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31 March 2016

Re: Annual Interim Closure and Reclamation Plan Progress Report – 2015 (revised)

Please find attached the Diavik Diamond Mines (2012) Inc. (DDMI) Annual Interim Closure and Reclamation Plan Progress Report for 2015 with revisions as requested by WLWB Staff (February 26, 2016). This submission is being made under Part K Item 4.

The report contains a substantial amount of information in support of Diavik's closure planning. DDMI notes that:

- Appendix IV-1 - *North Country Rock Pile Final Closure Plan* is being submitted for approval (Part K Item 7). The Plan includes design drawings (Appendix –X) that are also for approval (Part F Item 4).
- Appendix IV-2 - *A21 Interim Closure Plan* is being submitted for approval (Part K Item 3) as directed by WLWB (August 19, 2015).
- Appendix VIII – updated RECLAIM Estimate is being submitted for approval (Part C Item 2).

Please let us know if you require any additional clarification.

Regards,

Gord Macdonald

cc Patty Ewaschuk (WLWB)
Ryan Fequet (WLWB)

Attachment – Annual Interim Closure and Reclamation Plan Progress Report – 2015 (Revised)

Diavik Diamond Mines (2012) Inc.

Annual Interim Closure and Reclamation Progress Report – 2015 (Revised)

Document #: CLSR-003-1015R0

31 March 2016

Prepared for the Wek'èezhíi Land and Water Board under Water License W2015L2-0001

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1. Report Summary

- Community Engagement Summary

    - During 2015, DDMI communicated updates on closure planning and TK Panel activities to various levels of community governments (refer to Table 2.1).

    - TK Panel Session 8 was held in Yellowknife from 2-4 December 2015 to discuss options for water quality monitoring and reef design at closure, as well as the 2015 results and future plans for the AEMP TK Study (Appendix I-2).

    - Reviewed DDMI responses to TK Panel Session 7 Re-vegetation recommendations with Panel members; Panel recommendations will ultimately also be shared with community leadership, Participation Agreement Implementation Committees, community members and regulators (Appendix I-1).

- Reclamation research programs are progressing substantially on plan.

- A revised and expanded research task status and schedule have been included in Section 3 at the request of WLWB Staff.

- An Interim A21 Closure and Reclamation Plan is included (see Section 4.1) as is a North Country Rock Final Closure Plan (see Section 4.2). DDMI understands these to be items for WLWB approval.

- Report on Site-specific Risk-Based Closure Criteria have been proposed by ERM and are submitted for review and comment (see Section 5).

- Total closure security of $152,210,000 is held by the Territorial and Federal governments as of December 31, 2015. An updated RECLAIM estimate is included in Appendix VIII (see Section 8).

2. Community Engagement

Diavik Diamond Mines Inc. (DDMI) has Participation Agreements (PA) with each of the 5 community organizations that are signatories to the Environmental Agreement: the Tłı̨chǫ Government (TG), Kitikmeot Inuit Association (KIA), Łutsel K'e Dene First Nation (LKDFN), Yellowknives Dene First Nation (YKDFN) and the North Slave Métis Alliance (NSMA). DDMI values opportunities to share progress on closure planning and other initiatives with community members and leadership, and works with each PA organization to determine the most suitable method to achieve this.

The Traditional Knowledge (TK) Panel that was originally established under the Environmental Monitoring Advisory Board (EMAB) has largely focused on opportunities to incorporate TK into closure planning. The Panel is made up of three representatives that are selected by each of the five PA communities. Diavik began to directly administer the TK Panel in 2013, and the Panel met to discuss post-closure water quality monitoring and reef design from 2-4 December 2015. Recognizing that Panel members are not fully representative of their community organization, DDMI shares recommendations from the Panel with the appropriate community representatives and the Environmental Monitoring Advisory Board (EMAB).

Engagement efforts with DDMI's community partners relating to closure reached various levels of the community in 2015, including Chiefs, Implementation Committees, community governments and local Environment departments, committees and working groups. The following table summarizes each of the community engagements relating to closure that DDMI conducted in partnership with the PA organizations during 2015. Topics relating to closure include the TK Panel, Environmental Performance updates, closure planning and water license renewal.

Table 2.1: Summary of 2015 Community Engagements

	Methods	**Dates**	**Topics**
KIA Steering Committee	Meeting	2015-11-09	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview
Kugluktuk - Hamlet	Meeting	2015-08-31	Closure TK Panel administrative support
LKDFN L&W Committee	Meeting Site Visit	2015-03-26 2015-04-20	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview

NSMA Environment	Meeting	2015-03-27	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview
TG Kwe Beh Working Group	Meeting	2015-09-29	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview
TG Implementation & Committee	Meeting Meeting Conference Call	2015-02-18 2015-04-07 2015-04-21	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview
TG – Chiefs & Chief Executive Committee	Meeting	2015-07-30	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview
YKDFN - Implementation	Meeting Meeting	2015-11-26 2015-12-11	Closure TK Panel administrative support
YKDFN Chiefs	Site Visit / WR Tour Meeting Meeting Conference Call Meeting Meeting	2015-03-23 2015-03-25 2015-04-24 2015-06-19 2015-09-11 2015-09-22	Environmental Performance, Water License Renewal, Closure Planning & TK Panel overview

Progress

DDMI has had discussions with community representatives to determine how best to effectively engage with communities on various levels (leadership, organization, members, youth) and topics. As in the past, business opportunities and socio-economic initiatives are top priorities for community members. Community engagement in 2015 also focused largely on DDMI's water license renewal, which included closure discussions. Direct engagement for closure planning was realized across many levels of the community including Chiefs, Implementation Committees, community governments and local Environment departments, committees and working groups.

Diavik has arranged for three successful TK Panel sessions since the Panel was transferred to Diavik from EMAB during the summer of 2013. Each PA organization has been supportive of the TK Panel process and membership, and has been instrumental in assisting and preparing Panel members for each session. With having relatively consistent membership, the process and function of the TK Panel continues to evolve and strengthen each time the Panel meets. One change that Panel members requested of their PA organizations at the August 2014 session was for a shift in Panel membership that resulted in 1 Elder male, 1 Elder female and 1 youth from each PA organization attending the 2015 session.

During TK Panel Session 7 (August 2014), discussions focused on re-vegetation at the mine site. A summary of that session and the Panel's recommendations were shared in the 2014 ICRP Annual Progress Report. DDMI shared their response to the Panel recommendations relating to re-vegetation during the December 2015 Panel session, and they are included as part of the DDMI TK Panel Recommendations & Response Tracking tables (Appendix I-1).

A fish habitat design review was originally scheduled for later discussions with the TK Panel. However, the Aquatic Effects Monitoring Program (AEMP) Traditional Knowledge (TK) Study was conducted in 2015 so the opportunity to review the results of this study and focus on post-closure water quality monitoring and fish habitat design resulted in a decision to conduct this session earlier. The TK Panel met in Yellowknife from 2 to 4 December 2015 and the report from that meeting is included as Appendix I-2. An EMAB representative was also available to attend part of the December 2015 session as an observer.

Panel members and facilitators have incorporated a cross-cultural approach to learning that has demonstrated an increased understanding of the technical challenges associated with closure and has resulted in more practical recommendations from the Panel. A table of recommendations relating to closure that have been provided through TK/IQ Panel reports is included as Appendix I-1, with a summary of the primary recommendations for water quality monitoring and fish habitat design outlined below. As in previous years, DDMI's response and actions remain as 'pending' for the most recent Panel session (#8), as DDMI prefers to discuss these with the TK Panel prior to public release.

The goals for Session 8, Reefs and Water Monitoring, were to:

- Provide an opportunity for TK Panel members to determine priorities and methods for water management and monitoring after closure;

- Review the results of the 2015 AEMP TK Study and determine future plans for this study;

- Consider fisheries habitat at closure, specifically the proposed reefs within the dikes; and,

- Learn how Panel recommendations provided to Diavik in the past are currently being considered.

There were six key themes that emerged from this TK Panel session. These are listed below, including a brief summary of the main recommendations associated with each item.

1. Monitor Water Quality and Quantity

The TK Panel considered areas that they would want sampled and identified the reasons why. There was also discussion on how or whether to integrate TK and western science monitoring techniques, as well as identifying landscape features that may naturally help to clean or heal water. Panel members noted that community members are comfortable tasting Lac de Gras water (as part of the AEMP TK Study), but that they were not comfortable tasting water on East Island. A visual inspection of water bodies, combined with scientific sampling, was the preferred method for monitoring East Island water quality at closure. Indicators of good water quality from a TK perspective were identified, such as the presence of bugs in lakes and animals drinking the water. Fish taste is also considered an indicator of water quality, as fish can taste different if the water changes.

