

KATIVIK ENVIRONMENTAL QUALITY COMMISSION

**THE SIVUMUT PROJECT
THE RAGLAN MINE PROPERTY AFTER 2020
PHASES II and III**

DECISION OF THE COMMISSION

JULY 2017

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1 INTRODUCTION

Mining projects in Northern Quebec are automatically subject to the environmental and social impacts assessment review process established under Chapter 23 of the *James Bay and Northern Quebec Agreement* (JBNQA) and Chapter II of the *Environment Quality Act* (EQA). Raglan Mine was granted ministerial authorization in 1995 and began operations in 1997. Since then, significant changes have been made to the project in terms of both infrastructure and operations management. The mine presence and its economic impacts on the communities have changed the equilibrium of Inuit activities both traditional and modern, as well as their access to the territory. Over the last twenty years, the social, environmental and economic climates of Nunavik have changed considerably.

In December of 2014, the Kativik Environmental Quality Commission (the Commission) received from the Deputy Minister of Sustainable Development, Environment and the Fight against Climate Change (the Administrator) the preliminary information on the Sivumit Project and continued operations at Raglan Mine after 2020 (Phases II and III). With this project, Glencore Canada Corporation (Glencore) plans to develop five new underground mineral deposits, mainly nickel and copper, and to process the mined ore.

In April of 2015, the Commission forwarded to the Administrator its recommendations on the Directive for the preparation of the impact assessment of this mining project, and in May of 2016 the Commission received the impact assessment prepared by Glencore. Following its analysis of the impact assessment, the Commission produced a series of additional questions in October 2016 and the proponent's responses to those questions were forwarded to the Commission in December of 2016.

To complete its review, the Commission held public hearings in the communities of Salluit and Kangiqsujuaq from April 3 to 6, 2017.

This report constitutes the Commission's decision with respect to the Sivumut Project located in the territory of Nunavik and proposed by Glencore. The report begins with a description of the project and its infrastructure, followed by a report on the public hearings and the concerns raised by the public. The next section covers the major issues related to the project, followed by the Commission's findings. The document concludes with the Commission's Decision and the Conditions attached to the authorization of the project.

2 DESCRIPTION OF THE PROJECT

The information in this section is taken from the documentation submitted by Raglan Mine as part of the review process of the Sivumut project.

Raglan Mine is located north of the 61st parallel in the Nunavik region. The mining facilities are located approximately 70 km west of the Inuit village of Kangiqsujuaq, 110 km southeast of the Inuit village of Salluit and more than 60 km southeast of Deception Bay, where the port facilities are located (Figure 1).

The Raglan mine property covers a total area of 50,457 ha. It is about 70 km from east to west, and 10 km from north to south. The deposits in the deposit contain a high content of nickel and copper.

2.1 HISTORY AND EXISTING EQUIPMENT

The Raglan mining project submitted by Falconbridge Ltd. was authorized by the Ministry of the Environment and Wildlife, following a decision by the Commission, on May 5, 1995. There have been 21 amendments to the original certificate of authorization.

2.1.1 Authorization and amendments to the initial project

As noted above, operations at the Raglan Mine (Phase I) commenced in December of 1997 under the direction of Falconbridge Ltd. In 2003, a second impact assessment was prepared and submitted for the operation of three new zones. This study involved only the mining activities planned for 2003 in mining areas 5-8, West Boundary and East Lake. The concentrator production rate and downstream processing activities, including transport activities to Deception Bay, remained unchanged.

In March 2006, Falconbridge Ltd. applied for an amendment to its authorization in order to increase the production capacity of the mine. Its plan to increase annual production from 0.8 million tonnes (Mt) to 1.32 Mt was authorized in July 2007. At the same time, Xstrata Nickel acquired the Raglan mining property and its facilities to take over mining operations. In that same year, the Commission authorized the renovation of the loading dock at Deception Bay.

Glencore has managed the mine since May of 2013 and its merger with Xstrata Nickel. In September 2014, it commissioned a three megawatt pilot wind turbine at Katinniq to reduce its dependence on diesel fuel.

2.1.2 The Raglan Agreement

When the Raglan mining project was originally proposed, an Impact Benefit Agreement was signed between the proponent and the Nunavik communities. This agreement, known as the Raglan Agreement, was signed in 1995 by Société Minière Raglan du Québec Ltée (now Raglan Mine) and five Inuit partners: Makivik Corporation, the northern villages of Salluit and Kangiqsujuaq, and their respective landholding companies. The objective of this agreement was to ensure that the effects of activities at Raglan on the natural and human environments are adequately measured.

