Mackenzie Valley Review Board

Report of Environmental Assessment And Reasons for Decision

Dominion Diamond Ekati Corp.

Jay Project

EA1314-01

February 1, 2016

List of Abbreviations

AANDC	Aboriginal Affairs and Northern Development Canada
AEMP	Aquatic Effects Management Plan
AQEMMP	Air Quality Emissions Monitoring and Management Plan
CRMP	Caribou Road Mitigation Plan
DAR	Developer's Assessment Report
DDEC	Dominion Diamond Ekati Corp.
DDMI	Diavik Diamond Mines Inc.
DKFN	Deninu Kue First Nation
DFO	Department of Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
ENR	Department of Environment and Natural Resources, GNWT
EPZ	Enhanced Permeability Zone
FRMC	Fort Resolution Metis Council
GNWT	Government of the Northwest Territories
ICRP	Interim Closure and Reclamation Plan
IEMA	Independent Environmental Monitoring Agency
KIA	Kitikmeot Inuit Association
LKDFN	Lutsel K'e Dene First Nation
LLCF	Long Lake Containment Facility
MVRMA	Mackenzie Valley Resource Management Act
MVEIRB	Mackenzie Valley Environmental Impact Review Board
NIRB	Nunavut Impact Review Board
NPMO	Northern Projects Management Office
NRCan	Natural Resources Canada
NSMA	North Slave Metis Alliance
NWT	Northwest Territories
PR	Public registry
REA	Report of Environmental Assessment
SSWQOs	Site specific water quality objectives
TC	Transport Canada
TDS	Total Dissolved Solids
TG	TłĮcho Government
TK	Traditional Knowledge
WEMP	Wildlife Effects Monitoring Program
WLWB	Wek'èezhìi Land and Water Board
WRRB	Wek'èezhìi Renewable Resources Board
YKDFN	Yellowknives Dene First Nation
ZOI	Zone of Influence

Review Board decision

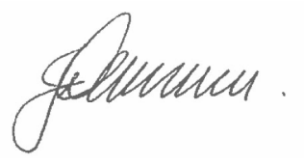
To make its decision in this environmental assessment, the Mackenzie Valley Environmental Impact Review Board (Review Board) has considered all the evidence on the Public Record and made its decision under section 128 of the *Mackenzie Valley Resource Management Act*.

Based on the evidence and submissions on the public record, the Review Board finds that the proposed Jay Project is likely to cause significant adverse impacts on the environment. This includes cumulative impacts from the potential effects of the Jay Project, combined with the effects of other activities. The Review Board also finds there is significant public concern related to these impacts.

The Review Board has recommended measures to mitigate these impacts. Specifically, it requires the Jay Project:

- be designed and operated in a manner that reduces impacts to caribou, particularly from roads and dust
- manage surface waters so the area is useful for Aboriginal traditional uses after the Jay Project closes
- better manage social impacts, with more community engagement
- offset remaining impacts to caribou from the Jay Project on other areas of the Ekati Mine site
- fund an Elders group to advise on constructing, operating and monitoring the Jay road
- ensure clean surface waters on the Jay and Misery pits after closure
- create an independent dike review panel to help design and operate the dike safely
- prevent impacts to the Narrows
- improve the strategy to employ women
- use Traditional Knowledge appropriately to design and operate the Jay Project
- create a cultural camp
- follow up monitoring and reporting on implementing these measures and their effectiveness

The Review Board finds that applying these measures will mitigate the causes of public concern. The Review Board recommends, under subparagraph 128(1)(b)(ii) of the *Mackenzie Valley Resource Management Act*, that the Project be approved subject to the measures described in this report, which are necessary to prevent significant adverse impacts on the environment.



February 1, 2016

JoAnne Deneron
Chairperson
Mackenzie Valley Environmental Impact Review Board

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Executive summary

This report describes the process, evidence, conclusions and decisions of the Mackenzie Valley Environmental Impact Review Board (Review Board) environmental assessment (EA) conducted on the Jay Project. The developer, Dominion Diamond Ekati Corporation (Dominion), proposes to expand the existing Ekati Mine near Lac du Gras, Northwest Territories. The Project is primarily at Lac du Sauvage, 30 km southeast of the Ekati processing facilities and about 300 km northeast of Yellowknife, in the Wek'èezhìi settlement area.

Proposed development

The Jay Project consists of mining and processing diamonds from the Jay pit, in Lac du Sauvage. Dominion proposes to build a dike in Lac du Sauvage and drain the water from the diked area to access the area of the proposed open pit. Dominion proposes to build a new road (the Jay road) from Lac du Sauvage to the Misery site (an existing open pit and camp). Trucks will transport ore along this road and the existing Misery haul road to the main Ekati mine site for processing. The Jay Project will extend the life of the Ekati mine by ten or more years (PR#87 p1-26).

The Jay Project proposes to use existing infrastructure at Ekati, including mined-out pits, processing facilities and camps, the Misery haul road, the airport, camps, power plant, and wastewater and processed kimberlite containment facilities. New activities for the Jay Project include:

- building a 4-km-long horseshoe-shaped water retention dike around the pit in Lac du Sauvage
- fishing out the area in the dike prior to dewatering
- mining an open pit inside the diked area
- constructing a 260 ha waste rock pile near Lac du Sauvage
- building a new 7 km road, with pipelines and a powerline running along it, from the Jay pit to the existing Misery pit area
- storing minewater in the mined-out Misery pit, storing processed kimberlite in the mined-out Panda and Koala pits, and leaving mine water in Misery and Jay pits underneath a cap of cleaner freshwater at closure
- transporting ore on the Misery haul road by large trucks, significantly increasing existing traffic volume

Over the course of this environmental assessment, Dominion has proposed design modifications, including deciding to exclude the nearby Cardinal pipe from the project, which greatly reduces the dewatering and fish removal required in Lac du Sauvage. Dominion has also improved the Project by committing to enhanced dust suppression and caribou offsets on the remainder of the Ekati site beyond the Jay Project area.[1] The Review Board has included these commitments as part of the Project while evaluating the potential significance of adverse impacts. The Review Board finds Dominion deserves to be recognized for responding to the community concerns it heard early in this EA and significantly changing its project design to avoid the potential impacts.

The Review Board's findings

The Review Board has carefully considered the following issues. It has provided a series of measures and suggestions that will mitigate the significant adverse environmental impacts and resulting public concern, and improve monitoring and managing potential impacts.[2]

1) Water

Constructing, operating, and closing the dike and Jay pit during the Jay Project, as well as managing high salt concentrations from groundwater, will affect Lac du Sauvage's water quality. The potential impacts depend on the quantity and quality of water Dominion will have to manage while operating the Jay Project, and the success of the meromictic pit lake closure strategy. The Review Board concludes that, after closing, impacts to water quality will likely significantly affect traditional land uses near the area. The Review Board finds it is important that the area around the Jay Project is returned to a state that supports traditional land practices. The Review Board has prescribed measures that:

- ensure a clean water cap on the Jay and Misery pits at closure
- make sure that the mine is closed in a way that leaves it suitable for traditional Aboriginal uses
- create an independent dike review panel to make sure the dike is safe[3]

2) Fish and fish habitat

The sole connection between Lac de Gras and Lac du Sauvage is a shallow channel called the Narrows (Nàk'ooʔaa in Taltsąot'ıne). It has high ecological value as a fish habitat and passage,

[1] See Appendix B for a list of the Developer's commitments.
[2] See Appendix A for a full list of measures and suggestions.
[3] See Section 4 (Impacts to Water) for details.

and as the place Aboriginal peoples traditionally use to harvest caribou at this narrow crossing point between the two large lakes. Water levels at the Narrows will be lowered at mine closure during refilling of the Misery pit, Jay pit and diked area with water from Lac du Sauvage. In the Review Board's opinion, it is likely the closure will cause significant adverse impacts to the ecological and traditional uses of the Narrows. The Review Board has included a measure that requires Dominion to mitigate these impacts.[4]

The developer and parties presented evidence that indicates the Jay project will result in the loss of fish habitat, some permanent and some reversible. The Jay Project fish-out of the diked area of Lac du Sauvage will kill between 7100 and 23 400 fish. Modeling predicts that, because Lac du Sauvage is large, it will result in a small population change that will not affect fish populations in the area in the long term. The regulatory system requires fisheries authorizations and offsetting requirements that will adequately offset any losses that occur. These requirements, and the commitments Dominion made during the environmental assessment process, will prevent significant adverse impacts to fish populations.[5]

3) Caribou

The Review Board finds that the Jay Project is likely to cause significant adverse project-specific and cumulative impacts to the Bathurst caribou herd. The Project proposes to cross an important caribou migration corridor at a time when the herd is in a precarious and "extremely worrisome"[6] state. There are existing significant cumulative impacts, so additional stresses on the herd have a large effect. From a project-specific perspective, the Jay Project will create physical barriers that prevent caribou from moving freely and add sensory disturbances such as noise and visual stimuli along an important migration corridor.

No plan exists to manage the Bathurst caribou herd or its range. Currently, caribou harvest is restricted. Any activities that inhibit the ability of the Bathurst caribou herd to recover (such as the cumulative effects of the Jay Project and other human activities on the herd's range) will likely significantly impact caribou, as well as affect the well-being, health and culture of Aboriginal communities. This is a cause of serious public concern.

To mitigate these effects, the Review Board requires Dominion to:

- improve the design and use of roads to avoid impacts to caribou
- minimize and manage dust from the Jay Project

[4] See section 5 (Impacts to fish and fish habitat)
[5] Project effects on fish populations and fish health
[6] Source: GNWT. See Caribou Section 6.3.1.

- use the rest of the Ekati site to offset Jay Project's remaining cumulative impact to caribou
- use Traditional Knowledge more effectively in caribou research to reduce caribou impacts, and fund a Traditional Knowledge Elders group to advise on constructing roads and operating to prevent impacts to caribou.[7]

4) Air quality and greenhouse gases

The Review Board finds Jay project air emissions have the potential to cause significant adverse impacts to ecological receptors such as fish, wildlife and humans, and add cumulatively to climate change because:

- incinerator emissions from the Jay project have the potential to release dioxins and furans, acutely toxic compounds, which adversely affect fish, wildlife, and humans
- the Jay project will be a major source of greenhouse gases in the NWT. Greenhouse gas emissions from the project will cumulatively add to already significant effects of climate change

To mitigate related significant adverse impact, the Review Board requires Dominion to:

- regularly test its incinerators to prove they are not releasing dioxins and furans, and
- publicly report its greenhouse gas emissions, targets, and alternative energy study results, and provide parties with opportunities to give feedback

5) Maximizing benefits and minimizing impacts to communities

Communities are experiencing both benefits and adverse impacts from diamond mining. Communities are concerned that the Jay Project will add to the combined existing social impacts. Some social issues such as crime rates and impacts to families have worsened since diamond mining started in the NWT. The Review Board finds that the Jay Project could add to these stresses, resulting in significant adverse cumulative social impacts.

Communities are concerned that stresses will increase without the socio-economic benefits to offset them. Some people in communities face barriers that prevent them from benefitting as fully as others. The Review Board finds there has been no careful examination of these adverse cumulative and significant social impacts from diamond mining.

[7] See section 6 (Impacts to caribou)

The Review Board has recommended measures intended to mitigate significant adverse socio-economic impacts. The measures require:

- the GNWT to engage with communities and adaptively manage social impacts from diamond mining
- Dominion to update its strategy to train, recruit and employ women, particularly in non-traditional trades and occupations, after consulting with appropriate Territorial women's groups.[8]

6) Culture and Traditional Knowledge

The Review Board heard the serious concerns every Aboriginal community expressed on the adverse cumulative cultural impacts diamond mines had on their traditional way of life. They have experienced changes such as less time on the land, the stress of the potential loss of the Bathurst caribou herd, and reduced culture sharing between generations. The Review Board finds the Jay Project will add to these cumulative significant cultural impacts. Aboriginal groups also told the Review Board that diamond mine land disturbances have decreased the harvesting value of the Lac de Gras area. Harvesters and their families are discouraged from using the area, which affects the transfer of Traditional Knowledge about the area.

The Review Board finds that the Jay Project will prolong this cumulative cultural impact. It recommends a measure to create a framework to collect, manage and use Traditional Knowledge appropriately and adaptively, and a measure for Dominion to create a cultural camp near the Jay Project for community groups to use.[9]

7) Follow-up

Follow-up is a key part of the adaptive management framework the Review Board recommends in the measures in this report. The actions that result from adaptive management will mitigate the adverse impacts that are otherwise likely to be significant. That is why the Board has set out measures in this EA Report that require implementing follow-up programs. For the same reason, the Review Board recommends measures that require monitoring, adaptive managing, and related reporting.[10]

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[8] See section 8 (Maximizing Benefits and Minimizing Impacts to Communities) for details.
[9] See section 7 (Cultural aspects and Traditional Knowledge) for details.
[10] See section 13 (Reporting and follow-up) for details.

Based on the above, the Review Board finds that the Jay Project is likely to have significant adverse impacts on the environment, and that there is significant public concern related to these impacts.[11] The Board has proposed measures that will mitigate these impacts and address the corresponding public concern.

To summarize, the proposed measures include requirements to:

- design and use roads to avoid impacts to caribou
- better manage dust from the Jay Project to reduce impacts to caribou
- fund an Elders group to advise on constructing and operating the Jay road
- offset remaining impacts to caribou from the Jay Project on other areas of the Ekati Mine site
- manage water to protect traditional Aboriginal uses after closure
- ensure a clean water cap on the Jay and Misery pits when the mine closes
- create an independent dike review panel to make sure the dike is safe
- prevent impacts to the Narrows
- better manage social impacts and engage the community more
- improve the strategy to employ women
- use Traditional Knowledge appropriately and adaptively to better design and operate the Jay Project
- create a cultural camp to help reconnect traditional users of the area to the land around the Project
- follow-up on the implementation and effectiveness of these measures

The Review Board has concluded that the impacts of the Jay Project can be mitigated by these and other measures, in addition to implementing the commitments Dominion made. The Board recommends it should proceed to the regulatory phase for approvals.

[11]The full report includes specific findings of impact significance for each issue where measures are prescribed.

1 Introduction

This is the Mackenzie Valley Environmental Impact Review Board's (Review Board) Report of Environmental Assessment and Reasons for Decision (REA) for the proposed Jay Project (Jay Project). The developer is Dominion Diamond Ekati Corporation (Dominion or the developer). The Jay Project expands the existing Ekati diamond mine and will extend the life of the Ekati mine by ten or more years (PR#87 p1-26).

The Jay Project consists of a horseshoe-shaped dike in Lac du Sauvage, 30 km southeast of the Ekati processing facilities and about 300 km northeast of Yellowknife. It is in the Wek'èezhìi settlement area (See Figure 1-1). Dominion proposes to drain the water in the diked area to expose the proposed open pit and build a new road (the Jay road) from Lac du Sauvage to the existing Misery site. Trucks will transport ore along this road and then along the Misery haul road to the main Ekati mine for processing.

This report:

a) outlines the overall environmental assessment (EA) process
b) reviews the relevant evidence on which the decisions are based
c) describes the Review Board's analysis and decisions, addressing whether the proposed development is likely to cause significant adverse impacts on the environment or cause significant public concern
d) satisfies the assessment and reporting requirements of sections 121 and 128 of the *Mackenzie Valley Resource Management Act* (the *Act*)

This Report of Environmental Assessment Report (REA) includes fourteen sections and four appendices:

Section 1 discusses the regulatory history and how the Jay Project came to be referred for EA. This section also sets out the requirements of the *Act* and briefly describes the Jay Project.

Section 2 describes the Review Board's EA process for the Jay Project. It gives information about the parties to the assessment and the steps the Review Board took to identify significant adverse impacts or public concern, as required by section 128 of the *Act*. Section 2 also describes the scope of the Jay Project as determined by the Review Board under subsection 117(1) of the Act, including changes to the design that occurred during the assessment.

Section 3 describes alternative means of developing the Jay Project.

Sections 4-10 focus on potential selected environmental impacts of the Jay Project. These sections include:

- a summary of the evidence
- the likelihood and significance of public concern
- the Review Board's analysis and conclusions
- its mitigation measures and suggestions (EA measures)

Section 11 examines impacts of the Jay Project to downstream users.

Section 12 examines the proposed closure of the Jay Project and related potential impacts.

Section 13 presents a framework for follow-up on EA measures, including tracking and reporting.

Section 14 is the Review Board's conclusion.

Appendix A lists the Review Board's recommended measures and suggestions to avoid or reduce impacts.

Appendix B lists management and monitoring plans.

Appendix C lists commitments Dominion made for the Jay Project since submitting the *Developer's Assessment Report* in November 2014 to date, including commitments made in response to information requests, the DAR Adequacy Review, technical sessions and public hearings.

Appendix D contains the public registry index.[12]

The Review Board is aware that with respect to wildlife, this EA focused on caribou, due to the critical status of the Bathurst caribou herd and its uncertain future. The Review Board is mindful that a healthy and self-sustaining ecosystem, in which all wildlife on the landscape can thrive, is important to Aboriginal communities and other residents of the Northwest Territories (NWT) for its intrinsic value and use.[13]

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[12] This report references documents on the public registry with the initials PR followed by the registry number of the document and specific page numbers where appropriate. Appendix D provides a listing of the documents on the public registry by number.

[13] Throughout this report, the term "Aboriginal" is used to mean "Indigenous", and applies to First Nations, Metis, and, where applicable, Inuit peoples.

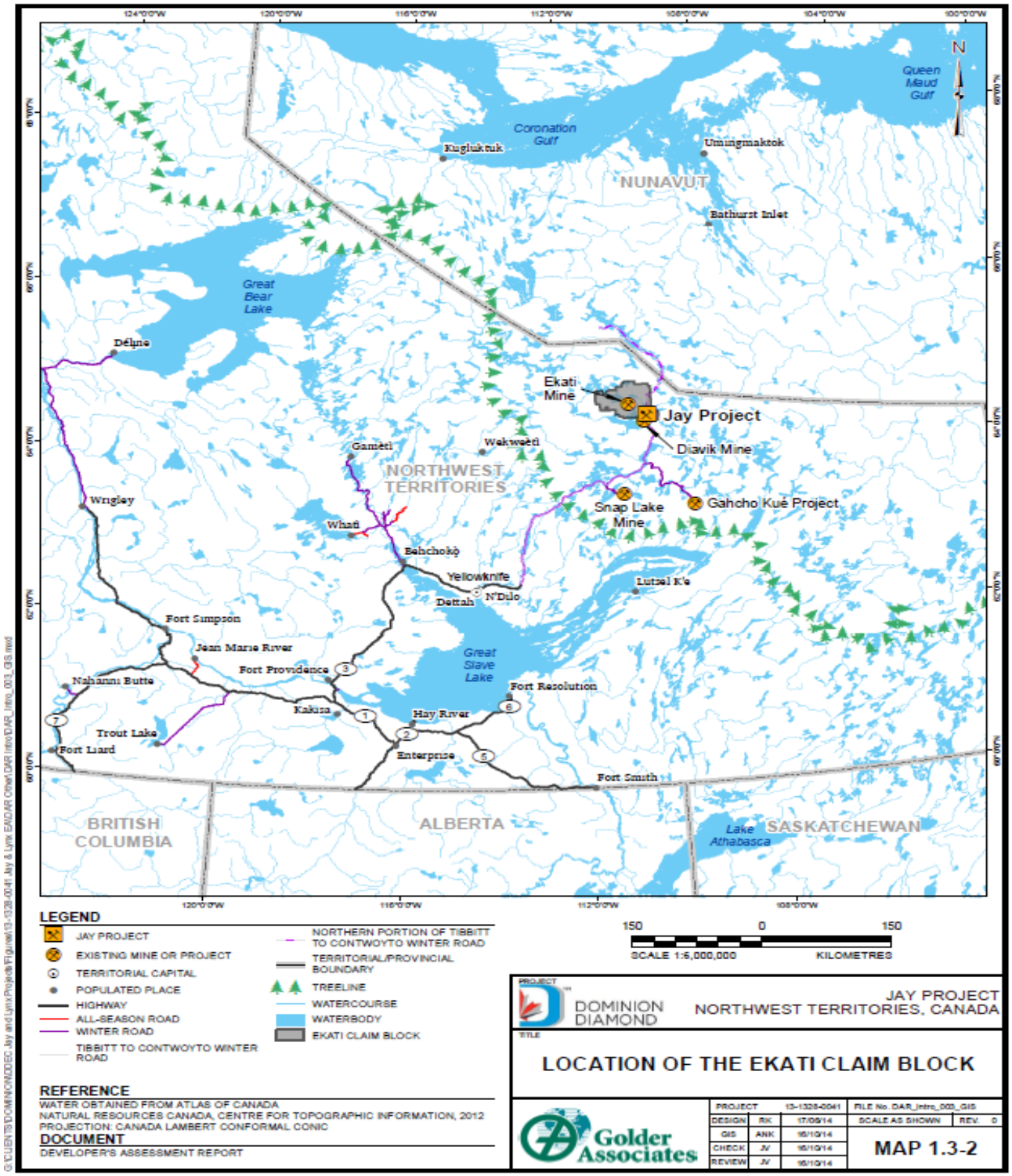

Figure 1-1: Location of the Ekati claim block (Source *PR#87 p1-36*)

1.1 Requirements of the *Mackenzie Valley Resource Management Act*

The Review Board administers Part 5 of the *Act* and is responsible for conducting an EA that considers a proposed development's biophysical, socio-economic and cultural impacts on the environment. The Review Board conducted this EA based on its *Rules of Procedure for Environmental Assessment and Environmental Impact Review Proceedings* and its *Environmental Impact Assessment Guidelines*.

Under section 117(1) of the *Act*, the Review Board must decide on the scope of the Jay Project. Section 117(2) sets out other factors the Review Board must consider in conducting the EA. Although the parties have submitted evidence about various impacts, the Review Board must determine whether the Jay Project is likely to cause a significant adverse impact on the environment or be a cause of significant public concern.[14] The Review Board must then prepare a report of environmental assessment (REA).[15]

1.1.1 Changes to the *Mackenzie Valley Resource Management Act*

Amendments to the *Act* that took effect in 2014 introduced new mandatory timelines for the Review Board to complete an EA and make a report available to the relevant authorities.[16] Specifically, the *Act* prescribes 16 months for an assessment involving a public hearing.[17] The Review Board has completed its EA of the Jay Project and REA within the statutory timeframe.

1.2 Development and regulatory history of the Ekati Mine

In 1994, a federal EA panel was appointed to review the environmental and socio-economic effects of the proposed Ekati mine, then called the NWT Diamonds Project. The EA was conducted in accordance with the Federal Environmental Assessment and Review Process, before the *Mackenzie Valley Resource Management Act* existed. In 1996, the EA Panel recommended that the Government of Canada approve the Ekati mine subject to recommendations. Regulatory authorizations to mine multiple pits were issued and the Ekati mine began production in October 1998. In 1999, BHP Diamonds Inc. (the then developer) applied to expand the Sable, Pigeon and Beartooth pits. The Review Board conducted an EA and, in 2001 recommended to allow the expansion under specific conditions. The Minister of Indian Affairs and Northern Development (now Indigenous and Northern Affairs Canada) approved the expansion.

[14] Subsection 128(1)
[15] Subsection 128(2)
[16] Subsection 128(2)
[17] Paragraph 128(2.1)

1.2.1 The Jay Project

Dominion submitted the following Land Use Permit and Water Licence applications for the then Jay-Cardinal Project to the Wek'èezhìi Land and Water Board (WLWB) on October 18, 2013:

- W2013L2-0002: Type A Water Licence, Jay–Cardinal Project
- W2013D-0007: Land Use Permit, Jay–Cardinal Project

Dominion submitted a project description of the proposed development and a community engagement record at the same time. The WLWB initiated a preliminary screening of the Jay–Cardinal Project according to section 124 of the *Act*. On November 21, 2013, Aboriginal Affairs and Northern Development Canada (AANDC) determined that the development might have a significant adverse impact on the environment and referred the Jay-Cardinal Project and all associated applications to EA under paragraph 126(2)(a) of the *Act* (PR#1). The Review Board notified the developer on November 22, 2013, that the Jay Project had been referred to EA.

In June 2014, in response to early engagement and community concerns about the Jay-Cardinal Project footprint identified during the EA, Dominion removed the Cardinal pipe from the Project entirely (PR#69) (Figure 1-2). To reflect the Project changes, the Review Board issued a *Revised Terms of Reference* (PR#73) on July 17, 2014, and resumed the EA of the Jay Project.

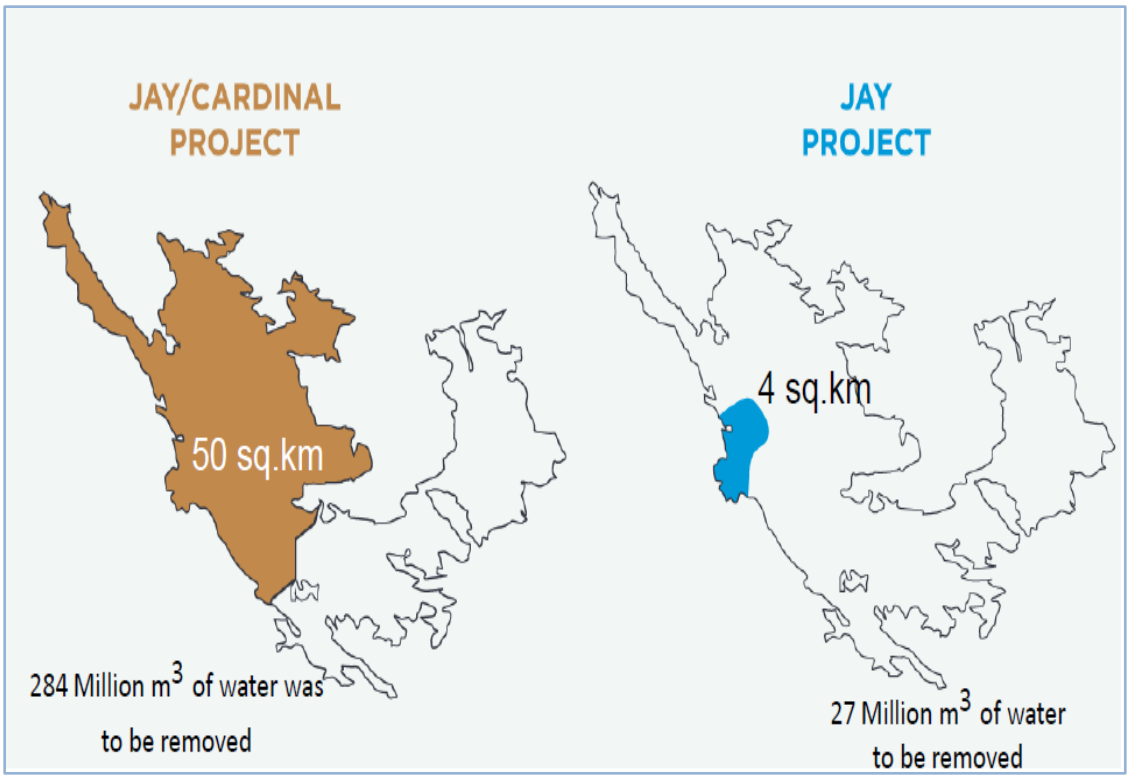

Figure 1-2: Jay-Cardinal Project and revised Jay Project water removal estimates (Source *PR#69 p4*)

1.3 Environmental Setting and Traditional Use

1.3.1 Environmental setting

The following description of the Jay Project's biophysical setting is summarized from Dominion's Jay Project *Developer's Assessment Report* (DAR):

The Ekati claim block, including the Jay Project location, is situated in the Lac de Gras watershed, approximately 300 km northeast of Yellowknife (Figure 1-1). The proposed development is primarily located on Lac du Sauvage, roughly 30 km from the main Ekati camp and 7 km from the existing Misery pit. Lac du Sauvage flows into Lac de Gras (Figure 1-3), which is in the headwaters of the Coppermine River watershed. The Coppermine River flows north from Lac de Gras to the Arctic Ocean, providing a source of drinking water to the community of Kugluktuk in Nunavut (via the watershed shown in Figure 1-4). The proposed Jay Project site is located in the subarctic region known as the Southern Arctic Ecozone, and more specifically the Takijuq Lake Upland Ecoregion (PR#87 p1-29).

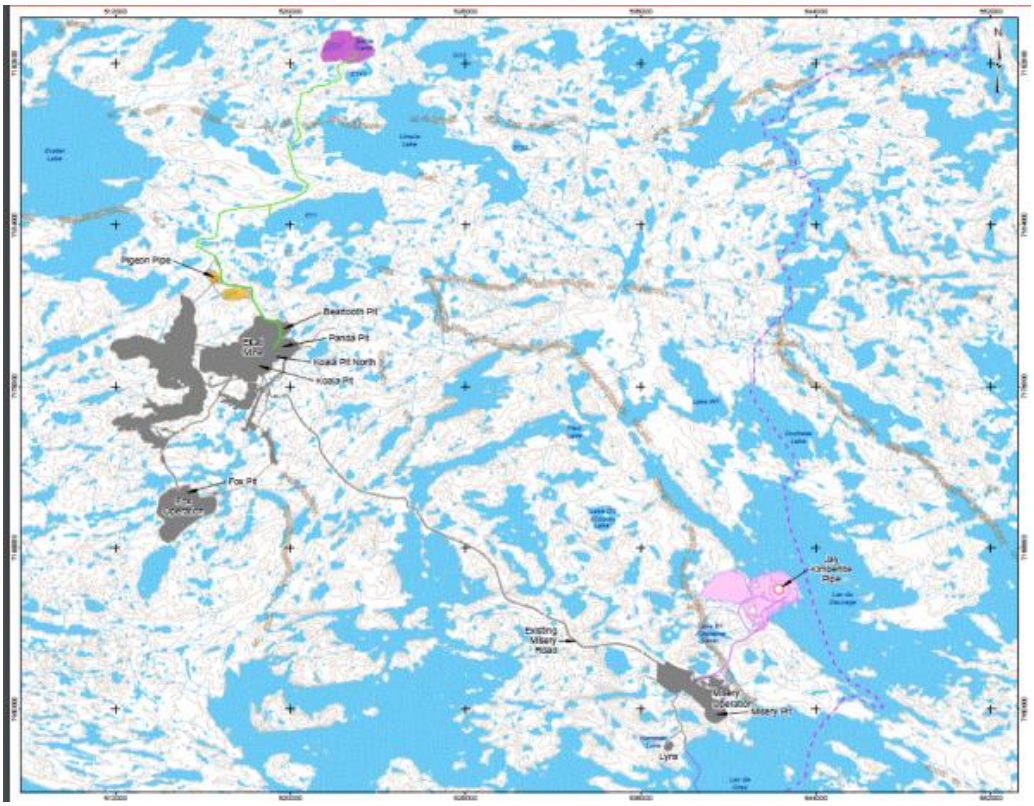

Figure 1-3. Jay Project bottom right, Ekati middle left and Sable deposit at top (Source PR#612 p3)

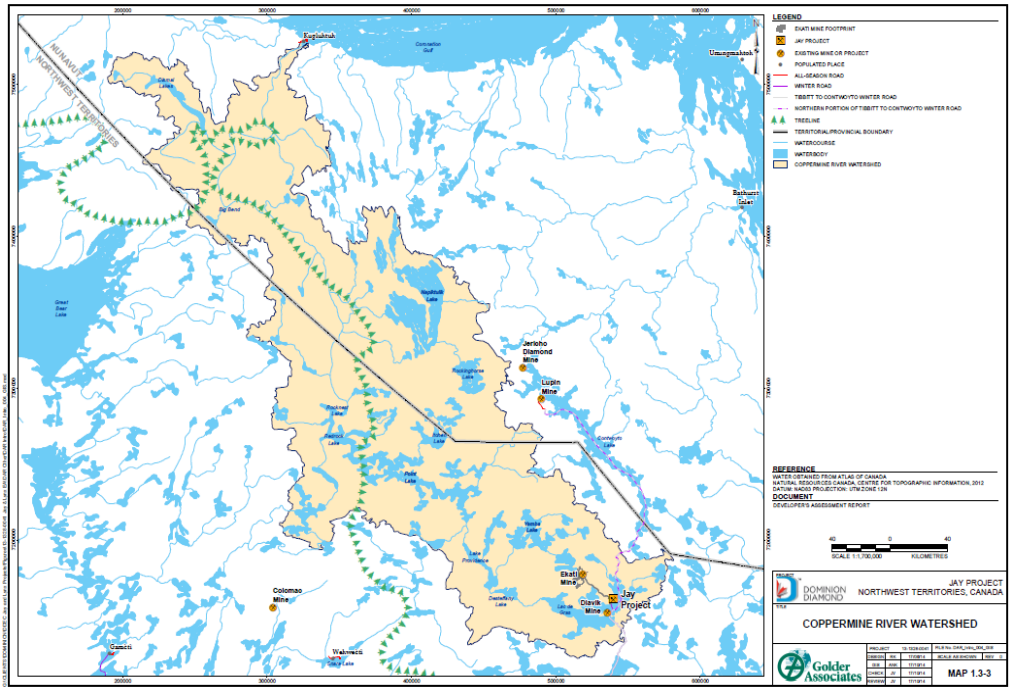

Figure 1-4: Coppermine river watershed (Source PR#87 p1-35)

The Ekati claim block is located in the Slave Geologic Province, which is characterized by three broad bedrock groups and a number of intrusive inclusions. Glacial deposits between 2–15 m thick overlay the bedrock. Kimberlite pipes in the Ekati area form part of the Lac de Gras kimberlite field, and range from 45–75 million years in age. These pipes can be up to 20 ha in surface area and generally extend 400–600 m below the ground (PR#94 p3-16).

The Jay kimberlite pipe has been investigated via 16 diamond drill holes and 17 reverse circulation holes, totalling 3,872 m and 4,979 m respectively of core available for geological logging. Approximately 35 m of water and between 5–10 m of lake sediments or overburden (PR#94 p3-17) overlay the Jay pipe located underneath Lac du Sauvage. The surface area of the pipe is expected to be approximately 13 ha (375m x 350m) and to extend approximately 700 m below the ground surface, with roughly half of the total depth available through open pit mining (Figure 1-5) (PR#236 p37).

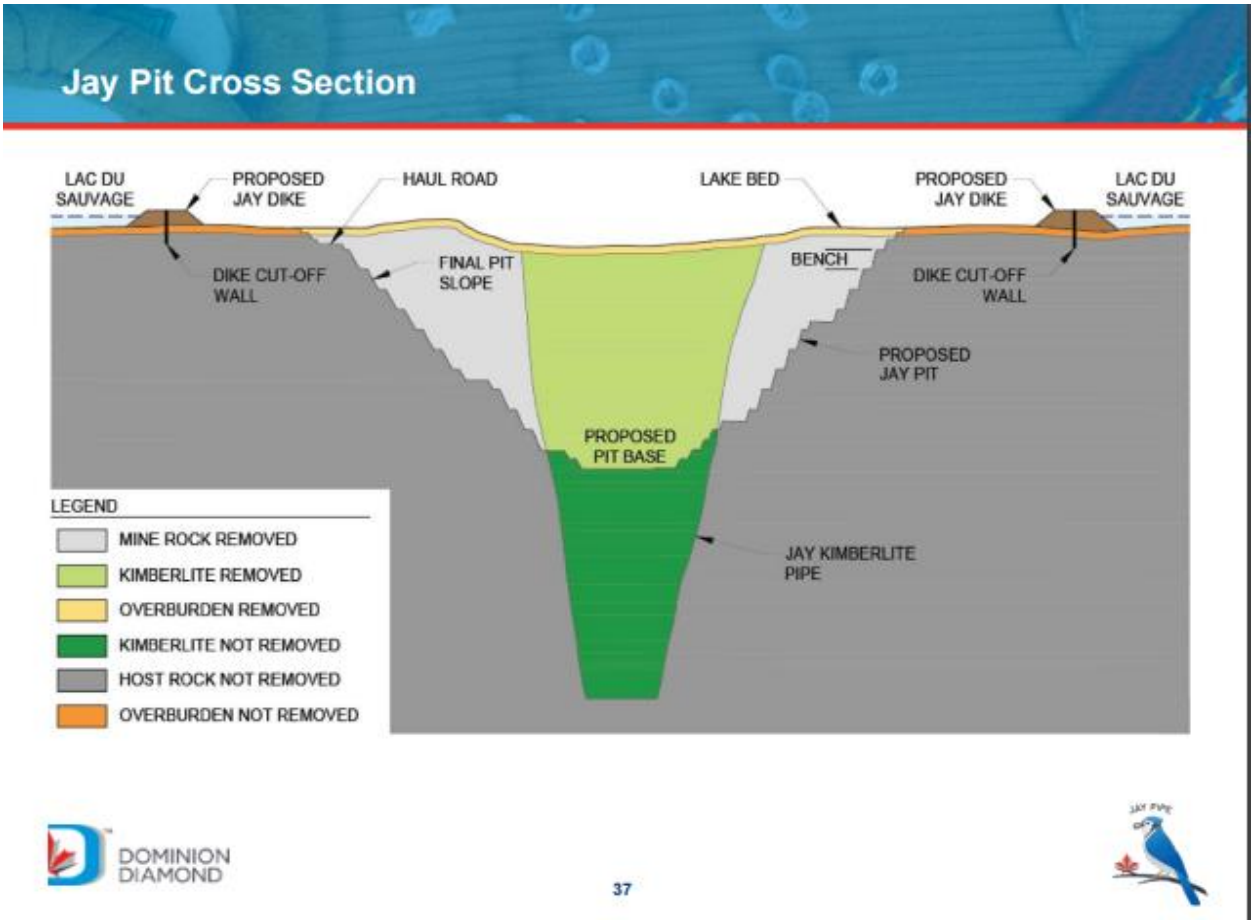

Figure 1-5: Schematic of Jay Kimberlite pipe and pit cross section (Source PR#236 p37)

The topography surrounding the Jay Project is characterized by rolling terrain, with ridge features known as eskers trending northwest to southwest and exposed bedrock outcrops. Additional terrain features include boulder fields, tundra, wetlands and numerous lakes with interconnecting streams. Permafrost is continuous, typically extending to a depth of 300 m and overlain with an active layer of 1–2 m. Long-term climate normals from the Lupin A climate station, approximately 130 km to the northwest of the proposed Jay Project location, indicate that mean daily temperatures are typically sub-zero from October to June, with an annual daily mean temperature of -10.9°C. Total annual precipitation averages 299 mm, of which 161 mm falls as rain between June and September. Wind speeds average 17.8 km/hr and most frequently trend northwest (PR#103 p7-12, 7-13).

The lakes and streams of the Takijuk Lake Upland Ecoregion are cold, nutrient-poor and ice-covered for up to nine months of the year (PR#87 p1-29). Nutrients in the permafrost soil are inaccessible, active layer temperatures are low, and organic matter decomposes and releases nutrients slowly. All this results in surface waters characterized by very low nutrient

concentrations and aquatic plant production. Despite their low productivity and cold temperatures, the aquatic ecosystems surrounding the Ekati mine support communities of aquatic plants, phytoplankton, zooplankton and benthic invertebrates and fish. Nine fish species have been found in Lac du Sauvage—lake trout, lake whitefish, round whitefish, slimy sculpin, cisco, burbot, Arctic grayling, northern pike and ninespine stickleback (PR#87 p1-33).

The region also supports a number of terrestrial migratory and non-migratory birds and mammals. Migratory species, which travel north through the area during spring and summer and move south through the area before winter, include caribou, wolf, spotted sandpiper, pectoral sandpiper, yellow warbler and peregrine falcons. Species which occupy the area year-round include grizzly bear, wolverine, Arctic and red foxes, Arctic hares, ravens and gyrfalcons. Muskoxen have also been observed in the area on rare occasions (PR#87 p1-33).

1.3.2 Cultural Setting and Traditional Use

The Ekati claim block, which covers a total of 2,663 km^2, and the broader Lac de Gras region, are in the traditional lands of the Inuit, Dene, and Métis people. Archaeological studies and Traditional Knowledge indicate that humans have used the area for over 3,000 years. The predominant traditional land use activity in the region is hunting, with groups travelling through the area in anticipation of caribou migration and for fishing. Particularly valued areas include the Narrows, the channel between Lac du Sauvage and Lac de Gras and the esker located to the west of Lac du Sauvage (PR#87 p1-33).[18]

Indeed, "Ek'ati" is a Dene name meaning "fat lake" and is known otherwise as Lac de Gras. The Yellowknives Dene First Nation (YKDFN) states that "gras", which is French for "fat", relates to the strong smell of caribou fat that was processed in the area during fall hunt (PR#562 p1).

Dene and Métis groups from south of the area and Inuit groups from further north would migrate towards Lac de Gras following traditional land use patterns based on the seasonal movements of culturally valued wildlife (PR#211 p1-10). Big game animals that were harvested included barren-ground caribou and muskoxen. Nets, spears, and hook and line were used to harvest fish. Waterfowl were hunted with bows and arrows or driven into nets (PR#211 p1-10). Additional harvesting activities included trapping small, fur-bearing animals and collecting plants for nutrition (for example, berries) and constructing domestic items like living structures, canoes, snowshoes, sleds and weapons (PR#211 p1-10).

Traditional Knowledge indicates that the Bathurst caribou herd migrates through the Lac de Gras area every year. The North Slave Metis Alliance (NSMA) says:

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[18] The Narrows and the esker are described further in sections 5.1 and 6.3.2 of this report.

> *"It is right in the middle of their migration route. When they are travelling south and heading back home to their calving grounds in the spring, the Lac de Gras area is right dead centre (NSMA 1999)."* (PR#132 p12-35)

Traditional Knowledge has specifically identified the Narrows, as well as the Misery Esker, as critical caribou migration routes (PR#132 p12-31, p12-37). The Narrows is an example of the TłĮcho concept of Naaɔoo k'é, described in the TłĮcho Traditional Knowledge Report as meaning "a narrow water crossing that caribou can use to migrate between large lakes", forcing caribou to swim to reach the other side (PR#532 p11). The image below (Figure 1-6), from the YKDFN Traditional Knowledge Report *Lands that are Wide and Open* demonstrates the importance of the Narrows for caribou, as seen by the large amount of caribou hair piled up along the shores at the crossing (PR#591 p8).

Figure 1-6: Caribou hair collected on the shores of the Narrows (Source PR#591 p8)

Because the Lac de Gras area (and the Narrows in particular) is important to caribou, and because of the intimate connection between caribou and the Aboriginal way of life, these areas are important to many Aboriginal groups. Participants at the cultural workshop Dominion hosted stated, "We are caribou people. It is fundamentally important that we talk about the caribou. They are at the centre of our existence" (PR#327 p13). The area being on the caribou migration route, Aboriginal hunters would fish and camp there while awaiting the arrival of the herds (PR#664 p114 – 115 and p320; PR#663 p253).

The Narrows was also a useful spot for camping and fishing and as a source of drinking water during the winter (PR#562 p31). Migratory birds would make use of the open water at the Narrows during the winter, landing there when the larger bodies of water such as Lac de Gras

were frozen (PR#562 p32). Lac du Sauvage and the Narrows were also identified as productive and sensitive fishing areas (PR#562 p25):

> "*Fish camps and hunting camps are located everywhere on Egati [Ekati]; hunting and fishing is done on the whole lake, it is not possible to point to specific camps; camps were generally placed on islands, at mouths of rivers, and at channels (narrows).*" (Crookedhand et al. Interview, July 19, 1997)

The combined importance of the Lac de Gras area, including Lac du Sauvage and the Narrows, to caribou, fish, birds and other wildlife make this a highly important area of traditional use for Aboriginal groups. As described by the NSMA (PR#663 p114 to 115), with respect to the Jay Project:

> *"The area under the consideration is a very, very culturally important area. That's where people camped, fished while they waited for caribou. That's where they gathered. The permanent loss of fish habitat is going to be significant… it's not something that can be easily replaced by restoring fish habitat elsewhere, because of that cultural importance."* (PR#663 p114 to 115)

1.4 Development description

The Ekati mine has been in operation since October 1998, with both open pit and underground mining operations. Dominion has been the majority owner of Ekati mine since April 2013, when it purchased all of BHP Billiton's diamond assets. While the current mine plan includes stopping production by 2019, the Jay pipe would extend the life of the mine to at least 2030.

The following sections describe the components of the Jay Project, including the existing infrastructure that will support the development of the Jay pipe.

Existing infrastructure

To date, development at the Ekati mine has occurred mainly at the Ekati main site near Kodiak Lake and the Misery satellite location, which is approximately 30 km south of the main site and close to the shores of Lac de Gras. Several facilities and infrastructure components of the existing Ekati mine will be used for the proposed Jay Project, including (PR#94 p3-25):

- mining operations at Koala, Koala North, Panda, Beartooth, Fox and Misery pits, as well as planned and under-development operations at Lynx and Pigeon pits
- processing facilities at the Ekati main site and waste rock storage areas for the Panda, Koala, Beartooth, Misery, Fox and Pigeon developments
- wastewater and processed kimberlite management structures at the Long Lake containment facility (LLCF) and the King Pond containment facility

- accommodation complexes at the main Ekati and the satellite Misery sites
- airport and helipad at the Ekati main site
- facilities for administrative activities, heavy and light vehicle maintenance, storage and other uses
- roads, including the existing Misery road
- ancillary facilities at the Ekati main site, including a power plant; ammonium nitrate storage facility; bulk storage locations for diesel fuel, lubricant and glycol; a water supply system (from Grizzly Lake); an emulsion plant; a landfill; a landfarm; waste management and incineration facilities; and a contaminated snow containment facility
- ongoing use of the Tibbitt to Contwoyto winter road

To date, approximately 30 km^2 of development has taken place on the Ekati claim block, representing 0.77% of the total claim block area (PR#87 p1-29).

Jay Project components

Since the Jay Project is an extension of the existing Ekati mine, much of the infrastructure it requires has already been developed. The development of the proposed Jay Project will consist largely of an open pit diamond mine, a dike surrounding the open pit, a water diversion channel connecting Lac du Sauvage with upstream water bodies in sub-basin B, a waste rock storage area, and some new access and haul roads, pipelines and power lines (PR#94 p3-1, Figure 1-7 below).

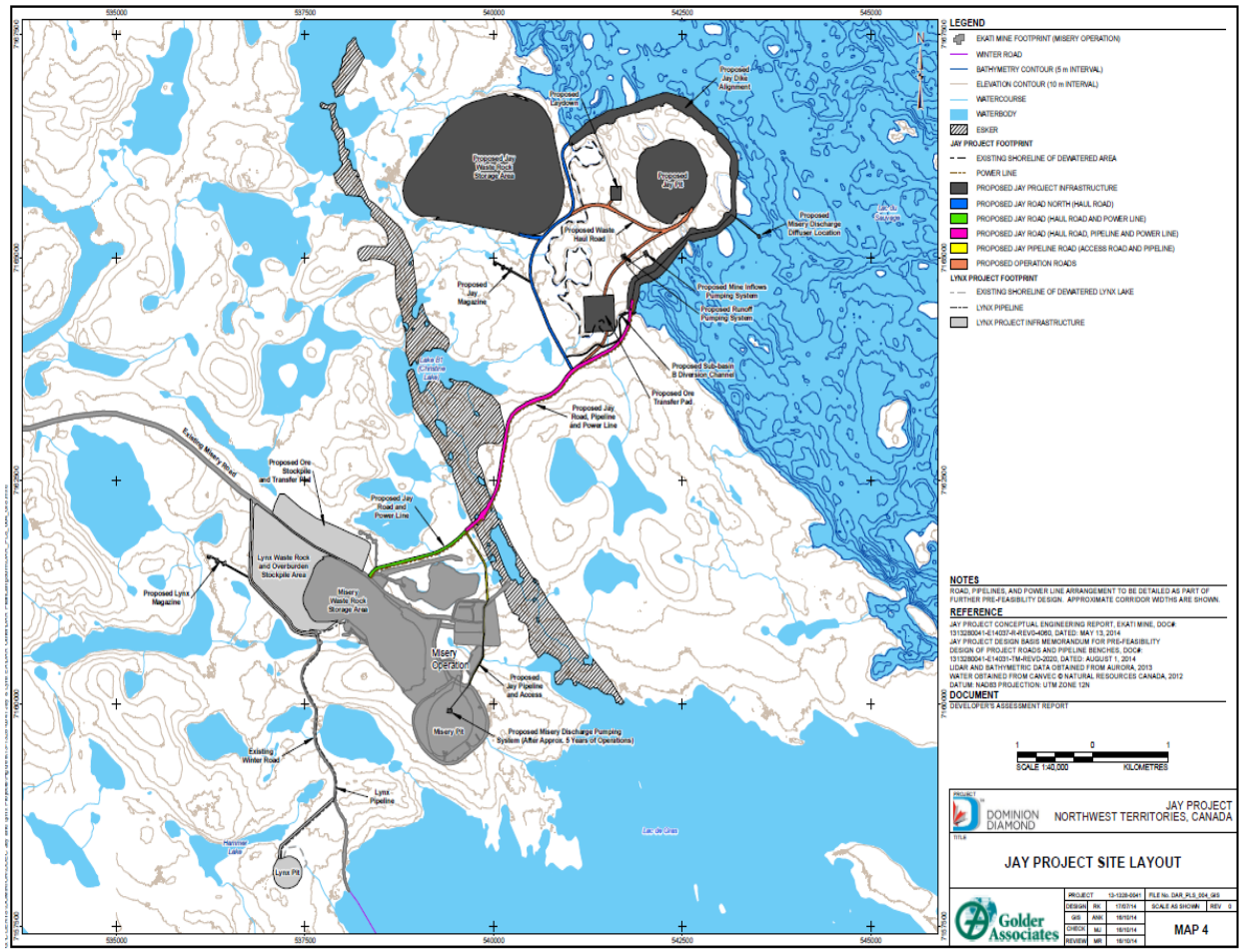

Figure 1-7: Jay Project site layout (Source PR#81 p12)

The new activities specifically for the Jay Project include:

- constructing a horseshoe-shaped water-retaining dike (the Jay Dike) in the portion of Lac du Sauvage overlying the Jay pipe, including dewatering activities and eventual reflooding of the diked area
- constructing a diversion channel (the sub-basin B diversion channel) and sumps to minimize and manage runoff and surface minewater in the diked area
- constructing rockfill ramps into the diked area during dike dewatering
- fishing-out the diked area in Lac du Sauvage before dewatering
- open-pit mining the Jay pipe (at a rate of 40 million tonnes/year, or approximately 110,000 tonnes/day)
- constructing the Jay waste rock storage area, for waste rock and overburden excavated from the Jay pit during construction and operation
- depositing processed kimberlite in the Koala and Panda open pits (and cell D of the LLCF as a contingency deposition location)
- potentially enlarging the existing Misery site truck stop

- enlarging and extending the operating life of the Misery accommodations complex (for approximately 100 more people)
- building Jay site surface facilities, including a lunchroom, office and washroom facility, with temporary emergency shelter and supplies, as well as a laydown and truck-ready area for field maintenance of heavy equipment
- installing pumping systems between the Jay site and the Misery Pit, and from the Misery Pit to the Lynx Pit, each consisting of a pump station and pipeline
- constructing new roads and laydown areas including the primary access Jay Road connecting the Jay pit to the existing Misery Road, Misery site facilities and Ekati main camp
- developing two new kimberlite stockpile areas, covering a total area of 0.56 km^2
- additional truck traffic, including an estimated 56 round trips per day by long-haul trucks, 15x 190-tonne rock trucks cycling between the Jay pit and the Jay WRSA, and 7x 90-tonne rock trucks cycling between the Jay pit and the ore transfer pads at the Jay and Misery roads
- additional fuel hauling to accommodate fuel needs for the Jay development, and potential doubling of the Misery tank farm storage capacity
- additional energy generation from diesel;
- developing a new granite rock quarry located within the footprint of the Jay waste rock storage area
- constructing up to three Type 4 explosive magazines located near the Jay open pit for storage of primers, boosters, packaged products and surface delays (PR#94, p3-40-64)

Construction

Granite quarried from the Lynx pit (currently being developed) will be used as a construction material for many of the Jay Project components, including the Jay Road from the southern end of the existing Misery road to the shoreline of Lac du Sauvage and a laydown area near Lac du Sauvage. Specific infrastructure components to be constructed on this laydown area include a lunchroom, office, washroom, and storage and maintenance facilities.

After completing the site access roads, a horseshoe shaped water-retaining dike will be constructed from the shoreline into Lac du Sauvage. This dike, which will isolate the portion of the lake overlying the Jay pipe from the rest of Lac du Sauvage, is expected to be approximately 5 km long and to rise over 13 m from the lakebed. A diversion channel will be created in sub-basin B, located to the southwest of the proposed Jay Project area, to reduce the total amount of natural runoff entering the diked area and maintain fish passage between Lac du Sauvage and upstream water bodies (PR#95 p18).

Once the area of Lac du Sauvage the dike encloses is hydrologically isolated, it will be fished-out and dewatered through a series of pumping systems and pipelines. These pipelines will also be used during operations for water management purposes. It is expected that approximately 29.6 million m^3 of water will be removed from the diked area during dewatering, with the first

portion of this water being pumped directly to Lac du Sauvage. Dominion has predicted that at a certain point in the dewatering process, water in the diked area will no longer be suitable to discharge into Lac du Sauvage due to increasing levels of total suspended solids. At this point, it will be directed into the mined-out Lynx and Misery pits (PR#94 p3-7). Dominion will begin mining when all the water has been removed from the diked area and the lakebed on top of the Jay pipe is exposed.

Operation

Mining operations are expected to take place between 2019 and 2029. Rock trucks will haul waste rock and overburden to the Jay waste rock storage area on the shore of Lac du Sauvage close to the open pit. Kimberlite will be hauled from the pit to nearby ore transfer pads, and then to the processing plant at the Ekati main camp along the Misery haul road. Kimberlite will be processed to recover diamonds, with waste-processed kimberlite deposited into the mined-out Panda and Koala pits via pipelines. Waste water from the processing stage will be piped to the existing Long Lake containment facility (PR#94 p3-8). Specific details on mining activities, waste rock and kimberlite movement, and kimberlite processing are below.

The proposed pit design is based on using conventional open-pit truck-shovel operations with 15 m bench heights and a double-bench configuration. A single access ramp, which will be designed to accommodate a 190-tonne CAT 789 haul truck, will allow for two-way traffic, a safety berm, ditch, and the placement of dewatering pipes along the edge of the road (PR#94 p3-54).

Mining activities will include drilling, blasting, excavation and hauling. Dominion will use CAT-789 haul trucks to transport waste rock material from the pit to the Jay waste rock storage area. The Jay road will be used to transport kimberlite ore to the Jay and Misery road stockpiles. Road trains will then transport the kimberlite to the processing plant at the Ekati main site via the Misery haul road (PR#94 p3-54).

A series of new and existing roads will be used to transport materials to and from the Jay Project location. New roads include:

- the Jay road, a primary access road from the Misery road to the south abutment of the water retention dike, which will be approximately 5.1 km long and will cross the Lac du Sauvage esker
- a 3.2 km road connecting the Jay road to the north abutment of the water retention dike and Jay waste rock storage area
- a 1.9 km road connecting the Jay road to the Misery camp, which will branch off from the Jay road just north of King Pond
- operational roads in the isolated and dewatered portion of Lac du Sauvage connecting the Jay road to the Jay pit and sumps, and the Jay pit to the Jay waste rock storage area, for a combined total of approximately 4.1 km (PR#94 p3-45)

Building roads will comply with applicable regulations and guidelines and minimize permafrost disturbance. For example, the developer is not planning cuts for site roads, except where necessary to cross the esker, and it will not remove surficial layers of insulation vegetation and organic soils to build the roads. Haul roads will be approximately 23 m wide to accommodate two-way traffic of the largest vehicles. They will be constructed of three layers of inert rock (a foundation of coarse rock 1.35 m deep, overlain by a 0.5 m layer of crushed aggregate, and topped with a 0.15 m layer of fine crushed aggregate) and feature side berms where the height of the road is greater than 3 m (PR#94 p3-45).

The Jay Road will also extend the Misery powerline from the Misery camp to the Jay Project site. Similarly, a pipeline from the Jay Project site to the existing Misery camp dewatering system will run most of the length of the proposed Jay road (See Figure 1-5 above).

The existing Ekati processing plant will continue to be used for the Jay Project. This plant is located just southwest of Koala pit at the main Ekati site. Typically, processing occurs continuously (24 hours per day, 365 days per year) with an average processing rate of 12,500 tonnes of kimberlite per day. Dominion has a wastewater and processed kimberlite management plan detailing the stages of kimberlite processing. Basic steps include crushing, washing, screening, and a final separation of material by density to isolate diamonds from the surrounding kimberlite rock (PR#94 p3-28). Water for this process will come from the existing LLCF (PR#94 p3-8). After processing, Dominion will deposit fine processed kimberlite in the mined-out Koala and Panda open pits.[19]

Components of the overall water management system during operations include the collection and diversion of surface and open-pit minewater, as well as the diversion of natural runoff from the sub-basin B catchment area. Open-pit minewater, expected to be the largest source of water to the Jay development, will be collected at the bottom of the Jay pit and pumped to the base of the Misery pit. Similarly, surface water draining into the dewatered area behind the dike will be collected in surface sumps and pumped to the top of Misery pit. The minewater is expected to have high concentrations of total dissolved solids (salts) (TDS), while the surface runoff is expected to have low concentrations. Dominion therefore intends to separate the minewater from the runoff, which should help develop the chemical gradient in Misery pit necessary to meet closure objectives (PR#95 p18).[20] It is predicted that groundwater inflows to the proposed Jay pit will peak at year 10 of production, with approximately 21,300 m^3/d of groundwater entering the pit, with a maximum total dissolved solid concentration of approximately 7,300 mg/L (PR#95 p21).

[19] See Section 4.2 for further discussion on fine processed kimberlite.
[20] See section 4.1.2 for further discussion on meromixis.

Dominion anticipates that in year five of the Jay Project, assuming it meets all applicable discharge criteria, water will be pumped from the top of Misery pit to Lac du Sauvage through a diffuser outfall (PR#95 p18). The Lynx pit may be used as a contingency water management facility during the operations phase if the capacity of Misery pit is lower than predicted—either due to higher than expected concentrations of total dissolved solids, or higher than expected rates of water inflow (PR#95 p20).

Regardless of origin, all sewage will be collected and trucked to the Ekati main site sewage treatment facility, which treats all domestic wastewater at primary and secondary levels of treatment. Treated effluent will be pumped to the LLCF via the processing plant (PR#94 p3-31). Inert, non-hazardous solid wastes from the Jay Project will be disposed of in existing landfills, one of which is located at the Ekati main site, and another within the Misery waste rock storage area (PR#94 p3-32). Non-inert wastes, including potential animal attractants such as food, will be either incinerated or composted at the Ekati main site. Capacity of this incineration facility includes a throughput rate of up to 2,500 lbs. per day. Dominion conducts, and will continue to conduct, regular stack testing to ensure the incinerators are operating efficiently (PR#94 p3-32).[21]

Grizzly Lake provides water for both the Ekati main site and Misery camp (water licence W2012L2-0001). Dominion does not expect to modify existing water sourcing or treatment procedures for the Jay Project (PR#94 p3-33). Fuel is stored at several locations, including the Ekati main site (68 ml) and Misery site (9 ml), and in smaller amounts at the Fox and Koala North sites. Fuel storage, dispensing, and offloading activities are described in the Spill Contingency Plan, which focuses on the management of controlled substance spills, spill prevention, and spill response (PR#94 p3-33).

The main power plant, which provides power to the processing plant, accommodation complex, underground operations and truck shop and office complex, consists of seven 4.4 MW diesel generator sets operating at 4,160 volts. A second power distribution system at the Misery camp consisting of three 455 kW generators provides power to buildings at the Misery location. A power distribution line that will bring electricity from the main Ekati power plant to the Misery site is currently under construction and Dominion proposes to extend it to locations close to the Jay Project area. Approximately three megawatts of power will be required at pumping locations during the dewatering stages of the Jay Project, with one megawatt of power required for general mining operations (PR#94 p3-33).

[21] See section 9.3 for further details regarding incinerators.

Closure and reclamation

The goal of reclamation activities at the Ekati mine is to return the mine site to viable, and wherever practicable, self-sustaining ecosystems compatible with a healthy environment, human activities, and the surrounding environment (PR#94 p3-65).[22] Reclamation and closure of facilities that are part of the Jay Project (for example, certain sections of the LLCF) will take place through the Jay operations phase, as described in Version 2.4 of the *Ekati Mine Interim Closure and Reclamation Plan*. The WLWB approved the plan in 2011. Dominion expects to incorporate specific updates to accommodate the Jay Project into the *Interim Closure and Reclamation Plan* through future regulatory processes with the WLWB (PR#94 p3-9).

Reclamation activities related to or dependent on the Jay development will begin after mining ends (in 2030) and are expected to take four years. The *Interim Closure and Reclamation Plan* (ICRP) describes six categories of reclamation activities relating to open pits, underground workings, waste rock storage areas, processed kimberlite containment facilities, dams, dikes and channels, and buildings and infrastructure (PR#94, p3-65).

Reclamation of the Jay, Misery and Lynx open pits will follow the methods outlined in the ICRP (PR#94 p3-66). The Misery and Lynx pits, which will be used as storage and management facilities for Jay pit minewater, will be pit lakes upon closure. Water in the Lynx pit, which will contain high levels of total suspended solids from the diked area of Lac du Sauvage during initial dewatering, will be monitored over time. Once a sufficient amount of these suspended solids have settled to the bottom of the lake and overall water quality is sufficient, surface water will be allowed to flow from Lynx pit lake to Lac de Gras via previously existing natural runoff channels (PR#94 p3-67). Upon closure, Misery pit will be converted to a meromictic (chemically stratified) pit lake. The uppermost 60 m of the water column will consist of a freshwater cap that overlies saltier water with high total dissolved solid concentrations from Jay pit minewater. It is expected that the difference in density between the freshwater cap and the saltier portions of the water column will be sufficient to provide long-term stable stratification, effectively trapping the dissolved solids in the bottom of the pit. The freshwater cap will then be connected to Lac de Gras through surface overflow channels (PR#94 p3-67).

The Jay open pit will be reclaimed through a series of progressive actions. Initially, all buoyant or hazardous materials will be removed. Following the removal of materials and equipment, approximately 16.75 million m^3 of minewater from the Jay development will be pumped from the Misery pit back to the Jay pit. Water will then be pumped from Lac du Sauvage back into the diked and dewatered area, filling the remainder of the pit with freshwater. It is expected

[22] See section 12 for further discussion of closure.

that 93.84 million m^3 and 26.64 million m^3 of freshwater from Lac du Sauvage will be required to fill the top portion of the Jay pit and the remainder of the dewatered area, respectively, and that re-watering will take place over approximately four years (PR#94 p3-66).

Once the previously dewatered area of Lac du Sauvage and the Jay pit have been submerged and water quality in the diked area meets closure criteria, the dike surrounding the Jay Project area will be breached. Breaches will be made at several locations around the dike, and will extend approximately 2–3 m below the minimum water levels at Lac du Sauvage. Silt curtains will limit the potential for sediment transport during this period of re-connection. Other reclamation activities will include placement of excavated rock or other materials and reclamation of riparian and littoral zones to prevent erosion and promote long-term stability of breached areas and shoreline (PR#94 p3-68).

As with the Misery pit, it is predicted that density gradients between the salty minewater at the bottom of the Jay pit and freshwater at the top of the Jay pit and the re-watered portion of Lac du Sauvage will create the necessary conditions for long term meromixis in the submerged open pit. Stable meromictic conditions in the submerged Jay pit are necessary to protect the overlying waters in Lac du Sauvage from the adverse effects of interaction with the salty waters at depth (PR#94 p3-66).

Processed kimberlite from the Jay pit will go to the mined-out Koala and Panda open pits. Reclamation of these storage areas involves pumping freshwater into the pits on top of the processed kimberlite, creating a freshwater cap in these pits similar to what will be created in the Misery pit (PR#94 3-68). Roads and pads will be decommissioned during closure according to the approved ICRP. Access roads will be re-graded and culverts will be removed to promote natural drainage and create usable wildlife surfaces (PR#94 p3-67). Reclamation of the Jay waste rock storage area will follow the methods approved in the ICRP, with a focus on creating a flat upper surface to discourage snow accumulation and provide for wildlife safety (PR#94 p3-67). Other buildings and infrastructure, including the overhead powerlines and power poles, will be similarly reclaimed according to the ICRP (PR#94 p3-69).

It will be necessary to continually monitor physical and chemical stability for all reclamation activities until closure objectives and criteria have been met. Monitoring during closure will be designed to track foreseeable sources of contamination after closure, and to identify specific monitoring is required after closure to address potential effects through adaptive management. While Dominion proposes that the specific schedule and program for closure and reclamation activities will be established through the ICRP finalization, a conceptual schedule of activities (PR#94 p3-70) includes those described in Table 1-1.

Table 1-1: Conceptual schedule of reclamation activities

Initial work
• reclaiming Jay open pit (removal of equipment)
• reclaiming pump stations and facilities in the dewatered area Lac du Sauvage
• installing Lac du Sauvage water recharge equipment (for example, pipes, pumps)
• installing Panda and Koala open pits freshwater pumping equipment
• installing reclamation of surface facilities not needed for ongoing monitoring
Water recharge and reclamation work
• pumping minewater from the Misery pit to the Jay pit
• back-flooding the isolated portion of Lac du Sauvage in the dike
• pumping freshwater into Panda/Koala and Misery open pits
• reclamation of surface facilities not needed for ongoing monitoring
Breaching of Jay dike and completion of reclamation work
• strategic local breaching of water retention dike
• reclaiming the sub-basin B diversion channel
• completing reclamation of surface facilities not needed for ongoing monitoring
Post-closure monitoring and progressive relinquishment of liabilities

Post-closure

As stated above, the timeframe for completing reclamation activities will be approximately four years after completing mining and processing activities. Closure and reclamation would be followed by post-closure monitoring for physical and chemical parameters, including water quality in the previously diked Jay pit (PR#94 p3-69). Plans in place, such as the *Mine Water Management Plan*, will encompass these post-closure monitoring activities. It may be necessary to maintain the reclaimed facilities into the post-closure period until closure objectives and criteria are met. Finally, all roads will be decommissioned once they are no longer required for post-closure monitoring and maintenance activities.

Employment

In 2012, the Ekati mine provided over 1,300 person-years of direct employment, of which 52% was Northern and 27% was Northern Aboriginal. Dominion expects that the Jay Project will continue to have similar employment requirements and workforce characteristics for the life of the mine. It also anticipates that the proposed Jay development will require direct and contracting positions resulting in the following total person-years of employment during the following phases (PR #94 p3-30):

- 635 during construction
- 1,252 during operations
- 282 during reclamation

Development phases and schedule

Table 1-2 describes the proposed timeline for activities required for the Jay Project as included in the DAR (PR#94 p3-6).

Table 1-2: Proposed timeline of activities for the Jay Project[23]

Year	Project Phase	General Activities
2016-2018	Construction	• Construction of roads, powerline, dike, pipelines and pumping facilities • Construction of sub-basin B diversion channel • Fish-out within diked area
2019	Construction and operations	• Construction completed • Dewatering of the diked area • Use of the Misery and Lynx pits for water management • Pre-stripping for Jay open pit • Production of kimberlite to processing plant from Jay open pit begins
2020-2029	Operations	• Mining of the Jay open pit • Use of Misery pit for minewater management • Storage of waste rock at Jay waste rock storage area • Storage of fine processed kimberlite in the mined-out Panda and Koala pits, and coarse kimberlite reject in the coarse

[23] This table does not include post-closure activities described in section 1.4

		kimberlite reject management area
2030-2033	Closure	• Pumping minewater from the Misery pit to the Jay pit • Back-flooding the Jay pit and the dewatered area of Lac du Sauvage • Back-flooding of the Misery pit with a cap of freshwater from Lac du Sauvage • Roads and Sub-Basin B Diversion Channel decommissioned • Reclamation of surface facilities

2 Environmental assessment process

This section describes the Review Board's EA process for the Jay Project. It provides information about the parties to the assessment and the process steps the Review Board took to identify any likely significant adverse impacts to the environment or public concern. This section also describes the final scope of development and assessment that informed the Environmental Assessment (EA), as well as how the Review Board satisfied statutory requirements under the *Act* and made its final significance determinations.

2.1 Participation in the environmental assessment

Thirteen organizations were granted party status in this EA (PR#50). According to the Review Board's *Rules of Procedure*, Dominion Diamond Ekati Corp. (Dominion or the developer) is automatically considered a party to the proceedings. The other registered parties in the EA were:

- Deninu Kue First Nation (DKFN)
- Diavik Diamond Mines (2012) Inc.
- Environment Canada
- Department of Fisheries and Oceans Canada (DFO)
- Fort Resolution Métis Council (FRMC)
- Government of the Northwest Territories (GNWT)
- Independent Environmental Monitoring Agency (IEMA)
- Lutsel K'e Dene First Nation (LKDFN)
- North Slave Métis Alliance (NMSA)
- Tłı̨chǫ Government
- Transport Canada (TC)
- Yellowknives Dene First Nation (YKDFM)

During the EA process, representatives from government departments and other interested groups had the opportunity to identify their interests and notify the Review Board of their intent to participate in the proceeding. Parties had other opportunities to attend and participate throughout the EA process, though some parties did not actively participate in all stages of the EA. All written information exchanges between the developer and parties submitted to the Review Board are on the public registry. The Kitikmeot Inuit Association (KIA) was not a registered party but participated in various phases of the EA, including the public hearing in Kugluktuk.

Table 2-1 below illustrates the involvement of parties throughout the phases of the EA, including submission of technical reports and participation at public hearings.

Table 2-1: Participation in the environmental assessment

Participant	Party Status	Information requests, technical sessions (Yellowknife)	Submitted Technical Report	Public Hearing (presentation and questioning)
Deninu Kue First Nation	✓	✓	✓	✓
Diavik Diamond Mines (2012) Inc.	✓	✓	✓	✓
Environment Canada	✓	✓	✓	✓
Fisheries and Oceans Canada	✓	✓	✓	✓
Fort Resolution Métis Council	✓	✓		✓ (questioning only)
Government of the Northwest Territories	✓	✓	✓	✓
Independent Environmental Monitoring Agency	✓	✓	✓	✓
Lutsel K'e Dene First Nation	✓	✓	✓	✓
North Slave Metis Alliance	✓	✓	✓	✓
Tłı̨chǫ Government	✓	✓	✓	✓
Transport Canada	✓	✓	✓	✓
Yellowknives Dene First Nation	✓	✓	✓	✓
Kitikmeot Inuit Association (not a party)		✓		✓

✓ = actively participated in this phase of the environmental assessment

2.2 Environmental assessment phases

After the referral of the Project and initial EA start-up activities, the Review Board conducted the EA in three major phases: a scoping phase, an analytical phase, and a decision phase. Figure 2-1 outlines the EA process, including the tasks associated with each EA phase.

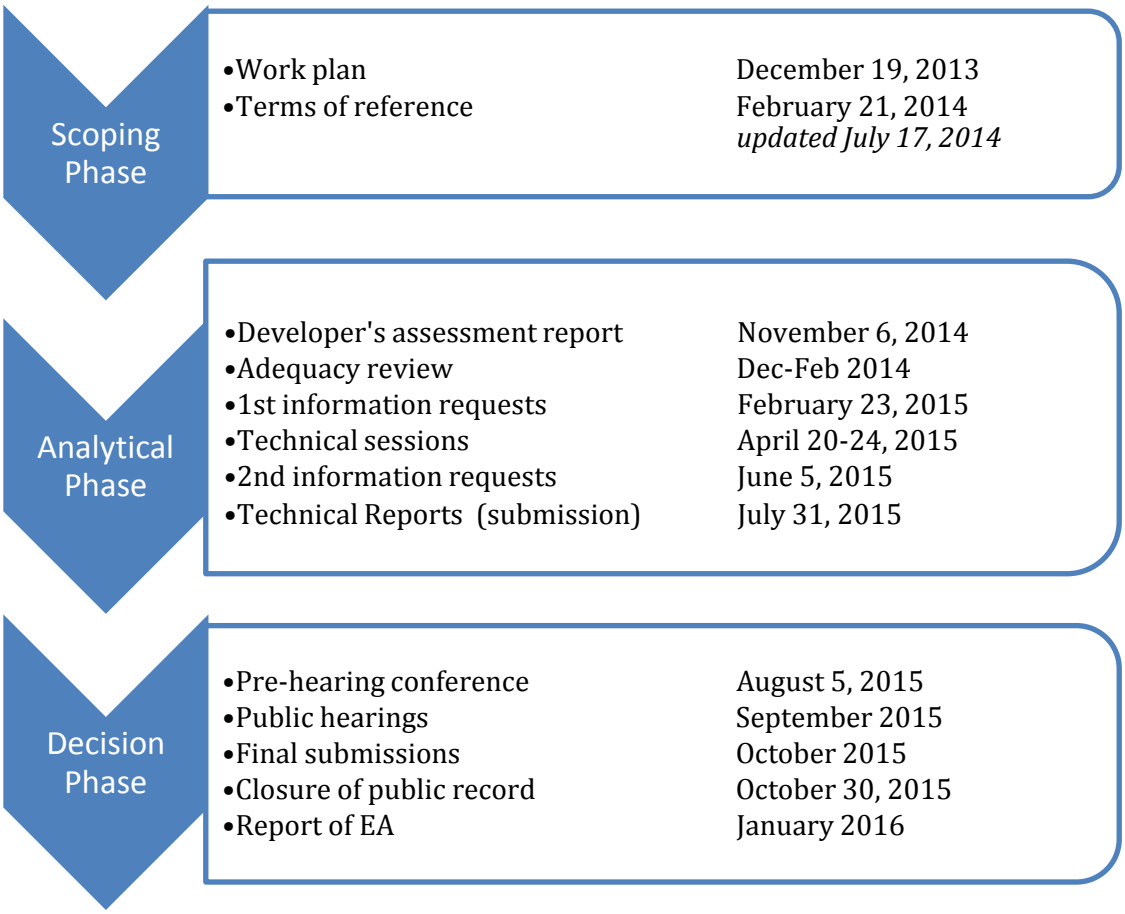

Figure 2-1: EA process phases

The following sections outline the individual process steps in the major EA phases.

2.2.1 Development of work plan and terms of reference

The Review Board issued a final work plan in February 2014. The work plan described the roles and responsibilities of the developer, parties and the Review Board. The work plan also summarized the Project phases and provided a tentative schedule for the EA.

The developer issued a draft Terms of Reference for the Jay-Cardinal Project as an appendix to the Project description submitted during preliminary screening in November 2013 (PR# 5). The Review Board distributed Dominion's draft Terms of Reference to parties for comment in December 2013. Scoping sessions for the Jay-Cardinal Project were then held in January 2014: a technical scoping session in Yellowknife and community scoping sessions in Yellowknife, Behchokǫ̀ and Lutsel K'e. These scoping sessions identified and prioritized the issues, and the Review Board completed a draft Terms of Reference in January 2014. The Review Board requested comments from parties on its draft and, after considering them, issued a final Terms of Reference for the Jay-Cardinal Project in February 2014 (PR# 52).

In April 2014, Dominion advised the Review Board of a change to the Jay-Cardinal Project to exclude the Cardinal pipe, and submitted an addendum to the original Project description in June 2014 (PR# 69). In light of this change, the Review Board issued the Revised Terms of Reference for the Jay Project in July 2014 (PR# 73). The final Revised Terms of Reference defined the scope of development and the scope of assessment and determined the key lines of inquiry and subjects of note to be addressed in the DAR.

2.2.2 Developer's Assessment Report

Dominion submitted its DAR to the Review Board on November 6, 2014 (PR#80-211). The DAR responded to the items identified in the Revised Terms of Reference and provided all relevant information needed by the parties to prepare information requests.

2.2.3 Adequacy review

In November 2014, the Review Board conducted an adequacy review (PR#220) to assess whether the DAR provided adequate information for parties, Board staff, and technical advisors to understand the Jay Project and the developer's impact predictions well enough to produce meaningful and relevant information requests.[24] Dominion responded to the Adequacy Review items from December 2014 to February 2015. On February 13, 2015, the Review Board issued its *Reasons for Decision* (PR#277), concluding that the DAR and Dominion's responses provided sufficient information for the Review Board and parties to continue with information requests.

The following notable actions resulted from the adequacy review:

[24] The Review Board posted a note to file (PR#249) clarifying the difference between an adequacy review and a conformity check, and justifying the use of this higher standard for the Jay Project.

- Dominion hosted a cultural workshop in February 2015 to consider the effects of diamond mines on Aboriginal culture and the potential impacts of the Jay Project. A report on this workshop was filed on April 15, 2015 (PR#327).
- In response to Item 5.1 of the adequacy review, Dominion submitted as an addendum to the DAR, a cumulative effects assessment for the inclusion of the Sable pit and its associated activities as a reasonably foreseeable development to the Jay Project (PR#234).
- In response to Item 8.3, Dominion held a technical workshop on caribou energy and protein modeling in Yellowknife on January 19, 2015 (PR #261).

2.2.4 Information requests and technical sessions

In December 2014, the Review Board asked parties to provide written information requests outlining their questions and clarifications related to the DAR by February 16, 2015. The Review Board extended the due date for information request submissions to February 23rd, after a series of letters from parties requesting extensions. The deadline for Dominion's responses to information requests was similarly extended by one week, and its responses were received on April 7, 2015.

From April 20–24, 2015, Review Board staff hosted technical sessions in Yellowknife for parties to seek clarification on information request responses and discuss outstanding issues face-to-face with Dominion's representatives and consultants.

2.2.5 Pre-hearing conference

Review Board staff hosted a pre-hearing conference on August 5, 2015 and invited parties to participate. The purpose was to discuss the hearing protocol, to describe the difference between formal public hearings in Yellowknife and community hearings, and to set agendas for the hearings in Yellowknife and the communities.

2.2.6 Public hearings

In September 2015, the Review Board held the following public and community hearings:

- **September 14–16**, formal hearings in Yellowknife
- **September 17**, community hearing in Behchoko
- **September 19**, community hearing in Lutsel K'e
- **September 21**, community hearing in Kugluktuk

Radio, posters, newspapers, and webpage announcements notified the public of the hearings. The main purpose of the hearings was to allow the developer and parties the opportunity to present their predictions and views directly to the Review Board members. It also gave the

public an opportunity to hear and discuss the issues related to the Project. The hearing gave further opportunity for members of potentially affected communities to raise important concerns directly to the Review Board.

The developer and several other parties gave presentations to the Review Board. All parties had the opportunity to question both the developer and the other parties present. Parties highlighted direct and indirect impacts of the proposed development and presented final comments about impact predictions and suggested mitigations to the Review Board.

2.2.7 Hearing follow-up, final submissions and closure of the public record

During the hearings, the Review Board asked the parties to submit additional information. Parties submitted the additional information to the Review Board by October 9, 2015.

The Review Board received final submissions from the parties on October 23, 2015 and responses from Dominion on October 30. The Review Board closed the public record[25] on October 30, 2015.

2.2.8 Environmental assessment decision

Section 128 of the *Act* requires that the Review Board decide, based on all the evidence on the public record, whether the proposed development is likely to cause a significant adverse impact on the environment or cause significant public concern. Sections 3–12 of this report describe the Review Board's analysis of the key issues and present its conclusions on the likelihood and significance of adverse impacts and public concern that may result from the Project.

After closing the public record, the Review Board considered all the evidence and submissions to arrive at its decisions. The Review Board has prepared this REA for submission to the Minister of Lands, as required by subsection 128(2) of the *Act*.

2.3 Scope of development

Subsection 117(1) of the *Act* requires that the Review Board determine the scope of development for the EA. The scope of development for the Jay Project includes all of the physical works and activities required for the Jay Project, including activities required for

[25] The public record refers to the portion of the public registry that the Review Board relies on when reaching its decision. It contains all the evidence from the parties submitted during the EA.

construction, mining operations and closure. The scope of development identifies and takes into account both principal and accessory activities related to the development. It also outlines activities that will occur under the land use permit, water licence, and other regulatory instruments (PR# 73 Appendix A).