The key areas of concern relating to water quality at closure were runoff from the PKC and North Country Rock Pile as well as the water quality in the pits. Panel members wanted to be sure that any contaminants were removed from the pits and underground prior to flooding, and that the dikes would not be breached until the water was proven over many years to be of good quality. The Panel felt that water quality monitoring should be done regularly, with a particular focus on heavy metals and freshet. Panel members noted that moss can filter water, so use of this and other types of vegetation should be considered as a natural way to help clean water in channels and around shorelines.

2. AEMP TK Study Support

The TK Panel supports ongoing implementation of the AEMP TK Study into the future, even considering options for funding and organizing this program after DDMI is finished; around 2030. The Panel would like to continue to use the camp site that Diavik has on the south side of Lac de Gras to carry out this work, until at least 2018. The Panel also reviewed the location and frequency of the scientific sample locations for the AEMP and are in support of these. There are some minor changes that the Panel recommended for the AEMP TK Study, namely: water quality taste test of plain, cold lake water (not tea) plus a visual inspection of boiled lake water; setting fish nets on both sides of East Island; including 2 youth and 2 Elders; and, considering sampling water and fish in the area of the Narrows (between Lac de Gras and Lac du Sauvage) due to development upstream.

3. Fish Habitat Considerations

The most important question for the Panel to address was the type of habitat that should be built inside the dike areas. Spawning habitat was initially of interest, but Panel members determined that there was enough spawning habitat in Lac de Gras so they shifted their focus to rearing and resting habitat for small fish. Gravel with a mix of sand or till in shallow areas was considered as the best substrate for the new lake bottom. The reefs in this area should be of variable size and shape while being far enough under the water to allow for current and for ice to freeze solid.

TK Panel members felt that the shoreline in the A154 pit could be largely left as-is and that the ramps in the pits should be left as well, so that caribou and other wildlife have a safe access point into and out of the water. In relation to the A418 pit, there was concern that an approximately 1 kilometre section of pit wall would become a cliff over the water/ice that could be dangerous for animals. The Panel recommended that this section be broken up with some sloped areas that would allow for safe passage.

4. Engage Young People from the Communities

Discussions on post-closure monitoring helped the Panel identify that community capacity is not at a level where Aboriginal communities could undertake current monitoring responsibilities carried out by the mines or their consultants. The importance of supporting youth to start training in environmental monitoring was identified as critical. Elder Panel members identified that it is the young people of today that can learn to conduct this type of monitoring and carry through with it to post-closure, benefitting from being a part of the decisions and activities with which the Panel is involved at present. It was important to the Panel members that these young people be knowledgeable in science and equally equipped with personal experience and knowledge (i.e. the foundations of TK). A number of existing training programs were identified to help young people learn the skills required for this type of work.

5. Diavik and TK Panel Demonstrate a Collaborative Model

Collaboration between different groups, disciplines, and generations strengthens the nature and quality of the work that is carried out by TK Panel members. While the membership of the TK Panel has shifted slightly to become more gender balanced, many members have been participating since the TK Panel began in 2011. Such commitment levels are indicators of the success of the TK Panel and enable the members to move through a series of related topics with each session, building on their knowledge from one year to the next.

The purpose of the Panel is to provide TK expertise that simply may not have been applied in the same setting before, but nonetheless, is integral to developing a comprehensive closure plan with relevant and effective design considerations. It is the commitment of TK Panel members and Diavik staff alike to respect one another’s perspectives and see value in learning from each way of knowing that is at the core of this successful collaborative model.

6. Climate Change and the Mine

This particular TK Panel Session took place the week after the *COP 21: UN Climate Change Conference* such that environmental issues, in general, and climate change impacts, in particular, were on people's minds. More specifically, Panel members were concerned about lower water levels that some areas of the North are experiencing, and how filling the pits would impact water levels in Lac de Gras. They were also interested in learning about the calculations used to predict the impacts of climate change for the North Country Rock Pile, because the integrity of the pile relies on maintaining a frozen core. At a higher level, Panel members connected the products of mining to lifestyle choices and identified that the mine should be working on small things in relation to energy efficiency, as they all count towards a big improvement one day.

Challenges

As with years past, there continue to be numerous demands on time and people in each community, many of which are more pressing than closure planning. With limited resources, community organizations and members have to prioritize how best to allot their time. Challenges encountered with community member engagement in recent years, namely lack of attendance, have resulted in a shift in focus to community leadership and established committees that represent the interests of the communities. DDMI is still interested in engaging with community members, and is responsive to requests for such opportunities from community leadership.

The TK/IQ Panel has provided a total of 130 detailed recommendations for consideration by DDMI and other parties, but Panel members have been clear that their views do not necessarily represent those of their community organization. As such, their recommendations are only to be considered as advice that requires confirmation from each community organization. This is a cultural consideration that is common in northern communities, but the challenge lies again in gaining timely access to community leadership to clarify their position on the TK/IQ Panel's growing number of suggestions prior to updating the ICRP in 2016. Panel members have expressed an interest in being involved in presenting back to their communities, but it is a matter of availability.

Discussions with communities on closure options and how the site will look at closure can be challenging given that all maps and figures show the current mine site. Visitors are confronted with large-scale infrastructure when at the site and there are few examples or experiences with large-scale reclamation areas within the NWT. DDMI recognizes this challenge and is evaluating possible methods, for use with the TK Panel and other stakeholders, which would better illustrate what the mine site could/would look like at closure. The ultimate goal of such a tool would be to advance closure discussions and increase the level of understanding of closure plans, options and challenges in order to more effectively obtain feedback.

DDMI is interested in further discussions to confirm community preferences for closure options relating to each of these topics and is evaluating methods to more clearly illustrate how the mine site may look after closure. DDMI suggests that it would be in the best interest

of communities to have these discussions prior to issuing the updated Interim Closure and Reclamation Plan in December 2016, rather than waiting to identify concerns through the Wek'èezhìi Land and Water Board review process. DDMI is interested in continuing to work with community organizations to further develop engagement strategies for closure and plans to discuss this with communities in the coming year.

3. Reclamation Research Update

3.1 Status of Immediate Research Tasks

The status of each immediate research task is summarized in the following table. Where documentation is available for a research task a reference is provided. If the documentation has not been previously submitted to the WLWB, a copy is included in Appendix II. The full research plans can be found in Appendix VIII of the Interim Reclamation and Closure Plan (ICRP) (Version 3.2). A copy has been included in this document as Appendix III-1. It has been revised to include more specific references to task numbers and accompany the following table.

As per W2015L2-0001 Schedule 9 Item 2.c.iv scopes of work for tasks:

2.4 – Updated predictions of flooded pit water quality (see Appendix III-2);

2.5 – Screening level risk assessment of flooded pit water quality (see Appendix III-2);

Scopes of work for the following task has not been developed as the scope is dependent upon other outcomes from other activities that are not yet complete:

1.3.2 – Landform model – current efforts are on computerized images (Task 1.3.1) versus physical models.

Table 1. Research plan tracking table.