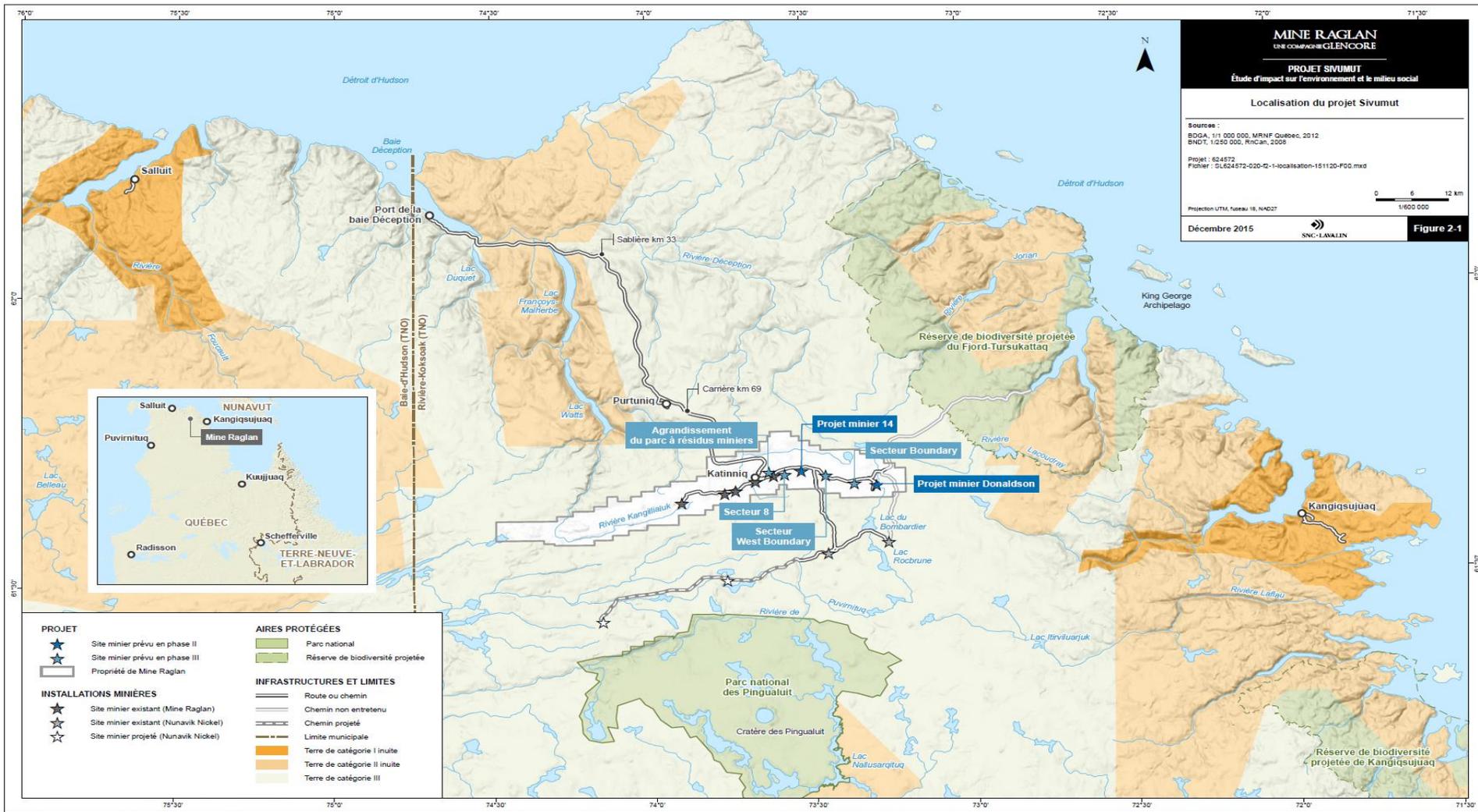


Figure 1: Location of Raglan Mine (Source: Étude d'impact sur l'environnement et le milieu social, Main report - Volume 1, December 2015, p.2-19.)

The Raglan Agreement includes the following objectives:

- preserving the integrity of the environment;
- ensuring that the Inuit enjoy social and economic benefits through jobs and businesses for Inuit;
- providing a safe and healthy working environment;
- ensuring ongoing collaboration between Raglan Mine and stakeholders, particularly through the Raglan Committee.

The Raglan Committee formed the Sivumut sub-committee to review the proposed mitigation measures identified in the impact assessment for the Sivumut Project. This process led the proponent to sign an annex to the Raglan Agreement with Makivik Corporation and the communities of Salluit and Kangiqsujuaq.

The Commission notes that agreements signed between project proponents and communities or other entities are private agreements and entered into voluntarily. The Commission has neither a role nor a mandate to interfere in such negotiations. It cannot base its decisions on a project on any agreements that might have been signed. Nevertheless, after its analysis of the Sivumut Project, the Commission is satisfied that the mitigation measures aimed at protecting the environment and the communities adhere to the guiding principles identified in Section 23.2.4 of the JBNQA.

Therefore, the Commission will not comment on the Raglan Agreement, even though the communities raised concerns about the agreement repeatedly during the public hearing.

2.1.3 Existing equipment

Raglan's nickel and copper mining operations, which were originally expected to extend over 23 years, take place mainly at Katinniq. The ore extracted is crushed, ground and then processed on site into nickel-copper concentrate. Each year, 1.32 Mt of ore is processed at the concentrator, with an annual production of more than 37,000 tonnes of nickel concentrate.

In addition to the concentrator, the installations include four underground mines in operations. Since the mine opened, there have been operations at a few open pit mines as well as underground mines. There has been no surface mining at Raglan since 2013, only the underground mining operations at Mine 2 and the Katinniq, Kikialik and Qakimajurq sites (Figure 2).

The tailings storage facility (TSF) receives filtered residues and is located near Katinniq. By the end of Phase I the TSF is expected to cover 76 ha, with an approximate final elevation of 660 m. A network of ditches collects runoff water that has been in contact with tailings and directs it to a collection pond.

Treatment of surface water from surface infrastructure at Donaldson is handled at Spoon, and from Mine 2, Mine 3 and Kikialik in Zone 3, while the surface water from Qakimajurq is treated at Katinniq.

Infrastructures to ensure self-sufficiency of the mining complex in terms of water and energy (fresh water supply, fuel tanks, water treatment plant, power station, wind turbine etc.) are also

present. Finally, there are airport facilities at Donaldson and port facilities at Deception Bay (Figure 2).

2.2 THE PROPOSED PROJECT

Over the course of the mine's operation, exploration activities on the property continued and are still ongoing. According to the proponent, the economic viability of mining development at the Raglan mine – particularly on the east half of the property, which contains significant mineral deposits – has been confirmed. In order to ensure continuity of operations until 2038, the proponent launched Phases II and III, known to stakeholders as the Sivumut Project, which means "moving forward." Phase II calls for the exploitation of two new deposits, with three other deposits developed in Phase III.

2.2.1 Rationale for the Sivumut Project

The main objectives of the project are to continue underground mining operations over a period of 20 years and to maintain socio-economic benefits, which include:

- Socio-economic benefits for Quebec as a whole;
- Maintaining existing jobs held by Inuit and non-native people;
- The socioeconomic benefits stemming from the Raglan Agreement, namely, fixed royalties and profit sharing;
- Stimulating openings on the labor market for youth from the Inuit communities;
- Training the local workforce to perform mining operations;
- Contracts for Inuit businesses.