During the drafting and revision of the terms of reference and before the DAR submission, the developer proposed two project changes which modified the scope of the development and its potential impacts on the environment. A summary of these project modifications is set out in Table 2-2.

Table 2-2: Modifications to the development description

Original project description component	Timing of proposed modification	Project modification	Outcomes of the modification in relation to the likelihood of significance of adverse impacts
Simultaneous development of both Jay and Cardinal Pipes	Between issuing of the Terms of Reference and Revised Terms of Reference	No development of the Cardinal Pipe (Jay Project Description Report Addendum) (June 2014)	• Areal footprint of the proposed water drawdown is significantly (approximately 90%) smaller with the exclusion of the Cardinal Pipe • Less water (approximately 90% less) is required to be diverted from Lac du Sauvage • No water diversion structures are required upstream of the proposed project development, including no upstream effects to Paul and Duchess Lakes
Underground operations after open pit mining of the Jay pipe	Between issuing of the Revised Terms of Reference and submission of the DAR	The potential development of underground operations following open-pit mining of the Jay pipe is not part of the Project (Dominion will undertake further study of economic feasibility) (Jay DAR Project Description) (November 2014)	• Shorter duration of potential environmental effects • Shorter duration of socio-economic benefits • Less groundwater to manage • Less waste rock and processed kimberlite to manage • Fewer truck loads between Jay pit and Misery main site

The Review Board accepted Dominion's rationale for modifying the Jay Project, both of which are in the DAR Project Description (PR#94). The Review Board finds the modifications to the Project description are likely to decrease the potential for significant adverse impacts on the environment. In particular, the removal of the Cardinal pipe from the Project design is important to the Review Board's findings.[26] This report is based on the final scope of development described below, including the Project modifications in Table 2-2. The Review Board's analysis and conclusions about the impacts of the Jay Project are based on these important Project modifications.

The final scope of development for the Jay Project includes all of the Project components, infrastructure and activities in the DAR Project Description (PR# 94) (Table 2-3). The scope of development also includes Dominion's Project commitments described in Appendix C.

Table 2-3: Jay Project scope of development activities

Construction
• constructing a dike and a water diversion structure to divert water from Project site to the main body of Lac du Sauvage
• constructing site access roads (spur roads from Misery haul road to Project components at Lac du Sauvage)
• producing borrow sources/aggregate quarries to obtain construction material for the roads, dykes and water diversion structures
• constructing a powerline to supply site with electricity
• constructing water management facilities to accommodate drawdown volumes and minewater
• diverting drawdown of water from the isolated portion of Lac du Sauvage and fish-out of this area of the lake
• constructing an open pit and associated support infrastructure
• using Tibbitt to Contwoyto winter road

[26] See section 3 for further discussion.

Mining operations
• establishing a waste rock storage area
• removing waste rock, kimberlite and minewater from the open pit, including the use of explosives
• storing and handling waste rock
• managing minewater
• managing surface water
• using Tibbitt to Contwoyto winter road
Closure and reclamation
• removing (decommissioning) all temporary structures and equipment
• reclaiming open pits and affected area of Lac du Sauvage
• reclaiming all permanent structures (for example, waste rock pile, road)
• long-term monitoring and water management
• using Tibbitt to Contwoyto winter road

2.4 Scope of assessment

The EA scope identifies the issues and items the Review Board examined during the EA process. The scope of assessment includes all potential impacts on valued components of the biophysical and the human environment from the Jay Project, by itself and combined with other past, present and reasonably foreseeable future developments. The scope of assessment identifies additional factors to consider in assessing potential Jay Project impacts, including those set out in section 117(2) of the *Act* (see section 2.6). Under section 127 of the *Act*, the Review Board considered the previous REA for the Sable, Beartooth and Pigeon expansion the Review Board issued in 2001, and the 1996 Report of the EA Panel for the original Ekati mine in its decision-making process.

To determine the scope of assessment, the Review Board considered Dominion's original Project description (PR#4) and the evidence on the public registries of the preliminary screening and EA up to the scoping stage of the EA. The Review Board also considered the comments it received at the scoping sessions it hosted in Yellowknife, Behchokǫ̀ and Lutsel K'e. After

considering the relevant information available on the public record, the Review Board identified valued components and the priority issues affecting these valued components in terms of key lines of inquiry and subjects of note.

2.4.1 Issues prioritization

The Review Board identified the following potentially affected valued components in the terms of reference:

- air quality
- surface hydrology
- water quality and aquatic life other than fish
- fish
- groundwater
- permafrost
- physical terrestrial environment (soils, eskers and vegetation)
- archaeology (heritage sites)
- caribou and caribou habitat
- carnivores (wolverine, grizzly bears, wolves)
- breeding birds
- species at risk
- archaeology and heritage sites
- land use and traditional land use
- employment and economy (socio-economic and employment)
- human health

The Review Board assessed these valued components in the context of the following key lines of inquiry and subjects of note identified in the terms of reference:

Key lines of inquiry

The Review Board assessed the following Key Lines of Inquiry:

- impacts to water quality and quantity
- impacts to fish and fish habitat
- impacts to caribou
- analysis of alternative means
- maximizing benefits and minimizing impacts to communities

Subjects of note

The Review Board assessed impacts from Jay Project components on the following Subjects of Note:

- air quality
- vegetation
- wildlife and wildlife habitat
- terrain
- cultural aspects

The relevant sections of this report discuss the prediction, analysis and significance of impacts to valued components in the Key Lines of Inquiry and Subjects of Note . Not all Key Lines of Inquiry and Subjects of Note are discussed individually. Instead, the discussion focuses on the significance of outstanding issues related to valued components and the Review Boards' conclusions and recommended measures and suggestions.

2.4.2 Other scope of assessment considerations

In assessing impacts to valued components, the Review Board used the appropriate geographic scope for the characteristics of each component, or for the nature of the impact or impact source. For example, consideration of impacts on air should reflect the airshed, wind patterns, and mobility of airborne contaminants, while the habitat ranges of wildlife using the area may be relevant from a project-specific and cumulative effects perspective.

In addition, the Review Board defined the temporal boundaries for EA based on potential impacts to valued components, including long-term impacts, rather than on a single generic timeline. As such, the temporal boundaries were not always limited to the duration of the operating phase of the Jay Project.

The Review Board also considered the effects of the environment on the Jay Project. The terms of reference required Dominion to describe the potential impacts of the physical environment on the development (including the Tibbit to Contwoyto winter road), including changes in the permafrost regime, climate change impacts, seasonal flooding and melt patterns, seismic events and extreme precipitation (PR#73 p43). The developer discussed these impacts, as well as potential resulting Jay Project design or management changes in the DAR (PR#143). The Review Board's analysis and conclusions related to the effects of the environment on the Project are in the relevant sections of this report.

2.5 Decisions on significance

Section 128 of the *Act* requires that the Review Board decide, based on all of the evidence on the public record, whether in its opinion the proposed development will likely have a significant adverse impact on the environment or be a cause for significant public concern.

The *Terms of Reference* (PR#73) outlined how the developer was to predict and rate the overall significance of potential impacts in the DAR, including identifying quantitative or qualitative significance thresholds.[27] The developer was instructed to use the following characteristics impacts to determine their significance:

- nature or type
- geographical range
- timing (including duration, frequency and extent)
- magnitude (what degree of change is expected)
- reversibility
- likelihood and certainty

The Review Board asked parties to assist in the assessment by providing their own views of the predicted impacts and significance presented in the DAR. Parties provided this information through information requests and in their technical reports and closing submissions. After considering all of the evidence on the public record, the Review Board made its final determination on the significance of impacts, as described in this report.

Section 128 (1)(c) of the *Act* requires the Review Board to identify whether the proposed development is likely to be the cause of significant public concern. Though the Jay Project was referred to EA because of the potential for significant adverse impacts on the environment, it became apparent that public concern was a relevant consideration; the Review Board therefore considered public concern as well.

The Review Board considered the potential adverse impacts of the Jay Project at different scales. It considered the impacts of individual components of the Jay Project, and also considered the combined impacts of the entire development, taken as a whole.[28] The collective

[27] If Dominion determined that significant adverse impacts were not likely, it had to identify its significance threshold in a narrative statement.
[28] This is not to be confused with the cumulative impacts of the Jay Project in combination with other past, present, and reasonably foreseeable future activities described in section 2.6.

effect of all of the Review Board's recommended measures below is intended to reduce or avoid the combined impacts of all Jay Project components.

2.6 Statutory requirements

Section 117 of the *Act* sets out specific factors which the Review Board must consider in an EA. These include:

- cumulative effects
- accidents and malfunctions

Cumulative effects

The Review Board considered cumulative impacts in its determination.[29] Cumulative effects are the combined effects of the development in combination with other past, present, or reasonably foreseeable future developments and human activities. Because the Jay Project site is in an area that has been affected by past development, the Review Board required the developer to consider cumulative impacts for the following valued components (in the context of the relevant key lines of inquiry and subjects of note):

- water quantity and quantity including any impacts on Lac de Gras
- fish and fish habitat
- caribou
- air quality
- grizzly bear, wolverine and species at risk
- impacts to the landscape
- wildlife and wildlife habitat
- terrain
- cultural aspects
- employment and business opportunities

Dominion analyzed potential cumulative impacts to the relevant valued components in the DAR, including a cumulative impacts summary (PR#144) and DAR addendum considering these impacts in the context of future development of the Sable pit (PR#234). The Review Board's

[29] 117(2) Every EA and environmental impact review of a proposal for a development shall consider (a) […] any cumulative impact that is likely to result from the development in combination with other developments; (b) the significance of any such impact; […]

own analysis and conclusions of cumulative impacts are in the relevant sections of this report, particularly in section 6.3.2, caribou and section 11, downstream users.

Accidents and malfunctions

Section 117 of the *Act* requires an EA to consider the impact of accidents and malfunctions of the development on the environment.[30] The Review Board's terms of reference required the developer to:

- consider the impacts of accidents and malfunctions (including their probability) in relation to all relevant valued components
- conduct a risk assessment
- describe all design features, contingencies and response plans to address potential impacts (PR#73 p44)

Dominion provided a risk assessment of accidents and malfunctions (PR#97) and the impacts to valued components and proposed mitigations in the relevant sections of the DAR and applicable plans (see Appendix B for list of plans). The Review Board's analysis and conclusions of impacts related to accidents and malfunctions is in the relevant sections of this report.

2.7 Transboundary effects assessment

Section 140(1) of the *Act* requires the Review Board to notify the authority responsible for examining environmental effects in another region and request its cooperation in the EA, if the Review Board finds that a development in the Mackenzie Valley might have a significant adverse impact on the environment in a region outside the Mackenzie Valley.

The KIA and the Hamlet of Kugluktuk sent a letter dated April 28, 2015 to the Nunavut Impact Review Board (NIRB) requesting a transboundary review of the Jay Project. The KIA states, "The land around the [Jay Project] was traditionally occupied by Inuit…. Inuit have a strong and irrefutable connection to the land and wildlife of the Jay Project area" and there is "potential for impact on the KIA and [Hamlet of Kugluktuk] due to historic and current land use and to the direction of flow of the Coppermine River" (PR#404).

[30] 117(2) Every environmental assessment and environmental impact review of a proposal for a development shall include a consideration of (a) the impact of the development on the environment, including the impact of malfunctions or accidents that may occur in connection with the development and any cumulative impact that is likely to result from the development in combination with other developments […]

On May 12, 2015, the Review Board received a copy of a letter from the NIRB to the Aboriginal Affairs and Northern Development Canada (AANDC) about the request from KIA and the Hamlet of Kugluktuk for a transboundary review of Jay Project. The NIRB letter noted that because the Jay Project is located wholly in the Northwest Territories, the Minister's consent would be required for the NIRB to consider conducting a review of the Jay Project.

Due in part to the concerns expressed by the KIA and the Hamlet of Kugluktuk, the Review Board decided to hold a community hearing for the Jay Project in Kugluktuk on September 21, 2015. Kugluktuk is the only community downstream of the Jay Project area, and the Review Board was interested in hearing the community's views directly on whether the Jay Project is likely to have significant impacts outside of the Mackenzie Valley.

The Minister of AANDC declined to consent to the NIRB undertaking a transboundary review in a letter dated July 13, 2015 (PR# 483). The Minister confirmed the Review Board's responsibility "to ensure that the concerns of Aboriginal people and the general public are taken into account", under paragraph 114 (c) of the *Act*. The Minister also indicated his support for the Review Board hearing in Kugluktuk, endorsing the Review Board's plan to hear the KIA's concerns and those of Kugluktuk residents directly.

On August 21, 2015, the Review Board requested the NIRB's cooperation in the conduct of the assessment (PR#592), as required by section 140 (1) of the *Act*. On August 24, 2015, the NIRB confirmed its willingness to cooperate with the Review Board and to provide technical, logistical and planning support for the conduct of the hearing.

Review Board's determination

Based on the evidence and the testimony heard during the community hearing in Kugluktuk, the Review Board has determined that the Jay Project is not likely to be a cause of significant adverse impact to the environment in an area outside of the Mackenzie Valley. The Review Board finds that the mitigation proposed by the developer and the implementation of the recommended measures will reduce impacts (particularly in relation to downstream water quality to the Coppermine River, the Bathurst Caribou, and socio-economic factors) so they are no longer significant (See sections 4.1.5 - Water, 5.1.5 - Narrows, 6.5 -Caribou).

2.8 Traditional Knowledge

The Review Board recognizes the important role that Aboriginal cultures, values, and Traditional Knowledge play in its decision-making. Under section 115.1 of the Act, and the Review Board's *Guidelines for Incorporating Traditional Knowledge in EIA,* the Review Board considered all the Traditional Knowledge made available during the EA.

As part of its DAR, Dominion prepared a traditional land use and Traditional Knowledge baseline report (PR#211). The baseline report relied on a review of available literature, including Traditional Knowledge and Traditional Land Use information provided for other projects, as well as general documentation about Traditional Knowledge and Traditional Land Use. In addition to this baseline report, Dominion hosted a culture workshop (PR#327) in February 2015 on the effects of diamond mines on traditional land users and Aboriginal culture.[31] The Review Board conducted six days of public and community hearings in September 2015, which included discussion of these reports as well as comments from Aboriginal organizations, parties and the public.

This report presents measures and recommendations related to Traditional Knowledge in sections 6 and 7.[32] Dominion made commitments related to Traditional Knowledge, including commitments to (Appendix C, Commitments #71, 111-116):

- continue to gather and incorporate Traditional Knowledge into Jay Project design and implementation throughout the Jay Project life,
- discuss new Traditional Knowledge project ideas with communities, and
- work with Elders on important Project mitigations

[31] See section 7.2 for further discussion of the cultural workshop.
[32] See sections 6.6 and 7.4 for these measures.

3 Analysis of alternative means

The Review Board identified alternatives as a key line of inquiry for the Jay Project environmental assessment (EA). In its Terms of Reference, the Review Board required the developer to assess alternative means of carrying out the proposed development using a multiple accounts analysis methodology (PR#73 p34).[33]

In the Developer's Assessment Report (DAR), Dominion Diamond Ekati Corp. (Dominion or the developer) analyzed alternative means (PR#93) for the following project components:

- project mining method
- roads
- waste rock storage
- energy sources and conservation

This section addresses the overall assessment of alternatives for the Jay Project, and presents the Review Board's final conclusions. Some of the alternative means under analysis, however, were considered more relevant to other aspects of the assessment. Those distinct alternative means are discussed in other sections of this report, specifically impacts to water (section 4) and caribou (section 6.2.3). The sections below discuss the issues raised by parties and the public during the EA, and the developer's responses and conclusions about the overall assessment of alternative means.

3.1 Evidence from the developer and parties

3.1.1 Project mining method alternatives

During consultation with communities in the scoping phase, Dominion heard concerns regarding the requirement to drain approximately half of Lac du Sauvage to access the Jay and Cardinal pits. Dominion removed the Cardinal pit from the Project description in response to these community concerns. The change in project description and the current Jay Project will greatly reduce the impact on Lac du Sauvage, with less than 5% of the total volume of the lake being removed. This compared to more than 45% in the original Jay-Cardinal proposal (Figure 1-2 above). During the technical sessions, Dominion stated that the Jay Project has evolved

[33] This analysis considered a range of criteria including technical feasibility, economic viability, environmental considerations, and social-economic factors (PR#352 p27).

from the original Jay-Cardinal design to the Jay Project, which has a lower disturbance to the environment, with no large stream diversions, drawdowns, upstream flooding or use of a natural lake system to manage water (PR#354 p119).

In addition, Dominion eliminated the underground mining portion from the Jay Project description before submitting its DAR. The underground portion of the Project was included in the *Terms of Reference* but was removed from the Jay Project and not assessed as part of EA1314-01. The Jay Project is now proposed as an open-pit mine only. This change reduces the Jay Project duration to approximately 10 years of open-pit mining.

The following sections summarize the developer's conclusions and parties' submissions related to Jay Project mining method alternatives addressed in the EA.

"No Project" alternative

In Dominion's view, not developing the Jay Project (that is, the "No Project" alternative) results in a loss of potential economic benefits the mine would contribute to Northerners, including long-term employment stability for current Ekati mine employees (PR#93 p2-12). Dominion believes development of the Jay Project would extend the benefits of the Ekati Mine for the general benefit of all residents of the Northwest Territories (NWT).

The Review Board received no follow-up information requests or outstanding concerns from parties regarding Dominion's conclusions to rule out further consideration of the "No Project" alternative.[34]

Cardinal pipe and Jay underground

During the first round of information requests, parties questioned why Dominion did not include mining of the Cardinal pipe as an alternative stand-alone project for consideration in its assessment of alternatives (DAR-MVEIRB-IR-45; DAR-NSMA-IR-01). Dominion responded that the Cardinal pipe is not economically viable on its own. This is due to Cardinal's smaller size relative to the Jay pipe and the high costs of a stand-alone dike required to develop it (despite the feasibility of diversion and drawdown dikes for the development of Jay and Cardinal pipes together) (PR#292).

[34] This report examines the effects of not allowing the Jay Project to proceed, which would have the same result as this no-Project alternative.

Parties also asked whether the infrastructure and other investments for the Jay Project might contribute to the viability of future underground mining (DAR-NSMA-IR-03). In response, Dominion reiterated that underground mining is not part of the Jay Project, because high exploration costs make it economically unfeasible.. Dominion did note, however, that developing infrastructure (access roads, power supply, waste rock storage areas, etc.) could benefit underground operations should they become economically feasible in the future (PR#292).

Finally, parties asked about phased development alternatives, namely Jay open-pit followed by underground mining, and Jay followed by Cardinal mining (DAR-NSMA-IR-04). Dominion reiterated the current viability issues associated with Jay underground operations and the economic constraints in developing the Cardinal pipe using a stand-alone dike (PR#292).

Cumulative effects

Both the Review Board and the Independent Environmental Monitoring Agency (IEMA) raised the issue of conducting a cumulative effects assessment for the Jay Project that included considering potential future underground development (DAR-MVEIRB-IR-79; PR#355 p76-77). Dominion responded that it did not have adequate information to conduct such an assessment, and that the level of uncertainty of such modelling would not be helpful in the context of the Jay Project (PR#355 p79-81).

3.1.2 Alternative routes for the Jay road

Dominion assessed Jay road alternatives in the DAR Project Alternatives chapter (PR#93). The Review Board submitted an information request to understand specific caribou road crossing sites and currently known movement routes (DAR-MVEIRB-IR-87). In response, Dominion cited information sources on historical and existing caribou movements and its commitment to consider these in later road design work (PR#292).

During the technical sessions in Yellowknife, discussion of Jay road alternatives resumed; parties requested additional road analysis, including consideration of a fourth alternative. Dominion undertook this analysis (DAR-MVEIRB-UT-02) and concluded that its alternative (#3) road alignment was still preferable (PR#371). Further analysis and conclusions related to the Jay road alternatives appear in sections 6.2.3 and 6.5 of this report, and section 6.6 contains a measure that gives specific direction to Dominion in developing a Caribou Road Mitigation Plan.

3.1.3 Energy sources and conservation alternatives

In response to alternative energy questioning at the technical sessions, Dominion maintained there was no need for the company to consider new power sources and the Jay Project would rely on existing infrastructure for its energy needs. However, in its responses to the Lutsel K'e

Dene First Nation (LKDFN) and North Slave Métis Alliance (NSMA) technical reports (PR#557; PR#558), Dominion committed to conducting a concept study of additional potential investments in alternative energy, including wind and solar energy. Dominion also committed to presenting a summary of results of the concept study to the Review Board within one year of this Report of Environmental Assessment (REA) (Commitment #52 in Appendix C: List of Developer's commitments). For further discussion of this commitment, see section 9.4.4 of this REA.

3.2 Review Board conclusions

The Review Board observes that the consideration and analysis of alternatives in this environmental assessment has resulted in major beneficial Project changes and developer commitments. The removal of the Cardinal pit from the proposed Project, and the much larger drawdown of Lac du Sauvage and related impacts that the Cardinal pit would have required, are a particularly commendable example of this. In the Review Board's view, Dominion deserves recognition for its willingness to respond to the community concerns it heard early in this EA by significantly changing its Jay Project design to avoid potential impacts.

The Review Board accepts Dominion's conclusions regarding the amended Jay Project description and preferred alternatives discussed above. The Review Board finds that the analysis of alternative means identified no likely adverse impacts from the preferred alternatives. With respect to alternative means proposed to mitigate impacts to water and caribou, the Review Board recommends specific measures set out in sections 4 and 6 of this REA.

4 Impacts to Water

4.1 Impacts to water quality

4.1.1 Summary of the Review Board's findings

Construction, operations, and closure of the Jay Project will affect water quality in the environment, and in turn likely affect traditional uses in the vicinity of the Jay Project after closure. The potential impacts of this development depend on the quantity and quality of water Dominion Diamond Ekati Corp. (Dominion or the developer) will have to manage during the operation of the Jay Project and the success of the meromictic pit lake closure strategy. The Review Board concludes that measures are necessary to prevent impacts to water quality that are otherwise likely to significantly affect traditional uses in the vicinity of the Jay Project after closure activities have been completed.

4.1.2 Evidence from the developer

Construction of the dike and the Jay pit

Dominion proposes to develop the Jay pit in Lac du Sauvage. To mine the Jay pipe, Dominion will build an isolation dike (see section 4.5.2). Dominion intends to use a double-walled silt curtain during dike construction to minimize the amount of silt released to Lac du Sauvage. Once the dike has been constructed and the pit area isolated, Dominion will pump out the water in the diked-off area. Dominion expects that approximately 50% of the water will be clean enough to pump directly to Lac du Sauvage. The remainder of the water, which may contain elevated suspended sediment levels, will be pumped to either the Misery pit or the Lynx pit, located west of the Jay pit (PR#94, PR#95).

The proposed water management plan – operations phase

In the Developer's Assessment Report (DAR), Dominion said its water management plan during operations was to pump minewater from the Jay pit to the mined-out Misery pit. As the Misery pit reaches capacity, water from the top of the Misery pit will then be discharged to Lac du Sauvage. Dominion has predicted that discharge from the Misery pit to Lac du Sauvage will begin in approximately year five (2024) of operations. The minewater includes the deep groundwater intercepted during open-pit mining and the natural runoff from the Jay pit area, which will be collected in a sump in the diked-off area. The groundwater intercepted in the Jay pit is predicted to have a much greater total dissolved solids (TDS) concentration than the natural surface water (PR#107, PR#534). For example, as shown below in Table 4-1, the maximum TDS concentration of the Jay pit minewater was predicted to range between 5,000 mg/L and 7,300 mg/L. Existing lakes in the area have TDS concentrations near 20 mg/L

(PR#107 p8-96 to 8-118). As the open pit deepens, the volume of groundwater and TDS concentration in the groundwater reporting to the pit are expected to increase (PR#95, PR#534).

The proposed plan is to pump the Jay groundwater to the bottom of the Misery pit and the runoff water to the top of the Misery pit. The goal of using two input streams is to create a salinity and density gradient in the Misery pit as it fills, so that the surface layer has a lower TDS concentration and lower density and does not mix with the high TDS water at the bottom of the pit. The surface water will then be discharged to Lac du Sauvage (PR#95).

Groundwater quality and quantity affects water management

The modelling completed by Dominion showed that groundwater intercepted in the Jay pit will be the main determinant of the quantity and quality of the water in the Misery pit that is later discharged to Lac du Sauvage. Given the importance of the groundwater on the overall water management strategy, Dominion initially modelled two scenarios for groundwater quality and quantity: the "reasonable estimate"[35] scenario and the "Environmental Assessment (EA) conservative" scenario (PR#95; PR#108). Following the technical session, in response to questions raised by the Review Board staff and the Government of the Northwest Territories (GNWT), Dominion modelled a third "lower bound" scenario (PR#450). The main characteristics of these modelling scenarios are described below.

Dominion completed a drilling investigation to determine the characteristics of the subsurface around the Jay pit and predict the groundwater. The drilling investigation identified four main stratigraphic units pertinent to groundwater: weathered bedrock, kimberlite, competent bedrock and an enhanced permeability zone (EPZ).[36] The groundwater model predicted the quality and quantity of water from each of these units and then the total quantity and quality of water that would flow into the Jay pit. Dominion tested the sensitivity of the groundwater predictions by varying the characteristics (such as hydraulic conductivity and specific storage) for each of the strata. Because the specific characteristics of the EPZ were not known, Dominion made assumptions about its characteristics in the groundwater model and varied those as well. Results from the groundwater model showed that the model was most sensitive to the characteristics of the EPZ, specifically the hydraulic conductivity and dimensions (PR#108,

[35] The reasonable estimate scenario was initially presented in the DAR, then updated following the first round of information requests to "updated reasonable estimate" scenario.
[36] An enhanced permeability zone is a subsurface zone in which water moves more easily than in the surrounding subsurface materials.

PR#534). The DAR predicted that 65% to 80% of the groundwater originated from the EPZ (PR#108, PR#450).

The characteristics of the EPZ were the primary adjustments made to estimate the lower bound scenario (PR#450). For the lower bound scenario, Dominion reduced the hydraulic conductivity of the EPZ and the width.

Dominion's modelling predicted a range of TDS concentrations during operations and after closure. The peak TDS concentration of the groundwater in the Jay pit was predicted to range between 5,131 mg/L and 7,371 mg/L. The peak TDS concentration of the water to be discharged from the Misery pit to Lac du Sauvage was predicted to range between 202 mg/L and 2,925 mg/L (see Table 4-1 below, from PR#534 p5). Existing surface water bodies in the area have TDS concentrations less than 20 mg/L (PR#107 p8-96 to 8-118).

Table 4-1: Summary of key water outputs

Summary of key outputs	Lower bound scenario	Reasonable estimate scenario	EA conservative scenario
Total inflows into the Misery pit over LOM (Mm^3)	41.80	65.37	83.39
Proportion of total inflows from surface water (%)	71%	45%	35%
Proportion of total inflows from groundwater (%)	29%	55%	65%
Peak TDS concentration in the Misery pit (mg/L)[1]	5,131	7,096	7,371
Peak TDS concentration of discharge water to Lac du Sauvage over LOM (mg/L)	202	1,150	2,925
Peak TDS concentration of overflow from the Misery pit post-closure (mg/L)	210	613	743

Notes:

[1] Peak TDS concentration of water pumped from Jay pit to the bottom of the Misery pit
LOM = life of mine
Mm^3 = million cubic metres

The Project will affect the water quality in Lac du Sauvage

In the DAR, Dominion characterized Lac du Sauvage as an oligotrophic lake[37] with low levels of alkalinity, TDS, and hardness (PR#107 p8-96 to 8-98). Water management for the Jay Project will affect the quality of water in Lac du Sauvage, both from the water discharged from the Misery pit and from potential seepage from the waste rock storage area (PR#107 section 8.4, see section 4.4).

Dominion conservatively predicted that the maximum peak total phosphorous concentration in Lac du Sauvage would increase from approximately 0.007 mg/L to 0.0012 mg/L (PR#107 p8-356 to 8-359). Based on the baseline water quality samples collected, Dominion suggested a water quality objective for total phosphorous in Lac du Sauvage of 0.02 mg/L. During the technical sessions and in its technical report, Environment Canada expressed concern that this level would enable a shift in the trophic status of Lac du Sauvage from oligotrophic to mesotrophic (PR#510 p12 to 13; see section 4.1.3). In response to these concerns, Dominion accepted Environment Canada's recommendation to amend its proposed objective for total phosphorous to 0.01 mg/L, to protect the existing oligotrophic status of the lake (PR#554 p2-1).

In the DAR, Dominion showed that the Jay Project would release water with high concentrations of TDS to Lac du Sauvage. As shown in Table 4-1, the peak TDS concentration of the discharge from the Misery pit to Lac du Sauvage during operations ranged between 202 mg/L and 2,925 mg/L. For the Jay Project, the largest component of TDS is chloride, which is expected to represent 50% to 60% of the TDS.[38] At a maximum predicted TDS concentration of 2,925 mg/L, the chloride concentration was predicted to be 1,712 mg/L (PR#95 p41). This concentration could be toxic to certain species of aquatic life.

Managing acutely toxic water

In its technical report, the GNWT indicated that the EA conservative scenario predicted discharge TDS concentrations to Lac du Sauvage that would be acutely toxic (PR#515 p17; see section 4.1.3). In response to the concerns, Dominion stated it will not discharge minewater that is acutely toxic (PR#498 p23; PR#663 p30). To ensure this, Dominion stated it would monitor the water in the Misery pit, submit a site water management plan to the Wek'èezhìi Land and Water Board (WLWB) and, if necessary, do the following (PR#663 p50; PR#305 p77, p92, p261, p800):

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[37] An oligotrophic lake has low nutrient levels and a low productivity.
[38] TDS is the sum of a number of salts in water.

- store the toxic water by:
    - using the freeboard available in the Misery pit
    - sending water to the Lynx pit or King Pond
    - increasing the capacity of the Jay runoff sump
    - using storage at the main camp
- discharge the water directly from the Jay runoff sump
- treat the water before discharge

Meromictic Misery pit and Jay pit lakes at closure

The closure plan for the Jay Project, as described by Dominion in the DAR, is to make the Jay and Misery pits meromictic lakes.[39] Dominion predicted that, when mining at the Jay pit ends, the Misery pit will be full and have a high TDS concentration (PR#109; PR#110; PR#107; see Table 4-1). For closure, Dominion intends to pump a portion of the minewater from the Misery Pit back to the bottom of the Jay Pit, so that high TDS water would be stored in the bottom of both the Misery and Jay pits. This would allow room in both pits for the freshwater cap needed for meromixis, for which Dominion would pump clean water from Lac du Sauvage. The intent of the freshwater cap is to permanently isolate the salty (high TDS) water (PR#107 section 8.3, PR#122, PR#450, PR#489). At the end of the closure activities, the Jay and Misery pits would therefore have a freshwater cap (low TDS water) above the minewater (high TDS water).

For the Misery pit, the bottom 200 m of the pit would contain high TDS minewater and the top 60 m would be freshwater sourced from Lac du Sauvage. The Misery pit lake would then be reconnected to the natural ecosystem and allowed to naturally overflow to Lac de Gras (PR#107 p8-139). The predicted maximum TDS concentrations at the surface of the Misery pit during the post-closure period ranged between approximately 200 mg/L and 750 mg/L (see Table 4-1, PR#534). In selecting the freshwater cap depth for the Misery pit, Dominion aimed to establish and sustain meromixis while minimizing the pumping requirements both to the Jay pit and from Lac du Sauvage (PR#307 MVEIRB-IR-32).

For the Jay pit, the bottom 150 m to 200 m would contain minewater pumped from the Misery pit. The top 150 m to 200 m would be freshwater sourced from Lac du Sauvage. At closure,

[39] Meromixis is when a body of water has stratified layers which do not mix. A meromictic lake is a lake in which a density difference separates the high salt and low salt water so that the annual cycle of mixing deep and shallow waters does not occur and the lake remains permanently stratified. The design of water management for the Jay Project depends on differences in the salinity of different types of water to form layers that do not mix, keeping freshwater near the surface of the Misery pit (and Jay pit after closure), and saltier water beneath.

Dominion proposes to breach the dike so that the Jay pit would become a part of Lac du Sauvage, as it was before the Jay Project (PR#95, PR#450).

Throughout the EA, there were questions and concerns from parties about the long-term stability of meromixis after closure. In Dominion's opinion, the empirical evidence (PR#307 GNWT-IR-62) and its modelling predictions support its closure strategy and indicate meromixis in the Jay and Misery pits will be maintained (PR#699 p3-2 to 3-5). The three scenarios modelled by Dominion (lower bound, reasonable estimate, and EA conservative scenarios) all predicted meromixis would be established and stable. Moreover, in Dominion's opinion, the surface water quality would support healthy ecosystems and traditional uses (PR#450; PR#677 undertaking 12; PR#699 p3-2 to 3-5).

4.1.3 Evidence from parties

The Project will affect water quality in Lac du Sauvage

The GNWT, Environment Canada and the IEMA all raised concerns about the effect of the Jay Project on the water quality in Lac du Sauvage during the operations phase of the Project. The issues discussed below relate to possible changes in the trophic status and the possible effects from discharging acutely toxic water.

Regarding trophic status, Environment Canada stated at the technical session and in its technical report that Lac du Sauvage should be maintained as an oligotrophic lake (PR#354 p206 to 209; PR#510 p12 to 13). Environment Canada's concern was that the water quality objective for total phosphorous Dominion proposed would allow a shift in the trophic status from oligotrophic to mesotrophic and would change the nature of the lake. In its technical report, Environment Canada recommended the total phosphorous water quality objective be set to ensure that Lac du Sauvage be maintained as oligotrophic. The Deninu Kue First Nation (DKFN) supported Environment Canada's recommendation. Dominion agreed.

In their technical reports, the Yellowknife hearing and closing arguments (PR#515 p19; PR#663; PR#693 p8; PR#498 p32; PR#682 p17), the GNWT and the IEMA expressed concern that the water quality of the discharge to Lac du Sauvage at the end of the life-of-mine could be acutely toxic to the aquatic environment. In its technical report, the GNWT said that, in the EA conservative scenario, the predicted TDS concentrations in the discharge to Lac du Sauvage could be acutely toxic at the end of the pipe (PR#515; see section 4.1.2). Specifically, the maximum predicted chloride concentration of 1,712 mg/L would be acutely toxic to aquatic life (PR#515 p17). The IEMA also stated in its technical report that the discharge from the Jay Project could be acutely toxic to zooplankton, phytoplankton and benthics in the mixing zone during operations (PR#498 p22 to 24).

Both the GNWT and the IEMA concluded that discharging acutely toxic water would cause a significant adverse impact to the aquatic environment. The GNWT recommended Dominion adaptively manage its discharge to Lac du Sauvage by dischargeing lower TDS minewater earlier in the life-of-mine, to increase storage available for potentially acutely toxic water later in the mine life. The IEMA recommended that Dominion submit a site water management plan to the WLWB, with details about the suitability and timing of contingencies. Dominion confirmed it intends to submit a site water management plan to the WLWB.

The area near the Jay pit and the Narrows is culturally significant

During the Yellowknife hearing, Aboriginal parties described the importance of the Jay pit and the area near the Jay pit from a cultural perspective. During the technical session, its hearing presentation and closing argument (PR#336 p118 to 120, PR#644 p320), the Yellowknives Dene First Nation (YKDFN):

- raised the importance of the area for harvesting caribou
- described how the area near the Misery esker, Point Misery, the Narrows and the area east of the esker towards Lac du Sauvage should be protected (PR#336 p118 to 120, PR#644 p320)
- argued for the preservation of the health and viability of the waters of Lac du Sauvage and Lac de Gras

During the public hearing, the North Slave Métis Alliance (NSMA) described the area near the Jay as a culturally important place “where people camped, fished while they waited for caribou” (PR#663 p114 to 115). Shin Shiga, speaking as a member of the public, said the closure plan for the Project—storing minewater within the Jay pit—would result in a permanent change to Lac du Sauvage that would mean “significant…adverse impacts to the Aboriginal people’s traditional use of the land” (PR#663 p253 to 254).

Concern about relying on meromixis

The Aboriginal parties all expressed concern about relying on meromixis to protect the environment. In the Lutsel K'e Dene First Nation's (LKDFN) view, even if the likelihood of meromixis failing is low, any failure would result in significant impacts to the environment (PR#521; PR#663; PR#697). Specifically, the LKDFN expressed concern about the effects of TDS to the aquatic environment, taste of the water to people, taste of the water to wildlife and perception of the area by traditional users (PR#521 p7 to 10).

The LKDFN was concerned about the lack of information on contingencies for ensuring meromixis. It recommended an independent review panel be established to analyze meromixis and recommend contingencies to ensure meromixis or mitigate effects from meromixis failure. Aboriginal parties (the DKFN, the NSMA and the TłĮcho Government) supported the LKDFN's recommendation (PR#521 p10, PR#663 p324). In addition, the DKFN recommended water treatment as a contingency option if meromixis is not stable (PR#663 p327).

In the YKDFN's opinion, there was too much uncertainty associated with the meromixis strategy to ensure acceptable surface water quality in the Misery and Jay pits. To mitigate the concerns, the YKDFN recommended Dominion submit a specific site water management plan to the WLWB outlining when contingencies would be implemented (PR#520).

In their technical reports and at the hearings, the GNWT and Environment Canada raised concerns about the TDS concentrations in the surface layer of the Misery pit lake in the post-closure period (PR#663 p209; PR#693 p9; PR#510 p16 to 17). Dominion's modelling predicts maximum surface concentrations of TDS in the Misery pit lake of 600 mg/L (in the updated reasonable estimate scenario) to 750 mg/L (in the EA conservative scenario) (see Table 4-1; PR#534 p5). The GNWT concluded these concentrations would not meet Dominion's stated closure objectives (PR#693 p9; see section 4.2.2). During the EA, Dominion stated that it intends to meet the same closure objectives for the Jay Project as have already been approved for the rest of the Ekati site (see section 4.2.2).

Environment Canada stated that maximum TDS concentrations would eventually exceed the water quality guidelines. In their technical reports, at the hearing, and in the closing arguments, the GNWT and Environment Canada recommended Dominion use a larger freshwater cap depth to reduce the TDS concentration of the surface layer of the Misery pit (PR#510, PR#693, PR#515). Environment Canada also recommended that Dominion investigate other means to reduce contaminant concentrations in the Misery pit (PR#510).

Aboriginal groups intend to use the area after mining is done

In closing arguments, Aboriginal parties stated they intend to use the water around the Jay Project again, specifically Lac du Sauvage and Lac de Gras. In its closing argument, the NSMA stated it would like to see Lac du Sauvage and Lac de Gras returned to pre-development conditions as soon as technically possible (PR#695 p13). The YKDFN stated the waters of Lac de Gras and Lac du Sauvage were always good for drinking, and changes to water quality would affect traditional uses. From its perspective, "Areas used for harvesting must have a reliable and good water supply. If the water is perceived to be of inferior quality, traditional land users will no longer use that site" (PR#692 p19 to 20).

4.1.4 Review Board analysis

Based on the predictions presented during the EA and the uncertainty associated with modelling, the Review Board believes that, without the implementation of the appropriate mitigations, the Jay Project will affect water quality and likely result in a significant adverse impact to traditional uses in the vicinity of the Jay Project after closure.

In the Board's view, it is important that the area around the Jay Project, in particular the land and water near the Misery esker, the Narrows, Lac du Sauvage and Lac de Gras, is returned to a state that supports traditional land practices. This is based on historic use of the area by Aboriginal groups, the stated cultural significance of this area, and the intent of Aboriginal groups to use this area again (see section 4.1.3). The Jay Project components in this area include the Lynx pit, the Misery pit, the Jay pit, the Jay road, and the Jay waste rock storage area. Traditional land practices include hunting, fishing, harvesting berries and plants, camping, and associated activities.

The Aboriginal parties described the value of the area in the vicinity of the Jay Project to the Review Board throughout the EA. As observed in section 4.1.3, Aboriginal peoples used the area extensively while harvesting caribou, before mining. In addition, all of the Aboriginal parties expressed concern and a lack of confidence in the strategy of keeping salty from fresh surface waters using meromixis, and the contingencies to ensure it.

Aboriginal parties have described their traditional use of the area, which includes using local water sources for drinking while camping and harvesting caribou. Based on the testimony of Aboriginal participants in the EA, the Review Board concludes that Aboriginal groups will not want to camp in the area if the water does not taste clean, because it will cause a perception that the water is contaminated from the mine. Even if the water is technically safe to drink, people will likely avoid the area if they think it is bad. In the Review Board's opinion, if meromixis is not established and stable, and the resulting water quality in the Jay and Misery pits is poor, the Jay and Misery pits would likely cause a significant adverse impact to the

traditional use in the vicinity of the Jay Project after the Jay Project closure has been completed.

The Review Board observes that regulators have tools at their disposal during the closure planning process to ensure that the area in and around the Jay Project can be returned to a state that supports traditional land uses. Closure planning includes setting closure goals, objectives and criteria. The criteria include numeric values to determine if the objectives are met. If the objectives are met, the broader closure goal will be achieved. Given the cultural value of the area and concerns raised about the quality of water in the Misery and Jay pits after closure, the Review Board considers it essential that the closure planning, in particular the closure objectives and criteria, reflect the cultural value of the vicinity of the Jay Project.

How Dominion achieves its closure goals will depend on the quality and quantity of water it must manage and how it does so. Dominion predicted the water quality in Lac du Sauvage, Lac de Gras, and the Jay and Misery pits during operations and after closure of the Jay Project using a series of models. The predictions were most sensitive to changes in the groundwater predictions for the Jay pit. The groundwater model was used as an input to several other models to make other important EA predictions. Dominion predicted that the discharge water to Lac du Sauvage could be acutely toxic during operations (with chloride concentrations greater than 1,700 mg/L). At closure, Dominion's reasonable estimate scenario and EA conservative scenario predicted the Misery pit to have a surface water quality of 600 mg/L to 750 mg/L respectively (see Table 4-1).

The models were based on the best available data at the time. However, because the Project is not operational, the models have not been calibrated to actual pit flows and pit water quality. For example, the hydro-geological (groundwater) model was based on results from the drilling investigation and not on measured flows into the Jay open pit. Drilling investigations may not represent larger conditions on-site with enough accuracy, and therefore the quality and quantity of groundwater could be quite different.

The models need to be calibrated throughout the life of mine and into closure to improve confidence around the predictions of water quality and quantity and the associated management actions. The Review Board's previous experience and results from mines in the north have proven there can be a high degree of uncertainty with predictive models until they have been calibrated using site observations during operations (PR#673 undertaking 9). This uncertainty can affect the operator's ability to plan for and manage water in a way that is protective of the environment.

During the EA, Dominion indicated that its strategy to manage water during the life of the mine includes a site water management plan. The site water management plan would include a list

of contingencies the developer could implement to help ensure no adverse impacts to the environment are caused by unexpected events. In addition, Dominion committed to maintaining Lac du Sauvage as an oligotrophic lake. Dominion's commitments allay some of the Review Board's concerns about the possible impacts to the environment. However, the Review Board believes the feasibility of implementing contingencies, and the possible environmental effects of implementing them, need to be described and assessed further. The specific operational contingencies identified during the EA include:

- discharging mine-water earlier in the life of mine (proposed by the GNWT, see section 4.1.3)
- storing the water by (proposed by Dominion, see section 4.1.2):
    - using the freeboard available in the Misery pit
    - sending water to the Lynx pit or King Pond
    - increasing the capacity of the Jay runoff sump
    - using storage at the main camp
- discharging water directly from the Jay runoff sump (proposed by Dominion, see section 4.1.2)
- treating the water before discharge (proposed by Dominion, see section 4.1.2)

The environmental impacts that could result from using the proposed contingencies must be understood before the need to implement them arises. For example, the effects to the environment from using the freeboard capacity in the Misery pit or using King pond as a contingency storage were not described during the EA. In addition, Dominion did not explain the feasibility of the contingency options of sending water to the main camp or treating water before discharge. The burden of proof lies with the developer to convince the Review Board that the contingencies are feasible and can be relied on without having an impact on the environment. In the Review Board's view, Dominion did not provide sufficient evidence to satisfy this requirement.

For closure, Dominion explained that its strategy for water is to make the Misery and Jay pits meromictic. It considered this a feasible long-term plan. Parties expressed concern over meromixis and the quality of the resulting water in the pits. As a contingency, Dominion suggested that the depth of the freshwater cap could be modified. The cap depth selected by Dominion in the DAR was based on ensuring that meromixis is established and stable, and minimizing the pumping requirements. The GNWT and Environment Canada recommended increasing the freshwater cap depth (4.1.3). In addition, Environment Canada, the LKDFN, the TłĮcho Government, and the NSMA recommended that Dominion describe additional contingencies to ensure meromixis or to mitigate the effects of meromixis failing.

The Review Board has determined that there is significant concern over the meromixis strategy and its potential impacts to water quality. Unacceptable actual and perceived changes to water will likely affect traditional uses, as described above. The Review Board believes these concerns can be addressed through careful water management and having appropriate contingencies available to deal with the unexpected.

4.1.5 Review Board Conclusions

The Review Board recognizes the concerns of Aboriginal groups that water quality in the area will not be acceptable for traditional uses once mining ends. Aboriginal groups' apprehensions and perceptions matter because they directly affect the likelihood, frequency and quality of traditional use of the Project area post-closure. Even if the water is not toxic, any elevated levels of TDS after closure that would result in perceived poor quality water would likely adversely affect traditional use.

As an overarching principle, the Review Board believes that the cultural value of the area needs to be reflected during the closure planning. Second to that, the Review Board concludes that appropriate water management and use of contingency options during the operations and closure of the Jay Project can mitigate impacts to the environment that would otherwise likely result in a significant adverse impact to traditional use in the vicinity of the Jay Project.

4.1.6 Measures and Suggestion

The Review Board finds that the area in the vicinity of the Jay Project[40] is culturally important to Aboriginal peoples and needs to be suitable for traditional uses, including harvesting and associated activities, once the Jay Project has ended. Traditional uses will likely be affected by water quality in the Misery and Jay pit lakes, which will be part of the natural environment. If, after closure, Aboriginal users perceive that water quality in the pit lakes is adversely impacted by the Jay Project, it will likely result in traditional users avoiding the area.

The Review Board has determined that, without additional mitigation measures, the Project will likely result in a significant adverse cultural impact on traditional users of the Jay Project area, after closure from changes in water quality. The measures below are intended collectively to

[40] "In vicinity of the Jay Project" here means the area of: the Misery esker, the area east of the Misery esker to Lac du Sauvage, the Misery pit, the Jay pit, the Jay road, the Jay waste rock storage area, the Narrows, Lac du Sauvage, and areas of Lac de Gras affected by the project and downstream to the Coppermine River. It also includes the traditionally used surrounding area in the vicinity of these components.

protect traditional users by requiring that traditional land uses be considered during closure planning, and by managing water during operations and closure to ensure the aquatic environment and traditional uses are protected.

Measure 4-1 - Closure Objectives

To prevent significant cultural impacts after closure from changes in water quality, the Wek'éezhii Land and Water Board will set closure objectives and criteria for the Jay Project components so that Dominion ensures that the area is suitable for traditional uses after closure. Closure objectives and criteria will be set for, but not limited to, the following components of the Jay Project:

- Jay pit
- Misery pit
- Lynx pit
- Jay waste rock storage area

Measure 4-2a – Site Water Management Plan

In order to avoid significant impacts to traditional use in the vicinity of the Jay Project after the Jay Project mining and closure have been completed, Dominion will submit a site water management plan to the Wek'éezhii Land and Water Board for approval, prior to the commencement of dike construction. Dominion will demonstrate how its plan, and the contingencies in it, will ensure water quality in the Jay Pit, Misery Pit, Lac du Sauvage, Lac de Gras, and downstream will support traditional uses in the vicinity of the Jay Project after closure, while protecting the environment during operations. The plan will include, but not be limited to:

- a list of contingencies that Dominion can use to manage water during operations and an evaluation of the feasibility of each
- a description of the scenarios (*i.e.*, conditions and timing) under which contingencies will be implemented
- Dominion's preferred contingencies, with rationales, for each scenario
- a description of how Dominion will monitor the quantity and quality of water to:
  a) calibrate the water models used to make predictions in the EA
  b) assess the suitability of contingencies
  c) evaluate the performance of contingencies used

Dominion's plan to protect the aquatic environment from minewater at closure is to establish meromixis in the Jay and Misery pit lakes. The Jay pit will be connected to Lac du Sauvage and the Misery pit will overflow to Lac de Gras. Both of these lakes and the area around the Misery pit, in particular the Misery Esker and the Narrows, are of great importance for traditional use. If water quality in the pit lakes is perceived to be negatively impacted by the Jay Project after closure, this will likely result in traditional users avoiding the area.

Measure 4-2b – Pit lake water quality

To ensure that water quality in the Misery pit and Jay pit is compatible with traditional uses of the area in vicinity of the Jay Project and downstream after closure, Dominion will:

1. establish meromixis for the Jay and Misery pits
2. stabilize meromictic pit lakes for the long-term

If the above requirements cannot be met, Dominion will develop and implement contingencies to ensure the pit lake water quality is compatible with traditional use after closure. Dominion will submit a list of these contingencies, which describe the feasibility of each contingency, and the conditions and timing under which each would be implemented, to the Wek'éezhii Land and Water Board for approval prior to the implementation of any contingency.

Suggestion

When considering the contingencies for water management and meromixis, Dominion and the WLWB should consider the options identified during the environmental assessment, including:

- providing a deeper cap of freshwater on the Misery and Jay Pits at closure
- discharging water to Lac du Sauvage earlier in the life of mine
- using additional storage near the Jay Project, including the Lynx pit, the Jay runoff sump and King Pond
- using additional storage at the Ekati mine main camp
- treating minewater before discharge to the environment

4.2 Managing fine-processed kimberlite

4.2.1 Summary of the Review Board's findings

Dominion has not demonstrated that its planned deposit of fine-processed kimberlite (FPK) [41] from the Jay Project into the Panda and Koala pits is a suitable means to store and manage FPK. The onus is on the developer to prove to the Review Board that the use of the Panda and Koala pits for the deposition of FPK will not cause significant adverse impacts. Dominion has not done this. Because Dominion has not adequately proven that the strategy for FPK will be acceptably safe for the environment, the Review Board concludes that measures are necessary to prevent significant impacts from using the Panda and Koala pits for FPK management.

4.2.2 Evidence from the developer

Fine-processed kimberlite into Panda and Koala pits

Dominion stated in the DAR and throughout the EA that it intends to place FKP into the mined-out Panda and Koala pits. FPK is anticipated to be composed of 20% solids and 80% water. During the life of the mine, the solids and water in the FPK will separate so that the solids are at the base of the pit with the supernatant[42] water above it. At closure, a portion of the supernatant water from Panda and Koala will be pumped to the Long Lake Containment Facility (LLCF), to make room for a 30 m freshwater cap to be placed above the FPK solids and supernatant water (PR#488).[43]

Meeting closure objectives

Without the Jay Project, Dominion's proposed closure plan for the Panda and Koala pits is to fill Panda and Koala pits with freshwater from Lac de Gras and reconnect the pit lakes to the natural watershed (PR#435 p5-29 and p5-36). The first lake downstream of the pit lakes is Kodiak Lake. During the public hearings, Dominion confirmed that it still intends to reconnect the pit lakes to the natural environment and meet the existing closure goals and objectives (PR#663 p135, PR#96 p1). For the entire Ekati mine, Dominion's closure goal is to "return the Ekati site to viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment." The existing

[41] Fine processed kimberlite refers to the waste slurry component of the kimberlite processing and includes both the fine and extra-fine processed kimberlite components.
[42] Supernatant water is the water originally entrained within the FPK that floats above the solids component.
[43] Unlike the separation of water proposed for the Misery and Jay pits, this is not based on meromixis, as it is not caused by a salinity gradient.

closure objectives for the Ekati mine, which Dominion intends to uphold for the Jay Project pit lakes, include the following (PR#435 p5-33 and 5-36):

- facilitating the establishment of self-sustaining aquatic ecosystems in pit lakes
- ensuring that pit lakes are safe for fish passage
- ensuring that the open pit mine component is left in a healthy state that supports continuation of human land use activities

During the EA, Dominion did not provide any Jay project-specific predictions for the water quality in the Panda and Koala pits during operations and after closure and the resulting water quality downstream in Kodiak. Dominion did not present sufficient evidence to demonstrate that it could still meet the closure objectives if the FPK is placed into the mined-out Panda and Koala pits. Currently at the Ekati site, FPK is placed into the LLCF and a trial is being undertaken at the Beartooth pit to assess the feasibility of using mined-out pits for FPK (PR#426 p4–6).

During the Yellowknife hearing, Dominion stated it intends to use data from the Beartooth pit FPK trial to inform its operational plan for the Panda and Koala pits. Dominion stated that, if the results of the Beartooth trial do not demonstrate the feasibility of placing FPK into the mined-out pits, Dominion would place FPK into Cell D of the LLCF (PR#663p135–137). In response to the GNWT's recommendation (see section 4.2.3), Dominion committed to completing an optimization study into the use of mined-out pits for FPK (PR#555 p2-7).

4.2.3 Evidence from parties

In its technical report and at the public hearings in Yellowknife, the GNWT expressed concerns about the quality of water that would naturally overflow to Kodiak Lake after closure and the suitability of the FPK management plan (PR#515 p17, PR#663 p213 to 214). Specifically, the GNWT stated that "it is not clear if the proposed deposition and water cover would meet the approved closure objectives in the ICRP [Interim Closure and Reclamation Plan]" (PR#515 p17). The GNWT recommended the Review Board include a measure to prevent impacts to the water quality in the Panda and Koala pits at closure that would affect traditional use. Namely, Dominion is to conduct an optimization study into the placement of FPK into Panda and Koala to ensure no adverse impacts to the environment occur and that the closure objectives are met.

4.2.4 Review Board analysis

The developer did not meet its onus to prove to the Board that the use of the Panda and Koala pits for the deposition of FPK will not cause significant adverse impacts. The Review Board's conclusion is based on the absence of data about the water quality of the Panda and Koala pit, both during operations and after closure, and the quality of the environment downstream of

the Panda and Koala pits at closure. While Dominion said that it is committed to meeting the established closure objectives, it did not prove this is possible. The Review Board is not confident that the proposed management of FPK is likely to take place in a way that avoids significant adverse impacts on the environment. Therefore, it concludes there is an unacceptable likelihood of significant adverse impacts to the environment.

Existing data from the Ekati site shows that discharge water from the LLCF has constituent concentrations above the baseline concentrations, and the discharge is regulated to minimize effects to the environment (PR#379 p3-30 to 3-74). Although there is no evidence to suggest the quality of the FPK will differ with the Jay Project, storage of FPK in Panda and Koala may produce discharge water that is of a different quality than that from the LLCF. The severity of these differences is not known at this time.

The Review Board recognizes that the contingency option for FPK, if it cannot be deposited into the Panda and Koala pits, is to use Cell D of the LLCF. The Review Board considers this a feasible alternative, as the use of the LLCF has already been assessed and the facility is approved to receive FPK.

4.2.5 Review Board conclusions

Dominion has not provided sufficient information on the likely impacts of depositing FPK into the Panda and Koala pits. Dominion has not convinced the Review Board that this deposition of FPK will avoid significant adverse impacts. The Review Board concludes, given the lack of data on the water quality in the Panda and Koala pits that would result from FPK deposition, that it is likely it would cause a significant adverse impact to the environment.

In the Review Board's view, Dominion can mitigate this impact by ensuring it meets its established closure objectives for the Panda and Koala pit lakes and only deposits FPK into these pits if it will not adversely affect the environment. These closure objectives were agreed to by parties and are necessary to ensure that the area affected by the mine is returned to a state that can be used for traditional purposes. If Dominion cannot deposit FPK into the Panda and Koala pit lakes, Dominion must deposit FPK into an approved processed kimberlite containment area.[44] At the time of the EA, the approved processed kimberlite containment areas were the LLCF and the Beartooth Pit.

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[44] Processed kimberlite containment areas are, as defined in the Interim Closure and Reclamation Plan, the areas and associated structures that are specifically designed for processed kimberlite and regulated through the water

4.2.6 Measures and Suggestions

Dominion intends to deposit FPK from the Jay Project into the mined-out Panda and Koala pits. Dominion did not provide sufficient evidence on the impact to water quality from the deposition of FPK into these pits, to satisfy the Review Board. Currently, Dominion is conducting the Beartooth pit FPK trials to research the effects of FPK on water quality in pit lakes. To avoid significant adverse environmental impacts to the Panda and Koala pit lakes and to the downstream environment after closure from the deposition of FPK,[45] the following measure is required:

Measure 4-3 – Fine processed kimberlite

To avoid significant adverse environmental impacts to the Panda and Koala pit lakes and to the downstream environment after closure from the deposition of fine processed kimberlite, Dominion will not deposit fine-processed kimberlite into the Panda and Koala pits unless the Wek'éezhii Land and Water Board approves such a use of the Panda and Koala pits. The Wek'éezhii Land and Water Board's approval will ensure the protection of the downstream environment after closure and will consider the results of the Beartooth pit fine-processed kimberlite trial. Otherwise, the Jay fine-processed kimberlite will be deposited into an approved processed kimberlite containment area.

Suggestion:

To demonstrate the suitability of the Panda and Koala pits for fine-processed kimberlite, the Wek'éezhii Land and Water Board should require Dominion to complete a deposition study and a freshwater cap optimization study. The deposition study should investigate how fine processed kimberlite behaves once deposited into mined-out pits and the quality of the resulting supernatant water. This should include data from the Beartooth pit trial.

licence (PR#435 p362). At the time of the EA, the only approved areas were the Long Lake Containment facility, the Phase 1 Tailings Containment Area, and the Beartooth pit.

[45] Fine processed kimberlite is the processed kimberlite generating during kimberlite processing and sent as a slurry to a processed kimberlite containment area. It includes extra fine-processed kimberlite (PR#435 p356; PR#401).

The optimization study should determine the optimal depth of a freshwater cap to be pumped into the Panda and Koala pits at closure, if they are suitable for fine-processed kimberlite deposition. The purpose of the optimization study should be to understand the relationship between the freshwater cap depth and the resulting pit surface water quality after closure. The study should identify the optimum freshwater cap depth to meet the established closure objectives.

For both studies, the WLWB should require Dominion to calibrate any models used to make predictions with site-specific data, if available.

4.3 Cumulative effects to water quality

4.3.1 Summary of the Review Board's findings

The Jay Project will result in additional mine-affected water flowing into Lac de Gras. Other mine flows to Lac de Gras will be from the Diavik diamond mine (Diavik) and the existing Ekati mine. The Lac de Gras catchment is part of the Coppermine River watershed. The Coppermine River is the drinking water source for Kugluktuk. Based on the evidence from the parties, the Review Board concludes that the Jay Project is not likely to cause significant adverse cumulative impacts on Lac de Gras and the Coppermine River.

4.3.2 Evidence from the developer

Cumulative effects to Lac de Gras are predicted to be minimal

Dominion described how the Jay Project will discharge water to Lac du Sauvage from the Misery pit during operations (see section 4.1.2). Its proposed plan is to discharge water to Lac du Sauvage from year five of operations (2024) to the end of mine life (2029). The effluent will mix with a portion of Lac du Sauvage and flow into Lac de Gras via the Narrows (see Figure 4-1). Water from Lac de Gras then flows into the Coppermine River, which flows into the Coronation Gulf near Kugluktuk (PR#107; see Figure 4-2).

Lac de Gras also receives effluent discharge directly from Diavik and indirectly from the Ekati Mine project via Slipper Lake. In the DAR, Dominion observed that the water quality in Lac de Gras has already changed from pre-mining conditions because of existing mining (PR#107 p8-363 to 8-378; PR#182). Dominion stated that the existing and predicted water quality in Lac de Gras will not have an adverse on impact aquatic life (PR#107).

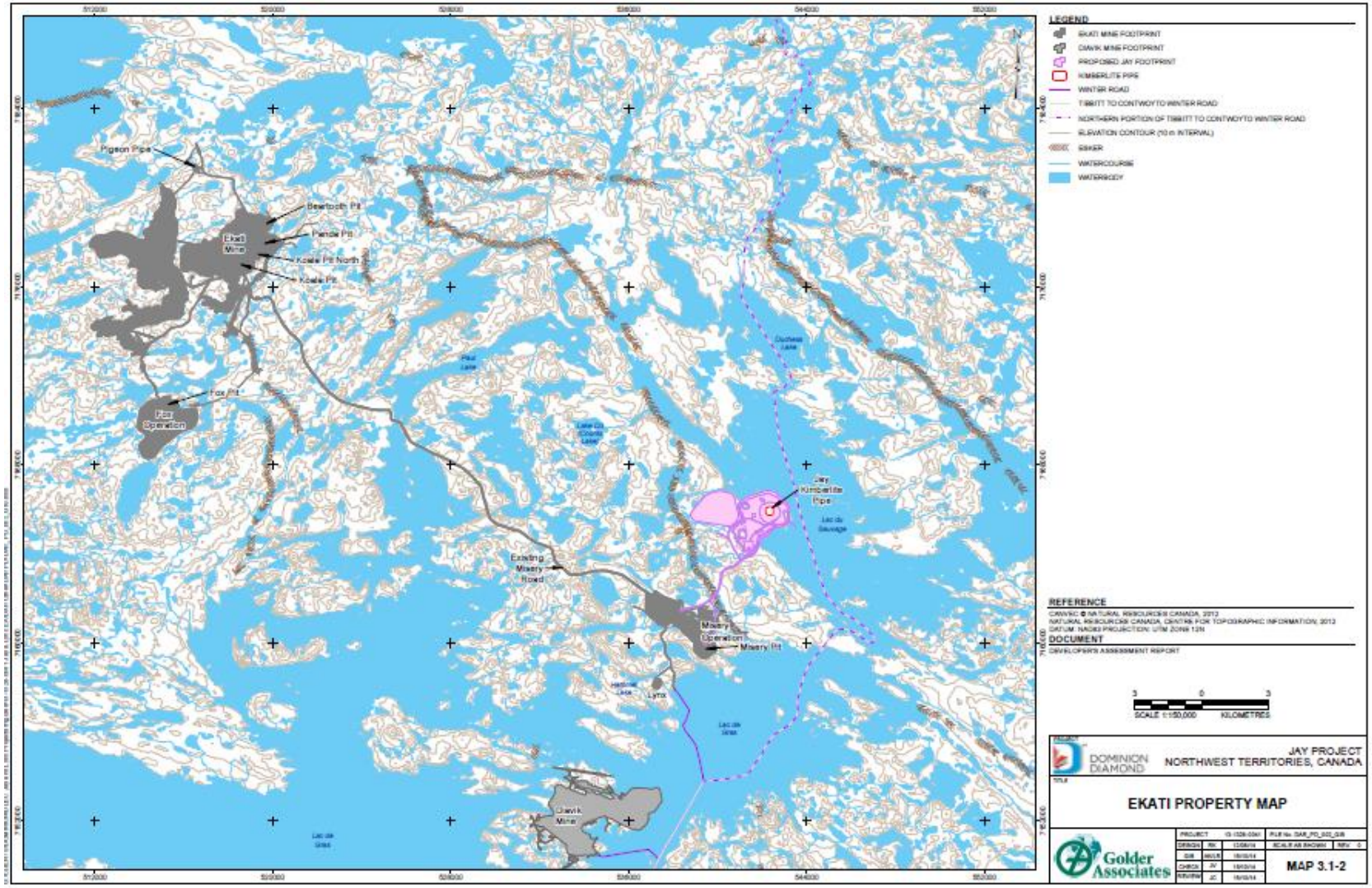

Figure 4-1: Location of the Jay Project, Diavik and existing Ekati Mines in the Lac de Gras watershed (Source PR#94 p3-3)

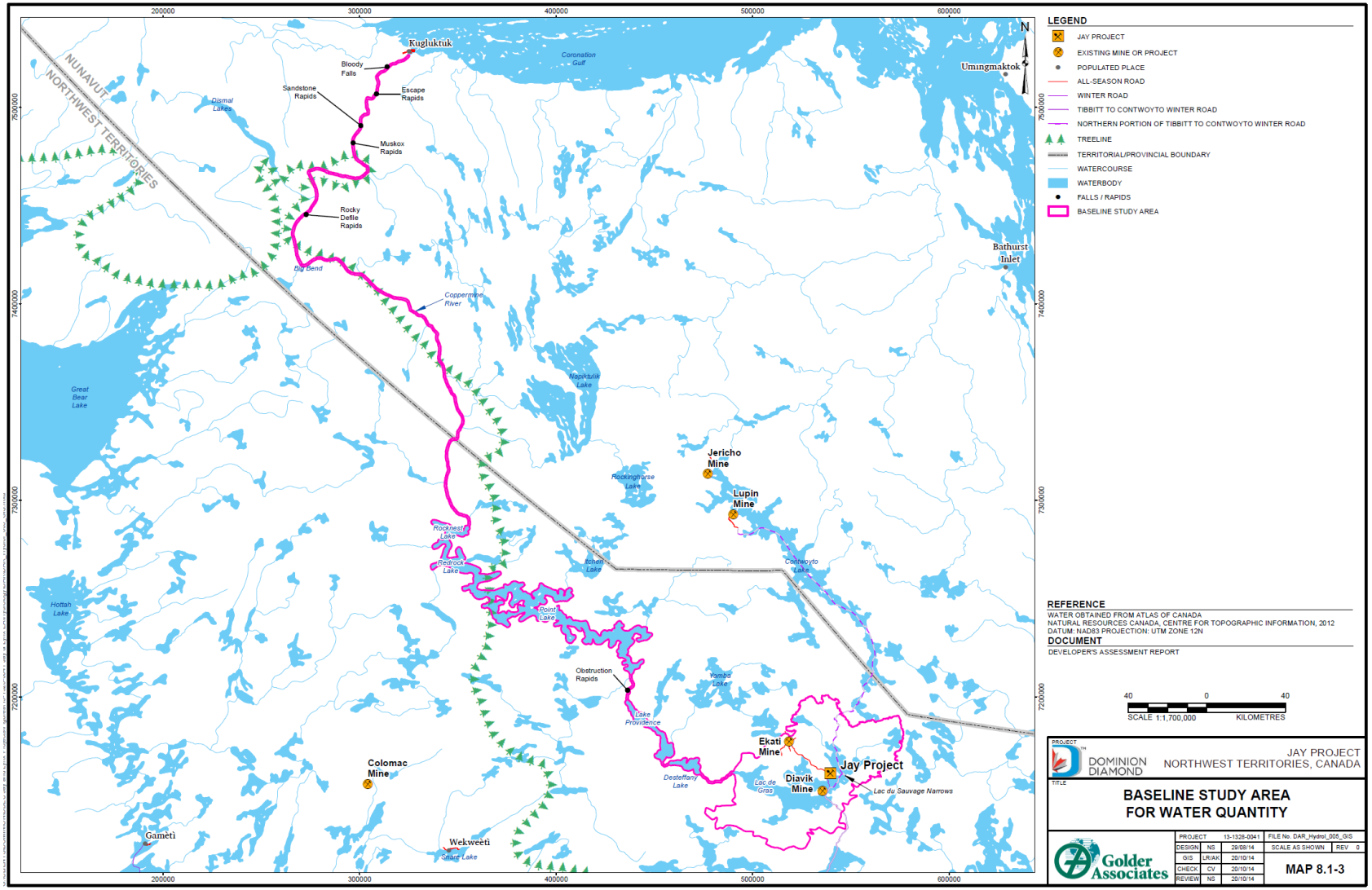

Figure 4-2: Location of the Jay Project and the Coppermine River (Source PR#107)

Dominion designed its water management strategy to minimize the potential effects to Lac de Gras. Its strategy was to delay the discharge of Jay minewater until year five (2024) of operations so that the Jay Project discharge would not overlap with Diavik's operational discharges. Dominion's model was based on Diavik's intended end discharge date of 2023. Without discharging water at the same time as Diavik, Dominion predicted that the Jay Project would affect the water quality in Lac de Gras, but that the change would not be great enough to cause a significant adverse impact (PR#107). Until the hearing undertakings, all of Dominion's predictions of possible effects to Lac de Gras were based on the assumption that Diavik's and Jay's discharge would not occur at the same time.

During the hearing, in response to questions and recommendations from the GNWT, Dominion stated that it would not preclude discharging water before year five of operations (PR#663). In stating that, Dominion established that it is possible that both the Jay Project and Diavik could be releasing water at the same time. This could affect the quality of Lac de Gras in a way that was not previously assessed.

Given this possibility, the Review Board requested that Dominion describe the potential effects to Lac de Gras from concurrent discharges from Diavik in combination with those predicted for the Jay Project (PR#659). Dominion described the effects in its hearing undertaking responses. Dominion predicted that a concurrent discharge would increase the TDS concentrations in Lac de Gras relative to what was predicted in the updated reasonable estimate scenario (see section 4.1.2), but the effects to Lac de Gras would not be significant (PR#677- Alternative discharge water quality model). For example, the TDS concentration predictions increased by less than 5% relative to the updated reasonable estimate scenario and still had TDS concentrations between approximately 15 mg/L and 30 mg/L.

4.3.3 Evidence from parties

Cumulative effects to Lac de Gras and downstream in the Coppermine River

At the technical session, the public hearing and the community hearings, parties expressed concern over the potential cumulative effects to Lac de Gras and downstream to the Coppermine River from three mines (Ekati, Diavik and Jay) operating in the same catchment.

During the Kugluktuk community hearing, community members expressed concern over the possible effect of upstream mining projects on its drinking water supply in Kugluktuk. The community members stated multiple times that the Coppermine River is extremely important to the community because it is the only place people get drinking water, and it is an important spawning habitat for arctic char. From the community's point of view, any pollution that affects the drinkability of the water would be unacceptable. In response to these concerns, Dominion committed to provide resources (financial or in kind) to support a long-term water quality monitoring program for Kugluktuk (PR#648).

The TłĮcho government and Diavik expressed concerns over the possible cumulative effects to Lac de Gras. The TłĮcho government was specifically interested in how the Jay Project and Diavik would affect Lac de Gras, and if the GNWT had tools to address the cumulative effects (PR#663 p229). Diavik was specifically concerned about how the Jay Project would affect water quality in Lac de Gras, and how it would affect Diavik's ability to demonstrate that it has successfully closed its mine and met its closure objectives (PR#663; PR#519; PR#688; see section 11).

The potential for additional cumulative effects to Lac de Gras were highlighted by GNWT's recommendation to discharge Jay mine-water earlier in the mine life (PR#515, PR#663). In its technical report, the GNWT suggested that Dominion discharge minewater earlier in the life of mine to reduce the potential for discharging acutely toxic water and to potentially improve the stability of meromixis in the Jay and Misery pits at closure. During the Yellowknife hearing, Dominion stated that while this is not its preferred approach, it has not precluded discharging water earlier in the life of mine. As described in the preceding section (4.3.2), the Review Board requested that Dominion describe the effects to Lac de Gras from discharging minewater sooner, given this possibility. As described above (section 4.3.2), the effects were predicted to be minimal and not significant.

4.3.4 Review Board analysis and conclusions

After reviewing the evidence, the Review Board has determined that cumulative effects of the Jay Project on Lac de Gras are not likely to be significant. The final modelling completed by Dominion for a concurrent discharge of minewater from the Jay Project, Ekati mine and Diavik suggested that, while the three operations will affect Lac de Gras, the result will be a very small increase in TDS that will not approach any thresholds for effects to aquatic life. In addition, the Review Board believes its measures to protect water quality (see section 4.1.6), Dominion's commitment to support Kugluktuk in monitoring the Coppermine River adjacent to the community, and the predictions for water quality downstream in the Coppermine River adequately address the concerns raised about potential effects to Kugluktuk's drinking water supply.

4.4 Waste rock storage area seepage

4.4.1 Summary of the Review Board's findings

The Jay Project will store its waste rock immediately adjacent to Lac du Sauvage. The materials stored will include lakebed sediments collected during dike construction and waste rock from the Jay pit. Some of the waste rock will likely contain potentially acid-generating meta-sediments. The Review Board has determined that seepage from the Jay waste rock pile will not likely have a significant adverse impact on the environment. The Review Board makes this determination on the basis of the waste rock seepage water quality predicted by Dominion and the commitments made by Dominion to monitor and adaptively manage any seepage from the waste rock pile.

4.4.2 Evidence from the developer and parties

Storing meta-sediments and managing seepage

In the DAR, Dominion described how waste rock from the Jay Project will be stored in a waste rock storage area immediately adjacent to the Jay pit and Lac du Sauvage. Over the life of mining, approximately 34% of the meta-sediments and overburden material is potentially acid-generating. In year two of mining, the proportion of meta-sediments to granite could be up to 54% (PR#305 GNWT-IR-25). Meta-sediments that are potentially acid-generating could result in seepage water quality that could adversely affect the environment (PR#94, PR#107 p8-158 to 8-159).

Dominion described in the DAR that the plan for the waste rock was to co-dispose the meta-sediment with the non-potentially acid-generating waste rock. The pile would be placed on permafrost with no connection to groundwater, and at closure, it would be covered with a 5 m granite cap that would allow the pile to freeze. In placing the waste rock this way, the acid potential would be neutralized and the seepage water quality would not pose a risk to the environment (PR#94, PR#107).

In its responses to the first round of information requests, Dominion explained that establishing permafrost in the waste rock pile was not necessary to ensure the physical and chemical stability of the pile. This resulted in questions during the technical session and the management plan workshop from the IEMA, the LKDFN and Review Board staff about the possible seepage quality from the waste rock pile. At the technical session and the management plan workshop, the IEMA requested assurances Dominion would be able to adequately detect any seeps and manage them appropriately (PR#460, PR#354 p183).

To investigate the potential for seepage from the pile and the quality of any seepage, Dominion committed to monitor the Jay waste rock pile as part of its Waste Rock and Ore Management Plan and install thermistors in the pile to monitor temperatures (PR#305). Dominion also predicted that any seepage that occurred would not cause an adverse impact to the environment (PR#460).

Lakebed sediments would be stored in the waste rock pile

Dominion proposes to store lakebed sediments (dredged during the dike construction) in the waste rock pile (PR#556, PR#521). In its technical reports and at the Yellowknife public hearings, both the IEMA and the LKDFN questioned how potentially contaminated sediment from the dike construction would be managed. The concerns were related to managing mercury-contaminated sediment: two of the 59 sediment samples collected had mercury concentrations that exceeded the Canadian Council of Ministers of the Environment guidelines (PR#556 p2-10). In its undertaking responses and closing argument, Dominion indicated that the sediment quality of additional lakebed samples collected in the same locations were below the Canadian Council of Ministers of the Environment guidelines, sediment samples that had

exceeded the guidelines were anomalous, and seepage from the sediments should not adversely affect the environment (PR#699 p3-5, PR#677 undertaking 11).

4.4.3 Review Board analysis and conclusions

In the Review Board's view, seepage from the Jay waste rock pile is not likely to significantly affect water quality. The developer's proposed mitigations and commitments have provided the Review Board with enough confidence that the quality of the seepage will likely be suitable for release into the environment. If it were not suitable, the Review Board considers Dominion's commitment to adaptively manage the Jay waste rock pile through a Waste Rock and Ore Management Plan submitted to the WLWB appropriate to address any potential future environmental concerns.

4.5 Impacts of the dike to Lac du Sauvage

4.5.1 Summary of the Review Board's findings

Dominion will build a dike in Lac du Sauvage to isolate the Jay pit from the lake. The majority of the dike will remain in Lac du Sauvage once closure of the Project has been finalized. The dike design and operation will determine the potential impacts it causes to the environment. If designed, constructed, or operated poorly, the dike could result in significant adverse impacts to the environment, and a safety risk to people. The consequences associated with a dike failure are severe, and measures are needed to ensure there is not an unacceptable risk.

4.5.2 Evidence from the developer

The dike is needed to build the Jay open pit

Dominion's proposed plan for the Jay Project is to build a water-retaining dike in Lac du Sauvage to isolate the Jay pipe so that an open pit mine can be constructed and mined. The semi-circular dike will isolate approximately 4 km^2 of Lac du Sauvage. The design and techniques will be similar to what has been completed at the Meadowbank mine, another northern mine located in Nunavut. The preliminary design of the dike was presented during the EA (PR#94 section 3.5.3.1).

The potential impacts of failure of the dike

As stated by Dominion in the DAR and DAR adequacy responses, the construction, operation and closure of the dike could adversely affect public health and safety and the environment. Slope failures of the dike could result in equipment, heavy machinery, and people falling into Lac du Sauvage during construction, or the dike failing while in operation causing sudden flooding in the pit. Spills or failures of fill placement during construction could release excess sediment or other contaminants into Lac du Sauvage and adversely affect the environment (PR#258).

In the DAR and adequacy review responses, Dominion stated it would mitigate the potential effects by taking a number of actions it believes would make these effects unlikely, including:

- implementing a thorough quality assurance/quality control program
- investigating dike foundations
- utilizing a double-walled silt curtain with smaller isolation cells
- following guidelines set by the Canadian Dam Association
- implementing an Operation Maintenance and Surveillance Program
- implementing an Emergency Response and Spill Contingency Plan

In addition to the items above, Dominion committed to an independent dike review panel. The commitment was made in response to both the IEMA (PR#266, IEMA IR-45) and Review Board staff (PR#352 p53). Similar panels have been established for both the Diavik and Meadowbank mines in the north.

4.5.3 Review Board analysis and conclusions

The Review Board concludes that a significant adverse impact to human safety and the environment would occur if there is a dike failure. Early in the EA, Dominion committed to an independent dike review panel to help mitigate the potential for failure of the dike due to design, construction, operations and maintenance. The Review Board agrees that an independent dike review panel would help ensure the dike is designed, constructed, and operated to minimize significant impacts to people and the environment. Due to the high severity of the consequences associated with a dike failure, the Review Board recommends the establishment of an independent dike review panel.

Similar independent panels have been established at other mines in the north with water retaining dikes (Diavik and Meadowbank). The Review Board considers this a best practice that must be followed for the Jay Project as well. Recent failures at other mines in Canada have shown that the lack of an independent review panel can have severe consequences.

Dominion committed to an independent dike review panel during the early stages of the EA in response to questions from the IEMA and Review Board staff. Because of the early commitment, the discussion of the potential effects from the dike was limited. The Review Board considers Dominion's commitment to using an independent dike review panel to be necessary to further reduce the likelihood of a high-consequence dike failure. Such a panel

would mitigate this unacceptable risk of significant adverse impacts.[46] The Review Board has therefore required it as a measure and added guidance for the panel's tasks.

4.5.4 Measure

To avoid an unacceptable risk to workers' safety and to the environment, it is essential that the Jay dike be stable. The measure below builds on Dominion's commitment to establish an independent dike review panel by outlining a framework for the dike review panel. This resulting measure is necessary given the severe consequences associated with a dike failure. The independent dike review panel's assessment will inform the WLWB's approval of the dike design.

Measure 4-4 – Dike stability and safety

To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, advise on the design, construction, operation and maintenance of the dike over the life of the Jay Project. The panel will provide recommendations to the developer to ensure that impacts to the safety of people and the environment from the dike are minimized. The panel will, at a minimum:

- review and accepts the dike design prior to the commencement of dike construction
- review the dike operation

Dominion will engage with the Wek'éezhii Land and Water Board, Government of the Northwest Territories, and the Independent Environmental Monitoring Agency on the panel composition and tasks. Dominion will submit the review panel's final terms of reference to the Wek'éezhii Land and Water Board.

[46] As in EA 0809-001, in this section the significance of potential effects modifies the likelihood that is acceptable in the Review Board's significance determination. See *Report of Environmental Assessment and Reasons for Decision-Giant Mine Remediation Project* (2013), p19 for details.

5 Impacts to fish and fish habitat

5.1 Protection of the Narrows

5.1.1 Summary of Review Board's findings

The sole connection between Lac de Gras and Lac du Sauvage is a shallow channel referred to as "the Narrows" in English and "Nàk'ooʔaa" in Taltsąot'ıne (PR#562 Appendix D) (See Figure 5-1). It is important due to its high ecological value as fish habitat and fish passage and for its traditional use by Aboriginal peoples, who harvest caribou at this narrow crossing point between the two large lakes. Water levels at the Narrows will be lowered at mine closure during refilling of the Misery pit, Jay pit and diked area with water from Lac du Sauvage. In the Review Board's opinion, significant adverse impacts from the Jay Project to the ecological and traditional uses of the Narrows are likely during these closure activities. A measure below requires Dominion Diamond Ekati Corp. (Dominion or the developer) to mitigate these impacts.