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
1. Traditional Knowledge and Community Engagement	1.1 Wildlife Movement	1.1.1 Desktop study to review available TK for caribou and other wildlife in the Slave Geological Province	Complete. *Literature Review of Traditional Ecological Knowledge Related to the Resource Sector.* July 2011.	**VIII-1 TK** 3.2.3.1 5.1.1.1	**Complete**		**Y**
		1.1.2 More detailed discussions with members from each of the Aboriginal organizations to obtain more specific recommendations on preferred options and where/how to best incorporate these recommendations in the final closure design, while still taking into account technical considerations.	On-going. TK/IQ Panel discussions continue to evolve on this topic (Appendix I-1) and community updates should provide further insight into each Aboriginal organization's preferences.	**VIII-1 TK** 3.2.3.2 3.2.3.3 3.2.3.4 3.2.3.5 3.2.4.3 5.1.1.2	**Y**	**na**[1]	**Y**
		1.1.3 DDMI hopes to discuss these topics in community-based workshops and with the TK Panel.	On-going. TK/IQ Panel discussions continue to evolve on this topic (Appendix I-1) and community updates should provide further insight into each Aboriginal organization's preferences.	**VIII-1 TK** 5.1.1.3	**Y**	**na**[1]	**Y**
	1.2 Re-vegetation	1.2.1 Desktop study to review available TK for vegetation in the Slave Geological Province	Complete. Documented in Appendix I-3 *Literature Review: Traditional Knowledge of Plant Life at the Diavik Diamond Mine.* October 2014.	**VIII-1 TK** 3.2.4.1 5.1.2.1	**Complete**		**Y**
		1.2.2 A summary of DDMI 5-year research on re-vegetation is to be provided to Aboriginal organizations and combined with TK views on which of those species are suited to re-vegetation or are beneficial for wildlife.	Completed. Summaries of the Phase I and II studies have been provided in annual Wildlife Monitoring Program reports. A full summary of both phases, including plans to continue re-vegetation research, was included in the 2012 Environmental Agreement report. Appendix C of the 2014 Literature Review (Appendix I-3) identified species valued by Aboriginal organizations and noted which of these species have been tested in DDMI's re-vegetation research.	**VIII-1 TK** 3.2.4.2 3.2.4.6 5.1.2.2	**Complete**		**Y**
		1.2.3 DDMI hopes to discuss these topics in community-based workshops and with the TK Panel.	Initiated. The TK Panel site visit of 20 August 2012 included a visit to the re-vegetation plots and a discussion of results to date. The Panel expressed an interest in further re-vegetation discussions and this was conducted from 14-18 August 2014. Recommendations relating to re-vegetation are included in Section 2 and Appendix II-2. DDMI is working with PA organizations to arrange community visits where the results of this Panel session would be shared (Q4 2014).	**VIII-1 TK** 3.2.4.4 3.2.4.5 3.2.4.7 5.1.2.3	**Y**	**na**[1]	**Y**
	1.3 Landforms	1.3.1 DDMI to work with Aboriginal organizations to begin developing more detailed images of what the mine will look like post-closure to assist community members in understanding what the mine site might look like. These images can incorporate different rock features, vegetation, or wildlife trails that community members may recommend.	Initiated. Both computer and clay models have been shared with community and TK/IQ Panel members over the past few years. Given the progress of the TK Panel, DDMI's intention is to capture the existing recommendations and develop a working model that provides a visual representation of the guidance provided to date. Ideally, DDMI is interested in developing a model that can be manipulated in real time to respond to stakeholder feedback. DDMI anticipates having a model developed by Q2 2016.	**VIII-1 TK** 3.2.5.1 5.1.3.1	**Y**	**Y**	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
		1.3.2 DDMI will assess the technical feasibility and material availability to meet Aboriginal organizations recommendations for key landforms. A model that best represents the final look of the land will be constructed and shared with each of the Aboriginal organizations to obtain any further feedback.	Pending. Refer to status in 1.3.1.	**VIII-1 TK** 3.2.5.2 3.2.5.3 5.1.3.2	**Y**	**N**	**Y**
		1.3.3 DDMI hopes to discuss the models in community-based workshops and with the TK/IQ Panel.	Pending. Refer to status in 1.3.1.	**VIII-1 TK** 3.2.5.4 3.2.5.5 5.1.3.3	**Y**	**na**[1]	**Y**
	1.4 Community Engagement - TK	1.4.1 Development of a TK/IQ Panel under the Environmental Agreement	Panel established under EMAB in 2012. Administration of the Panel was transferred to DDMI in August 2013. The TK Panel has completed a total of 7 sessions since its inception, with results from the most recent session summarized in Section 2.	**VIII-1 TK** 3.2.2.1 3.2.2.2 3.2.6.2 5.1.4.2	**Complete**		**Y**
		1.4.2 Formalize community engagement protocols with each of the Aboriginal organizations.	Ongoing. This work is reported annually in Section 2.0 of the ICRP Progress Report	**VIII-1 TK** 3.2.1.1 3.2.1.2 3.2.1.3 3.2.1.4 3.2.6.1 5.1.4.1	**Y**	**na**[1]	**Y**
	1.5 Semi-Fluid Processed Kimberlite Study	1.5.1 Initiate an independent toxicological and chemical assessment of semi-fluid PK material.	This new research was requested by the TK Panel in October 2013. The results are included in Appendix II-5: *Characterization of Extra Fine Processed Kimberlite Tailings from the Diavik Processed Kimberlite Containment Pond* .	**VIII-1 TK** New 5.2.2	**Y**	**Y**	**Y**
	1.6 Fish Habitat Design	1.6.1 engage TK Panel and communities on fish habitat designs for pit shelf areas	Panel addressed this topic in December 2015. Please See Section 2 and Appendix I-2: *DDMI Traditional Knowledge Panel Session #8 - Focus on Fish Habitat.*	**VIII-1 TK** 3.3.1 3.3.2 5.2.1	**Complete**	**na**[1]	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
2. Open Pit, Underground and Dike Area Research	Pit Water Quality	2.1 Geochemical loadings from the walls of the pit and underground workings are expected to be greater from areas with exposed biotite schist than areas with granite. The walls of the open pit represent the largest surface area of rock that will be washed by the flooding of the pit. The relative areas of granite versus biotite schist will be measured using photo imagery techniques and the results will be available for future updates to flooded pit water quality predictions.	Complete – documented in 2013 ICRP Progress Report.	**VIII-2 Pit-Dike** 3.1 5.1	**Complete**		**Y**
	Pit Water Quality	2.2 Actual geochemical loading rates from pit or underground walls during flooding will be measured by spraying water over small sections of exposed granite and biotite schist and collecting and analysing the wash water. These results will be compared with estimates from waste rock geochemical testing. The results will be available for future updates to flooded pit water quality predictions.	Complete – documented in 2013 ICRP Progress Report.	**VIII-2 Pit-Dike** 3.2 5.2	**Complete**		**Y**
	Fish Use of Dike Exterior	2.3 DDMI is working with Fisheries and Oceans Canada on a survey method for verifying fish use of the exterior slopes of the A418 and A154 dikes. This work may also be an opportunity to combine TK approaches. The information will be used to verify expected post-closure fish habitat use.	Complete – documentation in 2013 ICRP Progress Report.	**VIII-2 Pit-Dike** 3.3 3.4 5.3	**Complete**		**Y**
	Revised Predictions	2.4 Beyond 2013 the anticipated tasks relate to applying the results of reclamation research to update predictions of flooded pit water quality using the established mathematical modelling framework. The model is also expected to be used to evaluate the effect of different fill rates on flooded pit water quality and effects of post-closure groundwater flows on flooded pit water quality.	Not started	**VIII-2 Pit-Dike** 3.5 3.6 3.7 3.8 5.4	**Y**	**N**	**Y**
	Risk Assessment	2.5 Predicted water quality conditions would then be used as the basis for a screening level risk assessment to determine if the predicted water quality is expected to pose an unacceptable risk to aquatic life. Outcomes from the assessment could include revisions to closure criteria, identification of additional research tasks and/or the need for a more detailed risk assessment (See Appendix VIII Introduction).	Not started	**VIII-2 Pit-Dike** 3.9 5.5	**Y**	**N**	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
3. Waste Rock Research	3.0 Field data collection from the Test Piles, laboratory measurement and characterization of thermal, hydological, gas transport and geochemical processes.		2015 is the final field season for data collection. Data analysis to characterize processes have been ongoing with documentation through published papers. This will continue through 2015 and 2016. Instrumentation has been installed and is being monitoried in NCRP. Pile deconstruction and observation is complete with documentation through publication pending. Appenidx II-4 *Diavik Waste Rock Research Project - 2015 Annual Report* provides an update on progress to date.	**VIII-3 Wasterock** 3.2.1/3.3.1 3.2.2/3.3.3 3.2.3/3.3.4 3.2.4/3.3.5 3.2.5/3.3.6 3.2.6/3.3.7 3.3.2 5.2.4	**Y**	**Y**	**Y**
	3.1 Thermal	3.1.1 Based on the monitoring results from the test piles and waste rock as well as possible mathematical modelling, provide an estimate of the depth of annual thaw for the waste rock pile.	Complete – Documented in 2012 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.1.1	**Complete**		**Y**
		3.1.2 Provide this estimate for scenarios assuming both a cover and no cover.	Complete – Documented in 2012 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.1.2	**Complete**		**Y**
		3.1.3 Determine the effect of a climate change scenario on these initial estimates.	Complete – Documented in 2012 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.1.3	**Complete**		**Y**
		3.1.4 Revise estimates with any changes in monitoring information, mathematical modelling or cover design parameters.	Pending any changes.	**VIII-3 Wasterock** 5.1.1.4	**N**	**N**	**Y**
	3.2 Hydrological	3.2.1 Based on the monitoring results from the test piles and thermal analysis provide an interim estimate of the fraction of rainfall and snow melt expected to travel within the annual thaw zone and exit the rock pile as seepage.	Complete – Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.2.1	**Complete**		**Y**
		3.2.2 Provide this estimate for scenarios assuming both a cover and no cover.	Complete - Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.2.2	**Complete**		**Y**
		3.2.3 Determine the effect of a climate change scenario on these initial estimates.	Complete - Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 5.1.2.3	**Complete**		**Y**
		3.2.4 Revise estimates with any changes in monitoring information or cover design parameters.	Pending any changes.	**VIII-3 Wasterock** 5.1.2.4	**N**	**N**	**Y**
	3.3 Geochemical	3.3.1 Based on the monitoring results from the test pile, thermal analysis and hydrological analysis provide an interim estimate of the geochemical loading rates in seepage from the waste rock.	Complete – Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 3.2.7/3.3.8 5.1.3.1	**Complete**		**Y**
		3.3.2 Provide this estimate for scenarios assuming both a cover and no cover.	Complete - Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 3.2.7/3.3.8 5.1.3.2	**Complete**		**Y**
		3.3.3 Determine the effect of a climate change scenario on these initial estimates.	Complete - Documented in 2013 ICRP Progress Report.	**VIII-3 Wasterock** 3.2.7/3.3.8 5.1.3.3	**Complete**		**Y**
		3.3.4 Revise estimates with any changes in monitoring information or cover design parameters.	Pending any changes.	**VIII-3 Wasterock** 5.1.3.4	**N**	**N**	**Y**
	3.4 Finalize estimates of post-closure thermal, hydrological and geochemical conditions for the waste rock pile. Final evaluation of the expected performance of a Type I and till cover, as compared with no cover, on seepage water quality and quantity. Evaluation of cost-benefit of a waste rock pile cover.		Pending any changes in thermal, hydrological or geochemical estimate basis.	**VIII-3 Wasterock** 5.2.1 5.2.2 5.2.3	**N**	**N**	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
4. Processed Kimberlite Containment Area Reclamation Research	4.1 Geotechnical	4.1.1 Interpretation and analysis of piezocone testing of the PKC slimes to determine consolidation rates and magnitudes. An estimation of consolidation rates and magnitudes can provide an indication of final landscape topography, and the volume of pore water that may be expelled during consolidated.	Complete. Documented in 2012 ICRP Progress Report.	**VIII-4 PKC** 3.2.1.1 5.1.1.1	**Complete**		**Y**
		4.1.2 Laboratory tests for additional slimes characterization, could contribute to estimates of consolidation rates and magnitudes.	Complete. Documented in 2012 ICRP Progress Report.	**VIII-4 PKC** 3.2.1.2 5.1.1.2	**Complete**		**Y**
		4.1.3 Installation of thermistors in the beaches and/or slimes and collection of thermal data can provide an indication of permafrost development and the propensity for thermokarst topography.	Installation complete. Data collection and interpretation is on- going. To-date results are described in Appendix II-1 *Four-Year Hydrochemical Field Investigation of Processed Kimberlite Weathering.*	**VIII-4 PKC** 3.2.1.3 5.1.1.3	**Y**	**Y**	**Y**
		4.1.4 Contract a qualified engineer to review the 2001 cover design for the PKC. Specifically to provide expert opinion on the expected performance of the till layer as an impermeable layer over an unconsolidated PK material and provide a written report.	Complete. Documented in 2013 ICRP Progress Report.	**VIII-4 PKC** 3.2.1.4 5.1.1.4	**Complete**		**Y**
	4.2 Geochemical	4.2.1 Annual or semi-annual sample collection from surviving/accessible piezometers (as accessible) to monitor changes to pore water chemistry and identify any potential elements of concern.	On-going. See Appendix II-1 *Four-Year Hydrochemical Field Investigation of Processed Kimberlite Weathering.*	**VIII-4 PKC** 3.2.2.1 5.1.2.1 3.3.6 5.2.5	**Y**	**Y**	**Y**
		4.2.2 Pore water chemistry trend analysis and interpretation; to identify any changes in pore water chemistry over time and identify any potential elements of concern.	On-going. See Appendix II-1 *Four-Year Hydrochemical Field Investigation of Processed Kimberlite Weathering.*	**VIII-4 PKC** 3.2.2.2 5.1.2.2	**Y**	**Y**	**Y**
		4.2.3 Laboratory and/or small scale field leaching experiments to monitor accelerated and in situ weathering of FPK and the resultant water quality.	Ongoing. See Appendix II-2 *Technical Memorandum – PK Tank 2014 Progress Report* and Appendix II-3 *Technical Memorandum – PK Static and Kinetic Tests.*	**VIII-4 PKC** 3.2.2.3 5.1.2.3	**Y**	**Y**	**Y**
		4.2.4 Pore water chemistry modelling based on pore water chemistry trends, and laboratory experiments and/or small-scale field experiments that may include predictive/reactive transport modelling.	On-going. An initial interpretive report is included as *Appendix II-1: Sources of Dissolved Ions to the Process Kimberlite Containment Facility at Diavik Diamond Mines Inc.*	**VIII-4 PKC** 5.1.2.4	**N**	**Y**	**Y**
		4.2.5 A screening level risk assessment using available PKC pond monitoring (SNP 1645-16) information, pore water chemistry information, and laboratory and/or field experiment preliminary results to estimate possible outlet seepage water quality. This risk assessment will identify parameters of potential concern and may help focus characterization of sources (e.g. pore water, beach runoff) or processes (e.g. freezing, oxidation) governing the concentrations in the outlet and seepage water.	On-going. An initial problem formulation report was submitted to WLWB March 17, 2016: *Site-specific Risk-based Closure Criteria – Phase I Report*	**VIII-4 PKC** 5.1.2.5	**Y**	**Y**	**Y**
	4.3 Water quality criteria	4.3.1 A screening level risk assessment will be completed based on initial estimates of probable ranges of outlet water quality and quantity. Water quality criteria from Appendix V, Table V7 will be used as the basis for screening. Areas where exposure concentrations will be estimated include streams and or inland lakes along any seepage pathway and areas of Lac de Gras.	On-going. An initial problem formulation report was submitted to WLWB March 17, 2016: *Site-specific Risk-based Closure Criteria – Phase I Report*	**VIII-4 PKC** 3.2.3.1 5.1.3.1	**Y**	**Y**	**Y**
		4.3.2 Update water quality criteria, if required	A Site-specific Risk-based Closure Criteria Phase II Report has been submitted March 17, 2016 with outcomes included in ICRP V4.0.	**VIII-4 PKC** 3.2.3.2 5.1.3.2	**Y**	**na**[2]	**Y**
	4.4 Final Evaluation	4.4.1 Thermal modelling including modelling of climate change scenario.	Not started.	**VIII-4 PKC** 3.3.1 5.2.1	**N**	**N**	**Y**
		4.4.2 Hydrological modelling.	Not started.	**VIII-4 PKC** 3.3.2 5.2.2	**N**	**N**	**Y**
		4.4.3 Predictions of seepage and outlet water quality.	Not started.	**VIII-4 PKC** 3.3.3 5.2.3	**N**	**N**	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
		4.4.4 Conduct and document detailed level risk assessment, if required.	Not started.	**VIII-4 PKC** 3.3.4 5.2.4	**N**	**N**	**Y**
		4.4.5 Update closure criteria.	Not started.	**VIII-4 PKC** 3.3.6 5.2.6	**N**	**na**[2]	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
5. North Inlet Reclamation Research	5.1 Follow-up studies and testing from 2010 characterization program to isolate the source of measured biological responses	5.1.1 Estimate leaching potential of contaminants from NI sediment	Complete – Documented in 2013 ICRP Progress Report.	**VIII-5 NI** 3.1.1 5.1.1a	**Complete**		**Y**
		5.1.2Confirm sediment chemistry and toxicity in NI sediment	Complete - Documented in 2012 ICRP Progress Report.	**VIII-5 NI** 3.1.1 5.1.1b	**Complete**		**Y**
		5.1.3 Conduct additional chemical and toxicological testing on NIWTP sludge	Complete - Documented in 2012 ICRP Progress Report.	**VIII-5 NI** 3.1.1 5.1.1c	**Complete**		**Y**
		5.1.4 Conduct zooplankton sampling in NI	Complete - Documented in 2012 ICRP Progress Report.	**VIII-5 NI** 3.1.1 5.1.1d	**Complete**		**Y**
		5.1.5 Conduct preliminary Toxicity Identification Evaluation (TIE)	Complete – Documented in 2013 ICRP Progress Report.	**VIII-5 NI NEW**	**Complete**		**Y**
		5.1.6 Model acceptable NI water quality conditions for a partial breach to Lac de Gras as a closure alternative	Pending outcome of Task 5.2	**VIII-5 NI** 5.1.1e	**Unknown**	**N**	**Y**
	5.2 Conduct and document screening level risk assessment for NI water and sediment quality		To be submitted January 31, 2016 under Part H Items 18 and 19.	**VIII-5 NI** 3.1.2 3.2.2 5.1.2	**Y**	**Y**	**Y**
	5.3 Conduct and document detailed level risk assessment, if required		Pending outcome of Task 5.2	**VIII-5 NI** 3.1.3 3.2.3 5.1.3	**Unknown**	**N**	**Y**
	5.4 Develop risk management strategy, if required		To be submitted January 31, 2016 under Part H Items 18 and 19.	**VIII-5 NI** 3.1.4 5.1.4	**Unknown**	**Y**	**Y**
	5.5 Update water and sediment closure criteria		Scheduled to be updated along with revisit of closure objectives in ICRP V4.0.	**VIII-5 NI** 3.1.5 3.2.4 5.1.5	**Y**	**Y**	**Y**
	5.6 Sediment Characterization Update		To be submitted January 31, 2016 under Part H Items 18 and 19.	**VIII-5 NI** 5.2.1	**Y**	**Y**	**Y**

