SECTION 18

SUMMARY AND CONCLUSIONS

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Abbreviations

Abbreviation	Definition
DAR	Developer's Assessment Report
Diavik Mine	Diavik Diamond Mine
Dominion Diamond	Dominion Diamond Ekati Corporation
EA	Environmental Assessment
e.g.	for example
Ekati Mine	Ekati Diamond Mine
ELC	Ecological Landscape Classification
ESA	effects study area
i.e.	that is
IBA	Impact Benefit Agreement
MVRB	Mackenzie Valley Review Board
NWT	Northwest Territories
NWT AAQS	Northwest Territories Ambient Air Quality Standards
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of 2.5 microns (µm) or smaller
Project	Jay Project
RFD	Reasonably Foreseeable Development
TLU	Traditional Land Use
VC	valued component
WLWB	Wek'èezhìi Land and Water Board
WRSA	waste rock storage area

Units of Measure

Unit	Definition
$	Canadian dollar
%	percent
g	gram
ha	hectare
km	kilometre
km^2	square kilometre
m	metre
m^3	cubic metre

18 SUMMARY AND CONCLUSIONS

This section of the Developer's Assessment Report (DAR) provides a summary of the main elements of the Jay Project (Project) and predictions of the environmental assessment of the Project. For the human environment, the Project is expected to have overall positive effects on the socio-economic environment, maximizing economic, employment, and educational benefits, while minimizing the negative impacts on well-being, physical infrastructure and non-traditional land use. Impacts to cultural aspects are predicted to be not significant. The Project is expected to have no significant negative effects on the biophysical environment (i.e., air quality, water quality and quantity, fish and fish habitat, vegetation, caribou, and wildlife and wildlife habitat).

18.1 Introduction

The existing Dominion Diamond Ekati Corporation (Dominion Diamond) Ekati Diamond Mine (Ekati Mine) and surrounding claim block are located approximately 300 kilometres (km) northeast of Yellowknife in the Northwest Territories (NWT). Dominion Diamond proposes to develop the Project as an extension of the Ekati Mine to add 10 years or more of operations life to the Ekati Mine. To avoid a shutdown of the Ekati Mine, kimberlite from the Jay pipe must be delivered to the processing plant by 2019.

The purpose of the DAR is to address the requirements stipulated in the Terms of Reference (TOR) for environmental assessment by the Mackenzie Valley Review Board.

Dominion Diamond is a Canadian-owned and NWT-based mining company that mines, processes, and markets Canadian diamonds. The Ekati Mine was the first surface diamond mine and the first underground diamond mine established in Canada and has been operating for 16 years.

18.2 Analysis of Alternative Means

An alternatives analysis process was used to assess Project alternatives in a transparent manner. For the Project, this analysis involved two levels of assessment. Level 1 involved detailed assessments to identify the most viable alternatives for mining method. This assessment included a pre-screening step and a subsequent multiple accounts method, as described below. Level 2 evaluated alternatives for specific components of the selected mining method (i.e., following from the outcome of Level 1), including the alignment of the Jay Road, location of the waste rock storage area, and energy sources.

Project options and alternatives were discussed and feedback was collected during Dominion Diamond's engagement activities conducted throughout 2013 and 2014. Feedback and local knowledge shared during these discussions were considered in developing these alternatives assessments.

In the Level 1 assessment, different mining methods were considered for developing the Project, including having no project, as follows:

- no project;
- underground mining – Jay only;
- diversion and drawdown – Jay-Cardinal Project;
- open-pit mining within a single dike – Jay only;

- other alternatives:
  - wet mining;
  - underwater mining; and,
  - lake drawdown and underground mining.

These alternatives were evaluated in a pre-screening assessment that was based on technical, economic, environmental, and social considerations. The pre-screening assessment eliminated alternatives that had fatal flaws, and determined which alternatives were the most appropriate for further evaluation.

The Project Alternatives of the Single Dike – Jay Only and the Diversion and Drawdown – Jay-Cardinal met the pre-screening criteria and were considered to be viable Project alternatives. However, the Jay-Cardinal Alternative would require a much larger Project footprint than the Single Dike – Jay Only Alternative, and local communities had expressed concerns about the potential environmental effects from this approach.

The Single Dike – Jay Only Alternative does not provide for the development of the Cardinal kimberlite pipe, but addresses community concerns of limiting the Project footprint in Lac du Sauvage (reduced by approximately 90% for the Jay-Only alternatives compared to the Jay-Cardinal approach), and in the esker area west of Lac du Sauvage (only one road crossing of the esker and only one waste rock storage area for the Jay-Only alternatives versus two for the Jay-Cardinal approach). For this reason, the Single Dike – Jay Only Alternative was brought forward from the pre-screening assessment for the multiple accounts analysis step of the Level 1 assessment.

Three single dike alternatives were considered in the multiple accounts analysis:

- Alternative 1 ("Hockeystick") and Alternative 2 ("Horseshoe") were based on the dike construction approach that was used in the construction of the Bay-Goose Dike at the Meadowbank Mine in Nunavut. These dike alignments are located in shallower water, and are located farther from the open-pit rim.
- Alternative 3 was based on a ring dike approach similar in concept to that implemented for the Diavik Diamond Mine (Diavik Mine), and would include a causeway to connect the dike to the shore of Lac du Sauvage. This dike alignment would require some sections to be constructed in deeper water, and would be located closer (approximately 100 m) to the open pit rim.

The three single dike alternatives were evaluated with a multiple accounts analysis using evaluation criteria developed in four accounts:

- technical feasibility;
- project economic viability;
- environmental considerations; and,
- social and economic considerations.

The results of the initial assessment indicated that Alternative 2 (Horseshoe Dike) is the most viable option for the Project. A sensitivity analysis verified that, when different weightings were applied to the accounts, Alternative 2 remains the most viable option.

The Level 2 assessment of three alternative routes for the access road between the Jay kimberlite pipe (Jay pipe) area and the existing Misery Haul Road indicated that the most southerly option was the most viable (Section 2, Map 2.5-1). Input from community engagement through meetings and field trips was used in the layout of the Jay Road where it crosses the esker.

Three potential waste rock storage area (WRSA) alternatives were considered for the Project (Section 2, Maps 2.5-2 and 2.5-3). The Level 2 assessment indicated that the northern-most location, west of the Jay Pit is the most viable option for the Project.

Power will be required at the pump locations for the dewatering stages of the Project, and for the life of the mining activities to remove minewater from the diked area according to the Mine Water Management Plan. Through the Level 2 assessment, wind power was eliminated as a power source due to the variable nature of the wind and the uncertainties in operability of wind farms in extremely low temperatures. The Level 2 asessment of four alternatives for diesel generation indicated that the most viable option would be to supply all energy from the powerhouse at the Ekati Mine, and distribute the power as an extension of the existing Misery power line (under construction 2014/2015).

18.3 Project Summary

Dominion Diamond is proposing to develop the Jay kimberlite pipe (Jay pipe) located beneath Lac du Sauvage in the southeastern portion of the Ekati claim block, approximately 7 km northeast of the Misery Pit. The majority of the facilities required to support the Project and process the Jay pipe already exist at the Ekati Mine, including the Misery Pit mining infrastructure, primary roads and transportation infrastructure, Ekati main camp and supporting infrastructure, processing plant, and fine processed kimberlite management facilities.

A water-retaining dike will be constructed to isolate the portion of Lac du Sauvage overlying the Jay pipe. The isolated portion of Lac du Sauvage will be dewatered to enable open-pit mining of the Jay pipe. The Project will also require an access road, pipelines, and power lines to the new open pit.