Figure 5-1: The Narrows connecting Lac de Gras with Lac du Sauvage (Source PR#591 p8)

5.1.2 Evidence from the developer

The Developer's Assessment Report (DAR) states that during closure of the Jay Project, water from Lac du Sauvage will be used to backfill both the Jay and Misery pits. Lac du Sauvage water will also be used to create the freshwater caps in the proposed meromictic Jay and Misery pit lakes during closure. Early in the closure phase, water will be pumped from Lac du Sauvage to both pits. Near the end of closure, the dike surrounding the Jay pit will be breached, and water from Lac du Sauvage will flood into the pit (PR#107 p8-139). Both the pumping and breaching of the Jay dike will affect the water surface elevation of Lac du Sauvage and, as a result, may lower water levels at the Narrows (PR#111 p8D-179 to 8D-215).

In response to an information request from the Review Board, Dominion assessed the potential effect of back-flooding the Misery pit, Jay pit and diked area on the ecological function of the Narrows (PR#448 p260 to 265). Dominion used historic climate data to demonstrate that maximum water depth at the Narrows ranged from 0.7 m to 1.4 m in October and June, respectively. In Dominion's view, the minimum depth required to ensure fish passage is 0.2 m to 0.3 m. When Dominion modelled the Jay pit back-flooding, the minimum depth for fish passage was achieved 90% of the time during the key migration periods of June and October. The modelling showed that back-flooding could lower water levels up to 0.4 m from the baseline conditions.

In its response to an information request from the GNWT (PR#448 p10) and the technical report of the Department of Fisheries and Oceans Canada (DFO), Dominion committed to protecting fish habitat and fish passage at the Narrows by implementing mitigation measures such as a reduction in pumping, as required, through an adaptive management plan. Dominion will submit this plan as a component of the Aquatic Effects Monitoring Program (AEMP) Design Plan for approval by the Wek'èezhìi Land and Water Board (WLWB) as part of the water license process (PR#552 p2-7). Dominion's adaptive management will be developed as part of the back-flooding pumping plan.

5.1.3 Evidence from parties

Throughout the environmental assessment (EA), and in particular at the hearings, Aboriginal parties emphasized the importance of the Narrows and the area surrounding it. For example, the Narrows allows for fish to move between two large lakes (PR#663 p73 and p290). Unlike most water bodies in the area, the Narrows does not freeze in winter, and is a key point for the migration for caribou (PR#644 p291, p320; See also section 6.3.2). It is also important as a source of drinking water in the winter when other water is frozen (PR#562 p31). While hunting caribou, Aboriginal hunters fish and camp in the area awaiting the arrival of the herds (PR#664 p114 – 115 and p320; PR#663 p253).

As stated by the Independent Environmental Monitoring Agency (IEMA) at the hearings and by Dominion in its information request responses, from an ecological point of view, low water levels at the Narrows has the potential to affect fish movement between Lac de Gras and Lac du Sauvage (PR#448 p260 to 265; PR#663 p190-191). The IEMA further stated that migration between the lakes is important, since the Jay Project may limit the amount of spawning habitat available for fish in Lac du Sauvage. As a result, some fish will likely require access to spawning habitat in Lac de Gras. The IEMA concluded that a prolonged disruption of fish movement between the two lakes would result in a significant impact to fish (PR#663 p190 to 191).

In its technical report and closing arguments, the DFO stated that sufficient flow must be maintained at the Narrows to prevent significant impacts to fish passage and fish habitat (PR#510 p13; PR#690 p8-9). The DFO recommended monitoring water levels at critical times and locations to produce a larger body of information with which to develop measures to

reduce the risks to fish passage and fish habitat. The DFO stated it would be particularly important to measure water levels during periods of low precipitation, extended drought, and Jay Project back-flooding.

5.1.4 Review Board Analysis

Based on the evidence discussed above, the Review Board accepts that the Narrows is a key migration pathway for fish between Lac du Sauvage and Lac de Gras, and that this migration corridor may become even more important if spawning habitat in Lac du Sauvage becomes limited during Jay Project operations. The Review Board understands that low water levels could inhibit fish passage through the Narrows during the period of pit back-flooding in the absence of mitigation measures. The Review Board acknowledges Dominion's commitment to managing pumping rates during back-flooding to ensure that fish passage will not be compromised (PR#448 p263; PR#663 p50 and 77). However, it also acknowledges the suggestion made by the DFO that additional monitoring for water levels and flow rates at key times and locations will further inform appropriate management decisions to achieve this objective.

The Review Board accepts the evidence of Aboriginal parties and the public demonstrating the cultural importance of the Narrows. For example, the North Slave Métis Alliance (NSMA) stated that the area around the Jay pit and the Narrows was used during traditional caribou hunts and is considered to be "culturally significant" (PR#663 p113, p253). The Review Board is convinced of the combined ecological and cultural importance of the Narrows and accepts that impacts which adversely affect the ability of fish to pass through the area or the traditional use of the area as a year-round open source of freshwater would likely be significant.

5.1.5 Review Board Conclusion

The Review Board acknowledges Dominion's commitment to manage pumping rates during the closure phase of the Jay Project to maintain fish passage at the Narrows. The Review Board also understands the importance of adequate monitoring in advance of closure activities, planning mitigation strategies and determining action levels for implementation. Based on the evidence from the parties, the Review Board concludes that both the ecological function of the Narrows as a fish migration corridor and its function for traditional use as a year-round open water source must be protected to prevent significant adverse ecological and cultural effects.

5.1.6 Measure

The Review Board believes that, without additional mitigation, the Jay Project will have a significant adverse effect on the ecological and traditional uses of the Narrows due to lowered water levels in Lac du Sauvage resulting from closure activities. The following measure mitigates this risk by building on Dominion's commitment to maintain water levels that protect fish and fish habitat during the back-flooding phase of the Project. The measure also requires Dominion to protect the traditional use of the Narrows as a source of open water year-round. By linking the required monitoring and management to the existing AEMP and Aquatic

Response Framework, the measure provides the WLWB with a role in approval and implementation.

Measure 5-1: Monitoring and maintaining water levels at the Narrows

To mitigate significant adverse ecological and traditional use impacts resulting from unacceptable drops in water levels at the Narrows, Dominion will maintain water levels at the Narrows such that the Jay Project does not adversely affect fish passage and the continuation of traditional use of the area as an open water source. It will do so by monitoring the Narrows before and during closure, and by appropriately managing activities in Lac du Sauvage during closure.

Prior to construction, a description of this monitoring will be submitted to the WLWB for its approval as part of the Aquatic Effects Monitoring Program design plan. The monitoring results will be reported in the annual AEMP reports and incorporated into the Aquatic Response Framework, specifying minimum required water levels and flow rates, and triggers for management responses during closure activities.

5.2 Project effects on fish habitat

5.2.1 Summary of Review Board's findings

Evidence presented by the developer and parties indicates that the Jay Project will result in the loss of fish habitat, some of which is permanent and some of which is reversible. 4.2 km^2 of Lac du Sauvage will be lost to build the Jay pit (PR94 p3-48). All losses of, and effects to, fish habitat will be considered during the regulatory phase of this Project through the development of Fisheries Authorizations. Based on the requirements of these authorizations, and Dominion's commitments to minimize adverse effects to fish habitat, the Review Board does not anticipate significant adverse impacts after mitigation. Therefore, no additional measures are required. However, the Board suggests that during the development of Fisheries Authorizations and associated offsetting plans, DFO gives full consideration of the unique and high cultural value of the area to be affected by the Jay Project.

5.2.2 Evidence from the developer and parties

The DAR predicted that the Jay Project will have direct effects on fish habitat associated mostly with habitat loss due to the construction of the dike, dewatering and mining of the diked area and diversion of streams to support Jay Project infrastructure (PR#124 p9-212). The total amount of lake and stream habitat impacted by the Jay Project is estimated to be 390 ha and 877 m (PR#124 p163 and p214). In its technical report, the IEMA suggested that indirect effects to fish habitat and spawning success as a result of dust deposition may adversely affect fish productivity (PR#489 p19 to 21). Dominion's response to this technical report indicated that

sufficient modelling had already taken place to quantify this risk, and that "changes to the quality of shoals for spawning and rearing (through changes in dust deposition) in Lac du Sauvage during construction and operations are expected to be negligible" (PR#556 p2-13). While the IEMA ultimately disagreed with this assessment (PR#692 p14), it also found that future resolution of the issue can adequately take place during the regulatory phase of the Jay Project.

In addition to the loss of habitat described above, Dominion has predicted that the Jay Project has the potential to create new habitat during operations and after closure. For example, the footprint of the Jay Pit (65 ha), while lost as shallow habitat, will represent new pelagic, or deeper water, habitat in Lac du Sauvage upon closure. Additionally, the portions of the dike that remain in place following closure represent a permanent loss of approximately 54 ha of lake bottom, but may provide habitat functions for a variety of species including areas for spawning, rearing and foraging (PR124 p9-199).

Several other issues were raised during the course of the EA by a number of parties regarding project effects on fish habitat. DFO identified a number of these concerns in its technical submission including effects associated with blasting, and habitat disturbance at key locations including water-crossings, the sub-basin B diversion channel, lake C1 and stream C1 (PR#690). Further specific recommendations for stream crossings and the sub-basin B diversion channel were described in the DKFN closing submission (PR#685 p3–4). In response, Dominion made several commitments including submitting detailed design plans to DFO and committing to "avoid and mitigate serious harm to fish as a result of water course crossing during construction, operation and decommissioning" (PR#552 p2–2).

As described in section 3.1.1 and elsewhere in this report, Dominion responded to numerous concerns raised by parties regarding the loss of habitat and effects to fish resulting from the combined Jay and Cardinal Project by eliminating the development of the Cardinal pipe from the project plan.[47] This change significantly reduced the Jay Project footprint and the area to be dewatered, and therefore, the amount of fish habitat that would be affected. Specifically, the Project, including Cardinal pipe, involved 50 km^2 of Lac du Sauvage, and the removal of over 280 million m^3 of water. The Jay Project following the removal of the Cardinal pipe involves only 4 km^2 of Lac du Sauvage and the removal of 27 million m^3 of water. The Review Board considers this change to be a positive improvement in Project design as it drastically reduces the potential impacts of the development on fish and fish habitat.

[47] See Figure in Section 1.2.1

In addition to this major change, the developer made several commitments and described Project design features to further mitigate adverse effects of the Jay Project on fish and fish habitat. Some key examples include the use of silt curtains during dike construction to limit sediment transport, constructing the dike using non-potentially acid generating rock to prevent the acidification of water near the dike, engineering the diffuser such that subsurface erosion is minimized, and following DFO guidelines designed to minimize the impacts of blasting (PR124 pp9-125 to 9-129). A full list of Dominion's commitments concerning fish and fish habitat are available in Appendix B commitments 16-36.

5.2.3 Evidence from the developer and parties

Since the Jay Project will cause serious harm to fish, as defined in the *Fisheries Act*, a Fisheries authorization is required before the construction of the Project. The conceptual Offsetting Plan outlines preliminary options that can offset the predicted harm to fish as a result of the Jay Project (PR#125 p9A-1). Dominion has committed to further developing this plan by "working with all impacted communities to identify potential offsetting measures for the Jay Project that meet community interests and meet the requirements of the Fisheries Protection Policy Statement" (PR#448 DKFN-IR2-07).

A number of parties, including the TłĮcho Government (PR#694 p6) and DFO (PR#510 p17 to 18), agree that further engagement on the details of the Jay offsetting plan is required. A number of parties stressed the importance the area in Lac du Sauvage which will become part of the Jay Project has for fish and for traditional fishing practices. For example, information in the Weledeh Traditional Knowledge report, as discussed during the technical sessions (PR#336), indicated that Traditional Knowledge has identified a large portion of the area to be covered by the Jay Project in Lac du Sauvage as spawning habitat. As described by the NSMA during the public hearings:

> *The area under the consideration is a very, very culturally important area. That's where people camped, fished while they waited for caribou. That's where they gathered. The permanent loss of fish habitat is going to be significant…it's not something that can be easily replaced by restoring fish habitat elsewhere, because of that cultural importance.* (PR#663 p114-115)

Both Dominion and DFO indicated they will continue to engage with parties during the regulatory phase of this Project on further developing fish-out and habitat loss offsetting requirements (PR#699 p3-7; PR#690 p3). In their closing statement, DFO has acknowledged that the goal of this ongoing consultation should include "the development of appropriate quantification of fisheries productivity impacts in Lac du Sauvage and streams Ac35 and B), and options to offset the impacts of the Project on fisheries productivity that cannot be avoided or mitigated" (PR690 p3).

5.2.4 Review Board analysis

Based on the evidence described above, in conjunction with the details submitted in the DAR and the commitments made throughout the EA process, the Review Board is convinced that that the Jay Project is not likely to cause significant adverse residual effects to fish or fish habitat. Many impacts will be reduced by Dominion's mitigations, the use of silt curtains, environmentally protective dike construction methods and materials, following DFO's blasting guidelines, and the reduced dusting that the Review Board expects to result from measures 6-2a and 6-3.[48] The Board is satisfied that the parties' remaining outstanding issues, such as concerns over the impacts of dust deposition in Lac du Sauvage and details regarding the construction of the sub-basin B diversion channel, will be adequately resolved during the regulatory phase of the Project, and are not likely to cause significant adverse impacts on the environment. The Review Board further finds that the offsetting required by the Fisheries Authorizations will adequately address any residual impacts.

The Review Board has heard that further engagement is required on the part of Dominion and DFO in the development of offsetting requirements for fish and fish habitat through offsetting plans and supports this planned engagement. The Board is convinced that options and requirements for offsetting should fully consider the cultural significance of Traditional Knowledge about the areas that require offsetting measures.

5.2.5 Conclusions

The Board has determined that, based on the evidence provided by parties and Dominion, along with the commitments made by the Dominion during the EA, residual impacts to fish habitat from the Jay Project are not likely to be significant. However, the Board supports Dominion's planned further engagement with parties on the development of the Offsetting Plan and suggests that DFO fully consider the cultural significance of the Jay Project area as part of the plan's development.

5.2.6 Suggestion

DFO should fully consider the unique cultural significance of the area in Lac du Sauvage that will be permanently lost due to the construction of the Jay pit in its determination of fisheries offsetting requirements.

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[48] See section 6 (Impacts to caribou)

5.3 Project effects on fish populations and fish health

5.3.1 Summary of Review Board's findings

The Jay Project is predicted to result in the direct mortality of many fish in Lac du Sauvage. Because of the large size of Lac du Sauvage, modelling predicts this will result in a small population change that will not affect fish populations in the area in the long term. Fisheries authorizations and offsetting requirements will adequately offset any losses that occur. These requirements, and the commitments Dominion made during the Environmental Assessment (EA) process, are sufficient to prevent significant adverse impacts to fish health and populations as a result of the Jay Project. The Review Board, therefore, does not anticipate significant adverse impacts to fish populations or fish health from the Jay Project provided Dominion commits to follow and enforce the requirements of the Fisheries authorizations.

5.3.2 Evidence from the developer and parties

Project effects on fish populations in Lac du Sauvage and Lac de Gras

Dominion has predicted that the Jay Project will result in the direct mortality of between 7,100 and 23,400 fish (PR#124 p9-55 and 9-173). Dominion estimates there are between 197,422 to 828,153 fish in the lake. During its fish-out, Dominion will remove approximately 3.6% of the fish in Lac du Sauvage (PR#124 p9-173). Modelling conducted in response to a Review Board information request indicated that this population loss may change the population less than 1% ten years after the fish-out (PR#448 MVEIRB-IR2-15). Based on uncertainties inherent in and assumptions used in this supplemental modelling, DFO recommended in its technical report that Dominion should undertake "additional consultation with affected communities and continue to work with Fisheries and Oceans Canada regarding the development of appropriate quantification of fisheries productivity and impacts" (PR#510 p18).

Dominion hosted a series of community meetings and workshops to discuss specific fish-out concepts, the results of which were incorporated into conceptual Fish-Out and Offsetting Plans. During these meetings, communities expressed concerns regarding involvement in the fish-out, being able to consume fish on the land and in their communities, and ensuring there was little wastage of fish during the fish-out (PR#126 p9B-5).

These plans Dominion submitted describe how the fish-out will proceed and how fish mortality will be offset. The conceptual Fish-Out Plan describes how:

- effects of the fish-out will be mitigated, including how diving birds like loons will be avoided
- it will use protective fishing methods that incorporate Traditional Knowledge
- it will distribute fish for consumption to communities (PR#126 p9B11-13)

Additional methods in the conceptual Fish-Out Plan included enumerating all fish and documenting biological data, thus addressing the DKFN's concerns that all fish removed during the fish-out are proper enumerated to properly verify offsetting requirements (PR#685 p4).

5.3.3 Evidence from the developer and parties

Project effects on fish health

Dominion has indicated that the Jay Project may affect fish and fish health due to changes in water quality in Lac du Sauvage and Lac de Gras from operational activities that include: discharge of wastewater, runoff, dust and air emission deposition, and release of nitrogen compounds from blasting residues (PR#124 p9-125 to 129). The DAR predicted the Jay Project would increase the concentration of some metals, major ions and total dissolved solids in Lac du Sauvage. These increased concentrations are not expected to adversely affect fish or the plankton that forms the base of aquatic food chains, as they will remain below federal, provincial and site-specific water quality guidelines (PR#124 p9-178).

IEMA and Environment Canada (EC) asserted that, due to the potential for the Jay Project to affect fish and fish health, several amendments should be made to the Aquatic Effects Monitoring Program for the Jay Project. For example, EC recommended that the effects study area in the DAR and the proposed sampling program in the Aquatic Effects Monitoring Program be aligned with one another (PR#510 p25). IEMA suggested changes such as including non-lethal testing during large bodied fish sampling, and updating both the reference lakes and plankton sampling regimes (PR#498 p19).

Dominion indicated that revisions to the Aquatic Effects Monitoring Program required for the Jay development, including those IEMA and other parties suggested, will be reviewed through the established Wek'èezhìi Land and Water Board approval process (PR#556 p2-11 to 14). IEMA agreed that this is an acceptable approach to monitoring program revisions and will pursue recommended changes during the regulatory stage (PR#682 p14-16).

5.3.4 Review Board analysis

The Review Board accepts the evidence of both Dominion and parties that believe that the Jay Project will have impacts on fish populations due to direct mortality and habitat loss, although it is likely that these impacts will be short term and in most cases, reversible. The Review Board acknowledges that while the percentage of fish expected to be removed during the fish-out is small, it still represents the loss of thousands of fish from Lac du Sauvage. The Review Board recognizes Dominion's commitments to work with DFO and interested parties to further develop the Fish-Out and Offsetting Plans required for the Jay Project. It is apparent from DFO's closing submission that this Offsetting Plan will be mandatory, and will identify "options to offset the impacts of the Jay Project on fisheries productivity that cannot be avoided or mitigated" (PR#690 p3).

The Review Board understands that communities can benefit from the fish-out through employment opportunities, and from using the fish as food for both humans and dogs, as bait or as fertilizer (PR#126 p9B-6). The Review Board also understands that the final determination on fish transfers and fish-out methods will be made by consulting affected Aboriginal parties and DFO (PR#126 p9B-11).

The Review Board finds that the loss of several thousand fish from Lac du Sauvage represents an adverse ecological impact, although the large size of Lac du Sauvage, in combination with compensation that is required by the Fisheries authorization, mitigates the residual impact so that it is no longer significant. While people in communities will benefit from receiving fish, it is still important to avoid killing fish unnecessarily. The Review Board finds Dominion should take reasonable actions to minimize the number of fish killed during the fish-out. The fish that are killed should be handled and distributed according to Aboriginal communities' wishes. A suggestion below recommends that DFO develop fish-out protocols accordingly.

The Review Board has heard, through submissions from both the developer and parties, that further engagement is required through the regulatory phase of the Jay Project to finalize the requirements for the Aquatic Effects Monitoring program. The Review Board fully supports this ongoing engagement and believes that the WLWB's review and approval process will provide an opportunity for this further engagement.

5.3.5 Review Board conclusions

Based on the evidence provided by the developer and parties throughout the course of this EA, the Review Board is convinced that no significant adverse impacts to fish or fish health are likely as a result of the Jay Project. The residual impacts of the Jay Project on fish and fish habitat can be offset by developing a robust and effective Offsetting plan. Any changes required to the existing Aquatic Effects Monitoring Program can be reviewed and approved through the WLWB process. The Review Board supports ongoing engagement by the developer and interested parties throughout all phases of the Jay Project.

The developer has made a number of commitments (see Appendix B) to prevent and minimize adverse impacts on fish and fish habitat as a result of the Jay Project. The Review Board concludes that if these commitments are implemented, measures to prevent significant adverse effects to fish or fish habitat are not required. However, the Review Board does suggest that ecological effects of the fish-out should be minimized to the extent practicable by killing only as many fish as are necessary to meet fish-out objectives.

5.3.6 Suggestion

Suggestion

DFO should develop the Jay fish-out protocols to minimize fish mortality where it can reasonably do so, while requiring that fish removed from Lac du Sauvage are handled and distributed in a culturally appropriate manner that is consistent with the wishes of Aboriginal communities.

6 Impacts to caribou

6.1 Summary of Review Board's findings

The Review Board finds the Jay Project is likely to cause significant adverse project-specific and cumulative impacts to the Bathurst caribou herd, primarily because:

1. The Jay Project is proposed across an important caribou migration corridor at a time when the herd is in a precarious and "extremely worrisome" state (see sections 6.4.1, 6.4.2)
2. Existing cumulative impacts on the herd are already significant and additional stresses on the herd at this point matter (see section 6.4.3)
3. From a project-specific perspective, the Jay Project , in isolation, will create physical barriers to caribou movement and additional sensory disturbance (such as lights, smells, noise and dust) along an important migration corridor (see section 6.4.4)
4. No plan exists to manage the Bathurst caribou herd or its range (see section 6.4.6)
5. Caribou harvest restrictions are in place, and any activities that inhibit the ability of the Bathurst herd to recover, such as the cumulative effects of the Jay Project and other human activities on the herd's range, affects the well-being, health and culture of Aboriginal communities. This is a cause of serious public concern (see section 6.4.4)

A summary of the evidence from the developer and parties is provided in sections 6.2 and 6.3. The Review Board proposes measures in section 6.6 that are intended to mitigate these issues and to prevent potential impacts that would otherwise be significant.

6.2 Evidence from the developer

This section describes Dominion Diamond Ekati Corporation's (Dominion) submissions on how the construction, operation and closure of the Jay Project will affect the Bathurst caribou herd. The section also outlines the mitigations proposed by Dominion to avoid, minimize and offset the potential impacts.

6.2.1 Dominion's views on impacts to caribou

Throughout all phases of this environmental assessment (EA), Dominion has maintained that the Jay Project will not have significant adverse impacts to caribou. Dominion told the Review Board that it has used conservative assumptions to reduce uncertainty and improve confidence in its predictions of impacts from the Jay Project on caribou. Dominion concludes that the

cumulative effects from the Jay Project and other developments should not have a significant influence on the ability of the Bathurst caribou herd to be self-sustaining and ecologically effective (PR#132 pp12-122, 124, 130-34).[49]

In Dominion's view:

> *the weight of evidence predicts that incremental and cumulative changes to measurement indicators from the Jay Project and other developments should have no significant adverse impact on self-sustaining and ecologically effective caribou populations.* (PR#132 p12-135)

Dominion predicts that implementing mitigation, such as modifying traffic patterns and road closures, will mitigate the small, predicted impacts to migrating caribou. It will maintain connectivity for the Bathurst caribou herd, so that there are no significant adverse impacts from the Jay Project (PR#132 p12-135).

Dominion reiterates this opinion in its closing submission, stating that it "remains of the view that the weight of the scientific evidence provided in the Developer's Assessment Report (DAR) and in the responses to the adequacy review and [information requests (IRs)] illustrate clearly that there may be a small, almost immeasurable impact on caribou from the Project" (PR#699 p2-1). Dominion bases this prediction on its conservative modelling approach. This conclusion is reached even though Dominion excluded consideration of the beneficial effects of its proposed enhanced mitigation (PR#699 p2-1).

Please see section 6.4.3 and 6.4.4 for the Review Board's reasons why it does not accept these arguments and finds that the Jay Project is likely to cause significant adverse impacts to caribou.

6.2.2 Effects assessment of the Jay Project on caribou

During the public hearing on September 15, 2015, the developer stated that:

> *Dominion Diamond recognizes and understands the critical importance of the Bathurst herd to the ecosystem and the people of the North. During this process, Dominion Diamond has carefully and thoroughly examined the potential impact of the Jay Project on the Bathurst herd, incorporating both scientific and Traditional*

[49] Please see section 6.4.3 for reasons why the Review Board does not accept Dominion's chosen assessment endpoint of "self-sustaining and ecologically effective caribou populations" as an adequate basis for determining whether the Jay Project is likely to cause significant adverse impacts.

> *Knowledge in its assessment. We've incorporated measures in the Jay Project to avoid or mitigate the impact of the Project on the Bathurst herd. Based on that work, Dominion Diamond concludes that the residual effects of the Jay Project on the Bathurst herd are small and those changes would not be distinguishable from natural variation.* (PR#644 p23)

Developer's Assessment Report — Primary impacts to caribou

In the DAR (PR#132), Dominion describes ways the Jay Project could impact caribou. Dominion used scientific, local and Traditional Knowledge in its effects assessment. Dominion also relied on experiences at similar mining developments and use of environmental design features, and incorporated mitigations into the Jay Project to reduce impacts to caribou. In its assessment of the effects of the Jay Project to caribou, Dominion ranked predicted project impacts (or pathways) into three categories. The pathways are described as no linkage, secondary, or primary, and are defined below.

Pathways with no linkage are impacts that are removed by environmental design features at the mine or by mitigation. Secondary (or minor) pathways are those that could result in a measureable minor change. They would have a negligible residual impact and are not expected to contribute to the impacts from other existing, approved or reasonably foreseeable projects to cause a significant effect. A primary pathway is likely to result in environmental change that could contribute to residual impacts from the Jay Project to caribou. Dominion assessed primary pathways in detail in the caribou section of the Developer's Assessment Report. They include:

- direct loss and fragmentation of habitat from the Jay Project footprint. This causes changes in caribou abundance and distribution
- sensory disturbance (lights, smells, noise, dust, and viewscape) and barriers to movement that cause changes to caribou distribution and behaviour, and changes to energetics and reproduction
- increased traffic on the Misery road and Jay road and the above-ground powerline along them, which may create barriers to caribou movement, change migration routes and reduce population connectivity (PR#132 p 12-44, 12-63, Table 12.3-1)

In its effects assessment, Dominion identifies uncertainties in predictions used in its residual effects analysis, and in its assessment of environmental significance. Uncertainties in the effects assessment relate to:

- future changes unrelated to the Project (uncertainties about future developments and about climate change)
- modelling inputs (uncertainties about the zone of influence)
- understanding of Jay Project impacts on complex ecosystems

- knowledge of the effectiveness of mitigation to avoid or minimize impacts (PR#132 p12-118)

Dominion considers incremental impacts to caribou not significant

During all phases of the EA, Dominion maintained that that the Jay Project will not have significant adverse impacts to caribou. In its DAR, Dominion states that the "incremental decrease in fecundity from the [Jay] Project and the Lynx and Gahcho Kué projects relative to the Base Case was predicted to be 0.3% lower fecundity" (PR#132 p12-115).

In its responses to technical reports, Dominion stated that in its view, there are no significant adverse impacts from the Jay Project to caribou after proposed mitigation is implemented. In response to technical report recommendations from the Independent Environmental Monitoring Agency (IEMA) and Aboriginal groups for offsetting to mitigate cumulative effects, Dominion's view (before the hearings) was that effective mitigation through avoidance, minimization and reclamation eliminates the need for offsetting. Therefore, no offsetting mitigation was considered necessary (PR#556 p2-8, PR#557 p2-4, PR#558 p2-5, PR#561 p2-6).[50]

During the public hearing on September 15, 2015, Dominion acknowledged that the Jay Project would have an impact on caribou. Using what it describes as a "very conservative assessment" of the effects on the caribou population, Dominion's position during the final public hearing remained that, based on modelling and without the implementation of mitigation, the "decline that is accounted for by the Jay Project is approximately 0.3% per year" (PR#644 p78).

This conclusion did not account for the beneficial effect of the mitigations described in the Caribou Road Mitigation Plan, to which Dominion has committed to further reduce impacts to caribou (PR#644 p93, 117, PR#673 p8). In its closing submission, Dominion restated that that the Jay Project will not cause significant adverse impacts to caribou (PR#699 p2-1). In Dominion's view, once the additional mitigation actions described in the Caribou Road Mitigation Plan are applied, the residual effects of the Jay Project are expected to contribute little to cumulative effects on barren-ground caribou energy loss, calf production and survival.

The Review Board rejects this argument for reasons described in section 6.4.3 and 6.4.4 below.

[50] Dominion changed its position during the hearings. Please see section 6.4.5 for discussion of Dominion's final position.

Dominion commits to caribou mitigation plans with specific mitigations

In its closing submission, Dominion states that it recognizes the significance of caribou to the culture, traditional land use and economy in communities affected by the Jay Project. Dominion commits to working with the Government of the Northwest Territories (GNWT) and Aboriginal communities to support the management and protection of the Bathurst caribou herd (PR#699 p2-1). In addition, Dominion has committed to implement programs and plans with specific mitigation actions to compensate for residual impacts from the Jay Project on the Bathurst caribou herd and on the ability of communities to harvest caribou (PR#699 p2-1).

Dominion cites examples of specific actions it will take to reduce impacts on caribou from the Jay Project in its closing submission as follows (PR#699 p2-1 – 2-2):

- Caribou Road Mitigation Plan (PR#518): Enhanced mitigation to minimize barrier effects from the Jay and Misery road (and other Ekati roads) on caribou movement and migration, and limit sensory disturbance to caribou behaviour
- Caribou Mitigation Plan- Compensatory Mitigation (PR#673 p8-15): Improved mitigation through research, direct offsetting and adaptive management, including acceleration of progressive reclamation at the Long Lake Containment Facility (LLCF) and waste rock storage areas

Dominion will also provide financial support for:

- communities for monitoring strategies and plans including Traditional Knowledge-based research
- the installation of 50 geo-fenced collars to provide Ekati-specific information on caribou movement
- studies to determine drivers for the magnitude and spatial extent of the zone, with the goal of reducing them
- studies to identify the key factors that caused the Bathurst caribou herd to decline
- a pilot study into the effectiveness of an alternative dust suppressant to mitigate dusting and, if successful, to apply this suppressant mitigation on all Ekati roads to offset the Jay Project

Both the Caribou Road Mitigation Plan and the Caribou Mitigation Plan contain provisions for adaptive management, so that the effectiveness of mitigation actions can be improved based on monitoring caribou behaviour. Dominion recognizes that successful mitigation practices developed at Ekati can be implemented at other mines to reduce impacts to caribou at the range scale (PR#699 p2-2).

Use of Traditional Knowledge in assessing impacts to caribou

During the public hearing on September 15, 2015, Dominion explained that it used both scientific information and Traditional Knowledge to assess the potential impacts from the Jay

Project on the Bathurst caribou herd. Dominion states it used Traditional Knowledge to inform the assessment in:

- selecting valued components and assessment endpoints
- identifying effects, pathways and mitigation
- identifying the importance of the Narrows and Lac du Sauvage esker to caribou migratory movements
- selecting the Jay road route
- the knowledge that caribou populations increase and decrease through time
- the ability of fire and climate change to influence caribou abundance and distribution; and
- the information that caribou are arriving on the wintering grounds later in the year (PR#644 p26-27).

Dominion stated that it will continue to engage with Aboriginal communities on caribou and wildlife mitigation and monitoring and will provide opportunities to integrate Traditional Knowledge into all phases of the Jay Project (PR#644 p27).

6.2.3 Alternative locations for the Jay road and waste rock storage area

In its DAR, Dominion assessed alternative means of carrying out various components of the Jay Project. Dominion considered alternatives for these Jay Project components because these components are located in the caribou's key migration route, and their respective footprints create a direct barrier to caribou movement (PR#93 p2-40 to 2-52). In addition, Dominion focused on alternatives to these Jay Project components after consulting with Aboriginal communities as an effort to incorporate Traditional Knowledge into Jay Project design. The following sections focus on Dominion's assessment of alternative locations for the Jay road and the waste rock storage area.

Alternatives assessment for Jay road

Dominion considered three alternatives for the Jay access road, which incorporates the pipelines and powerline into the infrastructure corridor. There were four categories of evaluation criteria: technical feasibility, economic viability, environmental considerations, and social and economic considerations. The road alternatives were then scored from one to three for each criteria, resulting in a most preferred and least preferred alternative (PR#93 p2-40 to 2-44).

Potential impacts to caribou from the three alternative road locations and esker crossings was a key consideration for the environmental criterion. Dominion notes that the caribou migration route runs northwest from the Narrows and that the three road options must run in an east-west direction to connect the Jay pit with the Misery road. Therefore, all three alternatives for the Jay road will cross the main caribou migration path. Dominion predicts that all three will have similar effects on caribou migration (PR#93 p2-44).

Figure 6-1 below shows the three alternatives Dominion evaluated for the Jay road and esker crossing. The direction of caribou movement and migration at the Narrows is northwest in the spring and southeast in the fall.

The results of the alternatives assessment indicate that the most southern route, alternative three, is the most viable route for the Jay road. It achieved the best score and is preferred because it:

- has the shallowest maximum grade
- requires the shortest section of new road, the least amount of fill, and the shortest pipeline alignment
- has the shortest esker crossing, and the esker cut results in less of a barrier to caribou than the large fills required for alternatives one and two
- requires one water crossing
- includes a cut through the esker rather than fill, involves less of a visual impact and allows for easier closure than the other alternatives (PR#93 p2-46)

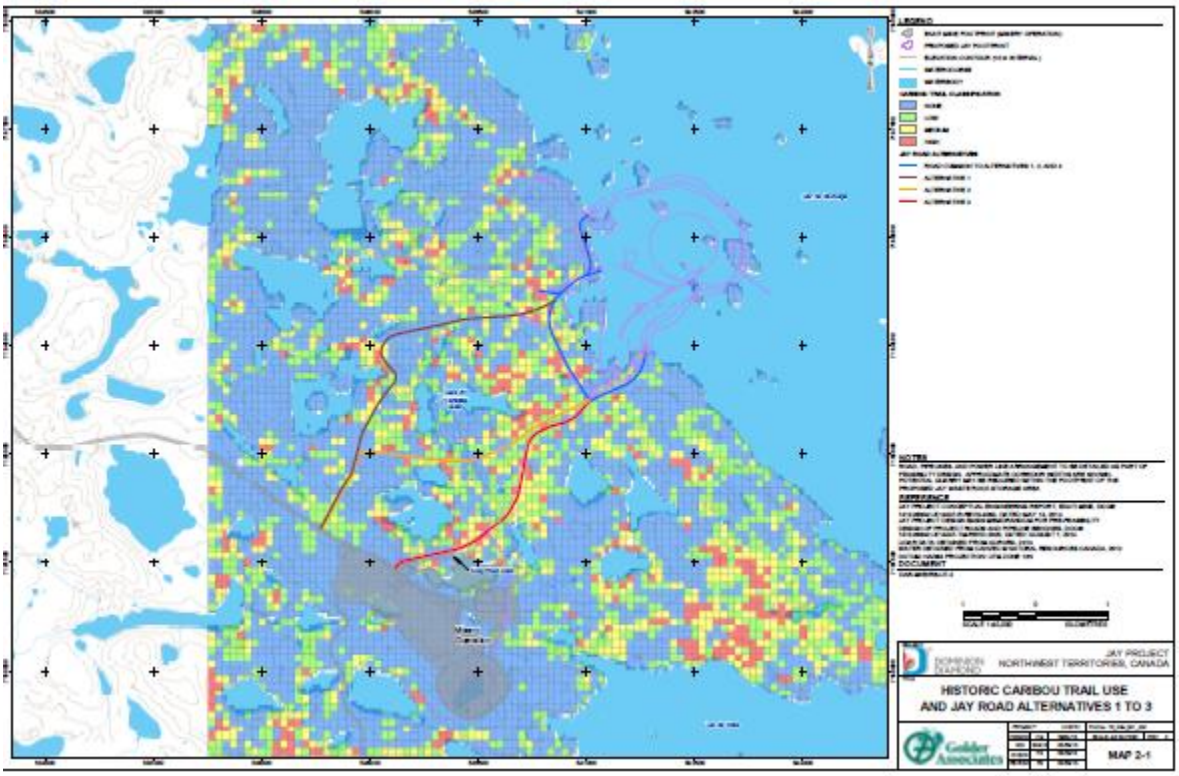

Figure 6-1: Historic caribou trail use and Jay road alternatives one to three (Source PR#371 p7)
The coloured cells in this figure indicate historic caribou trail classification in the Narrows area for the three road alternatives. Each cell represents an area of 100m x 100 m. Red represents high, yellow represents medium and green represents the low historic caribou trail classification. The red, high use area cells are classified as containing greater than 15 trails or had trails that covered more than 50% of the cell area (PR#305 pDAR-MVEIRB-IR-92 and PR#371 p7-8).

In addition, Dominion states that the design of the Jay road and crossing of the esker for alternative three was obtained during community consultation. The alternative three routing was therefore used for the more detailed effects assessment of the Jay road (PR#93 p2-45).

During the technical session in April 2015, parties asked Dominion to consider a fourth Jay road route option that may have less impact on caribou movement and migration (PR#353 p144-147). Dominion conducted an alternatives assessment of this option as a technical session undertaking and submitted its findings to the Review Board. In its alternatives assessment, Dominion found that alternative three still had the highest score for the Jay road, pipeline and powerline. While alternative four has lesser caribou trail density, other environmental considerations affect the area crossed by alternative four, such as a greater length of safety berms and greater length of the esker crossing and esker disturbance (see Figure 6-2 below).

Due to the increased need for safety berms, less of alternative four could be constructed as caribou crossing relative to alternative three. [51]

[51] A berm is a raised barrier, in this case along the side of the road.

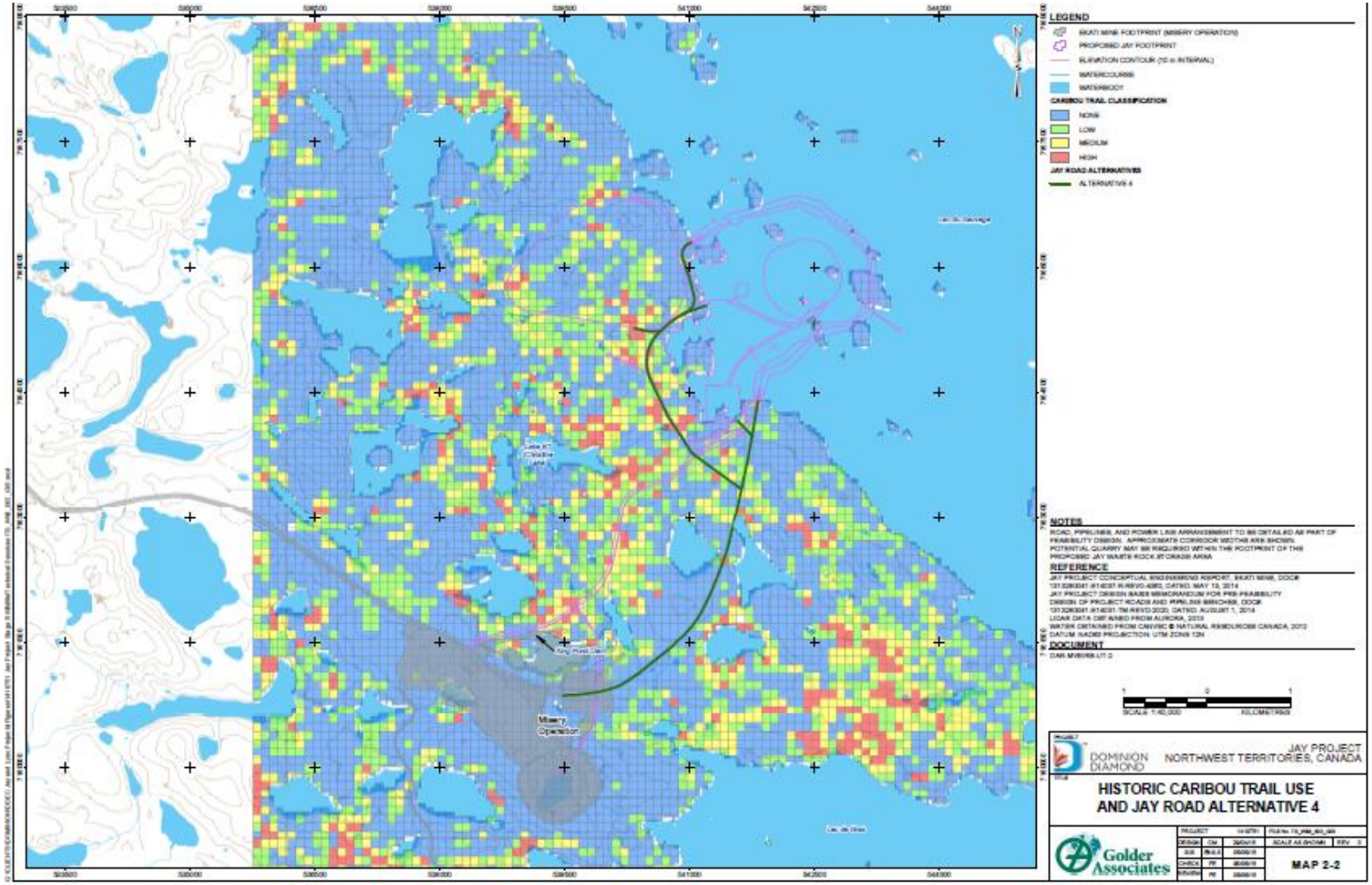

Figure 6-2: Historic caribou trail use and Jay road alternative four (Source PR#371 p8)

Dominion observes that another drawback to alternative four is the steep grade that large payload trucks may not be able to climb. Alternative three therefore remains the preferred routing for the Jay road and esker crossing location (PR#371 pDAR-MVEIRBB-UT-01). Dominion reiterated this, in response to IEMA's technical report, stating that the selected alternative three is consistent with Dominion's efforts to minimize barrier impacts to caribou movement and migration (PR#556 p2-3). The selected alternative three for the Jay road is shown below in Figure 6-3.

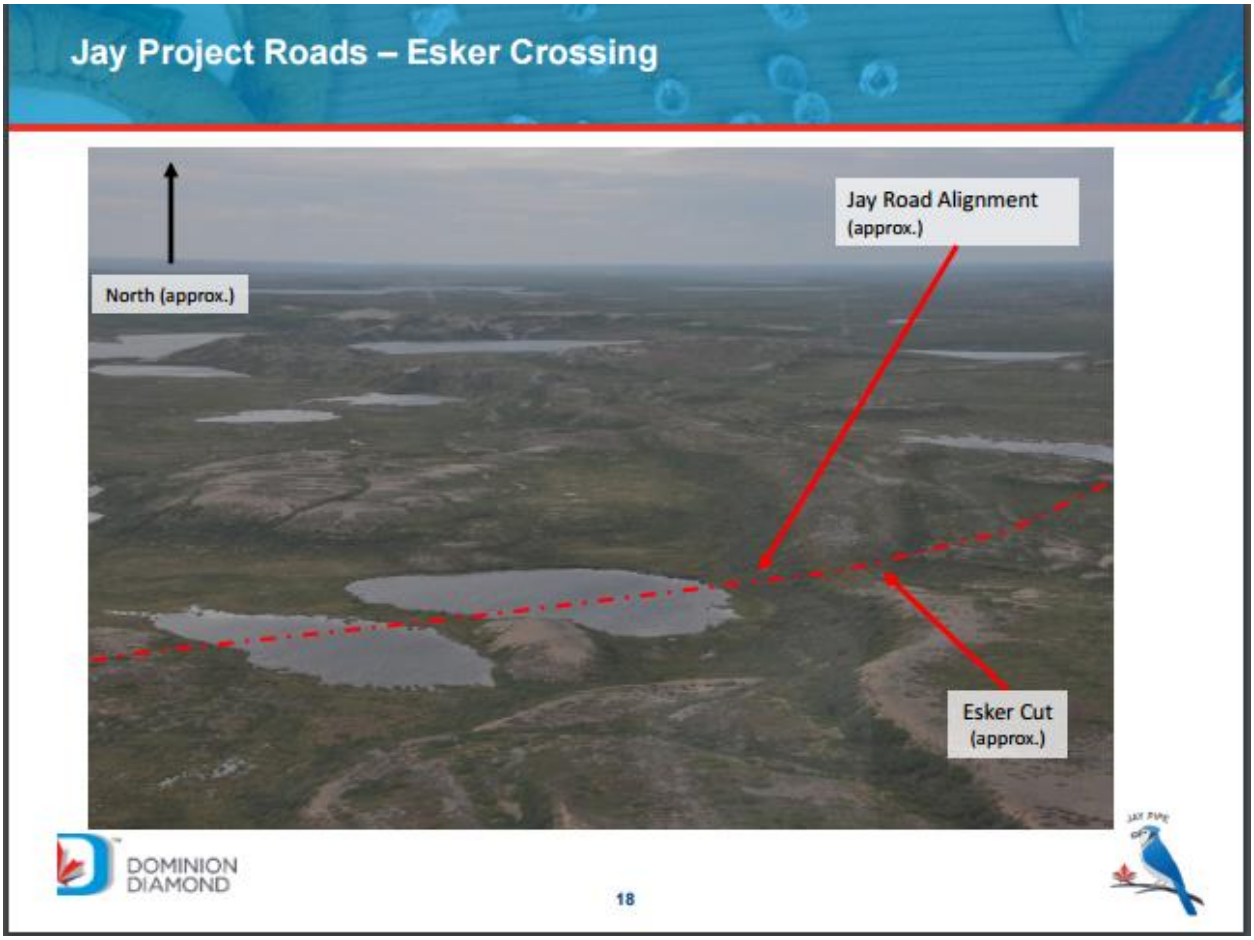

Figure 6-3. Jay road alternative three at esker crossing (Source PR#236 p18)

Alternatives assessment for waste rock storage area

Waste rock will be transported in haul trucks from the Jay pit to a storage area on land adjacent to Lac du Sauvage. The waste rock storage area is designed to accommodate 120,000,000 m^3 of waste rock and overburden. In its DAR, Dominion considered three alternate locations for the storage of waste rock from the Jay pit. Dominion estimates that 25% of the waste rock storage area volume will be potentially acid-generating rock (metasedimentary) and 5% will be overburden. The waste rock storage area is designed to include components that manage acid-

generating waste rock. The design also includes wildlife ramps to provide multiple access and exit areas for wildlife during mine operations and after mine closure (PR#93 p2-45).

Design criteria for the three waste rock storage area alternatives included:

- a balance between the waste rock footprint covering the land and height of the waste rock pile above ground elevation
- setbacks from waterbodies to allow for attenuation of seepage (drainage) from the waste rock through tundra soils, and to allow for contingency construction of seepage collection structures downstream from the toe if required
- a setback from the esker (PR#93 p2-45)

The three alternatives were evaluated in terms of technical feasibility, economic viability, and environmental, social, and economic considerations to determine the preferred alternative. The waste rock storage area alternatives are shown below in Figure 6-4 and Figure 6-5.

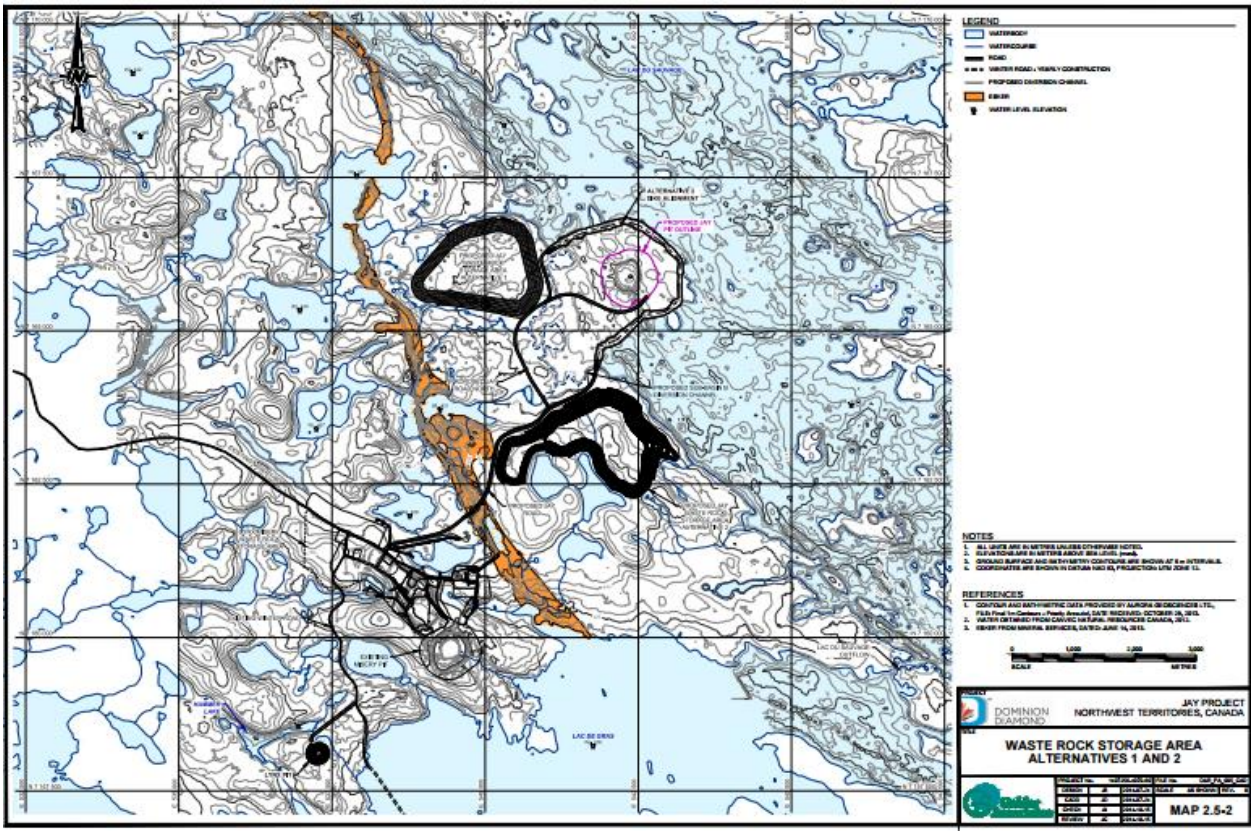

Figure 6-4: Waste rock storage area alternatives one and two (Source PR#93 p2-48)

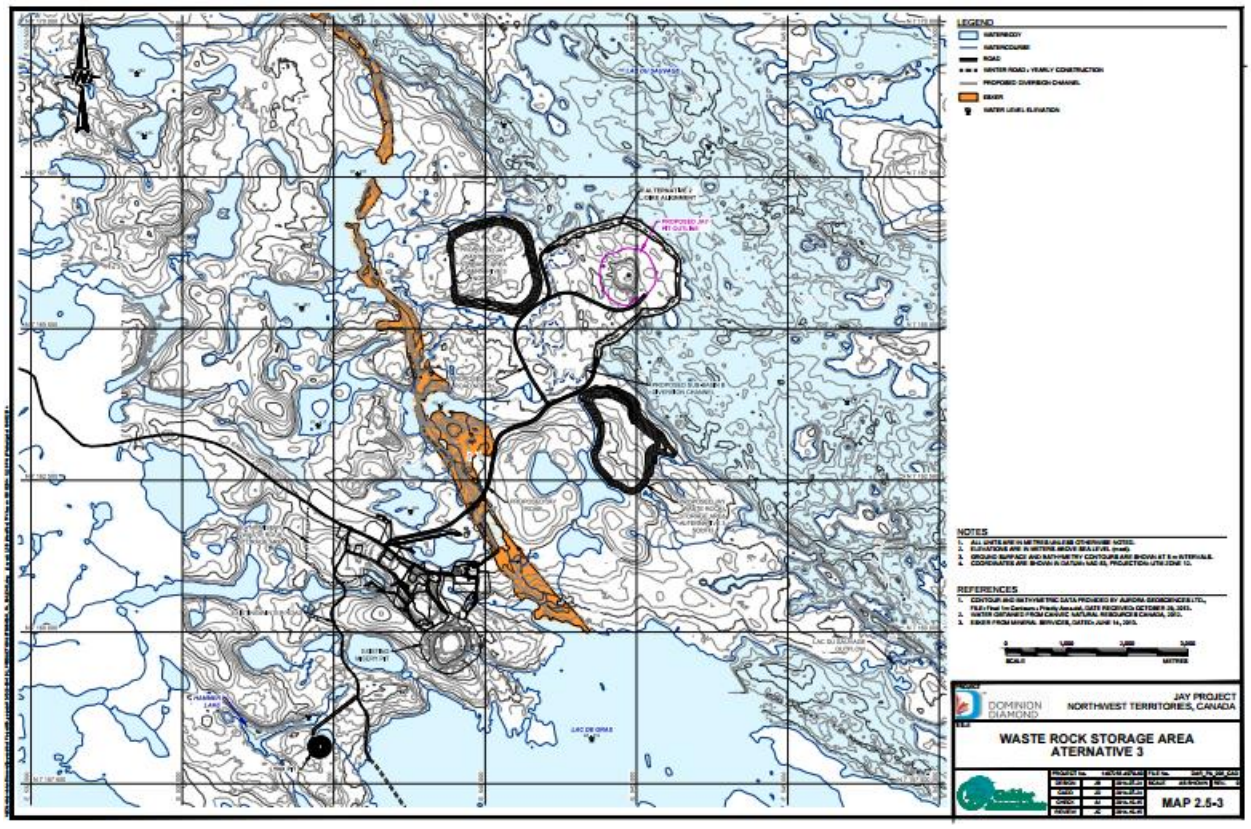

Figure 6-5: Waste rock storage area alternative three (Source PR#93 p2-50)

Dominion considered potential impacts of the location of waste rock storage on caribou migration. Rock storage areas that created greater barriers to caribou movement were considered less desirable. The esker has been identified as a caribou migration corridor and is important to Aboriginal communities as a caribou harvesting area. Therefore, Dominion evaluated proximity of the waste rock storage area to the esker in its alternatives assessment. Storing waste rock further from the esker was evaluated as desirable in this assessment because it results in less of a barrier to caribou movement (PR#93 p2-51).
Waste rock storage area alternative one had the highest score in the evaluation and is the preferred option because:

- it would have the simplest seepage water management contingency if required
- the hauling distance is the same as alternative two and less than alternative three
- the footprint has lower-quality wildlife habitat than the footprint of alternative two
- it does not require water diversions
- it is 13 m lower in height than alternative two (PR#93 p2-53)

The results of Dominion's alternatives assessment indicate that alternative one (Figure 6-4) in the northern most location west of the Jay pit is the most viable option for the Jay Project. The

waste rock storage area at alternative one has a maximum height of 79 m and a footprint of 2.5 km^2 (250 ha). It is set back 200 m from the esker, 100 m from Lac du Sauvage and 30 m from all other water bodies (PR#93 p2-46 to 2-47).

6.2.4 Barriers to movement in caribou migration corridor

Both local and Traditional Knowledge identify the Narrows as a critical migration route (PR#132 p12-20-21). From a project-specific perspective, the Jay Project will create physical barriers to caribou movement and additional sensory disturbance along an important migration corridor.[52]

In its DAR, Dominion states that the total footprint for the Jay Project covers 1,132 ha (PR#132 p12-116). At the Narrows corridor location, the Jay road is the only road that crosses the Lac du Sauvage esker between the Jay Pit and the Misery haul road. The Jay road is approximately 5.1 km long and the Misery road is 29 km long (PR#132 p3-45). It is estimated that 4 ha of the esker will be disturbed by the Jay Project (PR#132 p12-83) and the total length of the esker it cuts is approximately 80 m (PR#699 p2-3).

Dominion reviewed effects monitoring and research studies to determine caribou behaviour at roads and the permeability of roads with traffic to caribou. Dominion used studies to determine how caribou react to roads and traffic at Ekati. They included aerial surveys, behavioral observations studies, a motion-triggered camera monitoring program, and research from other Northwest Territories (NWT) diamond mines (PR#132 p12-8 to 12-14). In the effects assessment, ore truck traffic rates along the Jay and Misery roads were expected to be seven road trains (one tuck pulling three trailers), completing eight trips per day (56 trips per day). If the trucks are assumed to be evenly spaced, this represents an average of 12 minutes between trips (PR#132 p12-103, PR#94 p3-47). When non-ore haul vehicles from the Jay Project are added, this period is reduced to an average of four to five minutes between vehicles (PR#421 p3, PR#353 p91).

In its closing submission, Dominion re-states that the location of the Jay road and esker crossing is based on extensive engagement with individuals from Aboriginal communities. This engagement included on-the-ground site visits to identify locations for the Jay road that have the least adverse impacts to caribou. Dominion states that the selected location for the Jay road and esker crossing minimizes barrier effects to caribou movement and migration and is a key element of the Caribou Road Mitigation Plan (PR#699 p2-3).

Dominion recognizes that the proposed waste rock storage area footprint will remove approximately 260 ha of habitat from the caribou migration corridor at the Narrows. As part of its Caribou Mitigation Plan, Dominion will outline a strategy for accelerated progressive

[52] See section 6.4.4 for details.

reclamation at the Ekati mine that includes access ramps on the waste rock storage area for caribou. Dominion commits to engaging Elders and members from Aboriginal communities on the number, location and design of the caribou access ramps. Caribou egress ramps on the Jay waste rock storage area will be constructed progressively as the structure is built, rather than waiting until final reclamation (PR#699 p2-7).

See section 6.3.3 for more discussion on barriers to caribou movements from parties, and section 6.4.4 for the reasons for the Review Board's finding that the combined impacts of barriers to movement by physical structures and the impacts arising from sensory disturbance to caribou from the Jay Project are likely to be significant.

6.2.5 Caribou energetics model

In its effects assessment, Dominion used an energetics model to quantify the energy cost of a caribou encountering a sensory disturbance in the zone of influence around the mine. Examples of sensory disturbances at a mine include visual stimuli (trucks moving, humans walking) and noise (blasting or a plane flying overhead). Inputs for the model were taken from data collected at the Ekati mine from 2001 to 2008. Dominion states that the model used ecologically conservative assumptions by assuming that a behaviour response is running away or trotting. Female caribou were used to estimate the change in caribou energetics and the subsequent effects on fecundity (parturition rates, which measure successful pregnancies) (PR#132 p12-102).

In the analysis, Dominion conservatively assumed that caribou would not cross the Misery or Jay roads because of this traffic, but would be deflected by the roads and pit and not cross the Narrows. In the model, caribou were assumed to be deflected around the Ekati mine, which would increase the energetic cost. Dominion said this was a conservative assumption because monitoring data acquired from the Misery haul road illustrates that traffic along the haul road is not a complete barrier to caribou movement (PR#132 p12-103). The model also considered insect harassment to caribou, time spent within the zone of influence and encounter rates (PR#132 p12-106-107).

Dominion describes levels of uncertainty in its modelling predictions in section 12.5 of the DAR. Dominion concludes that the assumptions in the models and analyses were designed to overestimate effects from disturbance by creating worst-case scenarios. This provides Dominion with confidence that it has not underestimated impacts of the incremental and cumulative effects from the Jay Project and other developments on caribou (PR#132 p12-124).

A meeting of caribou modelling technical experts was held in January 2015 to discuss protein-energy models for caribou. A caribou expert and independent facilitator, Dr. Don Russell, chaired the meeting and included caribou modelling experts from Dominion and its consultants, the Review Board staff, GNWT and IEMA (PR#261). Dominion described its modelling inputs in detail with emphases on caribou behavior, energy balance and calf production (PR#262).

6.2.6 Jay Project is on a key caribou migration route

Dominion submitted information that confirms the high use of the Jay Project area and the Jay access road as a movement corridor for the Bathurst caribou. Dominion's response to information request DAR-MVEIRB-IR-92 from the Review Board integrates mapped historical caribou trail data and Traditional Knowledge-based paths from the DAR, along with radio-collared caribou movement information from 1996-2013. Dominion conducted fieldwork in 2014 that confirmed the density of caribou trails in the Jay Project. Map 92-1 in Dominion's response to the information request (see Figure 6-6 below) shows this integrated trail information and confirms the importance of the area as a caribou movement corridor. In addition, Figure 6-1 and Figure 6-2 in section 6.2.3 of this Report are from Dominion's response to questioning during the technical session, and confirm the high historic caribou trail use of the Narrows area at the proposed Jay road.

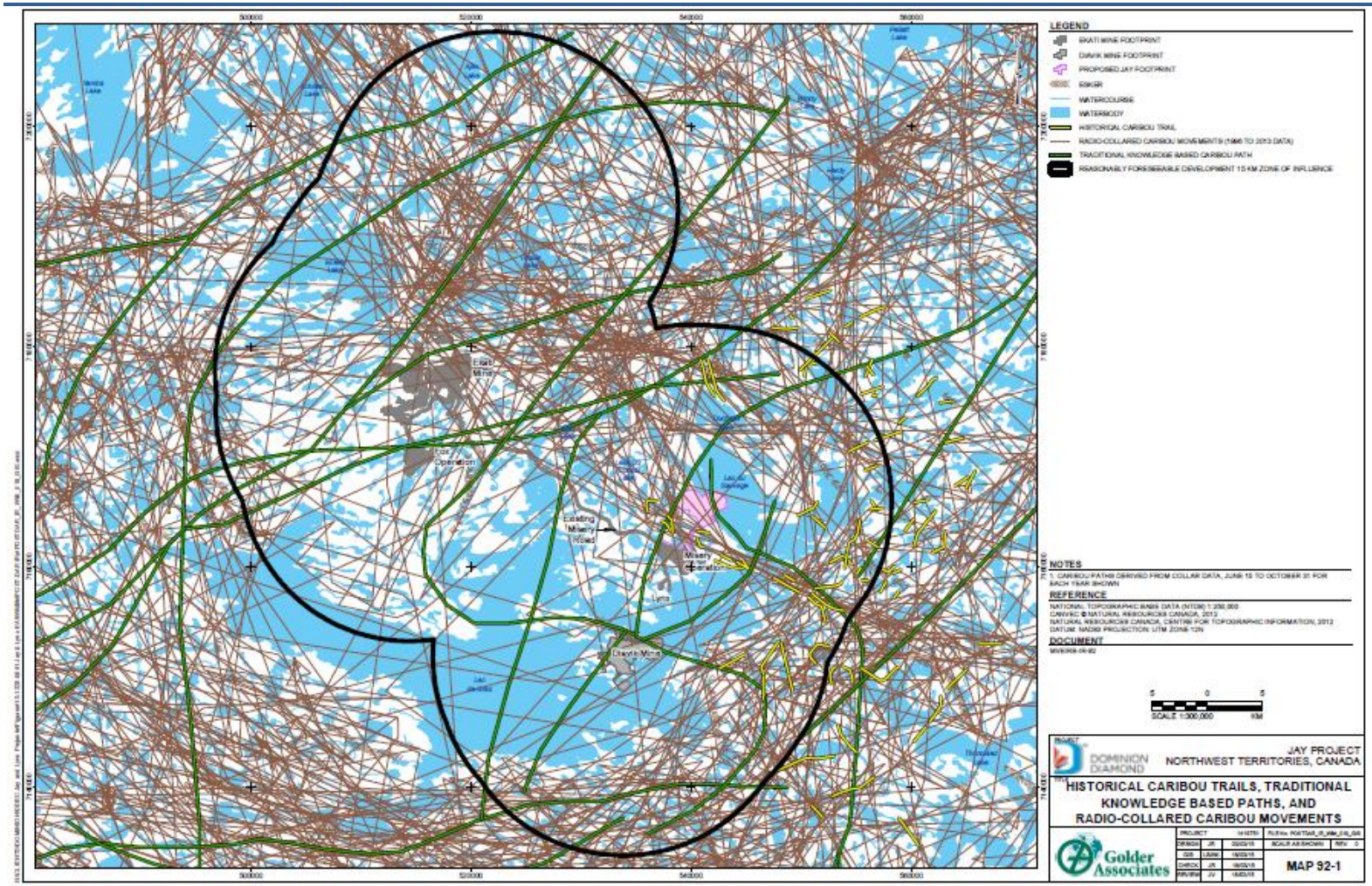

Figure 6-6: Historical caribou trails, Traditional Knowledge-based paths and radio-collared caribou movements (Source PR#305 pDAR-MVEIRB-IR-92)

6.3 Evidence from parties

This section describes the conclusions from parties, along with the evidence to support them. The section also contains recommended mitigations from parties based on their views of the significance of adverse impacts from the Jay Project on caribou.

6.3.1 State of the Bathurst herd is worrisome

On September 8, 2015, the GNWT updated the Review Board on the 2015 calving ground survey of the Bathurst caribou herd. In the correspondence, the GNWT states that the results from the June 2015 photo survey are:

> *extremely worrisome as the estimates show that not only is there a continued decline in the population since 2012 calving ground survey, there has been a further 50% decline in breeding females since the 2012 survey.* (PR#625 p2)

The GNWT correspondence identifies a decline from the 2012 estimated total population of 35,000 caribou to between 16,000 – 22,000 animals total (PR#625 p2). In addition, the number of animals in the herd continues to decline even without the added pressure of harvesting (due to a hunting ban) and with incentives in place to encourage the harvest predators (PR#625 p2).

The Yellowknives Dene First Nation (YKDFN) closing submission quotes the GNWT Minister of the Department of Environment and Natural Resources (GNWT ENR) about the Bathurst herd, who said, "When a herd goes from 460,000 to 15,000, to me and I think to everyone else, that's an emergency" (PR#692 p24).

6.3.2 Existing cumulative impacts are significant

IEMA asserted that there is an existing significant adverse impact on the Bathurst caribou herd (PR#498, p2). In its technical report, IEMA refers to Dominion's Adequacy Review response (PR#266) and the DAR (PR#132), which conclude that the current low abundance of the Bathurst herd has been caused by a combination of a largely cyclic decline, intensified by human harvest and human development on the range of the Bathurst herd. IEMA quotes the Dominion adequacy response, which states that human development in the herd's range may have had a role in the decline through disturbance, increased energy costs and reductions in available habitat, contributing to declining pregnancy and reduced calf survival (PR#266 p10-24).

During the public hearing on September 15 2015, IEMA agreed with Dominion that the impacts to caribou from the Jay Project would be adverse and small. IEMA explained that, since there is an already existing significant negative cumulative impact on caribou, if you add even a small negative impact from Jay to it, you make the cumulative effect worse. This results in a significant adverse cumulative impact from the Jay Project to caribou when added to existing developments on the Bathurst caribou herd's range (PR#644 p158).

Zone of influence to caribou expanded with Jay Project

In its technical report, IEMA observes that the Jay Project will expand the existing zone of influence to caribou from the Ekati and Diavik mines. The Jay road in particular will interfere with the ability of the herd to use the esker between the Misery and Jay pipes to move and migrate. This impact to caribou movement will slightly worsen the existing significant adverse impact, which will result in a significant cumulative adverse impact. This is particularly the case for a caribou herd in a vulnerable state that is less resistant to impacts (PR#498 p4).

The Zone of Influence on Caribou Technical Task Group has prepared a document titled *Draft Guidance for Monitoring the Zone of Influence (ZOI) of Anthropogenic Disturbance on Barren-Ground Caribou*. This guidance document defines the zone of influence as follows:

> *Both academic studies and industry monitoring programs on the central barrens of the NWT have identified areas of lower caribou abundance within a certain distance of established diamond mines than would be expected given available habitat. This effect is termed the Zone of Influence or ZOI. Predictions on the size of this area can help to quantify the costs to caribou of avoiding these areas or, if they occur within them, to characterize disturbance impacts.* (PR#466 p3)

IEMA describes the mechanisms through which the Jay Project affects caribou through the creation of a zone of influence. These include:

- dust from vehicles and blasting to the air and vegetation caribou consume
- visual disturbances from mine activities, vehicles and lights
- disturbance and displacement impacts from increased intensity of traffic on Jay and Misery roads
- energy losses to caribou, particularly for caribou cows (PR#498 p3)

In its technical report, the GNWT states, "the extent to which the herd can sustain even minimal additional stress in its present vulnerable state is not clear" (PR#515 p34). The GNWT further states in its technical report:

> *The potential for delayed recovery or continued decline of the Bathurst herd as a result of the cumulative effects of all current and proposed development on the Bathurst range cannot be dismissed. If the population is near a vital threshold, which at present is unknown, even small scale adverse impacts could tip the scales. As such GNWT ENR believe that actions that pose risk of further decline and delayed recovery need to be very carefully considered and that a precautionary approach is warranted*. (PR#515 p34)

In its response to an information request on cumulative impacts to caribou, Dominion submitted a map showing the zone of influence for caribou in the Ekati area in a

reasonably foreseeable developments scenario. (See Figure 6-7 below). The reasonable foreseeable developments scenario includes post-closure of the Diavik mine (including the A21 pipe) and Ekati, where Ekati includes the Sable Project and the Jay Project. For the purposes of the analysis, each zone of influence was 15 km (PR#309 p3).

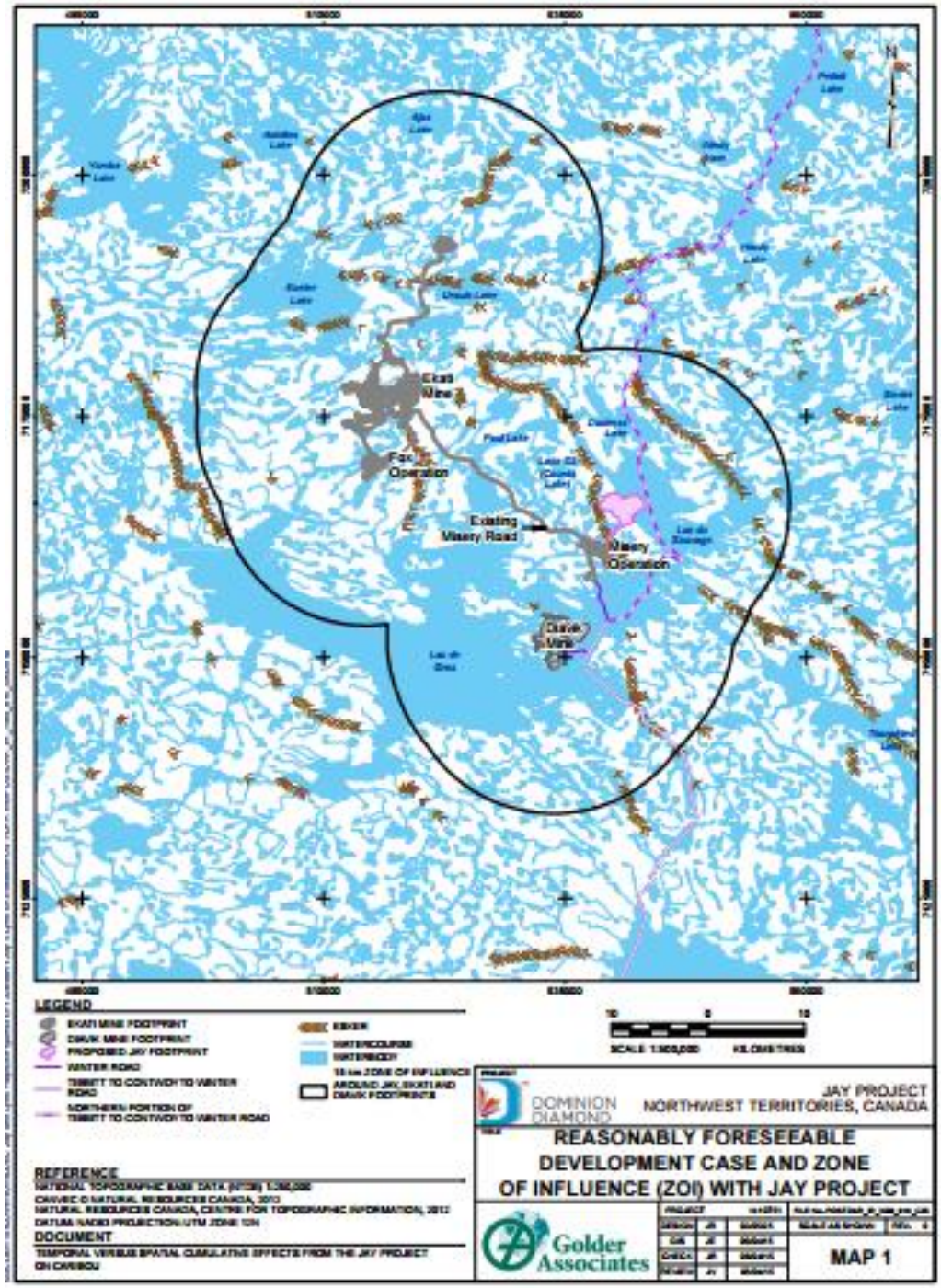

Figure 6-7. Zone of influence for Jay Project with reasonably foreseeable development case (Source PR#309 p6)

Cumulative impacts to caribou are already significant and Jay Project causes additional impacts

In the context of the Jay Project, cumulative effects refer to past, present and reasonably foreseeable human activities that may have an adverse cumulative impact on the Bathurst caribou herd, including:

- other industrial developments in the range, such as mines, roads, and exploration activities
- hunting including traditional harvesting, hunting by non-Aboriginal residents and outfitters
- climate change related trends affecting insects, vegetation, icing of snow, fire frequency and severity, travel on ice and ecological components

In its technical report, GNWT recognizes that part of the difficulty in determining significant adverse impacts to caribou from the Jay Project is the lack of quantifiable thresholds with which to measure and evaluate the limits of acceptable change. The GNWT advises that one of the objectives of the Bathurst Range Planning process it is leading is to develop thresholds for acceptable levels of change on the range of the Bathurst herd. This task is currently ongoing. The GNWT states in its technical report that Dominion's effects assessment approach for impacts to caribou is generally sound in the absence of thresholds. However, the GNWT does not believe that all of Dominion's conclusions necessarily follow from the analysis, particularly with respect to cumulative effects (PR#515 p34).

In its closing submission, the GNWT recognizes cumulative effects play a role in determining whether a development is likely to have a significant adverse impact on caribou. The GNWT states that in recognition of the precarious state of the herd, uncertainty regarding the relative magnitude of various stressors on the herd, and lack of defined thresholds of acceptable change against which to measure impacts, a measure to prevent significant adverse cumulative impacts to the Bathurst herd is required (PR#693 p10).

In its technical report, Lutsel K'e Dene First Nation (LKDFN) states that the welfare of caribou is of paramount importance to the community and its people. The LKDFN finds when the impacts from the Jay Project are considered cumulatively with impacts from other developments and pressures on the herd such as harvesting and climate change, the result is a significant negative impact on the caribou population (PR#521 p4).

In its technical report, the YKDFN provides evidence and rationale for its conclusion that cumulative impacts from mining in the Lac de Gras and Lac du Sauvage area has already had a significant adverse impact on caribou. The Jay pit and access road lie at a historic caribou migration route. Yellowknives Dene Elders have previously indicated that disrupting this migration corridor would disrupt migratory route selection. Traditional Knowledge strongly supports this conclusion (PR#520 p6).

It its closing submission, the YKDFN reiterates that Traditional Knowledge strongly supports the conclusion that mining development at Ekati, and nearby developments have already had a significant impact on caribou populations. Therefore, the YKDFN concludes that intensified development of the Lac de Gras and Lac du Sauvage area from the Jay Project will have a negative impact on caribou numbers and behaviour (PR#692 p4).

In its closing submission, the GNWT restates its position; while the incremental impact of the proposed Jay Project on the Bathurst caribou herd will not be ecologically significant, its cumulative effects should be considered significant (PR#693 p13, PR#644 p196). The GNWT acknowledges that cumulative effects need to be considered when determining whether a project is likely to have significant adverse impacts. The GNWT concludes that:

> *In recognition of the precarious state of the herd, uncertainty regarding the relative magnitude of various stressors on the herd, and lack of defined thresholds of acceptable change against which to measure impacts, the GNWT is recommending one measure to prevent significant adverse cumulative impacts to the Bathurst herd*. (PR#693 p10)

The GNWT proposes the following measure to prevent significant cumulative impacts to caribou:

> *To reduce significant adverse cumulative impacts to Bathurst caribou related to the Jay Project, DDEC [Dominion]will develop a wildlife management and monitoring plan for approval by the Minister of ENR that will include, in addition to content and reporting requirements outlined in GNWT's Draft WWHPP* [Wildlife Habitat Protection Plan] *and WEMP* [Wildlife Effects Monitoring Plan] *Guidelines and existing approaches in the conceptual WEMP, the following additional elements:*
>
> - *Enhanced mitigation or offsetting actions identified in collaboration with the parties that will be applied throughout the Ekati mine or elsewhere, in addition to those proposed for Jay, that are intended to produce overall net benefits to the Bathurst herd.*
> - *Further details on the objectives for funds committed in Undertaking #6 including specific research questions determined in collaboration with parties, the process for administering any committed funds to the particular questions, how the information will be used by the DDEC [Dominion] or management bodies to assess or mitigate adverse impacts to the Bathurst herd, and how the results of the research or monitoring will be shared and reported.*
> - *A method for monitoring approaching caribou at a distance of approximately 2–4km as the means to trigger road closures, and to adapt the Caribou Road Mitigation Plan (CRMP) to ensure substantial breaks (hours) in traffic through road closures and/or convoying and highly disturbing activities (e.g. blasting) to allow approaching caribou to pass.* (PR#693 p10-11)

IEMA finds that Dominion's modelling on impacts from the zone of influence on caribou suggest there are reasonable grounds to expect a cumulative adverse impact. IEMA observes that Dominion has not been able to demonstrate the absence of an effect from the Jay Project to the Bathurst herd and, since the herd is in a precarious state, it recommends that the precautionary approach is required (PR#498 p3).

Dominion is required to use the precautionary principle for the Ekati mine under the Environmental Agreement (EA) section 1.2(d). In the EA, precautionary principle means "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation" (PR#411 p7). The IEMA accepts that using the precautionary approach for the Jay Project means that, since human activities cause cumulative impacts in the Bathurst range, the GNWT and Dominion should apply the precautionary principle in their responses to any additional impacts from the Jay Project (PR#498 p3).

Offsetting residual impacts from Jay as cumulative impacts management strategy

In its closing submission, the GNWT states that while Dominion's proposed offsets (PR#673 p8-15) are promising, there is no clear path for measuring the outcomes of the mitigation actions, and assessing their effectiveness may prove challenging. The GNWT recognizes the value of offsetting as a cumulative effects management strategy, and acknowledges the need to develop guidance and identify potential habitat or population offsetting projects in future. Because this approach is new to this jurisdiction, the GNWT is unable to provide a suite of offsetting opportunities beyond Ekati, or suggest an approach to measure effectiveness. The GNWT is committed to working with Dominion to develop an approach to measure or quantify the value of their proposed compensatory mitigation actions and to consider how this can be applied at Ekati (PR#693 p15).

During the October 1, 2015 meeting to discuss proposed offset options, GNWT ENR supported the Business Biodiversity Offsets Programme definition for biodiversity offsets:

> *measureable conservation outcomes of actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken*. (PR#674 p2)

The Review Board accepts this definition.

Rejection of developer's assessment endpoint

Several parties rejected Dominion's chosen assessment endpoint for impacts on caribou. This endpoint was the basis for its prediction that the Jay Project would not cause significant impacts. Dominion postulates that if the Jay Project does not reduce the Bathurst caribou herd's ability to be "self-sustaining and ecologically effective", there is no significant adverse impact (PR#132 pp12-122, 124, 130-34). The Deninu Kue First Nation (DKFN), LKDFN, IEMA and

others argued that this endpoint is inadequate and does not help the Review Board to make its decision. They argue that the Jay project could still cause significant impacts, even if it did not affect the herd's ability to be self-sustaining and ecologically effective.