2.2.2 Description of Phase II

Initially, the plan for Phase II was to open two new underground mines – the Donaldson mine project and Mine 14. However, while the Commission was studying the project, the proponent changed the mining sequence, postponing the Donaldson project to Phase III and shifting the proposed Mine 8 to Phase II. During Phase II, Mines 8 and 14 will be in operation from approximately 2019 to 2030. The deposits to be mined in Phase II are well suited to underground mining, which has the advantage of generating less waste and producing a smaller environmental footprint than an open pit mine. The locations of these two proposed mines are shown in Figures 1 and 2.

Energy consumption will remain virtually the same as in recent years due to the fact that the start of the Sivumut activities coincides with the closure of the mines currently in operation.

2.2.2.1 Mine 14 project

Construction on mine project 14 is scheduled to begin in 2018, with operations starting in 2021. The total amount of ore to be mined during these years is approximately 7.14 Mt for a maximum annual production estimated at 0.85 Mt of ore.

Temporary surface infrastructure will include foundations of various buildings such as shelters, garages and warehouses, tailings and ore dumps, and roads connecting the mining facilities to the main road.

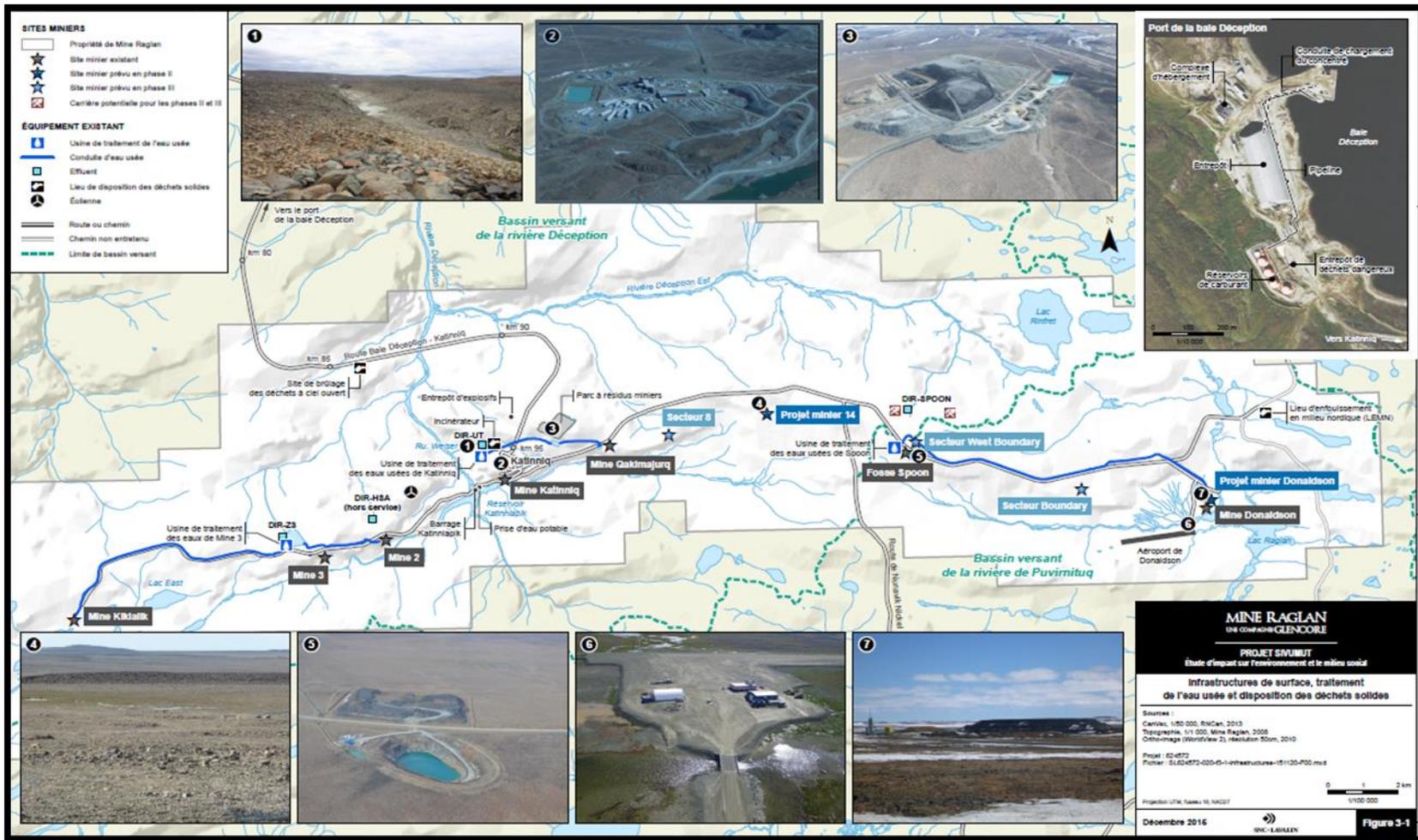


Figure 2: Current and proposed mine sites and existing infrastructure (Source: Étude d'impact sur l'environnement et le milieu social, Rapport principal - Volume 1, December 2015, p.3-5)

Contaminated water from the ore and waste rock will be sent to the collecting basin through a network of ditches and pumped to the Spoon Pit where they will be treated before returning to the environment.

During the construction and operational phases, a total of approximately 2.8 Mt of waste rock will be transported to the surface and then progressively returned underground in the mine as “matériel de roulement” and backfilling of mined out stopes. By 2027, all waste rock will have been returned to the mine and 1,387 Mt of waste rock from the Spoon pit and/or other site will be required to continue operations until the end of planned operations in 2030.

2.2.2.2 Mine 8 project

Construction on Mine 8 will begin in 2018 and end when the mine goes into production in 2020. According to the current plan, operations will last 18 years (from 2020 through 2038). The total amount of ore to be mined during this period is approximately 11.3 Mt. Mine 8 will use the existing surface infrastructure and portal of the Qakimajurq mine (currently in operation). A new waste rock pad and collection basin will be added.