The design of these facilities and activities uses approaches that have been successfully implemented at the Ekati Mine and other northern mines. The existing Ekati Mine environmental monitoring, management, and mitigation programs will be expanded to incorporate the activities proposed for the Project.

Construction of roads, the dike, pipelines, and pumping facilities is expected to start in 2016. The diked area of Lac du Sauvage will be dewatered to allow mining to begin. Dewatering discharge will initially be directed to Lac du Sauvage. When total suspended solids levels increase beyond acceptable levels, water will be pumped to the mined-out Lynx and Misery pits for settlement.

During operations (2019 to 2029), kimberlite from the Jay Pit will be mined and processed. The mined-out Misery Pit will be used for minewater management (i.e., surface runoff and groundwater inflows to the Jay Pit). After Year 5 of operations, when the Misery Pit has reached operational storage capacity (including

emergency storage provision) and providing that water quality is suitable for discharge, water will be pumped to Lac du Sauvage.

Waste rock will be placed at the Jay WRSA, which is located west of Lac du Sauvage. Waste rock from the Jay Pit will be mainly non potentially acid-generating (PAG) granite (estimated as 70 percent [%] of the waste rock), with the remainder metasediments and overburden. An encapsulating layer of non-PAG granite rock of at least 5 m thickness will be placed over PAG waste rock to prevent acidic seepage.

Fine processed kimberlite from the processing plant will be placed in the mined-out Panda and Koala pits and associated underground workings. The use of mined-out pits for processed kimberlite deposition is generally acknowledged as a preferred approach for the Ekati Mine, and has been shown to be viable and beneficial through the current use of the mined-out Beartooth Pit for this purpose.

The Project will be incorporated into the Ekati Mine Interim Closure and Reclamation Plan. At closure, a portion of the minewater contained within the Misery Pit will be pumped to the bottom of the Jay Pit, and the diked area and the Misery and Jay pits will be back-flooded with natural freshwater from Lac du Sauvage. When water quality meets regulatory requirements, the dike will be breached and reconnection to Lac du Sauvage will occur. The Misery Pit will overflow to Lac de Gras. The Panda and Koala pits would be reclaimed by pumping freshwater into the pits as a 'cap' about 30 m deep. Infrastructure will be decommissioned and removed, except for facilities required for ongoing monitoring.

18.4 Engagement Summary

The revised Terms of Reference for the Jay Project issued by the Mackenzie Valley Review Board (MVRB) on July 17, 2014 were developed using input from participants in scoping sessions conducted by the MVRB in 2014 (Appendix 1A). The key lines of inquiry, subjects of note, and areas of concerns indicated in the Terms of Reference span the breadth of participants' biophysical, environmental, social, cultural, and economic concerns about the Project.

The Project-specific community engagement undertaken by Dominion Diamond focused on considering, understanding, and documenting community concerns, including relevant Traditional Knowledge, and then adapting the Project design to mitigate these concerns.

The focus of Dominion Diamond's ongoing community engagement are parties that will likely be the most directly affected if the Project is implemented or not implemented, which includes potentially affected Aboriginal communities, other Northerners, government and regulatory agencies, and the Independent Environmental Monitoring Agency.

Dominion Diamond is committed to engaging with potentially affected communities and stakeholders in an open, timely, and comprehensive manner. This approach is set out in the Ekati Mine Engagement Plan, and is a culmination of successful engagement activities that have developed and become well established since the Ekati Mine was first licenced and became operational in 1998.

Dominion Diamond regularly and routinely undertakes community engagement activities as part of its management of the Ekati Mine. The engagement activities include: quarterly engagement meetings; formal Impact Benefit Agreement (IBA) meetings with leadership from each of the Ekati Mine IBA groups; workshops on specific issues; and, site-based activities wherein leadership, elders, and youth are invited

to visit the Ekati Mine for site visits or to take part in the environmental monitoring programs. Reports are submitted to the Wek'èezhìi Land and Water Board (WLWB), all of which are posted to the WLWB's public registry where any party can provide comment or questions.

Dominion Diamond's approach to Project-based engagement is to develop a project-specific engagement plan that includes, but is not limited to, such key activities as pre-application engagement beginning before any initial submission to the WLWB, in addition to ongoing Project engagement.

Based on Dominion Diamond's Community Engagement Plan, NWT regulatory requirements, and community expectations, Dominion Diamond's engagement activities have focused on communicating the technical, environmental, and socio-economic aspects of the Project. These activities have also served as an opportunity for Dominion Diamond to develop its understanding of community concerns and aspirations related to Dominion Diamond's plan to extend the life of the Ekati Mine through the development of the Project.

Specific engagement meetings were also held with, and will continue to be held with, regulators, government departments, and the Independent Environmental Monitoring Agency.

Ongoing engagement will include participation in the Environmental Assessment (EA) process, including responses to information requests, preparations of reports and presentations, and participation in community, technical, and MVRB hearings.

Dominion Diamond will also continue with its current practice of quarterly engagement meetings and additional engagement, as required, through written exchanges, public meetings, and face-to-face meetings and workshops to discuss specific issues of interest, and to maintain two-way dialogue about the Project with the affected parties.

Dominion Diamond is also planning a series of information workshops for communities, regulators, governments, and parties to the EA process to explain the Project and the contents of the Developer's Assessment Report (tentatively scheduled for the week of December 8, 2014).

Dominion Diamond has developed a visualization program to assist in explaining the Project in the EA Hearing, and in meetings with communities and stakeholders. This visualization program includes a physical model and computer-generated images that show the various stages of the Project.

A Project newsletter is planned for early 2015. It will be distributed in communities to better explain the Project.

18.5 Air Quality

The Project is not expected to have a significant effect on air quality. Sulphur dioxide, nitrogen dioxide, carbon monoxide, fine particulate matter, and total suspended particulate matter concentrations were predicted using an air dispersion model to determine effects on air quality, and are discussed in this section.

The maximum sulphur dioxide concentrations for all applicable averaging periods were predicted to be substantially below the NWT Ambient Air Quality Standards ([NWT AAQS]; GNWT-ENR 2014) in each of the Base Case, Construction Case, and Application Case. Maximum concentrations were predicted to

change nominally between the Base Case and Construction Case, and between the Base Case and the Application Case.

The maximum 1-hour and annual nitrogen dioxide concentrations were predicted to exceed the NWT AAQS in the Base Case, Construction Case, and Application Case, while the maximum 24-hour nitrogen dioxide concentration was predicted to exceed the NWT AAQS in the Application Case. All predictions exceeding the NWT AAQS were confined to small areas within a few hundred metres from the Jay Pit, and can be attributed to mine fleet exhaust. Predicted concentrations decrease sharply with distance from the edge of the mine site. Changes in areas of exceedance of the NWT AAQS between the Base Case and Application Case for 1-hour, 24-hour, and annual concentrations are predicted to be 4 hectares (ha), 29 ha, and 0.5 ha respectively. For the Construction Case, an area of 6 ha is predicted to exceed the 1-hour NWT AAQS, while areas of exceedance of the 24-hour and annual concentrations are predicted to be minimal.

The maximum 1-hour and 8-hour carbon monoxide concentrations were predicted to be substantially below the NWT AAQS for all assessment cases, at less than 25% of the NWT standards.

