

Title: Using resilience to offset cumulative impacts

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Introduction

Four major diamond mines operate in Canada's Northwest Territories. Since diamond mining began in 1998, the region has seen a significant drop in caribou populations and corresponding impacts on Indigenous communities. The Mackenzie Valley Environmental Impact Review Board (Review Board) commenced an environmental assessment (EA) of a diamond mine expansion project in November 2013 and issued its reasons for decision in February 2016.

A key issue in the environmental assessment was the cumulative impacts on caribou and indigenous communities arising from nearly two decades of mining. The Review Board found these impacts to be significant. As per their mandate, the Review Board had three options: to reject the project; to impose binding mitigation measures ensuring the impacts are no longer significant; or to refer the project for further environmental impact review. The Review Board decided that the project's likely significant impacts could be mitigated through appropriate measures, including those intended to build resilience for both caribou and local Indigenous communities. The measures were designed to improve the well-being of the herd and that of affected communities, and to offset any project-specific impacts that could occur.

This article discusses how resilience theory contributed to the understanding of adverse effects and influenced the design of mitigation measures to protect and preserve the well-being of caribou and affected Indigenous communities.

Description of the proposed mine expansion

The Jay Project (the Project) is an expansion of the existing Ekati diamond mine, located 300 km northeast of Yellowknife, in the Northwest Territories, Canada. The Ekati mine has been in operation since 1998 and consists of multiple open pits, waste rock piles and roads. In 2013, the mine owners proposed a new open pit mine 30 km away from the main Ekati mine site in order to continue supplying the mill with diamond-bearing ore. The Project includes the construction of a new road to the Jay open pit and continued use of an existing access road to transport ore to the main Ekati site. The Project will extend the life of the Ekati mine by ten years or more.

Summary of the Board's findings

The Review Board assesses impacts on the environment based on both written evidence on the public record and from testimony presented during public hearings

in affected communities. The Review Board is guided by the *Mackenzie Valley Resource Management Act* (MVRMA), which defines ‘**impact on the environment**’ as “any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and **includes any effect on the social and cultural environment or on heritage resources**” (Canada 2017). In its February 2016 *Report of Environmental Assessment and Reasons for Decision (REA)*, the Review Board determined that the Project is likely to cause significant adverse project-specific and cumulative impacts to the environment. Regarding the latter, the Board concluded that several valued components (VCs) were already significantly adversely affected, and could not tolerate additional stress or cumulative effects without substantial risk. In resilience theory, these VCs could be thought of as having surpassed an acceptable level of change and existing on the cusp of a threshold shift; any additional project-related effect had the potential of causing an irreversible change to these VCs.

The valued components in question were: the habitat and health of the Bathurst caribou herd (*Rangifer tarandus groenlandicus*); the well-being and traditional way of life of affected Indigenous groups; and the health and well-being of communities, families and individuals in diamond mining communities.

The diamond mines are located within one of the Bathurst caribou herd’s key migration corridors. Since the discovery of diamonds in the region, the herd population has declined over 95%, from a census high of 460,000 animals in the 1980s to a low of 16,000 -22,000 animals in 2015. Numerous factors likely contribute to this decline, such as climate change, harvesting pressure, successive difficult winters and habitat disturbance from forest fires and industrial development. However, the scientific and traditional knowledge remained uncertain over the main driver(s) behind the herd’s decline. In an attempt to estimate its contribution to the overall decline, the proponent estimated a 15km zone of influence around the diamond mine, within which caribou are considered disturbed by mining-related activities. While the proponent had proposed mitigations, it was not likely that all impacts to caribou could be avoided. Meanwhile, the expansion of the mine would extend the area and duration of habitat disturbance on the Bathurst caribou.

Regarding the well-being and traditional way of life of Indigenous groups, the Project is both situated in the traditional territory of several Indigenous groups and has the potential to affect environmental components that multiple Indigenous groups depend on. The following Indigenous groups were considered affected by the Project: the Deninu Kue First Nation, the Kitikmeot Inuit Association, Lutsel K’e Dene First Nation, North Slave Métis Alliance, Tłı̄ch̄ Government, and Yellowknives Dene First Nation. The well-being and cultural identity of the affected Indigenous groups are inextricably linked to caribou. As a migratory animal, numerous Indigenous groups and communities rely on the Bathurst caribou herd for physical, economical, cultural, and spiritual sustenance. The declining health of the herd has had a profound impact on these groups. The Review Board heard from Aboriginal groups that their cultural well-being and way of life are threatened by: the transition

to a wage economy, reduced time on the land, less practice of a traditional way of life, reduced use of their native language, and reduced transmission of culture between generations. Moreover, Indigenous groups stated that the diamond mining industry has contributed significantly to those challenges since it began in 1998. They argued that the Project would extend the life of the Ekati mine by an additional decade, likely adding to and prolonging these impacts on cultural well-being.

Similarly, the health and well-being of communities, families and individuals in communities directly affected by diamond mining was also seen to have declined in several areas (e.g. number of single parent families, violent crimes, potential years of lost life, number of sexually transmitted diseases, number of houses in core need, etc.). Annual reporting on the health and well-being suggested that these indicators had all worsened during the time of diamond mining and were continuing to decline. The existing impacts to health and well-being were acknowledged as significant by communities and the proponent, particularly to the most vulnerable members in the communities, which included women, elders, youth and those unable to benefit from employment opportunities. Concern was expressed over how much additional stress these communities could take before a large social change occurred. The Project would likely add to these impacts and continue the worsening trends.