Specifically, the surface infrastructure of the Qakimajurq mine that will be re-used include the temporary waste rock and ore storage pad, collection ditches surrounding the pad, another infrastructure pad to accommodate service and shelter buildings, a collecting basin, two explosives warehouses, a temporary generator, a brine tank and settling ponds, and access roads to the surface infrastructure and portal. A pipeline will pump water from the new collecting basin for the new waste rock pile to the existing collecting basin of the Qakimajurq mine. This water will provide for underground needs, while the surplus will be pumped to the TSF pond for eventual treatment at the Katinniq wastewater treatment system.

An increase in the capacity of the Katinniq wastewater treatment system that was originally planned for Phase III, to meet the needs of Mine 8, was moved to Phase II and modified because the new environmental footprint is now smaller than initially planned.

2.2.3 Description of Phase III

Phase III of the Raglan project, where annual production is expected to approximate production in Phase II, will include three new underground mines, Donaldson Boundary and West Boundary, with mining activities extending from 2029 to 2038. The Donaldson mine will produce .45 Mt of ore annually for approximately five years. During the operation of this mine, existing infrastructure will be used, which will limit its ecological footprint. All waste rock extracted from the underground mine will be returned to the existing pit, thus representing the first stage of its restoration. Water contaminated by ore and waste rock will be directed to the existing collection basin through a network of ditches already in place and then pumped into the Spoon pit where they will be treated before returning to the environment.

New construction at the Boundary and West Boundary sites will include access roads, a gate, ditches, a collecting basin, and pads for ore, waste rock and surface infrastructure. These surface infrastructures will include a shelter for the workforce, a vehicle maintenance garage, a few diesel generators to supply electricity, a fuel tank and a refueling station

Finally, it should be noted that these three new mines will be operated in a similar way to those in Phase II.

2.2.4 Other components

Most of the existing infrastructure that has been used to date for mining activities at the Raglan mine will continue to be used in the Sivumut project. At the concentrator, an increase in annual production capacity to 1.5 Mt is anticipated through optimization of operations, which will be achieved solely via minor changes to the concentrator installations at Katinniq. The participants in the Raglan Agreement have approved these changes in production capacity. The increased production capacity will be achieved by retaining the same number of workers. However, because this will increase profitability, profit sharing with beneficiaries of the Raglan Agreement will also increase, according to the proponent.

To meet the needs of the Sivumut project, the tailings storage facility will be expanded from 93 to 133 ha, thus increasing the amount of wastewater. However, the maximum level of the tailings pond will remain at 660 m.

The new mining operation will expand the area of development to the east of Katinniq which, along with a larger TSF, will result in larger volumes of runoff to be treated at the wastewater treatment facilities at the Spoon and Katinniq sites. The table below shows the required capacities of the Katinniq and Spoon minewater treatment systems at the end of each phase. It should be noted that the current three effluent discharge points will remain in exactly the same locations in the Deception watershed, namely the Spoon, Katinniq and Zone 3 effluents 3.

Phase	Système de traitement	Superficie du bassin versant à la fin de la Phase (ha)	Volume d'eau à traiter annuellement pour une crue de projet ⁶ (m ³ /an)	Augmentation du volume d'eau à traiter par rapport à la fin de la Phase I (%)	Capacité de traitement d'eau requise gérer une crue de projet ⁶ (m ³ /h)
I	Katinniq ¹	127,91	752 700	-	261
	Spoon ²	40,00	246 700	-	500
II	Katinniq ¹	158,90	943 800	20	320
	Spoon ³	55,60	342 900	39	500
III	Katinniq ⁴	196,93	1 178 400	57	400
	Spoon ⁵	75,60	466 623	89	680

¹ Inclut l'eau à traiter de Katinniq, du parc à résidus et de Qakimajurq.

² Inclut l'eau à traiter de Spoon et du site actuel de Donaldson.

³ Inclut l'eau à traiter de Spoon, du Projet minier Donaldson et du Projet minier 14.

⁴ Inclut l'eau à traiter de Katinniq, du parc à résidus, de Qakimajurq et du Secteur 8.

⁵ Inclut l'eau à traiter de Spoon, du Projet minier Donaldson, du Projet minier 14, du Secteur Boundary et du Secteur West Boundary.

⁶ Volume d'eau cumulatif d'une averse critique (pluie de 24 heures) et la fonte moyenne des neiges sur une période de 30 jours (maximum de neige prévisible pour une récurrence de 100 ans).

There will be no change to domestic wastewater treatment, as the volumes of water to be treated will remain unchanged for all areas west of Katinniq in the Sivumut project.

As part of the development of the Sivumut project, the proponent proposes connecting to the Katinniq power grid insofar as possible, as this will make better and more efficient use of the power from the generators and the wind turbine than the only other option, which is generators installed locally. In addition, tapping into the grid will provide more efficient use of diesel fuel and reduce the need for fuel transport. During Phase II, Mines 8 and 14 will be connected to the grid since they are so close to the Qakimajurq site, which is already equipped with a 25kV power line. The goal is to connect to the grid at the beginning of the project, to avoid the need for temporary generators. Although the proponent does not yet have detailed studies for Phase III, the plan now,

given that there are fewer mineral resource in Boundary and West Boundary sectors and they are relatively distant from Mine 14, is to install a substation running on generators no longer needed at existing sites.

The reclamation activities at Sivumut will include returning waste rock to the mined out pits and underground workings. At the end of mining activities, the final reclamation of the tailings facility and waste rock pile will begin. It is expected that it will take five years to restore the entire site, and the related financial guarantees will be paid in accordance with the *Mining Act*.

3 PUBLIC CONSULTATIONS

Public consultations on the Sivumut project took place in two different ways. First, as outlined in the Directive for the environmental and social impacts assessment, the proponent involved the communities of Salluit and Kangiqsujaq in various ways in the development of the project. Parts of these consultations were handled by the Raglan Committee (created under the Raglan Agreement) but also through workshops, an environmental committee and the Sivumut sub-committee.

Furthermore, the Commission held public hearings on April 3 and 4, 2017 in Salluit and on April 5 and 6 in 2017 in Kangiqsujaq. The proponent was present at the hearings to present the project, and also to respond to questions or concerns raised by members of the public or the Commission. In each community, the hearings took the form of a public meeting that took place at the community center, but also a community radio broadcast. The public meetings were recorded and these recordings are available from the Commission's Secretariat.