In response to an information request from the Review Board, the GNWT stated:

> *GNWT ENR considers the assessment endpoint for caribou of "self-sustaining and ecologically effective caribou populations" to be operationally ambiguous, not conducive to measurement or modelling and an inappropriate departure point for evaluating impacts given the current status of caribou populations… The ambiguity of this endpoint makes the exercise of drawing a link between any of the measurement endpoints and the assessment endpoint almost entirely speculative.* (PR#304 p10)

During technical sessions, various parties discussed the flaws in Dominion's endpoint. They emphasized that the sustainable use of caribou in a traditional manner by Aboriginal people should be an endpoint (PR#353 p259-261).

In its technical report, the DKFN states that the 93% decline between 1986 and 2010, and fluctuations afterward, indicate that the Bathurst herd is not self-sustaining at present. This is not ecologically effective because there are already observed ecological impacts in other species related to the drop in caribou population (PR#537 p2-3).

At the hearing on September 15, 2015, the LKDFN told the Review Board that it did not believe that Dominion's significance test of whether the caribou herd was "self-sustaining and ecologically effective" was a sufficient assessment endpoint. It stated that the ability of Lutsel K'e to harvest caribou was an important indicator of significance (PR#644 p347). At the same hearing, the IEMA stated that other societal values, such as the ability of Aboriginal people to harvest caribou, should play an important role in determining whether the Jay Project's impacts are significant (PR#644 p51).

6.3.3 Barriers to movement and sensory disturbance from the Jay Project

In its technical report, TłĮcho Government states that impacts from the Jay Project as a barrier to caribou movements include:

- constructing the Jay road through an esker
- losing habitat in the movement corridor through construction of the waste rock storage area
- contaminating caribou forage with dust

The TłĮcho Government is concerned about the magnitude of change from the Jay Project to the existing zone of influence around Ekati because of the importance of the Jay Project area at Lac du Sauvage to caribou habitat (PR#531 p4-6).

Traditional Knowledge from the TłĮcho Elders identifies that eskers are important for caribou as trails to migrate and escape from heat and pests. According to TłĮcho Elders, caribou also use shorelines to avoid heat and pests in the summer and fall. The waste rock storage area will increase sensory disturbance during its construction and be a permanent barrier to movement. TłĮcho Elders stress that caribou will see a rocky area like the waste rock storage area and not go there. They state that the migration route will degrade further unless the proposed waste rock storage area with its egress ramps are planned using their Traditional Knowledge (PR#531 p4-6).

At the Behchoko community hearing, Elder Elizabeth Michel described how caribou avoid sensory disturbances from mining activity:

> *(T)here was abundance of caribou that roamed that area. And that whole lake used to be just full of caribou. But I went back after the mine went into operation. There are just so many lights, it was almost like a small city. So how do you expect a caribou to migrate past obstacles that's in their way? And there's so much noise pollution from blasting and also from drilling. And it was in their path. It was in the migration path.* (PR#647 p109)

In its technical report, the YKDFN notes that it has been demonstrated that caribou avoid haul roads. Roads, such as the Jay and Misery roads, act as barriers to movement. The documented existence of the zone of influence, including sensory disturbance, around the diamond mines indicates that caribou prefer to keep their distance from mining activity. In the view of the YKDFN, the Jay Project will extend this zone of influence (PR#520 p12).

During the public hearing on September 15, 2015, GNWT caribou biologist Dr. Jan Adamczewski stated *(*PR#644 p207-208):

> *I think the more recent evidence from zone of influence monitoring would suggest that, if there are going to be adverse effects from mining, from disturbance, from human influence, they are likely to be the most severe if the herd is already on a natural declining trend. And they're likely to be least significant or important to the herd if it's on an inclining trend with good calf numbers. What I'm suggesting is that a large part of the decline in the Bathurst herd was not driven by mining or human influence, but certainly that human influence has contributed, and probably that the human influences now are stronger than they have been at any time in the past*.

In the IEMA's opinion, the Jay Project will result in high traffic levels along the Jay and Misery roads. Therefore, it will extend the negative effects to caribou moving through the migration

corridor for at least another decade (PR#498 p4). In their technical reports, the LKDFN and North Slave Métis Alliance (NSMA) argue that, given the extreme declines in Bathurst caribou population numbers, any such impacts from the Jay Project on the Bathurst caribou herd should be considered significant and are unacceptable (PR#521 p5, PR#522 p24).

Dustfall from Jay Project activities and impacts to caribou

Sensory disturbance to caribou from Jay Project dustfall on caribou habitat, and barriers to movement related from dustfall around roads, were concerns parties raised throughout all phases of this EA.[53] During the public hearing on September 14, 2015, the IEMA stated that dustfall is a key concern, particularly when dust may be one of the main drivers of zone of influence on caribou avoidance at the Ekati mine site (PR#639 p48, 118).

In its technical report, the TłĮcho Government states that it is concerned with impacts from caribou forage dusting from the Jay Project. Traditional Knowledge from TłĮcho Elders states that caribou forage as they travel, so it is important to have healthy vegetation along migration routes. TłĮcho Elders use the health of plants to assess the fitness of caribou and how much caribou use an area. A TłĮcho study at the nearby Diavik mine identified a relationship between dust impact on caribou forage and changes in migration. Elders in the Diavik study observed that:

> *(T)he caribou will taste and smell a difference in lichen quality, and thus avoid locations where lichen is of poor quality…(and)…the caribou know that their forage is in poor condition at the location and choose not to use and forage on the island.* (PR#531 p6)

The TłĮcho Government stated that effects of dustfall on caribou and caribou habitat are significant (PR#644 p381).

In its closing submission, IEMA reiterated its concern about the role dust deposition from mine activities plays in the magnitude of the zone of influence to caribou. The IEMA stated that it:

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[53] Dustfall is composed of total suspended particulates, PM 2.5, and PM10. Emissions sources are defined in the Developer's Assessment Report as: stack emissions from power generators, diesel boilers and heaters, waste incinerators, and the fresh air raises; mine fleet exhaust emissions from the mobile and portable diesel combustion equipment at the Ekati Mine; fugitive particulate emissions from all mining and material handling activities that result in fugitive dust emissions; road dust emissions caused by vehicle travel on roads; wind erosion from the transportation and deposition of particulate matter including metals by the wind; and vehicle emissions related to vehicle travel on the Tibbitt to Contwoyto Winter Road. (PR#103 p7-56)

> *would have preferred to see a clear commitment to reduce road, LLCF (Long Lake Containment Facility) and other fugitive dust deposition from Jay and across the entire Ekati Mine with specific targets and a timetable, something we have been pushing for over many years. The reductions should be measureable, reported and linked to other efforts to reduce the Zone of Influence.* (PR#682 p7)

To prevent significant adverse impacts to caribou from dustfall and to minimize the ecological disturbance footprint from the Jay Project, the IEMA recommended the following measure requiring Dominion to:

> *[Implement] additional mitigation to reduce the effect of haul truck and other traffic on caribou (e.g. a dust management best practices document with adaptive management triggers for additional dust suppression; more precautionary traffic management to reduce sensory disturbance such as greater use of convoys and scheduling breaks in traffic), [and] develop rules for blasting to reduce sensory disturbance.* (PR#682 p8)

In its closing submission, the IEMA recommended ways to prevent significant adverse impacts to caribou from air emissions and dustfall. It included specific actions to be incorporated into Dominion's Air Quality Emissions Monitoring and Management Plan (AQEMMP) for the Jay Project. These recommendations include:

- *specific triggers for air quality monitoring results for NO2, PM2.5 and Total Suspended Particulate that will result in adaptive management responses and actions including prevention and mitigation;*
- *detailed actions and responses for tiered thresholds and action levels that will include a range of lead times from immediate action when necessary, but recognize longer-term trends;*
- *a plan and timetable to develop thresholds and actions in relation to dustfall, snow and lichen sampling results;*
- *plans to manage road traffic to reduce fugitive dust including vehicle spacing, cameras for monitoring amount of dust (visibility), and triggers or thresholds when dust suppressant must be re-applied (e.g., adoption of the NWT twenty-four hour air quality standard for total suspended particulate monitoring and mitigation along haul roads with exceedances resulting in immediate dust mitigation responses such as applying more dust suppressant or decreasing road traffic);*
- *monitoring and sampling sites to capture dust, and sample snow and lichen on the northern and eastern shores of Lac du Sauvage and along the esker system, and other appropriate sites considering prevailing winds, habitat sensitivity and similar factors; and*
- *explicit quality assurance and quality control protocols to ensure data reliability and properly functioning equipment.* (PR#682 p26)

In closing submissions, a number of parties expressed concern about the amount of fugitive dustfall from Jay Project activities, including traffic along the haul roads and blasting, and the resulting adverse impacts on vegetation and caribou (PR#685, PR#697 p5, PR#695 p12). The DKFN notes that because the amount of fugitive dust from mine operations is a major component of the zone of influence, an effective monitoring and mitigation program is essential to reduce the adverse impacts of dusting to vegetation, and ultimately reduce impacts to caribou (PR#685 p2-3). The DKFN states:

> *Dominion must develop an effective air quality mitigation and monitoring program to test the predictions of the DAR. This program must set measureable thresholds that are consistent with applicable regulatory ambient air quality standards. Where standards are not yet determined in the NWT, Dominion Diamond must use appropriate regulatory standards from other jurisdictions*. (PR#685 p3)

Research into dustfall recommended to better characterize zone of influence

During the public hearings on September 15, 2015, parties stated that research into the causes of the zone of influence to caribou from the Jay Project is important. Parties recognize that the zone of influence is likely caused by a combination of a number of sensory disturbances, behavioral reactions and memory. However, efforts should be placed on mitigating impacts from dustfall to caribou, regardless of how much it contributes to the zone of influence (PR#644 p168).

The IEMA clarified that while research on its own may not benefit caribou, if the research leads to applying mitigation actions to reduce dustfall, then it can be directly beneficial in reducing adverse impacts to caribou. The IEMA asserted:

> *(T)he rationale for dust research is that, if one explores how dust influences the zone of influence, and if it were determined that dust is a substantial contributor to a zone of influence, then by adopting mitigation measures to the Jay Project, one would have, not cumulative effects mitigation, but project mitigation*. (PR#644 p168)

Research was described at the public hearing as a tool that would result in applied mitigation to the Jay Project. The IEMA observed that research findings that successfully mitigated the Jay Project could be shared with other developers to reduce their cumulative effects from developments and become cumulative effects mitigation (PR#644 p168).

Figure 6-8. Mine haul trucks with dust plumes on Misery road (Review Board photo September 2014)

6.3.4 Lack of caribou herd management plan

On August 24, 2015, the Review Board asked both the Wek'èezhìi Renewable Resources Board (WRRB) and the GNWT to provide their most recent planning or management documents for the Bathurst caribou herd and the document status updates (PR#593 p2). Responses indicate there is no management plan for the Bathurst herd, and there is no known schedule for preparing a management plan for the Bathurst herd.

In correspondence dated August 31, 2015, the GNWT observed that although there is a lot of on-going work to develop a specific long-term management plan for the Bathurst caribou herd, there is not one currently (PR#610 p1). Though not specific to the Bathurst herd, the GNWT provided the Review Board with the document *Caribou Forever – Our Heritage Our Responsibility: A Barren-ground Caribou Management Strategy for the Northwest Territories 2011-2015* (PR#611).

The Bathurst Caribou Range Plan working group has had three meetings since it began in 2014. Its purpose is as follows:

> *The focus of range planning is to recommend an approach to manage cumulative disturbance of Bathurst caribou habitat. The approach will consider other values supported by land use, including traditional practices and economic development, and focus on range and population scale effects and solutions. The goal is to provide greater clarity for land use decision-making across the range*. (PR#594)

The working group consists of Aboriginal organizations, government agencies, mining advocacy bodies, renewable resources boards established under land claims, non-government agencies and the outfitters association. The Working Group Report for the Bathurst Range Plan proposes to present draft recommendations to the Bathurst Caribou Range Plan Steering Committee in 2016 (PR#594). During the hearings in September 2015, the GNWT advised that the Bathurst range plan is not expected to be completed for another three years (PR#644 p259).

In the September 15, 2015 public hearing discussions about the range plan, the TłĮcho Government asked the GNWT how low the Bathurst population level would have to be before they would cease to allow further developments on the land (PR#644 p242). The GNWT stated that the goal of the Bathurst Caribou Range Plan is to "define acceptable levels of development on the landscape in such a way that the herd's future and Aboriginal ability to harvest is not compromised for the long-term" (PR#644 p242).

6.3.5 Cumulative impacts on Aboriginal well-being from reduced caribou harvest

In its technical report, the LKDFN observes that the 95% reduction in the Bathurst herd's population from the 1980s to present has already lead to significant impacts for traditional land users due to harvest restrictions. The impacts of the Jay Project are significant to the LKDFN because even small additional impacts from the Jay Project to caribou may inhibit herd recovery. This would result in the continued inability of the community to practice subsistence harvesting for food and continue to inhibit the community's cultural practices (PR#521 p5).

In the LKDFN's opinion, if the Bathurst herd requires a hunting ban and is not healthy enough to sustain any harvest, then any other potential causes of caribou mortality that may reduce the population cannot be sustained either. In its technical report, the LKDFN states that since the GNWT will only permit harvesting once the Bathurst herd population increases, then any impediment to population growth and herd recovery, such as the Jay Project, has a direct impact on traditional livelihoods and food security for the Lutsel K'e people (PR#521 pp5-6).

Numerous people from Lutsel K'e spoke to the Review Board during the community hearing on September 19, 2015. They spoke of the value of caribou to the community culturally, economically and socially (PR#646 p110-180). People are concerned that caribou may disappear because there is too much noise and activity on the land (PR#646 p112, p138). They are concerned that pollution to the air, water and lichen from mining is harming caribou, and the Jay Project will destroy an important migration route (PR#646 p138-140, p143). The Lutsel K'e youth who spoke at the hearing particularly do not support the Jay Project due in part to

impacts to caribou. The majority of people who spoke at the hearing in Lutsel K'e do not want the Jay Project to proceed (PR#646 p110-180).

Before the close of the September 19 public hearing in Lutsel K'e, Chief Felix Lockhart retracted the LKDFN position from the technical report and requested a moratorium on the Jay Project. Chief Lockhart was concerned with the health of the caribou herd and concerned with the social, economic and cultural well-being of Lutsel K'e (PR#646 pp204-206). In its closing submission, the LKDFN restated that it preferred the Jay Project should not proceed, and reiterated that "caribou are central to the traditional livelihoods and spiritual beliefs of the people of Lutsel K'e" (PR#697 p7).

In its technical report, the NSMA insists that the cumulative effect from the Jay Project is significant because it adds to existing cumulative impacts on Bathurst caribou that have already passed the threshold of significance. Members of the NSMA have already suffered irreversible social and cultural impacts because of the declining population of the herd (PR#522 p24-25).

The YKDFN stated that the collapse of the Bathurst caribou herd has had a significant adverse impact on YKDFN members due to restrictions on harvesting and traditional activities. The YKDFN finds it is unreasonable that traditional harvesters of caribou should be restricted while large-scale developments that impact the land are not (PR#520 p6).

The YKDFN described how harvest restrictions and the inability to practice traditional activities have far-reaching adverse social and economic impacts on its members. This contributes to a decline in community wellness and cultural identity (PR#520 p7). The YKDFN cites examples of adverse impacts such as the lost opportunity to pass on cultural practices and practical skills, including "respect for the land, wilderness survival skills, physical and spiritual health of the community, and meaningful engagement between youth and Elders" (PR#520 p8).

The loss of caribou and caribou harvesting has resulted in significant economic and physical well-being impacts to the YKDFN. In its technical report, the YKDFN states that harvested meat offsets the high cost of meat in grocery stores. Other lost economic benefits include producing traditional crafts and garments and participating in the outfitting industry. In addition, caribou meat is healthier and more nutritious than store-bought meat. Therefore, consuming caribou meat contributes to the physical health of members of the community. These health benefits are no longer available (PR#520 p8).

6.4 Review Board analysis

The Review Board finds that the Jay Project is likely to cause significant adverse impacts on caribou, due to:

- new physical and sensory barriers to caribou on an important caribou movement corridor

- the vulnerability of the Bathurst herd at this time
- the addition of impacts from the Jay Project to cumulative effects that are already significant
- flaws in the assessment endpoint as the basis for Dominion's significance predictions
- the importance of the Bathurst herd to Aboriginal communities
- the lack of a plan to protect and manage the Bathurst caribou herd, despite years of stakeholders' efforts

The following sections (6.4.1 to 6.4.6) describe these findings. Measures to mitigate these impacts are described in section 6.6.

6.4.1 Jay Project is in a known important caribou movement corridor

The Review Board finds as a fact that the Jay Project is located in an important spring and fall movement and migration corridor for the Bathurst caribou herd. This corridor runs through the Narrows between Lac de Gras and Lac du Sauvage, along the esker and through the Jay Project. Dominion and the other parties agree it is important. The Review Board acknowledges information from the DKFN and reported in the DAR, that in the fall of 1996, a herd of about 10,000 caribou passed in front of the Ekati camp (PR#132 p12-34). Evidence from two decades of radio collar information and field studies of existing trails identify the importance of this corridor. There are visible trail ruts in the tundra caused by centuries of caribou travelling along this route.

Traditional Knowledge identifies the esker and the Narrows as a significant travel route for caribou and all Aboriginal parties confirm the importance of this location to caribou movement. Traditional Knowledge confirms that Aboriginal people gathered at the Narrows location to camp, fish and wait for arrival of caribou passing through the Jay Project area to harvest them.

The Review Board accepts that the Jay Project, particularly the Jay access road, lies across an important current and historic movement and migration corridor for caribou.

6.4.2 Bathurst herd is vulnerable

The Review Board accepts information from the GNWT that the Bathurst caribou herd continues to decline in population and number of breeding females, based on the June 2015 calving ground survey. In September 2015, the GNWT described the June 2015 survey results as "extremely worrisome" (PR#625 p2). The Review Board agrees with the Minister of GNWT ENR when he said that, "when a herd goes from 460,000 to 15,000 to me, and I think to everyone else, that's an emergency" (PR#693 p24). The Review Board observes that the GNWT was speaking as the manager and regulator of wildlife in the territory when it indicated the seriousness of the decline of the herd. During the hearings, Dominion also characterized the herd as being under "severe threat" (PR#644 p20).

Final survey results are not available. However, the Review Board finds the continued, rapid decline in the herd's population, along with the 50% drop in breeding cows between 2012 and 2015, deeply troubling. The Review Board finds that the most recent caribou survey information clearly suggests that the Bathurst herd is in peril.

6.4.3 Significant cumulative impacts from the Jay Project to caribou are likely

Cumulative effects on the Bathurst herd are already significant

Parties and the developer made it clear to the Review Board that the Bathurst caribou herd has been or will be affected cumulatively by past, present and reasonably foreseeable human activities, including mines, roads, exploration activities, hunting and climate change related trends.[54]

The developer included reasonably foreseeable future developments in its cumulative effects predictions, after information requests from the Review Board identified specific omissions from the developer's original predictions. The Review Board observes that any future industrial developments in the calving grounds in Nunavut would likely be particularly concerning. They are theoretical enough at present that their exclusion from the developer's cumulative effects assessment is understandable.

The value of Dominion's cumulative effects assessment is diminished considerably because it included natural (non-anthropogenic) factors that affect caribou (PR#144 p17-1). It is true that nature presents major challenges to caribou, such as predation, cold winters, and naturally occurring levels of parasites. However, nature is the background, not a cumulative effect of human activities. Including the influence of natural events in the cumulative assessment downplays the combined effects of human activities, which are the proper subject of a cumulative effects assessment. Had the developer followed the guidance of the Review Board's *EIA Guidelines* this problem could have been avoided.

From the cumulative effects assessment, the Review Board accepts that, even without the Jay Project, many human activities have affected caribou. This includes development, outfitting, non-Aboriginal hunting (pre-2010) and Aboriginal harvesting. Herd trends reflect this. The Review Board agrees with the majority of parties' conclusion: that cumulative effects on caribou are significant, even without the proposed Jay Project.

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[54] See section 6.3.2 for further details.

Dominion's conclusions on the significance of impacts to caribou are flawed

The Review Board finds another major problem with Dominion's predictions about cumulative and project-specific impact significance: its chosen assessment endpoint of the Bathurst herd being "self-sustaining and ecologically effective". Dominion used this endpoint as the basis for its conclusion that the Jay Project would not cause significant impacts. In the Review Board's view, the GNWT, LKDFN and IEMA identified an important weakness in this approach. The endpoint is inadequate because impacts on caribou could be significant for other reasons, such as a diminished ability of Aboriginal people to successfully and sustainably harvest caribou.

The Review Board accepts the GNWT argument that Dominion's assessment endpoint for caribou is inappropriate and ambiguous. Drawing the threshold of significance at impacts that prevent the herd from being "self-sustaining" could suggest that apart from causing herd collapse, no impacts are significant. Defining the threshold of significance at impacts that prevent the herd from being "ecologically effective" is equally unhelpful, as certain ecological functions could be identified at almost any herd size. The Review Board agrees with the GNWT (PR#304 p10) that Dominion's assessment endpoint for caribou makes significance "almost entirely speculative". DKFN argued that the herd may be neither self-sustaining nor ecologically effective at present (PR#537 pp2-3).

For these reasons, the Review Board does not accept Dominion's endpoint for assessing impacts on caribou. Nor does it accept Dominion's significance conclusions, which were made on this flawed basis.

Additional stresses on the Bathurst herd matter

The Review Board accepts a number of parties' arguments that, since cumulative impacts from human activities on caribou are already significant, any additional impact to caribou from the Jay Project is also significant. It is self-evident that, if the sum of existing impacts is significant, the sum of the same impacts, plus additional impacts will be even more significant. The Review Board agrees that given the high vulnerability of the herd, even small additional stresses on caribou matter. They are likely significant, even if they might not have been when the caribou herd was more resilient.

The Review Board agrees with the parties which said the Bathurst caribou herd is in a precarious state. It is less resistant to impacts from development than a healthy and robust herd would be. In the words of the GNWT, "the extent to which the herd can sustain *even minimal additional stress* in its present vulnerable state is not clear" (PR#515 p34). Regulators and Aboriginal groups are uncertain about the extent to which human activities, such as mine developments, are causing the caribou herd to decline. However, all parties, including the developer, recognize that the Jay Project, and in particular constructing and using the Jay road, will cause additional adverse impacts to a vulnerable caribou herd that is already experiencing adverse impacts from other sources.

Most parties, including the GNWT, recommended that the Review Board adopt a precautionary approach for this issue, because of predictive uncertainties and the vulnerability of this important herd. The Review Board agrees that this is warranted because of the lack of certainty in the developer's modelling and predictions in its effects assessment, combined with the ecological and social importance of the herd. In the Review Board's view, this does not mean that the Jay Project cannot go ahead, but it means that a comprehensive and innovative combination of mitigation measures is required to reduce the risks of serious harm to the Bathurst herd to the lowest level possible.

6.4.4 Project-specific impacts from Jay Project to caribou are likely significant

In the Review Board's view, the combined impacts of barriers to movement by physical structures and the impacts arising from sensory disturbance to caribou from the Jay Project are likely to be significant, considering the importance of the area for migration and the current vulnerability of the herd to disturbance. These impacts alone are significant for the Jay Project, and are even more so when considered in the cumulative context.

Project-specific physical barriers to caribou movement

The Review Board agrees with parties that some of the structures proposed for the Jay Project will be barriers to caribou movement. For example, the Jay Project proposes to build an industrial haul road through an esker that all parties agree serves as an important caribou migration route. The Jay Project will also bury established caribou migration paths along the shore of Lac du Sauvage under an 80 m high waste rock pile (approximately the height of a 30 storey building) and approximately 260 ha in area. Ongoing regular traffic by ore haul trucks and other vehicles will likely be a further barrier to caribou movement.

The precise magnitude and extent of this barrier effect is uncertain. However, all parties agree that even with the developer's proposed mitigation, it will increase the energetic cost of migrating caribou, which affects reproductive rates and calving success. As described above (in section 6.2.2), Dominion states in its DAR that Jay will cumulatively decrease fecundity 0.3% (PR#132 p12-115). While this modelled prediction does not consider the implementation of mitigation, any reducing calving success at a time when the herd is in a precarious state is a significant impact.

Project-specific sources of sensory disturbance to caribou

The Review Board heard that in the opinion of parties, project-specific adverse impacts from the Jay Project alone are likely to be significant. This is because sensory disturbance and displacement to caribou in the existing Ekati zone of influence will increase, most importantly, in a key migration corridor.

Parties have described how, around the mine, caribou will see bright lights, visible for many kilometers. On site, caribou will see huge moving vehicles and unnatural landforms such as the road and waste rock storage area. Caribou will hear generators, drills, industrial traffic and

explosions. Caribou will also smell exhaust, breathe dust and taste dust on their forage, as Aboriginal Elders have described (PR#531 p6, PR#532 p18-20). Traditional Knowledge holders emphasized that caribou have evolved highly sensitive sight, hearing and smell. Traditional Knowledge from TłĮcho Elders indicates that caribou will avoid areas where dust has landed on forage. The Review Board accepts the Traditional Knowledge information and concludes that caribou forage dusting from the Jay Project may change caribou migration patterns and harm caribou.

The Review Board agrees that the activities of the proposed project will add sensory stimuli and increase the existing sensory disturbance to caribou in the Ekati zone of influence. This will increase in magnitude due to the Jay Project. Although there are sensory components to the physical barriers to movement described in the previous section, the Review Board notes that sensory disturbance will also occur at various other locations throughout the Jay Project site.

The Review Board agrees with parties that introducing or extending multiple sensory disturbances to caribou in a key migration corridor, in a period of unprecedented decline in the Bathurst herd, is likely to cause significant adverse effects. This is likely the case in the project-specific context, even before consideration of past, present (e.g. Ekati, Diavik) or reasonably foreseeable future projects (e.g. Sable, Jay underground).

Project-specific and cumulative impacts on cultural uses of caribou

Reduced caribou harvesting harms Aboriginal communities. During this EA, the Review Board repeatedly and consistently heard public concern from Aboriginal communities that people are no longer able to harvest caribou. The Review Board understands that this has caused hardship on people in the communities that rely on caribou meat in the freezer.

The Review Board accepts the arguments it heard during community hearings that the restrictions on caribou harvesting results in adverse social, economic and cultural impacts to communities and people, for the reasons described above in section 6.3.5. These include economic hardships from replacing country foods with much more expensive store-bought foods, and health impacts from a poorer diet. The Review Board accepts that this affects Aboriginal harvesters at both the individual and community scales.

The ongoing harvest ban also has undesirable consequences on the well-being of people in communities as there is no reason to go caribou hunting. Caribou are closely linked with Aboriginal people, and the inability to harvest caribou erodes Aboriginal culture. In its closing submission, the LKDFN states, “caribou are central to the traditional livelihoods and spiritual beliefs of the people of Lutsel K’e” and “the concern expressed by LKDFN members over the precarious state of the Bathurst caribou herd cannot be overstated” (PR#697 p7-8).

Dene people in communities have told the review Board that they have less incentive to practice traditional lifestyle activities or go out on the land because they cannot harvest

caribou. On-the-land practices are also vital for transmitting cultural identity across generations. Elders told the Review Board in community hearings how caribou are central to their cultural identity. John B. Zoe expressed this in the Behchoko hearing by saying:

> *We know that the caribou for all Aboriginal people in the area really defines the foundation for our language, culture, and way of life; it defines who we are. And because it defines who we are, the threat to the caribou brought to us means not only a further loss towards decline, but the loss of our way of life and our way of thinking, that we're tied to the landscape.* (PR#644, p 386)

In the Review Board's opinion, these words clearly indicate how important caribou are to Aboriginal EA participants. They emphasize that caribou are an important part of who they are, both literally (as a food) and figuratively (as a part of cultural identity).

In the view of Aboriginal parties, the decline in caribou populations is due in part to development pressures in the herd's range and in movement corridors. Based on information provided by Dominion and parties, the Review Board is not able to specify the extent to which mining developments and other human activities on the herd's range contribute to the caribou population decline. What is clear is that the population needs to recover before harvesting can resume.

The Review Board understands that the Bathurst caribou herd is no longer robust enough to sustain any level of harvest. Aboriginal people have been prevented from harvesting caribou despite constitutionally-entrenched rights. This emergency harvest ban on caribou is unprecedented in the NWT.

The Review Board heard from Aboriginal communities that the Jay Project could delay recovery of the herd due to its location in an important migration corridor. The Review Board agrees with this view. In the Board's view, the impacts on community well-being, including social, economic and cultural impacts from any delay in recovery of the Bathurst caribou herd are likely significant due to the potential for prolonging the harvest ban.

The Review Board believes that any delay in herd recovery will prolong the ban on caribou harvesting and adversely impact traditional livelihood. The Review Board finds constructing, operating and closing the Jay Project in an important movement corridor is likely to affect the recovery of the Bathurst caribou herd.

During the public hearing in Lutsel K'e the Review Board heard from many community members. The majority of these individuals spoke out passionately against the Jay Project. The Review Board heard that people are concerned the Jay Project will harm caribou and bring further hardship to the community including the social, economic and cultural way of life of the Lutsel K'e Dene. At the close of the hearing, the Chief supported community members who had spoken.

The Review Board heard from the YKDFN that its members are forced to restrict caribou harvesting and traditional practices due to the emergency situation with the Bathurst herd. However, there are no restrictions on large-scale development on the herd's range. Adverse impacts from the Jay Project on the ability of the caribou herd to recover may be small, but in the Review Board's view, they cannot be ruled out. The Review Board accepts the potential delay in recovery of the Bathurst herd from the Jay Project is likely to have a significant adverse impact on communities that depend on caribou. This may result in continued effects on traditional lifestyle, food security and health, economic sustainability and cultural well-being of communities.

The Review Board understands Aboriginal communities' concerns and agrees the Jay Project is likely to have an adverse impact on caribou and may delay herd recovery. In the Review Board's view, a comprehensive and innovative combination of measures is required to reduce the risk of serious harm to the Bathurst caribou herd and to the Aboriginal communities whose traditional livelihood depends on the herd (see also section 7.2.2 and 7.4).

6.4.5 Commitments by the developer to complete and implement management plans

In its closing submission, IEMA observed there is considerable uncertainty around some of Dominion's effects assessment predictions and a lack of details on how caribou monitoring programs would detect changes. Therefore, there is a need for greater detail in caribou monitoring and management plans that can provide early warning signs of potential problems, and actions that can be implemented to solve them. The GNWT, IEMA and YKDFN propose specific measures that improve Dominion's existing and proposed monitoring and management plans for caribou. These organizations made recommendations to improve the Caribou Road Mitigation Plan, Caribou Mitigation Plan and AQEMMP. In the GNWT, IEMA and YKDFN's view, recommendations to improve these plans will prevent significant adverse impact from the Jay Project to caribou (PR#693 p16-17, PR#682 p3-11, PR#692 p15).

The Review Board acknowledges Dominion's commitments to mitigate impacts to caribou throughout the course of the EA (PR#681 and Appendix C). The Review Board also acknowledges the work that Dominion has done to prepare monitoring and management plans in consultation with parties to the Jay Project. However, the Review Board accepts parties' arguments that to improve these plans, mitigating actions need to be added to reduce significant adverse impacts. Accordingly, the Review Board recommends measures that improve Dominion's monitoring and management plans related to caribou and dust deposition as described below.

This section describes key Dominion commitments to reduce impacts to caribou in the form of management plans (Appendix B). The Review Board appreciates the fact that the plans described below contain specific mitigation actions intended to reduce barrier impacts and sensory disturbance impacts from the Jay Project to caribou. The Review Board believes it is essential that the specific actions in the following plans are implemented and enforced.

Caribou Road Mitigation Plan

Dominion hosted multiple workshops in 2015 with parties to design and formulate the Wildlife Effects Management Plan (WEMP) containing the Caribou Road Mitigation Plan (Appendix B). Parties were able to comment on draft versions of the plan after each workshop (PR#372, #421, #425, #433, #436). Using this iterative approach, Dominion filed an updated draft Wildlife Effects Monitoring Plan with the Caribou Road Management Plan on July 31, 2015 (PR#518).

The Wildlife Effects Monitoring Plan describes how Dominion intends to contribute to regional monitoring initiatives and monitor the effects to wildlife that may occur beyond the Jay Project footprint. The Wildlife Effects Monitoring Plan outlines the policies, practices, designs, and mitigation implemented to avoid and reduce direct and indirect mine-related effects to wildlife and wildlife habitat (PR#518 p1-7 to 1-9).

The objectives of the Caribou Road Mitigation Plan are to:

- avoid and minimize the risk of caribou and other wildlife mortalities from traffic
- avoid and minimize the barrier effect of the Jay and Misery roads (and other Ekati Mine roads) to caribou movement and migration
- limit the effect of sensory disturbance from roads and traffic on caribou behaviour (PR#518 Appendix B p1-3)

A key mitigation measure and commitment in the Caribou Road Mitigation Plan is to design the Jay Road to incorporate caribou crossings to reduce barrier impacts to caribou (PR#518 p3-5). During the technical session on April 21, 2015, Dominion stated that it would construct the Jay Road entirely as a caribou crossing, except where safety berms and access locations at the pipeline valves are required for maintenance (PR#353 p103). Dominion advised that approximately 75% of the Jay road alignment is estimated to not require safety berms (PR#371 pDAR-MVEIRB-UT-01).

The Caribou Road Mitigation Plan states that specific caribou crossing locations on the Jay Road will be provided once the road design has been finalized during the regulatory phase. Caribou crossings on the Jay Road will be designed so that the side slopes of the road are flatter than on the existing Misery road. The slopes at the caribou crossings will also have finer crushed rock particles (six inches or less) to reduce risk of injury to caribou. The pipelines will also be covered with finer crushed rock at the caribou crossings. Valves and pipeline joints must be accessible and will not be covered (PR#518 p3-5).

Figure 6-9 shows the area along the Jay Road that will be constructed as a caribou-crossing zone to reduce barrier impacts from the Jay Road.

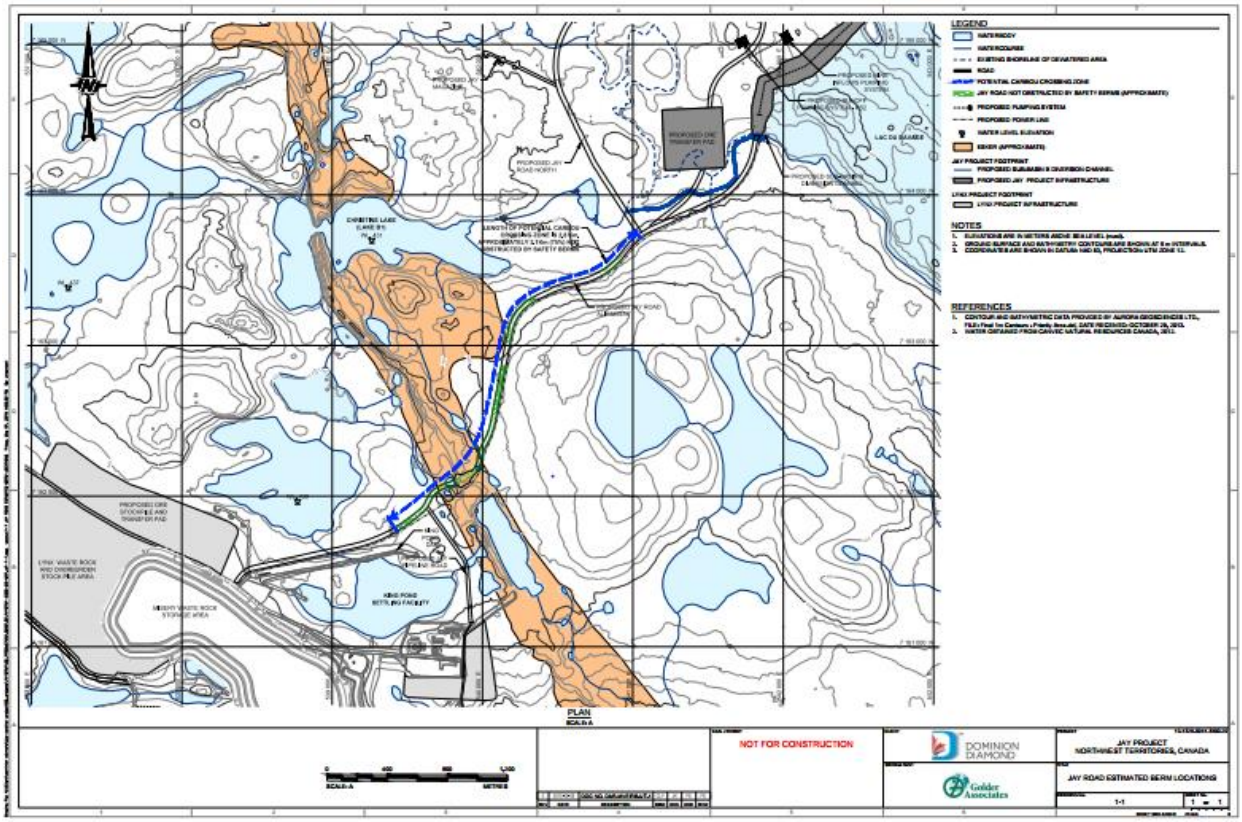

Figure 6-9: Caribou-crossing zones on the Jay road (Source PR#371, DAR-MVEIRB-UT-01 p4)
This map of the Jay road shows the selected alternative (green line) with section to be constructed as a caribou-crossing zone (blue dashed line)**.**

Dominion clarifies that mitigation and monitoring of dust will not be addressed in the Caribou Road Mitigation Plan. Mitigation to control dust at the Ekati Mine currently includes watering and applying dust suppressant to the roads. Monitoring of dust for the Jay Project will occur through the AQEMMP (PR#424 p3-10 to 3-11) and Wildlife Effects Monitoring Program (WEMP) (PR#518 p4-5).

Appendix D of the Wildlife Effects Monitoring Plan describes a mitigation hierarchy Dominion will apply to the Jay Project for caribou and wildlife. The hierarchy classifies proposed mitigation to reduce impacts to caribou and other wildlife into categories that either avoid impacts, minimize impacts or reclaim impacts after mine operations are complete (PR#518 pD-1 to D-5).

Dominion describes its planned engagement schedule (PR#487 pp11-13) for the Wildlife Effects Monitoring Plan and appended Caribou Road Mitigation Plan as follows:

- Within one month of receiving EA approval, Dominion will circulate draft amendments to construct and operate in a manner that considers and addresses feedback and direction received through the MVEIRB process.

- Before Jay Project construction activities, Dominion will:
  - host a technical workshop to discuss and receive input on the draft amendments for construction and operations
  - circulate revised draft amendments for construction in a manner that considers and addresses feedback received for final written comment
  - finalize amendments for construction in a manner that considers and addresses feedback received
- Before Jay Project operation activities, Dominion will:
  - circulate revised draft amendments for operations in a manner that considers and addresses feedback received and reflects findings of the Jay Project construction programs and the ongoing Ekati mine operations programs
  - host a technical workshop to discuss and receive input on the revised draft amendments for operations
  - circulate final draft amendments for operations in a manner that considers and addresses feedback received for final written comment
  - finalize amendments for operations in a manner that considers and addresses feedback received
- Before Jay closure and reclamation activities, Dominion will finalize amendments for closure and reclamation through the established Wek'èezhìi Land and Water Board (WLWB) process to develop the Interim and Final Closure and Reclamation Plans.

Caribou Mitigation Plan (Compensatory Mitigation)

In response to an undertaking from the hearings, Dominion prepared a Caribou Mitigation Plan and facilitated a Caribou Compensatory Mitigation meeting with parties to improve that plan (PR#673 p8-15, PR#674). Dominion hosted the caribou compensatory mitigation workshop on October 1, 2015 after the public hearings to find ways to positively offset impacts from the Jay Project to caribou (PR#674). The purpose of offsetting is to make impacts from the Jay Project to caribou neutral or even positive so that the Bathurst caribou herd is no worse off, or ideally possibly even better off, with the Jay Project (PR#674 p2). Dominion submitted a draft Caribou Mitigation Plan (Compensatory Mitigation) after the workshop as part of its hearing undertaking (PR#673 p1-8). This plan was further refined in Dominion's closing submission (PR#699).

By definition, offsets need to be measurable so that their effectiveness at mitigating adverse residual effects can be assessed and known (PR#699 p1-6). According to Dominion, the purpose of the Compensatory Mitigation Plan is to implement programs and plans that will provide appropriate and sufficient additional mitigation to compensate for any residual effects

of the Jay Project on the herd and the ability of communities to harvest caribou. Key offsetting actions in this plan include:

- progressively reclaiming the Long Lake Containment Facility
- constructing access ramps at the various waste rock storage areas at Ekati during reclamation
- working with the GNWT to determine a methodology to determine offsets so that the offsetting actions will have a net neutral or positive impact on the Bathurst caribou herd (PR#673 p2-8)

Dominion further refined this plan in its closing submission when it committed to investigate the causes of the decline of the Bathurst caribou herd. As part of its Caribou Mitigation Plan, Dominion commits to contribute $500,000 to studies identifying the key factors limiting the Bathurst herd, including examining what factors caused the herd to decline (PR#699 p2-2).

Air Quality Emissions Monitoring and Management Plan

Dominion prepared a draft Conceptual AQEMMP (PR#424) and submitted it to the Review Board in June 2015. The Plan notes that road dust is the largest source of fugitive dust or particulate matter emissions in the Jay Project. Water and approved chemical suppressants are required on the haul roads during seasons when the ground is free of snow and ice (as snow and ice naturally keep dust down) (PR#424 p1-6).

Dominion states that the AQEMMP addresses not only ambient air quality matters, but also provides data that will support studying the linkages between air quality and areas of study. The plan program provides a framework for air quality monitoring that can be used to support cross-disciplinary study.

The Review Board accepts that managing dust is an important way to mitigate impacts to caribou. The monitoring and mitigation described in the measure below, and the resulting management responses will be implemented in the Caribou Mitigation Plan Compensatory Mitigation and Caribou Road Mitigation Plan. Dominion's actions to manage based on monitoring will reduce project-specific and cumulative impacts of dustfall to caribou.

The Review Board observes that currently there is no dustfall standard in the NWT and that the GNWT has the authority to regulate dustfall. A dustfall standard would help to inform the developer's dusftall response. The Review Board realizes that establishing a dustfall standard that considers protecting caribou and caribou habitat will require considerable effort. This may include additional studies, research and analysis. However, the Review Board finds it is important that before establishing a dustfall standard, an interim dustfall objective is needed. It should be conservative and err on the side of caution. This objective will help to inform Dominion's adaptive management response planning and associated triggers and action levels.

The objectives in Dominion's draft AQEMMP are to:

- enable evaluation against applicable Federal and Territorial ambient air quality standards
- track trends in ambient air quality and emissions
- validate air quality predictions made in the DAR and associated follow-up work such as updates provided in adequacy review responses and information requests (IRs)
- identify the need for adaptive management response plans by evaluating results against predefined early warning levels
- provide data including dust deposition to evaluate effects to aquatic and terrestrial ecological receptors (PR#424 p1-7)

The Review Board supports the goals and objective of the AQEMMP (PR#424 p1-7). Dominion lists a series of commitments in its AQEMMP (PR#424 p1-5 to 1-6) and will finalize the plan during the permitting phase of the Jay Project (PR#491 p13-15). The Review Board believes that enhancing the existing AQEMMP with the actions described in the measure below will further reduce impacts from dustfall to sensory disturbance to caribou.

On June 1, Dominion submitted its draft Conceptual AQEMMP (PR#424). Dominion facilitated an initial workshop in June to discuss the Conceptual AQEMMP (PR#444, PR#460 p2-5) and a second workshop in July (PR#491, PR#538). During the second Air Quality Workshop (PR#491, PR#492, PR#538), Dominion stated that any proposed changes to the AQEMMP would be circulated for public review (PR#538 p13). Dominion proposes to refine the AQEMMP for the Jay Project during the permitting phase and will incorporate input from regulators and communities as part of its engagement process (PR#491 p13-15). Dominion also proposes to circulate the next version of the Jay Project AQEMMP one month after the Jay Project REA is accepted. It includes these schedule updates:

- Before construction (2016), Dominion will:
  - host a technical workshop to discuss and receive input on the draft conceptual plan for construction and operations
  - circulate revised draft conceptual plan for construction addressing feedback received for final written
  - finalize plan for construction addressing feedback received
- Before Jay operations (2019), Dominion will:
  - circulate revised draft plan for operations addressing feedback received and reflecting findings of the Jay construction programs and the ongoing Ekati Mine operations programs
  - hold technical workshop to discuss and receive input on the Revised Draft Amendments for operation
  - finalize amendments for operations addressing feedback received
- Before Jay closure and reclamation activities, Dominon will:

- finalize the Plan for Closure and Reclamation through the established WLWB process to develop the Interim and Final Closure and Reclamation Plans (PR#491 p15-16)

Moreover, Dominion has committed to finalize and implement these three plans for the Jay Project:

- Wildlife Effects Monitoring Plan with appended Caribou Road Mitigation Plan
- Caribou Mitigation Plan (Compensatory Mitigation)
- Air Quality and Emissions Monitoring and Management Plan

Traditional Knowledge-based and community-based research and monitoring

In its Caribou Mitigation Plan (Compensatory Mitigation), Dominion commits to funding research into the drivers of the zone of influence and how barriers to caribou movements and sensory disturbance in the zone of influence change caribou behaviour and movement (PR#673 p3-4). In its closing submission, Dominion states that financial support should be available for Traditional Knowledge-based and community-based research and monitoring. Dominion further states that funding for this type of research could come from specific funding components of the Caribou Mitigation Plan (PR#699 p2-5).

Dominion specifically identifies the following funding sources that could fulfill this role:

- financial support (at least $1.3 million total for the Jay Project) for developing and implementing Caribou Mitigation Strategies/Plans including Traditional Knowledge-based research and monitoring programs
- financial support ($500,000) for studies to identify the key factors that caused the Bathurst herd to decline (PR#699 p2-2)

Dominion further states in its closing submission that it is willing to discuss with communities the most appropriate working group or planning group to implement this funding. This group would provide the mandate, research objectives, qualifications, distribution and reporting protocols for the different elements of funding described above (PR#699 p2-5). Dominion has committed funding for Aboriginal communities to conduct and manage Traditional Knowledge related to the Jay Project (PR#699 p1-4).

6.4.6 There is no caribou herd management plan

The Review Board understands from the evidence that there is no management plan for the Bathurst caribou herd, despite several years of drastic population declines. This absence is occurring despite co-management partners, including the territorial government, Aboriginal governments and other organizations acknowledging that the population of the herd has been in a steep decline for over a decade.

No clear explanation was provided to the Review Board as to why a management plan is not in place. Its absence means there are no thresholds for development, no integration of development effects with harvest allocations, no management of the level of human activity on the herd's range and no consideration of ecological changes resulting from climate trends on the herd's range. A management plan for the Bathurst caribou herd could help address cumulative impacts from developments, human activities and other stressors to herd recovery on the range of the Bathurst caribou herd.

The Review Board observes that when the Aboriginal Affairs and Northern Development Canada (AANDC) and Responsible Ministers approved the Gahcho Kué Panel's *Report of Environmental Impact Review and Reasons for Decision for the Gahcho Kué Project,* the GNWT and its co-management partners agreed to prepare a cumulative effects framework that links monitoring to mitigation for the Bathurst caribou herd (PR#530 p99-106). The Review Board understands a range plan for the Bathurst herd and a cumulative effects framework are being developed, but will not be completed for three more years.

The Review Board is dismayed with the inability of the GNWT and its wildlife co-management partners to complete a plan to protect and manage the Bathurst caribou herd, despite years of stakeholders' efforts. Considering the rate of decline in the Bathurst herd population over just the last two years, the Review Board is left to wonder whether the Bathurst caribou herd has capacity to survive the proposed three year planning process.

Evidence on the public record indicates that the Bathurst caribou herd was thriving in the early 1990s, before the development of the diamond mines, and has declined 95% over only two decades. This is due to a combination of factors, including development, outfitting, recreational hunting, traditional harvest levels and natural causes. Careful management of cumulative impacts on a shared resource may solve this problem, but progress on this urgently needed plan has been inadequate. The Review Board finds the ongoing lack of a management plan for the herd unacceptable in light of the current status of the Bathurst caribou herd.

6.5 Review Board conclusions

In the Review Board's view, constructing and operating the Jay Project road, esker crossing, waste rock storage area and other facilities in the caribou migration corridor will likely have a significant adverse impact on caribou. Evidence on the public record indicates both science and Traditional Knowledge will play an important role in recommending ways to reduce the harmful impacts.

The Review Board is convinced of the critical importance of caribou to the people of the NWT and communities that depend on them. The Review Board accepts that the management plans and commitments discussed above are necessary to mitigate the significant adverse impacts that would otherwise be likely from the Jay Project. The Review Board acknowledges the work that Dominion has done to prepare monitoring and management plans by consulting with

parties on the Jay Project. However, the Review Board accepts parties' arguments that mitigating actions need to be added to the plans to improve them and mitigate significant adverse impacts. Accordingly, the Review Board recommends measures that improve Dominion's monitoring and management plans related to caribou and dust deposition as described below. The Review Board proposes the following measures that build on Dominion's commitments to prepare these plans.

Completing a plan will not, by itself, mitigate impacts to caribou. The Review Board is particularly concerned about implementing and enforcing wildlife management and air quality plans that are not incorporated into a licence or permit. The proposed measures below detail timelines, responsible regulatory authorities, a public review and approval process, and key mitigation actions required through all Project phases. The resulting actions will reduce or avoid significant impacts. The measures below build on Dominion's commitments and, combined with other measures to reduce or avoid impacts on caribou, will mitigate the significant adverse impacts on caribou that are otherwise likely.

The Review Board agrees with Dominion that financial support should be available for Traditional Knowledge-based and community-based research and monitoring. The Review Board further agrees with Dominion that this funding should be directed to an effective body, whether existing or proposed, as recommended by th e GNWT.

There is evidence, from TłĮcho Traditional Knowledge and science, that the primary driver of the zone of influence is likely dustfall. A monitoring, mitigation and response framework is needed to measure dustfall impacts to caribou with greater scientific certainty. The GNWT has the authority to regulate emissions to air and dustfall. A standard would tell Dominion specifically when to take certain actions to mitigate dustfall. However, this standard does not exist in the NWT at present. The Review Board concludes that the GNWT needs to implement a conservative interim dustfall objective until a final standard is adopted. Measures 6-3 and 6- 4 address this.

Measure 6-5 below requires Dominion to convene a group of Traditional Knowledge holders (agreed to by included in the Impact Benefit Agreement) to assist in monitoring caribou behaviour from the Jay Project structures and activities, and recommend ways to mitigate those impacts to the greatest extent possible (see section 7.4.1 of the Report for another measure regarding Traditional Knowledge).

The Review Board designed the following proposed measures to collectively reduce incremental and cumulative impacts from the Jay Project to caribou so they are no longer significant.

6.6 Measures and suggestions

Due to the critical importance of caribou to the people of the NWT and Aboriginal communities that depend on caribou, the Review Board accepts that Dominion's proposed plans in section 6.4.5 are necessary to reduce significant project-specific and cumulative adverse impacts on caribou. The draft plans propose mitigation to help to reduce impacts to caribou, and monitoring that can provide feedback for changes to mine operations for adaptive management and improve caribou mitigation. The Review Board believes that additional specific mitigation or enhancement to the proposed plans is required.

The following measures will build upon and enhance these plans. The measures directed at Dominion build on its commitments to prepare and implement monitoring and management plans. This will result in adaptive actions to mitigate significant impacts to caribou.

This group of measures, combined with Dominion's other actions and commitments to reduce or prevent impacts to caribou, will mitigate the significant adverse project-specific and cumulative impacts on caribou that are otherwise likely.

Mitigation of impacts from barriers to movements and sensory disturbance

The measure below includes and builds upon the existing Caribou Road Mitigation Plan (PR#518 p96-139) and is necessary so adverse impacts to caribou can be reduced to a level where they are no longer significant. The Review Board believes the additions to the Plan, set out in the measure below, will mitigate impacts from barriers to caribou movement and sensory disturbance impacts to caribou from the Jay Project to the greatest extent possible.

Measure 6-1: Road mitigations for caribou impacts

a) In order to mitigate significant incremental and cumulative adverse impacts to caribou from roads used by the Jay Project, Dominion will:

- use convoys or other methods to manage traffic on the road in order to maximize interval between disturbances from vehicles
- use real-time caribou collar satellite information and other detection systems to enable early detection of caribou in the vicinity of the road as a trigger for action levels for management responses
- construct caribou crossing features along a minimum of 70% of the length of the Jay road

b) In addition, Dominion will update and revise the Wildlife Effects Monitoring Plan with the appended Caribou Road Mitigation Plan according to GNWT requirements under section 95 of the *Wildlife Act* and any future section 95 regulations. The plan(s) required under section 95 will be in force for the duration of the Jay Project.

In the Caribou Road Mitigation Plan, Dominion will:

- investigate and implement innovative actions to mitigate impacts to caribou from barriers to movement at the esker, such as one-way traffic, buried powerlines and pipelines, and remote sensory devices to monitor caribou and reduce impacts at the esker crossing
- define specific thresholds that trigger road management responses, including actions to slow traffic, stop traffic and close the Jay and Misery roads for an appropriate period if caribou are on or near these roads
  - describe the minimum size of the kimberlite stockpiles at Jay pit and Misery pit necessary to enable extended closure(s) of the Jay road
  - indicate how long the road management responses described above will be applied for each slow down or closure and thresholds and triggers for reopening the road
- describe methods for monitoring approaching caribou at intermediate distances beyond line of sight from the roads, including at night and in poor visibility
- prepare a dust management best practices document with adaptive management triggers for additional dust suppression and link to the Air Quality and Emissions Monitoring and Management Plan
- use Traditional Knowledge when designing
  - the Caribou Road Mitigation Plan
  - the project components in the Caribou Road Mitigation Plan (including the Jay road, esker crossing and waste rock storage area)
  - the monitoring of caribou responses to these components during the operations phase
- describe specific monitoring and mitigation for caribou impacts related to the road during the construction, operations and closure phases of the Jay Project

c) The Caribou Road Mitigation Plan will detail the means to be employed to avoid and minimize habitat disturbance and include a response framework that links monitoring results to changes in mitigation. When developing monitoring and mitigation, Dominion will give special consideration to the esker crossing and specify contingency measures if caribou do not cross the Jay road at the esker.

d) Dominion will submit the Caribou Road Mitigation Plan to the GNWT ENR for approval before constructing the Jay road. As part of this approval process, the GNWT should provide the opportunity for public comment. Dominion will annually report monitoring results, success or failure of mitigation, and adaptive management to communities in person in a culturally appropriate manner.

Caribou detection methods within zone of influence

The GNWT is not satisfied with Dominion's response to its technical report or undertaking #7 and #8 on detecting caribou. Detecting approaching caribou from a distance toward a known movement corridor, such as the Narrows, is a logistical challenge. There are uncertainties in knowing where caribou are, predicting how soon they may be approaching developments and how quickly they may be moving. This makes it difficult to apply protective mitigation (vehicles slowing down, stopping, and road closure) to developments like the Jay road because the triggers for action are based on how close caribou are to the road.

Suggestion
To allow for mitigation of potential barrier effects from the Jay Project, Dominion should conduct pilot studies into technologies and approaches to detect caribou before they perceive sensory disturbances from the Jay Project (such as un-manned aerial vehicles, large animal detection systems, remote video cameras or on-the-land monitors).

Offsetting mitigations to reduce impacts to caribou from the Jay Project at other Ekati locations

The Review Board accepts that Dominion's Caribou Mitigation Plan (Compensatory Mitigation) (PR#673 DAR-MVEIRB-UT-06) will help compensate for any residual effects of the Jay Project on the Bathurst caribou herd and communities' ability to harvest caribou. The goal of offsets for the Jay Project is to avoid net adverse impacts to caribou by reducing caribou impacts from other human activities, thus reducing the total cumulative impact on the Bathurst herd.[55]

The following measure includes and builds on the contents of Dominion's Caribou Mitigation Plan (Compensatory Mitigation). It is intended to ensure that enhanced mitigation, in the form

[55] The existing and approved Ekati operations, which are not proposed to be used as part of the Jay Project, are a separate development from the proposed project, even though the same company that operates them is proposing the Jay Project.

of offsets, results, at a minimum, in no net addition of impacts to the Bathurst caribou herd.[56] Dominion will implement these offsets beyond the Jay Project, on the Ekati mine site. This measure, in combination with other measures, will reduce project-specific and cumulative adverse impacts from the Jay Project to caribou so they are no longer significant. The measure includes timelines for annual reporting and public review of the plan to continually improve.

The Review Board believes the GNWT needs to address and supervise measuring and quantifying the effectiveness of offset mitigation.

[56] The Review Board recognizes that offsets leading to net gain are desirable to compensate for uncertainties in scientific knowledge and the unpredictability of caribou responses. However, the measure prescribes no net addition of impacts at a minimum to offset adverse additional significant cumulative impacts. This is not intended to replace impact prevention by project-specific mitigation to the maximum extent practicable.

Measure 6-2 (a): Caribou Offset and Mitigation Plan

i. Dominion will offset residual adverse impacts to caribou by human activities that cumulatively affect the Bathurst caribou herd, beyond direct impacts of the Jay Project. Dominion will set out these offsets in a Caribou Offset and Mitigation Plan, which it will complete within one year of Minister's acceptance of this EA Report. This plan will be in force throughout the duration of the Jay Project.

ii. Dominion will implement the Caribou Offset and Mitigation Plan as described in DAR-MVEIRB-UT2-06[57] and incorporate the following into the Plan:

- caribou offsets related to roads that result in enhanced mitigation, such as scheduling of activities during caribou migration or dust suppression offsite from Jay Project
- zone of influence research with funding as committed by Dominion
- identify mitigation actions from the Plan and apply at other Ekati operations
- options for the scheduling of other Ekati operations to offset Jay Project impacts during caribou migration periods
- an enhanced dust mitigation study including:
    - a pilot test on application of dust suppressant
    - a dustfall sampling program
    - report on results and propose improvements to be incorporated into the Air Quality Emission Monitoring and Management Plan
    - if dust mitigation improvements are identified, Dominion will apply them on all roads at Ekati
- accelerate progressive reclamation of Long Lake Containment Facility substantially beyond current Interim Closure and Reclamation Plan requirements to return it to productive caribou habitat sooner
- incorporate waste rock storage area egress ramps, designed in consultation with Elders to prevent injuries and entrapment of caribou

[57] Caribou Mitigation Plan (Compensatory Mitigation (PR#673))

iii. Following implementation of the Caribou Offset and Mitigation Plan, Dominion will:

- annually report on the effectiveness of monitoring, mitigation and adaptive management of the Caribou Offset and Mitigation Plan to communities in person, in a culturally appropriate manner
- annually report on the activities conducted under the Caribou Offset and Mitigation Plan and the effectiveness of related monitoring, mitigation and adaptive management, to GNWT ENR, WRRB and IEMA
- submit an updated Caribou Offset and Mitigation Plan for approval by GNWT ENR every three years. Prior to approval, the GNWT should provide the opportunity for public comment

iv. The GNWT will enforce the Caribou Offset and Mitigation Plan under section 95 of the *Wildlife Act*.

Measure 6-2 (b): Research to design and implement successful offsetting projects

The GNWT will measure and evaluate the effectiveness of Dominion's offsets that result from the approved Caribou Offset and Mitigation Plan.

To better enable the GNWT to do this, it will conduct a study on the potential methods for evaluating and measuring the effectiveness of offsetting options described in the approved Caribou Offset and Mitigation Plan. The GNWT will publically report on the results of the study within one year of the approval of the Caribou Offset and Mitigation Plan.

Reducing impacts from dustfall to caribou

The measure below includes and builds upon the existing Draft Conceptual AQEMMP (PR#424), and is necessary so that adverse impacts from dustfall are reduced to the greatest extent possible. Building upon and enhancing the AQEMMP[58] with the measure below will reduce the

[58] Dustfall mitigation and monitoring is described in AQEMMP (PR#424)

impacts from barriers to caribou movement and caribou sensory disturbance impacts from dustfall so they are no longer significant.

Measure 6-3: Air Quality Emissions Monitoring and Management Plan

In order to reduce adverse impacts from dustfall within the Jay Project area to caribou so they are no longer significant, Dominion will finalize and implement the Air Quality Emissions Monitoring and Management Plan prior to construction. This plan will be applied throughout the construction, operation and closure phases of the Jay Project.

Dominion will:

- describe how it will implement commitments made in this plan (PR#424 p1-5 to 1-6), along with management response linkages to the Caribou Road Mitigation Plan and the Caribou Offset and Mitigation Plan.
- reduce dustfall by continuing and improving the following management and monitoring practices, including:
  - applying dust suppressant to control dust emissions on haul roads during summer or non-frozen snow-free season
  - managing vehicle speed to limit road dust from vehicle-wheel entrainment
  - implementing a dustfall monitoring program, methods, locations, monitoring parameters
  - sampling lichen tissues (heavy metal parameters) and snow chemistry
  - planning responses with triggers and action levels
  - allowing opportunity for public comment on updates or changes to the Air Quality Emissions Monitoring and Management Plan
- annually report monitoring results, success or failure of dust mitigations and adaptive management to communities in person, in a culturally appropriate manner
- submit an updated Air Quality Emissions Monitoring and Management Plan for public review and approval process as required by the GNWT

In addition, the GNWT will review and approve the Air Quality Emissions Monitoring and Management Plan as required by the Environmental Agreement and regulate in accordance with the *Environmental Protection Act*.

Reducing dustfall impacts to caribou

The Review Board accepts that GNWT is the responsible authority for wildlife and wildlife habitat in the NWT. Currently, there are no standards for dustfall impacts to caribou or caribou habitat or regulatory oversight of dustfall management in the territory. The Review Board

believes that an interim dustfall standard for the Jay Project is required to reduce the adverse impacts from the Jay Project on caribou. It will also mitigate impacts to habitat effectiveness from deposition of fine particulate dust on lichens and other caribou forage so that they are no longer significant.

Measure 6-4: Dustfall standards

Prior to construction, the GNWT will develop an interim dustfall objective for all types of dustfall that impact caribou and caribou habitat, including impacts on lichen and other caribou forage within the Jay Project zone of influence. The objective will reduce dust-related sensory disturbances to caribou to the greatest extent practicable.

Dominion will use the interim dustfall objective to inform its actions to reduce impacts to caribou and caribou habitat from dustfall.

Funding Traditional Knowledge for managing caribou impacts

The Review Board finds incorporating Traditional Knowledge into Project design and operations is required to mitigate impacts to caribou while constructing and operating the Jay Project. The Review Board acknowledges caribou offsetting from Dominion's financial commitments to manage and track Traditional Knowledge, prepare a caribou monitoring strategy and identify factors that caused the Bathurst herd to decline. Funding has also been set aside by Dominion to determine the drivers of the magnitude and spatial extent of the zone of influence with the goal of reducing the zone of influence (PR#699 p1-4 and 2-1 to 2-2).

In the Review Board's view, directly applying Traditional Knowledge, along with conventional science-based information during Project design and operations, will result in practical mitigation actions that reduce impacts from the Jay Project to caribou so they are no longer significant.

Measure 6-5: Traditional Knowledge-based caribou monitoring and mitigation

Dominion will:

- develop and implement a collaborative research program incorporating Traditional Knowledge designed to identify the causes of the zone of influence for caribou avoidance within one year of acceptance of the Report of EA
- summarize and report annually on this collaborative research program as part of the Wildlife Effects Monitoring Program reporting
- implement the research findings which can help to reduce the size of the zone of influence on caribou
- Dominion will fund a Traditional Knowledge Elders group drawn from Aboriginal organizations that participated in the EA. This group will:
  - advise on the construction and operation of the Jay road, esker crossing and waste rock management area egress ramps that limit impacts to caribou
  - monitor caribou reactions to the Jay road use, esker crossing and waste rock storage area egress ramps in coordination with existing caribou management authorities
  - report on the results of monitoring to Dominion, IEMA, regulators and Aboriginal organizations that participated in the EA
  - recommend mitigation based on monitoring results
  - recommend a contingency plan for the esker crossing if monitoring indicates that the road through the esker is a major barrier to caribou movement

This Traditional Knowledge group will be in place prior to construction, throughout operations and closure.

Timely completion of a management plan for the Bathurst caribou herd required

The Review Board is alarmed by the continued decline of the Bathurst caribou herd. It is evident that Aboriginal people and Mackenzie Valley residents share this concern. The lack of a management plan for the Bathurst Caribou herd during a period of very low numbers and a declining population is unacceptable to the Review Board.

Wildlife management plans are designed to a large extent to manage human activities, which are likely contributors to the decline of the herd. At present, the Bathurst caribou population continues to decline rapidly without any management actions from the territorial government apart from harvest restrictions. Despite the urgency of the caribou herd's status, the territorial government does not, in the Review Board's view, plan to complete a management plan soon enough. There is no evidence the GNWT is developing a herd recovery strategy. This deeply concerns the Review Board.

The Review Board notes that the GNWT was required by section 12.11.2 of the TłĮcho Agreement to prepare a comprehensive proposal for the management of the Bathurst caribou herd within three years of the effective date (2005) of that land claim. There is no evidence before the Review Board that this legal obligation has been satisfied.

The Review Board recognizes that the GNWT has initiated separate planning processes for both a Bathurst Range Plan and cumulative effects framework for caribou. However, according to the GNWT, these initiatives will not be completed for three years. This is not a timely response to an emergency situation. An interim management plan for the Bathurst herd is required sooner.

The Review Board has proposed a combination of measures in this Report of Environmental Assessment (REA) to both Dominion and the GNWT to assist in mitigating significant adverse impacts to caribou. The GNWT needs to complete and implement an interim recovery and management plan for the Bathurst caribou herd before this herd's population is so reduced that recovery of the herd is no longer likely. The following measures will mitigate a significant cumulative impact by requiring the GNWT to manage cumulative impacts of development and other human activities that are otherwise likely to combine with the cumulative effects of the Jay Project to worsen the situation.

The Review Board observes that the measure's requirements could be partially met by requiring the existing Bathurst Caribou Range Plan Working Group and the Cumulative Effects Assessment Monitoring and Management Framework to make interim recommendations for the GNWT to implement within one year.

Dominion has committed to provide financial support to examine the causes of the herd's decline.[59] The Review Board expects a portion of this funding to support the studies described in the measure below.

[59] See section 6.4.5

Measure 6-6: Timely completion of caribou management plans

To mitigate cumulative significant impacts from the Jay Project and other human activities on the Bathurst caribou herd, within one year of Ministerial approval of this EA Report, the GNWT will:

- investigate and report on the causes for the current population change
- complete and implement an interim management plan for the Bathurst caribou herd
- implement an interim herd recovery strategy towards a sustainable and ongoing Aboriginal harvest

Suggestion

GNWT should work towards producing interim thresholds for developments and other human activities within the range of the Bathurst caribou herd.

7 Cultural aspects and Traditional Knowledge

7.1 Summary of Review Board's findings

The Review Board finds the Jay Project is likely to affect Aboriginal groups and cause significant adverse cumulative impacts to their well-being and traditional way of life. Existing impacts on these valued components are already sources of public concern. The Review Board heard serious concerns expressed by every Aboriginal group on the adverse cumulative impacts diamond mines have on their traditional way of life. The Review Board believes the Jay Project will add to these cumulatively significant impacts. The reasons supporting the Review Board's conclusion are:

1. Aboriginal groups told the Review Board that their cultural well-being and way of life now face serious challenges. These include the transition to a wage economy, reduced time on the land, less practice of an Aboriginal way of life, reduced Aboriginal language use, the stress of the potential loss of the Bathurst caribou herd, and reduced transmission of culture between generations.[60]
2. Aboriginal groups emphasized how diamond mining has contributed significantly to these challenges since it began in 1996.[61]
3. As a continuation of the Ekati project, the Jay Project is likely to add to and increase the duration of these impacts on important aspects of cultural well-being.[62]
4. Aboriginal groups told the Review Board that land disturbance from diamond mines has decreased the harvesting value of the Lac de Gras area and discourages harvesters and their families from using it.[63]
5. Reduced traditional harvesting has resulted in a significant loss in knowledge transfer and cultural experience about this area to an entire generation. The expansion of diamond mining in this area from the Jay Project is likely to prolong this loss of knowledge transfer and learning, or make the loss permanent.[64]

Section 7.2 summarizes the evidence from the developer and parties. Section 7.3 provides a detailed analysis of the Review Board's reasoning for this conclusion. The Review Board proposes measures in Section 7.4 intended to mitigate these issues and prevent potential impacts that would otherwise be significant.

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[60] See section 7.2.1, 7.2.1 and 7.2.2 for more details
[61] See section 7.2.2 for more details
[62] See section 7.2.1 for more details
[63] See section 7.2.1 and 7.2.2 for more details
[64] See section 7.2.1 for more details

7.2 Evidence from the developer and parties

Aboriginal peoples in the region are already experiencing loss of cultural values and traditional lifestyle. The Review Board heard from community Elders who described their rapid transition from a traditional lifestyle to residential living.

The Review Board heard from many people who grew up on the land speaking their native language and relying on the land for their complete sustenance. Life was hard, but healthy; strong relations and culture made for a resilient community who shared burdens (PR#647 p113). A number of Elders described the transition to modern life and the difficulties associated with it. Examples of these difficulties included relying on store-bought foods and the impact it has had on the physical and mental health of the elderly (PR#647 p118), the high cost of living which creates financial pressures on people in the community to live decently, and the disappearance of wildlife from nearby and previously reliable harvest grounds (PR#647 p56).

From community hearings, the Review Board heard participants describe how modern living has created social barriers between people that did not exist when they lived on the land. For example, people:

- do not rely on one another to get food or to make their homes and stay warm
- are now dependent on money to afford the amenities of a modern lifestyle
- no longer share frequent contact with one another, nor do they share as many experiences on the land

These all translate into a loss in community cohesion, or social capital:

> *We shared everything that was edible. (I)f we had caribou meat we shared. If we had fish — any kind of country foods — we shared with one another. But these days it's so different. Nobody will hand out a little piece of meat to share with you." –*
> Elder Elizabeth Michel (PR#647 p117)

Dominion Diamond Ekati Corporation (Dominion) hosted a Cultural Intangibles Workshop[65] on February 25, 2015, to discuss how the Jay Project expansion of the Ekati mine might impact:

- the community's perception of the land and wildlife, including caribou, in the area

[65] In its *Reasons for Decision* on the Adequacy of the Developer's Assessment Report, the Review Board found the DAR to be adequate, provided Dominion fulfilled a commitment to host a workshop with community members to discuss how the Jay Project (and diamond mines more generally) might affect Aboriginal culture (PR#277 p1-2). This resulted in the Cultural Intangibles Workshop.

- the community's knowledge of the land, places, and hunting practices
- other cultural changes to the community (PR#327 p1; PR#328)

In its follow-up report, Dominion committed to continuing to engage with Aboriginal groups, and to collaborate on ways to support communities in addressing pressures and to assist in maintaining cultural practices and identities (PR#327 p15-16).

At the Cultural Intangibles Workshop, participants described how the switch to a wage economy compounds this loss in social capital. They said, "the historic relationship of family to land, especially caribou and fish, has been disrupted as family members are removed from the community and the traditional system to accept wage employment with the mine or in the city" (PR#327 p14-15).

Participants at the same workshop described the difficulty of balancing their traditional lifestyles with the realities of a wage-economy. As one participant expressed, "[w]e will continue to have a tough time bridging a traditional culture and lifestyle that we wish to maintain while addressing the impacts of a cash economy, inflation, and the impacts of drugs and alcohol" (PR#327 p13).

The Review Board heard from community leadership how the changes and stresses described above have resulted in a cumulative impact to individual health and cultural well-being. As Chief Felix Lockhart in Lutsel K'e said:

> *We have a tremendous trauma. We have a tremendous impact, not just from the time that the diamond mines have started, but right from way back, from the residential school systems and where the government and the churches were involved, and also, the whole concept of colonialism. When our Elders did the treaties in 1900, they said there was going to be newcomers. And sure enough, there were a lot of people that come over.*
>
> *…The different impacts that we have, we need to be able to differentiate one from the other. Some of them were from residential schools. Some of them were from the mining impacts. And some of them were for just general colonialism.* (PR#697 p207-208)

Dominion identified some specific cultural impacts related to the Jay Project. The Developer's Assessment Report (DAR) described the effects of the two weeks on, two weeks off work rotation on Aboriginal people's ability to pursue traditional livelihoods:

> *The typical rotation is two weeks on and two weeks off. One of the positives is that going out on the land to hunt and fish can be accommodated during the two-week period at home. Rotational work, however, can also place stress on families, particularly those with young children. Rotational work can also affect a worker's*

> *participation in regular community activities (i.e., coaching soccer) and community and cultural events.* (PR#140 p14-101)

Additionally, the DAR notes that "language skills may be the most at risk from mine employment because English is the primary language used at work" (PR#140 p14-89).

The Review Board heard from Dominion and Aboriginal groups on the importance of language to Aboriginal culture. As described in the DAR:

> *The knowledge and use of Aboriginal language may allow for a continued connection with a traditional land use (TLU) landscape, through the continuance of local place names and vocabulary. Language also provides an avenue for the transfer of Traditional Knowledge between generations and therefore, may affect the continuance of TLU activities.* (PR#142 p15-33)

7.2.1 Cultural impacts from disturbances to the land

Hearing participants linked the loss of language and less time spent on the land to a reduced connection with the land. This concern was captured by John B. Zoe at the Behchoko community hearing:

> *(T)he real threat is … slightly towards loss of language, culture, and our way of life. Because our inheritance, which the main one is the caribou, had provided an activity of going into the landscape to read the footprints and the stories of the people that were there before us: to follow their trails and the skills needed to be out there doing that activity.* (PR#647 p148)

Community members in Behchoko believe that the caribou's avoidance of the Ekati Mine area worsens this loss of connection to the land. Before the Ekati project development, Aboriginal peoples frequented the area as a staple harvesting area and seasonal camp base. The TłĮcho Traditional Knowledge report describes the Jay Project area as "a central hunting and trapping area for the Dene since time immemorial" (PR#532 p6). Caribou and trapping were the main draws to the area, as described by Elder Phillip Dryneck of Behchoko:

> *[T]hat land has been utilized very well. It's a fat land. It's Eka-ti. 'Eka' means fat… Our ancestors have really worked the land very well. Many of our people lived on the land trapping, looking at [the land], roaming the land for furs. At fall time, people would travel north.* (PR#647 p69)

The presence of the mines deters both people and caribou from using the region. Elder Phillip Dryneck described how mining disturbances have altered people's perception of the land:

> *And then, now, when you look at it, there's a lot of resources that has been ruined, and I'm very upset because of that. I'm very concerned about all the resources that's*

> *ruined on our land. Not only is the land ruined, but, also, the water has been contaminated. The water was pristine before mining development happened… And so ever since the mine is on our lands, we're having many caribou that used to migrate through there, they're not going through the migration areas anymore.* (PR#647 p69)

Others at the Behchoko community hearing, such as Elder Elizabeth Michel, further described how caribou avoid the area as a result of mining activity (PR#647 p109. See section 6.3.3 for details). The Review Board also heard from the TłĮcho Government that 19 years of mining in the Jay Project area have turned the region into a place where Elders believe caribou no longer want to travel. The TłĮcho Traditional Knowledge report stated:

> *The caribou know their feeding grounds are of poor quality close to the mine and as such the herds choose to travel to other areas with increased forage quality. Consequently, as caribou decrease their use of the migration route through Ek'atì, the use of the far-site sample location and the migration to these locations have been altered.* (PR#532 p38)

The Review Board heard uncertainty from parties whether or not this impact is temporary or permanent; caribou may or may not return once the area is reclaimed. The Lutsel K'e Dene First Nation (LKDFN) expressed concern about the taste of water to people and wildlife, and traditional users' perception of the area (PR#521 p7-10)[66]. As the Yellowknives Dene First Nation (YKDFN) stated, so long as the area is perceived as a disturbance zone to caribou and harvesters, the experience of using the land is lost.

The YKDFN Traditional Knowledge study describes this:

> *The people's occupation and full use of the area stopped only when nonindigenous development occurred and damaged the people's land to such a degree that they no longer felt comfortable in their traditional places along the river banks.* (YKDFN 1997a: 7) (PR#562 p17)

As the YKDFN explain, "From start to finish, the Ekati mining operation will span more than a generation. This is an entire generation of traditional land users that have stopped using this area" (PR#692 p25).

[66] For further discussion on the role of perception affecting traditional use, please see Section 4.1.4.

7.2.2 Effects of impacts to the Bathurst Caribou herd on Aboriginal culture

The Review Board heard that, in addition to other well-being challenges, Aboriginal groups are dealing simultaneously with a collapse of the Bathurst caribou herd.[67] Aboriginal groups told the Review Board that the importance of the Bathurst herd for many Aboriginal groups cannot be overstated. At Dominion's Cultural Impacts Workshop, a participant described this by saying, "We are caribou people. It is fundamentally important that we talk about the caribou. They are at the centre of our existence, and we need to focus on them and what we are doing to them" (PR#327 p13). Elder Angie Lantz in Lutsel K'e stated, "Caribou is the livelihood of this community. Not only that, [harvesting]'s also a time where we can enhance the use of our own Chipewyan language. Our language and our culture is the essence of who we are as Lutsel K'e Dene" (PR#646 p110).

The Review Board heard community members describe great sacrifices and compromises that have been made by all of the diamond mine communities to restrict their caribou harvest. For example, as stated in a community hearing, "the community of Lutsel K'e has traditionally harvested the Bathurst herd. It's only recently that they haven't — because they've recognized what kind of a situation they're in" (PR#646 p61).

Community members and parties related to the Review Board how the temporary reduction or loss of caribou from the diet and lifestyle has caused much community and family stress and strife. Residents described this stress to the Review Board in Behchoko and Lutsel K'e:

> *I hardly have any caribou. I've got some, but not much. And our livelihood is mostly on caribou and fish. And not only that, but there's a lot of Elders in the community that really want their traditional food, and it's not there.* – Ms. Phoebe Rabesca, Behchoko community hearing (PR#647 p97)

And,

> *As you know, in this community, there's a lot of illnesses. Why? Because in the last so many years we have to eat store bought food. It doesn't sit well with us.* – Elder Angie Lantz, Lutsel K'e Public Hearing (PR#646 p111)

The Review Board heard that effects from the collapse of the caribou herd are burdens Aboriginal groups and communities bear almost exclusively. As stated in the YKDFN's closing statement:

> *Now, YKDFN faces a new round of harvesting restrictions which we will continue to respect, while DDEC continues to expand their mining operations. YKDFN has come*

[67] See section 6.3.5 and 6.4.4.

> *to realize that the indigenous people of the North have benefited the least from mining development, while sacrificing the most*. (PR#692 p25)

Parties said that hunting restrictions on Aboriginal harvesters were like being forced to put their culture on hold until the Bathurst caribou herd recovers. As stated during the Lutsel K'e community hearing:

> *Lutsel K'e's ability to harvest and therefore Lutsel K'e's ability to live their traditional lifestyle is directly dependent on the population of the Bathurst caribou. It says right there that we can't harvest again until the numbers are healthy again. So anything that keeps those numbers from coming back is directly impacting Lutsel K'e's ability to live the way they traditionally have.* – Peter Unger (PR#646 p61)

Aboriginal communities related to the Review Board perceived a double standard. On the one hand, Aboriginal groups have had to stop their harvest and its accompanying cultural activities for the herd to recover. On the other hand, development has not had to alter, slow down or halt its activities despite the likelihood of its impacts to caribou. The YKDFN noted this concern in its closing statement:

> *The caribou population collapse has had a significant negative impact on YKDFN. In spite of this, it is YKDFN who face increased restrictions on their traditional activities. It is not reasonable that the onus fall to the traditional harvesters of caribou and not those who have a large-scale, impact on the land.* (PR#688 p10)

A speaker in Behchoko summarized the importance of caribou to Aboriginal peoples, saying that "[i]t goes without saying that the state, and the future protection, of the Bathurst caribou herds is a priority for the TłĮcho governments and the TłĮcho people. And therefore, any new stressors for caribou must be avoided" (PR#647 p51).