The maximum 24-hour and annual $PM_{2.5}$ (particulate matter with a mean aerodynamic diameter of 2.5 microns [µm] or smaller) concentrations in all assessment cases were predicted to exceed the NWT AAQS. The exceedances of the standards were confined to the perimeters of the current boundaries of Ekati operations, the Jay Pit, and the Diavik Mine. The majority of the area with predicted concentrations above the standard may experience between 1 and 60 days of concentrations above the standard. Only the area immediately adjacent to the emission sources is predicted to experience more than 60 days of concentrations above the standard. No concentration above the NWT 24-hour AAQS were predicted beyond 5 km from the mine boundaries, and the area above the annual standard extends no further than approximately 1 km beyond the mine boundaries.

The $PM_{2.5}$ emissions were based on conservative estimates and it is expected that the actual $PM_{2.5}$ concentrations at the Project will be lower than predicted. Changes in areas with concentrations exceeding the NWT AAQS between the Base Case and Application Case for 24-hour and annual concentrations are predicted to be 3,622 ha and 111 ha respectively. For the Construction Case, areas with concentrations exceeding the 24-hour and annual NWT AAQS are predicted to be 2,820 ha and 234 ha respectively.

The maximum 24-hour and annual total suspended particulate concentrations were predicted to exceed the NWT AAQS for all assessment cases. The areas over the NWT AAQS were confined to perimeters of the current boundaries of Ekati operations, the Jay Pit, and the Diavik Mine. No concentration above the NWT 24-hour AAQS was predicted beyond 3 km from the mine boundaries, and the area above the annual standard extends no further than approximately 1 km beyond the mine boundaries.

As with the other particulates, the total suspended particulate fugitive emission estimates are expected to be a conservative representation of predicted air quality changes. Changes in areas with concentrations exceeding the NWT AAQS between the Base Case and Application Case for 24-hour and annual concentrations are predicted to be 2,378 ha and 151 ha respectively. For the Construction Case, areas with concentrations exceeding the 24-hour and annual NWT AAQS are predicted to be 2,735 ha and 387 ha respectively.

The estimated maximum annual greenhouse gas emissions from the Project represent approximately 4% of the estimated total for the NWT, and approximately 0.02% of the estimated national total.

A human health risk assessment will be completed to evaluate the potential for adverse health effects to people associated with exposure to chemicals from the Project. No impacts are expected for human health.

Cumulative effects on air quality are predicted to be not significant. A residual impact classification for the Project used the criteria of magnitude, geographic extent, duration, frequency, reversibility, and likelihood of predicted concentrations to determine significance. When all criteria are considered collectively, the resulting impact of the Project on air quality is predicted to be not significant.

Conservatism was built into the emission inventory and dispersion model inputs. Consequently, emission estimations and model results are likely to overestimate concentrations, which is preferred to results that underestimate concentrations. Therefore, based on the conservatism of the emission inventory and modelling, it is unlikely that Project emissions and Project effects are underestimated, and the level of confidence in the prediction is high.

Noise levels during construction will vary depending on the type and level of activity. However, effects from construction activities on the acoustic environment are expected to be temporary and periodic. Furthermore, effects from construction activities on the acoustic environment are predicted to be below benchmarks for all receptors with the exception of the Misery worker camp, where effects from construction activities are not predicted to substantially change noise levels.

The effect on the acoustic environment during operations will be continuous. The predicted noise levels at all identified noise receptors for the Winter Road and mine operations are below the benchmarks. Effects from blasting activities are predicted to be below benchmarks at the Misery worker camp and at all locations 800 m or farther from the Jay Pit.

Monitoring programs are planned that will verify predictions and identify unanticipated effects, which enables adaptive managent actions if necessary. Monitoring can include compliance inspections, environmental monitoring or follow-up monitoring, all of which may be implemented during the development of the Project. Dominion Diamond will expand the Ekati Mine Air Quality Management and Monitoring Plan to as appropriate to validate that the predicted concentrations from the Project are conservative, and to assist in managing Project emissions at a reasonable level.

18.6 Water Quality and Quantity

The water quality and quantity Key Line of Inquiry (KLOI) considered potential changes to the VCs of hydrogeology, surface hydrology, and water quality from the Project. Residual effects were carried forward and assessed for the surface hydrology and water quality VCs. Based on predicted water quality and water quantity during the Project phases, it is concluded that the Project will not have a significant adverse effect on the maintenance or suitability of water to support a healthy and sustainable ecosystem.

Key Project activities from construction through closure with the potential to affect discharge and water levels at the outlets of Lac du Sauvage, Lac de Gras, and Desteffany Lake are dewatering activities during construction (construction dewatering), operational water uses, and back-flooding of the pits during

closure. Effects from the Project activities on lake outlet discharges and water levels were determined by comparing modelled conditions under the Base Case to modelled conditions under the Application Case. For surface hydrology, there are no reasonably foreseeable developments located in the surface hydrology ESA.

The construction dewatering will increase the discharge and water levels of Lac du Sauvage, Lac de Gras, and Desteffany Lake. Pumped water from the Misery Pit for operational minewater discharge during the latter years of operations will increase the discharge and water levels of Lac du Sauvage slightly. Withdrawal of water from Lac du Sauvage for back-flooding of pits and the diked area in closure will decrease the water levels and discharge of Lac du Sauvage, Lac de Gras, and Desteffany Lake. During post-closure, the discharge and water levels of Lac du Sauvage, Lac de Gras, and Desteffany Lake will be similar to baseline.

Construction dewatering, operational water usage, and back-flooding of the pits and diked area during closure will be carried out in a manner that protects source water and downstream areas against adverse effects. This includes limiting changes to water levels and hydrological regimes in Lac du Sauvage and Lac de Gras. No adverse effects to channel stability or bank erosion are anticipated due to Project activities.

The assessment also considered the available information on additional water transfers associated with the Ekati Mine closure and the Diavik Mine operations and closure (e.g., pit back-flooding).

The surface hydrology effects and predictions include assumptions inherent to the development of the regional water balance model. Future refinements during final design of pumping systems will be conducted with support from fish and fish habitat specialists to identify specific mitigation criteria.

Key Project activities from construction through closure with the potential to affect water quality are those related to the collection and management of minewater, diversion of runoff water, and release of minewater. Existing developments (Ekati Mine and Diavik Mine) have affected water quality and have the potential to continue affecting water quality. The effect of these activities and existing developments on Lac du Sauvage and Lac de Gras were determined by predicting concentrations of water quality constituents at various locations in the lakes and through the entire Project. Concentrations were compared to screening thresholds (e.g., aquatic life site specific objectives, aquatic life guidelines, drinking water guidelines) to evaluate the magnitude of change and the potential effect to end uses (e.g., aquatic biota). The predicted water quality concentrations considered the Project only and the Project plus existing developments (cumulative effects). For water quality, there are no reasonably foreseeable developments located in the water quality ESA.

Predicted water quality concentrations at all locations in Lac du Sauvage and Lac de Gras, during all Project phases, are predicted to be less than the screening thresholds and thus to have no significant adverse effect on the maintenance or suitability of water to support a healthy and sustainable ecosystem. Early into the post-closure period, water quality in Lac du Sauvage is predicted to be similar to existing conditions (or reference conditions) for most constituents. By the end of the modelled post-closure period, water quality in Lac de Gras is predicted to be similar to existing and similar to reference conditions for most constituents.

The summary and interpretation of quantitative predictions relied upon results and assumptions of various hydrological and water quality models. Overall, there is a high level of confidence in the predictions and interpretations, as through the assessment process, conservatism was incorporated to mitigate the inherent uncertainties associated each of the models used and the predicted values generated for the assessment.