Research Area	Topic	Scope	Status	ICRP Research Plan Reference or New	Work to begin in Next 3 Years? (Y/N)	Detailed Scope of Work Provided? (Y/N)	Timeline Updated?
6. Infrastructure Area Reclamation Research	6.1 Re-vegetation	6.1.1 Continue monitoring of re-vegetation research plots	Ongoing – progress report included as Appendix II-5 *Reclamation of Disturbed Sites at Diavik Diamond Mine – 2015 Annual Report.*	**VIII-6 Infrastructure** 3.2.1.1 5.1.1	**Y**	**Y**	**Y**
		6.1.2 Interpretation and documentation of field and laboratory monitoring results	See 6.1.1 above	**VIII-6 Infrastructure** 3.2.1.2 5.1.1	**Y**	**Y**	**Y**
		6.1.3 Assess information availability and applicability from Ekati	Complete. Documented in Appendix II-4 *Reclamation of Disturbed Sites in the North – Implications for Diamond Mines – A Literature Review.*	**VIII-6 Infrastructure** 3.2.1.3 5.1.1	**Complete**		**Y**
		6.1.4 Assess confidence in developing re-vegetation procedures	See 6.1.1 above	**VIII-6 Infrastructure** 3.2.1.4 5.1.1	**Y**	**Y**	**Y**
		6.1.5 Identify any additional research that may be required and long-term monitoring scope for existing re-vegetation plots.	See 6.1.1 above	**VIII-6 Infrastructure** 3.2.1.5 5.1.1	**Y**	**Y**	**Y**
		6.1.6 Finalize specific procedures for site-wide re-vegetation	See 6.1.1 above	**VIII-6 Infrastructure** 3.3.1 5.2.1	**N**	**N**	**Y**
	6.2 Contaminated soils	6.2.1 Conduct and document risk assessment for options for management and disposal of petroleum hydrocarbon contaminated materials.	Complete – Documented in 2012 ICRP Progress Report.	**VIII-6 Infrastructure** 3.2.2.1 5.1.2	**Complete**		**Y**
		6.2.2 Finalize procedures for management/disposal of hydrocarbon contaminated material.	Not started	**VIII-6 Infrastructure** 3.3.2 5.2.2	**N**	**N**	**Y**
	6.3 Closure Reference Concentrations	6.3.1 Develop site-specific, risk-based closure reference concentrations; document and distribute for review	On-going. An initial problem formulation report was submitted to WLWB March 17, 2016: *Site-specific Risk-based Closure Criteria – Phase I Report*	**VIII-6 Infrastructure** 3.2.3.1 3.2.3.2 5.1.3	**Y**	**Y**	**Y**
		6.3.2 Update closure criteria	A Site-specific Risk-based Closure Criteria Phase II Report was submitted March 17, 2016 with outcomes included in ICRP V4.0.	**VIII-6 Infrastructure** 3.2.3.3 5.1.3	**Y**	**na**[2]	**Y**
		6.3.3 if expected exposure concentrations of metals in water, soil, dust, plants or prey are identified as posing an unacceptable risk to wildlife or people, then specific research plans may need to be developed to address associated uncertainties	Pending outcome of 6.3.1 and 6.3.2	**VIII-6 Infrastructure** 3.3.3	**N**	**N**	**Y**
	6.4 Post Closure Vegetation Metals Level Risk	6.4.1 Literature and field studies to determine metals levels in plant tissue from test plots.	Ongoing – progress report included as Appendix II-5 *Reclamation of Disturbed Sites at Diavik Diamond Mine – 2015 Annual Report.*	**VIII-6 Infrastructure** 3.2.4.1 5.1.4 5.2.3	**Y**	**Y**	**Y**
		6.4.2 Compare these literature values with risk-based reference concentrations.	Not started	**VIII-6 Infrastructure** 3.2.4.2 5.1.4 5.2.3	**Y**	**Y**	**Y**
		6.4.3 Determine if there is a need to further research this potential contaminant pathway.	Pending outcome of 6.4.1 and 6.4.2	**VIII-6 Infrastructure** 3.2.4.3 5.1.4 5.2.3	**Y**	**Y**	**Y**
		6.4.4 if metals levels in post-closure vegetation remains a high risk contaminant pathway, determine appropriate post-closure monitoring methods as per Water License Part L, Item 3f.	Pending outcome of 6.4.1, 6.4.2 and 6.4.3	**VIII-6 Infrastructure** 3.3.4	**N**	**N**	**Y**
	Notes	1. Community and/or TK Panel engagement tasks do not lend themselves to conventional work scope definitions. 2. The methods used to update criteria are described in the previous tasks. Updated criteria would be one of the deliverables.					