7.2.3 Consideration of cultural values in decision-making

Aboriginal groups expressed concern to the Review Board over how Dominion makes use of, and considers, Traditional Knowledge. Parties made many information requests during the EA process on how Dominion incorporates Traditional Knowledge.[68] During the June 25 meeting to discuss the Jay Project Wildlife Effects Monitoring Program and Caribou Mitigation Plan (PR#459), members from Deninu Kue First Nation (DKFN), the YKDFN, North Slave Métis Alliance (NSMA) and the LKDFN all questioned Dominion on their process of Traditional

[68] For example, PR#329 - DAR-DFO-IR-03; DAR-IEMA-IR-37; DARKIA-IR-60, 70, 76, and 77; DAR-Tlicho-IR-17 and 18; PR#459 p15-18

Knowledge and how the information is used. Parties expressed frustration about the lack of a formal method of incorporating and reporting back on Traditional Knowledge. Former YKDFN Chief Fred Sangris expressed:

> *We were assured that Traditional Knowledge would be incorporated with mining information [in the IBA] -This was in 1995, it is 2015 and Traditional Knowledge is still not incorporated. If you need help on Traditional Knowledge and need help for monitoring programs then incorporate. If you are committed to working with the communities as you say you are then do it. Incorporating Traditional Knowledge doesn't give you the right to use our intellectual property rights… There has been 45 recommendations that Yellowknives Dene made to Ekati but we don't know if it was incorporated. There has been a lot of good suggestions by the companies to do good will but there has been no follow through. I hope that the incorporation of Traditional Knowledge is done quickly, so step up.* (PR#459 p15-16)

Dominion responded to the YKDFN by saying, "[w]ith the inclusion of Traditional Knowledge we are open to ideas, we want it to be an ongoing engagement that continues to improve our monitoring and mitigation. We recognize that we need to continue to strive to do it better," (PR#459 p16).

The DKFN expressed some concern over the protocols and interpretation of Traditional Knowledge:

> *What is the process of Traditional Knowledge as it comes into your company and how you utilize that information? How do you safe guard and protect Traditional Knowledge? What are you doing with that knowledge, especially after the mine shut downs? How do you take all this information and begin to articulate it in a design and address a particular issue or a problem? I did see some of your examples and there seems to be something lacking between the Traditional Knowledge input and the implementation. It seems that you interpret it the way you want…* - Patrick Simon (PR#459 p16)

The YKDFN echoed concerns over using and interpreting Traditional Knowledge. It sought feedback on what Traditional Knowledge had been obtained and how it was used. The NSMA raised concerns over manging Traditional Knowledge data. Dominion replied by saying it does

not manage Traditional Knowledge records so as not to misinterpret the context of the information in subsequent uses (PR#459 p16).[69]

In response to data management concerns, Dominion committed to provide in kind or financial support to Aboriginal parties "in order that they can manage and keep track of Traditional Knowledge that is relevant to the [Jay] Project," (PR#522 p2-2). Dominion told the Review Board that its method of considering and including Traditional Knowledge in decision-making is comprehensive, saying "[t]he importance of Traditional Knowledge is recognized and preserved in the Ekati Mine's Engagement Plan, Environmental Agreement, four Impact Benefit Agreements and in the regulatory approvals" (PR#557 p2-14).

Dominion's efforts and record of supporting Traditional Knowledge projects and engaging with communities for Traditional Knowledge are described in the DAR (PR#98, PR#101). According to Dominion, these efforts include considering and incorporating Traditional Knowledge into project and program design (e.g. PR#98 p4-2). Furthermore, Dominion employs a qualified team of professionals "that develops and manages Traditional Knowledge projects in collaboration with the Ekati Mine IBA communities," (PR#521 p2-16). Dominion makes use of qualified external assistance when capacity or additional expertise is required.

The NSMA and LKDFN acknowledged Dominion's efforts to engage and assist in gathering and using Traditional Knowledge, but remained concerned over its use and weighting relative to conventional western science (e.g. PR#521 p14). LKDFN stated:

> *Development operations not adequately incorporating Traditional Knowledge into their planning, operations and monitoring cannot properly assess impacts on these livelihoods. LKDFN is concerned that development based purely on scientific information will not fully capture potential impacts on these traditional livelihoods and this could result in significant negative impacts on these same livelihoods, especially where Traditional Knowledge conflicts with scientific knowledge.* (PR#521 p14)

The developer, responding to the LKDFN's concerns, said, "Dominion Diamond will continue to request Traditional Knowledge information related to the Jay Project and consider that information equally in Project design and implementation" (PR#557 p2-18).

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[69] The NSMA also raised the lack of a Traditional Knowledge research agreement as an issue of concern in their technical report to the Review Board (PR#522 p12).

The NSMA shared the LKDFN's concern that failing to appropriately consider the cultural connections and values "poses a significant threat to the present and future well-being of North Slave Métis people" (PR#522 p14). By not using Traditional Knowledge appropriately or to assess important cultural values, Aboriginal groups argued the Jay Project could be designed or managed inappropriately, which would result in an indirect but significant impact to cultural well-being and the Aboriginal way of life.

7.3 Review Board analysis and conclusions

The Review Board has carefully considered the evidence on the public record about potential impacts to the well-being and the traditional way of life of Aboriginal peoples affected by the Jay Project. The Review Board finds it is clear that diamond mining in the Jay Project area has already adversely affected Aboriginal way of life and well-being by altering Aboriginal harvesters' use, perception of, and relationship with the land. Aboriginal peoples' perceptions have changed from seeing this area as a 'land of plenty' to seeing it as a land that is 'heavily disturbed' and 'unhealthy'. This has resulted in a lost connection to the land in an area recognized for its high cultural importance. The Review Board accepts that this is a cumulative adverse impact that has significantly affected Aboriginal peoples' way of life in the Jay Project area.

From the perspective of the Review Board, the proposed Jay Project will create new disturbances to this cultural landscape by creating a new open pit diamond mine, substantial rock stockpiles, additional access and haul roads, removing a portion of Lac du Sauvage, and expanding the zone of influence around the existing diamond mine operations. These disturbances conflict with the traditional uses of the surrounding area. The Jay Project will also extend the existing cumulative and significantly adverse cultural impacts by an additional ten years.

In 1996, the Ekati Mine was the first diamond mine to be built in this area. Dominion anticipates that Jay Project post-closure activities will extend to roughly 2033. Taken together, the disturbances to the cultural landscape from Jay and other operations span more than 30 years. The Review Board concludes that this area will have been substantively removed from cultural use and knowledge-sharing for more than a generation. The Review Board believes this cumulative impact is adverse and significant because the lost connection to, and experience on the land threatens the transmission of Traditional Knowledge and cultural values that make up the Aboriginal way of life.

The Review Board further recognizes that the health and well-being of Aboriginal peoples and of caribou is inseparably linked. If the herds are lost, the way of life that has sustained these peoples and their ancestors is also at risk. In its assessment of impacts to caribou, the Review Board concludes that the suite of Dominion's mitigations and commitments, combined with the measures identified in this REA, will serve to mitigate impacts from the Jay Project to this culturally important species. With these measures properly implemented, the Review Board

does not believe that the caribou population will decline further because of the Jay Project. It nonetheless recognizes the significant and cumulative impact the decline of the caribou population has had on Aboriginal groups, their well-being and way of life (see section 6.3.5). The Review Board is concerned about these cumulative impacts to Aboriginal well-being and how they interact with the additional cultural impacts from the Jay Project in combination with other diamond mining developments. The Review Board believes that specific attention is warranted to address cumulative cultural impacts, in particular those affected by the Jay Project.

The Review Board does not believe that existing efforts outlined in the Socio-Economic Agreement and Impact Benefit Agreements are sufficient to mitigate the significance of these cultural impacts. Nor does the Review Board believe that all of these cultural concerns are adequately captured or managed by Dominion's mitigation of Jay Project impacts to biophysical components like caribou and water.

7.3.1 Impacts to Aboriginal well-being and way of life

The Review Board notes the history of development in the region and the proximity of three other diamond mines. Parties and community members expressed concern to the Review Board on the number of mines operating in the region and questioned the capacity of the human and biophysical environment to sustain additional mines. The Review Board notes the Sable Project as an example of a likely future development in the region. The Review Board considers that these concerns relate to the existing environment. The Aboriginal way of life and their community health and well-being (see section 8) have been found to already be adversely and significantly affected by cumulative impacts.

The Review Board heard repeated concerns regarding the long-term impacts on cultural use and caribou habitat resulting from the removal of this land. In the Review Board's view, the lost experience on the land represents a cumulative impact of losing the connection to the land. The Review Board is concerned that diamond mining disturbances could inadvertently result in a permanent loss of Traditional Knowledge sharing and experience of using the land in the Ekati Mine area. The Review Board views such a loss as a significant and irreversible impact to Aboriginal way of life and cultural well-being.

Evidence from both the parties and the public affirmed the overall fragile state of the Bathurst caribou herd and the people whose cultural fate depends on them. The Review Board further understands that prolonged disturbance to this area, to caribou, and to Aboriginal way of life is not acceptable to community members.

The Review Board assessed the concerns Aboriginal groups raised over Dominion's incorporation of Traditional Knowledge into decision-making. Dominion evidently has a comprehensive process of gathering and using Traditional Knowledge. However, the Review Board believes Aboriginal parties' concerns on the uncertainty of this process represent a gap in

establishing a reliable method of considering culturally valued components in Project design and operations. The Review Board agrees with Aboriginal groups that an improved Traditional Knowledge management system will fill this gap and, in so doing, reduce the likelihood of the Jay Project inadvertently impacting Aboriginal well-being or way of life.

7.3.2 Review Board conclusion

The Review Board concludes that the Jay Project will contribute to cumulative and significant adverse impacts to the well-being and way of life for affected Aboriginal groups. The Review Board has determined this on the understanding that the Jay Project will add to the disturbance of a culturally important landscape that the Ekati Mine and other diamond mining operations haves already been significantly affected by the Ekati Mine and other diamond mining operations. Moreover, the Review Board has determined that the Jay Project, by continuing mining for another decade in the project area, will contribute to these adverse impacts through the:

- likely continued loss of Aboriginal language use (associated with mining rotation work)
- likely continued lost connection to the land in the Jay Project area (related to the shift in perception by harvesters that the area is heavily disturbed, unhealthy and unfit for traditional uses)
- potential loss of cultural memory and Traditional Knowledge for the area (related to a generation's reduced use of the land and the resulting reduction of Traditional Knowledge of the area being transmitted from one generation to the next)
- adverse affect on valued cultural components like water, the Narrows and caribou

The Review Board believes any of these outcomes represents a significant adverse impact to Aboriginal well-being or way of life. The Review Board concludes that:

1. The Ekati Mine, in combination with other diamond mines, has had a significant impact on the Aboriginal way of life and well-being.
2. The Jay Project will have an adverse impact on the Aboriginal way of life and cultural well-being.
3. The existing methods and mechanisms to mitigate cultural impacts do not adequately identify or reduce Jay Project effects on valued cultural components to an acceptable level.

As such, the Review Board recommends that any new developments in the Jay Project area only proceed with a deliberate focus on identifying and adaptively managing Jay Project effects to Aboriginal way of life and cultural well-being. The measures below will mitigate the significant adverse cultural impacts of the Jay Project.

7.4 Measures and suggestions

7.4.1 Traditional Knowledge Management Framework

The following measure is intended to mitigate significant cumulative impacts of diamond mining and significant impacts of the Jay Project on the environment, traditionally used areas and Aboriginal way of life. It builds upon Dominion's commitments to use and consider Traditional Knowledge as described in section 11 of the EA (PR#411 p26). The measure is intended to improve the management of the Jay Project from an Aboriginal cultural perspective by considering Traditional Knowledge appropriately (in context and respectfully). It requires a more transparent and consistent process of incorporating Traditional Knowledge into decision-making. In the measure, this is referred to as a "Traditional Knowledge Management Framework".

The measure will help Dominion implement other measures in this report to mitigate impacts to caribou,[70] water,[71] aquatic life,[72] and traditional use areas in the vicinity of the Jay Project area, including the Narrows.[73]

Measure 7-1: Traditional Knowledge Management Framework

In order to mitigate the Jay Project's cultural impacts to traditional use areas or culturally valued components like caribou, water or aquatic life, Dominion will develop a Traditional Knowledge Management Framework that describes protocols for collecting, storing, managing and using Traditional Knowledge. This will be done in a manner that is culturally suitable for each community. Dominion will use the Traditional Knowledge gathered through the framework to inform Project decision-making. This framework will be developed prior to the construction phase of the Jay Project and will apply for the lifetime of the Jay Project (construction, operations and closure phases).

In developing the Traditional Knowledge Management Framework, Dominion will consult with each Aboriginal group affected by the Jay Project, in a culturally appropriate manner, while developing the protocols. Dominion will report annually on how Traditional Knowledge influenced Jay Project decision-making.

[70] See Measures 6-1, 6-2, 6-3, 6-4, 6-5, and 6-6 in the Caribou section (section 6)
[71] See Measures 4-1, 4-2, and 4-3 in the Water section (section 4)
[72] See Measure 5-1 in the Aquatic Life section (section 5)
[73] See Measure 5-1 in the Narrows section (section 5.1)

The Review Board acknowledges that Aboriginal groups claim intellectual property rights over their Traditional Knowledge. As such, Aboriginal groups have a responsibility to manage how their Traditional Knowledge is used. This includes deciding what constitutes Traditional Knowledge, how it is gathered, how it is approved, and how it should be confirmed for authenticity or context.

Suggestion

To ensure that Traditional Knowledge is consistently being used in a manner that is agreeable to Aboriginal groups, each Aboriginal group affected by the Jay Project should develop a standard Traditional Knowledge Use Protocol. This protocol would inform how Traditional Knowledge is captured, managed, reported on and used. This protocol would facilitate Dominion's effort in establishing a Traditional Knowledge Management Framework that is meaningful to Aboriginal groups.

Aboriginal groups should work with Dominion to establish what Traditional values should be monitored for Jay Project impacts, and how monitoring should occur.

7.4.2 Cultural offsets for lost use of land

The following measure will offset adverse cultural impacts of diamond mining on the practice of the Aboriginal way of life in the Jay Project area. In particular, the measure seeks to create a cultural camp to reduce the risk that Aboriginal use of the land, connection to the land, and knowledge of the land will fade over the lifetime of the Jay Project. This will help restore the cultural association and memory of individuals with the disturbed landscape by facilitating use of the land by Aboriginal groups, including Aboriginal harvesters and their families. The Review Board expects activities at culture camps to promote increased language use, re-establish relationships with the land, develop survival and life skills for youth, and strengthen cultural bonds within and between Aboriginal groups.

Measure 7-2: On-the-land culture camp

In order to mitigate significant adverse impacts of the Jay Project on traditional use of the area and transmission of cultural values, Dominion will, during the construction and operations phases of the mine, support an on-the-land culture camp, in a traditionally used area near the Jay Project. This culture camp will be used by Aboriginal groups to maintain or establish a connection with disturbed areas of land and restore Traditional Knowledge transfer between generations about the area affected by diamond mining.

Dominion will consult with Aboriginal groups that participated in the environmental assessment to decide on the location, timing and frequency of use of the culture camp. Dominion will support the camp's use and access, financially or in-kind.

8 Maximizing Benefits and Minimizing Impacts to Communities

8.1 Summary of Review Board's findings

The Review Board finds that the Jay Project is likely to cause significant adverse cumulative impacts to the health and well-being of communities, families, and individuals in diamond mining communities because:

1. Cumulative adverse impacts to the health and well-being of diamond mine communities are significant.
2. Communities have identified adverse cumulative impacts associated directly or indirectly with diamond mining, which are currently affecting communities. The developer has acknowledged that existing impacts to health and well-being are significant.
3. Communities have indicated that these adverse impacts have worsened over the history of diamond mining in the NWT, and are a significant concern of residents and communities affected by the Jay Project.
4. As a continuation of the Ekati project, the Jay Project is likely to add to these existing adverse impacts.
5. Aboriginal groups are concerned about employment barriers for vulnerable community members.

Section 8.2 summarizes the evidence from the developer and parties. Section 8.3 presents a detailed analysis of the Review Board's reasons and conclusions. In section 8.4, the Review Board proposes measures intended to mitigate and/or prevent potential adverse impacts that may otherwise be significant should the Jay Project proceed.

8.2 Evidence from the developer and parties

During the EA process, parties provided evidence on the substantial economic benefits related to the Jay Project and to diamond mining generally. In his opening remarks to the Review Board at the Public Hearing, Dominion CEO Brendan Bell described the importance of the Jay Project to the people and economy of the NWT:

> *The extension of the Ekati mine is of critical importance, not just to our company, but to the Northwest Territories. Dominion Diamond currently employs more northern and more Aboriginal people than any other northern company. And we spend more than a quarter of a billion dollars annually with northern companies. During the life of the Jay Project Dominion Diamond expects to contribute over $6 billion to the GDP of the NWT, and to generate over $270 million in direct corporate taxes payable to the territory. -Dominion Diamonds CEO Brendan Bell, PR#639 pp29-30*

The Review Board also heard from Dominion about the Jay Project's potential to "soften the adverse economic and population effects of the closures of other operating mines," (PR#699 p5-1). Dominion predicts significant adverse socio-economic effects if the Project does not proceed—a position that was echoed by the GNWT, some Aboriginal parties, and organizations like the NWT Chamber of Mines, the Town of Hay River, and the Kitikmeot Inuit Association.

The Review Board heard from some Aboriginal parties and community members on the desire for, and anticipation of, continued and additional employment and contracting opportunities. TłĮcho members spoke of limited opportunities in the remote communities and the need to find work for young people (PR#647 pp70,134, 141).

Though they want to benefit from the Jay Project, communities and Aboriginal groups expressed a need to balance development prospects carefully with future considerations (for example, PR#647 p148). For some Aboriginal groups, the Review Board heard concerns that a balance does not exist—that the benefits from diamond mining are not equally distributed. Representatives from Lutsel K'e Dene First Nation (LKDFN), Yellowknives Dene First Nation (YKDFN), North Slave Métis Alliance (NSMA) and Deninu Kue First Nation (DKFN) commented on the challenges to benefitting from diamond mining, and noted that concurrent health and well-being issues affect their communities.

The Review Board finds that, despite its economic benefits, the Jay Project is likely to add to existing significant adverse cumulative socio-economic impacts among residents of NWT diamond-mining communities.

8.2.1 State of existing socio-economic issues

Over the past 19 years, eight communities in the TłĮcho and Akaitcho regions[74], and Kugluktuk, Nunavut, have grown and developed alongside the diamond mines. Communities told the Review Board that, in the 1990s, they supported this growth with the understanding that employment and contract opportunities would be deliberately designed for their benefit (for example, Impact and Benefit Agreements and developer commitments from the original environmental assessment (EA)).

The communities supported the Ekati project in the 1990s partly because of the Socio-Economic Agreement (SEA) between the BHP Diamonds Inc. (BHP, owner of the Ekati mine at that time) and the Government of the Northwest Territories (GNWT). The SEA was intended to mitigate any adverse direct or indirect socio-economic impacts (such as impacts on gender

[74] Yellowknife, Behchokǫ, Detah, Gamètì, Łutselk'e, Ndilǫ, Wekweètì, and Whatì.

equity, social health and well-being) and maximize mining benefits (PR#414). The SEA was explicitly designed to progressively manage socio-economic issues related to diamond mining. Some Aboriginal groups such as the NSMA view the SEA as "the only tool available to us to hold the GNWT and the developer accountable" (PR#522 p18). The SEA states:

> *2.1.4 The regular monitoring of socio-economic impacts are undertaken, and furthermore unforeseen events or impacts, or impacts the scope of significance of which are greater than foreseen, are addressed and dealt with in accordance with the spirit and intent of this Agreement; and, 2.1.5 As set out in Section 5.0, negative social impacts of the Project on communities are minimized and all opportunities for the increased wellness of those communities are maximised.* (PR#414 p4)

However, many community members told the Review Board that the expected positive socio-economic outcomes and benefits have not materialized, and that adverse impacts are getting worse. According to Peter Unger, manager of the Lutsel K'e's Wildlife Lands and Environment Department, while the developer has achieved overall employment targets, "a lot of the health and well-being targets, a lot of the indicators are not improving… [S]ome of them are getting worse, and we think that drastic action is required". (PR#646 p53)

Lutsel K'e Chief Felix Lockhart echoed this sentiment when he addressed the Review Board at the Lutsel K'e community hearing, stating that the "socio-economic status in our community is basically in a deficit in a lot of ways" (PR#646 p13). Most of the Lutsel K'e residents who presented to the Review Board at that community hearing shared this perceived failure and their disappointment with existing conditions. Community members and parties described deteriorating social conditions since diamond mining started, with none of the anticipated benefits companies had promised. One community member described the significant impact "on our mental well-being here in the community and our mental health. And you can see it in your own data in socio-economic reports over the years. You can see how our community and the data shows this suffering," (PR#646 p171). Based on their negative experiences to date, residents of all ages did not want to gamble their future on resource promises. As ex-Chief Florence Catholique described it:

> *When we talk about the issue of Diavik and Snap Lake, Diavik, all these mines, it -- I know -- I know how many people are working there, the problems they're having. One person he said -- if I work, he said, he'll complain that his rent is going up. And some people separated. There are a lot of social problems because of it… there are a lot of social problems.* (PR#646 pp94-95)

The NSMA revisited the concerns that its members had brought forward during the original 1996 Ekati EA, and in its closing submission reminded the Review Board that "(t)hese issues they predicted, unfortunately, materialized and are worsening" (PR#695 p3). Despite the 1996 assessment and its conditional measures, communities told the Review Board during this EA of

social and cultural impacts from diamond mining, and community members expect them to worsen with the Jay Project.

8.2.2 Impact of Diamond mining on community health & well-being

The Review Board heard from the YKDFN, LKDFN and NSMA that communities continue to face serious social and cultural challenges from diamond mining (for example, PR#692 p22,25; PR#695 p3 and PR#697 pp2-3). The complex nature of these issues has complicated efforts to resolve them.

Both Dominion and the GNWT expressed challenges to identifying causal linkages between diamond mining and its impacts on communities. Dominion found "[d]etermining effects on health and well-being due to mining is not as straightforward as determining effects on other indicators," citing economic indicators as a comparison (PR#305 p1118 – DAR-TłĮcho-IR-14). Difficulties arise, Dominion said, "in disentangling social change resulting from mining specifically, as opposed to from other forces of change," (PR#454 p3: DAR-MVEIRB-IR2-30). Even if impacts can be attributed to mining, Dominion found "it is impossible to identify what effects may be caused by the Jay Project versus the cumulative impacts of all development and activities in the region" (PR#327 p4).

The GNWT described its perspective on health and well-being issues in its response to a Review Board information request:

> *It is important to differentiate negative trends from 'significant adverse impacts'. There are a number of factors influencing the wellness of individuals, families, and communities and negative trends may be attributable to rapid social, cultural or environmental change at both a local and territorial level, in addition to potential impacts from resource development. (PR#454 p1)*

In its 2014 Annual Communities and Diamonds Report, the GNWT reports worsening adverse trends in diamond mining communities.[75] The report indicates a decrease in the number of people speaking aboriginal language and increases in the following indicators:

- potential years of lost life

[75] The Review Board uses the phrase "diamond mining communities" to describe communities that are directly affected by diamond mining through impacts and benefits, and includes both physical and organized communities (for example Dettah and the North Slave Métis Alliance). This interpretation differs slightly from the Socio-Economic Agreement (SEA), which refers to these communities as "point-of-hire" communities. Point-of-hire communities are defined in the SEA as "the places in the Northwest Territories at which individuals become employees of BHP and includes the City of Yellowknife and such other communities as may be identified in the impact and benefit agreements and such other communities as may be mutually agreed upon by the Parties" (PR#414, p3).

- number of single-parent families
- number of sexually-transmitted infections
- number of households in core need
- crimes
- violent crimes
- 'other' criminal code crimes
- property crimes
- Federal statute crimes

The Review Board asked parties to comment on the magnitude of the identified adverse social trends, including acceptable rates of change and when a threshold might be crossed. The Review Board heard from the GNWT that "[a] "threshold", as requested by Review Board, "does not exist," (PR#454 p1). The GNWT cautioned the Review Board on the interpretation of the Communities and Diamonds Report data, saying it "demonstrates a correlation between resource development activity and community wellness – it does not provide causality or speak to the magnitude of a trend" (PR#454 p1).

The significance of these adverse trends was nonetheless an issue of concern for parties. The NSMA stated in their technical response that "no negative social impacts associated with the development are tolerable," (PR#522 p28). The NSMA was concerned about the GNWT's and developer's approach to tracking relevant indicators, saying "there are currently no effective research or monitoring programs administered by the GNWT or the developer to track all the relevant indicators. Nor do they take responsibility for negative impacts" (PR#522 p28).

The NSMA requested a different approach to socio-economic impact mitigation, including "more effective research and monitoring (including qualitative research), as well as better and clearer accountability for impact mitigation" (PR#522 p28).

In its response to a Review Board information request to clarify its position, Dominion also recognized the seriousness of mining impacts to health and well-being. Dominion acknowledged that the identified adverse trends from the Communities and Diamonds report, and their continuation, are significant and may continue despite Dominion's ability to mitigate (PR#448 p3; DAR-MVEIRB-IR2-30). Dominion maintained that:

> *While the Project is predicted to not contribute to these adverse trends, Dominion Diamond is committed to working with the Government of the Northwest Territories, health and wellbeing-focused organizations, and communities to proactively address them to the extent possible. (*PR#448 p3; DAR-MVEIRB-IR2-30)

Furthermore,

> *The Project, as an extension of an existing mine, does not change the health and wellbeing conditions in communities, or alter existing health and wellbeing trends. The Project neither improves, nor worsens the baseline conditions to a point where most people or communities will experience a change in their health and wellbeing. As a result, the effect of the Project on the existing health and wellbeing of communities is considered not significant. (PR#448 p3; DAR-MVEIRB-IR2-30)*

The Review Board heard evidence of cumulative social impacts from diamond mining. In the summary report from Dominion's Cultural Intangibles Workshop, participants explained that:

> *It is evident that the cumulative effects of diamond mining have had an impact on the historic socio-cultural patterns of the Aboriginal communities involved in the culture workshop. Ultimately, the cash economy has influenced a divide within communities into the "haves and have-nots": those who are able to benefit from development and earn cash wealth, those who have not been able to secure employment or other benefits as a result of development, and those who continue to try to pursue a traditional lifestyle.* (PR#327 p14)

The Review Board also heard Aboriginal groups describe the connection between diamond mining and community wellbeing. For example, the YKDFN indicated that:

> *YKDFN Community Wellness Department has identified a number of markers of community wellness have shown a significant deterioration as a result of increase mine activity… It is YKDFN's assertion that the decrease in community health and wellbeing is a pressing community concern.* (PR#692 pp21-22)

The list of deteriorating markers included:

- loss of traditional language
- increased evidence of sexually-transmitted infections
- poor nutritional status
- addictions
- inaccessibility of high quality jobs
- gender gaps in employment

Of these, the YKDFN identified the loss of language, increasing rates of sexually transmitted infections, and the gender gaps as significant concerns within the community (PR#692 pp22-23).

8.2.3 Investigation of diamond mining impacts on communities

The GNWT uses the annual Communities and Diamonds Report to fulfill its annual SEA reporting requirements. This report tracks effects on various health and well-being indicators

during diamond mining operations (PR#415 ppi-2). The report is distributed to each diamond mining community.

The NSMA, YKDFN and LKDFN all contend that lack of feedback and analysis render these annual reports, and the larger SEA, ineffective. The LKDFN noted that "while the report does present data on the indicators, there is no discussion of what is being done when the trend of an indicator is undesirable. While the data is very much appreciated, what is more important is to see that action is being taken when a problem is evident" (PR#697 p5).

The GNWT responded to parties' concerns that the SEA is not effective, citing the challenges of establishing causal links between worsening indicator trends and diamond mining (PR#454 p1; PR#697 p4). The GNWT argued that an inability to establish a causal link made it challenging to develop intervention strategies.

The GNWT expressed confidence throughout the EA process that its existing health and social services and programming can meet the needs of concerned communities (PR#693 p21). The GNWT offers a variety of social, health and well-being programs as part of its mandate, such as:[76]

- Early Childhood Staff Grant
- Skills 4 Success Initiative
- The Canada-Northwest Territories Job Grant
- The HSS System Navigator
- 24/7 Helpline – the Community Counselling Program
- 32 Healthcare facilities with flexible staff to accommodate local concerns
- Community engagements to personalize health services
- Community Wellness Plans

The GNWT described how it manages health and wellness program delivery, monitoring, evaluation, and strategies to identify and tackle issues at the community level:

> *The [GNWT] departments consider data that includes capturing changes in the population, employment and education levels, trapping, hunting and fishing activity across the territory and are committed to using this data to be both proactive and responsive in the programs and services delivered to minimize negative health and well-being changes. (*PR#454 p1)

[76] See PR#693 pp21-27 for more details.

The GNWT "adapts programming on the basis of population-level trends and the full suite of indicators available at any given time" (PR#693 pp26-27). Based on the strength of these programs, their frequent evaluation and modification, and their availability to all NWT communities, the GNWT remained optimistic that "the Project will not result in significant adverse impacts on the human environment. The GNWT has programs and services in place to address wellness of all NWT residents" (PR#693 p26).

The GNWT's programming is designed for all communities and residents of the NWT (PR#693 p24). The LKDFN questioned the existence, utility and accessibility of these Territorial programs:

> *The GNWT claims that there are programs in place to address negatively trending indicators, but many residents are not aware of them. It is very difficult to find information about these programs and the GNWT has admitted in questioning that it does not have an information resource allowing people to see what is being done to address socio-economic impacts. (PR#697 p5)*

Questioning from the public hearing established that the GNWT had neither undertaken, nor was aware of, any studies that explicitly investigated diamond mining effects on community health and well-being (PR#697 p5). From the perspective of the LKDFN, it is untenable for the GNWT to assert that there are no significant adverse impacts of diamond mining on communities, with no evidence to support the claim. The LKDFN submitted that:

> *[R]epeatedly in the [Communities and Diamonds] Report it is stated that no effect from mining is discernible without any evidence to support this statement. Questioning from the public hearing clarified that the GNWT has not done ANY research into socio-economic impacts from mining. Therefore, a statement of a lack of effect is completely baseless and should not appear in an official publication. This is especially concerning when the company is making the claim that the development will have net positive socio-economic effects.* (PR#697 p5)

The LKDFN, YKDFN and NSMA all expressed disappointment in the GNWT's decision to not recognize the seriousness of diamond mining impacts on community health and wellbeing (e.g. PR#695 p3; PR#697 pp5-6; PR#639 pp152-154). Chief Clifford Daniels articulated this perspective at the Behchoko community hearing, stating:

> *And we are saddened to see that the GNWT will not connect the mines being open with changes we know we are experiencing in the remote communities. We urgently need new initiatives and community-based programs in our communities. We urge the GNWT to work more closely with us to build environmental programs.* (PR#647 p160)

8.2.4 Jay Project effects on health and well-being

Dominion maintains that the Jay Project will extend the existing Ekati mine's life without contributing measurable or significant changes to the health or well-being status of communities. The developer argues that the Jay Project "neither improves, nor worsens the baseline conditions to a point where most people or communities will experience a change in their health and wellbeing" and that the "effect of the Project on the existing health and wellbeing of communities is considered not significant" (PR#448 p3).

Dominion clarified its definition of significance in response to an information request from the Review Board, saying that "significance in socio-economic assessment is determined for Project effects on the basis of the expected result for most people or of the effect's manifestation at the community level" (PR#448 p2 - Dominion, IR2-30). In its closing arguments, the YKDFN told the Review Board that its list of deteriorating community wellness markers[77] meets Dominion's definition of significance:

> *These decreases in wellbeing relate directly to the proponent's response to DAR-MVEIRB-IR2-31 … [which states] "if the Project results in a change to the health and wellbeing of most people in communities, or if the effects create community or societal concern over the status of health and wellbeing, it could have a significant effect".* (PR#692 p22)

Finally, the Review Board heard concerns from communities and Aboriginal groups that the Jay Project would extend the duration of existing adverse socio-economic impacts from diamond mining. The NSMA acknowledged Dominion's attempts to address outstanding social issues, but called for reform in both the developer and the GNWT's approach to addressing negative impacts:

> *the urgency and severity of the situation persists as long as there are significant adverse trends in the communities. It is time, after nineteen years of negative impacts, to fundamentally review and renew the developer and GNWT's approach to the problem people face in the impacted communities.* (PR#695 p3)

[77] The YKDFN list of deteriorating community wellness markers include: loss of traditional language; increased evidence of sexually-transmitted infections; poor nutritional status; addictions; inaccessibility of high quality jobs; and gender gaps in employment (PR#692 pp22-23).

8.2.5 Relationship between social conditions and public support

The Review Board heard from parties that deteriorating social conditions in diamond mining communities have increased the public's concern about resource development projects. Three positions articulate this concern: the YKDFN identified significant community concerns related to diamond mining (PR#692 p23); the NSMA wants to see improved social conditions for its members (PR#695 p3); and the LKDFN opposes the Jay Project (PR#697 p11). The public articulated its concern about diamond mining at community hearings. For example, at the Behchoko public hearing, Chief Clifford Daniels stated that "(W)e do connect the changes we see in the communities to mines. We see many young families torn apart by the work of one or the other partners at the mine. We know many families like this," (PR#647 p160).

Comments from the NSMA and LKDFN indicated that public concern is greater today than during the original 1996 Ekati EA, particularly related to caribou and social impacts.[78] Community members expressed their struggle to have these concerns addressed and to reverse the adverse changes they were experiencing. Gloria Enzoe in Lutsel K'e expressed this frustration, saying:

> *Today we struggle in this community. You guys come to rich people here. We're rich in our heart and we're rich in our culture and our traditions, and our spirituality. But it's like we've been fighting for how many years since the diamond mine came. And it's like we fight all the time.* (PR#646 p132)

Aboriginal groups and community members are concerned that both the GNWT and the developer have failed to address these deteriorating social conditions. Community members felt they cannot sustain the continued effects of worsening health and well-being (PR#646 p92, pp197-198). The Review Board heard particular concern from the community of Lutsel K'e, where residents argued they had seen few benefits from diamond mining, but experienced many of the social ills.

This community frustration came to the fore in the LKDFN's collective opposition to new diamond mine projects until social issues are resolved.[79] In its closing arguments, the LKDFN stated:

> *There has never been a discussion of limiting further mining in LKDFN territory and the assessment of cumulative effects is woefully inadequate, while conversely, large amounts of resources are poured into supporting exploration and attracting further development. This does not seem like balance and it is difficult for LKDFN to not see*

[78] See section 6.3.5 in caribou section for further discussion of these.
[79] See section 8.2.1 and 8.2.3 for further discussion.

> *it as biased, especially when many of their concerns are dismissed and their position is merely taken into consideration rather than being a deciding factor.* (PR#697 p2)

The Review Board heard from the GNWT *Community and Diamonds 2014 Annual Report* (PR#415) that diamond mining communities may experience disproportionate sustained impacts compared to non-diamond mining communities. The report, which is updated and released every year, shows that many of the health and well-being indicators are statistically worse in diamond mining communities than in other NWT communities.

Community members corroborated these trends, and expressed fear of further social decline if the Jay Project is approved. Community members described a dramatic decrease in quality of life and community structure over the history of diamond mining in the territory. Gloria Enzoe, a mother from Lutsel K'e, conveyed these impacts to the Review Board in her opposition to the Jay Project:

> *You know, I was just a young girl and they introduced diamonds and the mines and they promised, 'You'll live a good life. You'll be rich and abundant -- and community wealth. Everybody will be happy.' It's not like that. It's not like that. Social problems are escalating. Our elders are passing. For me it's the social problems that drive me.* (PR#646 p132-133)

In its closing argument, the GNWT acknowledged the social concerns raised during the EA process (PR#693 p24). The GNWT highlighted its strong participation during the EA process, which included the active review of socio-economic concerns and Project components by the following Departments: Health and Social Services, Industry Tourism and Investment, Education, and Culture and Employment (PR#639 p209). From its assessment, the GNWT determined that:

> *socio-economic concerns have been adequately addressed through information provided throughout the EA process, DDEC's continued commitment to the terms of the existing Ekati SEA and ongoing engagement. The GNWT remains committed to continued engagement and collaboration between DDEC and NWT communities to address any health and well-being concerns as they arise.* (PR#693 p27)

Public support for economic and community benefits

The Review Board did hear support for the Jay Project from members of the public at the public hearings (PR#639; PR#644). Representatives of the Kitikmeot Inuit Association, the Town of Hay River and the NWT & Nunavut Chamber of Mines spoke of the substantial direct economic benefits of diamond mining and the indirect social benefits. For example:

> *The community of Hay River benefits through both the direct employment of our residents onsite and indirectly through the various businesses that have been established locally to support the growth and the ongoing operations of mining in the Northwest Territories.* (Andrew Cassidy, Mayor of Hay River, PR#644 p295)

And,

> *Inuit from the Kitikmeot region, many of whom actually live in the NWT, have benefited from employment generated by the diamond mines either as direct employees or as employees of Kitikmeot Corporation companies. It's also worth noting that Inuit have received training at the diamond mines that has helped them to access employment elsewhere. The diamond mines have provided other social benefits.* (Christy Sinclair, Kitikmeot Corporation, PR#639 p278)

The Kitkmeot Corporation described diamond mining as a "critical factor in Kitikmeot Corporation's development and ongoing success," (PR#639 p277) which "supports the Kitikmeot Inuit Association's initiatives to deliver social and cultural programs," (PR#639 p278). Both the Kitkmeot Corporation and the Town of Hay River offered their full support for the Jay Project.

The NWT Chamber of Mines highlighted some of Ekati's contributions to the NWT and to northern mining : "Ekati really helped usher in a whole new era of mining with notable achievements in the areas of safety, socio-economic commitments and successes, and environmental standards," (PR#639 p283). It pointed out that Ekati was built to a modern social and environmental standard, and represented a new class of mine compared to previous NWTmines. Ekati was the first mine to bring an international standard of health and safety to their operations, the first to negotiate Impact and Benefit Agreements with affected Aboriginal groups, and the first to sign a Socio-Economic Agreement with the GNWT to ensure socially responsible mining that benefitted northerners (PR#639 pp283-284). Tom Hoefer, Executive Director NWT & Nunavut Chamber of Mines, stated:

> *(T)here's tens of millions of dollars in community spending, and donations and various other sponsorships that's paid out regularly. And I think we can't forget about their contribution as well to the almost $40 million that's been shared in diamond royalties now with Aboriginal groups that have a settled claim and, of course, more that will come with the devolution agreement sharing.* (PR#639 p285)

8.2.6 Social barriers to employment

The Review Board heard from some parties that approving the Jay Project would likely worsen socio-economic conditions for the most vulnerable groups in communities. In the DAR, Dominion defines vulnerability in relation to economic status, as "those with lower incomes in relation to their household costs… [s]ingle parent families, people living on fixed incomes (i.e.

pensioners) and those dependent on income assistance" (PR#140 p14-90). Elsewhere, Dominion connects lack of education and other social issues with barriers to employment, thereby expanding vulnerability to a broader group that includes those with "low educational attainment and literacy, alcohol and drug abuse, and past criminal activity…" (PR#255 p7; PR#337 p6). Dominion's Cultural Intangibles Workshop report states: "(a) divide is growing between those who have money and those who cannot get the jobs. This creates social and cultural alienation for many people in the communities" (PR#327 p12).

Phoebe Rabesca described the risk of excluding potential employees due to limited education saying that "… now everything's education, technology, you know…if you don't have a university degree, if you don't have a college degree, everything's based on that now," (PR#647 p98). During the hearings, communities emphasized that Dominion must make efforts to ensure vulnerable groups are not excluded from the benefits of ongoing development projects. The Review Board heard concern and hope in Behchoko and Lutsel K'e about the well-being of youth and their future opportunities. As Elder Nick Football commented, "It's no use to concentrate a lot on the Elders, because the Elders have a shelter, a place to go to… there's more young people and the unemployment is much higher. Some of them are still living with their parents, because they are not able to afford their own housing" (PR#646 p139).

The YKDFN and Behchoko community members raised questions about hiring policies preventing those with criminal records from getting jobs. George Mantla cited concerns about the lack of jobs available for young people and their limited opportunities in communities, often leading to boredom and mischief:

> *I hope you guys could create more jobs for [the] younger generation. They never stole [from the] mine. I don't know why [the mine is] using criminal record. They got charged because they got no jobs. That's the main thing. They got not jobs. That's why they get charged: [They] hang around town. They're not going to steal money. (PR#646 p134)*

Dominion's method of assessing potential hires with criminal records was described in an Adequacy Review response to barriers to employment. Dominion conducts case-by-case security assessments. When an applicant self-declares a criminal record, Dominion's security investigators consider the timing and severity of the crime before recommending whether to hire (PR#255 p8). Dominion CEO Brendan Bell confirmed this approach during the public hearing in Yellowknife, saying "I have waived situations like this to ensure we don't prohibit people from gaining employment which will help their family, help their community… We know it's a concern. And we want to help be a part of the solution" (PR#639 pp55-56).

Dominion described further initiatives for youth in its Socio-Economic Adequacy Review response, outlining employment recruitment, retention and training initiatives, and

community-based initiatives focused on youth engagement, leadership development and education support (PR#255 pp9-11).

The Review Board heard the YKDFN and NSMA's concerns related to gender equity and diamond mining. The YKDFN described the gender gap as "significant, with women being chronically under-represented in mining industry jobs," and making up, "a smaller proportion of higher paying jobs" (PR#692 p23). The NSMA raised concerns on the disempowerment of women, noting that the "likelihood of violence against women tends to increase in households where women earn less than men" (PR#697 p5).

In its closing submission, Dominion acknowledged barriers to women in diamond mining and in the NWT. The Review Board heard that Dominion has taken specific actions "to try to minimize these barriers, where possible in its workforce," (PR#699 pp 5-1 to 5-2). Dominion added, however, that its employment rate of women at the Ekati Mine (15%) is within the 14%-17% mining industry average (PR#699 p5-2). Dominion further committed to "evaluate the status of the employment of women at the Ekati Mine, and to develop strategies to improve performance" (PR#699 p5-2*)*.

The NSMA acknowledged Dominion's efforts in their closing submissions, but observed that women continue to be under-represented "despite the long list of programs and efforts DDEC provided" (PR#697 p5). The NSMA noted that women's organizations made substantial contributions during the 1996 EA. It recommended to the Review Board that the Status of Women Council of the NWT assist Dominion with its initiatives to increase gender equity.

8.3 Review Board's Analysis and Conclusions

8.3.1 Summary of Jay Project impacts and benefits

Evidence from the parties, including testimony from Aboriginal community members at the hearings, showed the Review Board that many people in diamond mining communities struggle with issues affecting their overall well-being. This includes the ability to chart a healthy future in line with community values. This struggle has occurred despite the economic and employment benefits from the diamond mines. These promised benefits have not offset many of the issues that parties and the public described. These issues continue to limit the future well-being and potential of diamond mining communities.

The Review Board accepts that, alongside its many benefits, diamond mining contributes to existing social and cultural impacts, primarily on Aboriginal communities. The Review Board believes that without mitigation, the Jay Project will extend these impacts for another decade.

8.3.2 Managing social impacts from diamond mining

During the course of the EA, the Review Board assessed the adverse social and economic concerns likely to arise from the Jay Project. As a continuation of the Ekati Mine, the Review

Board gauged Dominion's likelihood of succeeding in minimizing socio-economic impacts partly by observing how it manages adverse socio-economic issues at the Ekati Mine. The Review Board determined that a good process exists, but Dominion is not following it sufficiently to minimize or mitigate adverse impacts to community health and well-being.

In particular, the Review Board has noted that the primary process to address socio-economic issues relies on the Ekati Mine Socio-Economic Agreement (SEA) between Dominion and the GNWT. In this agreement, the GNWT is responsible for managing social health and well-being. Evidence on the public record indicates that diamond mining is contributing to the worsening of some indicators. This has led the Review Board to conclude that the SEA should not be the only mechanism parties rely on to mitigate adverse social issues likely to arise from the Jay Project. At the same time, the Review Board agrees with the SEA's intent and agrees that the GNWT should maintain a leading responsibility in managing social issues related to diamond mining.

It is evident to the Review Board that the GNWT has not successfully addressed deteriorating socio-economic conditions caused by mining in Aboriginal communities. This has raised questions among parties and the Review Board about the capacity of the diamond mining communities to withstand another decade of worsening health and well-being trends (PR#646 p92; PR#646 p197).

The Review Board further acknowledges the concerns of the NSMA and YKDFN, and those of Lutsel K'e community members, who have experienced social and cultural impacts from diamond mining. The Review Board observes that many of the concerns community members expressed at the Jay Project hearings were not new. These concerns were anticipated and considered in the original 1996 Federal Environmental Assessment Review Process decision recommending the development of the Ekati Mine by BHP.[80] The SEA, developed following the 1996 EA of the Ekati diamond mine, was intended to address and resolve these problems.

The SEA represents both the developer's and the GNWT's substantial commitment to ensure Northerners will benefit from employment and business opportunities, with minimal impact to their social health and well-being. The SEA underpins the social licence under which the original Ekati project was approved. It remains the primary tool for Dominion or the GNWT to address adverse project-related socio-economic impacts. As such, it represents a safeguard for diamond mining communities in the event of unexpected adverse social impacts from the Ekati Mine and its additional operations, such as the Jay Project.

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[80] Federal Environmental Assessment Review Office. *Federal Environmental Assessment and Review Process: NWT Diamonds Project – Report of the Environmental Assessment Panel*. June 1996.

Parties have acknowledged the substantial economic benefits already gained from the Ekati mine and those anticipated from the Jay Project. The developer has been largely successful in fulfilling the economic commitments outlined in the SEA. By contrast, the Review Board heard substantial concern from communities about deteriorating social conditions that residents attribute directly to diamond mining development. The GNWT's Communities and Diamonds 2014 annual report recorded 12 adverse trends in health and well-being indicators in diamond mining communities that are statistically different from those being observed in non-diamond mining communities. Under the terms of the SEA, the GNWT is required to engage regularly with diamond mining communities, and to:

- report their monitoring results to communities
- consult with them on areas of concern
- seek ways to improve the results
- generally minimize negative social impacts while maximizing opportunities for increased wellness (PR#414 pp4,8,10)

Moreover, the record shows that social health and well-being issues continue to worsen or cause concern despite the Agreement, and despite nearly two decades of economic benefits from the mines. Some Aboriginal groups said that social progress had not occurred over the course of the 19 years of diamond mining, and questioned the effectiveness of the SEA in addressing health and well-being issues.

Many Aboriginal groups cited a lack of engagement on SEA initiatives. Based on input from community members, there is strong evidence that this iterative and adaptive management cycle is not occurring at a meaningful level for affected communities.

The Review Board found that annual SEA reporting has identified adverse trends, but does not meaningfully discuss their impact or any initiatives to improve them. The Review Board also heard that while the GNWT and communities engage annually, they combine diamond mining impacts with other agenda topics. This makes detailed reporting and feedback of mining-related issues a challenge in the allotted time.

The Review Board is aware that establishing a causal link between Project effects and adverse social impacts is challenging and involves uncertainties, but it has seen no evidence from the GNWT to support the assertion that diamond mines do not cause undesirable socio-economic impacts on communities. The GNWT indicated that it has not initiated any studies to identify causes of undesirable socio-economic impacts on communities from diamond mines. The Review Board finds this lack of investigation is inconsistent with the GNWT's obligations under the Socio-Economic Agreement. The lack of information on causal links, and the general uncertainty and complexity surrounding socio-economic effects, undermines the GNWT's evidence and argument that the Jay Project "will not pose significant adverse impacts in the area of socio-economics" (PR#693 p21).

The Review Board agrees with the LKDFN, YKDFN and NSMA that without better understanding the mechanisms behind diamond mining impacts, the GNWT cannot adequately assess or improve adverse social impacts to communities. Furthermore, the Review Board is not confident that the GNWT's current approach will identify ways to address mining-related impacts or result in any meaningful changes within communities.

The GNWT has stated that its programs to address health and well-being concerns operate on a population-based approach. The Review Board has heard that the existing programs do not effectively mitigate project impacts because of (1) evidence of worsening trends in diamond mining communities, and (2) the lack of familiarity with or availability of these programs in some communities.

The Review Board disagrees with the GNWT's argument that catering programming and initiatives to diamond mining communities would cause preferential treatment to some communities. In signing the SEA, the GNWT acknowledged that diamond communities would likely face unique challenges. The intent of the SEA (sections 2.1.4, 2.1.5) was to give NWT residents confidence that the GNWT would identify those unique challenges, and address and mitigate any unforeseen impacts (PR#414 p4).

In the Review Board's view, agreeing to the SEA meant the GNWT accepted responsibility for addressing potential adverse social impacts related to diamond mining activities. By monitoring and mitigating specific effects of diamond mining, the GNWT would not treat mining communities preferentially, but rather would fulfill its SEA with the developer, and its responsibility to residents of those communities. The Review Board has heard that communities need a social safeguard to lessen the adverse impacts of diamond mining. The Review Board believes that an improved engagement and adaptive management process will assist the GNWT in fulfilling the commitments made in the SEA.

The Review Board finds the cumulative effects of diamond mining on communities are significant. While the Review Board agrees with Dominion's assertion that it is "impossible to identify what effects may be caused by the Jay Project versus the cumulative impacts of all development and activities in the region" (PR#327 p4), the Review Board finds that adverse impacts to health and well-being from the Jay Project are likely, and will add to this already significant cumulative impact.

Considering the above reasons and conclusions, the Review Board has designed a measure focused on addressing adverse health and well-being impacts associated with diamond mining in the Project area.[81] With this measure, the GNWT will address communities' concerns and

[81] See Measure 8-1.

better understand the linkages between adverse social impacts and diamond mining. During the EA process, the GNWT committed to "i) increase reporting by the GNWT through an implementation report detailing how SEA commitments are being met; ii) continuing to hold community meetings as provided by the SEA; and iii) potential collaboration on future socio-economic-related surveys," (PR#693 p21). For its part, Dominion committed to its engagement and socio-economic reporting obligations (e.g. PR#358, PR#448, PR#557, PR#558, PR#561). The Review Board believes that these commitments will complement the Review Board's measure.

8.3.3 Impacts to vulnerable groups

The Review Board recognizes and commends both the GNWT and Dominion on the programming and initiatives currently in place to address health and well-being and reduce barriers to employment. The Review Board is aware of Dominion's recent acquisition of Ekati in 2013 and its many positive efforts since assuming ownership:

> *Dominion Diamond is committed to working with communities to identify barriers to employment, retention and Aboriginal advancement, as well as social issues faced by employees, and communities as a whole. Through collaborative development and implementation of programs and initiatives, Dominion Diamond hopes to remove these barriers, and to address social issues, wherever possible. Continued and future tracking of employment indicators and the social environment in which Dominion Diamond operates will be communicated with communities in an effort to continually evaluate the success of social and employment programs and initiatives. Dominion Diamond has begun the process of initiating changes to internal tracking of social and employment indicators to better understand the issues faced by employees, and communities, and is developing a Stakeholder Engagement Plan to enhance future engagement activities.* (PR#255 p13)

The Review Board heard about Dominion's efforts to better engage with diamond mining communities and to ameliorate negative trends in socio-economic indicators. The Review Board accepts Dominion's efforts have been commendable, with notable initiatives for improvement implemented, since Dominion assumed ownership of the Ekati Mine in early 2013.

The Review Board is persuaded these actions will reduce adverse socio-economic impacts, while promoting opportunities to benefit from the Ekati Mine. The Jay Project presents a further opportunity to improve Dominion's performance in these respects. Dominion's voluntary removal of the Cardinal Pipe as part of this EA provides further evidence to the Review Board that the developer takes community interests seriously.

The Review Board notes that Dominion recently added a community liaison officer to the community of Lutsel K'e. Dominion funds this position, which will assist with pre-employment in the community. The Review Board accepts this addition will directly support local training,

hiring and advancement goals, and will enable the community to engage directly with the developer to communicate concerns.

The Review Board is confident that Dominion will continue to improve upon its past performances and its efforts to minimize adverse socio-economic impacts of its operations. Nonetheless, while the Review Board commends both Dominion and the GNWT on their initiatives, it is not convinced that diamond mining impacts are being fully mitigated. The Review Board is concerned that the status quo with respect to mitigation efforts will not result in progress. Many parties argued that approving the Jay Project is likely to make socio-economic conditions worse for the most vulnerable groups in their communities. The status quo has also been found to have significant adverse impacts on community health and well-being. Of particular concern to the Review Board were the effects of barriers to employment on young adults and women.

The Review Board heard how youth are affected by a cycle of exclusion, whereby they cannot find jobs, cannot afford to live independently, and get caught up more easily in drugs and alcohol, which can lead to crime.

The Review Board commends Dominion's approach of engaging young adults and reducing their barriers to employment. Dominion has developed many strategies and approaches to train, recruit and encourage the employment of young adults. The Review Board believes that, with time, and combined with Dominion's and the GNWT's other employment initiatives to retain, advance and train, these efforts will result in positive change. As such, the Review Board believes Dominion's approach helps to reduce barriers to employment for young adults.

The Review Board finds Dominion's efforts to review applications of young adults with criminal records on a case-by-case basis is appropriate. The Review Board accepts that Dominion is best suited to determine their employees' qualifications and to manage the safety of their staff and operations. The Review Board notes Dominion's community initiatives include promoting healthy lifestyles in the community, with partnerships with all levels of government (PR#255 pp9-11).

The Review Board heard that gender inequity remains a significant challenge in diamond mining and in the communities. This inequity includes lower representation in the mines, fewer high-level positions, lower pay, and reduced ability to access jobs for mothers—especially in small local communities. The Review Board understands the consequence of this inequity contributes directly to the disempowerment of women, increased likelihood of abuse, and more family stress and strife.

The Review Board believes that gender inequity issues significantly contribute to undesirable health and well-being in diamond mining communities. The Review Board has heard from parties and the public how large development projects like Ekati or Jay contribute to establishing which groups in a community will benefit from their Project, and which will

become more vulnerable. The Review Board finds that gender inequity is a significant challenge to social health and well-being. As proposed, the Jay Project would fail to meaningfully alter the representation of women at the mine. The Review Board finds this would result in women facing continued and additional hardships in the communities.

The Review Board is concerned about the current under-representation of women employed at the Ekati Mine, particularly with the significant barriers for women in small, local, predominantly Aboriginal communities. The Review Board recognizes Dominion's and initiatives to address this, and that female representation at Ekati is on par with industry average. However, the Review Board has not seen evidence that Dominion's efforts to reduce barriers to women have changed their representation in the workforce or improved the well-being of women in communities. Furthermore, the Review Board does not accept the current representation level reflects Northern or societal values.

As such, the Review Board finds that Dominion should make additional and all reasonable efforts to address gender inequity in its operations.

Dominion told the Review Board that it plans to develop strategies to employ more women. The Review Board believes that initially, Dominion should consult with gender equity experts and recognized NWT women's groups to develop effective strategies and policies to reduce employment barriers to women. Review Board agrees with the YKDFN and NSMA that groups like the Status of Women Council of the NWT can help address some of the factors contributing to vulnerability among women in the NWT. Recognizing that the majority of women in the diamond mining communities are Aboriginal, the Review Board thinks Dominion should consult groups like the Native Women's Association of the NWT for additional expertise on vulnerability issues and barriers to employment specific to aboriginal women. The Review Board further recognizes the leading role and expertise of the GNWT in providing programming, initiatives, and delivering social services on behalf of vulnerable women. As local and regional experts, these groups can identify mechanisms that will work in the real-life context to increase the success of women trying to enter the workforce.

8.3.4 Development of socio-economic baseline information

Dominion's limited ability to analyze the complex cumulative impacts that affect social well-being impeded the Review Board's socio-economic review. This was no fault of Dominion or its EA submissions—the Review Board was generally impressed with Dominion's level of effort to provide thoughtful responses to information requests. Rather, Dominion faced the challenge of assessing social impacts without an existing standard or baseline information for communities' well-being in the region. Moreover, government was uncertain of or unable to describe the magnitude of existing socio-economic issues (for example, how good or bad the current situation is) and the additional impact communities can withstand before crossing a threshold, which compounded the challenge (PR#454 p1).

Many adverse health and well-being trends have been identified during the course of this EA. The Review Board notes the uncertainty surrounding those trends, which exists because:

- causality between the trend and mining has not been investigated
- acceptable rates of change are not established
- the resilience of diamond mining communities to withstanding the effects of further adverse impacts is unknown
- thresholds do not exist for any of the identified indicators

Better baseline information on social well-being would help the Review Board and parties assess:

- the current state of community well-being
- communities' ability to adapt to change
- communities' resilience against adverse conditions

Without credible baseline information about social well-being, developers must expend considerable time and resources to develop their own understanding of the baseline situation. These efforts are likely to result in a piecemeal socio-economic baseline assessment. It may not be informed by community or government planning, and does not discuss communities' adaptive capacity and resilience to social impacts. The absence of this discussion has created a vacuum in socio-economic assessments with unclear thresholds of acceptable change. This critical aspect of socio-economic assessment is left unfulfilled.

The consequence of unclear thresholds of acceptable change is apparent when adverse issues are identified during a social impact assessment. Without established criteria for community well-being, there will likely be no baseline against which to compare pre- and post-development conditions, and no discussion on how much change a community can withstand.

Without this important information, the socio-economic assessment must rely too heavily on subjective judgment, with results that are subject to a range of interpretations. This reduces the socio-economic assessment's usefulness, a challenge this EA encountered as the developer and the GNWT were unable to comment on the severity of negative trends (see section 8.2.2 and 8.2.3). In such cases, the Review Board must increasingly depend on public concern to determine social impact significance. To compensate for uncertainties in the baseline information and resulting impact predictions, a broader combination of mitigation measures is needed to reduce or avoid significant socio-economic impacts from the Jay Project.

Improved baseline information would also improve monitoring and mitigation measures to reduce the identified adverse socio-economic impacts of the Jay Project. With better information on community well-being, Dominion and the GNWT will be able to commit to and refine initiatives to enhance project benefits and reduce adverse project impacts.

The Review Board concludes that an established baseline socio-economic assessment for communities is necessary to more meaningfully evaluate a project's likely impacts. This would allow for a more consistent and effective approach to assessing the impacts of a proposed development on NWT communities.

8.3.5 Board Conclusions

The Review Board recognizes that the Jay Project would provide substantial economic benefits to the people, communities and governments in the NWT (PR#415 p7, PR#652 p6, PR#644 p295, PR#639 p277). The Jay Project would also provide substantial positive impacts to some health and social indicators (PR#639 p278, PR#415 p7). The Review Board also recognizes Dominion's substantial direct and indirect investments and support for social and cultural programming.

Despite the economic advantages of the Jay Project, the Review Board concludes the existing impacts and the additional impacts likely to result from the Jay Project on Aboriginal groups and communities are significant.[82] The Review Board does not believe the project's economic benefits are sufficient to offset the significant adverse impacts to the health and culture of Aboriginal communities, because cultural or social impacts cannot be mitigated or resolved by purely economic benefits.

Therefore, the Review Board finds that the Jay Project should include concrete efforts from both Dominion and the GNWT to address the existing social and cultural impacts parties identified during this EA. The Review Board believes that the mitigation measures put forward in sections 7.4 and 8.4 will accomplish this. Collectively, these measures serve to:

- reduce adverse social impacts of diamond mining on affected communities
- reduce barriers to employment for women
- identify causal links between diamond mining and social concerns
- improve accountability on the use of Traditional Knowledge in decision-making
- identify and reduce cultural impacts through improved engagement and reporting

[82] Refer to sections 8.3 and 7.3.

- lessen the cumulative challenges faced by diamond mining communities and affected Aboriginal groups through an improved adaptive management process

The Review Board is confident that the suite of mitigation measures recommended in this REA will reduce the risks of serious harm to community and cultural health and prevent adverse environmental impacts from the Jay Project. The Review Board thinks that these mitigations address the concerns expressed by community members and Aboriginal parties.[83] With these measures, the GNWT and Dominion will minimize adverse additional effects and maximize wellness opportunities from the Jay Project.

8.4 Measures and suggestions

8.4.1 Minimize negative socio-economic impacts of the Project on communities

The Review Board has determined that there are significant cumulative social impacts from diamond mining on communities. Adverse impacts to health and well-being from the Jay Project are likely, and will add to this already significant cumulative impact. The Review Board intends the following measure to require the GNWT, working with diamond mining communities[84], to identify and address the significant cumulative adverse social effects of diamond mining on NWT communities. This includes impacts from the Jay Project. The GNWT is the target of this measure because, under its SEA with Dominion, it is the responsible authority for social impacts from the Ekati Mine, which includes the Jay Project.

The measure recommends an improved engagement and adaptive management process by the GNWT to measure and respond to adverse health and well-being impacts from the Jay Project (see Figure 8-1). Through this measure, the GNWT will better understand the socio-economic impacts of diamond mining on community health and well-being. With an improved understanding, the GNWT can better manage, and reduce, adverse project impacts to diamond mining communities.

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[83] See 8.2.1, 8.2.2, 8.2.3, 8.2.4, 8.2.5, and 8.2.6.

[84] The Review Board has used the phrase "diamond mining communities" to describe communities that are directly affected by diamond mining through impacts and benefits, while the SEA refers to these communities as "point-of-hire" communities. Point-of-hire communities are defined in the SEA as "the places in the Northwest Territories at which individuals become employees of BHP and includes the City of Yellowknife and such other communities as may be identified in the impact and benefit agreements and such other communities as may be mutually agreed upon by the Parties" (PR#414 p3).

The measure is intended to ensure that the GNWT acts on the issues diamond mining communities expressed, and the priority issues the GNWT identified, during the Jay proceeding. The GNWT should act while studying the link between diamond mining and these adverse social impacts. The Review Board believes that cumulative adverse socio-economics impacts of diamond mining on communities will be mitigated through this adaptive process.

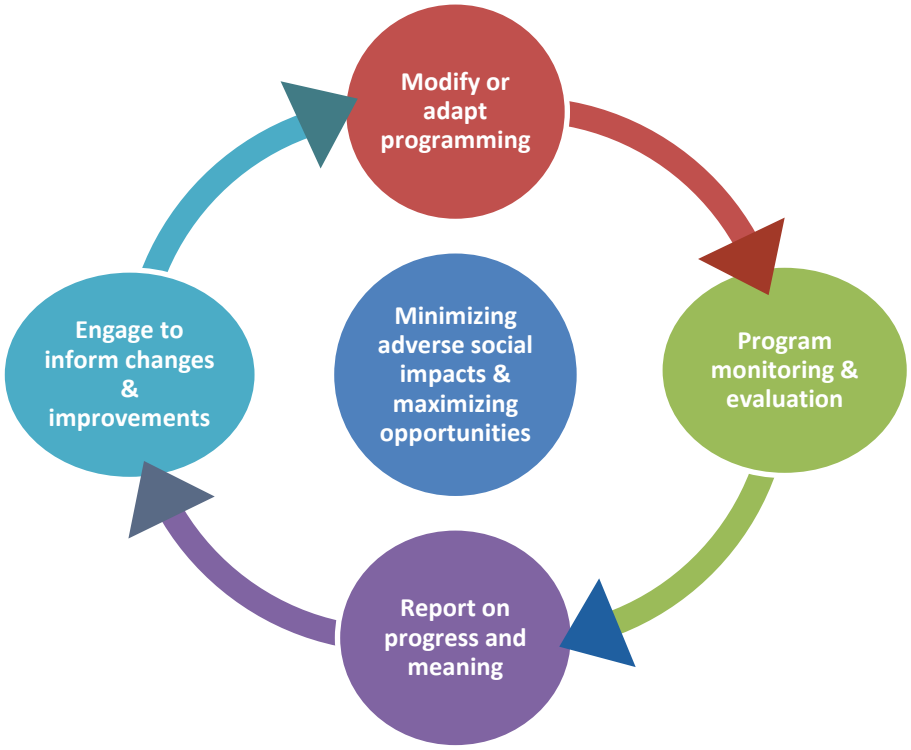

Figure 7-1: Social impacts adaptive management process

Measure 8-1: Adaptive management of social impacts

In order to mitigate significant cumulative adverse socio-economic impacts of the Jay Project on health and well-being, the Government of the Northwest Territories will engage and work with diamond mining communities to adaptively manage adverse social impacts to health and well-being from the Jay Project, in combination with other diamond mining projects. As part of this process, the GNWT will actively investigate and address linkages of diamond mining effects on the health and well-being of affected communities. The GNWT will also meet with communities within one year of the Ministerial approval of this Report of EA, and annually thereafter, to discuss:

1) priority social issues at the individual, family and community level related to diamond mining, as identified by communities and by the GNWT
2) the effectiveness of GNWT programs to address these identified issues, and
3) implementing improvements to mitigate identified issues.

The GNWT will submit an annual progress report on the above to each diamond mining community, describing the GNWT's engagement on and adaptive management of social impacts, and the GNWT's plans to address identified issues.

The Review Board concludes that communities and the GNWT are responsible for establishing a credible baseline condition for community well-being, since they are responsible for the health and social well-being of individuals and families in the community. Furthermore, they are best suited to understand how development projects affect each community's particular vulnerabilities and strengths. A vulnerability assessment and well-being baseline for diamond mining communities would allow them to consistently assess the type and amount of impacts communities could sustain from future developments. Doing this would inform and assist the GNWT in fulfilling Measure 8-1 to adaptively manage the cumulative adverse socio-economics impacts of diamond mining.

Suggestion:

The GNWT should work with diamond mining communities to develop socio-economic baseline studies. The GNWT, working with communities, should:

- assess the vulnerability of each community with a corresponding assessment of the community's resilience to socio-economic impacts, and capacity to adapt to them;
- assess the existing cumulative impacts on well-being at multiple scales (including individual, family and community levels);
- produce a definition of well-being and describe how it is measured and,
- establish qualitative and quantitative indicators of well-being appropriate for a socio-economic assessment.

The focus of the study should be to establish threshold levels of acceptable social impacts, and evaluate how close each social impact indicator is to a threshold level.

8.4.2 Reducing barriers to employment for women

The Review Board finds that gender inequity is a significant challenge to social health and well-being in diamond mining communities. As proposed, the Jay Project would fail to meaningfully alter the representation of women at the mine, particularly in non-traditional trades and occupations. The Review Board believes this would result in women facing continued and additional hardships in diamond mining communities through the lifetime of the Jay Project.

The following measure requires the developer to update its employment policies and initiatives to reduce barriers to employment for women. It builds on Dominion's commitments (1) for employee retention, adult education and recruitment, and (2) to address barriers to training and employment of women.[85] The Review Board expects this measure to (a) reduce the likelihood of significant adverse socio-economic effects to women, (b) allay public concerns about gender equity by lifting barriers to women's employment and creating more opportunities for women.

[85] See PR#255 DAR-MVEIRB-11; PR#305 DAR-NSMA IR-27; and PR#448 NSMA-DAR-IR2-01

Measure 8-2: Supporting increased employment opportunities for women

To mitigate significant adverse socio-economic impacts on women, Dominion will consult with the Government of the Northwest Territories, the Status of Women Council of the NWT and the Native Women's Association of the NWT to update its strategy for the training, recruitment and employment of women in traditional and non-traditional occupations, prior to the construction phase of the Jay Project. Where Dominion has community liaisons, they will serve as additional resources for implementing initiatives for training, recruitment and employment of women.

Dominion will report on employment and retention figures for women, and on the effectiveness of its revised policy, as part of its reporting per measure 15-1.

9 Impacts to air quality

9.1 Summary of Review Board's findings

The Review Board finds that emissions to the air from the Jay Project have the potential to cause significant adverse impacts to ecological receptors and add cumulatively to climate change because:

- Incinerator emissions from the Jay Project have the potential to release dioxins and furans, acutely toxic compounds, which negatively affect fish, wildlife, and humans.
- Greenhouse gas emissions from the Jay Project will cumulatively add to the already significant effects of climate change.

The Review Board finds that other emissions from the Jay Project, including sulphur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), and particulate matter, which includes total suspended particulate and $PM_{2.5}$, do not likely pose a risk of significant impacts to air quality, human health or other ecological receptors.

Many parties raised concerns about the effects of dust to caribou and caribou habitat. This topic is addressed in detail in section 6.3.3 of this Report of Environmental Assessment (REA).

9.2 Ambient air quality

9.2.1 Evidence from the developer

The Jay Project will emit a variety of pollutants to the atmosphere, some intentionally (such as incinerator emissions and exhaust from vehicles) and some unintentionally (such as dust from roads and the open pit). These emissions have the potential to affect air quality directly and other parts of the environment indirectly, including vegetation, wildlife and water quality. This section deals primarily with air quality. The effects of emissions to these other valued components are described in separate sections of the Developer's Assessment report (DAR) and in other sections of this REA. Dominion predicted its impacts to air quality in section 7 of the DAR and clarified predictions through responses to information requests and undertakings. The primary sources and types of emissions from the Jay Project described in the DAR include (PR#103):

- **combustion emissions** from power generators, Jay Project fleet and incinerators which will emit nitrogen oxides, sulphur dioxide, carbon monoxide, particulate matter (PM2.5 and total suspended particulate), and potentially dioxins and furans
- **fugitive emissions** from roads, the Jay open pit, exposed lake beds, and the waste rock storage area which will emit airborne particulates

To assess the effects of emissions to air quality, Dominion modelled emissions and compared these predictions against its proposed assessment endpoint: compliance with the GNWT's *Guideline* for *Ambient Air Quality Standards* (referred to below as the "standard") (PR#103 p7-3 and PR#338 p5). Dominion stated that this standard applies beyond the disturbance footprint of the Project (PR#448 p1-8). In other words, it does not apply within the Jay pit or on the roads because these areas are considered the disturbance footprint, but would apply outside of these areas.

The standard identifies limits for the concentrations in ambient air for many, but not all, of the Jay Project's emissions. The emissions it covers are referred to as "criteria air contaminants", which include sulphur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), and particulate matter.[86] The GNWT standard does not provide limits for volatile organic compounds, polycyclic aromatic hydrocarbons, trace metals, mercury, and dioxins and furans. The Jay Project will emit very small amounts of these compounds (PR#103 p7-90). For all emissions, Dominion modelled the maximum hourly, daily, and annual ground level concentrations and deposition rates near the Jay Project (PR#103 p7-10).

The DAR predicts that SO_2 and CO concentrations will be well below the GNWT standard (Dominion's assessment endpoint). However, the DAR predicts that several parameters may exceed the GNWT standard, including nitrogen dioxide and particulate matter. For nitrogen dioxide, Dominion stated that the exceedances will be confined to a small area that will extend a few hundred meters from the edge of the development area. For particulate matter, the developer predicts that exceedances over the GNWT standard may extend for several kilometers (PR#103 p7-120). The developer argued that such an exceedance is not significant because:

> *(M)odelled exceedances of nitrogen oxides and fugitive dust emissions will be infrequent, limited to the local study area, and temporary. The air quality modelling was also conservative, meaning air quality emission predictions are over-estimated. This is supported by measured air quality data from existing northern mines being typically below modelled predictions.* (PR#639 p44-45)

Dominion's approach to managing emissions for the Jay Project, and the current mine site, is described in the *Draft Conceptual Air Emissions and Management Plan* (AQEMMP). Several policies guide Dominion's efforts, with goals that include continuous improvement and keeping clean areas clean (PR#424 p1-9). Dominion described its current activities designed to mitigate emissions from combustion sources, including (PR#424 p1-9 to 1-10):

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[86] Particulate matter includes total suspended particulate and $PM_{2.5}$

- maximizing fuel efficiency by maintaining equipment and using Best Available Technology Economically Achievable
- using low sulphur diesel
- keeping roads in good repair (which increases fuel efficiency)
- employing energy conservation initiatives (such as low energy lightening and no idling)

The AQEMMP also describes Dominion's approach to managing dust emissions, which includes (PR#424 p3-11):

- applying dust suppressants
- managing vehicle speed
- studying alternative ore hauling strategies that may reduce dust

The AQEMMP describes a proposed adaptive management response plan that has triggers for applying mitigations to protect air quality. The GNWT and Dominion agreed to the triggering criteria based on the GNWT's *Guideline for Ambient Air Quality Standards* (PR#693 pp2- 3; PR#699 p4-1). Dominion also described additional studies and research to investigate the linkage between the effects of dust to caribou and caribou habitat. This is described in greater detail in the caribou section (section 6.3.3).

9.2.2 Evidence from parties

Parties expressed concerns and confusion with Dominion's method for determining impacts to air quality. These included the assessment endpoint for air quality, predicted exceedances of the endpoint, and what constitutes a significant effect. Parties also expressed concerns about the lack of enforceable regulations for air quality.

In the DAR, Dominion defined assessment endpoint:

> *Assessment endpoints are qualitative expressions used to determine the significance of effects on VCs [valued components] and represent the key properties of VCs that should be protected for future human generations (i.e., incorporates sustainability).* (PR#102 p6.2.2)

Dominion proposed to use the GNWT's *Guideline* for *Ambient Air Quality Standards in the NWT* as its assessment endpoint for air quality (PR#103 p7-3; PR#338 p5). The GNWT standard states:

a) that it "sets standards for the maximum concentrations of CO, $PM_{2.5}$, ozone, NO_2, SO_2, and total suspended particulate acceptable in ambient air throughout all of the Northwest Territories"

b) "These standards will be applied as an effects-based, long term management goal for air quality and are established at levels intended to protect human health and the environment"

Dominion stated that it will comply with the standard, yet also predict exceedances for several parameters. It was unclear to parties how Dominion could set an assessment endpoint, yet not predict a significant effect when it apparently fails to achieve that endpoint. The LKDFN stated that if Dominion asserts that the assessment endpoint complies with the standard, then it should not be exceeded. The LKDFN stated in its closing arguments that in its view, this is a contradiction (PR#697 p4).

Related to the exceedance of the standard are parties' concerns about what constitutes a significant effect. These concerns were based on two concepts: Dominion's definition of an assessment endpoint and the purpose of the standard. If Dominion is not achieving its assessment endpoint, then this should be a significant effect. Also, if Dominion is exceeding the GNWT standard, then this is a significant effect. Dominion states that effects are not significant because they are infrequent, short-term and local (PR#639 p44-45). The LKDFN disagreed with Dominion's position that if an effect was not permanent, it would not be significant (PR#697 p4).

Parties recommended that the GNWT regulate air quality. Their recommendation was based in part on:

- the current lack of clear and enforceable regulations
- Dominion's assessment endpoint for air quality (which is an unenforceable GNWT guideline)
- concerns about exceedances of the endpoint and determining compliance

The YKDFN stated in its closing comments, "YKDFN continues to be concerned about the lack of any enforceable air quality standards in the Northwest Territories" (PR#692 p17) and recommended that "the GNWT should develop strong, enforceable emission and air quality standards as soon as possible" (PR#692 p17).

In its closing arguments, the LKDFN reiterated its request that "…in the absence of binding air quality regulations, any exceedance of the AAQS [the standard] be considered a significant negative effect" (PR#697 p4). The LKDFN recommended that "the GNWT establish binding air quality regulations" (PR#697 p4). In its closing comments, the IEMA also recommended that the GNWT develop enforceable regulations (PR#682 p22).

In its closing arguments, the GNWT stated that it does have the authority to regulate air quality and currently does not have enforceable air regulations, but committed to phasing in enforceable air regulations, starting in 2017 with incineration regulations (PR#693 p5).

9.2.3 Review Board analysis

The Review Board notes Dominion's efforts to manage and reduce the Jay Project's effects to air quality. These efforts include purchasing a new haul fleet that will reduce emissions, employing improved dust control methods, and implementing an improved AQEMMP. These efforts will reduce the likelihood of impacts to air quality.

By choosing the GNWT's *Guideline for Ambient Air Quality Standard,* Dominion has selected an assessment endpoint that is not qualitative. It provides no useful framework as a model for determining significance for any valued component besides human health. Parties have many concerns about air quality that are based on the ecological impact of emissions, and that are not only related to human health. The Review Board therefore concludes that the above standard is an inappropriate endpoint for determining significance of air quality impacts on receptors such as caribou. This endpoint does not meet Dominion's own definition of an acceptable assessment endpoint, as reflected in the confusion many parties expressed.

Even so, the Review Board observes that it is unlikely that the Jay Project will cause health impacts to Aboriginal people due to poor air quality because a) exceedances of the air quality standard will be short-term and infrequent and b) it is unlikely that Aboriginal people will spend extended periods of time in areas with poor air quality.

The Review Board believes that many of the parties' concerns would be satisfied if the GNWT were to exercise its authority to regulate air quality. The Review Board observes that the GNWT has committed to do this in its closing submission.

9.2.4 Review Board conclusions

Even though short-term, infrequent exceedances are not likely to lead to noncompliance with Dominion's chosen standard, that standard is inapplicable for determining the significance of ecological impacts.

The Review Board finds that the developer's predicted exceedances of limits are not likely to lead to a significant effect on air quality or to human health. These limits include several parameters, including nitrogen dioxide and dust, as set out in the GNWT's *Guideline for Ambient Air Quality Standards*. The Review Board agrees with the developer's position that the exceedances will likely be small scale and intermittent, and that these exceedances should not cause significant adverse impacts to air quality or to human health. Further, the Review Board finds that Dominion's AQEMMP describes monitoring and contains triggering criteria. Monitoring these criteria will lead to the developer applying mitigations through an adaptive management response plan that will avoid significant adverse effects to air quality.

The Review Board does find that dustfall has the potential to cause significant adverse effects to caribou and caribou habitat and has prescribed measures to reduce the effects of dustfall. A description of these measures is in the caribou section (section 6.6).

The Jay Project's effects on air quality, with the exception of dustfall, are not likely to cause significant adverse impacts on human health or the environment.

9.3 Incinerator emissions as a source of dioxins and furans

This section examines the potential for significant adverse effects to the environment from incinerator emissions. It outlines the evidence concerning incinerator management, monitoring, testing, and adaptive management, along with parties' concerns. It includes the Review Board's analysis and conclusion, and prescribes a measure to ensure that significant adverse environmental effects do not occur.

9.3.1 Summary of Review Board findings

The Review Board finds that the Jay Project is likely to cause significant adverse environmental impacts from the release of dioxins and furans unless prevented by the measure set out by the Review Board.

The Jay Project proposes to incinerate waste which, unless done in a highly prescribed manner, can release dioxins and furans. This has occurred at the Ekati site in the past (PR#359 p71). The Review Board finds that the developer has made efforts to reduce the likelihood of dioxins and furans forming. The developer also committed to testing, monitoring and adaptive management actions intended to detect dioxins and furans and mitigate their effects.. The GNWT agreed to the wording of the developer's commitment. This commitment forms a useful basis for a measure that, if implemented, would help mitigate the potential release of dioxins and furans. This is discussed in greater detail in the following sections.

9.3.2 Evidence from the developer

Incineration as source of dioxins and furans

The Jay Project proposes to use incinerators as a way to manage waste. During the technical session, the GNWT stated that if the incinerator does not work properly, or is not operated properly, dioxins and furans could form, and be released and accumulate in the environment. These compounds are highly toxic to animals, fish and humans. The GNWT submitted the Canadian Council of Ministers of the Environment's *Canada-wide Standards for Dioxins and Furans,* which states:

> *(D)ioxins and furans, are toxic, persistent, bioaccumulative, and result predominantly from human activity. Due to their extraordinary environmental persistence and capacity to accumulate in biological tissues, dioxins and furans are slated for virtual elimination* (PR#407 p2).

The Canada-wide Standards also states that, "pollution prevention is being encouraged as the preferred method for avoiding the creation of dioxins or reducing releases to the environment" (PR#407 p3).

Incinerator emissions are tested to ensure dioxins and furans are not being released. This testing is referred to as stack testing. The following sections summarize related discussions that parties raised during the EA.

Developer's Efforts to Manage Dioxins and Furans

In its response to the GNWT's technical report, Dominion described its efforts to manage incinerator emissions to prevent the release of dioxins and furans. These include improved source control, improved operational procedures, and ongoing monitoring, described below.