Based on the predicted magnitude of residual effects (which incorporated results from water quality predictions and interpretations of effects to aquatic health), the duration of the predicted effects, and the geographic extent of the predicted effects, it is concluded that the Project will not have a significant adverse effect on the maintenance or suitability of water to support a healthy and sustainable ecosystem.

Monitoring of water quality on the mine site and in the receiving environment is planned. The existing Aquatic Effects Monitoring Program for the Ekati Mine and other programs will be updated and amended to include the Project.

18.7 Fish and Fish Habitat

The Project is not expected to affect the ability of Arctic Grayling, Lake Trout, and Lake Whitefish populations to be self-sustaining and ecologically effective. Nor is it expected to affect ongoing fisheries productivity or the ability of other aquatic life (e.g., plankton, benthic invertebrates) to support ongoing fisheries productivity.

Residual effects to fish will primarily be a result of habitat losses (i.e., Project footprint impacts) from the construction of the Jay horseshoe dike and the dewatering of the diked area in Lac du Sauvage where the open pit will be located. Habitat losses will also include diverted flows of tributary streams during the operation of the Sub-Basin B Diversion Channel. Predicted habitat losses may cause a reduction in carrying capacity, resulting in a reduction of fish production, and possibly fisheries productivity.

Existing footprints in the effects study area (ESA) that overlap with lake habitats include the Diavik Mine pits and dikes in Lac de Gras. However, there are no previous or existing footprints that overlap with tributary habitats for fish affected by the Project in Lac de Gras and Lac du Sauvage. At the scale of the population for Arctic Grayling, Lake Trout, and Lake Whitefish, the magnitude of direct changes to habitat quantity and connectivity from the Project and other developments is predicted to be low.

The area of the cumulative changes from direct loss of lake habitat is expected to be approximately 586 ha or less than 1% of the lake habitat in the ESA relative to the reference condition (i.e., pre-development). The incremental and cumulative direct loss of stream habitat from the Project is expected to be approximately 877 m or 1.6% of the selected tributary habitats in the ESA relative to the reference condition. There are no reasonably foreseeable developments in the ESA for fish and other aquatic life. Dominion Diamond will work with Fisheries and Oceans Canada and local Aboriginal communities on developing an offsetting plan to counterbalance for losses in fish habitat productivity.

Before the isolated portion of Lac du Sauvage is dewatered, a fish-out plan will be developed through engagement with local Aboriginal groups and Fisheries and Oceans Canada. The objective of the plan is to minimize the waste of fish caused by the dewatering of the diked area, while following a scientific protocol for removing fish. Based on estimates from hydroacoustic sampling, up to 23,400 fish are predicted to be removed from the diked area. Because the predicted number of fish to be removed would be small compared to the entire population in Lac du Sauvage and Lac de Gras (i.e., less than 1%), this

fish-out would not affect self-sustaining and ecologically effective populations of fish in Lac du Sauvage and Lac de Gras.

Based on the aquatic health assessment, the Project is predicted to result in negligible effects to aquatic health in Lac du Sauvage and Lac de Gras. As a result, adverse effects to Arctic Grayling, Lake Trout, and Lake Whitefish health are unlikely, and thus, no effects would be expected to the self-sustaining and ecologically effective populations of these VCs .

The effect of increased nutrient concentrations from minewater discharge to Lac du Sauvage during operations is expected to result in a general increase in productivity at lower trophic levels in the main basin of Lac du Sauvage and a similar, but less pronounced, effect in the eastern part of Lac de Gras. Large shifts in composition of plankton and benthic invertebrate communities are not expected. However, biomass of phytoplankton, zooplankton, and benthic invertebrates will likely increase during operations, as these communities take advantage of the increased nutrient supply. Following closure, plankton and benthic invertebrate communities are expected to return to baseline conditions. Due to the increased food base, there may also be a minor increase in growth and reproduction rates in the fish VCs. (Arctic Grayling, Lake Trout, and Lake Whitefish). However, effects will be limited primarily to Lac du Sauvage during the late operations phase and potentially into closure.

During back-flooding at closure, effects to downstream habitat quantity and riparian conditions may occur for up to four years during the pumping of water from Lac du Sauvage to back-flood the Jay and Misery pits and the diked area. However, water will be pumped at rates that will limit changes to flow rates and water levels in the Lac du Sauvage and Lac de Gras outlets. The flow depth, channel widths, and riparian conditions of the Lac du Sauvage outlet channel will remain within the range of natural variability for the duration of back-flooding. Habitat connectivity will be maintained for fish passage between the two lakes (i.e., the Lac du Sauvage-Lac de Gras Narrows).

The dike will be breached when water quality in the diked area meets acceptability criteria. The physical and chemical environment of the area will allow re-establishment of a healthy functioning aquatic ecosystem. Natural currents and fish in the water will be able to move in and out of the area. Recolonization of the back-flooded area is expected to occur immediately from adjacent habitat areas and will likely be populated by fish of all species and life-stages. Remnant portions of the dike represent the permanent loss of less than 54.3 ha of lake area (or less than 1% of area of Lac du Sauvage and Lac de Gras). Remaining dike material will remain as islands in Lac du Sauvage, potentially providing habitat functions for spawning, rearing, and foraging fish.

In the impact classification, primary pathways influencing measurement indicators of ongoing fisheries productivity (i.e. self-sustaining and ecologically effective populations of Arctic Grayling, Lake Trout, and Lake Whitefish) and ongoing support for fisheries productivity were determined to be of low magnitude in the Application Case. The geographic extent of the effects are local to regional (i.e., measurable in Lac du Sauvage and Lac de Gras, and possibly for a short distance past the outlet of Lac de Gras). Most impacts, including those from changes in water quality, were classified as reversible. Impacts from the construction of the horseshoe dike and Jay Pit within Lac du Sauvage were classified as permanent.

Cumulative effects from the Project are predicted to not have a significant adverse impact on the ability of Arctic Grayling, Lake Trout, and Lake Whitefish populations to be self-sustaining and ecologically effective. Self-sustaining and ecologically effective populations of fish VCs is the foundation for ongoing

fisheries productivity. Cumulative effects from development on aquatic life other than fish are also predicted to not have a significant adverse impact to ongoing support of fisheries productivity.

Confidence in the prediction is based on the consistent low effect sizes (i.e., magnitudes of change) that were determined from the incremental and cumulative changes from the Project and other developments for fish habitat quantity and habitat quality. As a general approach for addressing uncertainty, conservatisms were adopted at various steps of the assessment to overestimate impacts. There is moderate uncertainty for the classification of the duration of effects because of, for example, the variability inherent in making long-term predictions in ecological systems. But given that measurable changes to populations within the ESA are expected to be minor and may not occur at all, population recovery for fish VCs should occur at closure or within a few years following closure. Thus, there is a high level of confidence that most impacts will be reversible within one generation time of the fish VCs.

The Ekati Mine Aquatic Effects Monitoring Program will be expanded to monitor Project effects to the aquatic environment related to changes in surface hydrology, water quality, sediment quality, aquatic life other than fish (plankton and benthic invertebrates), and fish (fish health, fish tissue chemistry). The accompanying Ekati Mine Aquatic Response Framework will also be expanded to provide pre-defined 'early-warning' levels that will prompt adaptive management responses if necessary.

18.8 Terrain

The purpose of this section of the DAR was to describe the existing geotechnical stability of the area proposed for mine rock management, including:

- physical and chemical characteristics of mine rock and tailings;
- soil and hydrological conditions;
- permafrost, ground thermal conditions, and ground ice conditions; and,
- topography and slope stability.