3.1 PUBLIC HEARINGS IN SALLUIT AND KANGIQSUJUAQ

At the Salluit hearings there were 24 interveners, including a brief from the Kativik Regional Government (KRG). In addition, 10 calls were made to the community radio show. The main concerns expressed involved benefit sharing, land use and access, mine closure and restoration, tailings management, waste management, possible contamination of traditional foods and the economic impacts.

In Kangiqsujaq, there were 39 interventions, including briefs submitted by the KRG and Makivik Corporation. In addition, 15 calls were received during the community radio program. The main concerns raised by stakeholders in Kangiqsujaq were the sharing of benefits, possible contamination of traditional foods, land use and access, tailings management, ballast water management, emissions of contaminants, the deployment of wind turbines and jobs.

3.2 BRIEFS SUBMITTED AS PART OF THE PUBLIC HEARINGS

Two of the interveners who participated in the public hearings submitted their comments in written submission -- the KRG and Makivik Corporation.

The KRG had several comments and recommendations related to environmental and socio-economic considerations. Their environmental concerns included aspects of adaptive management, environmental monitoring, Inuit participation, cumulative effects and environmental restoration. The KRG had socio-economic concerns related to the Raglan Agreement, the Pijariursiq hiring program, and Inuit employment and training. Finally, the KRG raised concerns regarding the possible authorization of Phase III of the project.

For its part, Makivik Corporation had concerns and recommendations related in particular to the communication between the proponent and the various local and regional stakeholders, land use, contamination and environmental monitoring, restoration and mine closure, and the socio-economic impacts of the project

4 MAJOR ISSUES

During its review of the Sivumut project, the Commission was able to benefit from the support of experts from the provincial departments it consulted regarding the various issues related to the project. Combined with the concerns expressed at the public hearings this expert support helped to identify the major issues related to the project, which are discussed the following sections.

4.1 THE DEVELOPMENT OF PHASE III

As mentioned earlier, Phase III of the Raglan mine project involves the opening of three new underground mines (Donaldson, Boundary, and West Boundary), where activities will extend from 2029 to 2038. Thus, these mines will not be operational for at least another 12 years. There are likely to be many changes before the start of construction at these sites, notably in terms of climate, the social dynamics of the region, demography and the regional economy.

In addition, the Commission noted from the documents in the impact assessment that the information on Phase III was not as detailed as that provided regarding Phase II.

*Based on the limited information provided regarding Phase III and given that there are likely to be environmental and technological changes in the interim, the Commission is of the opinion that the proponent should provide the Commission with an update on the content of its impact assessment for Phase III before the commencement of work at to the Donaldson and Boundary and West Boundary sites. **Any change to the choice of sites to be mined during Phase III will necessitate a new impact assessment.***

4.2 TRADITIONAL LAND USE AND ACCESS

Land use and access is a major issue for the Commission. Traditionally, the communities of Salluit and Kangiqsujaq have used the territory to support themselves through activities such as hunting, fishing and berry picking. Although hunting and fishing methods have evolved over time, traditional food sources such as caribou, ptarmigan, arctic char, beluga, walrus and seal continue to be vital to the health and way of life of the Inuit. Thus, food security remains a constant concern to them. Also, the high cost of products in northern Quebec is an incentive to harvest resources from the local environment.

As part of its consultations, the proponent mapped the areas that were of interest to land users and also elicited their concerns and views stemming from the first phase of operations at Raglan Mine. Land users expressed their opinions on desired mitigation measures they would like to see, as well as their information and communication needs.

As outlined the Makivik brief, the Inuit members of the Sivumut sub-committee were dissatisfied with the content related to traditional land use, notably because of the lack of basic knowledge or a quantification of the land use loss resulting from the presence of the mine and its equipment. They conducted a detailed study of past and present land use in the area of the mine and Deception Bay area to address these deficiencies. According to Makivik Corporation, this study is expected to be in the fall of 2017.

The Commission is of the opinion that the information from this study is likely to shed new light on the impacts that Raglan mining activities have had and may have in future on traditional land uses by the communities of Salluit and Kangiqsujaq. Therefore, the

proponent should present a revised analysis the impacts of the Sivumut project on traditional land use and any changes to planned mitigation measures.

In recognition of the general concerns about land use raised by the Inuit members, the Sivumut sub-committee agreed to add a series of additional or complementary measures to those presented in the impact assessment or covered in the Raglan Agreement. In addition to these additional measures, the proponent is considering holding forums to transmit the results of various studies on fish, air quality, benthos, etc.

During the public hearings held by the Commission, several participants mentioned that they avoided hunting or fishing in certain areas because they have concerns about possible contamination in general and especially in the Deception Bay area. People believe that in the long term, the situation will deteriorate, especially with the arrival of new companies. In addition, a few stakeholders indicated that they felt less welcome at Deception Bay installations, particularly with regard to the opportunity for non-workers to have access to meals. In this connection, the Commission wants to point out the importance of food in Inuit culture, not only in terms of access but also in the spirit of sharing.

Based on the public hearings and its analysis of the documents, the Commission is of the opinion that the current mitigation measures and the additional measures agreed upon with the Sivumut sub-committee will strengthen communication between the Raglan Mine and the communities in connection to the issues raised concerning land use.

4.3 GREENHOUSE GASES (GHG) AND CLIMATE CHANGE

4.3.1 Greenhouse gases

The Raglan mine uses a large quantity of diesel for energy production and is considered an important emitter of GHGs. The proponent estimated diesel consumption at the Sivumut project based on the assumption that consumption will increase in proportion to the increase in annual ore processing capacity from 1.32 to 1.5 Mt. It also took into account the start-up of the wind turbine at the Raglan site in 2014, which resulted in a drop of 2.25 million liters of diesel per year for its generators. The proponent estimated that annual GHG emissions from diesel consumption – including for transport -- would rise from about 169,800 tonnes to 184,300 tonnes of CO₂ equivalent, an increase of about 14,500 tonnes or 8.6% over 2012 consumption.

