the site geotechnical inspection and monitoring program. Thermal monitoring will be completed using at least three thermistors that will be installed in each Mine Rock Pile. Permafrost establishment is not required to achieve stable slopes, but may enhance it.	Same as PK1.
PK3 – Chemically stable Processed Kimberlite Facilities (Piles) that do not endanger human, wildlife, or environmental health and safety.	Satisfactory results of a post-closure risk assessment completed by a qualified person indicate that chemical risks at site are consistent, or less than, EIS impact predictions.	This objective addresses the solids portion (e.g., PK) of the PK Facilities. The liquid portion (e.g., seepage water) is addressed within KL1. Construction of the PK facilities will be in accordance with the approved designs and constructed using non-PAG material.	Geochemical testing as per the approved Geochemical Characterization Plan (De Beers, 2015 v3) to evaluate PAG and non-PAG quality.	None.

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
<i>Infrastructure</i>				
I1 – Disturbed areas will be safe for people, wildlife, and vegetation.	<p>Final site inspection by a professional engineer or qualified professional to confirm removal of all potentially hazardous materials.</p> <p>Disturbed areas at the Mine are remediated to applicable federal/territorial soil quality guidelines or site-specific risk-based criteria as required.</p> <p>Soil that exceeds criteria (assumed to be the agricultural land use criteria at this time) is either removed or managed to the satisfaction of a qualified engineer to achieve protection of environmental and human health.</p>	<p>Post-closure Environmental Site Assessment and Remedial Action Plan completed by a professional engineer or geoscientist, in accordance with GNWT guidelines (GNWT, 2003).</p> <p>Removal of all potentially hazardous materials and satisfactory final inspection by a professional engineer or geoscientist.</p>	<p>Final landscape inspected by a qualified professional and representative of affected Aboriginal Parties to confirm completion of remedial activities.</p> <p>Water and soil quality monitoring may be required. This will be determined during development of the Remedial Action Plan.</p> <p>See SW5 for wildlife risk assessment details.</p>	None.
I2 – Re-vegetation targeted to priority areas.	<p>Available surface materials have been salvaged and applied as a growth substrate; compacted soil surfaces (e.g., roads, pads) have been scarified; and native species have been applied to disturbed areas.</p> <p>Conformance of the site to the revegetation plan, as</p>	<p>Available surface materials have been salvaged and applied as a growth substrate; compacted soil surfaces (e.g., roads, pads) have been scarified; and native species have been applied to disturbed areas.</p> <p>As informed by the research, a revegetation plan for the site will be</p>	<p>Final landscape inspected by a qualified professional and representative of affected Aboriginal Parties.</p> <p>Submission of as-built conditions in a summary report completed by a qualified person.</p> <p>Vegetation monitoring will be completed to evaluate the establishment of</p>	<p>Appendix E, Section 2.1: Revegetation</p> <p>Research Interests: Identification of priority areas for revegetation. Development of criteria for revegetation success.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
	<p>determined by a qualified professional.</p> <p>Specific criteria will be selected based on achievable coverage of vegetation for the environmental setting at the Mine as determined following completion of the revegetation research and will be included in the Final Closure Plan.</p>	<p>developed for the Mine with a goal to promote accelerated natural recovery.</p>	<p>vegetation at reclaimed surfaces across the site and provide a documented case study for future projects.</p>	
<p>I3 – Aesthetic conditions of the infrastructure areas are similar to surrounding natural conditions.</p>	<p>No visible buildings, equipment or non-local materials on surface.</p> <p>Final grading/contouring reflects surrounding topography (e.g. steep edges of roadways and pads flattened) and natural drainage patterns re-established where possible, native vegetation species established at final closure using methods informed by the research findings</p>	<p>The objective addresses aesthetics of the Mine. Habitat function is addressed in Objective I1 and I2. Revegetation is addressed in Objective I2.</p> <p>A final plan for grading/contouring the site, that incorporates the removal of all buildings, equipment and non-local materials on the surface, will be developed.</p> <p>No visible buildings, equipment or non-local materials on surface.</p> <p>Final grading reflects surrounding topography and re-establish natural drainage pathways where possible; native vegetation species</p>	<p>Final landscape inspected by a qualified professional and representative of affected Aboriginal Parties to confirm completion of remedial activities.</p>	<p>Appendix E, Section 2.3: Final Landform Options to Support Wildlife Habitat</p> <p>Research Interests: Identification of landforms for mine components with consideration given to wildlife use and habitat.</p>

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com

Proposed Closure Objective	Proposed Closure Criteria	Primary Reclamation Activities	Post-Closure Inspections and/or Monitoring	Reclamation Research
		<p>applied at final closure using methods informed by the research findings.</p> <p>At Mine Rock Piles, remaining access roads have been scarified, and salvaged overburden applied, if available.</p>		

Notes:

Site Wide (SW), Processed Kimberlite (PK), Kennady Lake (KL), Mine Rock (MR), Open Pits (OP), Infrastructure (I).

DE BEERS CANADA

1601 Airport Road NE, Suite 300, Calgary, Alberta, T2E 6Z8

T: 403 930 0991 | F: 587 349 7329

www.debeersgroup.com/canada | info.canada@debeersgroup.com