The geotechnical stability of all engineered structures, including site access roads, is assessed against a range of climate, seismic, and precipitation scenarios. The scope also includes plans to mitigate and monitor against impacts to terrain, including:

- erosion control measures;
- prevention of permafrost degradation or growth encouragement; and,
- how the geotechnical stability of the mine rock management area, and the system of dikes and dams will be monitored, and for how long.

Although terrain does not have an assessment endpoint, Project-specific changes in the measurement indicators for terrain are completed as summarized below. The measurement indicators for terrain are included in other sections of the DAR, which are applied to VCs with assessment endpoints and evaluated for significance of Project-specific and cumulative effects as described in Section 6.2. Although surface hydrology and soil quantity and distribution are included as measurement indicators for terrain, the changes to these indicators are analyzed in detail in Section 8 and Appendix 11A (Section 11),respectively.

Waste rock and overburden excavated from the Jay Pit, and waste generated during dike construction will be stored at the Jay WRSA. This WRSA has been designed to accommodate a volume of 120 million cubic metres (m^3), which includes approximately 9.6 million m^3 for contingency.

Waste rock from the Jay Pit will be mainly non-acid generating granite (an estimated 70% of the waste rock), with the remainder metasediments and overburden. Metasediment that is mined from the Jay Pit will be managed as PAG material.

The Panda and Koala open pits and underground workings are the primary deposition locations for fine processed kimberlite resulting from the Jay Project.

The existing WRSAs at the Ekati Mine include the Panda/Koala/Beartooth WRSA (537 ha), the Fox WRSA (383 ha), and the Misery WRSA (111 ha), and cumulatively cover 1,031 ha. The Jay WRSA will cover an additional 250 ha and result in a cumulative area of 1,281 ha occupied by WRSAs. The Pigeon WRSA that is currently under construction will cover an area of approximately 48 ha when complete. The cumulative areas that will be occupied by WRSAs will increase to 1,329 ha upon completion of the Pigeon WRSA.

The majority of the 250 ha area within the Jay WRSA is comprised of the Mineral-1 soil map unit. The Mineral 1 soil map unit within the WRSA is co-dominated by very stony to excessively stony well to rapidly drained Turbic Cryosols, and cryoturbated Orthic Dystric Brunisols developed on undulating coarse to moderately fine textured glacial till. Substantial amounts of the area of the WRSA will occupy exposed bedrock outcrops and boulders.

The Jay WRSA will not require any diversions of natural watercourses because the layout was designed to avoid surrounding waterbodies and drainage channels. The WRSAs at the Ekati Mine are constructed to encourage permafrost formation.

A small proportion of the WRSA is located within areas of active but low hazard, periglacial processes (freezing and thawing). This area will require site reconnaissance to confirm the soil conditions. Before waste rock is placed over the small polygon mapped as a solifluction lobe in the northwestern portion of the Jay WRSA, small continuous movements and depositing of sediment in the small hollow between the small hollow between bedrock outcrops is expected. Movements should subside after placement of waste rock due to the weight of the waste rock and the aggradation of permafrost in to the waste rock, reducing and eventually eliminated freeze thaw cycles in the soils beneath the WRSA. No large-scale instabilities are predicted at the locations of the Jay WRSA, and a large-scale, deep-seated landslide related to solifluction is not expected.

Degradation of the permafrost beneath the foundation of any road is not anticipated to result in any adverse effects during the construction and operation phases of the Project. Degradation of the permafrost beneath the foundation of the dike near the abutments or islands could lead to differential settlement, which would require maintenance to re-establish design elevations. Hydraulic head and the associated gradient in these locations is relatively low, and therefore quantity of seepage and potential for erosion of the dike or piping of the dike or foundation soils would be limited.

Erosion of the dike is not anticipated because of the width and gradation of the rockfill of the dike's embankments. There are no waterbodies in the form of ponds, lakes, or streams within the footprint of the

WRSA. A minimum 30-m setback distance from nearest streams and waterbodies will be used, and Lac du Sauvage is approximately 100 m away from the proposed WRSA.

Seismicity in the Project area is low (peak ground acceleration is 0.036 grams (g) for a 1:2,475 return period). Although an earthquake is unlikely, it is expected that an earthquake would likely be limited to minor settlement to roads and is unlikely to affect the WRSA. The Jay Dike is being designed to earthquake and climate conditions at return periods that are appropriate to the dike classification.

The monitoring program for the Ekati Mine proposes to use a combination of the current programs adapted to suit specific closure needs, including geotechnical inspections to monitor physical stability and permafrost.

18.9 Vegetation

The Project is not expected to affect the ability of plant communities, listed plants, and traditional use plants to be self-sustaining and ecologically effective.

The vegetation ESA is approximately 5,933 square kilometres (km^2) (593,274 hectares [ha]), and includes both unaffected (i.e., reference) areas, and areas that are influenced by the Project. Changes to vegetation quantity from the Project footprint will be permanent (1,132 ha; 0.2% relative to the ESA). Tundra ecosystems are slow to recover from disturbance, and it is uncertain as to what the revegetated landscape will look like in the future.

Relative to the reference condition, the change in the regional extent of effects from previous and existing developments is approximately 4,916 ha or 0.8% of the Ecological Landscape Classification (ELC) units within the vegetation ESA. Specific loss of any ELC map units from the Project is less than or equal to 3.6%. The maximum area of ELC map units to be disturbed by the application of the Project includes 510 ha of upland ELC units, 193 ha of wetland ELC units, and 430 ha of non-vegetation units (shallow and deep water). The ELC map units that will experience the greatest change from the Project are Deep Water (395 ha), Heath Tundra (251 ha), and Heath Tundra 30% to 80% Boulder (201 ha).

The cumulative reduction in vegetation through application of the Project and previous and existing developments is predicted to remove 6,048 ha or approximately 1.2% of the mapped units in the ESA. The largest magnitudes of cumulative reductions of ELC land cover types are 203 ha (3.7%) of Esker Complex, and 49 ha (2.3%) of Boulder Complex (greater than 80% rock).

Two territorial listed vascular plant species and five non-vascular plants species were documented during the 2014 field program: one forb (Pallas' buttercup); one graminoid (Richardson's sedge); one bryophyte (tiny fork-moss); and, four lichens (Kamchatka Iceland moss lichen, umber monk's hood lichen, silver-rimmed crottle lichen, and cushion coral lichen). All of these observations were in Shallow Water, Sedge Wetland, and microsites including rocky crevices and ecotones (i.e., transition areas between two vegetation types). Locations of territorial listed species identified during the 2014 field survey are within areas expected to be disturbed by the Project.

Of the area directly disturbed by the Project, 36 ha of ELC units with high listed plant habitat potential will be disturbed during construction, resulting in a decrease of 0.1% relative to 2014 baseline conditions. Habitat units with moderate listed potential will decrease by approximately 43 ha (0.2%). The largest

cumulative change through application of the Project and previous and existing developments is within the moderate plant potential ELC map units (378 ha; 1.7% of the ESA) relative to the reference condition.

A total of 507 ha of ELC units with high potential for traditional use plant habitat will be disturbed by the Project, resulting in a decrease of 0.2% relative to 2014 baseline conditions. Habitat units with moderate listed potential will decrease by approximately 177 ha (0.3%). The cumulative changes to high and moderate traditional use plant habitat potential will be 1.0% and 1.1%, respectively, relative to the reference condition in the ESA.