It should be noted that the proponent has a strategic environmental plan, one of the objectives of which is to minimize the environmental impact of the Raglan Mine by reducing greenhouse gases. The plan focuses on managing GHG emissions, improving energy efficiency and increasing access to reliable and affordable energy sources

Energy represents a significant cost but is an essential operational requirement for the project. The use of wind turbines reduces GHG emissions by about 6,275 tonnes per year and the proponent is considering installing a second turbine. As the Parnasimautik process revealed, this technology serves as an inspiration for some communities that want to reduce their dependence on fossil fuels. However during the public hearings conducted by the Commission, concerns were raised about the effectiveness of turbines and the potential impacts of adding a second.

The Commission acknowledges the efforts already made and encourages the proponent in its efforts to reduce the use of diesel by installing renewable energy infrastructure.

4.3.2 Climate change

According to the latest summary report on climate change in Quebec from Ouranos, historical climate data reveals several well documented and significant trends. Northern Quebec stands out as the region showing the largest predicted increases in both temperature and precipitation.

At the Katinniq site, the concentrator and the housing complex are built on pilings supported on bedrock, which limits the risks from melting permafrost. The proponent reports that since it began operations, it has been closely monitoring the impacts of climate change on its infrastructure. Surveys conducted annually at the oil tanks on Deception Bay show that these facilities are stable. Some subsidence of the concrete floor of certain buildings (Mines 2 and 3) has been noted where the slab is directly on the ground. Likewise, subsidence has been noticed in parts of some surface infrastructures. For example, there has been some localized subsidence of the road between Kattiniq and Deception Bay, some thirty kilometers inland from the bay. The same problem occurred at the Donaldson runway edge several years ago, although since the repairs were finished over three years ago, the situation has remained stable. The proponent states that it is integrating the impacts of climate change into the design of its new infrastructure. This led, for example, to the concept of the “fondation en araignée” used for the construction of the wind turbine.

As part of its environmental strategy, the proponent has put in place an environmental team that closely monitors the possible impacts of climate change. In order to adapt vulnerable infrastructure, the proponent tries to understand the risks climate changes poses to its activities. It attempts to adapt its infrastructure and understand the potential for changes to local biodiversity.

As part of the Pijariurusik program, the proponent is supporting an ice tracking study, the results of which will be available in 2017. Also, due to observed climate changes and their influence on Nunavik’s permafrost, the company formed an expert committee in 2005 tasked with supporting Raglan mine managers in the review of technical choices and guidelines related to the long-term management of waste rock and tailings. To date, several studies have been carried out on the recommendation of this committee, which will continue its work during the Sivumut project.

The Commission notes that in the impact assessment documents, it is not always clear how climate change impacts have been taken into account in the design of the proposed infrastructure. For example, it is mentioned that the collecting basins have been designed for a 100 year flood, but it is not clear whether this reflects future climate predictions that could change the amount of runoff. However it should also be noted that the impact assessment documents clearly show that climate change has been taken into account in the design of waste rock and tailings impoundments in permafrost, in particular by setting up an expert committee.

The Commission also notes that, despite a good general description of the impacts of climate change in northern Québec, it is not always clear whether the project includes mitigation measures to limit the impacts on the most vulnerable natural and anthropogenic elements. For example, no mention is made of measures to increase the albedo of infrastructure to limit permafrost warming (e.g. road insulation, the periodic review of the prohibition period on shipping in Deception Bay to coincide with the calving and raising period of ringed seals). However, the Commission notes that the Sivumut subcommittee agreed that the use of predictive climate change models to assess the environmental impact of its mining activities (namely on water quality) should be continued and that these models will be reviewed periodically based on future needs.

Given that the impacts of climate change are already being felt in Northern Quebec, that there is uncertainty about the forecasts and their potential impacts on the environment and the current and planned infrastructure at the Raglan Mine, and that this issue was not addressed in depth in the impact assessment documents, the proponent must provide the Provincial Administrator with all planned mitigation measures for reducing increased greenhouse gas emissions and the project impacts under climate change. It will also submit the adaptation measures envisaged in order to reduce potential climate change impacts on project components. The proponent must also indicate how it intends to share the relevant information coming out of the work of the expert committee on tailings and waste rock management and the Sivumut sub-committee in order to ensure that this information is widely disseminated.

4.4 PROGRESSIVE RECLAMATION AND MINE CLOSURE

The proponent's plan is for the progressive reclamation of the mine sites as the underground and open pit mines evolve. It reports that about forty hectares of the sites from Phase 1 have been reclaimed to date.

Phase 1 of Raglan Mine will come to an end in 2020 and the Kikialik, Mines 2 and 3 and Qaqimajurk mine sites will close. The proponent has carried out some reclamation work already. However the Commission asks that the proponent present a detailed schedule of the progressive reclamation plan for the remaining sites.

The reclamation of the new installations at the Sivumut project will be carried out according to the latest update of Raglan's rehabilitation and restoration plan issued in 2012. The proponent must submit a new version of its restoration plan to the ministry of Energy and Natural Resources every five years, which is commented on by the Commission. The mine restoration plan includes the following: temporary or permanent closure, progressive restoration, domestic and demolition waste management, recycling, effluent or tailings management, and soil characterization. Finally, as stated in its 1995 decision concerning the Raglan mine, the Commission will approve the restoration work before it is actually carried out.

4.4.1 Tailings storage facility

The results of the geochemical characterizations show that the tailings and a portion of the waste rock are potentially acid generating. The results also indicate that some waste rock presents the risk of contaminated neutral drainage. Given this, the current rehabilitation and restoration plan adopts the concept of embedding waste rock and tailings in the permafrost as an environmental protection measure once mining activities are completed. As already mentioned, observed climatic changes and their possible influence on the permafrost has led the proponent to set up a committee of experts to help the company review its technical choices regarding the long-term management of waste rock and tailings. The committee examines issues such as the deformation of the tailings pond, various capping concepts, options for dust control, the reclamation status of the Champagne and A pits, and the restoration strategy to be used for pits G and I.

Following the recommendation by the expert panel to compare four concepts for capping, an experimental cell for each of these concepts was constructed. According to the proponent, the use of a geomembrane appears to be the most promising because of its ability to limit water infiltration while not being affected by climate change.