For source control, Dominion has proposed to divert organic wastes and plastics (PR#555 p2-3). Incinerating these wastes factors into the formation of dioxins and furans. Removing them from the incinerator reduces the likelihood of dioxins and furans forming, and results in other benefits such as reduced greenhouse gas emissions.

The developer also committed to reducing the likelihood of dioxins and furans forming and being released by (PR#555 p2-3):

- using an incinerator capable of meeting the *Canada-wide Standards for Dioxins and Furans*
- implementing and adhering to the Ekati Mine Incineration Management Plan
- following the manufacturer's instructions for the operation of the incinerator
- adhering to the *Environment Canada Guidance Document on Batch Incineration*

Dominion stated that it currently monitors the combustion temperature and residence time in the primary and secondary incinerator chambers. The developer also stated that it performed a stack test in 2013, which met the Canada Wide Standards for Dioxins and Furans (PR#555 p2-3).

The developer and the GNWT have also agreed upon a framework for incinerator testing, monitoring, and adaptive management. This includes stack testing every three years, providing test results, re-stack testing as required, and following an adaptive response management plan (PR#418 p1; PR#681 p20-21).

9.3.3 Evidence from parties

Due to the acute toxicity of dioxins and furans, parties including the GNWT, the YKDFN, Environment Canada and the IEMA raised concern about potential releases (PR#359 p71; PR#461 p36; PR#682 p26; PR#292 p30). The GNWT summarized the parties' views that the Jay Project's waste incinerators could release dioxins and furans. This would cause a significant

impact to the environment (including water quality and soil) without appropriate testing and adaptive management (PR#639 p144; PR#639 p145).

To prevent these potential impacts, the GNWT made recommendations to ensure emissions are detected and adaptive actions are taken, if required, for example, frequency of stack testing and an adaptive response to a failed stack test (PR#639 p46). Dominion disagreed with the GNWT recommendations, including the timing of submission of test results and re-stack testing. However, Dominion and the GNWT resolved these matters after the public hearing, and agreed to the timing of stack testing, the provision of stack testing results, and to re-stack testing (PR#681 p20-21).

The IEMA stated in its closing comments that the commitment to stack testing does not sufficiently ensure that dioxins and furans are not released. The IEMA recommended additional inline continuous emissions monitoring (PR#682 p27). This additional monitoring could detect irregularities in incinerator operations that could lead to dioxins and furans forming, or that could detect the compounds themselves.

9.3.4 Review Board analysis

The Review Board recognizes that the Jay Project proposes incineration as a way to manage waste, and that it has the potential to release dioxins and furans to the environment. As acutely toxic compounds, dioxins and furans have the potential to cause significant adverse effects in the environment. The Review Board recognizes the developer's efforts to reduce the likelihood that dioxins and furans are released. The Review Board also notes that Dominion committed to stack testing every three years and identifying the cause of, and responding adaptively to, any failure.

The Review Board heard that in the past, incinerators at the Ekati mine did not operate properly, which may have caused the release of dioxins and furans. This has also occurred at other diamond mines in the NWT. The Review Board heard from the GNWT that presently there is no regulatory mechanism to ensure testing, monitoring, reporting and mitigations.

The IEMA recommended additional inline continuous emissions monitoring to detect the formation of dioxins and furans. This recommendation was based the GNWT's hearing undertaking submitted after the public hearing, about other jurisdictions' requirements (PR#668). The Review Board observes that parties did not have the opportunity to review this information from the GNWT because it was not available at the hearing. Although the Review Board understands that additional inline continuous emissions monitoring could identify if dioxins and furans are being formed, this EA did not examine whether the additional monitoring is warranted.

9.3.5 Review Board conclusions

The Review Board recognizes Dominion's efforts to reduce the likelihood of dioxins and furans forming. These efforts include waste diversion, waste segregation, and improved incinerator management. The Review Board accepts that, provided Dominion implements these and additional commitments (which the GNWT agreed to) to test and report, the likelihood of adverse impacts will be reduced. Further, and based on the same provision, adaptive management will prevent significant adverse impacts. However, the Review Board understands that currently no regulatory mechanism exists to implement and enforce these commitments. The Review Board views Dominion's commitments as necessary to prevent significant adverse impacts from dioxins and furans to people and ecological receptors. For this reason, the following measure builds on the commitments Dominion and the GNWT ENR agreed to (PR#681 p20-21).

The Review Board has also included a suggestion for the IEMA's recommendation on additional inline testing. The Review Board believes this suggestion would help detect if dioxins and furans are formed and released to the environment. However, since the supporting evidence for IEMA's recommendations did not undergo sufficient scrutiny from parties (due to the reasons described above), the Review Board cannot conclusively state it is necessary to prevent a likely significant adverse impact. Further study of additional inline continuous emission monitoring is warranted to understand if it is applicable, feasible, and achievable. In the event of a failed stack test, the measure below requires the developer and the GNWT to consider the need for inline continuous emission monitoring as part of the adaptive management response plan.

9.3.6 Measure and suggestion

The following measure prevents significant ecological impacts from the release of dioxins and furans by incinerators that are not functioning or operated properly. Dioxins and furans are persistent and acutely toxic to fish, wildlife, and humans. During the assessment, the Review Board heard that incinerators at the Ekati mine, and other diamond mines in the area, have not been operated properly or have malfunctioned. These conditions have led to the release of dioxins and furans. If the GNWT and Dominion do not test, monitor, report and employ the adaptive management responses they agreed to, these contaminants could be released and cause significant adverse impacts. Presently, the GNWT does not have a regulatory mechanism to ensure that Dominion will implement its commitments. The Review Board concludes that a measure is necessary to ensure that Dominion implements the agreed-to commitments.

The measure requires Dominion to conduct specific tests, and take corrective actions if needed, which will ensure that incinerators are not accidentally releasing dioxins and furans. The measure improves on the existing agreement between the GNWT ENR and Dominion (PR#681 p20-21).

Measure 9-1 – Dioxins and Furans

To reduce the likelihood of impacts resulting from the release of dioxins and furans, Dominion will conduct incinerator stack testing at least every three years and submit any stack test results to the GNWT Department of Environment and Natural Resources and Environment Canada no more than 90 days after the completion of stack testing. No more than 120 days after any failed stack test, (with failure determined according to the *Canada Wide Standards for Dioxins and Furans* or applicable regulation or guidance developed by the GNWT), Dominion will:

1) Develop an Adaptive Management Response Plan, containing:
    a. An assessment of the incinerator operations and management that contributed to the failed stack test, and methods to rectify them.
    b. A consideration of the need for increased monitoring of incinerator operational indicators associated with the formation of dioxins and furans. This may include inline continuous emission monitoring for, but not limited to: flow of flue gas, oxygen content, and carbon monoxide.
2) Submit the Adaptive Management Response Plan to the GNWT Department of Environment and Natural Resources and Environment Canada.
3) Implement the methods identified by Dominion (under 1a above) no later than the submission of the Response Plan, and earlier if feasible.

Dominion will re-stack test the incinerators within six months of the initial failed stack test. This second stack test will verify the effectiveness of the methods proposed and implemented in the Adaptive Management Response Plan and demonstrate compliance with the *Canada-wide Standards for Dioxins and Furans*. All stack tests must be conducted in accordance with national standards, and include detailed documentation to demonstrate that representative composition and batch size of waste were used during the testing process.

Exemptions for the second stack test may occur based on a review of the factors that contributed to the failed stack text and approval of the Adaptive Management Response plan by the GNWT Department of Environment and Natural Resources, in consultation with Environment Canada.

Suggestion

The Review Board finds that the IEMA's recommendation for additional inline continuous emissions monitoring could ensure that significant adverse effects do not occur. To properly assess the merits of this recommendation, the Review Board makes the following suggestion:

Suggestion: Inline continuous emission monitoring

The Review Board suggests that the developer, in consultation with the GNWT and EC, assess the feasibility and utility of additional inline continuous emission monitoring and provide a report of the findings within one year of Ministerial approval of this Report of EA.

9.4 Greenhouse gas emissions

This section examines evidence dealing with greenhouse gas emissions from the Jay Project and the related effects of climate change on the environment and people of the NWT. It includes the Review Board's analysis and conclusions that prescribe a measure to build on existing commitments relating to greenhouse gas management at the mine site to mitigate the concerns parties expressed.

9.4.1 Summary of Review Board's findings

The Review Board finds the Jay Project is a cause of significant adverse environmental impacts and a cause of public concern for the following reasons:

1. The Jay Project will be a major source of greenhouse gases within the NWT
2. This will add to the already significant cumulative impacts of greenhouse gases from other activities. The GNWT and Aboriginal parties recognize these impacts, which are a cause of public concern for communities.

The Review Board appreciates that mining in remote locations usually requires considerable fossil fuel consumption and associated emissions of greenhouse gases. Dominion has made efforts to increase its fuel efficiency and reduce its carbon footprint and committed to studying alternative energy for ways to further reduce its greenhouse gas emissions.

The Review Board observes that the developer is currently reporting on aspects of its greenhouse gas emissions and management through several mechanisms and has committed to additional reporting. The Review Board prescribes a measure that builds on these reporting efforts and includes the opportunity for parties to provide feedback on the developer's efforts to manage its emissions. This enhanced reporting combined with parties' input to Dominion would help to inform parties and reduce their concerns.

9.4.2 Evidence from the developer

The developer estimates that the proposed Jay Project would emit approximately 400,000 tons of greenhouse gases each year (PR#305 p1020). This conservative estimate assumes emission sources are at full capacity year round, which is not likely. To compare, the existing Ekati mine emits approximately 200,000 tons of greenhouse gas each year (PR#492 p12). The increase of

approximately 200,000 tons of greenhouse gas emissions is due to the Jay Project requiring more fuel to haul ore over greater distances, more pumping of water and increased electrical demands (PR#103 p7-61).

Regarding its approach to managing greenhouse gas, the developer stated:

- "Continuous improvement and emission reduction are key management approaches that support the principle of keeping clean areas clean and encompass Dominion Diamond goal of using best available technology economically achievable." (PR#305 p1029)
- "Since taking ownership of the Ekati mine, Dominion has implemented a number of measures, including the formation of a senior committee to review opportunities for greenhouse gas reductions. It has also introduced reduction targets beginning in 2016." (PR#639 p39-40)
- "Dominion is committed to reducing emissions through responsible energy management." (PR#639 p39)

The developer gave evidence of its current efforts to reduce greenhouse gas at the Ekati mine that will also benefit the Jay Project. These efforts include (PR#448 p284):

- a greenhouse gas steering committee
- a no idling campaign
- reducing the amount of fuel needed for incineration of waste through composting
- using heat exchangers on generators to reduce heating requirements
- efficient lighting using LED lights
- setting greenhouse gas reduction targets annually

For the largest increase in greenhouse gas emissions, which comes from hauling ore with diesel powered trucks, the developer made several commitments that would likely reduce greenhouse gas emissions. The developer committed to purchasing a new haul fleet that would need to meet more stringent emissions standards in place at the time of purchase (PR#359 p87). This new haul fleet will have several benefits, including lower emissions that effect air quality (such as nitrogen oxides, sulfur oxides, and $PM_{2.5}$), and will also likely be more fuel efficient. The developer is also committed to studying alternative strategies to haul ore, such as land trains, that will likely be more efficient and reduce greenhouse gas emissions.

For alternative energies, the developer provided an assessment of options in the DAR that considered hydroelectric, natural gas, biomass and wind (PR#93 p2-52), with a subsequent assessment of solar (PR#318). The developer discounted these alternatives for a variety of reasons, including (PR#93 p2-52; and, PR#318 pF-1):

- there are no ready sources of these energy sources at the mine site

- they would be cost-prohibitive
- they would not provide 100% of the power 100% of the time
- they may not function at very low temperatures

This set of conclusions was the basis for the developer's position that it would use the existing diesel powered generators as the only source of electrical power for the Jay Project.

In response to parties' recommendations that the developer consider alternative energy to offset a portion of its energy needs, as opposed to all of its energy needs, the developer committed to exploring alternative energy options at the public hearing, stating:

> *For the Jay Project, Dominion has committed to complete a concept study of potential additional alternative energy investments, including areas such as wind and solar energy. The results of this study would be publically reported within one year of the completion of the Jay Project environmental assessment review.* (PR#639 p40; PR#613 p25)

In its closing arguments, the developer clarified the concept study would be the first step in assessing alternative energy, with a feasibility study following, if the first step warranted (PR#699 p4-2).

Dominion stated it would report on its emissions and emission management efforts through several mechanisms, including: the annual *Air Quality and Emissions Management Plan* report and three-year report, the Mining Association of Canada's Towards Sustainable Mining Program, and the Environment Canada Greenhouse Gas Inventory (PR#461 p96).

9.4.3 Evidence from parties

Climate Change

Many parties gave evidence that climate change is a significant impact to the environment, is affecting Aboriginal people's ability to practice traditional pursuits, and is cause of significant public concern. Parties expressed concern that the Jay Project's greenhouse gas emissions will contribute to this already significant effect, and worried about the developer's approach to managing and mitigating its greenhouse gas emissions.

Aboriginal parties' concerns about climate change built upon the GNWT's views, which are stated in its *Greenhouse Gas Strategy*. The strategy states that human-caused greenhouse gases are warming the NWT's climate, and that this warming affects the North four to five times faster than the global average (PR#417 pp1-2). The strategy also states that this warming trend is limiting traditional pursuits and lifestyles (PR#417 p3).

The LKDFN stated at the public hearings in Yellowknife and in Lutsel k'e that the effects of climate change are evident, and include changes to: ice, water levels, winter season length, wind patterns, and movement of animals (PR#523 p15). At the public hearing in Yellowknife, the LKDFN stated of climate change:

> *This is an issue that's of a huge concern to the community. I've had several Elders remark on observed changes in the ice, and the ice density, and the lake levels, and many other things, [including] the movements of animals. And even the GNWT official reports on climate change explicitly state that they would have negative impacts on traditional livelihoods. And we're talking about people's ability to eat here.* (PR#639 p241)

The NSMA raised the issue of climate change repeatedly and expressed similar concerns as those of the LKDFN. The NSMA stated that effects of climate change are significant and are affecting the livelihood of NSMA members. The NSMA further reinforced this in its closing submission (PR#524 p22; PR#639 p252; PR#285 p4; PR#695 p12).

Aboriginal parties raised specific concerns that climate change is contributing to decline in caribou. At the Behchoko public hearing, Chief Clifford Daniels of Behchoko stated that climate change may be contributing to the drop in caribou (PR#647 p158). The NSMA stated that, if the developer did not make serious efforts to reduce its emissions, it would have a "significant impact on all VCs [valued components] that are affected by climate change" (PR#524 p22 and p23) and that "barren-ground caribou, the livelihood of NSMA people, will also be significantly impacted by the change in climatic conditions" (PR#524 p23).

The Kitikmeot Inuit Association expressed concern about the effects of climate change, stating, "Elders of all groups have expressed many concerns about the melting of permafrost with climate change and its impact on their traditional activities, as well as the environment" (PR#285 p58).

The following section describes parties' views on how to mitigate the Jay Project's emissions that contribute to the already significant effects of climate change.

Reducing greenhouse gas emissions

From the first round of information requests (IRs) through to its closing comments, the GNWT continually requested that the developer reduce its emission of greenhouse gas. The GNWT recommended several ways to accomplish this through alternative energy and by improving the efficiency of the haul fleet.

With respect to alternative energy, during the first round of IRs, the GNWT requested that the developer provide additional information as to why, and how, it determined that alternative energies were not viable for the Jay Project. The GNWT also specifically requested that the

developer consider solar power to offset a portion of the Jay Project's electrical needs, and reduce its greenhouse gas emissions and the payback time associated with solar power (PR#285 p6).

The GNWT followed up on this line of questioning at the technical session. The GNWT stated that the Jay Project will likely contribute to a 10% increase in the NWT's total emission, and that this is a significant increase (PR#359 p106). The GNWT also stated that, in its preliminary view, it is highly likely that solar energy could offset some portion of the Jay Project's greenhouse gas emissions (PR#359 p110-111). The GNWT provided evidence for this in the form of a preliminary assessment of the payback time for a small scale solar installation at the Ekati mine site (PR#455). In its closing arguments, the GNWT reiterated its view that Dominion should consider alternative energies for the Jay Project (PR#693 p5).

During the technical session, the GNWT also recommended that the new haul fleet meet the most stringent emissions standards, currently listed as Tier 4 (PR#359 p87). These standards are primarily for the reduction of air pollutants and are not specifically intended to reduce greenhouse gas emissions. However, it is likely that new Tier 4 vehicles will be more efficient.

Throughout the EA process, the LKDFN consistently raised concerns about the developer's management of greenhouse gas. The LKDFN focused on alternative energy as a way to reduce the Jay Project's greenhouse gas emissions. In response to questioning by the LKDFN at the technical session about whether alternative energies would reduce greenhouse gas emissions from the Jay Project, Dominion stated, "It would, but it's not a part of the Jay Project. That would be a different discussion for a different day, in our opinion" (PR#359 p103). The LKDFN disagreed with the developer's statement and followed up on it in the LKDFN's technical report, stating that:

> *Community members are interested in seeing every effort possible being made to reduce the mine's contribution to climate change and would like to see mines in LKDFN's home territory become world leaders in climate change mitigation.* (PR#523 p16-17)

At the public hearing, the LKDFN reiterated its consistent position that alternative energies should be seriously considered for the Jay Project. On day one of the public hearing, the LKDFN stated that the developer should continue to expand efforts to reduce emissions through alternative energies (PR#639 p241). Its public hearing presentation reinforced this position by recommending that the developer improve its reporting on greenhouse gas reduction activities and pursuing alternative energies (PR#571 p 21). The LKDFN's views and recommendations remained unchanged in its closing submission (PR#693 p7).

The NSMA consistently raised the issue of climate change and ways to mitigate the Jay Project's greenhouse gas emissions. This included the first round of IRs, through to the public hearing, and in its closing submission. During the first round of IRs, the NSMA noted the DAR did not

provide any meaningful mitigations for greenhouse gases (PR#285 p4). During the second round of IRs, the NSMA again raised the issue of ways to mitigate the Jay Project's greenhouse gas emissions (PR#448 p298). At the technical session, the NSMA continued this line of questioning (PR#359 p96).

In its technical report, the NSMA repeated its calls for the developer to consider alternative energies (PR#524 p22). The technical report also suggested as a measure that the developer conduct a cost-benefit analysis of alternative energies, and implement any successful results of the study (PR#524 p23). The NSMA recommended that the Review Board make a measure stating:

> *The developer shall conduct a feasibility study on renewable energy technologies, in collaboration with the Arctic Energy Alliance. The developer shall enter into this study in a view that [a] technically feasible and economically achievable alternative should be adopted and operationalized.* (PR#524 p23)

During the public hearing, the NSMA again reiterated its concerns that the developer should consider ways to reduce the Jay Project's greenhouse gas emissions by using alternative energy (PR#639 p192). In its closing arguments, the NSMA proposed two measures that would require the Jay Project to source 10% of its energy from renewables and to offset 80% of its emissions during the life of the Jay Project (PR#695 p12).

9.4.4 Review Board analysis

The Review Board observes that the Jay Project will be the largest industrial emitter of greenhouse gases in the NWT, responsible for an approximate 10% increase of the NWT total (PR#359 p106). The Review Board heard considerable evidence from parties, including Aboriginal groups and the GNWT, that climate change is affecting the NWT and is having a significant adverse effect on Aboriginal people's ability to practice traditional pursuits.

The Review Board finds that reducing greenhouse gas emissions requires looking at all sources of emissions and all ways to manage emissions. These could include improved efficiency or alternative energy use. The Review Board recognizes the considerable efforts that the developer has already undertaken to reduce emissions of greenhouse gas and additional commitments made during the EA. This includes reporting greenhouse gas emissions, setting greenhouse gas reduction targets, using best available technology and economically achievable, alternative ore hauling strategies, and a commitment to investigate alternative energy (PR#103 p7-42; PR#448 p284; PR#639 p39-40; PR#461 p96).

For the haul fleet, the Review Board observed that the GNWT asked the developer to commit to purchasing haul fleet vehicles of the highest emissions standard. In response, Dominion committed to adhering to emissions standards that apply at the time of purchase. The Review Board also observes the developer's commitment to using best available technology.

For alternative energy, the Review Board finds that Dominion's commitment to a concept study, followed by a feasibility study if warranted, is important. The Review Board observes that Dominion has already conducted and provided a study of alternative energy in the DAR in which it discounted alternative energy. The Review Board considered the GNWT's evidence that solar energy is likely economically feasible. The Review Board also heard from many parties that the developer should look seriously at the role of alternative energy to offset a portion of the Jay Project's greenhouse gas emissions. The Review Board is of the view that the developer's proposed concept study and feasibility study should take into account parties' concerns and evidence. This would help address parties' concerns, provided:

- the concept study assesses alternative energies that could offset a portion of the total energy demands at the mine site
- the results of the concept study, if warranted, are brought forward to the feasibility study
- the results are publically available
- viable options identified by the feasibility study, if any, are adopted

The Review Board concludes that the developer's reporting on greenhouse gas emissions is a step in the right direction. This includes required reporting to Environment Canada on its total greenhouse gas emissions, voluntary reporting under the Mining Association of Canada TSM framework, and reporting in the *Air Quality and Emissions Monitoring and Management Plan* annual report. The Review Board observes that the existing reporting may not include all the information that parties seek, and is not mandatory. If concerned parties do not have access to accurate information, their level of concern may increase even if the Jay Project's emissions are reduced.

9.4.5 Review Board conclusions

Based on the evidence provided during the EA, the Review Board concludes that climate change is a significant issue in the NWT and is a cause of public concern. The Review Board also concludes that the predicted greenhouse gas emissions from the Jay Project are a significant portion of the NWT's total, and will add to the already significant issue of climate change. This has been supported on the public record both by conventional scientific sources and by Traditional Knowledge.

The Review Board finds that the developer's efforts to manage greenhouse gas emissions are a step in the right direction, and that proposed and committed to additional steps demonstrate the developer's serious approach to managing emissions. However, parties have expressed considerable concern on this subject. If parties are not informed of Dominion's efforts, this concern may continue. The Review Board expects that the measure below, which requires mandatory reporting on the developer's greenhouse gas management efforts, will help to inform parties and alleviate concerns. The Review Board concludes that engagement and

feedback from community members on the developer's approach to managing greenhouse gas emissions is necessary and will likely reduce public concern.

9.4.6 Measure

The following measure requires Dominion to annually report on its greenhouse gas emissions and efforts to manage them adaptively, based in part on feedback from communities and the GNWT. The Review Board expects that the following approach to reporting and feedback will encourage innovation and efficiency in greenhouse gas emissions management. The Review Board also expects the measure to help address public concern through information sharing during community visits. For clarity, reporting does not need to include confidential or proprietary information.

Measure 9-2 – Reporting on greenhouse gas emission and management

Dominion will provide, in its Air Quality Emissions Monitoring and Management Plan annual report, information on its greenhouse gas management for all Project phases including, but not limited to:

- a calculation of greenhouse gas emissions by combustion source;
- greenhouse gas emissions reduction targets for the upcoming year and how they were determined;
- reporting of whether past reduction targets were achieved and how, or if they were not, why;
- a description of monitoring including the parameters, methods, frequency, and data analysis;
- a description of adaptive policies, strategies and mitigative actions undertaken, or proposed, to reduce greenhouse gas emissions, including but not limited to:

    1. the results of Dominion's proposed ore hauling pilot study, including a description of greenhouse gas emissions for each alternative hauling method studied compared to existing and/or proposed strategies;
    2. the results of Dominion's proposed concept study on the use of alternative energies to offset a portion of the Jay Project's energy needs, including the methods and analysis; and,
    3. if the concept study leads to a feasibility study on the use of alternative energy to offset a portion of the Jay Project's energy needs, report on the results, including the methods and analysis.

During its community visits, Dominion will engage on its greenhouse gas emissions management, and report on how results of past engagement have been incorporated into Dominion's management of greenhouse gas emissions.

10 Impacts to migratory birds, other wildlife and species at risk

Section 10 describes the Jay Project's impacts to migratory birds, other wildlife[87] and species at risk. Impacts to wildlife habitat are considered in section 10.1, followed by species at risk in

[87] In this section, "other wildlife" refers to birds and mammals other than caribou (which are considered in detail in section 6).

section 10.2. Each of these two sections begins with a summary of the Review Board's findings, followed by evidence provided by Dominion, evidence provided by parties, the Review Board's analysis of the evidence, and finally the Review Board's conclusions.

10.1 Impacts to migratory birds, other wildlife and wildlife habitat

10.1.1 Summary of Review Board's findings

The Review Board recognizes Dominion's efforts, with the assistance of parties, to prepare a Wildlife Effects Monitoring Plan for the Jay Project that meets the requirements of the new NWT *Wildlife Act*. The Review Board accepts that the Wildlife Effects Monitoring Plan contains the majority of the actions needed to avoid, minimize or mitigate adverse impacts to migratory birds, other wildlife and wildlife habitat.

Based on the evidence that Dominion and parties submitted, the Review Board does not anticipate the Jay Project will have significant adverse impacts on migratory birds, wildlife or wildlife habitat. This conclusion is based on (1) Dominion completing the requirements of its Wildlife Effects Monitoring Plan to the satisfaction of the GNWT and (2) implementing it according to commitments that avoid or minimize impacts from the Jay Project on the species considered in this section.

10.1.2 Evidence from the developer

This section describes Dominion's views on how constructing, operating and closing the Jay Project will affect migratory birds[88], other wildlife and wildlife habitat. In this section, wildlife refers to grizzly bears, wolverine, gray wolves, raptors and waterbirds.[89] The section briefly describes how Dominion will avoid, minimize and reclaim the potential impacts from the Jay Project on migratory birds and other wildlife.

In Dominion's view, the Jay Project will not result in significant adverse impacts to migratory birds and other wildlife. Dominion has made several key commitments to avoid impacts to wildlife, and in particular to mitigation to minimize impacts to migratory birds and their habitat. Dominion conducted an effects assessment of the Jay Project's impacts on wildlife and wildlife habitat in section 13 of its Developer's Assessment Report (DAR) (PR#135). In its effects assessment, Dominion described potential ways (or pathways) that the Jay Project could impact wildlife. Dominion used scientific, local and Traditional Knowledge, as well as experience with similar developments with environmental design features and mitigation, to determine whether these pathways are primary, secondary or have no linkage (no impacts).

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[88] The majority of birds in the area of the Jay Project are migratory.
[89] Some of these species are also discussed in the species at risk section (section 10.2).

Dominion reasons that pathways with no linkage are those impacts that are removed by environmental design features at the mine or by mitigation. Secondary (or minor) pathways are those that could result in a measureable minor change but would have a negligible residual impact. They are not expected to contribute to the impacts from other existing, approved or reasonably foreseeable projects to cause a significant effect. A primary pathway is likely to result in environmental change that could contribute to residual impacts from the Jay Project to wildlife. Primary pathways assessed in detail include:

- direct loss and fragmentation of habitat from the Jay Project footprint causing changes in wildlife abundance and population for grizzly bear, wolverine, waterbirds and raptors
- sensory disturbance (lights, smells, noise, dust, etc.) causing changes in habitat quality, movement and behaviour for grizzly bear, wolverine, gray wolf, upland birds, waterbirds and raptors
- increased traffic on the Misery Road, Jay Road and the above-ground powerline along these roads creating barriers to carnivore and caribou movement. This may affect carnivore population connectivity, abundance and distribution (including grizzly bear and wolverine). (PR#135 p13-70,12-72, Table 13.3-1)

Dominion incorporated Traditional Knowledge into its effects assessment using historical reports (PR#135 p13-55 to 13-62) and conducted detailed residual effects assessments for waterbirds, raptors, wolverine and grizzly bear. Uncertainties in the effects assessment relate to adequacy of baseline data; model inputs and disturbance coefficients; understanding project-related effects on complex ecosystems that contain interactions across different scales of time and space; and knowledge of the effectiveness of the environmental design features and mitigations for reducing or removing effects (PR#135 p13-137).

In its DAR, Dominion describes environmental design features and mitigation that it predicts will avoid or minimize adverse impacts from the Jay Project to migratory birds and wildlife (PR#135 p13-69 to 13-72). Key mitigations include:

- implementing actions described in the Wildlife Effects Monitoring Plan
- expanding existing mitigations for wildlife safety at Ekati to include the Jay Project
- constructing new access roads as narrowly as feasible while maintaining safe construction and operation practices to reduce the Jay Project footprint
- maintaining a minimum 200 m setback for the Jay waste rock storage area from Lac du Sauvage
- incorporating perching and nesting deterrents on powerlines and power poles, as well as other bird deterrents, in areas where possible bird strikes along the powerline may occur (such as near waterbodies that are known staging areas)
- always granting wildlife the right of way on roads
- reducing speed limits on roads to limit fugitive dust and the risk of wildlife mortality

- constructing kimberlite stockpiles in strategic locations that facilitate continued mine operations through various types of road closures, including closures for wildlife (PR#135 p13-69 to 13-72)

During all phases of the environmental assessment (EA) from the DAR, which include the analytical phase, public hearings and final submissions, Dominion consistently maintained that the Jay Project will not have significant adverse impacts to migratory birds and wildlife including grizzly bears, wolverine, raptors and waterbirds (PR#135 p13-147 to 153).

10.1.3 Evidence from parties

In its technical report, Environment Canada states that Dominion is aware of its responsibilities to take actions to remain compliant with the *Migratory Bird Convention Act* and associated *Migratory Bird Regulations*. These actions include prohibitions on disturbing or destroying the eggs or nests of migratory birds or the birds themselves during all activities associated with the Jay Project (PR#510 p16).

In its technical report, Environment Canada recommends how Dominion can protect migratory birds when planning or carrying out Jay Project activities. These recommendations include (PR#510 p19):

- avoiding land clearing during the migratory bird nesting season
- surveying for nesting birds before clearing, if disturbance cannot be scheduled outside of the nesting season
- including sensitive nesting periods and setback distances for tundra nesting birds and species at risk in the Wildlife and Wildlife Habitat Protection Plan and Wildlife Effects Monitoring Plan
- monitoring the effectiveness of mitigation in the Wildlife Effects Monitoring Plan annual report
- using monitoring to inform mitigation through adaptive management

Waterbird by-catch during fish salvage in Lac du Sauvage

In its response to Environment Canada's technical report, Dominion commits to developing a diving-bird mitigation strategy as part of the final fish-out plan. Dominion will consult with Environment Canada to develop this plan. Its purpose is to prevent or minimize the incidental take (injury or mortality) to waterbirds (such as loons and grebes) during the fish-out of the diked portion of Lac du Sauvage. Dominion further states that it will monitor the Jay Project fish-out to determine the mitigation's effectiveness, which can be used during future fish-outs (PR#554 p2-5).

Dominion notes that in 2015, it conducted a fish-out of Lynx Lake, a small lake near the Misery pit, and observed no injuries or mortalities to waterbirds. It will apply the lessons it learned in

avoiding harm to waterbirds during the Lynx salvage to the Jay Project fish salvage in the diked portion of Lac du Sauvage (PR#554 p2-5).

In its closing submission, Environment Canada states that it is satisfied with Dominion's commitment to engage with Environment Canada to develop and review a diving bird mitigation strategy (PR#690 p3).

Avoiding incidental take of migratory birds

Dominion's response to Environment Canada focusses on mitigation in the Wildlife Effects Monitoring Plan to avoid and reduce risks to migratory birds and nests. Dominion cites mitigation examples in the Wildlife Effects Monitoring Plan, such as using bird deterrents on powerlines and managing clearing of vegetation to avoid migratory birds or nesting sites. These and other mitigation measures must comply with the *Species at Risk Ac*t and the *Migratory Birds Convention Act*. Dominion commits to this mitigation, along with monitoring, to ensure mitigation actions are effective for the adaptive management approach described in the Wildlife Effects Monitoring Plan (PR#554 p2-6). In its closing submission, Environment Canada states that it is satisfied with Dominion's commitment and has no further recommendations to avoid incidental take of migratory birds (PR#690 p3).

Migratory bird use of mine-altered water

During the public hearing on September 17, the IEMA asked Environment Canada if the effluent from the Jay Project released within the mixing zone of Lac du Sauvage would be safe for water birds (PR#663 p270). Environment Canada was unable to respond on that hearing day, but did respond via an undertaking after the hearing.

The undertaking required Environment Canada to "*approach [its] wildlife toxicology expert and determine if, based on the water quality estimates [Dominion has] for Misery Pit and the Jay Project mixing zone, they anticipate any harm to migratory birds under the Migratory Birds Convention Act*" (PR#672 p1).

Environment Canada's response stated that, based on an evaluation of water quality predictions, no harm is anticipated to migratory birds from pit waters associated with the Jay Project (PR#672 p2). Environment Canada reiterated this statement in its closing submission and has no further concerns with this issue (PR#690 p3).

Wildlife Monitoring and Management Plan, Wildlife Act s.95

In its technical report, the GNWT supports the developer's conclusion in section 13 of the DAR, which states that significant adverse impacts to grizzly bears, wolves, wolverine and birds are unlikely as a result of the Jay Project. The GNWT's finding is predicated on Dominion fulfilling its commitments to work with parties and the GNWT on developing and implementing actions within its Wildlife Effects Monitoring Plan through all phases of the Jay Project (PR#693 p10).

The NWT *Wildlife Act* came into force in 2014, but some regulations have not yet been developed. Section 95 of the *Wildlife Act* requires a project developer to prepare a Wildlife Monitoring and Management Plan and outlines what the plan must include. In its closing submission, the GNWT provides advice on applying Section 95 of the *Wildlife Act* to the Jay Project (PR#693 p11).

The GNWT states that, due to the large scale of the Jay Project and its location at a key caribou movement corridor, the Jay Project meets the criteria for the preparation of a wildlife management and monitoring plan under Section 95(a) of the new *Wildlife Act*. Dominion has prepared a conceptual Wildlife Effects Monitoring Plan (PR#518), which the GNWT advises is consistent with the GNWT's *Draft Wildlife and Wildlife Habitat Protection Plan (WWHPP)* and *Wildlife Effects Monitoring Program (WEMP) Guidelines*. It therefore fulfills the requirement for a wildlife monitoring and management plan under section 95 of the new *Wildlife Act* (PR#693 p12).

The GNWT further advises that if the Jay Project is approved, the GNWT will require any wildlife measures in this REA be included in Dominion's Wildlife Monitoring and Management Plan in accordance with section 95 of the *Wildlife Ac*t (PR#693 p12).

10.1.4 Review Board analysis

The Review Board acknowledges that Dominion has an existing Wildlife Effects Monitoring Plan for the Ekati mine and has implemented mitigation measures to reduce or avoid impacts to migratory birds, wildlife and wildlife habitat since mine operations began in 1998. The Review Board recognizes Dominion's many efforts to mitigate adverse impacts to migratory birds and wildlife. The Review Board requires that Dominion (1) implement its commitments to avoid or minimize waterbird by-catch during the fish salvage to avoid the incidental take of migratory birds and (2) prepare a Wildlife Effects Monitoring Plan in accordance with the *Wildlife Act* that is acceptable to the GNWT.

The Review Board acknowledges Dominion's efforts , along with contributions from the GNWT, the IEMA and Aboriginal communities to prepare a Wildlife Effects Monitoring Plan for the Jay Project. Based on the evidence Dominion and parties submitted, the Review Board finds that the Jay Project will not have significant adverse impacts on migratory birds, wildlife other than caribou, or wildlife habitat. This conclusion is based on Dominion implementing its commitments to avoid or minimize impacts from the Jay Projects on the species considered in this section.

The Review Board is confident that the regulatory authorities with the mandate to manage these wildlife species, including the GNWT and Environment Canada, will ensure that Dominion implements its commitments.

10.1.5 Review Board conclusions

Based on the evidence, the Review Board does not anticipate significant adverse impacts from the Jay Project to migratory birds, wildlife habitat or wildlife, including grizzly bears, wolverine, gray wolves, raptors or waterbirds, provided the Jay Project is carried out as Dominion has described and Dominion's commitments are implemented and enforced.

10.2 Impacts to species at risk

10.2.1 Summary of Review Board's findings

In the opinion of the Review Board, the Jay Project is not likely to cause significant adverse impacts to species at risk. The sections below outline the Review Board's reasons for determining that significant impacts from the Jay Project on species at risk are not likely. Evidence on the public record from Dominion and parties provides the basis for the Review Board's reasoning and conclusions.

Section 10.2.4 describes the Review Board's analysis of the evidence from Dominion and parties, and the reasons that led to the Review Board's opinion of significance of adverse impacts from the Jay Project to wildlife. Section 10.2.5 presents the Review Board's conclusions, while sections 10.2.2 and 10.2.3 contain the evidence from the developer and parties respectively that the Review Board weighed in making its determination.

The Review Board assessed the Jay Project and its potential impacts on species at risk and their critical habitat. By reviewing and considering the evidence presented below, including the developer's commitments to mitigate and monitor impacts to species at risk, the Review Board has fulfilled its duties under section 79 of the *Species at Risk Act (Canada)*.

10.2.2 Evidence from the developer

In its DAR, Dominion identified five species at risk in its study area for the Jay Project, including grizzly bear, wolverine, peregrine falcon, short-eared owl and rusty blackbird. Separate effects assessments were conducted for grizzly bear and wolverine, while effects to peregrine falcon and short-eared owl were assessed as part of the valued component assessment for raptors. An effects assessment for rusty blackbird was included in Dominion's upland bird assessment (PR#135 p13-6).

In its DAR, Dominion conducted an effects assessment for species at risk. Dominion assessed the predicted impacts from the Jay Project that could result in environmental change resulting in residual effects on species at risk. These impacts are also called primary pathways, and are the same as those analyzed for migratory birds and wildlife. They are described in detail in section 10.1.2. In summary, the primary pathways from the Jay Project to species at risk are:

- habitat loss and fragmentation from the footprint of Jay Project components (1,160 ha)
- sensory disturbance from noise, light, dust and movement of vehicles at the mine and along haul roads
- barriers to wildlife movement from Project components (PR#135 p13-70,12-72, Table 13.3-1)

In its DAR, Dominion predicts that incremental and cumulative impacts to wildlife and wildlife habitat, including species at risk from the Jay Project, are not significant (PR#135 p147-153).

Dominion has prepared a draft Wildlife Effects Monitoring Plan with Caribou Road Mitigation Plan, July 31, 2015 (PR#518) and commits to finalizing the document during the regulatory phase (PR#681 p36). Dominion provides an engagement schedule for the Wildlife Effects Monitoring Plan in its July 24, 2015 submission (PR#487 p11). In its engagement schedule, in the following Jay Project phases, Dominion will:

Prior to construction (2016)

- host a technical workshop to discuss and receive input on the draft conceptual plan for construction and operations
- circulate revised draft conceptual plan for construction, addressing feedback received for final written comment
- finalize plan for construction, addressing feedback received

Prior to Jay Operations (2019)

- circulate revised draft plan for operations, addressing feedback received and reflecting findings of the Jay construction programs and the ongoing Ekati mine operations programs
- host a technical workshop to discuss and receive input on the revised craft amendments for operation
- finalize amendments for operations, addressing feedback received

Prior to Jay Closure and Reclamation Activities

- finalize amendments for closure and reclamation through the established WLWB process for development of the Interim and Final Closure and Reclamation Plans (PR# 487 p11, PR#491 p15-16)

10.2.3 Evidence from parties

In its technical report, Environment Canada advises the Review Board that it administers and enforces the federal *Species at Risk Act*. Environment Canada states that the purpose of the *Species at Risk Act* is (PR#510 p9):

> *to prevent wildlife from becoming extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened*.

Environment Canada further advises that under section 79 of the *Species at Risk Act*, the Review Board must (PR#510 p9):

> *ensure that an assessment of the environmental effects of a project is conducted, must ensure that measures are taken to avoid or lessen those effects and monitor the effects of a project on listed wildlife species and their critical habitat if a project is carried out*.

In its technical report, Environment Canada states that in response to questioning at the technical sessions in April 2015, Dominion revised its assessment of Jay Project effects on species at risk to include the rusty blackbird, short-eared owl (Schedule 1 *Species at Risk)* and the red-necked phalarope (assessed as at risk by Committee on the Status of Endangered Wildlife in Canada). With these additions, Environment Canada advises the Review Board that all species at risk that the Jay Project may affect have been identified and assessed (PR#510 p21).

Environment Canada acknowledges that Dominion has prepared a Wildlife Effects Monitoring Plan which identifies species at risk potentially occurring in the Jay Project area, their status, potential impacts from the Jay Project and associated monitoring. Environment Canada further notes that mitigation and monitoring for species at risk will be included in the Wildlife Effects Monitoring Plan and Wildlife and Wildlife Habitat Protection Plan to be submitted during the regulatory phase (PR#510 p22).
The GNWT shares management responsibilities for species at risk with Environment Canada as shown in Table 10-1 below.

Table 7-1: Management responsibilities for species at risk

Terrestrial species at risk[1,2]	**COSEWIC designation**	**SARA status**	**Government organization with primary management responsibility**	**Recovery strategy, action plan or management plan posted on the Species at Risk Public registry**
Peregrine falcon (*anatum tundrius complex*)	Special concern	Schedule 1 special concern	GNWT	Management Plan proposed

Rusty blackbird	Special concern	Schedule 1 special concern	GNWT	Management Plan proposed
Short-eared owl	Special concern	Schedule 1 special concern	GNWT	
Grizzly bear (western population)	Special concern	No status	GNWT	
Red necked phalarope	Special concern	No status	EC	
Wolverine	Special concern	No status	GNWT	

Notes:
1 Fisheries and Oceans Canada has responsibility for aquatic species.
2 Environment Canada (EC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the *Migratory Birds Convention Act* (MBCA). Day to day management of terrestrial species not covered in the MBCA is the responsibility of the Government of the Northwest Territories (GNWT).

Source: Table 2 in Environment Canada's technical report (PR#510 p23)

In its technical report, Environment Canada anticipates that the GNWT will provide expertise on mitigation and monitoring measures for species including the peregrine falcon, short-eared owl, grizzly bear and wolverine. In the GNWT's technical report, the GNWT stated that it has responsibilities for species at risk under territorial management, but did not recommend ways to mitigate or monitor species at risk specifically. The GNWT recommended that Dominion commit to revising its Wildlife Effects Monitoring Plan, and though the GNWT's focus was on caribou, this plan also contains mitigation and monitoring for species at risk (PR#515 p32-40). In its closing submission, the GNWT advises that, based on Dominion's commitments to work with parties to develop the Wildlife Effects Monitoring Plan through the regulatory phase, it does not anticipate significant adverse impact to grizzly bears, wolves, wolverine or birds that are within its mandate (PR#693 p10).

Environment Canada believes that the mitigation and monitoring proposed by Dominion in the Wildlife Effects Monitoring Plan and the Wildlife and Wildlife Habitat Protection Plan will help to mitigate and monitor potential adverse impacts to avian species at risk

from the Jay Project (PR#510 p24). Environment Canada provided three recommendations to mitigate and monitor species at risk. The recommendations focus on avoiding the nests and eggs of birds, mitigation and monitoring strategies consistent with existing status reports or recovery strategies, and continued input into the North American Breeding Bird Surveys (PR#510 p24).

In its closing submission, Environment Canada stated that it is satisfied with Dominion's responses to these recommendations and the final commitments regarding its wildlife issues, including species at risk (PR#690 p3).

10.2.4 Review Board analysis

The Review Board has responsibilities under section 79 of the *Species at Risk Act*. The Review Board assessed the Jay Project's impacts on species at risk and has ensured that mitigation and monitoring of the impacts to those species will occur. In the Review Board's opinion, the Jay Project is not likely to cause significant adverse project specific or cumulative impacts to species at risk. The Review Board's conclusion is based on the reasons below.

The Review Board accepts Dominion's commitments to mitigate impacts to species at risk and to monitor the effectiveness of that mitigation. The Review Board finds these actions will ensure there are no significant adverse impacts from the Jay Project to species at risk provided the commitments are adhered to and enforced.

The Review Board acknowledges Dominion's commitments to mitigate impacts to wildlife and species at risk made during the course of the EA. These commitments are in Appendix C of this Report of EA (REA). Dominion hosted multiple workshops in 2015 with parties on the Wildlife Effects Monitoring Plan and Caribou Road Mitigation Plan. Parties were able to comment on draft versions of the plan after each workshop. Using this iterative approach, Dominion filed an updated draft Wildlife Effects Monitoring Plan with appended Caribou Road Mitigation Plan on July 31, 2015. The Review Board accepts Dominion's commitments to complete the Wildlife Effects Monitoring Plan during the permitting phase (PR#681 p36-40) and include parties such as Aboriginal organizations, the GNWT and Environment Canada in periodic review of the plan.

10.2.5 Review Board conclusions

Based on the evidence on the record, the Review Board concludes that significant adverse impacts from the Jay Project to species at risk are not likely. This conclusion is predicated on Dominion adhering to its commitments described in Appendix C of this REA. This conclusion also requires that the GNWT and Environment Canada enforce the mitigation and monitoring actions in Dominion's Wildlife Effects Monitoring Plan and Wildlife and Wildlife Habitat Protection Plan that their respective mandates require.

11 Impacts to Diavik diamond mine

11.1.1 Summary of Review Board's findings

The Diavik diamond mine (Diavik) is located in Lac de Gras and will be downstream of the proposed Jay Project. Changes to the environment resulting from the Jay Project may affect Diavik's closure and reclamation. Diavik argued that the Jay Project will significantly affect its ability to demonstrate it has successfully closed its operation. The Review Board concludes that the potential effects to the environment that may affect Diavik's ability to close can be addressed through closure planning in the regulatory system and includes a suggestion to address this matter.

11.1.2 Evidence from the developer and parties

In its technical report, hearing presentations, and closing argument, Diavik stated that in its view, the Jay Project will affect the environment and in turn affect Diavik's ability to close its mine (PR#519; PR#663; PR#644; PR#688). Specifically, Diavik was concerned with the potential effect of the Jay Project on its closure objectives for caribou and water quality.

Diavik submitted the Jay Project will make it more difficult to demonstrate that the Diavik mine has been reclaimed and that the area is suitable for caribou. This is because the Jay Project will reduce the number of caribou that return to the region after Diavik's closure. In its technical report, Diavik observed that the zone of influence from the existing mine operations at Ekati is modifying caribou movement and resulting in fewer caribou using the Diavik site. In Diavik's view, its reclamation efforts should increase caribou use of the Diavik site after its closure in 2023. The return of caribou to the Diavik mine area "is expected to be a key regulatory and community closure performance measure of [Diavik]" (PR#519 p2-3). Diavik stated, in both its technical report and closing submission, that it believes the Jay Project, including use of the Misery road, will influence caribou movement. This will result in reduced use of the reclaimed Diavik Mine by caribou from 2023 to 2030, when Diavik will be completing its closure.

Regarding water quality, Diavik recognized that Dominion has predicted changes to the water quality in Lac de Gras. Dominion predicted that TDS concentrations in Lac de Gras would increase further as a result of the Jay Project. Diavik has already caused changes to the water quality in Lac de Gras, primarily from its operational effluent discharge (PR#107 p8-363 to 8-378; PR#182; PR#519 p4). Diavik argued that the additional mine-affected water from the Jay Project would degrade water quality in Lac de Gras during a period when it would have otherwise been improving. This may affect Diavik's ability to demonstrate it has adequately restored the water quality in Lac de Gras (PR#519).

Diavik stated in its technical report and closing argument that the potential environmental effects of the Jay Project to caribou and water could impact Diavik's ability to demonstrate its closure, and could result in an economic cost to Diavik. In its technical report, Diavik stated that its closure objectives have been approved, but the associated closure criteria to achieve

those objectives have not been defined yet (PR#519 p4). In Diavik's opinion, the effects from the Jay Project may cause Diavik to incur financial losses, saying "It is not unreasonable to expect that without mitigation some $10 million… would be at risk of not be(ing) relinquished… as a direct result of the Jay Project proceeding" (PR#688 p2).

In response to Diavik's technical report, Dominion "committed to continue to engage with [Diavik] on the development of detailed environmental monitoring plans for water and wildlife where there is a spatial overlap of interests or needs" (PR#551). In addition, Dominion agreed to engage with the parties to Diavik's environmental agreement when establishing the monitoring and mitigation measures (PR#644 p133). Finally, at the hearing Dominion stated that in its opinion, the Jay Project's relative contribution to Lac de Gras could be distinguished from the Diavik mine's contribution (PR#663 p147-148).

11.1.3 Review Board analysis and conclusions

The Review Board concludes that the Jay Project will affect the environment and may affect Diavik's ability to demonstrate satisfactory closure of its mine. However, the Review Board concludes that the regulatory closure process and Dominion's commitment to work with Diavik provide the best mechanisms to address these concerns. The Review Board makes a suggestion to help reduce the potential for an environmental impact from the Jay Project that would affect Diavik.

The Review Board recognizes that Dominion's commitment to work with Diavik on the closure and monitoring process where there is overlap in the effects to water and wildlife will be important to differentiating the causes of any measured effects. Based on the evidence presented during the environmental assessment (EA), the Review Board believes that it is possible to distinguish the effects to water quality in Lac de Gras from the Jay Project and Diavik. In the Review Board's opinion, both of these will assist the WLWB when regulating Diavik's closure.

Regarding the potential for economic impact to Diavik, the Review Board simply does not have adequate evidence to determine that the financial cost will be significant or amount to $10 million. Diavik suggested this cost but did not adequately explain how it was determined. In any event, the Review Board is aware that if water quality impacts from the Jay Project adversely affect Diavik, Diavik can claim water compensation through the water licensing stage of the regulatory process. In addition, the Review Board recognizes that if Diavik's closure goals are adversely affected by the Jay Project, Diavik can prove this to the WLWB and the parties to its environmental agreement and have its closure objectives reassessed.

The Review Board recognizes that the Jay Project may have an effect on Diavik; however, the extent of those effects cannot be determined at this time. If these impacts materialize, the Review Board anticipates Diavik would be able to prove their cause and the effects, financial or otherwise. Diavik can use both regulatory and civil processes to seek a remedy. At this point, the Review Board does not have the evidence to rule that those impacts will occur and is not

convinced that those hypothetical impacts on Diavik would constitute an impact on the environment under the Act.

In the Review Board's view, it important that regulators understand each mine's relative contribution to cumulative impacts to water and wildlife. Such an understanding would enable regulators to minimize effects to the environment with each company responsible for its own contributions to potential cumulative effects, and would allow closure planning to proceed with the best available information.

11.1.4 Suggestion

The Review Board recognizes that the effects to the environment from the Jay Project and Diavik mine overlap and that the Jay Project may affect the closure of the Diavik mine. The Review Board makes the following suggestion.

Suggestion:

When setting the closure criteria and considering the relinquishment of Diavik Diamond Mines (2012) Inc.'s closure security, the Wek'eezhii Land and Water Board and the Government of the Northwest Territories should consider any effects of the Jay Project on the environment.

12 Closure and Reclamation of the Jay Project

Reclamation is the process of returning a disturbed site to its natural state or preparing it for other productive uses. It is intended to prevent or minimize adverse effects on the environment or threats to human health and safety after the closure of a project or a component of a project.[90] As such, reclamation is an important part of the overall mitigation of project impacts and of ensuring that a project area is suitable for other uses after mine closure. Early planning for closure and reclamation, and related consideration during environmental assessment (EA), is critical to ensuring that mine design and operation allow for other uses after closure.

For the Jay Project, the Review Board has recognized and emphasized the importance of traditional use of the Jay Project area after closure.[91] As a result, several measures set out in the sections above are intended to ensure the Jay Project implements both operational mitigations and reclamation activities to prevent impacts on traditional use.

This section provides a summary of how the Review Board considered closure and reclamation of the Jay Project during the EA. The section describes Dominion's closure and reclamation plans for the Jay Project within the context of the overall closure and reclamation planning and activities for the entire Ekati mine site. Parties' submissions related to closure are summarized, followed by the Review Board's analysis and conclusions. For greater detail regarding any particular issue, such as water quality at closure or reclamation to facilitate caribou's use of the area, please refer to sections 4 and 5.

12.1 Incorporating Jay Project into Ekati mine closure and reclamation plan

The existing Ekati mine has an approved Interim Closure and Reclamation Plan (PR#391). In 2011, the Wekeezhii Land and Water Board approved version 2.4 of this plan. Dominion anticipates that this plan will be updated to incorporate the Jay Project during the regulatory phase (PR#94 p3-9).

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[90] *Guidelines for the Development of Closure and Reclamation Plans for Advanced Mineral Exploration and Mine Sites in the Northwest Territories (2013)*. Available through wlwb.ca.
[91] See sections 4.1.4 (Water quality) and 5.1.4 (Protection of the Narrows)

During the Jay Project operations phase, some existing facilities at Ekati that will have no operational value for the Jay Project will be reclaimed. They include cells A, B and C of the Long Lake Containment Facility (PR#94 p3-9).

Dominion proposes to fit the reclamation of the Jay Project into the established framework for closure and reclamation at the Ekati mine. The existing Interim Closure and Reclamation Plan, version 2.4, describes the reclamation goal, objectives, methods, and research for the entire Ekati mine site. The overall reclamation goal for Ekati is:

> *to return the Ekati Mine site to a viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities and the surrounding environment.* (PR#94 p3-65)

12.2 Evidence from the developer

Planned closure activities for the Jay Project

Dominion briefly describes its planned closure and reclamation activities for the Jay Project in the project description section of its Developer's Assessment Report (DAR) (PR#94 p3-7, p3-9, p3-65). Dominion provides a Conceptual Closure and Reclamation Plan in Appendix 3B (PR#96). Mine operations at the Jay open pit are predicted to close in 2030, and the closure phase is proposed to occur over four years, from 2030 to 2033. General activities during the closure phase for the Jay Project include (PR#94 p3-7 and 3-9):

- pumping minewater from the Misery pit to the Jay pit
- back-flooding the Jay pit and the dewatered area of Lac du Sauvage
- back-flooding the Misery and Jay pits with a cap of water from Lac du Sauvage
- covering Panda and Koala pits with a freshwater cap
- decommissioning roads and sub-basin B diversion channel
- reclaiming surface facilities

The diked area in Lac du Sauvage will be breached and the isolated portion of Lac du Sauvage will be reconnected with the rest of the lake once monitoring shows that the water in the diked area meets regulatory criteria. Water in Misery pit will be allowed to overflow to Lac de Gras once water in that pit meets regulatory closure criteria. Monitoring will continue after closure to ensure that the entire Jay Project site meets closure objectives and criteria.

Jay Project Conceptual Closure and Reclamation Plan

The Conceptual Closure and Reclamation Plan for the Jay Project in Appendix 3B of the DAR describes reclamation activities for new Jay Project facilities and existing Ekati facilities. The facilities for closure and reclamation after the Jay Project operations phase is complete include:

- New Jay Project facilities
  - open pit
  - waste rock storage area
  - dike, channel, sumps and dewatering ramps
  - buildings and infrastructure including roads, pipeline benches, pads, powerline, pumping and pipeline systems
- Existing Ekati mine facilities
  - Misery pit used for water management
  - Lynx pit used during dewatering for the Jay Project
  - Koala pit and Panda pit used as containment areas for fine processed kimberlite (or tailings) from the Jay Project
  - cells D and E of the existing Long Lake Containment Facility
  - processing plant and associated facilities
  - Ekati main camp, airstrip, explosives storage and manufacture facilities and associated facilities
  - Misery camp and associated facilities
  - coarse kimberlite reject management area (PR#96 p2-3)

Figure 12-1 below shows the Jay Project area's general arrangement once mine operations are complete at the Jay pit. Closure and reclamation of key Jay Project facilities and existing Ekati facilities are described in more detail below.

Jay open pit and diked area in Lac du Sauvage

The Jay pit and diked area will be back-flooded at closure of mine operations starting in the winter of 2030. Back-flooding of the Jay pit requires a volume of 93.84 million m^3 of water to fill, and the diked area in Lac du Sauvage above the pit requires 26.64 million m^3 of water (PR#96 p24).

Once mining of the Jay pit is complete, contaminated water from the Misery pit will be pumped to the Jay pit. The water level in Misery pit will be lowered 60 m below its overflow elevation. Misery pit water will likely be contaminated with elevated concentrations of TDS and will be pumped to the lower elevation portion of the mined-out Jay pit. It is expected to remain in the lower part of the pit by meromixis, because its salinity makes it heavier than the cleaner water above it.[92] The remaining volume of water needed to back-flood the Jay pit and the diked area will be pumped from Lac du Sauvage to create a freshwater cap above the contaminated water from Misery pit.

[92] See section 4.1.2 of Water section for further description of meromixis.

Dominion advises that back-flooding of the Jay pit and diked area will take approximately four years and will occur year-round. Dominion predicts minimal impacts on the water levels or water flows in both Lac du Sauvage and Lac de Gras (PR#96 p24-25). The sub-basin B diversion channel is the diversion of the outflow from Christine Lake to Lac du Sauvage. It was constructed to divert water flows around the diked area during mine operations. This diversion will remain in place during back-flooding and will be returned to natural drainage once the diked area is reconnected with Lac du Sauvage (PR#96 p24).

The dike will be breached and reconnected with Lac du Sauvage when surface water quality in the diked area meets acceptable licensing criteria. The dike itself will remain in place in Lac du Sauvage and will only be breached in a few locations, as shown in Figure 12-2. The dike in Lac du Sauvage will be breached to a depth of approximately 2-3 m below minimum water level at Lac du Sauvage to account for ice formation, and allow for fish passage and navigable water requirements (PR#96 p27).

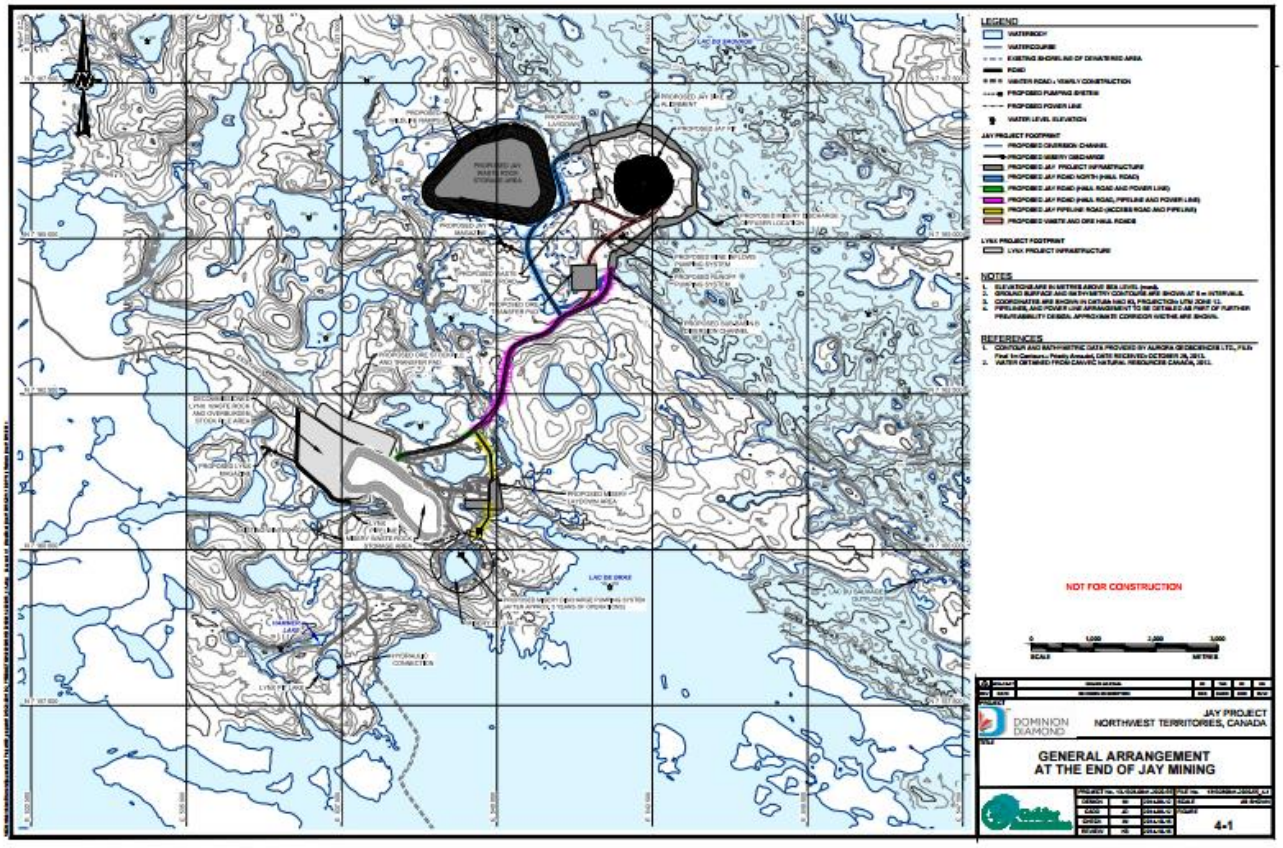

Figure 7-2: Jay Project area at the end of mine operations
(Source PR#96 p44)

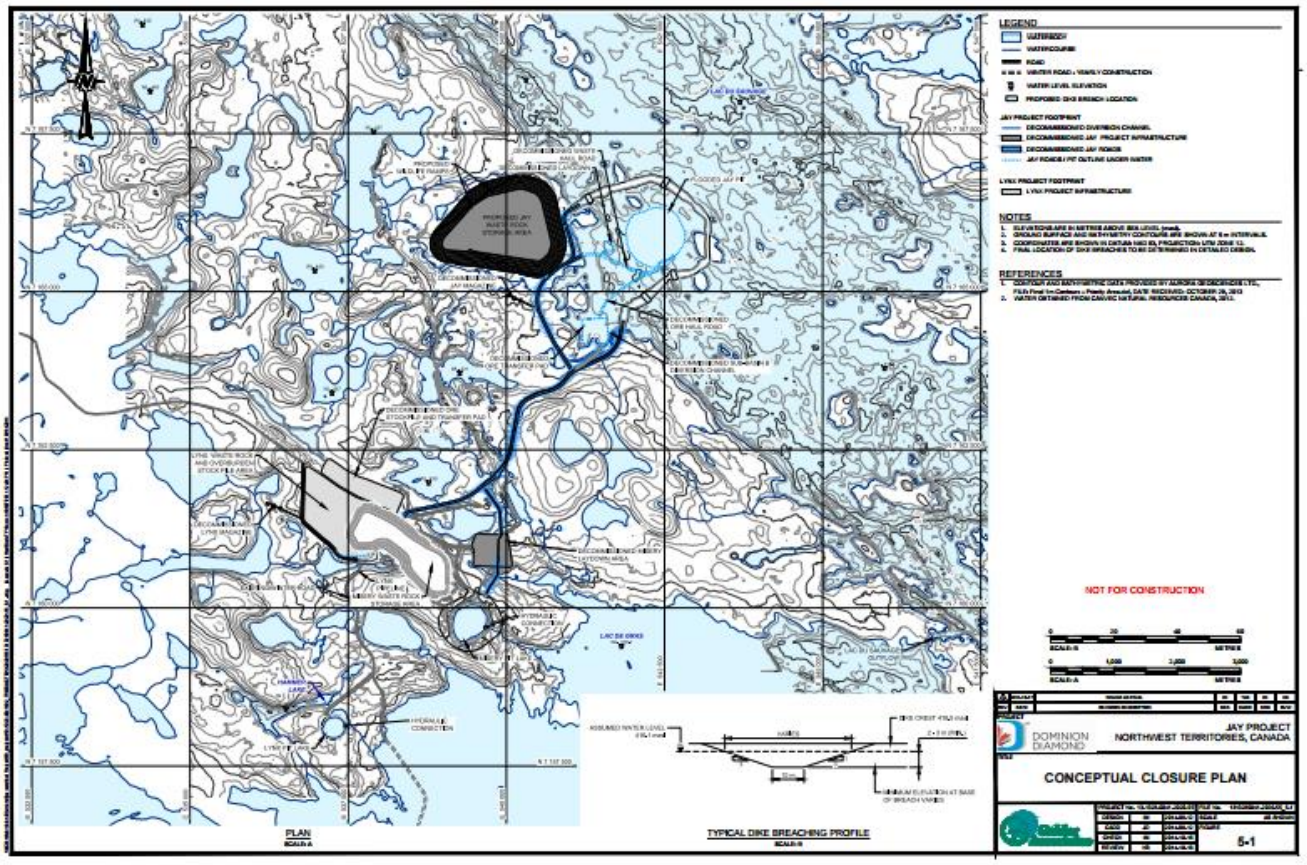

Figure 7-3: Conceptual closure plan for the Jay Project with typical dike-breaching profile (Source PR#96 p45)

Jay waste rock storage area

The waste rock storage area for the Jay Project is designed to remain in place after closure. It will be constructed to minimize runoff and encourage permafrost formation from the ground surface up, through selective placement of rock types at the base of the storage area. Dominion predicts that water infiltrating the waste rock storage area will freeze once it encounters permafrost conditions in the facility. Permafrost is predicted to limit runoff to the outer surface of the waste rock storage area, depending on the depth of the active layer (PR#96 p25).

The waste rock storage area will be covered with five meters of non-potentially acid generating waste rock and levelled to discourage snow accumulation. Access and egress ramps for wildlife will be constructed during the operations phase in consultation with communities and regulators (PR#96 p26).

If seepage from the waste rock storage area requires active management, seepage management structures (that is, collection sumps) may be required. These structures would be

decommissioned once monitoring demonstrates that seepage water quality is acceptable to regulators (PR#96 p26).

Mined-out Misery pit

Dominion proposes to use the Misery pit as a water management facility during Jay pit operations. At the close of the Jay Project, water from the Misery pit will be pumped into the Jay pit, and freshwater will be pumped from Lac du Sauvage to create a 60 m clean water cap in Misery pit above water contaminated with elevated TDS. The elevated TDS water is predicted to remain below this freshwater cap in Misery pit due to density stratification. Dominion estimates it will take 443 days to fill the 60 m freshwater cap. Misery pit overflow will connect to the receiving environment through its natural channel to Lac de Gras once regulators consider Misery pit water quality acceptable for discharge (PR#96 p28).

Mined-out Panda and Koala pits

The Panda and Koala pits are proposed as the primary locations for the deposition of processed kimberlite from the Jay Project after the Jay kimberlite ore is milled at the Ekati processing facility. Dominion intends to deposit processed kimberlite into the two pits to a maximum elevation of 30 m below pit overflow elevation, over which it will place a 30 m freshwater cap. A cap of this depth was permitted above processed kimberlite for the Beartooth pit in 2012. Dominion suggests that future studies and research could be done to optimize freshwater cap depth. Other aspects of reclamation and closure of the Panda and Koala pits will proceed as described in the existing Ekati Interim Closure and Reclamation Plan (PR#96 p28-29).

Mined-out Lynx pit

During operations, Dominion proposes to use the Lynx pit as a settling facility for water with high total suspended solids (dirty water) pumped from the Jay dike during dewatering. The Lynx pit can accommodate 4.9 million m^3 of water with high total suspended solids, allowing for 3 m of freeboard before overflowing. At closure, the top three meters of the remaining volume in the pit will be filled with natural inflows. Dominion predicts this volume will be filled in two and a half years. Natural runoff into the Lynx pit lake will then discharge through the natural Lynx channel to Lac de Gras once criteria are met (PR#96 p28).

Community engagement

Dominion states that community engagement has been a key component of closure and reclamation activities at Ekati. Dominion currently operates its Ekati mine under a Community Engagement Plan as required under its existing water licence. Dominion commits to continued engagement through all phases of the Jay Project, including closure and reclamation (PR#96 p30).

Post-closure monitoring

The Jay Conceptual Closure Plan briefly references post-closure monitoring and maintenance from the 2011 Interim Closure and Reclamation Plan for Ekati. The plan describes monitoring timeframes during the post-closure period as 5–10 years after reclamation of an area, Project component or facility (PR#96 p31).

12.2.1 Progressive reclamation during the Jay Project

Dominion proposes to decommission, close and reclaim Ekati mine components or facilities that no longer serve a purpose during the operations phase of the Jay Project. These activities are called progressive reclamation. Progressive reclamation activities during ongoing operations at the Jay Project can reduce future reclamation costs, reduce the time needed to achieve closure objectives, and provide operational experience on how best to achieve permanent closure at the entire Ekati site including the Jay Project (PR#96 p2, 22-23).

Progressive reclamation activities that Dominion will complete during the operations phase of the Jay Project include:

- Pigeon pit: after open-pit mining operations have ceased, the open pit will be flooded due to potential concerns with exposed meta-sediment rock in the pit walls
- Long Lake Containment Facility: cell B of this facility no longer receives processed kimberlite and cover reclamation research is currently underway. Research and reclamation will continue for cell B and be expanded to cells A and C once they are no longer operational (PR#96 p3, 23)

Dominion states that it will implement other reclamation activities during the Jay Project based on an environmental risk evaluation (PR#96 p3, 23).

12.3 Evidence from parties

In their technical reports, during the public hearings, and in closing submissions, parties recommended ways to mitigate impacts to the environment and people after closure of the Jay Project.

In its closing submission, the GNWT stated that to prevent significant adverse environmental impacts, the surface water quality in the Misery pit lake at closure must protect traditional uses of water. Protecting traditional uses of water is one of the closure objectives defined in the current Ekati Interim Closure and Reclamation Plan. The GNWT states that to protect traditional uses of water, surface water in Misery Lake must not exceed 500 mg/L total dissolved solids (TDS). In the GNWT's view, the freshwater cap proposed for the Misery pit lake must be deep enough to achieve the objective of <500 mg/L of TDS. In the GNWT's view, achieving the TDS objective would satisfy the approved Interim Closure and Reclamation Plan (PR#442), and ensure traditional uses of water are protected in the long term (PR#693 p9-10).

During the public hearings in Lutsel K'e on September 19, 2015, members of the public expressed concern about closure and reclamation in general, and questioned whether there was supporting research that water would revert to normal after mine closure (PR#646 p115). Lutsel K'e resident Stephanie Poole stated:

> *[T]he government and industry people first came here to talk about the proposed Ekati project and how it would only be there for a few years, and then it would close. So we were looking forward to see how does a diamond mine close, what is that going to be like. But it doesn't seem like that's ever going to happen. You just keep finding ways to keep exploiting the land.* (PR#646 p170)

During the public hearings in Yellowknife on September 15, 2015, Todd Slack, member of the public and former environmental and regulatory specialist for the YKDFN, expressed concern that caribou may not return to the Narrows area after closure of the Jay Project. Mr. Slack recommended that caribou use of the Jay Project area and the Narrows be part of closure planning, stating:

> *(G)iven the potential for the significant impact, I think that this Board has to make a measure. It should require that post-closure conditions for caribou use at Ekati and the crossing of the Narrows be reflective of pre-development conditions.* (PR#644 p291)

During the hearings and in written submissions, Aboriginal parties spoke to the Review Board about the importance of the Narrows area. For example, the NSMA identified the Jay pit and Narrows area as culturally important because people camp, fish and harvest caribou there. The YKDFN specifically stated that the waters of Lac du Sauvage and Lac de Gras are culturally important, and therefore the health and viability of these lakes should be preserved (PR#663 p114 to 115, PR#644 p320). Potential impacts to water quality and caribou at the Narrows area are described in more detail in section 4.1.3 (Impacts to water quality), section 5.1.3 (Protection of the Narrows), section 5.2.2 (Fish habitat), section 6.2.4 (Impacts to caribou), and section 7.2 (Cultural aspects and Traditional Knowledge) of this Report of EA (REA).

12.4 Review Board analysis and conclusions

The Review Board heard from Dominion and the parties about the importance of closure and reclamation of the Jay Project. The Review Board has set out measures in the Water (section 4), Fish (section 5), Caribou (section 6) and Culture (section 7) sections of this REA to ensure significant adverse impacts are avoided and the Jay Project area is suitable for traditional use after mining ends.

The Review Board recognizes that Dominion has an Interim Closure and Reclamation Plan, with closure objectives for each Project component or facility for the Ekati mine site, that the

Wekeezhii Land and Water Board approved in 2011. Dominion has proposed to use the same closure objectives.

The Review Board supports using the *Guidelines for the Development of Closure and Reclamation Plans for Advanced Mineral Exploration and Mine Sites in the Northwest Territories (2013)*[93] in planning for closure. The principles that guide the closure objectives in this document are physical and chemical stability, avoiding long-term active care, and facilitating future land and water use, including consideration of esthetics and community values. The *Guidelines* state that the general goal of closure and reclamation is to return the mine site and affected areas to viable and, wherever practicable, self-sustaining ecosystems compatible with a healthy environment and with human activities.[94] The Review Board acknowledges that Dominion has used this goal in its Conceptual Closure Plan for the Jay Project and in the approved Interim Closure and Reclamation Plan (version 2.4) for the Ekati Mine.

Closure objectives are typically specific to Project components, are measurable and achievable, and allow for the development of closure criteria. The Review Board believes that closure objectives for the Jay Project should be in place before mine operations begin, particularly if Dominion proposes any objectives that differ from those approved for the Ekati Mine.

The Review Board heard concerns from parties regarding the long-term impacts to water quality and caribou after the Jay Project closes. Parties are concerned that water in the Misery and Lynx pit lakes, or from Lac du Sauvage near the Jay pit, may not be safe to drink after closure of the Jay Project. Parties are especially concerned about water quality at the Narrows because that location has open water all winter and is a historic camping spot for Aboriginal harvesters waiting for caribou to pass on their spring and fall migrations. If water quality is poor at the Narrows or in the nearby lakes after mine closure, or if it is perceived to be poor, the area may be avoided and lost to Aboriginal people.[95] The Review Board agrees with the GNWT's conclusion that after closure of the Jay Project, pit lakes must protect traditional water uses. In the Review Board's view, this means that the pit lake water must protect all aspects of traditional use including people, wildlife, waterfowl and aquatic life.

In the Review Board's view, loss of the land base for traditional use around the Jay Project, especially of the Narrows, after closure of the Jay Project is a concern to Aboriginal people and members of the public that participated in the EA. The reason for this public concern is apprehension that the Jay Project will cause poor water quality in Lac du Sauvage and at the

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[93] Jointly published by the Mackenzie Valley Land and Water Board and Aboriginal Affairs and Northern Development Canada. Available at www.wlwb.ca

[94] This is the same goal as is stated in the approved interim closure and reclamation plan (version 2.4) for the Ekati Mine.

[95] See section 5.1(Protection of the Narrows) for further discussion about the cultural importance of the Narrows

Narrows after mine closure and into the long term. The Review Board accepts the arguments of Aboriginal parties and the GNWT that poor water quality at the Narrows will make the location less desirable for traditional uses in the long term. The public concern is therefore a result of the potential for significant adverse impacts to water quality from the Jay Project.

Measures designed to mitigate adverse impacts to water quality so that they are no longer significant, along with the Review Board's supporting analyses and conclusion, are described in detail in this REA in sections 4.1.4 to 4.1.6 (Impacts to Water). In the Review Board's view, mitigation measures set out in section 4.1.6 will mitigate adverse impacts and public concern during the closure phase as well.

The Review Board recognizes the cultural importance of the Narrows and surrounding area for traditional use. To mitigate significant adverse impacts to people and culture after closure of the Jay Project, the Review Board requires Dominion to implement measures so that Aboriginal people have the opportunity to remain connected to the land during Project operations. The Review Board considers this important to maintain use of the Narrows area after closure of the Jay Project. These measures along with the Review Board's supporting analyses and conclusion are described in detail in sections 4.1.4 to 4.1.6 and 5.1.4 to 5.1.6 of this REA.

13 Reporting and follow-up on EA measures

13.1 Summary of Review Board's findings

The Review Board has determined that the measures set out in this Report of EA (REA) are necessary to prevent significant adverse impacts on the environment.[96] Monitoring and reporting is necessary throughout all phases of the Jay Project to ensure measures are being implemented and significant adverse impacts prevented. This monitoring and reporting is also necessary to test EA predictions, assess the effectiveness of mitigation actions, and inform adaptive management.[97] Dominion, regulatory authorities, and government may need to adapt mitigation actions based on observations of the Jay Project and the environment to ensure that mitigation actions are effective.

13.2 The importance of monitoring and reporting

During the EA hearings, the Review Board heard repeated concerns from EA participants that past EA measures have not been consistently or effectively implemented (e.g. PR#646 p176; PR#644 p287; PR#644 p360).

The Review Board has prescribed measures in this REA to mitigate significant adverse impacts. Monitoring and reporting is a key part of the adaptive management aspects of these measures; adaptive management is necessary to facilitate adjustment of mitigation to improve it and to respond to unforeseen circumstances. That is why the Review Board requires follow-up monitoring, reporting, and adaptive management for the measures set out in the sections above. These follow-up requirements could have been included within each measure in the sections above, but have instead been set out in this Reporting and Follow-up section for clarity, consistency, and consolidation of reporting. Subsection 111(1) of the Mackenzie Valley Resource Management Act (the *Act*) defines "follow-up program" as:

> *a program for evaluating*
> *a) the soundness of an environmental assessment or environmental impact review of a proposal for a development; and*
> *b) the effectiveness of the mitigative or remedial measures imposed as conditions of approval of the proposal.*

[96] These are listed in Appendix A.
[97] The term "adaptive management" here does not refer to deliberate experimentation intended to find the best management solution. Instead, it refers more generally to an early warning system where the results of monitoring are used to adjust mitigation measures to minimize adverse effects and continuously improve environmental management practices.

Based on this definition, a follow-up program serves two key functions: to evaluate "soundness" of an EA and the "effectiveness" of mitigative measures. The first function evaluates whether the EA predictions are correct. It acknowledges that the EA process relies on predictions to analyze how the proposed development will affect the environment and inform the Review Board's determination of whether significant adverse impacts are likely. Unforeseen circumstances in the environment, the development, or how the two interact may result in effects that are different from those predicted. Monitoring and reporting to test EA predictions, including the effectiveness of environmental design features and project mitigations, can inform adaptive management so that the environment is protected when unforeseen circumstances occur.

The second function of a follow-up program examines how well the EA measures are performing their intended function. Before their effectiveness can be evaluated, such measures must first be implemented according to their full intent and purpose. Monitoring and reporting can then be used to assess their effectiveness and inform adaptive improvements to environmental management.

The Review Board finds that for adaptive management to be effective, it needs: 1) an overall framework of action levels or thresholds (which identify <u>when</u> to act); and 2) proposed mitigation options, policies, and practices linked to the action levels (which describe <u>what</u> actions to take). Planning for adaptive management allows flexibility that can lead to improved monitoring programs and more effective mitigation.

The Review Board recognizes that the scope and content of follow-up programs may vary widely. Dominion has numerous monitoring and reporting programs in place for the Ekati Mine, and has committed to expanding those programs to incorporate the Jay Project (see Final Commitments Table in Appendix B). The Review Board is encouraged by the fact that some of Dominion's monitoring programs, including programs for aquatic effects, air quality, and wildlife, already include frameworks for adaptive management (PR#681 p3, p2, p25-27).

In this REA, the Review Board is not recommending extensive follow-up programs or reporting programs that are new or different from those Dominion has committed to already. The Review Board's measures for follow-up, set out below, consolidate the monitoring, reporting, and adaptive management needed to ensure effective implementation of the other measures in this REA. As such, these measures address the purposes of a follow-up program under the Act; however, they are more focussed on implementing other EA measures effectively. They are also less extensive than the follow-up programs required under the environmental impact review of the Gahcho Kué Project, or the aquatic effects monitoring programs common in water licences. Because of their more limited scope, and to avoid confusion, the Review Board is not labelling the Jay Project EA measures as "follow-up programs."

13.3 Review Board conclusion

The Review Board has determined, under subparagraph 128 (1)(b)(ii) of the *Act*, that significant adverse impacts from the Jay Project are likely. The Review Board has therefore set out mitigation measures in this REA to prevent or otherwise reduce the significance of such impacts. To give full effect to, and derive the best environmental outcomes from these measures, monitoring and reporting are needed to:

- verify that measures are being implemented and evaluate their effectiveness
- confirm that significant adverse impacts are not occurring
- test EA predictions
- inform adaptive management

The Review Board emphasizes the need for Dominion, regulatory authorities, and government to use adaptive management to prevent or minimize impacts on the environment. Dominion must ensure it implements the requirements for monitoring, follow-up, and adaptive management, and the commitments it made during this EA (see Appendix B). Within their jurisdiction, regulatory authorities and government must play their role as well.