At the scale of the population for plant communities and traditional use plants, the magnitude of direct changes to mapped ELC units, fragmentation, and traditional use plants and traditional use plant habitat from the Project and other developments is predicted to be low. At the scale of the population for listed plants, the magnitude of direct changes to direct loss of listed plant species and the loss or alteration and fragmentation of preferred habitat from the Project and other developments is predicted to be moderate.

No significant adverse effects are predicted for the ability of plant populations and communities to remain self-sustaining and ecologically effective as a result of the Project in combination with previous and existing developments. Confidence in this prediction is high because the majority of these ecosystems are well distributed in the ESA, and plant species within already uncommon map units are expected to be adapted to the patchy nature of their habitats.

Incremental and cumulative changes to listed plant habitat from the Project and other developments are predicted to not have significant adverse effects on listed plant populations and communities to remain self-sustaining and ecologically effective. Confidence in this prediction is moderate because of limited knowledge about the reproductive capacity and resilience of the observed listed species, and the level of occurrence of these species in the ESA. However, there is a large amount of suitable habitat for listed plant species in the region.

The cumulative effects from the direct loss, alteration, and fragmentation of traditional use plant habitat from the Project and previous and existing developments are predicted to not have a significant influence on self-sustaining and ecologically effective traditional use plant populations and communities. Confidence in this prediction is high because the majority of the traditional use plant species and the land cover types that support them are well distributed throughout the ESA.

18.10 Barren-Ground Caribou

The Project is not expected to affect the ability of caribou populations to be self-sustaining and ecologically effective.

Habitat quantity and fragmentation analyses showed cumulative direct habitat loss from the Project and all previous, existing, and reasonably foreseeable future developments is predicted to be less than 0.6% of the area in each seasonal range. From the 2014 baseline condition to the Application Case (i.e., the addition of the Project), there was less than 0.1% reduction in area for any habitat in any season. The Project footprint did not intersect with the winter range and there was no incremental change to the area of disturbance. Physical disturbance to terrestrial habitat from the Project and other developments was assumed to be permanent because of the length of time it takes for recovery of vegetation in arctic ecosystems.

Most of the cumulative effects from development on caribou within each seasonal range are related to modelled changes in habitat quality from the combined influences of sensory disturbance mechanisms (e.g., dust, noise, lights, viewscape, and general human activity). The Project and previous, existing and approved developments were determined to reduce the amount of preferred habitat (includes physical footprints and zones of influence that decrease habitat quality) by 0.9% on the spring range (includes the calving grounds), 5.5% on the post-calving range, 6.1% on the autumn range, and 5.4% on the winter range. The proximity of the Project to existing Ekati Mine operations resulted in declines of preferred habitat from 0.0% to 0.2% among seasonal ranges. With the addition of uncertain, future developments (i.e., reasonably foreseeable) there was an increase in the loss of high quality habitat, particularly on the post-calving and autumn ranges. For the RFD Case, preferred habitat decreased by 1.7% in the spring range, 13.3% in the post-calving range, 12.0% in the autumn range, and 5.9% in the winter range.

The analysis of changes in caribou behaviour from sensory disturbance also included the use of an ecologically conservative and applicable energetic model to predict effects on calf production. Results indicated that encounters with development and insect harassment can have negative effects on adult female body condition in the autumn and reduce parturition rates the following spring. However, the key variable in the model is insect harassment. Even with the maximum previous, existing and future developments on the landscape (RFD Case), female caribou would have to increase their encounter rate with zones of influence by approximately 14 to19 times to result in no calf production the following spring. The Project is predicted to reduce calf production by less than 0.5%. Effects from the Project on caribou behaviour, movement and energetics are anticipated to be reversible in the long term.

The cumulative changes from the Project and previous, existing and future developments are expected to have no significant adverse effect on the ability of Bathurst herd (or other barren-ground caribou populations) to be self-sustaining and ecologically effective. There is a moderate degree of uncertainty associated with this prediction, which is primarily related to the cumulative effects of development footprints and zone of influences on migratory behaviour, the duration of impacts, and the variability inherent in making long-term predictions in ecological systems. Confidence in the predictions is based on the consistent low effect sizes (i.e., magnitudes of change) that were determined from the incremental and cumulative changes from the Project and other developments for habitat quantity and habitat quality, and energetics.

18.11 Wildlife and Wildlife Habitat

The Project is not expected to affect the ability of waterbird, raptor, wolverine, and grizzly bear populations to be self-sustaining and ecologically effective. There is a high degree of confidence in the predictions of environmental significance from the incremental and cumulative direct and indirect impacts on wildlife. Methods used to predict effects on waterbirds, raptors, grizzly bear, and wolverine incorporated conservative assumptions to address uncertainty and improve confidence of effects predictions.

The assessment of effects is completed at the scale of the population for waterbirds, raptors, grizzly bear, and wolverine. As such, two different ESAs were required for the wildlife residual effects assessment. The birds ESA (5,933 km^2) is used to assess effects to waterbirds and raptors, while effects to grizzly bear and wolverine are assessed within the grizzly bear and wolverine ESA (approximately 200,000 km^2).

The magnitude of direct changes to habitat quantity and fragmentation from the Project and other developments is predicted to be low. All habitat loss and fragmentation metrics were predicted to be less than 2.5% of both wildlife ESAs. Effects from direct changes to habitat quantity and fragmentation from the Project on waterbirds, raptors, wolverine, and grizzly bear are expected to occur at the local scale, while effects from cumulative loss and fragmentation of habitat are anticipated to occur at the regional scale.

The terrestrial area that contains the Project footprint is considered a permanent disturbance on the landscape because of the expected long time for vegetation to recover, and it is not known what the reclaimed landscape will look like in the future.

Sensory disturbance effects (e.g., noise, dust, lights, viewscape) from the Project on waterbirds, raptors, wolverine, and grizzly bear are predicted to be of moderate magnitude. For waterbirds, the Project and previous and existing developments are expected to reduce high and good quality staging habitats by 8,623 ha (4.2%) and 3,709 ha (4.5%), respectively. Cumulative changes from the Project and other developments are predicted to reduce high and good breeding habitats by 4,816 ha (4.9%) and 3,709 ha (4.5%), respectively. For raptors, the cumulative direct and indirect changes from the Project and previous and existing developments is expected to reduce high and good suitability habitat by 355 ha (3.5%) and 614 ha (4.0%) of that available during the reference condition.

Cumulative changes to wolverine and grizzly bear habitat quality are predicted to be larger than changes to habitat loss and fragmentation. Cumulatively, previous, existing, and reasonably foreseeable developments, including the Project, are predicted to remove 9.3% of suitable spring to autumn habitats for wolverine. The removal of high- and good-quality wolverine winter habitat from the reference condition through reasonably foreseeable developments is predicted to be 12.3%. Approximately 7.4% of the cumulative 12.3% decrease of suitable winter habitat is due to seasonal ice roads such as the TCWR and access roads to mine sites (i.e., 59.9% of the area within the zones of influence in the ESA is due to winter roads). Disturbance from these roads is considered temporary because winter roads are only active for 8 to 12 weeks every year. Previous, existing, and reasonably foreseeable human developments (including the Project) are predicted to remove from 7.1% (spring) to 8.5% (autumn) good- and high-quality grizzly bear habitats, relative to the reference condition. Effects from sensory disturbance on wildlife are anticipated to be reverisible in the long term.

An ecological risk assessment will be completed to evaluate the potential for adverse effects to animal health associated with exposure to chemicals from the Project. No health impacts are expected for caribou and other wildlife.