When drafting its directive, the Commission identified the mine closure and restoration of the mine site as major issues and a predominant concern of the local population. In the region, the environmental liability of mining sites such as Asbestos Hill and abandoned exploration sites serve as negative examples of site closures. In the case of the Raglan Mine, the tailings facility, even if restored, will remain an integral part of the landscape.

The Commission understands that the proponent will continue its research to determine the most promising and effective restoration concept under a changing climate. The proponent must indicate to the Commission how and when it intends to share the results of its studies in order to ensure they are well disseminated.

4.4.2 Temporary mine closure

If activities at Sivumut are halted temporarily, the same security measures as called for in the restoration plan will be implemented. These include securing mine openings, restricting access to the site, the various buildings and other structures, continuing the monitoring and treatment of effluents, and ensuring the physical and chemical stability of the various stockpile areas.

The Commission wants to remind the proponent that the measures identified in its 1995 decision concerning informing the population in the event of temporary or permanent closure remain applicable for the Sivumut project.

4.4.3 Final restoration

A fund of over \$160 million has been set aside for the reclamation of the Raglan Mine site. Much of this money has already been deposited with the Government of Quebec. The proponent will continue to contribute to this fund during the Sivumut Project, in accordance with the *Mining Act*.

In its submission to the public hearings, the KRG asked the Commission “reclamation plans, particularly those associated with the expanded tailings site, are adequate. Acid rock drainage and metal leaching are a significant concern. Monitoring and testing should involve the Inuit guardians/monitors. Contingency plans should be adapted to any new information”

The 5-year revisions of the restoration plan help ensure that the proponent will factor in climate change. These revisions require ongoing research to take into account new technology and new knowledge regarding reclamation methods. The Commission will comment on these revisions in addition to deciding on whether the final restoration plan will be approved.

4.5 TRANSPORTATION INFRASTRUCTURES

Mining development in this part of Nunavik was made possible by the development of transportation infrastructure for the Asbestos Hill deposit at the Purtunig site, including a dock at Deception Bay and a road network. The road network was consolidated and extended with the arrival of the Raglan and Nunavik Nickel mines. Raglan re-used part of the Deception Bay harbor infrastructure put in place for the Asbestos Hill project, while the Nunavik Nickel mine built its own facilities there. Finally, Donaldson Airport was originally built for the Raglan mine, but was shared with the Nunavik Nickel mine. All of these installations facilitate mining at the exploration and operational stages.

Although these installations are used mainly for mining operations, they, and various measures put in place by project proponents, have brought benefits for the communities. The road makes it easier for people to get to their camps in the Lake François-Malherbe area, and access to the shipping of goods has in some ways improved the quality of life.

Given that mining development in this part of the territory will, on all evidence, expand and continue for many years, the Commission believes that these installations should be re-utilized or shared when various companies are involved. In practice, this becomes a matter of limiting the footprint of these projects as much as possible and adopting a sustainable approach to land management.

Even though this infrastructure network is some distance from the northern villages of Salluit and Kangiqsujuaq, it is likely to lay the groundwork for the development of a wider network that will not only connect Salluit and Kangiqsujuaq to the mine, but also to each other. In fact, the the KRG brief to the Commission's public hearings raised the idea of the eventual construction of a road to connect the communities to the mine site and posed questions about the status of existing roads once the mine is closed. Some of the interveners at the hearings in Salluit and Kangiqsujuaq brought up the same idea.

The Commission is of the opinion that land use planning must be carried out in a way that avoids, or at the least limits, the multiplication of transport infrastructures on the territory. The Commission therefore considers that land managers should optimize the use of these infrastructures and territorial users should remain open-minded to sharing these infrastructures so as to reduce cumulative impacts.

At the end of mining operations when territorial managers are deciding on whether or not to maintain various infrastructures (roads, airport, and port infrastructures), they should take into account the benefits these infrastructures can bring to the communities, the costs related to their maintenance, and the impacts that such maintenance will have on the biophysical environment.

4.6 SOCIOECONOMIC ASPECTS

Analysis of the impact assessment enabled the Commission to see that the reality of work at the Raglan mine poses significant recruitment and retention challenges. Several measures, some of which are included in the Raglan Agreement, have been put in place, including training, jobs and awarding contracts to Inuit businesses.

Based on experience gained over the years, the proponent has implemented other measures for the specific purpose of retaining Inuit employees. In particular in 2008, Raglan introduced the Tamatumani program, designed to train, recruit and retain Inuit workers. According to the information provided in the impact assessment, the proponent believes that this program is partly responsible for the current rate of Inuit employees, which is close to 20% of the total workforce compared to 16.3% a decade ago. It should be noted that this workforce comes not only from the communities of Salluit and Kangiqsujuaq, but from all the communities of Nunavik.

Holding a job at Raglan Mine comes with its own set of peculiarities, such as access to high salaries and distance from one's community and primary social network (family, friends), not to mention the type of work itself. This situation can lead to both negative social impacts (risky behaviors, boredom and absenteeism at work, family neglect, acculturation, erosion of social cohesion and

social conflicts from the emergence of new social classes, etc.) and positive impacts (empowerment, skills development, pride, purchasing power, etc.).

The Commission believes that the proponent's efforts to promote and retain Inuit employment have been substantial. However, these efforts must be continued throughout the Sivumut project.

4.6.1 Economic spin-offs

According to the proponent, the economic impact of the Raglan Mine on Nunavik as a whole is very apparent. Gross domestic product in the region has grown rapidly over the past decade, climbing from \$291 million in 2003 to \$887 million in 2012. However, it appears that this injection of cash into Nunavik provides only partial benefit to the region, as much of it is spent in the south of the province.

The direct and indirect impacts of the Raglan Mine on the Nunavik economy are primarily the result of the Raglan Agreement through the distribution of financial guarantees, profit sharing, and incentives to encourage employment and contracting to Inuit companies.

The payment of financial guarantees and the sharing of Raglan Mine profits represent significant sums. Between 1995 and 2014, mine partners received a total of \$132 million in financial guarantees and profit sharing.