3.2 Results Summary and Conclusions

The following sections summarize key results and conclusions, relevant to closure, derived from the reclamation research recently completed.

3.2.1 Traditional Knowledge and Community Participation

Results summaries related to community engagement and Traditional Knowledge are provided in Section 2.0.

Appendix II-5 provides the results of an independent assessment of the toxicity of the fine processed kimberlite material that would ultimately form the bottom of a closure PKC Pond. The report was prepared by the Toxicology Center at the University of Saskatchewan. This study was conducted as a recommendation from the TK Panel.

3.2.2 Open Pit, Underground and Dike Area Research

The TK Panel reviewed the closure plans for the open pit and dike with regard to fish habitat during Session #8. Their recommendations are included in Appendix I-1. DDMI will now consider these recommendations and respond back at the next TK Panel session.

3.2.3 Waste Rock Reclamation Research

No new results or conclusions with relevance to closure. The Final Design for the North Country Rock Pile is noted in Section 4 and included in Appendix IV-1.

3.2.4 Processes Kimberlite Containment Area Reclamation Research

PKC geotechnical and geochemical monitoring continues to provide useful information that helped analyse closure options and will support more detailed water quality predictions in the future. An additional coarse processed kimberlite tank experiment was initiated in 2015 (see Appendix II-2).

3.2.5 North Inlet Reclamation Research

No new results or conclusions with relevance to closure at this time. Additional submissions of relevance will be made to the WLWB through Water License Part H Items 18 and 19.

3.2.6 Infrastructure Area Reclamation Research

Multi-year research work in relation to re-vegetation is ongoing. The 2015 Progress Report is included in Appendix II-3.which includes summaries of findings.

3.3 Research Timelines

Research timelines have been adjusted based on results and progress to date and will continue to change as the research progresses. The following chart shows our current view of the research schedule. Task descriptions for each of the task numbers are included in the research status table in Section 3.1.