18.12 Socio-Economics

Overall, it is expected that the Project will have a net-positive effect on the socio-economic environment in the NWT, and local study area communities, maximizing economic, employment and educational benefits, while minimizing potential negative impacts on well-being, physical infrastructure, and non-traditional land use.

The Project will extend the life of the Ekati Mine by 10 or more years, and will provide employment during construction and operations similar to the current mine. The Project will not result in an abundance of new positions, and so will not encourage migration to the NWT from southern communities. Instead, the

Project will prevent migration out of the NWT by workers who would otherwise lose mining employment when the existing Ekati Mine closes in 2019. After 2019, migration out of the NWT will still occur as the Diavik, Snap Lake, and the proposed Gahcho Kué mines close over the course of the next two decades. The Project, however, will soften the effect of this out migration.

The Project will pay taxes to the NWT, and will contribute to the territory's economy, softening the effect of the decline of the mining industry on capital expenditures and gross domestic product. The Project will continue to use local business wherever possible, and will maintain community contributions through the Ekati Mine's existing IBAs. The Project is not expected to result in increased prices of goods in communities. As with its effect on migration, the Project will act to soften the overall negative economic effect of the closure of the Diavik, Snap Lake, and Gahcho Kué mines over the next two decades.

The Project will provide employment and incomes similar to those paid at the existing Ekati Mine. Dominion Diamond will continue to hire northern workers for positions that come up at the mine during construction, and will move the existing Ekati Mine workforce to Project positions. The Project will maintain existing point of hire and fly point communities, and will continue to work towards meeting hiring targets identified in IBA's and the Socio-Economic Agreement with the Government of the Northwest Territories. The Project is expected to soften the impact of the decline of the mining industry on labour force characteristics, prolonging spikes in unemployment, and will maintain labour incomes at levels similar to the current environment.

The Project is expected to continue demand for a trained labour force through existing employment and employment opportunities made available through attrition, and will maintain community education contributions to IBA communities. On the job Project training and apprenticeship programs will continue to build capacity in the NWT labour force, maximizing the ability of trained workers to transition to other employment opportunities as the mining industry wanes over the next two decades.

It is difficult to correlate health and well-being characteristics with mining activity. It is similarly difficult to provide meaningful predictions regarding the effects of the Project on health and well-being. Many pathways of effect are dependent on the personal choices made by individuals in response to Project-related variables such as labour income and rotational work. In general, the Project will maintain existing employment, incomes, rotation schedules, and health and safety training and programs. As a result, the Project is expected to continue the existing health and well-being trends associated with workers, rather that create new issues or effects.

Given that the Project is not expected to result in-migration to the NWT from the south, it will not cause additional demand for public services and infrastructure, or change commercial land use in the area. Some direct Project demand will be placed on existing infrastructure, namely waste disposal and transportation. The Project will continue to provide funding (i.e., taxes and fees) and demand for existing services and infrastructure, and will partially offset the effect of the closure of the other NWT diamond mines over the next two decades. Some alterations to wilderness character via Project-generated noise and visual disturbances may affect land users in the immediate vicinity of the mine. However, these users are expected to be few, and to have abundant other land areas to use.

Overall, the Project is expected to have a significant, positive effect on population demographics, the economy, employment, incomes, and education that extends into the long term for the duration of Project operations. The Project will have positive and negative effects on health and well-being in the NWT and

local study area communities, but these effects will be of negligible to low magnitude given their nature (i.e., an overall continuation of existing conditions, rather than an additive increase). Project effects on health and well-being are not considered significant.

The Project's effect on physical infrastructure is expected to be neutral, given that it will use existing infrastructure designed to accommodate the current volume of mining activity in the NWT, and because the Project will pay all applicable fees used for the upkeep of this infrastructure. The effect on infrastructure is of negligible to low magnitude, and is not assessed as significant.

The Project will have minimal effect on non-traditional land use in the vicinity of the mine, and will not act to change the existing wilderness character in the non-traditional land use regional study area. As a result, Project effects on non-traditional land use are not considered significant.

18.13 Cultural Aspects

Cultural aspects of the human environment considered Project-related effects on the Traditional Land Use (TLU) VC (representing traditional activities) and the Heritage Resources VC. The cultural aspects assessment determined that the Project is not expected to result in a substantial reduction in the overall patterns of a TLU activity and associated traditional lifestyle and culture. The Project is also not expected to result in adverse effects on Heritage Resources. The results were determined with a high level of confidence.

Regarding Heritage Resources, archaeological investigations identified eight sites within 500 m of the Project footprint. Two of these sites (a lithic scatter/camp and cache/stone feature) were newly identified in 2014, and assessed as having low archaeological significance. Further mitigation was recommended for the lithic scatter/camp, while no further work was recommended for the cache/stone feature. These recommendations are currently undergoing governmental review with the Prince of Wales Northern Heritage Centre. All other previously identified sites have already been mitigated or will be avoided during Project construction.

Effects on TLU endpoints may occur from effects on several and sometimes the same measurement endpoint. Measurement endpoints include the effects on underlying terrestrial and aquatic resources (e.g., vegetation and fish), direct disturbance to preferred harvesting areas, changes in access to preferred harvesting areas, sensory disturbances, increased concerns regarding human and ecological health, and social and economic factors that may affect the continued participation in TLU.

Negative effects were predicted to occur through effects on underlying terrestrial and aquatic resources and direct disturbance to harvesting areas. Other effects, such as changes in access, and social and economic factors, were predicted to result in positive and negative effects. Increases to sensory disturbances or concerns regarding human and ecological health were also predicted, but the extent of these effects is difficult to establish because they are largely determined by the responses of individual land users.

Considering these effects, the incremental effects of the Project are expected to result in limited effects on the continued opportunity to practice TLU activities. No significant effects on TLU were assessed as resulting from the Project. Limitations within the TLU assessment were acknowledged and these limitations introduced a level of uncertainty into the assessment.

In an effort to mitigate potential effects on TLU, Dominion Diamond currently has existing monitoring programs in place to track effects to wildlife, aquatics, and air quality. Dominion Diamond will meet with potentially affected Aboriginal groups and discuss ways for community members to be involved in these programs. Dominion Diamond will also meet with Aboriginal groups to discuss the potential for additional monitoring programs to track trends associated with TLU in the general Ekati Mine area.

18.14 References

GNWT-ENR (Environment and Natural Resources, Government of the Northwest Territories). 2014. Guideline for Ambient Air Quality Standards in the Northwest Territories. Yellowknife, NWT, Canada, 5 pp.