Mitigating cumulative impacts

The Review Board was faced with determining whether the Project could proceed without adding to existing significant impacts; could the Project go ahead without making the cumulative impacts worse? The proponent had made numerous commitments during the EA to reduce impacts to VCs and had included industry best practices within their project design. Despite these mitigations, the Review Board concluded they were not adequate to reduce the impacts to an acceptable level. Moreover, the Review Board did not consider the Project's economic benefits sufficient to offset the significant adverse impacts to the Bathurst caribou or affected Indigenous communities.

The Review Board assessed how diamond mining had already impacted VCs and affected cumulative impacts. They then considered how this understanding was reflected in management decisions – both by the mining sector and by responsible government agencies. The Review Board found much uncertainty around the link and magnitude of impacts from diamond mining to VCs. Past efforts to improve those understandings did not appear proportionate or effective; the feedback mechanisms to measure effects on these VCs and improve upon mitigation measures were not operating as intended.

In reviewing the evidence, the Review Board determined that significant cumulative impacts could be addressed through the imposition of appropriate mitigation measures. The mitigation measures address the perceived knowledge gaps and superimpose a strict adaptive management approach for both the proponent and responsible regulatory authorities to follow. These measures serve to improve the underlying mechanisms to understand and reduce the social and environmental

impacts of diamond mining in general and the Project specifically. Additional offsets were recommended to counter project-specific impacts that might occur to each affected VC. Table 1 outlines and summarizes the mitigation themes used to address significant baseline cumulative impacts. The themes are grouped around the following resilience strategies: addressing uncertainty, promoting adaptive management, and strengthening (offsetting) external system components.

The Review Board believes that the mitigation measures recommended in their REA report will allow for the Project to proceed in a responsible manner that respects the environment and local communities. The measures the Board developed had a specific focus on building the resilience of the valued components at a regional scale. The measures looked beyond the immediate impacts of the Project to see if improvements to health or well-being could be achieved in novel or creative ways. In some cases this resulted in efforts to reduce known stressors. In other cases it meant expanding the knowledge base in decision-making through local expert involvement or building on existing strengths to offset project-related losses.

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
- lessen the cumulative challenges faced by diamond mining communities and affected Aboriginal groups through an improved adaptive management process

Through these measures, the Review Board was able to address significant baseline cumulative impacts by recognizing and addressing underlying issues of uncertainty, promoting adaptive management, and offsetting local impacts by reducing vulnerabilities elsewhere.

Considering Project and cumulative impacts from a resilience perspective enabled the development of measures to reduce overall significance and contribute to a more acceptable project. The Review Board looks forward to following the effectiveness of these measures as they are implemented and learning from them for future EA consideration.

Table 1. Mitigation measures to address baseline significant cumulative impacts, organized by resilience building strategy, mostly directed to the proponent.

Resilience strategy	Mitigation measures
Reducing uncertainty by increasing knowledge and modes of knowing	Incorporating a traditional knowledge (TK) based caribou monitoring and mitigation in project design and operations, including the formation of an Elders advisory group.
	Development of a TK management framework to improve management and implementation of TK, to ensure appropriate consideration and improve transparency over TK use in decision-making.
	Engagement with Indigenous groups on cultural impacts to ensure they are identified before an issue arises and that appropriate management actions/mitigations are put in place.
Strengthening system components by offsetting mitigation measures	Enhanced caribou mitigation at other locations (Ekati mine) to ensure no new impacts to the herd.
	Formation of a culture camp to reduce the risk that Indigenous use of the land, connection to the land and knowledge of the land will not fade over the course of the Project and diamond mining.
	Reducing vulnerability in affected communities by actively reducing barriers to employment for women.
Improving and building robust adaptive management	Requirement of the Government of the Northwest Territories (GNWT) for the timely completion of caribou management plans to mitigate cumulative impacts of development and human activities.
	GNWT will actively investigate and address the linkages between diamond mining and community health and well-being, including annual engagements, discussions and reporting on initiatives and problem solving.
	GNWT will actively investigate and address the linkages between diamond mining and community health and well-being, including annual engagements, discussions and reporting with communities.
	Establishing objectives for monitoring and adaptive management that must be fulfilled by the proponent.
	Annual reporting from both the proponent and GNWT on the implementation of the full suite of EA measures.

References

- Dominion Diamond Ekati Corporation (DDEC). 2015. Jay Project Developer's Assessment Report Information Request Responses – Appendix D. April 2015, p. 1. Available online at: [http://reviewboard.ca/upload/project_document/EA1314-01 App D Post Closure Caribou Habitat IR responses Dominion 7 April 2015.PDF](http://reviewboard.ca/upload/project_document/EA1314-01_App_D_Post_Closure_Caribou_Habitat_IR_responses_Dominion_7_April_2015.PDF)
- Government of Canada (Canada). 2017. Mackenzie Valley Resource Management Act. Justice Laws Website. Available online at: <http://laws-lois.justice.gc.ca/eng/acts/m-0.2/index.html>
- Government of the Northwest Territories (GNWT). 2015. Communities and Diamonds: 2014 Annual Report of the Government of the Northwest Territories under the Ekati, Diavik and Snap Lake Socio-Economic Agreements. Available online at: [http://reviewboard.ca/upload/project_document/EA1314-01 Communities and diamonds 2014 annual report.PDF](http://reviewboard.ca/upload/project_document/EA1314-01_Communities_and_diamonds_2014_annual_report.PDF)
- Mackenzie Valley Review Board (MVEIRB). 2016. Report of Environmental Assessment and Reasons for Decision, Jay Project. February 1, 2016, pi-iii