Also, in the Review Board's view the systematic evaluation and reporting required through the measures below will help the Review Board learn more about the practical implementation of EA measures, and thereby improve future EAs and EA measures. These reporting and follow-up measures may also help inform regulators, inspectors, responsible ministers, and parties as they carry out their respective roles in future EAs and in the integrated resource management system in the Mackenzie Valley.

Three of the measures below require Dominion to follow up on recommended EA measures; one proposes reporting requirements for regulatory authorities and government to follow up on EA measures they are responsible for.

13.4 Measures

Preamble to Measure 13-1: Monitoring and Adaptive Management by Dominion

The Review Board has set out measures in this REA that are necessary to prevent or reduce significant adverse impacts on the environment. To fulfill their purpose, these measures must be fully implemented and their effectiveness monitored to inform adaptive management to protect the environment if unforeseen circumstances arise or if impacts differ from those predicted during the EA. The measure below consolidates the monitoring and adaptive management requirements for the EA measures by setting the objectives that Dominion must fulfill through monitoring and adaptive management. These objectives should be incorporated into new and existing monitoring programs for the Jay Project (for example, for monitoring effects to wildlife and habitat, water and aquatic life, dust and air quality, and socio-economic

and cultural effects). Under measure 15-3, Dominion will provide a consolidated report that describes monitoring and adaptive management from various programs, and that focusses on the issues important to the EA, particularly those issues that are the subject of EA measures.

Measure 13-1: Monitoring and adaptive management by Dominion

In order to ensure that the measures that Dominion is responsible for are fully and effectively implemented, and significant adverse impacts on the environment are mitigated, throughout all phases of the development, Dominion will:

1. Establish and implement monitoring programs to fulfill the following objectives:

    a) to measure the effects of the Jay Project on the environment;
    b) to assess the implementation and effectiveness of the measures in this Report of EA to prevent or minimize impacts on the environment;
    c) to assess the accuracy of Dominion's predictions made during the environmental assessment, regarding the impacts of the Jay Project on the environment; and
    d) to provide relevant data and information to support regional monitoring initiatives.

2. Implement adaptive management processes that use the results of monitoring programs to systematically adjust mitigation actions in order to minimize adverse impacts on the environment.

Preamble to Measure 13-2: Engagement on cultural impacts

The Review Board finds that engagement with affected parties is important throughout all phases of the development. Among other things, engagement is important to discuss the Jay Project's impacts on the environment and the effectiveness of mitigation measures to prevent or minimize impacts.[98] Engagement about cultural impacts is uniquely important: without engaging the people whose culture may be affected by the Jay Project, such impacts are unlikely to be identified and even more unlikely to be mitigated successfully.

[98] The Review Board supports the Mackenzie Valley Land and Water Board's *Engagement and Consultation Policy* and *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* (2013).

Measure 13-2: Engagement on cultural impacts

In order to evaluate and, through adaptive management, improve the effectiveness of Dominion's mitigation of cultural impacts, Dominion will:

a) engage with Aboriginal groups that participated in the environmental assessment to identify cultural impacts, including cumulative impacts, from the Jay Project;
b) seek the input of those Aboriginal groups on ways to strengthen Dominion's cultural impact mitigation initiatives; and
c) report annually to those Aboriginal groups on the effectiveness of Dominion's efforts to mitigate cultural impacts.

Preamble to Measure 13-3: Annual reporting from Dominion

Regular reporting is needed to demonstrate to the Review Board, the public, and particularly organizations that participated in this EA, that Dominion is implementing the EA measures it is responsible for, and that the measures are fulfilling their purposes. The measure below consolidates the reporting required for these measures. Dominion should coordinate this reporting with other reporting that it carries out. It should be concise and use plain language, and must clearly satisfy the requirements listed below. The Review Board will receive the annual report required below, publish it to the Review Board's registry so it is accessible to the parties and the public, and learn from it to improve future EAs and EA measures.

Measure 13-3: Annual reporting from Dominion

In order to demonstrate how measures are being implemented and to evaluate the effectiveness of Dominion's efforts to prevent or minimize impacts on the environment, Dominion will, throughout all phases of the development, prepare an annual Report on Implementation of Measures. The Report will address the EA measures that Dominion is responsible for and will:

a) describe the actions, including actions implemented through adaptive management, being undertaken to implement the EA measures;
b) demonstrate how the implementation actions, including any actions implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:
    i. How are implementation actions addressing a likely significant adverse impact on the environment?

ii. How effective are implementation actions at preventing, reducing, controlling, or eliminating the impact?
iii. If the measure is for monitoring or research, how is the monitoring/research being used to inform mitigation of impacts on the environment?
iv. How are process considerations (such as engagement requirements, etc.) being considered, and, if applicable, how are they affecting implementation of the EA measures?

c) include a concise summary of monitoring programs and results that are related to EA measures or commitments and, where applicable, references to complete information contained in other documents (such as documents related to aquatic effects, wildlife, or air quality programs); and
d) address any specific reporting requirements noted in the EA measures set out in this report and summarized in Appendix A.

Dominion will provide a copy of this annual report to the Review Board prior to July 1 of each year.

Preamble to Measure 13-4: Annual reporting from government and regulatory authorities

Dominion, regulatory authorities, and government share responsibility to implement some of the measures in this REA. For other measures, government or regulatory authorities are solely responsible. All measures, regardless of who is responsible for implementing them, are necessary to prevent significant adverse impacts on the environment. Regular reporting is needed to demonstrate that the measures in this REA are being implemented and are fulfilling their purposes. Given that this REA includes some measures specifically directed to regulatory authorities or government, and others which they are in part responsible for implementing (under subsection 130(5) of the Act), government and regulatory authorities must play a role in follow-up and reporting to ensure the measures are effective.

The measure below consolidates the reporting required for those measures that government and regulators are responsible for implementing. The questions listed under part b) of the measure below were adapted from those used by the GNWT to evaluate the effectiveness of past Review Board measures (PR#678; PR#679). The Review Board will receive the reports required below, publish them to the Review Board's registry so they are accessible to the parties and the public, and learn from them to improve future EAs and EA measures.

Measure 13-4: Annual reporting from government and regulatory authorities

In order to evaluate the effectiveness of mitigation measures for the protection of the environment, each regulatory authority or government that is wholly or partly responsible for implementation of any measure in this Report of EA will prepare an annual *Report on Implementation of Jay Project Measures*. The Report will:

a) describe the actions being undertaken to implement the EA measures or the part(s) of the EA measure for which the regulatory authority or government is responsible; and
b) explain how the implementation actions, including any actions implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:
    i. How are implementation actions addressing a likely significant adverse impact on the environment?
    ii. How effective are implementation actions at reducing, controlling, or eliminating the impact or its likelihood?
    iii. If the measure is for monitoring or research, are the implementation actions clearly linked to mitigation and/or operations?
    iv. How are process considerations (such as consultation or engagement requirements, statutory obligations, etc.) being considered, and, if applicable, how are they affecting implementation of the EA measures?

Prior to July 1 of each year, during all phases of the Jay Project to which a particular measure applies, each regulatory authority and government will provide a copy of this annual report to the Review Board.

14 Conclusion

The Review Board finds that this EA has resulted in major beneficial Jay Project changes and developer commitments. Removing the Cardinal pit from the proposed Project, and the much larger drawdown of Lac du Sauvage and related impacts that the Cardinal pit would have required, are a particularly commendable example of this. In the Review Board's view, Dominion deserves recognition for its willingness to respond to the community concerns it heard early in this EA by significantly changing its Project design to avoid potential impacts.

The Review Board has carefully considered all of the evidence on the public registry. The above sections describe the basis and reasoning for the Review Board's findings that the Jay Project is likely to cause significant adverse ecological and social impacts. These impacts are generating public concern.

The Review Board has prescribed measures to mitigate these impacts, requiring Dominion to design and operate the Jay Project to reduce its impacts to caribou, particularly from roads and dust; manage surface waters so the area is useful for Aboriginal traditional uses after the Jay Project closes; and better manage social impacts with more community engagement.

Other measures prescribed by the Review Board include requirements to:

- offset remaining impacts to caribou from the Jay Project on other areas of the Ekati Mine site
- fund an Elders group to advise on constructing, operating and monitoring the Jay road
- ensure clean surface waters on the Jay and Misery pits after closure
- create an independent dike review panel to make sure the dike is designed and operated safely
- prevent impacts to the Narrows
- improve the strategy for employment of women
- use Traditional Knowledge appropriately to better design and operate the Jay Project
- create a cultural camp to help reconnect traditional users of the area to the land around the Jay Project
- conduct follow-up monitoring and reporting on the implementation and effectiveness of these measures
- facilitate active ongoing research into applicable emerging technologies
- create other measures to address the significant potential impacts of the Jay Project[99]

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[99] Appendix A: **List of measures** includes a full list of measures and suggestions.

By addressing the significant adverse impacts in these ways, the Jay Project will be improved, and meaningful actions will help address the concerns of the public and surrounding communities.

Appendix A: List of measures and suggestions

List of Measures

4. Impacts to Water Quality

Measure 4-1: Closure objectives

To prevent significant cultural impacts after closure from changes in water quality, the Wek'eezhii Land and Water Board will set closure objectives and criteria for the Jay Project components so that Dominion ensures that the area is suitable for traditional uses after closure. Closure objectives and criteria will be set for, but not limited to, the following components of the Jay Project:

- Jay pit
- Misery pit

- Lynx pit
- Jay waste rock storage area

Measure 4-2a: Site Water Management Plan

In order to avoid significant impacts to traditional use in the vicinity of the Jay Project after the Jay Project mining and closure have been completed, Dominion will submit a site water management plan to the Wek'eezhii Land and Water Board for approval, prior to the commencement of dike construction. Dominion will demonstrate how its plan, and the contingencies within, will ensure water quality in the Jay Pit, Misery Pit, Lac du Savuage, Lac de Gras and downstream will support traditional uses in the vicinity of the Jay Project after closure, while protecting the environment during operations. The plan will include, but not be limited to:

- a list of contingencies that Dominion can use to manage water during operations and an evaluation of the feasibility of each
- a description of the scenarios (i.e., conditions and timing) under which contingencies will be implemented
- Dominion's preferred contingencies, with rationales, for each scenario
- a description of how Dominion will monitor the quantity and quality of water, to:
    a) calibrate the water models used to make predictions in the EA
    b) assess the suitability of contingencies
    c) evaluate the performance of contingencies used

Measure 4-2b: Pit lake water quality

To ensure that water quality in the Misery pit and Jay pit is compatible with traditional uses of the area in vicinity of the Jay Project and downstream after closure, Dominion will:

1. establish meromixis for the Jay and Misery pits
2. stabilize meromictic pit lakes for the long-term

If the above requirements cannot be met, Dominion will develop and implement contingencies to ensure the pit lake water quality is compatible with traditional use after closure. Dominion will submit a list of these contingencies, which describe the feasibility of each contingency, and the conditions and timing under which each would be implemented, to the Wek'eezhii Land and Water Board for approval prior to the implementation of any contingency.

Suggestion

When considering the contingencies for water management and meromixis, Dominion and the WLWB should consider the options identified during the environmental assessment, including:

- providing a deeper cap of freshwater on the Misery and Jay Pits at closure

- discharging water to Lac du Sauvage earlier in the life of mine
- using additional storage near the Jay Project, including the Lynx pit, the Jay runoff sump and King Pond
- using additional storage at the Ekati mine main camp
- treating minewater before discharge to the environment

Measure 4-3: Fine processed kimberlite

To avoid significant adverse environmental impacts to the Panda and Koala pit lakes and to the downstream environment after closure from the deposition of fine processed kimberlite, Dominion will not deposit fine-processed kimberlite into the Panda and Koala pits unless the Wek'eezhii Land and Water Board approves the use of the Panda and Koala pits. The Wek'eezhii Land and Water Board's approval will ensure the protection of the downstream environment after closure and will consider the results of Beartooth pit fine-processed kimberlite trial. Otherwise, the fine-processed kimberlite will be deposited into an approved processed kimberlite containment area.

Suggestion:

To demonstrate the suitability of the Panda and Koala pits for fine-processed kimberlite, the Wek'éezhii Land and Water Board should require Dominion to complete a deposition study and a freshwater cap optimization study. The deposition study should investigate how fine processed kimberlite behaves once deposited into mined-out pits and the quality of the resulting supernatant water. This should include data from the Beartooth pit trial.

Measure 4-4: Dike stability and safety

To reduce the risk of dike failure and its associated significant impacts, Dominion will establish an independent dike review panel to evaluate and, if necessary, improve the design, construction, operation and maintenance of the dike. The panel will provide recommendations to the developer to ensure that impacts to the safety of people and the environment are minimized. The panel will, at a minimum:

- review and accepts the dike design prior to the commencement of dike construction
- review the dike operation

Dominion will engage with the Wek'éezhii Land and Water Board, Government of the Northwest Territories and the Independent Environmental Monitoring Agency on the panel composition and tasks. Dominion will submit the review panel's final terms of reference to the Wek'éezhii Land and Water Board.

5. Fish and Fish Habitat

Measure 5-1: Protection of the Narrows

To mitigate significant adverse ecological and traditional use impacts resulting from unacceptable drops in water levels at the Narrows, Dominion will maintain water levels at the Narrows such that the Jay Project does not adversely affect fish passage and the continuation of traditional use of the area as an open water source. It will do so by monitoring the Narrows before and during closure, and by appropriately managing activities in Lac du Sauvage during closure.

Prior to construction, a description of this monitoring will be submitted to the WLWB for its approval as part of the Aquatic Effects Monitoring Program design plan. The monitoring results will be reported in the annual AEMP reports and incorporated into the Aquatic Response Framework, specifying minimum required water levels and flow rates, and triggers for management responses during closure activities.

Suggestion

DFO should fully consider the unique cultural significance of the area in Lac du Sauvage that will be permanently lost due to the construction of the Jay pit in its determination of fisheries offsetting requirements

DFO should develop the Jay fish-out protocols to minimize fish mortality where it can reasonably do so, while requiring that fish removed from Lac du Sauvage are handled and distributed in a culturally appropriate manner that is consistent with the wishes of Aboriginal communities.

6. Impacts to caribou

Measure 6-1: Road mitigations from caribou impacts

a) In order to mitigate significant incremental and cumulative adverse impacts to caribou from roads used by the Jay Project, Dominion will:

- use convoys or other methods to manage traffic on the road in order to maximize interval between disturbances from vehicles
- use real-time caribou collar satellite information and other detection systems to enable early detection of caribou in the vicinity of the road as a trigger for action levels for management responses

- construct caribou crossing features along a minimum of 70 % of the length of the Jay road

b) In addition, Dominion will update and revise the Wildlife Effects Monitoring Plan with the appended Caribou Road Mitigation Plan according to GNWT requirements under section 95 of the *Wildlife Act* and any future section 95 regulations. The plan(s) required under section 95 will be in force for the duration of the Jay Project.

In the Caribou Road Mitigation Plan, Dominion will:

- investigate and implement innovative actions to mitigate impacts to caribou from barriers to movement at the esker, such as one-way traffic, buried power lines and pipelines, and remote sensory devices to monitor caribou and reduce impacts at the esker crossing
- define specific thresholds that trigger road management responses including actions to slow traffic, stop traffic and close the Jay and Misery Roads for an appropriate period if caribou are on or near these roads
    - describe the minimum size of the kimberlite stockpiles at Jay pit and Misery pit necessary to enable extended closure(s) of the Jay road
    - indicate how long the road management responses described above will be applied for each slow down or closure and thresholds and triggers for reopening the road
- describe methods for monitoring approaching caribou at intermediate distances beyond line of sight from the roads, including at night and in poor visibility
- prepare a dust management best practices document with adaptive management triggers for additional dust suppression and link to the Air Quality and Emissions Monitoring and Management Plan
- use Traditional Knowledge when designing
    - the Caribou Road Mitigation Plan
    - the project components in the Caribou Road Mitigation Plan (including the Jay road, esker crossing and waste rock storage area)
    - the monitoring of caribou responses to these components during the operations phase
- describe specific monitoring and mitigation for caribou impacts related to the road during the construction, operations and closure phases of the Jay Project

c) The Caribou Road Mitigation Plan will detail the means to be employed to avoid and minimize habitat disturbance and include a response framework that links monitoring results to changes in mitigation. When developing monitoring and mitigation, Dominion will give special consideration to the esker crossing and specify contingency measures if caribou do not cross the Jay Road at the esker.

d) Dominion will submit the Caribou Road Mitigation Plan to the GNWT ENR for approval before constructing the Jay Road. As part of this approval process, the GNWT should provide the opportunity for public comment. Dominion will annually report monitoring results, success or failure of mitigation and adaptive management to communities in person, in a culturally appropriate manner.

Suggestion

To allow for mitigation of potential barrier effects from the Jay Project, Dominion should conduct pilot studies into technologies and approaches to detect caribou before they perceive sensory disturbances from the Jay Project (such as un-manned aerial vehicles, large animal detection systems, remote video cameras or on-the-land monitors).

Measure 6-2(a): Caribou offset and mitigation plan

i. Dominion will offset residual adverse impacts to caribou by human activities that cumulatively affect the Bathurst caribou herd, beyond direct impacts of the Jay Project. Dominion will set out these offsets in a Caribou Offset and Mitigation Plan, which it will complete within one year of Minister's acceptance of this Report of EA. This plan will be in force throughout the duration of the Jay Project.

ii. Dominion will implement the Caribou Offset and Mitigation Plan as described in DAR-MVEIRB-UT2-06 and incorporate the following into the Plan:

- caribou offsets related to roads that result in enhanced mitigation, such as scheduling of activities during caribou migration or dust suppression offsite from Jay Project
- zone of influence research with funding as committed by Dominion
- identify mitigation actions from the Plan and apply at other Ekati operations
- options for the scheduling of other Ekati operations to offset Jay Project impacts during caribou migration periods
- an enhanced dust mitigation study including:
    - a pilot test on application of dust suppressant
    - a dustfall sampling program
    - report on results and propose improvements to be incorporated into the Air Quality Emission Monitoring and Management Plan
    - if dust mitigation improvements are identified, Dominion will apply them on all roads at Ekati
- accelerate progressive reclamation of Long Lake Containment Facility substantially beyond current Interim Closure and Reclamation Plan requirements to return it to productive caribou habitat sooner
- incorporate waste rock storage area egress ramps, designed in consultation with Elders to prevent injuries and entrapment of caribou

iii. Following implementation of the Caribou Offset and Mitigation Plan, Dominion will:

- annually report on the effectiveness of monitoring, mitigation and adaptive management of the Caribou Offset and Mitigation Plan to communities in person in a culturally appropriate manner
- annually report on the activities conducted under the Caribou Offset and Mitigation Plan and the effectiveness of related monitoring, mitigation and adaptive management, to GNWT ENR, WRRB and IEMA
- submit an updated Caribou Offset and Mitigation Plan for approval by GNWT ENR every three years. Prior to approval, the GNWT should provide the opportunity for public comment.

iv. The GNWT will enforce the Caribou Offset and Mitigation Plan under the section 95 of the Wildlife Act.

Measure 6-2(b): Research to design implement successful offsetting projects

The GNWT will measure and evaluate the effectiveness of Dominion's offsets that result from the approved Caribou Offset and Mitigation Plan.

To better enable the GNWT to do this, it will conduct a study on the potential methods for evaluating and measuring the effectiveness of offsetting options described in the approved Caribou Offset and Mitigation Plan. The GNWT will publically report on the results of the study within one year of the approval of the Caribou Offset and Mitigation Plan.

Measure 6-3: Air Quality Emissions Monitoring and Management Plan

In order to reduce adverse impacts from dustfall within the Jay Project area to caribou, so they are no longer significant, Dominion will finalize and implement the Air Quality Emissions Monitoring and Management Plan prior to construction. This plan will be applied throughout the construction, operation and closure phases of the Project.

Dominion will:

- describe how it will implement commitments made in this plan (PR#424 p1-5 to 1-6) along with management response linkages to the Caribou Road Mitigation Plan and the Caribou Offset and Mitigation Plan.
- reduce dustfall by continuing and improving the following management and monitoring practices, including:
    - applying dust suppressant to control dust emissions on haul roads during summer or non-frozen snow-free season

  - managing vehicle speed to limit road dust from vehicle wheel entrainment
  - implementing a dustfall monitoring program, methods, locations, monitoring parameters
  - sampling lichen tissues (heavy metal parameters) snow chemistry sampling
  - planning responses with triggers and action levels
  - allowing opportunity for public comment on updates or changes to the Air Quality Emissions Monitoring and Management Plan
- annually report monitoring results, success or failure of dust mitigations and adaptive management to communities in person in a culturally appropriate manner
- submit an updated Air Quality Emissions Monitoring and Management Plan for public review and approval process as required by the GNWT

In addition, the GNWT will review and approve the Air Quality Emissions Monitoring and Management Plan as required by the Environmental Agreement and regulate in accordance with the *Environmental Protection Act.*

Measure 6-4: Dustfall standards

Prior to construction, the GNWT will develop an interim dustfall objective for all types of dustfall that impact caribou and caribou habitat, including impacts on lichen and other caribou forage within the Jay Project zone of influence. The objective will reduce dust-related sensory disturbances to caribou to the greatest extent practicable.

Dominion will use the interim dustfall objective to inform its actions to reduce impacts to caribou and caribou habitat from dustfall.

Measure 6-5: Traditional Knowledge based caribou monitoring and mitigation

Dominion will:

- develop and implement a collaborative research program incorporating Traditional Knowledge designed to identify the causes of the zone of influence for caribou avoidance within one year of acceptance of the Report of EA
- summarize and report annually on this collaborative research program as part of the Wildlife Effects Monitoring Program reporting
- implement the research findings which can help to reduce the size of the zone of influence on caribou
- Dominion will fund a Traditional Knowledge Elders group drawn from Aboriginal organizations that participated in the EA. This group will:

- advise on the construction and operation of the Jay road, esker crossing and waste rock management area egress ramps that limit impacts to caribou
- monitor caribou reactions to the Jay road use, esker crossing and waste rock storage area egress ramps in coordination with existing caribou management authorities
- report on the results of monitoring to Dominion, IEMA, regulators and Aboriginal organizations that participated in the EA
- recommend mitigation based on monitoring results
- recommend a contingency plan for the esker crossing if monitoring indicates that the road through the esker is a major barrier to caribou movement

This Traditional Knowledge group will be in place prior to construction, throughout operations and closure.

Measure 6-6: Timely completion of caribou management plans

To mitigate cumulative significant impacts from the Jay Project and other human activities on the Bathurst caribou herd, within one year of Ministerial approval of this Report of EA, the GNWT will:

- investigate and report on the causes for the current population change
- complete and implement an interim management plan for the Bathurst caribou herd
- implement an interim herd recovery strategy towards a sustainable and ongoing Aboriginal harvest

Suggestion

GNWT should work towards producing interim thresholds for developments and other human activities within the range of the Bathurst caribou herd.

7. Cultural aspects and traditional knowledge

Measure 7-1: Traditional knowledge management framework

In order to mitigate the Jay Project's cultural impacts to traditional use areas or culturally valued components like caribou, water or aquatic life, Dominion will develop a Traditional Knowledge Management Framework that describes protocols for collecting, storing, managing and using Traditional Knowledge. This will be done in a manner that is culturally suitable for each community. Dominion will use the Traditional Knowledge gathered through the

framework to inform Project decision making. This framework will be developed prior to the construction phase of the Project and will apply for the lifetime of the Jay Project (construction, operations and closure phases).

In developing the Traditional Knowledge Management Framework, Dominion will consult with each Aboriginal group affected by the Jay Project, in a culturally appropriate manner, while developing the protocols. Dominion will report annually on how Traditional Knowledge influenced Jay Project decision making.

Suggestion

To ensure that Traditional Knowledge is consistently being used in a manner that is agreeable to Aboriginal groups, each Aboriginal group affected by the Jay Project should develop a standard Traditional Knowledge Use Protocol. This protocol would inform how Traditional Knowledge is captured, managed, reported on and used. This protocol would facilitate Dominion's effort in establishing a Traditional Knowledge Management Framework that is meaningful to Aboriginal groups.

Aboriginal groups should work with Dominion to establish what Traditional values should be monitored for Jay Project impacts, and how monitoring should occur.

Measure 7-2: On-the-land cultural camp

In order to mitigate significant adverse impacts of the Jay Project on traditional use of the area and transmission of cultural values, Dominion will, during the construction and operations phases of the mine, support an on-the-land culture camp, in a traditionally used area near the Project. This culture camp will be used by Aboriginal groups to maintain or establish a connection with disturbed areas of land and restore Traditional Knowledge transfer between generations about the area affected by diamond mining.

Dominion will consult with Aboriginal groups that participated in the environmental assessment to decide on the location, timing and frequency of use of the culture camp. Dominion will support the camp's use and access, financially or in-kind.

8. Maximizing benefits and minimizing impacts to communities

Measure 8-1: Minimize negative socio-economic impacts of the Project on communities

In order to mitigate significant cumulative adverse socio-economic impacts of the Jay Project on health and well-being, the Government of the Northwest Territories will engage and work with diamond mining communities to adaptively manage adverse social impacts to health and well-being from the Jay Project, in combination with other diamond mining projects. As part of this process, the GNWT will actively investigate and address linkages of diamond mining effects on the health and well-being of affected communities. The GNWT will also meet with communities within one year of the Ministerial approval of this Report of EA, and annually thereafter, to discuss:

1) priority social issues at the individual, family and community level related to diamond mining, as identified by communities and by the GNWT
2) the effectiveness of GNWT programs to address these identified issues, and
3) implementing improvements to mitigate identified issues.

The GNWT will submit an annual progress report on the above to each diamond mining community, describing GNWT's engagement on and adaptive management of social impacts, and GNWT's plans to address identified issues.

Suggestion:

The GNWT should work with diamond mining communities to develop socio-economic baseline studies. The GNWT, working with communities, should:

- assess the vulnerability of each community with a corresponding assessment of the community's resilience to socio-economic impacts, and capacity to adapt to them;
- assess the existing cumulative impacts on well-being at multiple scales (including individual, family and community levels);
- produce a definition of well-being and describe how it is measured and,
- establish qualitative and quantitative indicators of well-being appropriate for a socio-economic assessment.

The focus of the study should be to establish threshold levels of acceptable social impacts, and evaluate how close each social impact indicator is to a threshold level.

Measure 8-2: Supporting increased employment opportunities for women

To mitigate significant adverse socio-economic impacts on women, Dominion will consult with the Government of the Northwest Territories, the Status of Women Council of the NWT and the Native Women's Association of the NWT to update its strategy for the training, recruitment and employment of women in traditional and non-traditional occupations, prior to the construction phase of the Jay Project. Where Dominion has community liaisons, they will serve as additional resources for implementing initiatives for training, recruitment and employment of women.

Dominion will report on employment and retention figures for women, and on the effectiveness of its revised policy, as part of its reporting per measure 13-1.

9. Air Quality

Measure 9-1: Incineration – Stack Testing and Reporting

To reduce the likelihood of impacts resulting from the release of dioxins and furans, Dominion will conduct incinerator stack testing at least every three years and submit any stack test results to the GNWT Department of Environment and Natural Resources and Environment Canada no more than 90 days after the completion of stack testing. No more than 120 days after any failed stack test, (with failure determined according to the Canada Wide Standards for Dioxins and Furans or applicable regulation or guidance developed by the GNWT), Dominion will:

1. Develop an Adaptive Management Response Plan, containing:
   a) An assessment of the incinerator operations and management that contributed to the failed stack test, and methods to rectify them.
   b) A consideration of the need for increased monitoring of incinerator operational indicators associated with the formation of dioxins and furans. This may include inline continuous emission monitoring for, but not limited to: flow of flue gas, oxygen content, and carbon monoxide.
2. Submit the Adaptive Management Response Plan to the GNWT Department of Environment and Natural Resources and Environment Canada.
3. Implement the methods identified by Dominion (under 1a above) no later than the submission of the Response Plan, and earlier if feasible.

Dominion will re-stack test the incinerators within six months of the initial failed stack test. This second stack test will verify the effectiveness of the methods proposed and implemented in the Adaptive Management Response Plan and demonstrate compliance with the *Canada-wide Standards for Dioxins and Furans*. All stack tests must be conducted in accordance with national standards, and include detailed documentation to demonstrate that representative composition and batch size of waste were used during the testing process.

Exemptions for the second stack test may occur based on a review of the factors that contributed to the failed stack text and approval of the Adaptive Management Response plan by GNWT Department of Environment and Natural Resources, in consultation with Environment Canada.

Suggestion: Inline continuous emission monitoring

The Review Board suggests that the developer, in consultation with the GNWT and EC, assess the feasibility and utility of additional inline continuous emission monitoring and provide a report of the findings within one year of Ministerial approval of this Report of EA.

Measure 9-2: Reporting on greenhouse gas emission and management

Dominion will provide, in its Air Quality Emissions Monitoring and Management Plan annual report, information on its greenhouse gas management for all Project phases including, but not limited to:

- A calculation of greenhouse gas emissions by combustion source;
- greenhouse gas emissions reduction targets for the upcoming year and how they were determined;
- reporting of whether past reduction targets were achieved and how, or if they were not, why;
- a description of monitoring including the parameters, methods, frequency, and data analysis;
- a description of adaptive policies, strategies and mitigative actions undertaken, or proposed, to reduce greenhouse gas emissions, including but not limited to:
    - the results of Dominion's proposed ore hauling pilot study, including a description of greenhouse gas emissions for each alternative hauling method studied compared to existing and/or proposed strategies;
    - the results of Dominion's proposed concept study on the use of alternative energies to offset a portion of the Jay Project's energy needs, including the methods and analysis; and,
    - if the concept study leads to a feasibility study on the use of alternative energy to offset a portion of the Jay Project's energy needs, report on the results, including the methods and analysis.

During its community visits, Dominion will engage on its greenhouse gas emissions management, and report on how results of past engagement have been incorporated into Dominion's management of greenhouse gas emissions.

13. EA measures follow-up

Measure 13-1: Monitoring and Adaptive Management by Dominion

In order to ensure that the measures that Dominion is responsible for are fully and effectively implemented, and significant adverse impacts on the environment are mitigated, throughout all phases of the development, Dominion will:

1. Implement monitoring programs to fulfill the following objectives:

a) to measure the effects of the Jay Project on the environment;
b) to assess the implementation and effectiveness of the measures in this Report of EA to prevent or minimize impacts on the environment;
c) to assess the accuracy of predictions made during the environmental assessment, regarding the impacts of the project on the environment; and,
d) to provide relevant data and information to support regional monitoring initiatives.

2. Implement adaptive management processes that use the results of monitoring programs to systematically adjust mitigation actions in order to minimize adverse impacts on the environment.

Measure 13-2: Engagement on cultural impacts

In order to evaluate and, through adaptive management, improve the effectiveness of Dominion's mitigation of cultural impacts, Dominion will:

a) engage with Aboriginal groups that participated in the environmental assessment to identify cultural impacts, including cumulative impacts, from the Jay Project;
b) seek the input of those Aboriginal groups on ways to strengthen Dominion's cultural impact mitigation initiatives; and
c) report annually to those Aboriginal groups on the effectiveness of Dominion's efforts to mitigate cultural impacts.
d)

Measure 13-3: Annual reporting from Dominion

In order to demonstrate how measures are being implemented and to evaluate the effectiveness of Dominion's efforts to prevent or minimize impacts on the environment, Dominion will, throughout all phases of the development, prepare an annual Report on

Implementation of Measures. The Report will address the EA measures that Dominion is responsible for and will:

a) describe the actions, including actions implemented through adaptive management, being undertaken to implement the EA measures;
b) demonstrate how the implementation actions, including any actions implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:
    i. How are implementation actions addressing a likely significant adverse impact on the environment?
    ii. How effective are implementation actions at reducing, controlling, or eliminating the impact or its likelihood?
    iii. If the measure is for monitoring or research, how is the monitoring/research being used to inform mitigation of impacts to the environment?
    iv. How are process considerations (such as engagement requirements, etc.) being considered, and, if applicable, how are they affecting implementation of the EA measures?
c) include a concise summary of monitoring programs and results that are related to EA measures or commitments and, where applicable, references to complete information contained in other documents (such as documents related to aquatic effects, wildlife, or air quality programs); and
d) address any specific reporting requirements noted in the EA measures set out in this report and summarized in Appendix A.

Dominion will provide a copy of this annual report to the Review Board prior to July 1 of each year.

Measure 13-4: Annual reporting from government and regulatory authorities

In order to evaluate the effectiveness of mitigation measures for the protection of the environment, each regulatory authority or government that is wholly or partly responsible for implementation of any measure in this Report of EA will prepare an annual *Report on Implementation of Jay Project Measures*. The Report will:

c) describe the actions being undertaken to implement the EA measures or the part(s) of the EA measure for which the regulatory authority or government is responsible; and
d) explain how the implementation actions, including any actions implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:
    v. How are implementation actions addressing a likely significant adverse impact on the environment?

vi. How effective are implementation actions at reducing, controlling, or eliminating the impact or its likelihood?
vii. If the measure is for monitoring or research, are the implementation actions clearly linked to mitigation and/or operations?
viii. How are process considerations (such as consultation or engagement requirements, statutory obligations, etc.) being considered, and, if applicable, how are they affecting implementation of the EA measures?

Prior to July 1 of each year, during all phases of the Jay Project to which a particular measure applies, each regulatory authority and government will provide a copy of this annual report to the Review Board.

Appendix B: Summary of management and monitoring plans

The following is a table that lists management and monitoring plans for the Jay Project outlined in Section 14. The table lists existing Ekati plans that will incorporate the Jay Project as well as Jay specific plans.

Plan Name	Objective	Stage	Last revision date	Review Schedule
Waste Rock and Ore Storage Management Plan (WROMP)			May 5, 2014	
Wildlife Effects Monitoring Plan (WEMP)	• documenting Mine-related effects and test impact predictions made in the Environmental Agreement, Environmental Impact Report (EIR), and the Jay Project DAR; • implement operational practices that mitigate disturbance to wildlife and wildlife habitat including migratory birds and their nesting areas, species at risk, and caribou; • evaluate the accuracy of key predictions made in the Jay Project environmental assessment regarding the effects of the Mine directly on wildlife and wildlife habitat and adjust environmental management practices accordingly; • incorporate Traditional Knowledge (TK) and provide opportunities for the involvement and active participation by communities in the implementation of the	Draft	July 2015	With EIR (every 3 years)

	WEMP; and, • design studies and data collection techniques that are consistent with, and will contribute to, understanding and managing regional cumulative effects that can be shared across the NWT mining sector.			
Caribou Road Mitigation Plan (CRMP)	• avoid and minimize (reduce) the risk of caribou and other wildlife mortalities from traffic; • avoid and minimize the barrier effect of the Jay and Misery roads (and other Ekati Mine roads) to caribou movement and migration; and, • limit the effect of sensory disturbance from roads and traffic on caribou behaviour.	Draft	July 2015	Changes to the CRMP will occur as monitoring results are analyzed and assessed over time.
Caribou Mitigation Plan (CMP)				
Wastewater and Processed Kimberlite Management Plan (WPKMP)	The Wastewater and Processed Kimberlite Management Plan is intended to ensure that wastewater and processed kimberlite are properly managed, stored and disposed of at the Ekati Diamond Mine.	Jay update-draft	May 2014 (version 4.1)	Submitted 60 days prior to construction of any pit; revised as required by WLWB.
Site-Water Management Plan (SWMP)				
Air Quality and Emissions Monitoring and Management Plan	• enable evaluation against applicable Federal and Territorial ambient air quality standards; • track trends in ambient air quality and emissions;	Draft conceptual plan	June 2015	Engagement and revisions scheduled for prior to construction, and prior to

(AQEMMP)	• validate air quality predictions made in the DAR and associated follow-up work such as updates • provided in adequacy review responses and IRs; • identify the need for adaptive management response plans by evaluation of results against predefined • early warning levels; and, • provide data including dust deposition to evaluate effects to aquatic and terrestrial ecological receptors.			operation.
Aquatic Effects Monitoring Program (AEMP)	The objective of the AEMP is to identify changes occurring in the aquatic environment that may be caused by Ekati Diamond Mine activities.	Conceptual –Draft	June 2015	Every 3 years or as requested through WLWB process
Aquatic Response Framework	The overarching objective of the Aquatic Response Framework is to provide a tool to ensure the protection of the uses of the aquatic receiving environment at the Ekati Diamond Mine. Uses of the aquatic receiving environment include use by people and wildlife for drinking water and fishing, and use by fish and other aquatic life that live in the receiving waterbodies.	Final- not yet approved	September 2015	3-year basis (with AEMP reevaluation)
Traditional Knowledge Framework				

Appendix C: List of developer's commitments

This Commitments Table is the final compilation of commitments made by Dominion for the Jay Project since the submission of the Developer's Assessment Report (DAR) in November 2014 to date. The table is prepared by the Review Board. It includes commitments made by Dominion from the DAR Adequacy Review, responses to initial information requests, commitments made during the technical session and undertakings, the second round of information requests, public hearings and hearing undertakings. The Review Board asked parties to review and comment on the table and those comments are incorporated into this final version.

(PR#xx) = MVEIRB public registry number

Blue text = Commitments made in responses to technical reports

Red text = Commitments added or edited by other parties

Green text = Commitments made during public hearings and in hearing undertakings

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
	Water quality and hydrology		
1	DAR-EC-IR-07 (PR#305)	Metal Analysis, Uranium and Thorium. Request development of contingency plan to deal with exceedances of Uranium and Thorium in leachate should that occur	Expand Waste Rock and Ore Management Plan 2014 to include Jay Project area. Adaptive seepage management strategies will be implemented as necessary to remedy undesirable water quality trends. Uranium and thorium will be included in the seepage monitoring program to identify short-term and long-term water quality trends for the purpose of identifying any needs for further testing, monitoring or adaptive management.
2	DAR-IEMA-IR-03 (PR#305)	Waste Rock Storage Area seepage surveys	Ekati Waste Rock and Ore Management Plan seepage surveys will apply to Jay Waste Rock Storage Area and ore stockpiles. Seepage surveys are twice a year

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			(during spring freshet and late in the summer or fall before freeze-up).
3	Technical session April 23 – commitment #5 (PR#358)	Water quality	DDEC to hold meeting(s) to discuss questions related to the sensitivity of groundwater model.
4	DAR-MVEIRB-UT-09 (PR#371)	Enhance permeability zone characterization	Dominion Diamond will "undertake observations of inflow quantity, location of inflow and structure of the Jay Pit walls during operations that will identify the location and transmissivity of EPZs". These monitoring procedures will be developed during the permitting phase.
5	DAR-EC-IR2-01 DAR-GNWT-IR2-04 (PR#448) Hearing undertaking response DAR-MVEIRB-UT2-13	Discharge of minewater from Misery pit to Lac du Sauvage. Mixing zone in Lac du Sauvage. Synergistic toxicity	Further, Dominion Diamond has committed that no discharge of any minewater from the Misery Pit to Lac du Sauvage will occur if acutely toxic. To meet this commitment, monitoring of minewater in the Misery Pit (as a requirement under the Water Licence) will be undertaken during operations; the monitoring will be conducted in early operations (i.e., during the phase when there is no discharge to Lac du Sauvage) and late operations (i.e., during the discharge period). Minewater monitoring will include chemical analysis and acute and chronic toxicity testing. Similar to toxicity testing requirements at the Ekati Mine, toxicity testing is expected to include acute lethality testing with Rainbow Trout and

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			waterflea, and chronic toxicity testing with the green algae, Pseudokirchneriella subcapitata, and the cladoceran, Ceriodaphnia dubia (WLWB 2014). This testing will track water quality conditions in the pit (i.e., end-of-pipe) to prevent water that is acutely toxic from being discharged to Lac du Sauvage. In addition, an AEMP will be described and implemented, which will allow for the assessment of synergistic and antagonistic effects, and the AEMP results will inform adaptive management through the response framework, if necessary.
6	DAR-GNWT-IR2-18 (PR#448)	Hydrology model reliability	Predicted changes for Lac du Sauvage are greatest during back-flooding. To manage the uncertainty of the predicted changes to the flows and water levels in Lac du Sauvage, a Jay Pit and diked area back-flooding pumping plan will be developed prior to closure. It is expected that this plan will be submitted for approval under the water licence process and will be required prior to back-flooding (currently scheduled to commence in 2030). As part of the back-flooding pumping plan, Dominion Diamond will implement mitigation, as required, through an adaptive management plan, including the reduction of pumping rates to protect fish habitat in the Lac du Sauvage Narrows. Additional information will be collected

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			during operations as part of the Aquatic Effects Monitoring Program to further characterize baseline conditions at the Narrows, including depths and widths under naturally occurring low-flow conditions in the winter. The adaptive management plan for the potential reduction in pumping rates during closure, as mitigation to avoid adverse effects to fish habitat at the Lac du Sauvage Narrows, will be developed as part of the back-flooding pumping plan.
	Dike design, geotechnical studies, lakebed sediment management and waste rock storage area		
7	DAR-GNWT-IR-17 PR#305)	Jay-Pipe Pit Geometry Provide a description of proposed actions, mitigations and monitoring associated with free-thaw on the stability of the Jay Pit walls	At a later stage in the design process, a ground control management plan will be developed and implemented to monitor and maintain pit wall stability to an acceptable risk level associated with various forms of ground instability that may develop during operations. Thermistors will be installed to supplement the monitoring program if necessary.
8	DAR-KIA-IR-19 DAR-LKDFN-04 (PR#305)	Waste rock storage area, thermal modelling validation and seepage	Thermistors will be installed in the Jay Waste Rock Storage Area to monitor temperatures in the pile foundation and within the pile itself (KIA). Thermistors will be installed in the Jay Waste Rock Storage Area after completion of the pile to monitor temperatures in the pile foundation and within the pile itself (LKDFN). Jay Waste Rock Storage Area added to Ekati Waste Rock and Ore Management Plan. The

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			Adaptive management process in the Waste Rock and Ore Management Plan also applies to Jay WRSA.
9	Technical session April 20 commitment #1 (PR#358)	Dike design	DDEC commits to creating an Independent Dike Review Board/Panel prior to construction.
10	DAR-GNWT-IR2-14 (PR#448)	Jay Pipe Dike Geotechnical Investigations	This information request is similar to the request made by Mr. Brian Watts, retained by the Mackenzie Valley Environmental Impact Review Board as a reviewer, during the Jay Technical Sessions held on April 20, 2015 (Day 1). Dominion Diamond took the request as Homework Assignment #1, and provided a response on April 21, 2015 (Jay Technical Sessions, Day 2, pages 20-21 of the transcript). Section 15 of the Jay Project Pre-feasibility Dike Design Report (Golder 2014), dated December 8, 2014, provided recommendations for future work to advance the dike design to a detailed design level. The recommendations were organized under two (2) headings: 1) Evaluation of foundation conditions, and 2) Evaluation of potential construction materials. All recommendations related to foundation conditions (heading one), have been completed as part

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			of the 2015 winter investigation program, with the exception of the first recommendation. This recommendation involves conducting an underwater visual assessment of the lakebed surface for the presence of cobbles and boulders. Dominion Diamond has committed to carrying out this work once ice on Lac du Sauvage has melted. This work will be done during the summer of 2015. In terms of the recommendations related to construction materials (heading two), mix design testing for the cement-soil-bentonite, using till samples obtained from the Pigeon Pit have been completed. Additional till samples will be collected from Lynx Pit pre-stripping operations, and further testing conducted. Sufficient information from the testing carried out on the samples obtained from the Pigeon Pit exists to support detailed design. Once a crusher contractor is selected to produce the fine and coarse filter materials, then samples will be collected and testing conducted. This testing is not required for the detailed design, but will form a part of the quality control and quality assurance programs implemented during the construction.
11	DAR-GNWT-IR2-17	Lake bottom sediment transport,	The total volume of overburden soils to be stored in the WRSA is approximately 7,013,000 m^3 which

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
	(PR#448)	storage and management in the waste rock storage area	accounts for approximately 6.5% of the total volume of material to be stored in the WRSA. Overburden soils will be placed in the interior area of the WRSA footprint. It is anticipated that the overburden soils will be placed over approximately one third of the total footprint of the WRSA which could result in thicknesses up to 8 or 9 metres (m). Waste rock will be placed around and over top of the overburden soils to the design limits of the pile as the WRSA is developed. This will lead to encapsulation of the soils within waste rock. If the lakebed sediments are found to have a moisture content that is high enough to inhibit truck traffic required for placement of subsequent lifts, the wet lakebed soils could be placed separately in either the mined-out quarry within the Jay WRSA footprint (if available), or internal containment dikes could be constructed out of rockfill or till within the WRSA footprint for containment of the wet sediments. Staged development plans for each 2 to 3 years of operation/placement will be prepared for the Jay WRSA as part of the detailed design. These plans will include placement areas for overburden soils. Management of spillage of sediments from haul trucks, if necessary, may use such means as

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			tailgates and/or side boards for haul trucks to reduce this potential. If substantial spillage occurs on the road between the dike and WRSA, it will be cleaned up, as deemed necessary.
12	DAR-MVEIRB-IR2-02 PR#448)	Pre-feasibility dike design, lakebed sediment disposal	Excavated lakebed sediment will be transported to the waste rock storage area (WRSA) for disposal. Trucks will have tailgates and/or other containment mechanisms to minimize spillage of the excavated lakebed material. If the quarry is developed within the WRSA, this facility would be utilized for placement/containment of the lakebed sediments. If the quarry is not developed, containment cells constructed of either rockfill and/or till will be constructed within the WRSA footprint for disposal of this material. The location of these cells has not been defined yet, but would be away from the perimeter of the WRSA. The detailed design for the WRSA will contain details regarding placement of waste construction materials. If dredging is used to remove lakebed sediments, then the King Pond Settling Facility may be utilized for water with elevated TSS.
13	TG technical report (PR#559)	Seepage monitoring	The testing of seepage chemistry is designed to detect changes that may affect the receiving environment. The Jay WRSA would be included in these seepage surveys. Seepage monitoring will continue through the operation phase of the project, and for 10

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			years following the completion of mining of the Jay Pit, until closure objectives are met. The results of the seepage program are reported annually to the WLWB.
14	Transport Canada technical report response (PR#560)	Navigability of Lac du Sauvage	Dominion Diamond is committed to working with Transport Canada for the proposed dike and dewatering activities within Lac du Sauvage. Dominion Diamond will submit information to Transport Canada to support the determination of navigability of Lac du Sauvage and the applicability of Sections 21 to 23 of the *Navigation Protection Act* (NPA). This information will be submitted during the permitting stage of the Project. If Transport Canada determines that Sections 21 to 23 are applicable, Dominion Diamond will submit an application for Proclamation of exemption under Section 24 of the NPA.
	Ore storage pads		
15	DAR-IEMA-IR2-03 (PR#448)	Reclamation of ore transfer pad and diked area	Ore storage pads are included in the Ekati Mine Interim Closure and Reclamation Plan (ICRP; BHPBilliton 2011). As per Section 5.7.9.7 of the ICRP, ore will be removed from ore storage areas and the pads will be re-contoured and scarified as necessary. The ICRP is expected to be amended to include Jay Project components during regulatory process with the Wek'èezhìı Land and Water Board such that these requirements will apply to transfer pads constructed for the Jay Project. As described above, kimberlite will not be left on the

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			pad when the area is back-flooded.
	Fish/Aquatics		
16	EC technical report response (PR#554) DAR-EC-IR-25 and DAR-IEMA –IR-20 (PR#305) Jay Hearing Transcripts, Day 2, p.127-129 (PR#644)	Diving bird mitigation strategy	Dominion Diamond will develop a final detailed fish-out plan prior to implementing the fish-out within the diked area in Lac du Sauvage; Dominion Diamond will develop a diving bird mitigation strategy along with the fish-out plan, and will engage with Environment Canada on its development. Dominion Diamond will monitor the fish-out for the Project to determine the effectiveness of mitigation actions for waterbirds so that lessons learned can be applied to future fish-outs, such as, lessons learned that were applied to the Lynx fish-out. Monitoring results will be reported in the WEMP.
17	DAR-DKFN-IR2-07 (PR#448)	Conceptual Offsetting Plan	Dominion Diamond is committed to working with all impacted communities to identify potential offsetting measures for the Jay Project that meet community interests and meet the requirements of the Fisheries Protection Policy Statement (DFO 2013) and comply with the Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations.
18	DAR-IEMA-IR2-01	Fish impact predictions	Any Project-related losses of fish habitat (i.e., serious harm to fish) will be addressed in the final offsetting plan (based on the Conceptual Offsetting Plan in Appendix 9A of the DAR) submitted

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			with the application for a Fisheries Act Authorization during the regulatory phase of the Project.
19	DFO Technical Report Response (PR#552)	Effects of blasting	Dominion Diamond is committed to developing a blasting plan for the Project for avoiding and mitigating serious harm to fish and engaging with DFO on the plan as appropriate.
20	DFO Technical Report Response (PR#552)	Effects of blasting at Shoal 4	Dominion Diamond will engage with DFO on the topic of protecting shoal S4 as part of the future detailed design stage, and recommends that a determination of the need for shoal S4 to have a specific objective be made at that time.
21	DFO Technical Report Response (PR#552)	Watercourse crossings	Dominion Diamond is committed to avoid and mitigate serious harm to fish as a result of watercourse crossing during construction, operation and decommissioning.
22	DFO Technical Report Response (PR#552)	Culvert crossings	Consistent with current practice at the Ekati Mine, detailed designs of culvert crossings and associated construction plans will be developed during the detailed design stage of the Project for submission to DFO.
23	DFO Technical Report Response (PR#552)	Sub-basin B	Dominion Diamond is committed to avoid and mitigate serious harm to fish as a result of the sub-basin B diversion channel. This includes, but is not limited to, appropriate design of the diversion channel to facilitate fish passage at both high and low flows for relevant species and life stages, and adherence to appropriate timing windows, bank stabilization and sediment and erosion control.
24	DFO Technical	Sub-basin B	Consistent with current practice at

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	Report Response (PR#552)		the Ekati Mine, Dominion Diamond will engage with DFO on the design of the diversion channel, and will submit final designs to DFO. Operational monitoring of fish use of the Sub-Basin B Diversion Channel will confirm its expected functions (e.g., as a migratory corridor) for Arctic Grayling and other species, and will also include any new mitigation strategies as they are required in the future. Environmental design features, mitigations and monitoring plans for the Sub-Basin B Diversion Channel will be finalized during the permitting process for the Project.
25	DFO Technical Report Response (PR#552)	Sub-basin B	Dominion Diamond is committed to developing a maintenance and monitoring plan for the stream diversion channel for avoiding the formation of barriers to fish passage over time. This plan will be finalized during the permitting phase for the Project.
26	DFO Technical Report Response (PR#552)	Sub-basin B	Dominion Diamond is committed to completing the detailed design of the Sub-Basin B Diversion Channel to support the regulatory phase of the Project and providing the design to DFO. Available measurements of flows and modelled estimates of flows will be used as basis of the design of diversion channel.
27	DFO Technical Report Response (PR#552)	Sub-basin B	Dominion Diamond is committed developing a detailed closure and reclamation plan for the Sub-Basin B Diversion Channel, including the reclamation and promotion of natural drainage patterns through

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			the natural drainage channels (lower portions of streams B0 and Ac35), which will be provided to DFO for review. This will become part of the amendment to the existing Interim Closure and Reclamation Plan for the Ekati Mine to include the Jay Project.
28	DFO Technical Report Response (PR#552)	Consultation prior to fish-out	Dominion Diamond agrees to continue engaging with the affected communities and DFO regarding the handling and fate of captured fish during the fish-out of the diked area in Lac du Sauvage during the regulatory phase of the Project and prior to developing the detailed fish out plan.
29	DFO Technical Report Response (PR#552)	Consultation prior to offsetting	Dominion Diamond agrees to continue engagement with affected communities on the offsetting plan for the Jay Project, including offsetting options, and to continue to work with DFO on the development of methods for quantifying fisheries productivity and the options (or measures) for offsetting impacts of the Project on fisheries productivity.
30	LKDFN technical report responses (PR#557)	TK in fish out	Examples of recent Ekati-based TK projects include the participation of members of all IBA groups in the design and carrying out of the Lynx Lake fish-out, archaeological inspections of the proposed Jay Project area by Yellowknives Dene First Nation, inspection of the proposed Jay Road route through an esker by members of IBA and potentially-affected communities, and annual site visits for caribou monitoring and surveys. The routing and design of the proposed

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			Jay Road and the Lynx fish-out program are based, in part, on TK received through Dominion Diamond's engagement process. Dominion Diamond will undertake similar engagement to inform the methodology and timing of the Jay fish-out.
31	Environment Canada EC Technical report response (PR#554)	Water quality – Trophic Status trigger for Lac du Sauvage	Dominion Diamond accepts the recommendations by Environment Canada that the trophic status of Lac du Sauvage during the Project be maintained as oligotrophic, and that the CCME (2004) upper bound trigger concentration for oligotrophic lakes (0.01 milligrams per litre [mg/L]) be used as part of the aquatic Effects Monitoring Program (AEMP) to monitor for change in trophic status. As suggested by Environment Canada, lowering the benchmark to the upper bound of oligotrophic status will provide a more appropriate basis for oversight regarding responses and decisions to increases of phosphorus in Lac du Sauvage, if required.
32	EC technical report response (PR#554)	Diving bird mitigation strategy	Dominion Diamond will develop a final detailed fish-out plan prior to implementing the fish-out within the diked area in Lac du Sauvage; Dominion Diamond will develop a diving bird mitigation strategy as part of the fish-out plan, and will engage with Environment Canada on its development. Dominion Diamond will monitor the fish-out for the Project to determine the effectiveness of mitigation actions for waterbirds so that lessons learned can be applied to future

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			fish-outs, such as, lessons learned that were applied to the Lynx fish-out.
33	IEMA technical report response (PR#556)	AEMP reference lakes	As part of the further development of the AEMP Design Plan for future submission to the WLWB, a desktop reference lake study will be conducted for the Project to identify whether a suitable reference lake can be found for comparisons to Lac du Sauvage.
34	IEMA technical report response (PR#556)	Misery pit discharge toxicity	Dominion Diamond has committed that no discharge of any minewater from the Misery Pit to Lac du Sauvage will occur if acutely toxic. To meet this commitment, monitoring of minewater in the Misery Pit (as a requirement under the Water Licence) will be undertaken during operations; the monitoring will be conducted in early operations (i.e., during the phase when there is no discharge to Lac du Sauvage) and late operations (i.e., during the discharge period). Dominion Diamond will evaluate the use of standard laboratory procedures versus site-specific procedures for toxicity testing as part of its water licensing submissions to the WLWB. A robust quality assurance/quality control plan will be developed and implemented for all water quality and toxicity testing procedures. The effluent toxicity data from the Surveillance Network Program will also be integrated into the interpretation of the results of the AEMP.

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35	IEMA technical report response (PR#556)	Plankton Community monitoring	The final AEMP Design Plan to be submitted to the WLWB will include details on the proposed assessment of changes in plankton community structure. The design will include an assessment of phytoplankton and zooplankton biomass by taxonomic group and multivariate analyses to assess changes in community structure.
36	Kugluktuk public hearing transcript (PR#648)	Downstream water quality monitoring	"So I -- I think on behalf of the Company today, I -- I can say that we would commit to providing resources both financial and in kind for the establishment of a -- a long-term water quality monitoring program on the Coppermine River near -- near Kugluktuk." (Dominion Diamond)
	Air quality – Waste management		
37	DAR-GNWT-IR-3 (PR#305)	Incinerator facilities – waste incineration Incineration stack testing schedule requested	Version 2.0 of the Waste Management Plan will now be submitted to the Wek'eezhii Land and Water Board in September 2015 as part of the annual Water Licence review and will include updates for the Lynx Project and the new Management Plan for the Composter. The composter is currently being commissioned with a revised operation date of September 1, 2015.
38	DAR-GNWT-IR-69 (PR#305)	Proper waste management practices by new employees	During site orientation for new employees, contractors and visitors, Ekati management will outline a mandatory presentation on waste management including the Sustainable Development Policy.
39	Technical session April 24 –	Air quality	DDEC is to hold a meeting with EC to clarify emissions model and will prepare a summary report of the

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	commitment #7 (PR#358)		results of this meeting to be submitted to the Review Board.
40	Meeting Report - air quality regulators May 7, 2015 (PR#418) DAR-GNWT-IR2-19 (PR#448)	Air Quality Monitoring and Management Plan Stack testing	Dominion will commit to the 3-year incinerator stack testing cycle. Dominion Diamond has committed to undertake stack testing on the operating incinerators on the 3 year schedule. This was discussed in the Jay Project Technical Sessions, and a commitment to stack testing was made following the May 7, 2015 air quality meeting that included the Government of the Northwest Territories (GNWT) staff. Dominion Diamond has committed to updating the Incinerator Management Plan as part of the updated Waste Management Plans, as per the requirement in the Water Licence. Stack testing will follow current standards for this work, data will be circulated to GNWT and other parties, and follow up actions will be implemented if necessary. Details on these operating procedures will be finalized during the regulatory permitting process. Dominion Diamond provided a draft conceptual Air Quality Emissions Monitoring and Management Plan (AQEMMP) for the Jay Project to the Mackenzie Valley Environmental Impact Review Board for discussion on June 1, 2015, and followed up with a workshop on June 26, 2015 to engage with regulatory and

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			community groups. The development of the Jay Project AQEMMP is ongoing and the schedule for testing and reporting is to be discussed and finalized during the Jay regulatory process. Dominion Diamond will host a technical workshop to discuss the proposed triggers and technical components of the AQEMMP in July 2015 and will also provide an engagement schedule for the AQEMMP.
41	DAR-GNWT-IR2-01 (PR#448)	Ambient Air Quality Adaptive Management Plan Framework	As per the document titled "Regulatory Engagement Follow-Up Responses from May 7, 2015 Air Quality Regulatory Meeting", dated May 2015, the Proponent has committed to including adaptive management trigger levels and associated actions in the draft Air Quality Monitoring and Management Plan, which will be provided to the Mackenzie Valley Review Board public registry by June 1, 2015.
42	DAR-GNWT-IR2-02 (PR#448)	Project mine fleet and equipment procurement	Dominion Diamond is committed to minimizing emissions from mine equipment according to the established principles of Best Available Technology Economically Available (BATEA). All equipment operating at the Ekati Mine has a set preventative maintenance plan that ensures equipment is operating at optimal conditions and performance.
43	DAR-LKDFN-IR2-01 DAR-MVEIRB-	Ambient Air Quality Guidelines	Furthermore, the GNWT has adopted regulations specifically for the protection of the health and safety of workers at mines. The Government of the Northwest

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	IR2-28 (PR#448)		Territories Mine Health and Safety Regulations (Section 9.02) states that employees shall not be exposed to airborne chemical or physical substances in excess of those specified in the 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists (GNWT 2015). These thresholds are higher than the NWT ambient air quality guidelines and would be applicable inside the development area. It is Dominion Diamond's intent to apply the NWT ambient air quality guidelines (GNWT-ENR 2014) as standards or targets for purposes of air quality monitoring and management at the Project. Therefore, the fact that the NWT ambient air quality guidelines are non-legally binding, as clarified by the GNWT Department of Environment and Natural Resources (ENR) in a letter (GNWT-ENR 2015) responding to Undertaking 17 from the Mackenzie Valley Environmental Impact Review Board (MVEIRB) Technical Sessions for the Project on April 24, 2015, will have no effect on how Dominion Diamond plans to manage the air quality at the Project. Dominion Diamond, in its proposed Conceptual Air Quality and

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			Emission Monitoring and Management Plan for the Jay Project (AQEMMP; Dominion Diamond 2015) submitted to the MVEIRB on June 1, 2015, and discussed with parties during a workshop on June 26, plans to include an adaptive management approach to the management of air quality at the Project site. The NWT ambient air quality guidelines, regardless of their current non-legally binding status, will be used as the bases for the criteria that will trigger appropriate management actions as proposed in the AQEMMP. If new ambient air quality guideline or standard values are adopted by the GNWT in the future, the AQEMMP for the Project will be updated to reflect the changes in the guidelines or standards.
44	DAR-LKDFN-IR2-05 DAR-NSMA-IR2-04 (PR#448)	Greenhouse gas emissions and alternative energy	Dominion Diamond is committed to reducing overall greenhouse gas emissions from the Ekati Mine. As noted in the response to DAR-NSMA-IR2-04, Dominion Diamond has set the following targets for reducing greenhouse gas emissions for fiscal year 2016 (February 1, 2015 to January 31, 2016): • Reduce energy baseload by 5% • Reduce Greenhouse Gas Emissions by 5% • Realize energy savings of $2 million

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			• Reduce fuel consumption by 5% Dominion Diamond will continue to set targets for greenhouse gas emissions annually for the life of the Ekati Mine and this will be reported as part of the Air Quality Monitoring Program report, Mining Association of Canada Towards Sustainable Mining Program, and the Environment Canada Greenhouse Gas Inventory.
45	DAR-MVEIRB-IR2-29	Greenhouse gas emissions	Dominion Diamond will continue to set targets for GHG annually for the life of the Ekati Mine and the Jay Project, and this will be reported as part of the Air Quality Monitoring Program report, Mining Association of Canada Towards Sustainable Mining Program, and the Environment Canada Greenhouse Gas Inventory. Targets for GHG reductions have not been set for the Jay Project. Dominion Diamond will continue to set targets for GHG emissions on an annual basis. Targets will be selected with consideration of the stage of the Project (e.g., construction, operation). Examples of the targets set for Ekati Mine's 2016 fiscal year (February 1, 2015 to January 31, 2016) are: • Reduce energy baseload by 5% • Reduce fuel consumption by 5% • Realize energy savings of $2 million • Reduce GHG emissions by

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			5%
46	DKFN Technical Report Response (PR #553)	Air quality monitoring program – Monitoring transects	The monitoring transect proposed along the Jay Road in the Conceptual Air Quality and Emissions Monitoring and Management Plan (AQEMMP) will be designed and sited to optimize the potential to monitor elevated concentrations and deposition rates, and to capture the potential effects from the Jay Road and the Jay Pit.
47	GNWT technical report response (PR#555) NSMA technical report response (PR#558)	Air quality triggers	Dominion Diamond agrees with the recommendations of the GNWT with the following minor revisions noted below in Table 2.1-1 (underlined text to identify the change). Dominion Diamond recommends these final revisions to ensure that the development of action plans are prepared for a change based on an increase in year to year concentrations.
48	GNWT technical report response (PR#555) Hearing undertaking response DAR-MVEIRB-UT2-05 (PR#673)	Incineration management plan Stack testing, reporting and re-testing in the event of a failed stack test	Dominion Diamond has committed to continuation and on-going improvement of its Ekati Mine Incineration Management Plan that directs the incineration process in accordance with the manufacturer's instructions and the Environment Canada Guidance Document on Batch Incineration that may include: • A waste segregation/diversion procedure; • Removal of plastics and substitution of corn and bamboo based products at the Ekati Mine; • Appropriate batch sizing

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			including weighing and mixing; and, Monitoring and maintaining records of operating parameters (temperature in primary and secondary chambers, residence time) and quarterly performance monitoring. Dominion Diamond has committed to a rigorous stack testing regime that will enable assessment of ongoing compliance with the CWS. Dominion Diamond agrees to submit any waste incinerator stack test results to GNWT Environment and Natural Resources (ENR) and Environment Canada (EC). On September 22, Dominion and the GNWT agreed on the following wording for the reporting of incinerator stack testing results: • Dominion Diamond must submit any waste incinerator stack test results to ENR and EC no more than 90 days after completing a stack test. Following the reporting timeline agreed to above, Dominion Diamond and GNWT agreed to the following wording for the development of the AMRP. • In the event of a failed stack test, Dominion Diamond must develop and submit to

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			ENR and EC an AMRP no more than 120 days after the failed stack test. The AMRP should contain an assessment of the incinerator operations and management that would have contributed to the failed stack test, and methods to improve/rectify them. Dominion Diamond should implement the AMRP immediately upon submission of the AMRP. In regards to the requirement to re-test the incinerators 6 months from a failed tack test, GNWT re-iterated that this is an important step to test the AMRP. Dominion Diamond believes that the schedule for stack testing needs to be linked to the AMRP but has agreed to the measure proposed by the GNWT, with the addition of the bolded section below. This bolded wording is taken from the GNWT Technical Report (p13-14, GNWT 2015). • Dominion Diamond will re-stack test the incinerators within 6 months of the initial failed stack test. The second stack test will verify the effectiveness of the adaptive management response measures and compliance to the CWS. All

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			stack tests must be conducted in accordance with national standards, and will include detailed documentation to demonstrate that representative composition and batch size of waste were used during the testing process. Exemptions for the second stack test may occur based on a review conducted by ENR, in consultation with EC. **Exemptions for conducting a second stack test could occur based on factors such as the degree of the original exceedance over the CWS, the confidence from the developer and GNWT/EC in having properly identified and addressed the cause(s) of the exceedance, and the availability of any other indicators to demonstrate the issue(s) has been rectified.** Dominion Diamond believes that this addition allows for proper consideration of the exceedance and would be included and considered in the AMRP when submitted to ENR and EC.
49	IEMA technical report	Fugitive dust abatement program	As part of construction and operations for the Project, dust generation and deposition will be

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	response (PR#556)		monitored under the AQEMMP, as well as water quality (including TSS measurements) at stations in close proximity to Project activities (e.g., dike construction) in the AEMP. Mitigation strategies to minimize dust generation, such as limiting vehicle speeds, applying dust suppressants, or road watering, and monitoring and evaluation (which includes adaptive management trigger thresholds for particulate matter), will be implemented as per the Fugitive Dust Abatement Program detailed in the AQEMMP for the Project.
50	LKDFN technical report response (PR#557) and NSMA technical report response (PR#558)	Ambient air quality guidelines	During construction and operations of the Jay Project, Dominion Diamond intends to apply the NWT ambient air quality guidelines (GNWT-ENR 2014) as standards for purposes of air quality monitoring and management at the Project.
51	LKDFN technical report response (PR#557)	Providing climate information to communities	Specific topics of interest such as the potential implications of climate change for the Ekati Mine are often requested by individual communities and responded to by Dominion Diamond. Dominion Diamond will continue this approach and will tailor community engagement to the specific requests of each community.
52	LKDFN technical report response (PR#557)	Alternative energy study	Dominion Diamond commits to conducting a concept study of additional potential investments in alternative energy including areas such as wind and solar energy. This study will be led by Dominion

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	And NSMA technical report response (PR#558)		Diamond staff drawing on appropriate external expertise, with a summary of results to be made publicly available within one year of the MVEIRB's Report of Environmental Assessment.
53	YKDFN technical report response (PR#561)	Dust suppression	Dominion Diamond is committed to ongoing evaluation and improvement of dust suppression at the Ekati Mine.
	Caribou		
54	DAR-IEMA-IR-25 (PR#305)	Road use mitigation	Dominion Diamond commits to the list of mitigations from Table 12.3-1, and using a combination of collared caribou locations and road surveys to provide information on caribou locations relative to active roads. This monitoring will help determine when and where additional mitigation, such as signage, modification of traffic patterns and road closures is required.
55	DAR-MVEIRB-IR-2 (PR#305)	Caribou and other wildlife crossing dewatered lakebed	The Jay dike and pit area will be part of routine site surveillance monitoring for the Ekati Wildlife Effects Monitoring Program. If caribou approach the diked area, Dominion will implement deterrent procedures (e.g. walking towards caribou) to keep animals and people safe.
56	DAR-LKDFN-IR-19 DAR-Tlicho-IR-21 Appendix C PR#305, 308)	Jay road crossing mitigation	Mitigation includes: • Frequent and wide caribou crossings • Kimberlite stockpile areas so that the Ekati mine can operate through brief road closures • 200 mm crush on ramps

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			• Early monitoring for caribou using additional satellite collar maps
57	Technical session April 21 – commitment #2 (PR#358)	Caribou - baseline	DDEC is to complete a draft Wildlife Effects Monitoring Plan (WEMP) and Wildlife and Wildlife Habitat Protection Plan (WWHPP) that incorporates the Jay Project by August 1, 2015.
58	Technical session April 21 – commitment #3 (PR#358)	Caribou road mitigation	Traffic Management Plan or Wildlife and Roads Mitigation Plan as an Appendix to the WEMP. Input sought into plan that lays out the steps which will include linkage between monitoring and mitigation and incorporate input. Dominion to set out a plan on how it will incorporate those suggestions.
59	DAR-MVEIRB-UT-01 (PR#371)	Caribou Crossings	Dominion Diamond commits to constructing the section of the Jay Road between King Pond dam and the approach to active operations with "frequent and wide caribou crossings that will respect the communities' identification of the importance of this area for caribou movement".
60	DAR-MVEIRB-UT-04 (PR#371)	Caribou Monitoring	Dominion Diamond is proposing to "increase early monitoring of caribou movement with the aid of satellite collar maps obtained from the GNWT" that would "provide advanced warning of when caribou may be approaching the Ekati Mine". Dominion Diamond further proposes to "construct additional kimberlite stockpile areas" so that the mine can operate through brief road closures.
61	DAR-MVEIRB-IR2-04 (PR#448)	Light mitigation strategies for caribou	DAR-MVEIRB-UT-03 describes possible mitigation strategies for light pollution. These include

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			utilization of fully shielded lighting fixtures, lighting design that involves tilt and orientation and meets the required light levels to ensure worker health and safety onsite while minimizing luminous flux, and where possible, dark colours or lower-reflectivity surfaces on buildings and other structures. Another mitigation option includes the use of switches or motion detectors in high illumination areas not occupied on a continuous basis (i.e., lighting the area only when occupied). Dominion Diamond is committed to consider these and other mitigation strategies and their applicability to the Jay Project prior to the commencement of construction of new fixed structures or facilities.
62	GNWT technical report response (PR#555)	Participation in GNWT-led programs	GNWT requests that MVEIRB recognize the final statement made by DDEC in its response to IEMA-IR-36 as one of the developer's commitments to be included in the scope of development for this EA. This statement reads "DDEC will maintain its commitment throughout the life of the Jay Project to doing what it reasonably can to contribute to and support GNWT-led regional programs to improve the state of the Bathurst caribou herd." Dominion Diamond does not object to the inclusion of this statement as a commitment. Dominion Diamond

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			has revised the commitment as requested, and added it to Section 5.6.1 (Barren ground Caribou Management Strategy) of the Wildlife Effects Monitoring Plan (WEMP).
63	IEMA technical report response (PR#556) and TG technical report response (PR#559) and YKDFN technical report response (PR#561)	Improving ZOI measurements	Recommendation to assist in evaluating alternative methods for refining assessments of the ZOIs of developments on barren-ground caribou. Dominion Diamond agrees with the recommendation and will analyze the ZOI distance and magnitude from the 2009 and 2012 aerial survey data as requested and will present the results in its 2015 WEMP report. Dominion Diamond will work with the ZOI Technical Task Group to evaluate the analytical methods and their results. Dominion Diamond has also partnered with the Canada Centre for Remote Sensing (Natural Resources Canada) on their SMART program on the effects of development on the Bathurst caribou herd, which includes ZOI assessment.
64	IEMA technical report response (PR#556) NSMA technical report response (PR#558)	Improving ZOI measurements	Dominion Diamond will collaborate with the GNWT on regional programs and actions, and work with the ZOI Technical Task Group to revise the WEMP to include monitoring methods to address the prediction that the Project will not affect the size and magnitude of the area of caribou avoidance, including methods for measuring ZOI.
65	LKDFN technical report	Caribou and WRSA	During the construction and operations phases of the Project, all incidental caribou observations in

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	response (PR#557)		the study area are monitored as part of the Wildlife Effects Monitoring Program (WEMP). Observations are recorded to minimize potential risks associated with human and wildlife interactions, and to identify mine structures that are acting as potential barriers to caribou movement. This will include observations of caribou at the Jay WRSA. Incidental sightings logs will be maintained at site throughout the life of the Ekati Mine. Environment staff will review the logs weekly and respond to wildlife sightings or trends of concern when they occur.
66	LKDFN technical report response (PR#557)	Caribou and WRSA	Dominion Diamond has designed the WRSA to be a neutral feature on the land by providing for the construction of several caribou egress ramps as the rock pile progresses. Progressive construction of the egress ramps during construction of the Jay WRSA is an enhancement of current practice at the Ekati Mine. The ramps will provide multiple areas for caribou or other wildlife to safely move off the pile. In selecting the location of the ramps, Dominion Diamond will consider input from community engagement and TK and rely upon observations during the operations phase.
67	LKDFN technical report response (#557)	WRSA design plan	As part of the future permitting work for the Project (i.e., Water Licensing), Dominion Diamond will provide a Design Report for the Jay WRSA to the WLWB. This would be consistent with the current

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			requirements of the Ekati Mine Water Licence for WRSA Design Reports. This document will contain: • relevant information on the design, construction, monitoring, and management of the facility; • information on setback distances from the esker and surface water; • information on the visual inspections, monitoring of instrumentation, and sampling of any seepage/runoff that is identified, consistent with the existing Ekati Mine WROMP (Vers. 4.1)(Dominion Diamond 2014a); and, • an adaptive management approach to describe responses to seepage water quality issues, if they were to develop though operations or closure.
68	NSMA technical report response (PR#558)	Underground powerlines and pipes	Dominion Diamond will continue to hold discussions and receive input from IBA community members regarding the design of the caribou crossings for the Jay Road. This input will be incorporated into the detailed design of the Jay Road. Once roads are constructed, it is anticipated that as part of annual visits of community members to the Ekati Mine and for wildlife monitoring, the effectiveness of the caribou crossings will be reviewed,

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			and if necessary, modifications will be implemented.
69	TG technical report response (PR#559)	Caribou crossing design engagement	Dominion Diamond will continue to engage with their IBA communities and other people affected by the Project to receive input regarding the design of the caribou crossings for the Jay Road. This input will be incorporated into the final detailed design of the Jay Road.
70	TG technical report response (PR#559)	Road closures for caribou	Dominion Diamond recognizes that traffic on the Jay Road and Misery Road associated with transport of kimberlite from the Jay Pit to the Ekati Mine processing plant is a potential barrier for caribou movement. To reduce this impact, Dominion Diamond have committed to temporarily closing the road(s) (Jay Road and/or Misery Road) to haul vehicles depending on the season and group composition of caribou approaching the roads.
71	TG report response (PR#559)	Caribou and WRSA	Dominion Diamond will seek input from Tłı̨chǫ Elders and representatives of other IBA communities related to the location and design of these ramps, as was indicated in the Round 1 IR response DAR-Tłı̨chǫ-IR-29. Although caribou are not anticipated to regularly use the rock pile, they may occasionally be present; therefore, egress ramps will be constructed, to provide multiple routes off the pile for caribou or other wildlife. The rough boulder surface of the rock pile may still provide areas for dens for wolves and foxes, and burrowing

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			areas for animals such as ground squirrels and hares. Dominion Diamond will continue to work with the Tłı̨chǫ and other IBA community members on aspects of facility design, construction, monitoring and closure, and to incorporate traditional knowledge. As part of the future permitting work for the Project (i.e., water licensing) Dominion Diamond will provide a Design Report for the Jay WRSA to the Wek'èezhìı Land and Water Board (WLWB). This document will contain: • relevant information on the design, construction, monitoring and management of the facility, including the egress ramps; • information on setback distances from the esker and surface water; • information on the visual inspections, monitoring of instrumentation, and sampling of any seepage/runoff that is identified, consistent with the existing Ekati Mine Waste Rock and Ore Storage Management Plan (WROMP) Vers. 4.1 (Dominion Diamond 2014b); and, • an adaptive management approach to describe responses to seepage water quality issues, if they were to develop.