18.15 Glossary

Term	Definition
Application Case	Base Case plus the Project; represents predictions of the cumulative effects of the developments in the Base Case combined with the effects from the Project.
Base Case	Describes the existing environment before the application of the Project to provide an understanding of the current physical, biological, and social conditions that may be influenced by the Project. Existing conditions include the cumulative effects from all previous and existing developments and activities that are approved, and are either under construction or not yet initiated in the ESA of a VC.
Basin	A large area that is lower in elevation than surrounding areas and contains water. Basins are separated by land or shallow channels.
Carrying capacity	The maximum population size that can be supported by the available resources.
Claim block	Publicly owned land that Dominion Diamond has leased from the government of the Northwest Territories. Companies that hold a claim block must obtain a mining lease in order to proceed with the development of the property into a mine.
Cumulative effects	Those effects that result from a combination of the Project with other past, present, and reasonably foreseeable future developments.
Developer's Assessment Report (DAR)	A stand-alone report that describes the development, the environmental setting, predicts impacts and proposes mitigations. The report is submitted to the MVRB for the purpose of an environmental assessment.
Dewatering	Removal of water from a natural waterbody by pumping or draining.
Dike	A long wall or embankment built to prevent flooding.
Drawdown	A lowering of the water level in a reservoir or other body of water.
Ecosystem	Ecological system consisting of all the organisms in an area and the physical environment with which they interact.
Effects Study Area (ESA)	The area where direct effects from the Project are expected to occur; selection of the boundary for effect study areas was based on the physical and biological properties of valued components.
Ecological Landscape Classification (ELC)	An ecological mapping process that involves the integration of site, soil, and vegetation information.
Erosion	The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. Detachment and movement of soil or rock by water, wind, ice, or gravity.
Esker	An esker is a long, winding ridge of stratified sand and gravel believed to form in ice-walled tunnels by streams, which flowed within and under glaciers. After the retaining ice walls melt away, stream deposits remain as long winding ridges. They provide critical habitat for carnivores and ungulates in the Arctic.
Fish-out	Activity conducted to remove fish from an area resulting in the direct mortality of fish.
Footprint	The proposed development area that directly affects components of the landscape.
Forb	An herbaceous plant that is not a grass, sedge, or rush.
Geotechnical	Field of study concerned with the engineering behavior of earth materials.
Glacial till	Unsorted and unstratified glacial drift (generally unconsolidated) deposited directly by a glacier without subsequent reworking by water from the glacier. Consisting of a heterogeneous mixture of clay, silt, sand, gravel and boulders (i.e., drift) varying widely in size and shape.
Graminoid	Grasses and grass-like plants such as sedges and rushes.
Granite	A coarsely crystalline igneous intrusive rock composed of quartz, potassium feldspar, mica, and/or hornblende.
Greenhouse Gas	Gas such as carbon dioxide (CO_2), water vapour, methane (CH_4), nitrous oxide (N_2O), and other trace gases which trap heat in the atmosphere, producing the greenhouse effect.

Term	Definition
Habitat	The physical space within which an organism lives, and the abiotic and biotic entities (e.g., resources) it uses and selects in that space.
Heritage resources	Includes, but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historic buildings, and cairns.
Hydraulic head	The level to which water will rise if a standpipe is installed.
Hydrology	The science that deals with the Earth's water, specifically its movement in relation to land.
Key Line of Inquiry (KLOI)	An area of concern that identified in the TOR as requiring rigorous analysis and detail to be included in the DAR. Key Lines of Inquiry are identified to ensure a comprehensive, detailed analysis of the issues that were identified as bringing about potential significant public concern regarding the proposed development. Each KLOI is a stand-alone section in the DAR and requires more detail than a topic identified as a SON.
Kimberlite	Igneous rocks that originate deep in the Earth's mantle and intrude the Earth's crust. These rocks typically form narrow pipe-like deposits that sometimes contain diamonds.
Kimberlite pipe	Vertical structures on which kimberlites occur in the Earth's crust.
Lichens	A simple slow-growing plant that typically forms a low crustlike, leaflike, or branching growth on rocks, walls, and trees.
Lithic scatter	A concentration of stone flakes resulting from the production or rejuvenation of stone tools.
Local study area (LSA)	Defines the spatial extent directly or indirectly affected by the project.
Metasediment	Sedimentary rocks that have been modified by metamorphic processes.
Mitigation	The elimination, reduction or control of the adverse environmental effects of a project, including restitution for any damage to the environment caused by such effects through replacement, reclamation, compensation, or any other means.
Non-vascular plant	Plants that do not possess conductive tissues (e.g., veins) for the transport of water and food.
Nutrients	Environmental substances (elements or compounds) such as nitrogen or phosphorus, which are necessary for the growth and development of plants and animals.
Overburden	Materials of any nature, consolidated or unconsolidated, that overlie a deposit of useful materials. In the present situation, overburden refers to the soil and rock strata that overlie kimberlite deposits.
Particulate matter	Any aerosol that is released to the atmosphere in either solid or liquid form.
Permafrost	Ground (soil or rock and included ice and organic material) that remains at or below 0°C for at least two consecutive years. Permafrost is defined on the basis of temperature. It is not necessarily frozen, because the freezing point of the included water may be depressed several degrees below 0°C; moisture in the form of water or ice may or may not be present.
Phytoplankton	Small, usually microscopic, plants that live in the water column of lakes and make their food through primary production.
Plankton	Microscopic aquatic organisms (tiny plants [phytoplankton] and animals [zooplankton]) free-floating and suspended in the water column.
Processing plant	The Ekati processing plant located at the Ekati main camp is where the physical processing occurs to get the diamonds from the kimberlite.
Reasonably Foreseeable Development Case	Application Case plus reasonably foreseeable developments. Includes the Application Case plus the cumulative effects of future projects.
Raptor	A carnivorous (meat-eating) bird; includes eagles, hawks, falcons, and owls.
Reclamation	The process of reconverting disturbed land to its former or other productive uses.
Residual Effects	Effects that remain after mitigation has been applied.

Term	Definition
Runoff	The portion of water from rain and snow that flows over land to streams, ponds or other surface waterbodies. It is the portion of water from precipitation that does not infiltrate into the ground, or evaporate.
Sediment	Solid material that is transported by, suspended in, or deposited from water. It originates mostly from disintegrated rocks; it also includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope soil characteristics, land usage and quantity and intensity of precipitation.
Solifluction	Gravitational downslope movement of saturated non-frozen overburden over permafrost.
Subject of Note	An area of concern that need to be considered by the developer in the DAR but are of lower priority than the KLOIs. Requires a sufficient analysis to demonstrate whether the development is likely to cause significant adverse impacts. Each SON is a stand-alone section in the DAR.
Terms of Reference (TOR)	The Terms of Reference identify the information required by government agencies for an Environmental Assessment (EA).
Total dissolved solids	The total concentration of all dissolved compounds solids found in a water sample. See filterable residue.
Total suspended particulate	A term used to collectively describe tiny airborne particles or aerosols that are less than 100 micrometres in size.
Traditional knowledge	Knowledge systems embedded in the cultural traditions of regional, indigenous, or local communities. It includes types of knowledge about traditional technologies, the environment and ecology.
Traditional land use	Use of the land by Aboriginal groups for harvesting traditional resources such as wildlife, fish or plants, or for cultural purposes such as ceremonies or camping.
Tributary	A stream that flows into a larger stream or lake.
Trophic level	A functional classification of organisms in an ecosystem according to feeding relationships, from primary producers through herbivores (primary consumers) and carnivores (secondary and tertiary consumers).
Upland	Areas that have typical ground slopes of 1% to 3%, have better drainage, and are not wetlands.
Valued component (VC)	Represent physical, biological, cultural, and economic properties of the social-ecological system that are considered to be important by society.
Vascular Plant	Plants possessing conductive tissues (e.g., veins) for the transport of water and food.
Waterbody	An area of water such as a river, stream, lake or sea.
Watercourse	Riverine systems such as creeks, brooks, streams and rivers.
Wetland	An area of land where the water table is at or above the mineral soil for the entire year.
Wildlife	Under the Species at Risk Act, wildlife is defined as a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus that is wild by nature and is native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Zone of influence	The area surrounding a development site in which animal occurrence is reduced, possibly due to avoidance of sensory disturbances or low-quality habitat.
Zooplankton	Small, sometimes microscopic, animals that live in the water column of lakes and mainly eat primary producers (phytoplankton).