Research Task		2016	2017	2018	2019	2020
1. TK and Community Participation						
1.1 Wildlife Movement	1.1.1 Desktop study	Complete				
	1.1.2 Discussions					
	1.1.3 Engagement					
1.2 Re-Vegetation	1.2.1 Desktop study	Complete				
	1.2.2 Discussions	Complete				
	1.2.3 TK/IQ Panel	Complete				
1.3 Landforms	1.3.1 Development					
	1.3.2 Assessment					
	1.3.3 Discussion					
1.4 Community Engagement	1.4.1 TK/IQ Panel					
	1.4.2 Protocols					
1.5 Semi Fluid PK Study	1.5.1 Assessment	Complete				
1.6 Fish Habitat Design	1.6.1 TK Panel Review	Complete				
2. Open Pit, Underground and Dike Area						
2.1 Wall mapping		complete				
2.2 Geochmical loading		complete				
2.3 Fish use - exterior		complete				
2.4 Revised Predictions						
2.5 Risk Assessment						
3. Waste Rock						
3.0 Data Collection/Characterization						
3.1 Thermal	3.1.1 Initial estimate	complete				
	3.1.2 Scenarios	complete				
	3.1.3 Climate change	complete				
	3.1.4 Update estimates	pending				
3.2 Hydrological	3.2.1 Initial estimate	complete				
	3.2.2 Scenarios	complete				
	3.2.3 Climate change	complete				
	3.2.4 Update estimates	pending				
3.3 Geochemical	3.3.1 Initial estimate	complete				
	3.3.2 Scenarios	complete				
	3.3.3 Climate change	complete				
	3.3.4 Update estimates	pending				
3.4 Final Evaluation						
4. Processed Kimberlite Containment Area						
4.1 Geotechnical	4.1.1 Slimes analysis	complete				
	4.1.2 Slimes testing	complete				
	4.1.3 Instrumentation					
	4.1.4 Design review	complete				
4.2 Geochemical	4.2.1 Sampling					
	4.2.2 Trend					
	4.2.3 Leaching tests					
	4.2.4 Modelling					
	4.2.5 Risk assessment					
4.3 Water quality criteria	4.3.1 Risk assessment					
	4.3.2 Update criteria					
4.4 Final Evaluation	4.4.1 Thermal modelling					
	4.4.2 Hydological modelling					
	4.4.3 Seepage water quality					
	4.4.4 Risk assessment					
	4.4.5 Update criteria					
5. North Inlet Area						
5.1 Follow-up Studies	5.1.1 Leaching potential	complete				
	5.1.2 Sediment chemistry	complete				
	5.1.3 Sludge analysis	complete				
	5.1.4 Zoolpankton	complete				
	5.1.5 TIE	complete				
	5.1.6 Modelling	pending				
5.2 Screening level risk assessment						
5.3 Detailed risk assessment						
5.4 Risk management strategy						
5.5 Update criteria						
5.6 Sediment Characterization Update						
6. Infrastructure Area						
6.1 Re-vegetation	6.1.1 Monitoring					
	6.1.2 Interpretation					
	6.1.3 Ekati data	complete				
	6.1.4 Procedures					
	6.1.5 Gaps					
	6.1.6 Final Procedures					
6.2 Contaminated soils	6.2.1 Management options	complete				
	6.2.2 Final Procedures					
6.3 Reference Concentrations	6.3.1 Development					
	6.3.2 Update criteria					
	6.3.3 Risk Research	pending				
6.4 Vegetation metals	6.4.1 Field measurements					
	6.4.2 Compare					
	6.4.3 Gaps					
	6.4.4 Possible monitoring	pending				

4. Proposed Changes to Design Concepts

4.1 Pit, Underground and Dike Area

Closure activities related to the approved closure concept for the open-pits remain unchanged. Recommendations from the TK Panel are currently under consideration. An interim closure and reclamation plan in included for the A21 open-pit (Appendix IV-2).

4.2 Waste Rock Area

Appendix IV-1 includes the Final Closure Plan for the NCRP. This document is being submitted for approval by the WLWB. Re-sloping of the NCRP is required prior to construction of the till/rock cover system.

4.3 Processed Kimberlite Containment

The revised PKC closure design submitted with the 2013 ICRP updated was approved by the WLWB. There are no proposed changes to the design concepts. DDMI has made upgrades to the process plant to trial possible changes to the proportions of Coarse Processed Kimberlite (CPK) and Fine Processed Kimberlite (FPK). If implemented the proportion of CPK could increase and the proportion of FPK decrease. The current plan is to begin a trail operation of the upgrade to the process plant starting June 7, 2016. If feasible, it is expected that a greater proportion of CPK ("dry stacking") will assist with closure. DDMI will provide updates as information is obtained from the trail and impacts to the closure plan are better understood.

4.4 North Inlet

The approved closure plan for the North Inlet (NI) is to create a full connection with Lac de Gras to enable use of the NI by the fish of Lac de Gras, subject to confirmation that the conditions in the NI, particularly the NI sediments, are suitable and safe for aquatic life.

Diavik's Renewed Water License requires a North Inlet Hydrocarbon Investigation Report (Part H Item 18) and a North Inlet Sludge Management Plan (Part H Item 19). Both are to be submitted to the WLWB. The outcomes of these submissions and their reviews will inform advancement of the North Inlet closure design.

4.5 Infrastructure

Closure activities related to the approved closure concept for the re-vegetation are currently unchanged, but are pending consideration of recommendations from the DDMI Traditional Knowledge Panel as well as the results of ongoing research.

5. Closure Objectives and Criteria

At this time there are no proposed changes to the closure objectives documented in ICRP V3.2.

Specific closure criteria have been developed for the North Country Rock Pile and are included in Appendix IV-1.

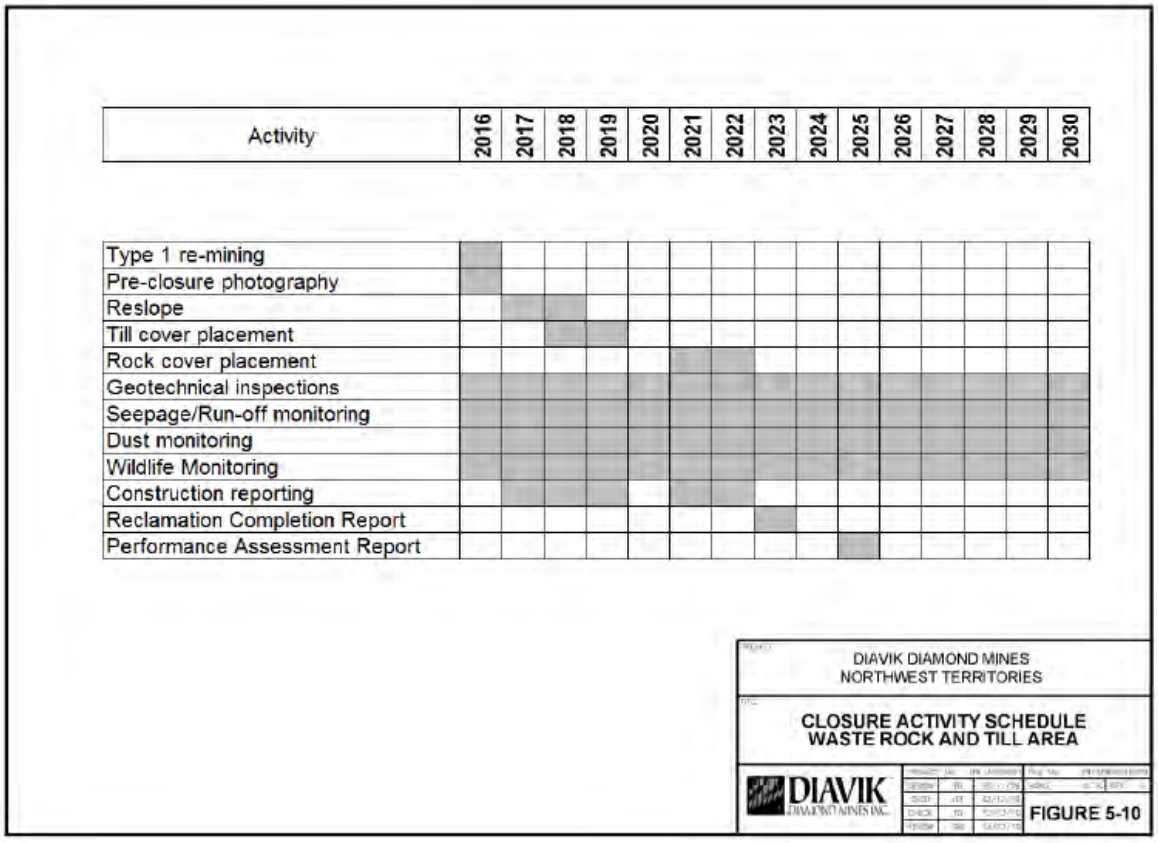
Site-specific Risk-based Closure Criteria (SSRBCC) prepared by ERM were submitted to WLWB March 17, 2016.