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72	Dominion responses to hearing undertakings, DAR-MVEIRB-UT2-06 UT2-07 UT2-08 (PR#673)	Caribou Mitigation Plan Caribou mitigation measures Caribou Road Mitigation Plan (CRMP) details Truck convoys	Dominion Diamond commits to prepare a Caribou Mitigation Plan within one year of the acceptance of the Report of Environmental Assessment. (See full text of the Caribou Mitigation Plan commitment PR#673, DAR-MVEIRB-UT2-06 here) The Plan/Strategy includes: • Caribou monitoring • Project mitigation • Zone of influence research • Dust mitigation – sampling and suppressant program • Progressive reclamation of the existing Ekati mine
	Maximizing benefits and minimizing impacts		
73	DAR Adequacy review response -DAR-MVEIRB-11 (PR#255)	Employee retention	Dominion Diamond is committed to improving upon the existing tracking of human resources indicator, including employee retention, in the future.
74	DAR Adequacy review response -DAR-MVEIRB-11 (PR#255)	Employee retention, adult education	Dominion Diamond is reinstating the Workplace Learning Program, and is introducing an adult educator position, with the goal of improving the education literacy of employees.
75	DAR Adequacy review response -DAR-MVEIRB-11 (PR#255)	Recruitment	Establish community liaisons employed by the community but funded through Dominion Diamond. The liaison will be the company's point of contact in the community and will mainly be responsible for pre-employment contact. Dominion Diamond agreed to fund a liaison position who would be employed by the community to

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			provide pre-employment assistance.
76	DAR-KIA-IR-84 (PR#305)	Local business capacity	Dominion is committed to engaging with all IBA communities with respect to contracting community businesses, wherever practicable, for the Jay Project. Through ongoing engagement with IBA communities, Dominion will seek to identify business opportunities and strategies to maximize the use of local businesses.
77	DAR-KIA-IR-88 (PR#305)	Education – northern labour force development	Dominion will continue to work with the Mine Training Society in the delivery of mine-related programming to the Hamlet of Kugluktuk. Dominion will extend the on-the-job training opportunities, including apprenticeships, to employees at the Ekati mine, including those who reside in Kugluktuk. Through ongoing consultation with IBA communities, including the Hamlet of Kugluktuk, Dominion will work to identify opportunities to provide education and training to residents of IBA communities, where practicable.
78	DAR-NSMA-IR-27 (PR#305) NSMA-DAR-IR2-01 (PR#448)	Employment and training– barriers to training and employment of women	Dominion is committed to ongoing engagement with communities, and will continue to seek input on employment barriers, including those discussed above (employment for rural women), and possible approaches to breaking down those barriers. Dominion Diamond has undertaken activities to try to minimize these barriers to the training and employment of women, where

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			possible: 1. Dominion Diamond provides scholarships in the support of educational attainment, with the aim of removing barriers associated with the cost of an education. 2. Dominion Diamond will continue to run the Women in the Workforce Program, designed to promote the training, hiring, and advancement of women in non-traditional roles. 3. On a case-by-case basis, Dominion Diamond evaluates alternate schedules for women with children, including flexible office hours for Yellowknife-based staff, and flexible rotations for mine-site workers, such as a four (4) days on / three (3) days off rotation instead of a two (2) weeks on/two (2) weeks off rotation. This shorter period away from home allows some women to split caregiver duties with another family member, or to use other childcare arrangements as available. 4. Dominion Diamond is committed to maintaining a workplace free of discrimination and/or hostility towards women. The Company has a Harassment & Discrimination Policy that outlines the process individuals can follow in raising a concern of harassment and/or discrimination and having the

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			concern addressed in a timely fashion. 5. Dominion Diamond is also committed to engaging with communities to provide information to potential female employment candidates that encourages their application, and reiterates the company's zero tolerance policy towards harassment and gender discrimination. 6. Dominion Diamond has implemented a Recruitment Policy that ensures qualified female applicants are given priority consideration for both traditional and non-traditional roles. With the creation and institution of this formal policy, it is Dominion Diamond's goal to increase the proportion of women working for the company over the operational life of the Jay Project. 7. Dominion Diamond will continue to support external organizations such as the Mine Training Society by providing work placements to students, including females, at the mine site with the view to ensuring students are able to gain practical hands-on work experience, but also enable them to experience life at the mine. Dominion Diamond will take the following steps to evaluate the status of the employment of women at the Ekati Mine, and to

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			develop strategies to improve performance: 1. Dominion Diamond will track feedback received from Exit Interviews completed by exiting female employees to identify barriers to successful retention. If such barriers are identified, Dominion Diamond is committed to investigating what can be done to address the issue. Mechanisms to address barriers will be developed as part of Dominion Diamond's commitment to ongoing improvement, and will be specific to the issue in question. 2. Where employment barriers for women are seen as related specifically to social issues, Dominion Diamond is committed to raising these issues with the Government of the Northwest Territories to determine how the two parties can work together to improve or remove the barrier that is being experienced. In addition, Dominion Diamond evaluates its programs aimed at improving the training and recruitment of women in the North, and will continue to adapt programs in response to feedback from female employees and community members interested in a career in mining. Regardless of achievement of industry averages of women in the workforce, Dominion Diamond is

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			committed to engaging women, and building capacity of the female workforce in the NWT. To this end, Dominion Diamond will continue to participate in the programs and initiatives detailed in Part 1 of this response, and will continue to work with communities to identify strategies for employing women.
79	Technical session April 23 – commitment #6 (PR#358)	Minimizing impacts and maximizing benefits to communities	DDEC is to prepare a summary report (in the future) from annual meetings between GNWT and DDEC describing performance on SEA community wellness and health indicators and DDEC's actions to address performance issues (acknowledging that all proprietary and confidential information will be omitted)
80	DAR-MVEIRB-IR2-30 (PR#448)	Health and well-being in communities	Dominion Diamond acknowledges that adverse health and wellbeing trends exist, are significant, and may continue into the future. While the Project is predicted to not contribute to these adverse trends, Dominion Diamond is committed to working with the Government of the Northwest Territories, health and wellbeing-focused organizations, and communities to proactively address them to the extent possible.
81	LKDFN technical report response (PR#557) YKDFN technical report response (PR#561)	SEA performance improvements	Dominion Diamond is currently in the process of evaluating the reporting tool in terms of its utility as a means for communicating SEA performance to communities, the GNWT, and the broader public. While Dominion Diamond has already improved upon the SEA reporting procedures, the Company is committed to continual

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			evaluation and improvement. Some steps taken to date to improve the reporting process for the 2014 SEA report, or subsequent reports, include: • Transitioning to a new Human Resources tracking system that provides better reporting capabilities than the previous system. • Listing of traditional and non-traditional roles to allow for greater understanding of the statistics being reported. • Developing and rolling-out of Contractor Employment Statistics Procedure, which will ensure that contractors comply with the SEA requirement to report on Aboriginal and Northern hire statistics. • Holding key contractors responsible for monthly reporting of employment and procurement statistics, to more accurately report on monthly achievement relative to SEA commitments. • Reviewing, updating, and reporting the skill levels associated with current positions at the Mine. • Implementing internal processes to track employee career progression, and reporting on Dominion Diamond's achievement in promoting and progressing

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			its Northern and Northern Aboriginal employees.
82	LKDFN technical report response (PR#557)	SEA engagement	Dominion Diamond is open to collaborating with communities and the GNWT to address SEA engagement recommendations, as appropriate. Given that the SEA reports are the responsibility of the operator, Dominion Diamond will continue to engage with communities on how to improve annual SEA reporting.
83	LKDFN technical report response (PR#557) NSMA technical report response (PR#558) YKDFN technical report response (PR#561)	SEA transparency	Dominion Diamond is open to continued engagement with communities regarding the improvement of the transparency of discussions with the GNWT on matters pertaining to the Ekati Mine SEA. Dominion Diamond has committed to working with the GNWT to share minutes from meetings regarding the SEA, as appropriate, except where proprietary or confidential information is concerned. Dominion Diamond will also discuss other ways to improve transparency with the GNWT.
84	YKDFN technical report response (PR#561)	SEA targets	Dominion Diamond is committed to hiring, contracting, and procuring from Northern and Northern Aboriginal sources.
85	YKDFN technical report response (PR#561)	Improving evaluation of social situation of employees	In addition to these existing strategies, Dominion Diamond intends to implement the following measures to improve the evaluation of the social situation of employees, and in communities: • Obtaining feedback from the

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			new Community Liaisons in key communities to determine what social barriers may be impacting work readiness or eligibility for employment at the Ekati Mine. • Having further discussions with the GNWT about additional programming that may be warranted based on feedback obtained from the above-noted (liaison) sources of information, and through existing and new government-sponsored programming such as the recent Skills 4 Success initiative. This initiative has been led by the GNWT and includes information on skills availability within communities and barriers to successful employment. • Working with the IBA representatives in each community to identify community and IBA-specific issues, and to determine what support Dominion Diamond can provide to assist in addressing these issues.
	Wildlife (other than caribou)		
90	DAR-EC-IR-28 (PR#292) DAR-EC-IR-29 (PR#292)	EC engagement during the development of the WWHPP and WEMP	The wildlife and wildlife habitat protection plan and wildlife effects monitoring program will be developed with Environment Canada during the Jay Project permitting phase.

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
	DAR-EC-IR-30 (PR#305)		
91	DAR-EC-30 (PR#305) EC technical report response (PR #554)	Migratory birds and SARA – reporting of mortalities Migratory bird use of mine-altered water	Reporting of all wildlife mortalities, including those of migratory birds and species at risk, is required by site personnel. This commitment for mandatory wildlife mortality reporting will be reaffirmed in the wildlife and wildlife habitat protection plan and wildlife effects monitoring program. The WEMP will also monitor and report annually direct mine-related wildlife mortalities, and any migratory bird mortalities would be directly reported to Environment Canada. Environmental information collected through the Water Licence will continue to be used to characterize mine-altered waterbodies as part of migratory bird surveys that are conducted under the direction of professional wildlife biologists through the WEMP. This approach enables timely implementation of migratory bird mitigation measures, if necessary. Migratory bird monitoring results related to mine-altered waterbodies will be provided in the annual WEMP report.
92	DAR-MVEIRB-IR2-10 (PR#448)	Raptor nesting locations	Dominion Diamond is committed to continue working collaboratively with the Government of the Northwest Territories, Environment and Natural

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			Resources (GNWT-ENR) to identify and mitigate any potential risks or impacts to raptors and their nests during mining operations and pit back-flooding during closure. Dominion Diamond will continue to monitor all pits during operations and engage with GNWT-ENR on the appropriate preventative measures or deterrent methods to ensure the safety of raptors, their nests and young during both operations and closure.
93	EC technical report response (PR#554)	Provisions for species at risk	Mitigation and monitoring strategies for listed species (per Environment Canada Table 2 above) will be consistent with any final and applicable COSEWIC assessment status report, SARA recovery strategy, action plan, and management plan that may become available during the duration of the project. Dominion Diamond will consult with the GNWT and Environment Canada on adaptive management strategies should they be required, including the implementation of setback distances for established nests and monitoring the success of such nests. Pit wall monitoring for nesting raptors is a component of the WEMP (Section 5.10.1). Mitigation for raptors nesting in active and inactive pits is provided in Section 4.3.1. If a bird successfully nests in an active pit, ENR will be contacted to discuss a buffer zone that will be applied to the nest where no work can be

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			undertaken. Monitoring for upland breeding birds (includes migratory birds) is a component of the WEMP and includes recording and reporting incidental observations (Section 5.12.1) and the North American Breeding Bird Survey (Section 5.12.2). Data would be submitted to eBird. In addition, rare and uncommon species will be recorded as part of the WEMP (Section 5.13).
94	GNWT technical report response 8 (PR#555 p2-9)	WEMP update	A revised version of the WEMP containing the changes identified in Response 8 was submitted to the MVEIRB on July 31, 2015 (Dominion Diamond 2015b).
95	DAR-EC-IR-28 and DAR-EC-IR-29 (PR#292)	Migratory Birds – Incidental Take	To the extent practicable, Dominion Diamond will plan to avoid vegetation clearing or causing other habitat loss during the migratory bird nesting season. Details of the mitigation procedures to avoid incidental take of migratory birds, their nests and eggs to comply with the Migratory Birds Convention Act and specific details for the avoidance of incidental take will be identified in the wildlife and wildlife habitat protection plan and wildlife effects monitoring program (including specific times and areas where migratory birds may be at risk).
	Closure		
96	DDMI Technical Report	Engagement with other parties	Dominion Diamond has committed to continue to engage with DDMI on the development of detailed

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
	Responses (PR #551)		environmental and monitoring plans for water and wildlife where there is a spatial overlap of interests or needs.
97	EC Technical report response (PR #554) AND GNWT technical report response (PR#555)	Misery pit closure plan	Dominion Diamond plans to undertake this optimization study (described in PR#554 and PR#555) for the Ekati Mine Final Closure and Reclamation plan for approval from the WLWB. Therefore, for the Ekati Mine Final Closure and Reclamation Plan to be approved by the WLWB, Dominion Diamond will update water quality predictions and determine the optimal depth of freshwater cap.
98	GNWT technical report response (PR#555)	Panda and Koala pit closure	Dominion Diamond will finalize operational and closure planning for the Panda and Koala pits once the Jay Project Environmental Assessment Process has been successfully completed. This work will include an optimization study as recommended by the GNWT.
	Management and Monitoring Plans		
99	Technical session April 21 – commitment #4 (PR#358)	Management plans	DDEC will submit draft plans or existing management plans (e.g. those under review by WLWB) that may be used for reference by the Review Board (but not for review under the EA process); to be submitted to the Review Board and posted to the public registry.
100	DAR-MVEIRB-IR2-23 (PR#448)	Misery pit water quality management strategies	If water quality monitoring within the Misery Pit indicates conditions differ from the DAR predictions and represent a potential risk to the receiving environment, Dominion Diamond will implement adaptive management strategies that may involve improvement or

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			modifications to the minewater management plan or temporary use of the contingencies included in the design of the water management structures (Section 8.3, Appendix 3A of the DAR). The adaptive management strategies were provided in responses to the previous information requests (Round 1 IRs DAR-GNWT-IR-58 and DAR-EC-IR-15), and include the following: • maintaining a storage contingency allowance in the existing King Pond throughout the construction and operations stage for use as an additional total suspended solids management facility during construction and operations phase, or for short-term emergency minewater storage; • maintaining the contingency storage in the Misery Pit (approximately 3 million cubic metres throughout the operations stage for use as emergency minewater storage - upper 10 metres of the pit); • maintaining pumping capacity and a pipeline between the Misery and Lynx pits throughout the operations stage to allow for lowering of the Lynx Pit water level to generate additional contingency

Commitment Number	Document Source	Sub-topic	Commitment by Dominion Diamond
			minewater storage, if required; • increasing storage capacity in the Jay runoff sump and mine inflows sump (e.g., constructing containment berms around the sumps) to augment temporary minewater storage capacity within the diked area; • consideration of direct discharge to the environment from the Jay runoff sump, if water is found to meet established discharge criteria (the discharge locations used during the initial stages of dewatering would be used); • use of storage capacity available at the Ekati site (e.g., construction of pumping and pipeline system from the Misery site to the Ekati site); and, • treatment of parameters of concern prior to discharge to Lac du Sauvage. Adaptive management options that provide additional storage for minewater may, in certain circumstances, be used to directly address certain water quality concerns such as suspended sediment, or they may provide additional time for implementation of other response plans.
101	DDMI Technical report response (PR #551)	Regional monitoring programs – Wildlife and Water	Dominion Diamond has committed to continue to take part in regional monitoring programs for water and wildlife that would be led by government agencies. For example, Dominion

			Diamond will continue its participation with the Government of the Northwest Territories (GNWT)-led Caribou ZOI working group.
102	DDMI Technical report response (PR #551)	Review of Monitoring and Mitigation Plans – Wildlife and Water	Dominion Diamond will advance the environmental monitoring and mitigation plans according to the applicable review process including engagement with stakeholders where appropriate.
103	DFO Technical Report Response (PR#552) AND EC Technical Report Response (PR #554) and IEMA Technical report response (PR#556)	AEMP development – AEMP	Dominion Diamond will continue to engage with regulators and communities on the design of the AEMP following the completion of the Environmental Assessment review process. Dominion intends to conduct an AEMP engagement workshop with interested parties prior to submission of the final plan to the WLWB. Dominion Diamond intends to conduct an AEMP engagement workshop with interested parties prior to submission to the WLWB.
104	DFO Technical Report Response (PR#552)	Aquatic Response Framework	Early warning action levels for water levels/flow changes for Lake C1/Stream C1 and the Narrows will be incorporated into the existing Ekati Mine AEMP Response Framework for approval by the WLWB under the Ekati Mine water license.
105	DKFN Technical Report Response (#553) LKDFN technical report response (PR#557) TG technical report response (PR#559) YKDFN technical response report (PR#561)	AQEMMP – AQEMMP engagement	As described in the Dominion Diamond's July 24, 2015 letter posted to the MVEIRB public registry regarding the Draft Engagement Program for Amendments to the Ekati Mine Wildlife and Air Monitoring and Management Plans to Incorporate the Jay Project, additional engagement with parties on the AQEMMP (including station locations) will occur following the Environmental Assessment approval and prior to construction of the Project. Dominion Diamond will continue to engage with Tłı̨chǫ government and Tłı̨chǫ Elders along with all of the IBA groups on the design and implementation of the air quality programs. As described above, additional engagement on the AQEMMP will occur following the Environmental Assessment approval and prior to construction of the Project.

			Dominion Diamond will continue to work with the regulators and other parties in future revisions of the AQEMMP prior to the construction of the Project.
106	GNWT technical report response (PR#555) IEMA technical report response (PR#556) YKDFN technical report response (PR#561)	Minewater management plan	Through the environmental assessment process, Dominion Diamond has repeatedly committed to effectively reduce the potential for impacts to the receiving environment through the operation of the mine under its proposed water management plan (e.g., limiting the period of discharge to the receiving environment for less than half the operating years). It is expected that a water quality monitoring and management plan for dike construction will be prepared for the WLWB prior to the start of construction. As part of the Water Licence process, this plan will include total suspended solids limits for the Jay Dike construction. Dominion Diamond accepts the recommendation that a revised mine water management plan be submitted to the Wek'èezhìı Land and Water Board (WLWB); we anticipate this will be a requirement of the Water Licence. As requested in this recommendation, this detailed plan submitted for approval with the Water Licence application will include details of contingencies, monitoring and evaluation, adaptive management trigger thresholds, and timelines for implementation.
107	GNWT technical report response (PR#555)	Wastewater and Processed kimberlite management plan	Dominion Diamond is committed to operating the Project in a manner that is environmentally protective. Therefore, Dominion Diamond will undertake ongoing evaluation of the operating details of the mine water management plan as operational monitoring data become available. Dominion Diamond anticipates that, consistent with current practice at the Ekati Mine, this work may take place through the Wastewater and Processed Kimberlite Management Plan as a requirement of the Ekati Mine Water Licence.
108	IEMA technical report response(PR# 556)	Construction management plan	A construction management plan will be developed during the detailed design stage of the Project that will provide details regarding the handling, placement, and management of sediments and soils associated with the construction of the

	LKDFN technical report response (#557)		dike and Sub-Basin B Diversion Channel. Additional information regarding handling, placement and management of sediments and overburden associated with development of the open pit will be provided in the detailed design report for the Jay WRSA.
109	IEMA technical report response (PR#556) and LKDFN technical report response (PR#557)	Waste rock and ore management plan	Dominion Diamond will provide the WLWB with an updated amendment to the WROMP to incorporate the Jay Project during the permitting process and will work with the WLWB on the timing and details of the submission. Dominion Diamond will extend the WROMP to cover the Jay WRSA; therefore, the adaptive management processes will also apply to the Jay WRSA.
110	TG technical report response (PR#559)	CRMP reporting	Mitigation and monitoring efforts related to the CRMP will be documented and analyzed in the Ekati Mine annual Wildlife Effects Monitoring Program (WEMP) report.
	Traditional Knowledge		
111	LKDFN technical report response (PR#557)	Commitment to TK	Dominion Diamond's commitment to TK will continue through the Jay Project. In addition to Dominion Diamond's established performance record, northern Aboriginal people and regulators can rely on the existing requirements of the Ekati Mine's various regulatory approvals (such as the WLWB-issued Water Licence, for example), Environmental Agreement, and IBAs.
112	LKDFN technical report response (PR#557) NSMA technical report response (PR#558)	Commitment to TK	Dominion Diamond will continue to work in collaboration with all of the IBA communities to develop and implement effective TK projects, and will utilize external assistance when necessary to ensure the success of a TK project. Dominion Diamond will continue to be open to discussing new ideas for TK Projects or ideas on improving existing TK Projects with the IBA communities. However, Dominion Diamond recommends against the MVEIRB mandating TK requirements in a specific short timeframe as recommended by NSMA because this would be done with no context for TK ideas or initiatives that may be under development and could

			'force' agreements before the merits and details have been adequately laid out.
113	LKDFN technical report response (PR#557) TG technical report response (PR#559)	TK in Jay design	Dominion Diamond will continue to request TK information related to the Jay Project and consider that information equally in project design and implementation. Dominion Diamond will continue to hold discussions and receive input from IBA community members regarding the design of the caribou crossings for the Jay Road. This input will be incorporated into the detailed design of the Jay Road.
114	NSMA technical report response (PR#558)	Collaboration on TK	Dominion Diamond will continue to work in collaboration with all of the IBA communities to develop and implement effective TK projects, and will utilize external assistance when necessary to ensure the success of a TK project. Dominion Diamond's approach to TK projects is focused on utilizing local TK Holders as leading 'experts' to provide input and direction. To this end, Dominion Diamond has previously proposed the concept of a multi-party elders panel that could provide input and guidance to TK projects at the Ekati Mine including the Jay Project. Although this initiative was not pursued by the Aboriginal organizations at that time, the approach of working firstly with local TK Holders themselves remains Dominion Diamond's preferred approach. Dominion Diamond will continue to be open to discussing new ideas for TK projects or ideas on improving existing TK projects with the IBA communities.
115	NSMA technical report response (PR#558)	Support for TK	The developer shall provide ongoing support, in kind or financial, to the aboriginal parties in order that they can manage and keep track of TK that is relevant to the Project. This TK will be shared with the developer, in accordance with the sharing agreement (PR# 558 recommended measure 2 p2-2), and used for environmental management at the Ekati Mine.
116	TG technical report response (PR#559)	TK support and integration	In an effort to continually supplement the existing body of knowledge, Dominion Diamond continues to support long-term monitoring programs and community-based TK projects. One goal of these programs is to support the ongoing

			collection, documentation, recording, and verification of TK throughout the life of the Ekati Mine. These activities will provide opportunities to integrate TK into the Jay Project (and Ekati Mine) on a continual basis.
	Dangerous Goods		
117	Transport Canada technical response report (PR#560)	Compliance with transportation of dangerous goods Act	Dominion Diamond will continue to comply with all requirements of the *Transportation of Dangerous Goods Act and Regulations* and seek clarification or guidance where required. Additionally, Dominion Diamond will continue to ensure that the Ekati Diamond Mine airstrip is operated under all appropriate certifications and associated standards, including those referenced above.

Appendix D: Public registry index

PR#	Document Name	Originator	Date
1	Referral letter from AANDC - Jay-Cardinal Project	AANDC	21-Nov-13
2	Notification of EA referral to distribution list	Review Board	22-Nov-13
3	Notification to developer of referral to EA	Review Board	22-Nov-13
4	Project Description Jay-Cardinal Project	Developer	22-Nov-13
5	Project Description App 2A - draft Terms of Reference	Developer	22-Nov-13
6	Project Description App 3A - Aquatic Baseline Report	Developer	22-Nov-13
7	Project Description App 4A - Underground Mining Concept	Developer	22-Nov-13
8	Project Description App 4B - Civil Engineering Components	Developer	22-Nov-13
9	Project Description App 4C - Report on Drawdown Alternatives	Developer	22-Nov-13
10	Land Use Permit Application Form - Oct 18, 2013	Developer	22-Nov-13
11	Land Use Permit Application - Map - Oct 18, 2013	Developer	22-Nov-13
12	Engagement Record - Oct 18, 2013	Developer	22-Nov-13
13	Spill Contingency Plan - Oct 18, 2013	Developer	22-Nov-13
14	Water Licence Application Form - Oct 18, 2013	Developer	22-Nov-13
15	Water Licence Application - Mining Questionnaire - Oct 18, 2013	Developer	22-Nov-13
16	SARA notification letter to EC	Review Board	29-Nov-13
17	Letter from IEMA to WLWB - preliminary screening	IEMA	04-Dec-13
18	Letter from EC re SARA notification	EC	10-Dec-13
19	Request for comments on developer's proposed ToR	Review Board	11-Dec-13
20	Template for recommendations on Terms of Reference	Review Board	11-Dec-13
21	Notification of scoping sessions - January 2014	Review Board	13-Dec-13

22	Notification letter to NIRB	Review Board	13-Dec-13
23	DDEC engagement session summaries Aug/Nov 2013	Developer	18-Dec-13
24	IEMA comments on DDEC draft TOR	IEMA	17-Dec-13
25	YKDFN comments on DDEC ToR	YKDFN	20-Dec-13
26	GNWT comments on DDEC ToR	GNWT	20-Dec-13
27	Federal department comments on DDEC draft ToR	NPMO (EC/DFO/TC/ AANDC)	23-Dec-13
28	EC comments on DDEC draft ToR	EC	23-Dec-13
29	Public scoping session agenda - Yellowknife Jan 7, 2014	Review Board	03-Jan-14
30	Summary table - comments on draft DDEC ToR	Review Board	03-Jan-14
31	Comments summary table - DDEC draft ToR	Review Board	06-Jan-14
32	Technical scoping session agenda	Review Board	03-Jan-14
33	DDEC Scoping session presentation	Developer	08-Jan-14
34	Issues scoping meeting agenda - Behchoko, Jan 14	Review Board	13-Jan-14
35	Issues scoping meeting agenda - Lutsel K'e Jan 16	Review Board	13-Jan-14
36	Letter from Ecology North re draft Terms of Reference	Ecology North	16-Jan-14
37	draft Terms of Reference Jay-Cardinal Project	Review Board	24-Jan-14
38	Comments requested on draft Terms of Reference	Review Board	24-Jan-14
39	Letter requesting applications for party status	Review	27-Jan-14

		Board	
40	Cumulative Effects - Canol Shale Potential Future Dev	Review Board	08-Jan-14
41	Scoping sessions - Collected summary notes Jan 2014	Review Board	23-Jan-14
42	Strategic Approaches to Cumulative Effects, Noble 2008	Review Board	08-Jan-14
43	Review comment summary table - with Board response	Review Board	24-Jan-14
44	Scenario analysis - Best practices in assessing CE from MGP	AANDC	08-Jan-14
45	AANDC Comments on draft Terms of Reference	AANDC	10-Feb-14
46	GNWT comments on Draft Terms of Reference	GNWT	10-Feb-14
47	ToR comments and party status reminder	Review Board	11-Feb-14
48	LKDFN Comments on Draft ToR	LKDFN	11-Feb-14
49	Note to File - documents uploaded to ORS	Review Board	17-Feb-14
50	Party status for Jay-Cardinal Project	Review Board	21-Feb-14
51	Interim draft Work Plan	Review Board	21-Feb-14
52	Terms of Reference	Review Board	21-Feb-14
53	Cover letter for Terms of Reference and Work Plan	Review Board	21-Feb-14
54	DKFN comments on draft Terms of Reference	DKFN	14-Feb-14
55	DDEC cover letter for LKDFN TOR responses	Developer	14-Feb-14
56	DDEC response to DKFN comments on the draft ToR	Developer	17-Feb-14
57	Review Summary Table for ToR transferred from ORS	Review Board	24-Feb-14

58	Party status applications (compiled)	Parties	19-Feb-14
59	Alternatives Analysis Methodology	Developer	12-Feb-14
60	Meeitng between MVRB staff and Dominion Diamond	Review Board	18-Mar-14
61	Dominion Diamond letter to Deninu Kue First Nation	Developer	21-Mar-14
62	Letters from CanNor and GNWT re participation	NPMO/GNWT	28-Mar-14
63	Letter from CanNor and GNWT to NSMA re participation	NPMO/GNWT	29-Apr-14
64	Letter from Dominion to MVRB - project update	Developer	09-May-14
65	Letter from Fort Resolution Metis Council to Dominion	FRMC	16-May-14
66	Revised draft Terms of Reference - cover letter	Developer	18-Jun-14
67	Revised draft Terms of Reference - track changes	Developer	18-Jun-14
68	Revised draft Terms of Reference - clean copy	Developer	18-Jun-14
69	Jay Project Description Report Addendum	Developer	18-Jun-14
70	Ekai Engagement Plan for Jay Project June 2014	Developer	18-Jun-14
71	Note to file - review of revised draft Terms of Reference	Review Board	19-Jun-14
72	Notice of timeline requirements under 2014 MVRMA	Review Board	26-Jun-14
73	Revised Terms of Reference - Jay Project	Review Board	17-Jul-14
74	Revised TOR Review Comment Table - Jay (ORS docs)	Review Board	17-Jul-14
75	GNWT letter to DDEC re Socio-Ec Agreement	GNWT	30-Jul-14
76	IEMA letter to DDEC on Dust Suppression Study	IEMA	18-Jul-14
77	Jay Project update - Note to File	Review Board	03-Sep-14

78	LKDFN letter to DDEC - response to TLU/TK Baseline Report	LKDFN	02-Oct-14
79	DDEC letter to GNWT re Socio-Economic Agreement	Developer	14-Oct-14
80	000_Cover_Letter	Developer	06-Nov-14
81	00_PlainLanguageSummary_1_English	Developer	06-Nov-14
82	00_PlainLanguageSummary_2_Dene_Suline	Developer	06-Nov-14
83	00_PlainLanguageSummary_3_TłĮcho	Developer	06-Nov-14
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85	00_PlainLanguageSummary_5_Inuinnaqtun	Developer	06-Nov-14
86	S_00_Overall_TOC	Developer	30-Oct-14
87	S_01_Introduction	Developer	06-Nov-14
88	S_01A_Terms_of_Reference	Developer	06-Nov-14
89	S_01B_Code_of_Ethics_and_Business_Conduct	Developer	06-Nov-14
90	S_01C_Sustainable_Development_Policy	Developer	06-Nov-14
91	S_01D_Concordance_Table	Developer	06-Nov-14
92	S_01E_Commitments_Table	Developer	06-Nov-14
93	S_02_Project_Alternatives	Developer	06-Nov-14
94	S_03_Project_Description	Developer	30-Oct-14
95	S_03A_Minewater_Management_Plan	Developer	06-Nov-14
96	S_03B_Jay_Project_Conceptual_Closure_and_Reclamation_Plan	Developer	06-Nov-14
97	S_03C_Risk_Assessment_for_Accidents_and_Malfunctions	Developer	06-Nov-14
98	S_04_Community_Engagement	Developer	06-Nov-14
99	S_04A_Ekati_Engagement_Plan	Developer	06-Nov-14
100	S_04B_Engagement_Registry	Developer	06-Nov-14
101	S_05_Traditional_Knowledge	Developer	06-Nov-14
102	S_06_Environmental_Assessment_Approach	Developer	06-Nov-14
103	S_07_Air_Quality_Assessment	Developer	06-Nov-14
104	S_07A_Summary_Results	Developer	06-Nov-14
105	S_07B_Air_Emission_Details	Developer	06-Nov-14
106	S_07C_Dispersion_Modelling_Approach	Developer	06-Nov-14
107	S_08_Water_Quality_and_Quantity	Developer	06-Nov-14

108	S_08A_Hydrogeological_Model	Developer	06-Nov-14
109	S_08B_Jay_Post_Closure_Hydrogeological_Model	Developer	06-Nov-14
110	S_08C_Misery_Hydrogeological_Model	Developer	06-Nov-14
111	S_08D_Regional_Water_Balance_Model	Developer	06-Nov-14
112	S_08E_Water_Quality_Modelling	Developer	06-Nov-14
113	S_08E-1_Projected_Misery_Pit_Concentrations_Mean	Developer	06-Nov-14
114	S_08E-2_Projected_Misery_Pit_Concentrations_99Percentile	Developer	06-Nov-14
115	S_08F_LDS_LDG_Hydrodynamic_Modelling	Developer	06-Nov-14
116	S_08F-1_Near_Field_Model	Developer	06-Nov-14
117	S_08F-2_Christine_Lake_Predictions	Developer	06-Nov-14
118	S_08F-3_Slipper_Lake_Predictions	Developer	06-Nov-14
119	S_08F-4_LacduSauvage_Predictions_Part_1	Developer	06-Nov-14
120	S_08F-4_LacduSauvage_Predictions_Part_2	Developer	06-Nov-14
121	S_08F-5_LacDeGras_Predictions	Developer	06-Nov-14
122	S_08G_Jay_and_Misery_Pit_Hydrodynamic_Modelling	Developer	06-Nov-14
123	S_08H_Acute_Toxicity_for_Effluent	Developer	06-Nov-14
124	S_09_Fish_and_Fish_Habitat	Developer	06-Nov-14
125	S_09A_Conceptual_Offsetting_Plan	Developer	06-Nov-14
126	S_09B_Conceptual_Fish_Out_Plan	Developer	06-Nov-14
127	S_09C_Conceptual_AEMP_Plan	Developer	06-Nov-14
128	S_10_Terrain	Developer	06-Nov-14
129	S_11_Vegetation	Developer	06-Nov-14
130	S_11A_Soils	Developer	06-Nov-14
131	S_11B_Plant_Species_List	Developer	06-Nov-14
132	S_12_Barren-Ground_Caribou	Developer	06-Nov-14
133	S_12A_Caribou_Seasonal_Range_Quality_Maps	Developer	06-Nov-14
134	S_12B_Area_and_Configuration_of_Habitat_Types	Developer	06-Nov-14
135	S_13_Wildlife_and_Wildlife_Habitat	Developer	06-Nov-14
136	S_13A_Landscape_Metrics	Developer	06-Nov-14
137	S_13B_Noise	Developer	06-Nov-14

138	S_13C_Wildlife_Resource_Selection_Function_Maps	Developer	06-Nov-14
139	S_13D_Noise_Assess_and_Wildlife_Zones	Developer	06-Nov-14
140	S_14_Socio-Economics	Developer	06-Nov-14
141	S_14A_Economic_Impact_Report	Developer	06-Nov-14
142	S_15_Culture	Developer	06-Nov-14
143	S_16_Environmental_Effects_on_Project	Developer	06-Nov-14
144	S_17_Cumulative_Effects_Summary	Developer	06-Nov-14
145	S_18_Summary_and_Conclusions	Developer	06-Nov-14
146	01_Annex I_Air_Quality_and_Meterological_Baseline	Developer	06-Nov-14
147	02_Annex II_Noise_Baseline	Developer	06-Nov-14
148	02A_Annex_II_App_A_Calibration_Record	Developer	06-Nov-14
149	03_Annex III_Geology_Baseline	Developer	06-Nov-14
150	04_Annex IV_Permafrost_Baseline	Developer	06-Nov-14
151	04A_Annex_IV_App_A_Thermistor_Data	Developer	06-Nov-14
152	05_Annex V_Soils_Baseline	Developer	06-Nov-14
153	05A_Annex_V_App_A_Soils_Data	Developer	06-Nov-14
154	06_Annex VI_Vegetation_Baseline	Developer	06-Nov-14
155	06A_Annex_VI_App_A_Plant_Species_List	Developer	06-Nov-14
156	06B_Annex_VI_App_B_Potential_Plant_Species_List	Developer	06-Nov-14
157	06C_Annex_VI_App_C_Vegetation_Photos	Developer	06-Nov-14
158	07_Annex VII_Wildlife_Baseline	Developer	06-Nov-14
159	08_Annex VIII_Geochemistry_Baseline	Developer	06-Nov-14
160	08A_Annex_VIII_App_A_Geochemical_Statistics	Developer	06-Nov-14
161	08B_Annex_VIII_App_B_Acid_Base_Accounting	Developer	06-Nov-14
162	08C_Annex_VIII_App_C_Bulk_Metal_Results	Developer	06-Nov-14
163	08D_Annex_VIII_App_D_Short_Term_Leach_Testing_Results	Developer	06-Nov-14
164	08E_Annex_VIII_App_E_Mineralogy	Developer	06-Nov-14
165	08F_Annex_VIII_App_F_Humidity_Cell_Testing_Results	Developer	06-Nov-14
166	08G_Annex_VIII_App_G_Humidity_Cell_Testing_Figures	Developer	06-Nov-14
167	08H_Annex_VIII_App_H_Sulphide_Calculations	Developer	06-Nov-14

168	09_Annex IX_Hydrogeology_Baseline	Developer	06-Nov-14
169	09A_Annex_IX_Westbay_Factual_Report	Developer	06-Nov-14
170	09B_Annex_IX_Hydrogeological_Testing_Memo	Developer	06-Nov-14
171	09C_Annex_IX_App_C_DiavkGroundQ_Data	Developer	06-Nov-14
172	09D_Annex_IX_App_D_EkatiGroundQ_Data	Developer	06-Nov-14
173	09E_Annex_IX_App_E_EkatiGroundPlot_Data	Developer	06-Nov-14
174	09F_Annex_IX_App_F_DiavkGroundPlot_Data	Developer	06-Nov-14
175	10_Annex X_Hydrology_Baseline	Developer	06-Nov-14
176	10A_Annex_X_App_A_AnnotatedBiblio	Developer	06-Nov-14
177	10B_Annex_X_App_B_ClimateData	Developer	06-Nov-14
178	10C_Annex_X_App_C_HistoricalData	Developer	06-Nov-14
179	10D_Annex_X_App_D_BasinCharacter	Developer	06-Nov-14
180	10E_Annex_X_App_E_FieldData	Developer	06-Nov-14
181	10F_Annex_X_App_F_ModelCalibration	Developer	06-Nov-14
182	11_Annex XI_Water_and_Sediment_Quality_Baseline	Developer	06-Nov-14
183	11A_Annex_XI_App_A_DataReview	Developer	06-Nov-14
184	11B_Annex_XI_App_B_QAQC	Developer	06-Nov-14
185	11C_Annex_XI_App_C_FieldProfiles	Developer	06-Nov-14
186	11D_Annex_XI_App_D_LightData	Developer	06-Nov-14
187	11E_Annex_XI_App_E_WaterData	Developer	06-Nov-14
188	11F_Annex_XI_App_F_SedData	Developer	06-Nov-14
189	12_Annex XII_Plankton_Baseline	Developer	06-Nov-14
190	12A_Annex_XII_App_A_HistoricalData	Developer	06-Nov-14
191	12B_Annex_XII_App_B_Taxonomy	Developer	06-Nov-14
192	13_Annex XIII_Benthic_Invertebrate_Baseline	Developer	06-Nov-14
193	13A_Annex_XIII_App_A_Historical	Developer	06-Nov-14
194	13B_Annex_XIII_App_B_MeshSize	Developer	06-Nov-14
195	13C_Annex_XIII_App_C_QAQC	Developer	06-Nov-14
196	13D_Annex_XIII_App_D_FieldWaterData	Developer	06-Nov-14
197	13E-1_Annex_XIII_App_E-1_Taxonomy	Developer	06-Nov-14

198	13E-2_Annex_XIII_App_E-2_EcoAnalystRefs	Developer	06-Nov-14
199	13F_Annex_XIII_App_F_Taxa	Developer	06-Nov-14
200	14_Annex XIV_Fish_and_Fish_Habitat_Baseline	Developer	06-Nov-14
201	14A_Annex_XIV_App_A_Historical	Developer	06-Nov-14
202	14B_Annex_XIV_App_B_Photos	Developer	06-Nov-14
203	14C_Annex_XIV_App_C_HydroAcoustic	Developer	06-Nov-14
204	14D_Annex_XIV_App_D_Limno	Developer	06-Nov-14
205	14E_Annex_XIV_App_E_CPUE	Developer	06-Nov-14
206	14F_Annex_XIV_App_F_FishLife	Developer	06-Nov-14
207	15_Annex XV_Socio_Economic_Baseline	Developer	06-Nov-14
208	16_Annex XVI_Archaeology_Baseline	Developer	06-Nov-14
209	16A_Annex_XVI_App_A_Arky_RSA_Sites	Developer	06-Nov-14
210	16B_Annex_XVI_App_B_Arky_BSA_Sites	Developer	06-Nov-14
211	17_Annex XVII_Traditional_Land_Use_and_Traditional_Knowledge_Baseline	Developer	06-Nov-14
212	DAR Table of Contents and Appendices with hyperlinks	Developer	07-Nov-14
213	DAR Annexes & Appendices Table of Contents with hyperlinks	Developer	07-Nov-14
214	Note to file - DAR submission and next steps	Review Board	07-Nov-14
215	DAR Table of Contents with hyperlinks	Review Board	07-Nov-14
216	Dominion letter to LKDFN re TK Baseline Report	Developer	10-Nov-14
217	Geotech advisor CV_B Watts	Review Board	20-Nov-14
218	Caribou advisor - Anne Gunn resume	Review Board	25-Nov-14
219	Dominion Information Sessions Dec 11-12	Developer	20-Nov-14
220	Jay DAR Adequacy Review	Review Board	28-Nov-14
221	Jay DAR Adequacy Review cover letter	Developer	28-Nov-14
222	Water Quality advisor - Kathy Racher CV	Review	01-Dec-14

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223	Aquatics advisor - Neil Hutchinson resume	Review Board	01-Dec-14
224	Jay Dike Factual Report - Volume 1 Part A	Developer	21-Nov-14
225	Jay Dike Factual Report - Volume 1 Part B	Review Board	21-Nov-14
226	Jay Dike Factual Report - Volume 1 Part C	Developer	21-Nov-14
227	Jay Dike Factual Report - Volume 1 Part D	Developer	21-Nov-14
228	Jay Pit Factual Report - Volume 2, Part A	Developer	21-Nov-14
229	Jay Pit Factual Report - Volume 2, Part B	Developer	21-Nov-14
230	Jay Pit Factual Report - Volume 2, Part C	Developer	21-Nov-14
231	Jay Pit Factual Report - Volume 2, Part D	Developer	21-Nov-14
232	Jay Project Factual Reports for DAR - cover letter	Developer	21-Nov-14
233	NPMO letter re federal department participation	NPMO (EC/DFO/TC/ AANDC)	03-Dec-14
234	Jay DAR Addendum - Cumulative Effects with Sable Pit	Developer	08-Dec-14
235	01 - Jay Project - Overview Presentation - Dec8	Developer	10-Dec-14
236	02 - DAR - REGULATOR MEETING - Engineering Project Description 2014 Dec4	Developer	10-Dec-14
237	03 - DAR - REGULATOR MEETING - Closure and Reclamation 2014 Dec4	Developer	10-Dec-14
238	04 - DAR - REGULATOR MEETING - Socio-Economics -27Nov2014	Developer	10-Dec-14
239	05 - DAR - REGULATOR MEETING - Archaeology - 5Nov2014 (gcsh)	Developer	10-Dec-14
240	06 - DAR - REGULATOR MEETING - Hydrology - 20Nov2014	Developer	10-Dec-14
241	07 - DAR - REGULATOR MEETING-WQ	Developer	10-Dec-14
242	09 - DAR - REGULATOR MEETING - Terrestrial - 28Nov2014	Developer	10-Dec-14
243	08 - DAR - REGULATOR MEETING - FISH	Developer	10-Dec-14
244	Dominion letter to MVRB re: DAR adequacy review	Developer	15-Dec-14
245	GNWT letter to MVEIRB re departmental participation	Parties/Publi c	18-Dec-14
246	Adequacy Review responses from Dominion	Developer	18-Dec-14

247	Work Plan - Jay Project revised Dec 2014	Review Board	19-Dec-14
248	Information Request Phase instructions	Review Board	19-Dec-14
249	Note to File - Adequacy Review vs. Conformity Check	Review Board	06-Jan-15
250	Technical meeting agenda - protein-energy modeling	Review Board	13-Jan-15
251	Don Russell CV - independent consultant for modeling meeting	Review Board	13-Jan-15
252	Energy Protein model for caribou - Kiggavik Project Effects	Don Russell	14-Jan-15
253	Rangifer Vol. 34, 2014 Special Issue No. 22 White et al	Don Russell	14-Jan-15
254	Adequacy Review responses Vol 1	Developer	19-Jan-15
255	Adequacy Review responses Vol 2 Socio-Ec	Developer	19-Jan-15
256	Adequacy Review responses Vol 3 Air Quality Assessment Update	Developer	19-Jan-15
257	Adequacy Review responses Vol 4 Lac de Gras Hydrodynamic Model Updates	Developer	19-Jan-15
258	Adequacy Review responses Vol 5 Accidents and Malfunctions Risk Assessment	Developer	19-Jan-15
259	Adequacy Review responses Vol 6 Thermal Assessment Misery Pit	Review Board	19-Jan-15
260	Dominion letter to MVRB re Jay Project timeline	Developer	22-Jan-15
261	Caribou technical meeting summary notes 19 Jan 2015	Review Board	28-Jan-15
262	Dominion DAR Energy Model Presentation - 19 Jan 2015	Review Board	28-Jan-15
263	Russell Energy-Protein model presentation - 19 Jan 2015	Review Board	28-Jan-15
264	MVEIRB response to Dominion letter of Jan 22	Review Board	30-Jan-15
265	MVEIRB letter to Dominion re adequacy of caribou modeling	Review Board	30-Jan-15

266	Adequacy Review Responses 02Feb2015	Developer	02-Feb-15
267	Human and Wildlife Health Risk Assessment Report 02Feb2015	Developer	02-Feb-15
268	Human and Wildlife Health Risk Assessment Appendices 02Feb2015	Developer	02-Feb-15
269	December Engagement Meeting Commitments	Developer	02-Feb-15
270	IR due date reminder for Feb 16 - Tech Session dates confirmed April 21-23	Review Board	03-Feb-15
271	Review Board information requests uploaded to ORS	Review Board	04-Feb-15
272	Letter from YKDFN to MVRB requesting IR extension	YKDFN	11-Feb-15
273	Letter from LKDFN requesting extension to IR deadline	LKDFN	12-Feb-15
274	Letter from TłĮcho Gov re IR deadline extension	TG	12-Feb-15
275	Letter from DKFN re IR deadline extension	DKFN	13-Feb-15
276	IR due date extended to Feb 23	Review Board	13-Feb-15
277	Reasons for Decision - Adequacy for Jay DAR	Review Board	13-Feb-15
278	Ekati Diamond Mine 2012 Environmental Impact Report	Review Board	12-Feb-15
279	Ekati 2012 WEMP Wildlife Camera Monitoring Report	Review Board	12-Feb-15
280	Ekati 2013 WEMP Wildlife Camera Monitoring Report	Review Board	12-Feb-15
281	DDEC Aboriginal Cultural Workshop Agenda	Developer	20-Feb-15
282	DKFN letter to MVEIRB re consultation	DKFN	26-Feb-15
283	Information requests directed to parties other than DDEC	Review Board	27-Feb-15
284	Meeting on IRs and technical session dates	Review Board	02-Mar-15
285	Summary of Feb2015 Jay IRs	Review Board	06-Mar-15

286	Note to file - Summary table of IRs	Review Board	06-Mar-15
287	2015 Annual Work Plan	Developer	13-Mar-15
288	Meeting notes between GNWT and Dominion 3Feb2015	Developer	12-Mar-15
289	Follow up from Dominion and GWNT meeting on 3 Feb 2015	Developer	12-Mar-15
290	GNWT response to DKFN letter	GNWT	12-Mar-15
291	DRAFT Agenda for Jay Technical Sessions	Review Board	17-Mar-15
292	Information request responses from Dominion	Developer	20-Mar-15
293	Request for technical advisor CVs for technical session	Review Board	24-Mar-15
294	Dominion letter re Diavik Engagement	Developer	24-Mar-15
295	Technical Session Agenda	Review Board	26-Mar-15
296	Emails from Dominion to Aboriginal groups re IRs	Developer	27-Mar-15
297	IEMA technical advisor - Poole CV	IEMA	30-Mar-15
298	Response to IRs directed to IEMA	IEMA	30-Mar-15
299	KIA technical advisors - CVs	KIA	30-Mar-15
300	GNWT technical advisor CVs combined	GNWT	30-Mar-15
301	DKFN technical advisors - CVs	DKFN	31-Mar-15
302	Diavik (DDMI) response to Board IR #77 on significance	DDMI	07-Apr-15
303	Federal Department responses to IRs	NPMO (EC/DFO/TC/ AANDC)	07-Apr-15
304	GNWT responses to information requests	GNWT	07-Apr-15
305	Dominion responses to IRs_7April2015	Developer	07-Apr-15
306	App A Socio-Ec Model IR responses	Developer	07-Apr-15
307	App B Modeling Compendium IR responses	Developer	07-Apr-15
308	App C Traffic Caribou IR responses Dominion	Developer	07-Apr-15
309	App D Post Closure Caribou Habitat IR responses Dominion	Developer	07-Apr-15

310	App E Pre-Feasibility Dike Design IR responses Dominion	Developer	07-Apr-15
311	Baseline_Aquatic_Health_Memo	Review Board	07-Apr-15
312	Baseline_Benthic_Invertebrates	Developer	07-Apr-15
313	App F Power Supply IR responses Dominion	Developer	07-Apr-15
314	Baseline_Fish_and_Fish_Habitat	Developer	07-Apr-15
315	Baseline_Hydrology_2014	Developer	07-Apr-15
316	Baseline_Plankton_Report_2014	Developer	07-Apr-15
317	Baseline_water and sediment quality_2014	Developer	07-Apr-15
318	App G Diavik Stakeholder Engagement IR responses Dominion	Developer	07-Apr-15
319	IR responses table of contents with hyperlinks	Review Board	08-Apr-15
320	IR responses TOC with hyperlinks	Review Board	08-Apr-15
321	Additional Board information requests to Dominion	Review Board	10-Apr-15
322	Dominion CVs and bios for participants at tech session	Developer	10-Apr-15
323	Ekati Engagment Plan - letter from YKDFN to DDEC	YKDFN	10-Apr-15
324	Document transfer WLWB registry to MVRB registry	Review Board	14-Apr-15
325	IR responses and scope of development considerations	Review Board	14-Apr-15
326	Bio for Gaeleen MacPherson -Dominion Diamond	Developer	14-Apr-15
327	Cultural Workshop Report	Developer	15-Apr-15
328	Culture Workshop Presentation - Appendix A	Developer	15-Apr-15
329	JayIRs_with responses_8Apr2015_Registry	Review Board	16-Apr-15
330	Technical session April 20-24 information for parties	Review Board	16-Apr-15
331	01_Technical_Session-Project_Description	Developer	16-Apr-15

332	02_Technical_Session-Wildlife	Developer	16-Apr-15
333	03_Technical_Session-Caribou	Developer	16-Apr-15
334	04_Technical_Session-Hydrogeology	Developer	16-Apr-15
335	05_Technical_Session-Hydrology_WQ	Developer	16-Apr-15
336	06_Technical_Session-Fish_and_Fish_Habitat	Developer	16-Apr-15
337	07_Technical_Session-Socio-Economics	Developer	16-Apr-15
338	08_Technical_Session-Air_Quality	Developer	16-Apr-15
339	W Klassen Resume - Technical Session Facilitator	Review Board	17-Apr-15
340	Review Board Geochem advisor CV	Review Board	17-Apr-15
341	Kate Mansfield participation at technical sessions	Review Board	17-Apr-15
342	Dominion responses to Apr10 Board IRs	Developer	17-Apr-15
343	Jay technical session agenda 17 April 2015 revised	Review Board	17-Apr-15
344	Diavik A21 Dike Design Report - response to MVEIRB-IR-109	Developer	17-Apr-15
345	Master Jay IR and Response Table for Tech Session	Review Board	20-Apr-15
346	Letter to DDEC from IEMA re 2014 bear and camera reports	IEMA	20-Apr-15
347	Note to File re Commitments and homework from Technical Meetings Apr 20	Review Board	20-Apr-15
348	Tech Session, homework, commitments and undertakings - April 21st 2015	Review Board	21-Apr-15
349	IEMA 2014 Env. Workshop Presentation--Dust Suppression	IEMA	21-Apr-15
350	Commitments from the Jay Project Tech Sessions - April 22 2015	Review Board	22-Apr-15
351	Commitments from Jay Technical Sessions, Day 4 - April 23 2015	Review Board	23-Apr-15
352	Technical session transcripts April 20, 2015	Review	20-Apr-15

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353	Technical session transcipts April 21, 2015	Review Board	21-Apr-15
354	Technical session transcripts April 22, 2015	Review Board	22-Apr-15
355	Technical session transcripts April 23, 2015	Review Board	23-Apr-15
356	Proposed alt road 4 caribou map from technical session April 21, 2015	Review Board	24-Apr-15
357	Commitments list from Tech Sessions - April 20-24 2015 combined	Review Board	24-Apr-15
358	Master Commitments list from Tech Sessions - April 20-24 2015	Review Board	27-Apr-15
359	Technical session transcripts April 24, 2015	Review Board	24-Apr-15
360	GNWT-Dominion meeting summary April 22, 2015	GNWT/DDEC	27-Apr-15
361	Management Plan list with submission dates	Developer	24-Apr-15
362	Tech session homework #20 Appendix B - Figures 6-3 and 6-6	Developer	22-Apr-15
363	Tech session homework #23 - shoal habitat	Developer	24-Apr-15
364	Note to file - Dominion and Board staff teleconference	Review Board	29-Apr-15
365	GNWT letter to MVEIRB re Environmental Agreement and Jay Project	GNWT	06-May-15
366	GNWT letter to MVEIRB re CEAMMF	GNWT	06-May-15
367	GNWT CEAMM Framework 23 Apr 2015	GNWT	06-May-15
368	Workplan - Jay Project revised May 2015	Review Board	08-May-15
369	Tech Session Undertaking #23 - NPMO response	NPMO	08-May-

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370	Undertaking #17 from tech session - ENR response	GNWT	08-May-15
371	Tech Session Undertakings submitted by Dominion	Developer	08-May-15
372	Jay Wildlife Road Mitigation Plan_draft	Developer	08-May-15
373	Tech session undertaking -13(Supporting Excel File)	Developer	08-May-15
374	Tech session undertaking-11(Supporting Excel File)	Developer	08-May-15
375	W2012L2-0001_Ekati_AEMP_2013_Annual_Report_Part 1_Evaluation_of_Effects_Mar 31_14	Developer	08-May-15
376	W2012L2-0001_Ekati_AEMP_2013_Annual_Report_Part 2_DataReport_Mar 31_14	Developer	08-May-15
377	W2012L2-0001_Ekati_AEMP_2013_Annual_Report_Part 3_Statistical_Report_Mar 31_14	Developer	08-May-15
378	W2012L2-0001_Ekati_AEMP_2013_Annual_Report_Summary_Report_Mar 31_14	Developer	08-May-15
379	W2012L2-0001 - Ekati - AEMP - 2014 Annual Report - Part 1 Evaluation of Effects - Mar 31_15	Developer	08-May-15
380	W2012L2-0001 - Ekati - AEMP - 2014 Annual Report - Part 2 Data Report - Mar 31_15	Developer	08-May-15
381	W2012L2-0001 - Ekati - AEMP - 2014 Annual Report - Part 3 Statistical Report - Vol 1 - Mar 31_15	Developer	08-May-15
382	W2012L2-0001 - Ekati - AEMP - 2014 Annual Report - Part 3 Statistical Report - Vol 2 - Mar 31_15	Developer	08-May-15
383	W2012L2-0001 - Ekati - AEMP - 2014 Annual Report - Summary Report - Mar 31_15	Developer	08-May-15
384	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 1-6 - Apr 13_15	Developer	08-May-

			15
385	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 7 Part 1 - Apr 13_15	Developer	08-May-15
386	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 7 Part 2 - Apr 13_15	Developer	08-May-15
387	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 7 Part 3 - Apr 13_15	Developer	08-May-15
388	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 8-12 - Apr 13_15	Developer	08-May-15
389	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Appendix 13 - Apr 13_15	Developer	08-May-15
390	W2012L2-0001 - Ekati - 2014 Air Quality Monitoring Program - Report - Apr 13_15	Developer	08-May-15
391	EKATI_Interim_Closure_and_Reclamation_Plan_Aug2011	Developer	08-May-15
392	W2009L2-0001 - BHP - AEMP - 2012 to 2015 Design Plan - May 1_13	Developer	08-May-15
393	W2009L2-0001 - BHP - Air Quality Monitoring Program - 2011 Version - Aug 3_11	Developer	08-May-15
394	W2012L2-0001 - Ekati - AEMP - Aquatic Response Framework - Version 1 1 - Nov 20_14	Developer	08-May-15
395	W2012L2-0001 - Ekati - Community Engagement Plan - Version 2.0 - Feb 28_14	Developer	08-May-15
396	W2012L2-0001 - Ekati - CRP - 2014 Annual Progress Report - Dec 31_14	Developer	08-May-15
397	W2012L2-0001 - Ekati - Nitrogen Response Plan - Version 1.1 - Jul 3_14	Developer	08-May-15
398	W2012L2-0001 - Ekati - Spill Contingency Plan - Version 8.1 - Jan 30_14	Developer	08-May-15
400	W2012L2-0001 - Ekati - Waste Management Plan - May 7_14	Developer	08-May-

			15
401	W2012L2-0001 - Ekati - WPKMP - Version 4.1 - May 22_14	Developer	08-May-15
402	W2012L2-0001 - Ekati - WROMP - Version 4.1 - May 5_14	Developer	08-May-15
403	Note to file - second round information requests	Review Board	11-May-15
404	KIA Letter to NIRB re transboundary review request	KIA	12-May-15
405	NIRB Letter to Minister Re Consent Required for Transboundary Review Request	NIRB	12-May-15
406	De Beers Snap Lake AQEMMP 2007 submitted by GNWT	GNWT	15-May-15
407	CWS for Dioxins Furans (CCME) - Waste Incineration 2001 submitted by GNWT	GNWT	15-May-15
408	CWS for Mercury (CCME) - Waste Incineration 2000 submitted by GNWT	GNWT	15-May-15
409	Jay Project Commitments Table (draft) 15-05-2015	Review Board	15-May-15
410	Note to file -Dominion and Board staff teleconference	Review Board	29-Apr-15
411	1997 Environmental Agreement plus 2003 addendum	GNWT	19-May-15
412	BHP Environmental Agreement Implementation Protocol 1996-10-08	GNWT	19-May-15
413	Wildlife Road Mitigation Plan Workshop_Agenda_May 2015	Developer	20-May-15
414	Ekati Mine socio-economic agreement	GNWT	20-May-15
415	Communities and diamonds 2014 annual report	GNWT	20-May-

			15
416	Letters from ITI re SEA and Communities and Diamonds report	GNWT	20-May-15
417	Greenhouse Gas Strategy 2011-2015	GNWT	28-May-15
418	Air Quality Meeting Notes - May 7, 2015	Developer	28-May-15
419	Air Quality Regulatory Engagement Follow-up Responses	Developer	28-May-15
420	Jay Project Hydrogeology Modelling Meeting Follow-up Package	Developer	29-May-15
421	Wildlife Road Mitigation Plan workshop meeting notes	Developer	01-Jun-15
422	01_Cover_Letter_Management_Plans	Developer	01-Jun-15
423	02_Draft_Conceptual_AEMP_Design_Plan_Jay	Developer	01-Jun-15
424	03_Draft_Conceptual_AQEMMP_Jay	Developer	01-Jun-15
425	04_Draft_Conceptual_WEMP_Jay	Review Board	01-Jun-15
426	05_Ekati_WPKMP_Conceptual_Jay_Amendment	Developer	01-Jun-15
427	06_Ekati_WROMP_Conceptual_Jay_Amendment	Developer	01-Jun-15
428	IEMA cover letter on Jay second round IRs	IEMA	05-Jun-15
429	Note to file - second round IRs directed to parties	Review Board	08-Jun-15
430	W2012L2-0001 - Ekati - Pit Lakes Water Quality Modelling Predictions - Nov 22_13	Review Board	12-Jun-15
431	Agenda Jay Project Management Plans Workshop June 26 2015 DRAFT	Developer	15-Jun-15
432	Agenda WEMP and CRMP Workshop June 25 2015 DRAFT	Developer	15-Jun-15
433	Caribou Road Mitigation Plan Jay Project_DRAFT_V2	Developer	16-Jun-15
434	Dominion Community Newsletter 2015 April-May	Developer	17-Jun-15
435	W2009L2-0001 - BHP - ICRP - Version 2.4 - Aug 31_11	Review Board	18-Jun-15

436	Workshop Minutes_Wildlife Road Mitigation Plan Workshop	Developer	23-Jun-15
437	Jay Project public hearing dates September 2015	Review Board	23-Jun-15
438	IR2 responses from DFO to MVRB	DFO	23-Jun-15
439	IR2 responses from CanNor and DFO to MVRB	DFO	23-Jun-15
440	Ekati Lynx - Caribou Crossings Plan - Lynx Access Road - Design and Locations	Review Board	24-Jun-15
441	Ekati Lynx - Caribou Crossings Plan - WLWB Directive and Reasons for Decision	Review Board	24-Jun-15
442	Agendas Jay Project WEMP, CRMP and Management Plan Workshops June 25 2015FINAL	Developer	17-Jun-15
443	WEMP and CRMP Workshop Presentations-25June2015	Developer	25-Jun-15
444	Conceptual_AQEMMP_presentation_26June2015	Developer	26-Jun-15
445	Conceptual WPKMP and WROMP_presentation_26June_2015	Developer	26-Jun-15
446	AEMP Conceptual Design presentation_26June2015	Developer	26-Jun-15
447	Note to file - intervener status for Jay Project	Review Board	26-Jun-15
448	01_Jay_Project_Round_2_IR_Responses	Developer	03-Jul-15
449	02_JayProject-Uncertainty_Analyses_Methods_and_Results_for_Hydrogeological_Modelling	Developer	03-Jul-15
450	03_JayProject-Pit_Lake_Hydrodynamic_Modelling-Lower_Bound_Scenario	Developer	03-Jul-15
451	04_Management_Plan_Worshop_Outcome_Letter	Developer	03-Jul-15
452	DAR-GNWT-IR2-11(Supporting Excel File)	Developer	03-Jul-15
453	GNWT round 2 IR responses - cover letter	GNWT	03-Jul-15
454	GNWT round two IR responses	GNWT	03-Jul-15
455	GNWT IR2 response document - Ekati 50 kW Solar - models	GNWT	03-Jul-15
456	DDEC - GNWT letter to MVEIRB re Socio-Economic Agreement	GNWT	07-Jul-15
457	Technical Report instructions - Jay Project	Review Board	07-Jul-15
458	Updated draft Commitments Table 09-July-2015	Review Board	09-Jul-15

459	Workshop Minutes_Conceptual WEMP_June 25 2015 Final	Developer	10-Jul-15
460	Workshop Minutes_Management Plans_June 26 2015 FINAL	Developer	10-Jul-15
461	ORS Review comment table IR2 and Response	Review Board	10-Jul-15
462	Ekati_Diamond_Mine_2012_Environmental_Impact_Report	Review Board	10-Jul-15
463	CE-QUAL-W2 2D Laterally Averaged Hydrodynamic and WQ Model - User Manual	Review Board	10-Jul-15
464	W2012L2-0001 - Ekati - Pit Lakes Water Quality Modelling Predictions - Nov 22_13	Review Board	10-Jul-15
465	W2012L2-0001 - Ekati - Water Quality Modeling of the Koala Watershed - Report and Appendices - Ma	Review Board	10-Jul-15
466	ZOI Draft Guidance Document 10Mar15	Review Board	10-Jul-15
467	Rescan, 2011. BHP_-_Air_Quality_Monitoring_Program_-_2011_Version_-_Aug_3_11	Review Board	10-Jul-15
468	Jay IR2 - attachments transferred from ORS	Review Board	10-Jul-15
469	A science-based interpretation of ongoing productivity of comm, rec or aboriginal	Review Board	10-Jul-15
470	GNWT - Revised Technical Guidance on How to Conduct Effluent Plume Delineation Studies	Review Board	10-Jul-15
471	Jay Project Koala Watershed Model July 10, 2015	Developer	13-Jul-15
472	Dominion letter re GNWT Engagement on WQ modelling	Developer	14-Jul-15
473	Dominion WQ modelling presentation - July 6 workshop	Developer	14-Jul-15
474	Dominion hydrodynamic model presentation - July 6 workshop	Developer	14-Jul-15
475	email_24July2015_RE Summary table of water balance inputs and outputs	Review Board	24-Jul-15
476	Diavik to MVEIRB email re assessment endpoints	DDMI	14-Jul-15
477	MVEIRB letter to DDEC - tech session follow-up on industrial water uses	Review	15-Jul-15

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478	Agenda - Air Quality Management Plan workshop July 20	Developer	16-Jul-15
479	Fate of Dioxins and Furans During Incineration Webster Mackay 2007	GNWT	16-Jul-15
480	Linking Incineration to Dioxins and Furans in Lakebed Sediments (Ekati) Wilson et al. 2011	GNWT	16-Jul-15
481	MV2005C0032 MV2005L2-0015 - De Beers Gahcho Kue - Reason for Decision - Aug11-14	GNWT	16-Jul-15
482	Hydrogeology presentation - 20 July 2015	Developer	20-Jul-15
483	AANDC Minister letter re KIA request for NIRB review	AANDC	20-Jul-15
484	Work Plan - Jay Project - updated July 22, 2015	Review Board	22-Jul-15
485	Agenda - Pre-hearing conference - August 5	Review Board	22-Jul-15
486	CCME Guidance Document on Air Zone Management 2012	GNWT	22-Jul-15
487	Dominion submission - IR response and engagement follow-up	Review Board	24-Jul-15
488	Koala Model with Jay Project Update Memo (UPDATED 2014 11 25)	Developer	27-Jul-15
489	KIA to MVRB Request for Party Status form 27-07-15	KIA	27-Jul-15
490	Email of table shown at Air Quality workshop - July 20	GNWT	27-Jul-15
491	AQEMMP Conceptual Design presentation for July 20 Workshop	Developer	28-Jul-15
492	AQMP 3 yr Workshop presentation (2015 07 20)	Developer	28-Jul-15
493	NSMA request extension for technical reports to Aug 3	NSMA	28-Jul-15
494	LKDFN request for extension of deadline for technical reports	LKDFN	28-Jul-15
495	Technical reports and responses due date extension	Review Board	28-Jul-15
496	Physical Processes and mermomix in pit lakes subject ot ice cover cjce-2012-0132	GNWT	30-Jul-15
497	N7L2-1645-Plume Delineation Report-Nov05 (Diavik)	GNWT	30-Jul-15
498	IEMA Technical Report	IEMA	31-Jul-15
499	IEMA Tech Report reference Fudge and Bodaly 1984	IEMA	31-Jul-15
500	IEMA Tech Report reference Gantner et al. 2009	IEMA	31-Jul-15
501	IEMA Tech Report reference Graeb et al. 2011	IEMA	31-Jul-15
502	IEMA Tech Report reference Morris and Mischke 1999	IEMA	31-Jul-15

503	IEMA Tech Report reference Panzacchi et al. 2013	IEMA	31-Jul-15
504	IEMA Tech Report reference Nellemann_et_al	IEMA	31-Jul-15
505	GNWT Tech Report reference - Incident-based crime statistics	GNWT	31-Jul-15
506	GNWT Tech Report Reference - Viability of the Minewater Management Plan	GNWT	31-Jul-15
507	GNWT Tech Report reference Ekati_-__Pit_Lakes_Water_Quality_Modelling_Predictions	GNWT	31-Jul-15
508	GNWT Tech Report reference Email_from_GNWT_regarding_AQ	GNWT	24-Jul-15
509	GNWT Tech Report references DEFRA Dioxins Furans 2002	GNWT	31-Jul-15
510	Government of Canada Technical Reports (EC, DFO, TC)	EC/DFO/TC	31-Jul-15
511	GNWT Tech Report reference Email_from_GNWT_regarding_Air_Quality - Avalon EA 2013	GNWT	31-Jul-15
512	Jay Project DRAFT public hearing agenda - Sept 14-21, 2015	Review Board	31-Jul-15
513	GNWT cover letter for Technical Report	GNWT	31-Jul-15
514	GNWT Technical Report - Appendix Zajdlik Associates Inc	GNWT	31-Jul-15
515	GNWT Technical Report July 31 2015	GNWT	31-Jul-15
516	Dominion cover letter July 31, 2015 submissions	Developer	31-Jul-15
517	Jay_2015_Baseline_Hydrogeology_Update July 31, 2015	Developer	31-Jul-15
518	Jay_Project_WEMP_and_CRMP July 31, 2015	Developer	31-Jul-15
519	DDMI - Technical Report	DDMI	31-Jul-15
520	YKDFN Technical Report	YKDFN	03-Aug-15
521	LKDFN Technical Report	LKDFN	03-Aug-15
522	NSMA Technical Report NSMA	NSMA	03-Aug-15
523	NSMA Tech Report Reference_DDEC_ Baseline_TK_Report2014	NSMA	27-Jul-15
524	NSMA Tech Report reference USHER (2000)	NSMA	03-Aug-15
525	NSMA Tech Report reference Lindsay A Bell	NSMA	03-Aug-15
526	NSMA Tech Report reference Gwynneth Jones	NSMA	03-Aug-15
527	NSMA Tech Report reference Gibson 2008	NSMA	03-Aug-15
528	NSMA Tech Report reference GAGNON (2009)	NSMA	03-Aug-15
529	NSMA Tech Report reference ELLIS (2005)	NSMA	03-Aug-15
530	NSMA Tech Report reference EIR0607-001_GK_NSMA	NSMA	03-Aug-15
531	TłĮcho Government Technical Report	TG	03-Aug-15

532	TłĮcho Tech Report reference TK report	TG	03-Aug-15
533	Cumulative Effects presentation Mar 2013	GNWT	04-Aug-15
534	Jay_Project_Water_Model_Inputs_and_Outputs	Review Board	05-Aug-15
535	Temporary change of Review Board staff contact	Review Board	05-Aug-15
536	Jay Project - upcoming due dates	Review Board	05-Aug-15
537	DKFN Letter to MVRB DDEC Jay Project_Technical Report_31July2015_signed	DKFN	05-Aug-15
538	Workshop Minutes_Air Quality Workshop_July 20 2015	Developer	07-Aug-15
539	FINAL_signed letter to MVEIRB re commitments table	GNWT	07-Aug-15
540	Jay Project Pre-hearing_conference_summary	Review Board	10-Aug-15
541	Jay Project public hearing agenda second draft FINAL	Review Board	12-Aug-15
542	Jay Hearing Questions planning table	Review Board	12-Aug-15
543	Letter to parties re DKFN late submission	Review Board	12-Aug-15
544	GNWT letter to MVEIRB re inclusion of DKFN tech report	GNWT	14-Aug-15
545	Dominion Community Newsletter 2015 June-July	Developer	14-Aug-15
546	Letter to parties re acceptance of DKFN technical intervention	Review Board	17-Aug-15
547	Gov of Canada comments on July 9 commitments table	NPMO	07-Aug-15
548	NSMA Tech Report reference EIR0607-001_GK_Report_of_EIR	NSMA	03-Aug-15
549	Email re public comment portion of Jay hearings	Public	17-Aug-15
550	Dominion's Cover_Letter-Jay_Tech_Report_Responses	Developer	17-Aug-15
551	DDMI_TechReport_Response from Dominion	Developer	17-Aug-15
552	DFO_TechReport_Response from Dominion	Developer	17-Aug-15
553	DKFN_TechReport_Response from Dominion	Developer	17-Aug-15

554	EC_TechReport_Response from Dominion	Developer	17-Aug-15
555	GNWT_TechReport_Response from Dominion	Developer	17-Aug-15
556	IEMA_TechReport_Response from Dominion	Developer	17-Aug-15
557	LKDFN_TechReport_Response from Dominion	Developer	17-Aug-15
558	NSMA_TechReport_Response from Dominion	Developer	17-Aug-15
559	TłĮcho_TechReport_Response from Dominion	Developer	17-Aug-15
560	TC_TechReport_Response from Dominion	Developer	17-Aug-15
561	YKDFN_TechReport_Response from Dominion	Developer	17-Aug-15
562	YKDFN Jay Project TK Report with email cover	YKDFN	17-Aug-15
563	Email from YKDFN re barren ground caribou survey	YKDFN	19-Aug-15
564	Letter to parties re YKDFN TK Report late submission	Review Board	19-Aug-15
565	Email from GNWT re barren ground caribou survey	GNWT	19-Aug-15
566	2015 caribou survey - YKDFN submission to Review Board	YKDFN	19-Aug-15
567	GNWT letter to MVEIRB re inclusion of YKDFN TK Report	GNWT	20-Aug-15
568	DDMI Presentation - Caribou	DDMI	21-Aug-15
569	DDMI Presentation – Water	DDMI	21-Aug-15
570	Acceptance of YKDFN TK Report and request for comments	Review Board	21-Aug-15
571	LKDFN Presentation	LKDFN	21-Aug-15
572	DKFN presentation	DKFN	21-Aug-15
573	GNWT AQ socio ec presentation Sept 14	GNWT	21-Aug-15
574	GNWT hearing presentation cover letter	GNWT	21-Aug-15
575	GNWT waters presentation for public hearing_Sept 16	GNWT	21-Aug-15
576	GNWT wildlife presentation for Jay public hearing_Sept 15	GNWT	21-Aug-15
577	Notice of Proceedings - Re Kugulktuk community hearing	Review Board	21-Aug-15
578	Letter to GNWT re 2015 Bathurst caribou calving survey	Review Board	21-Aug-15
579	Letter to GNWT and NPMO RE participation of government staff at community hearings	Review	21-Aug-15

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580	DFO Presentation	DFO	21-Aug-15
581	EC presentation	EC	21-Aug-15
582	TC Presentation	TC	21-Aug-15
583	TłĮcho Presentation Caribou	TG	21-Aug-15
584	IEMA Presentation--Air Quality Waste Rock and Other Matters	IEMA	21-Aug-15
585	IEMA Presentation--Caribou	IEMA	21-Aug-15
586	IEMA Presentation--Water and Fish	IEMA	21-Aug-15
587	NSMA Presentation cover letter	NSMA	21-Aug-15
588	NSMA Presentation Outline	NSMA	21-Aug-15
589	YKDFN Jay Hearing Presentation - Caribou	YKDFN	21-Aug-15
590	YKDFN Jay Hearing Presentation - Water	YKDFN	21-Aug-15
591	YKDFN Traditional Knowledge presentation	YKDFN	21-Aug-15
592	Letter to NIRB re Cooperation	Review Board	21-Aug-15
593	Review Board letter requesting current Bathurst caribou Management Plan and schedule for updates	Review Board	24-Aug-15
594	BCRP Planning Status Report to SC May 2015	GNWT	24-Aug-15
595	NIRB Letter to MVEIRB Re Request for Cooperation	NIRB	24-Aug-15
596	GNWT meeting with NSMA - meeting minutes and supporting documents	GNWT	25-Aug-15
597	Letter from MVEIRB to GNWT re Aug 7 commitments correspondence	Review Board	26-Aug-15
598	Letter to GN re Kugluktuk community hearing	Review Board	27-Aug-15
599	Notice of Proceedings - RE submitting new evidence	Review Board	27-Aug-15
600	TłĮcho Community Presentation 17 September 2015	TG	26-Aug-15
601	LKDFN Community hearing presentation Sept 19 2015	LKDFN	27-Aug-15
602	Notice of Proceedings - KIA and LKDFN presentaiton late submissions	Review Board	28-Aug-15

603	GNWT letter to MVERIB_comments on the YKDFN TK report	GNWT	28-Aug-15
604	YKDFN_TKReport_Response_28Aug2015_2	Developer	28-Aug-15
605	KIA community hearing presentation - Sept 21	KIA	28-Aug-15
606	Caribou Gathering Report FINAL 13-07-24	WRRB	01-Sep-15
607	Feb_2014 Bathurst Caribou Herd_Workshop Results_Final	WRRB	01-Sep-15
608	Workshop Results 2013 Bathurst Caribou Herd_final	WRRB	01-Sep-15
609	WRRB to MVEIRB - Jay Project - Bathurst Caribou Plan-Mgmt Information 01sep15	WRRB	01-Sep-15
610	GNWT to MVEIRB re Bathurst management planning update 2015-08-31	GNWT	31-Aug-15
611	2011-2015_barren-ground_caribou_management_strategy	GNWT	31-Aug-15
612	Dominion Jay Hearing Community Presentation	Developer	01-Sep-15
613	Dominion Jay Hearing Presentation - Day 1	Developer	01-Sep-15
614	Dominion Jay Hearing Presentation_Caribou_Wildlife	Developer	01-Sep-15
615	Dominion Jay_Hearing_Presentation_Water_Quality_Fish	Developer	01-Sep-15
616	GNWT response to MVERIB re MVEIRB clarification of gov commitments	GNWT	01-Sep-15
617	GNWT response to MVERIB request for community hearing participant list	GNWT	01-Sep-15
618	2015 09 01 - Note - GNWT and LKDFN re Jay Tech Report	GNWT	01-Sep-15
619	2015 08 31 - Note - GNWT and YKDFN re Jay Tech Report	GNWT	01-Sep-15
620	Jay Project Notice of proceeding for hearings	Review Board	03-Sep-15
621	Jay Project public hearing agenda FINAL	Review Board	03-Sep-15
622	Letter to GNWT and AANDC re measures from past EAs	Review Board	03-Sep-15
623	Late submission request by IEMA_8Sept2015	Review Board	08-Sep-15
624	Excel data from IEMA submission_BAH climate 1979-2014	Review Board	08-Sep-15
625	Letter from ENR GNWT to MVEIRB re Bathurst caribou survey	GNWT	08-Sep-15
626	Media Info Sheet Jay Project	Review Board	09-Sep-15

627	Letter from AANDC to MVEIRB re past measures request	AANDC	09-Sep-15
628	Letter from GNWT to MVEIRB re measures from past EAs	GNWT	09-Sep-15
629	Jay Hearing Presentations Timing	Review Board	10-Sep-15
630	Note to file - J Wah-Shee participation in hearings	Review Board	10-Sep-15
631	Dominion response letter to MVRB re IEMA late evidence	Developer	11-Sep-15
632	GNWT letter to MVEIRB re IEMA late submission	GNWT	11-Sep-15
633	Dominion Community Presentation - Kugluktuk Translation	Developer	11-Sep-15
634	Letter_RE Dominion objection to IEMA late submission_11Sept2015	Review Board	11-Sep-15
635	Letter to parties re GNWT caribou survey information	Review Board	11-Sep-15
636	Undertakings and Commitments- Jay Hearing Day 1	Review Board	14-Sep-15
637	Jay Project Commitments Table 082815	Review Board	14-Sep-15
638	Review Board response to IEMA request for ruling	Review Board	14-Sep-15
639	Jay hearing transcripts - Day 1, Yellowknife - Sept 14, 2015	Review Board	14-Sep-15
640	Sept 14 hearing response from Dominion re employees in S. Slave	Review Board	14-Sep-15
641	Sept 14 hearing response from Dominion re employment of women	Review Board	14-Sep-15
642	Sept 14 hearing undertaking 2 - greenhouse gas emissions	Review Board	14-Sep-15
643	Undertakings from Day 2	Review Board	16-Sep-15
644	Jay hearing transcripts - Day 2, Yellowknife - Sept 15, 2015	Review	15-Sep-15

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645	Undertakings from Day 3	Review Board	17-Sep-15
646	Jay hearing transcripts - Day 5 - Lutsel K'e Sept 19, 2015	Review Board	19-Sep-15
647	Jay hearing transcripts - Day 4 - Behchoko, Sep 17, 2015	Review Board	17-Sep-15
648	Jay hearing transcripts - Day 6 - Kugluktuk, Sept 21, 2015	Review Board	21-Sep-15
649	Dan Wong Comments	Public	22-Sep-15
650	Cory Vanthuyne Comments	Public	22-Sep-15
651	Note to file Updated Commitments Table 092315	Review Board	23-Sep-15
652	Tom Hoefer comments	Public	14-Sep-15
653	Note to file - Jay Project homework items from hearings	Review Board	24-Sep-15
654	Note to file - Undertaking #15 Jay Project public hearings	Review Board	24-Sep-15
655	Undertaking 9 - IEMA Response to Undertaking #9	IEMA	28-Sep-15
656	Undertaking 9 - Gunn and Poole Sahtu mobile caribou protection measures pilot project 2009	IEMA	28-Sep-15
657	Undertaking 9 - Gunn et al CPM assessment report final Mar07	IEMA	28-Sep-15
658	Undertaking 9 - Jakle natural gas wildlife mitigation primer 2012	IEMA	28-Sep-15
659	Letter to Dominion_IR for LDG cumulative effects model	Review Board	29-Sep-15
660	Public Hearing Homework Responses from Dominion	Developer	30-Sep-15
661	Hearing homework response on security from GNWT	GNWT	30-Sep-15
662	Caribou Compensatory Mitigation_Meeting Agenda_FINAL Oct 1, 2015	Developer	01-Oct-15
663	Jay hearing transcipt - Day 3, Yellowknife - Sept 16, 2015	Review Board	16-Sep-15

664	Notice of proceeding- closing submissions	Review Board	06-Oct-15
665	Letter from AANDC to MVEIRB re past EA measures for caribou	AANDC	30-Sep-15
666	Undertaking 3,4,5 GNWT re air quality cover letter	GNWT	06-Oct-15
667	Undertaking 3 GNWT - CCME Municipal Solid Waste Incinerators 1989	GNWT	06-Oct-15
668	Undertaking 3 GNWT - Continuous Emission Monitoring (CEM) Jurisdictional Scan	GNWT	06-Oct-15
669	Undertaking 3 GNWT - compiled incineration guidelines and regs from other jurisdictions	GNWT	06-Oct-15
670	Undertaking 3 GNWT - NL Air Pollution Control Regulations	GNWT	06-Oct-15
671	Undertaking 4 GNWT - Regulation Development Process - 30 Sept 2015	GNWT	06-Oct-15
672	Undertaking 15 Response - EC	EC	07-Oct-15
673	Undertaking responses submitted by Dominion (includes DAR-MVEIRB-UT2-06 Caribou Mitigation Plan)	Developer	09-Oct-15
674	FINAL_Caribou Compensatory Mitigation_Meeting Notes_ October 1	Developer	09-Oct-15
675	NPMO_-_GOC_comments_Commitment_Table__EC_DFO	NPMO (EC/DFO)	09-Oct-15
676	Undertaking #10 - GNWT response	GNWT	09-Oct-15
677	GNWT letter to MVERIB re commitments table 092315	GNWT	09-Oct-15
678	GNWT letter to MVEIRB re past EA measures status 2015-10-09	GNWT	09-Oct-15
679	GNWT - past EA measures response table	GNWT	09-Oct-15
680	Note to file -Dominion Community Newsletter	Developer	09-Oct-15
681	Jay Project Final Commitments Table 101415	Review Board	14-Oct-15
682	IEMA Closing submission	IEMA	19-Oct-15
683	LKDFN email re undertaking 4 from Sept 14 hearings	LKDFN	16-Oct-15
684	Letter MVEIRB to GNWT re undertaking #4 response not adequate	Review Board	19-Oct-15
685	DKFN Closing submission	DKFN	20-Oct-15
686	Caribou Compensatory Mitigation Plan Framework Meeting Notes Oct 16 2015	Developer	20-Oct-15
687	Undertaking DAR-MVEIRB-UT2-11_Errata submitted by Dominion	Developer	22-Oct-15
688	Diavik Diamond Mine Inc. Closing submission	DDMI	22-Oct-15

689	GNWT Undertaking #4 adequacy response	GNWT	22-Oct-15
690	Canada Closing submissions EC - DFO - TC	EC/DFO/TC	23-Oct-15
691	Jay Engagement Registry submitted by Dominion	Developer	23-Oct-15
692	YKDFN Closing submission	YKDFN	23-Oct-15
693	GNWT Closing submission	GNWT	23-Oct-15
694	TłĮcho Government Closing submission	TG	23-Oct-15
695	NSMA Closing submission	NSMA	23-Oct-15
696	KIA Closing submission	KIA	23-Oct-15
697	LKDFN Closing submission	LKDFN	23-Oct-15
698	GNWT response to Mr. Henry Zoe re participant funding	GNWT	30-Oct-15
699	Dominion Closing submission	Developer	30-Oct-15
700	Notice of proceeding - closure of the public record October 30, 2015	Review Board	31-Oct-15