6. Progressive Reclamation

Efforts continued during 2014 to reduce the Diavik footprint by removing from site items that are no longer required. Appendix VI-1 lists assets removed from site (2015). Additionally, South Camp Dorms T and X (200 rooms) were demolished and are currently being held by the landfill, pending disposal.

Schedule 9, Item 2.f.iii of W2015L2-0001 specifies that: "This section should include a discussion about the impacts of leaving the Waste Rock pile uncovered, and provide enough information so that the Board can be confident that there are no unnecessary delays in placing the cover."

The North Country Rock Pile (NCRP) Final Closure Plan was submitted to the WLWB March 22, 2016 (also included as Appendix IV-1) with the following schedule. This NCRP closure schedule shows the cover being placed progressively during operations such that the cover is fully in place before mining operations are complete in 2024.



This schedule is largely unchanged from that approved by the WLWB in ICRP V3.2.

The primary impact of not progressively covering the NCRP during operations is financial. The schedule shown above takes advantage of the A21 mine schedule such that till and rock mined from A21 are direct hauled to the NCRP and placed as the closure cover. There is a significant cost savings with this schedule compared with an alternative schedule that would require re-mining of till and waste rock.

An additional possible impact of leaving the NCRP uncovered is the generation of a poor quality operational seepage requiring treatment. Site-specific research has quantified the expected benefits of a closure cover to NCRP seepage water quality (2013 ICRP Progress Report – Appendix II-5) however no NCRP specific seepage has been observed to date. It is not certain that if the NCRP was left uncovered during operations that a poor quality operational seepage would occur.

To be clear no financial or seepage water quality impacts are anticipated given the current schedule.

7. Schedule

The overall closure schedule remains largely as described in ICRP V3.2 and revised in the 2014 Annual ICRP Progress Report. There will be some adjustments in ICRP V4 due to the extension of the expected mine life to 2024. Some key milestones are listed below.

- ICRP V4.0 in December 2016.
- Commence progressive reclamation of the NCRP in 2017.

8. Security Update

The total closure security held by the Territorial and Federal Governments as of December 31, 2015 is $152,210,000 including $118,460,000 held specifically as required by Water License W2015L2-0001 – Schedule 2.

A21 dike closure liability was previously accounted for in the 2014 ICRP Progress Report. While some buildings have been added to accommodate A21 Construction, more have been removed over the last few years without yet taking an adjustment to the security amount. The buildings that will be located near the A21 construction area have been relocated from elsewhere on the mine site and so do not require a change in security amounts. A21 area monitoring and maintenance costs are included within the general site scope.

Appendix VIII includes an updated RECLAIM Estimate with the following updates:

1. NCRP till and rock volumes updated as per Golder (2016) Table 3
2. NCRP unit cost for rock cover set to GNWT recommended $3.30 (Letter to WLWB Feb 17, 2016)
3. PKC Cover unit cost reduced by $1.10 to align with reduced re-mine unit costs from GNWT (see NCRP)
4. Updated A21 - one breach volume corrected to be a causeway excavation
5. There has been a net removal of buildings since 2011 that has not been credited in this version
6. NCRP Contingency to 10% to reflect level of engineering detail (AANDC Letter to WLWB Oct 23, 2012)
7. added scarifying road/laydown area on A21 lease
8. added A21 pipeline removal
9. added A21 powerline removal

The above are included in DDMI RECLAIM Estimate 2016 V2.xlms

With these updates the Water License security changes from $118,460,000 to $113,497,000.

9. Other Important Information

In ICRP V3.2 it was anticipated that mining operations would end around 2023. Recently this was revised to 2024.

Schedule 9, Item 2.h of W2015L2-0001 specifies other information related to closure be provided. The following lists the specific items followed by the requested information or a brief explanation as to why the information is not currently available or relevant.

i. summary of any operational monitoring results (e.g., PKC Seepage monitoring) that impact closure;

Table 9-1 provides a summary of the PKC seepage monitoring water quality results for 2015.

Table 9-1. PKC Seepage Water Quality Monitoring Results – 2015.

Sample Point	Date	Aluminum (Al) - Total (mg/L)	Ammonia (N) (mg/L)	Arsenic (As) - Total (ug/L)	Cadmium (Cd) - Total (ug/L)	Chromium (Cr) - Total (ug/L)	Copper (Cu) - Total (ug/L)	Lead (Pb) - Total (ug/L)	Nickel (Ni) - Total (ug/L)	Nitrite (N) - Total (mg/L)	Zinc (Zn) - Total (ug/L)	Turbidity (NTU)	TSS	pH (pH)
1645-77 (Pump PKCE-SWC 2520)	1/13/2015	0.01	0.097	0.611	0.402	<0.050	6.36	0.162	58.2	0.0088	16.7	0.42	<2.0	7.74
1645-77 (Pump PKCE-SWC 2520)	2/28/2015	0	0.45	0.86	0.117	<0.25	18.9	1.86	19.4	0.13	32.1	1.13	<2.0	7.67
1645-77 (Pump PKCE-SWC 2520)	3/26/2015	0.01	0.4	1.02	0.104	0.128	9.08	0.747	17.9	0.132	12.1	1.6	<2.0	7.67
1645-77 (Pump PKCE-SWC 2520)	4/23/2015	0	0.28	0.997	0.1	<0.050	3.85	0.145	13.1	0.115	8.53	0.39	<2.0	7.73
1645-77 (Pump PKCE-SWC 2520)	11/5/2015	0.01	0.45	0.948	0.1	<0.050	4.6	0.093	21.6	0.71	10.5	0.26	<2.0	7.94
1645-77 (Pump PKCE-SWC 2520)	12/3/2015	0.06	0.7	2.2	0.31	0.4	25.8	2.21	45.5	0.737	112	0.78	<2.0	7.93
1645-77 (Pump PKCE-SWC 2520)	12/31/2015	0.01	0.61	0.907	0.099	<0.050	3.29	0.127	18.4	0.491	6.1	0.65	<2.0	7.82
	N	7	7	7	7	2	7	7	7	7	7	7	0	7
	Mean	0.014	0.427	1.078	0.176	0.264	10.27	0.763	27.7	0.332	28.3	0.75	<2.0	7.79
	Standard Deviation	0.021	0.200	0.513	0.126	0.192	8.70	0.903	17.1	0.307	37.9	0.48	NA	0.11
1645-78 (Pump PKCE-SWC 2035)	3/26/2015	0.02	1.8	1.65	0.0556	0.896	1.84	0.338	14.8	0.287	7.92	0.83	<2.0	7.38
1645-78 (Pump PKCE-SWC 2035)	4/23/2015	0.01	2.1	1.41	0.0625	0.1	1.22	0.109	15	0.341	7.28	0.53	2.5	7.53
1645-78 (Pump PKCE-SWC 2035)	5/22/2015	0.01	1.5	1.27	0.096	0.124	1.05	0.226	15.6	0.118	5.15	0.36	2	7.59
1645-78 (Pump PKCE-SWC 2035)	7/17/2015	0.01	1.3	1.36	0.1	0.068	1.26	0.225	14.2	0.395	7.51	2.84	<2.0	7.43
1645-78 (Pump PKCE-SWC 2035)	8/13/2015	0.01	1.6	1.07	0.072	0.136	1.14	0.131	16.8	0.405	8.26	0.29	<2.0	7.66
	N	5	5	5	5	5	5	5	5	5	5	5	2	5
	Mean	0.012	1.660	1.352	0.077	0.265	1.30	0.206	15.3	0.309	7.2	0.97	2.25	7.52
	Standard Deviation	0.004	0.305	0.211	0.020	0.354	0.31	0.091	1.0	0.117	1.2	1.07	0.35	0.11
1645-79 (Pump PKCS-SWC 1567)	3/26/2015	0.49	7.4	1.43	0.134	5.26	12	35	49.2	0.0536	78.6	17.1	11.5	8
	N	1	1	1	1	1	1	1	1	1	1	1	1	1
	Mean	0.490	7.400	1.430	0.134	5.260	12.00	35.000	49.2	0.054	78.6	17.1	11.5	8
	Standard Deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1645-80 (Pump PKCW-SCW 4957)	1/13/2015	0.01	0.74	1.14	0.0933	0.05	7.09	1.08	15.9	0.534	14.5	0.31	<2.0	7.89
1645-80 (Pump PKCW-SCW 4957)	4/23/2015	0	0.18	0.604	0.355	<0.050	5.68	0.327	52.7	0.0193	29.9	0.37	4	7.64
1645-80 (Pump PKCW-SCW 4957)	5/22/2015	0	0.072	0.294	0.682	<0.050	9.03	0.095	104	0.0346	60.4	0.6	2.5	7.34
1645-80 (Pump PKCW-SCW 4957)	6/19/2015	0.01	0.32	0.551	0.473	<0.050	5.9	0.277	45.3	0.0609	38.1	0.43	3	7.49
1645-80 (Pump PKCW-SCW 4957)	7/17/2015	0.01	0.12	0.627	0.434	0.2	9.85	1.33	38.1	0.0257	63.7	0.88	<2.0	7.48
1645-80 (Pump PKCW-SCW 4957)	11/5/2015	0.01	0.11	0.485	0.467	0.1	16.5	2.15	46.1	<0.020	39.2	0.2	<2.0	7.76
	N	6	6	6	6	3	6	6	6	5	6	6	3	6
	Mean	0.007	0.257	0.617	0.417	0.117	9.01	0.877	50.4	0.135	41.0	0.47	3.17	7.60
	Standard Deviation	0.005	0.252	0.283	0.192	0.076	4.03	0.793	29.2	0.224	18.6	0.24	0.76	0.20

ii. any changes to the estimates of amounts of Reclamation materials that will be available or required;

A21 is expected to produce 6 Mt of till and 27 Mt of non-PAG rock. Table 9-2 provides the current estimates of existing Type I and till sources excluding A21. Table 9-3 provides the current estimate of required materials.

Table 9-2. Current estimates of potential reclamation materials.

Area	Type I (Mt)	Till (Mt)
North Country Rock Pile	31.37	0.00
Main Till Pile	0.00	4.28
Till Pile West of PKC	0.00	0.19
Dump 12	0.79	0.00
Wet Well	0.16	0.00
Run-of-mine Laydown	2.49	0.00
Test Piles	0.39	0.04
A21 UG Portal Area	0.10	0.00
Waste Transfer Area	0.25	0.00
Airport Runway and Apron	1.85	0.00
Dump 7	1.32	0.00
N3 Laydown	0.46	0.00
Pit Access Road	0.15	0.00
Pond 14	0.48	0.00
UG Portal Area	0.67	0.00
South Haul Road	0.44	0.00
A21 Causeway	2.51	0.00
AN Storage/Emulsion Plan Road	0.38	0.00
Pond 2 Dam	1.27	0.00
Total	**50.90**	**4.50**

Table 9-3 Estimated Operations Waste Rock Requirements 2016-2024

Area	Type I (Mt)	Type III (Mt)
A21 Construction (Aggregate)	2.6	0.0
A21 Construction (Run-of-mine)	1.3	0.0
Crusher Feed (Site Aggregate Products)	0.9	0
Underground Cemented Rock Fill	0.0	3.3
Total	**4.8**	**3.3**

Notes: Mt = million tonnes (1 tonne = 1,000 kilograms);

iii. once research results are available, a description of the effectiveness of potential top-dressing materials for revegetation and the amounts of required top-dressing material. If research on the amounts required are not complete, provide a rough estimate (e.g., as a range) of the total amount of top-dressing that might be required to re-vegetate the site;

This information is currently not available as the research is not yet complete and it is uncertain if top-dressing will be necessary.

iv. a description of any collaboration with Dominion Diamonds Corporation or other companies on closure issues;

In 2015 DDMI engaged with DDC on a number of occasions in relation to the following:

- years when pits may be filled;
- risk-based closure criteria; and
- impact of the Jay project on post-closure environment at Diavik.

v. new industry best practices or corporate requirements related to the mine's Closure Plan;

DDMI is not aware of new information in 2015.

vi. a review of updated meteorological data and a discussion of whether the results impact closure planning, in particular as it relates to climate change; and,

These data were not reviewed in 2015 but will be reviewed in 2016 with the development of ICRP V4.

vii. improved diagrams of the Waste Rock pile, including cross-sectional diagrams, diagrams clearly demonstrating the scale of the piles, a depiction of possible configurations, information about covers, slopes, wildlife access, vegetation, etc. Include a figure showing the different pockets/areas of types of Waste Rock (including spill contaminated material).

Please see Appendix IV-1 for the final closure drawings.

10. Record of Revisions to be made in Version 4.0 of the ICRP

Following is a list of revisions to be made in Version 4.0 of the Interim Closure and Reclamation Plan. This list was taken originally from the WLWB Letter of September 26, 2011 and has been added to as new items are identified.

1. Re-visit the closure objectives for the north inlet to ensure they are closure objectives and not closure options – particularly NI-1.

2. Develop a monitoring plan, including estimated time periods.

3. Include a detailed explanation of how the mine would passively treat seepage in situ.

4. Provide a more detailed description of risks associated with each selected closure activity. For each reclamation activity, identify the preferred contingency and significantly increase the level of detail for this contingency. Ensure all uncertainties associated with the preferred contingency are addressed. For example, if using Lac de Gras water to dilute water in the pit area is DDMI's preferred contingency, describe how this would be achieved, clearly define the environmental costs and benefits (compared to water treatment or other contingencies), and address any associated uncertainties.

5. Estimate the quantities of contaminated soils/materials expected at the end of operations, in order to facilitate the remediation of potentially contaminated material (landfarming).

6. Provide a general description of the types and quantities of materials that the company plans to leave underground, based on available information. Also, discuss the risk that this disposal may contaminate groundwater or surface water and identify any uncertainties.

7. Identify potential benefactors of salvaged infrastructure (e.g. buildings, tanks, equipment, supplies, crushers, generators, etc.) earlier rather than later and provide more detail about current plans and options.

8. Include updated predictions of water quality at closure and the duration and magnitude of residual effects using the most current information. This must include an analysis, using the most current data available, to update the 1998 runoff water quality predictions. Identify ways to reduce water quality problems associated with runoff.

9. Include detailed performance and post-closure monitoring plans and updated predictions of effects using the most current information. (Consider hosting a workshop or information session on post-closure monitoring prior to submission of Version 4.0 of the ICRP).

10. Address the issue of air contaminants released to land and water during operations, in the context of closure.

11. Provide the proposed revegetation procedure.

12. Include final design of the waste rock pile slopes and a resloping plan.

13. Provide a more detailed description of how metal uptake in revegetated plant communities will be monitored (per Water Licence condition Part L, Item 3f).

14. Provide “a description of the Plan to assess and monitor any ground water contamination during post-closure” (Water Licence condition Part L, Item 1g).

15. Develop “a field-testing program and an implementation timetable to verify the effectiveness of the proposed impermeable closure cap for the Process Kimberlite Containment Facility and the Waste Rock Storage Facilities” (Water Licence condition Part L, Item 3g).

16. Clarify how wetlands will be used for the closure of the collection ponds and the PKC Facility. Discuss whether it is imperative that wetlands develop in order to achieve the closure objectives? Discuss procedure and timetable for development of the wetland.

17. Add "identify opportunities to enhance/diversify fish habitat in the North Inlet" to the reclamation research plan (RRP) outlined in appendix VIII-5 (assuming ongoing investigations support full reconnection of the North Inlet to Lac de Gras) ;

18. Include a closure plan for the A21 causeway (including closure objectives, preferred activities, etc.);

19. Ensure that all information in section 3 of the ICRP (Project Environment) is correct and up to date (e.g., geological info, climate data, traditional use information, etc.). Refer to a number of INAC comments for specific revisions.

20. Include a statement that, during temporary shutdown, the stationary surface and underground mobile equipment stored within the common parking areas would have drip/spill trays placed in appropriate locations to absorb fluids which could leak.

21. Define closure vs. post-closure.

22. Include improved diagrams of the waste rock pile, as described above in the outline for the Annual ICRP Progress Report.

23. Provide detailed and informative figures illustrating the final closure design of each mine component.

24. Provide additional detail about long-term water treatment, including: any required changes to the existing treatment plant; implications on the post-closure requirement for fuel, chemicals, and personnel; maintenance requirements; proposed disposal location for treatment sludge; etc.

25. List all sub-appendices in the table of contents, and include cover pages for all appendices and sub-appendices. Ensure all subsections and appendices are bookmarked correctly in pdf version of the ICRP.

26. A description of how the Type III stockpile near the crusher will be closed if a) the material is not consumed during operation, and b) in the event of a pre-mature closure. Include as anew cost item in the RECLAIM model once ICRP V4 is approved.

27. Revise the research plans to match the outline in the Board’s Closure and Reclamation Guidelines (p. 42).