In addition to the economic benefits for households in the region, part of the money from profit sharing has been invested in community infrastructure and has therefore stimulated job creation in the communities. According to the proponent, in Kangiqsujuaq, 17 jobs have been created compared to 16 jobs in Salluit. In addition to this benefit is a degree of local and regional pride in the financial health of the Qaqqalik Landholding Corporation, which five years ago had an estimated value of \$23 million in buildings and equipment (office, garage, workers camp, fire truck and rescue equipment), half of which derived from royalties and benefit the entire community.

Meanwhile, businesses have been created throughout the lifetime of the mine. The profits generated by these companies are in addition to the financial guarantees and profit sharing from the mine, and can create additional jobs in the communities. However, the proponent notes that these companies appear to have even more difficulty recruiting and hiring Inuit workers and face numerous challenges in training and maintaining Inuit employees within their organizations.

The Commission is of the opinion that the Sivumut project will provide attractive socio-economic conditions for workers and their families over a 20-year period, and in addition, will contribute to some extent to the region's dynamism through economic spinoffs, profit sharing through the Raglan Agreement and training opportunities.

4.6.2 Communication with the communities

According to the proponent, various means of communication have been developed and implemented in order to facilitate exchanges with local communities and regional organizations in Nunavik. One of the principal ones is the Raglan Committee, which serves essentially as a venue for sharing information with Inuit communities, as well as a series of more specific communication tools for transmitting information to the various stakeholders.

The proponent states that much effort has been made in recent years to communicate better with stakeholders. In 2013, various stakeholders made comments on this issue during the consultations on the wind turbine. Comments focused mainly on the perception that information

was stalled at the level of the Raglan Committee and did not reach all community members, and that representatives of the mine were not very visible in the villages.

In response to these concerns, the Raglan Committee was expanded, and the proponent increased and structured its communications on environmental incidents, improved the opportunities for information-sharing geared to the creation of Inuit businesses, and increased its presence in the communities through recruitment activities via the Tamatumani program and a participatory social engagement program.

In discussions with the Inuit members of the Sivumut subcommittee, the proponent agreed to add measures to strengthen communications with communities. These measures were presented to the Commission in a letter dated February 15, 2017 which is available on its website. The measures include the hiring of liaison officers, environmental monitoring agents and training and employment officers in Salluit and Kangiqsujuaq, the implementation of a training program on the Raglan Agreement and continuing efforts to increase training opportunities in the communities.

The Commission regards these measures as positive as they will improve relations between the communities of Salluit and Kangiqsujuaq and the proponent. The Commission also stresses that it is important for Raglan Agreement stakeholders that the proponent seek the necessary feedback from the communities and municipal authorities to ensure that information has been adequately conveyed.

4.7 ENVIRONMENTAL ASPECTS

4.7.1 Contamination

With regard environmental contamination, the Commission focused mainly on the project impacts on air quality and water quality.

4.7.1.1 Air quality

According to the proponent, the main sources of air quality impacts in the construction phase will be:

- earth moving and excavation work, including drilling and blasting, for new infrastructures: roads, platforms, service buildings, quarries, power lines and pipelines;
- vehicle traffic (dust and exhaust fumes);
- electricity production from diesel-powered generators.

During mining operations, the main impacts will come from:

- handling of ore and waste rock (loading and unloading of transport trucks);
- heavy vehicle traffic (dust and exhaust fumes);
- wind erosion at the stockpiles;
- drilling and blasting;
- screening of waste rock;
- electricity production from diesel-powered generators (some sites);
- production at the concentrator.

It should also be noted that the tailings facility and the Katinniq complex are among other sources of impacts from the Sivumut project.

Since operations began at Raglan, land users have observed an accumulation of dust at their berry picking, fishing and drying grounds at Lac François-Malherbe. Comments in this regard were shared at the public hearings conducted by the Commission.

Mine applies a dust suppressant in the early summer in the area of the lakes near Deception Bay to control road dust. The proponent noted in the impact assessment documents that in the summer of 2015, it paid special attention to dust control in this area, and that dust deposit measurements are underway, with the results expected to be available in the winter of 2016. It also noted that additional mitigation measures might be developed for this area based on these findings.

As part of the Sivumut project impact assessment, the proponent conducted an atmospheric dispersion study. The results indicate that Katinniq mining activities at the new ore extraction sites (e.g. mine 14) will not affect the air quality at sensitive receiving environments (Kangijsujaq and Salluit).

Within one year of the authorization of the Sivumut project, the proponent must file with the Commission a document describing its air emissions management plan. This document should provide a description of the emission sources of the project and of all the mitigation measures that the proponent intends to implement in response. The document will also include the results of the road dust measurements in the Deception Bay sector and any revised mitigation measures planned.

4.7.1.2 Water quality

According to the impact assessment documents, during the construction period, several activities at Sivumut could affect the quality of surface water. The main sources of impact are:

- construction of surface installations for the new mines, including infrastructure pads, ore and waste rock pits, gates, ventilation piers, collecting ponds, ditching (stripping, excavation, drilling, blasting, profiling, compacting)
- stripping, excavation, profiling and compaction required for the expansion of the tailings facility;
- construction of new access roads (laying, profiling and compacting of granular materials);
- vehicle and machinery traffic, le transport and loading/unloading of material and equipment;
- generation of domestic wastewater by workers mine sites.

During the period of mine operations, the main sources of impact will be the following for the new components of the Sivumut Project, as well as the Phase I components that will remain in use and taking into account the annual increase in production to 1.5 Mt:

- road maintenance (spreading calcium chloride as a dust suppressant);
- operation of waste rock and ore piles (loading/unloading, stockpiling, drainage of runoff) at the various sites;
- blasting in the mines;
- use of brine in the mines;
- operations at the tailings facility (circulation of machinery, profiling, compaction, drainage of runoff);
- operation of the Katinniq concentrator;

- cooling water discharge at Katinniq;
- stormwater drainage in the Katinniq sector and the various mines;
- operations at the Donaldson landfill;
- the generation of domestic wastewater by mine workers.

Several mitigation measures with respect to these impacts have been in place since the start of operation at Raglan Mine and are planned for the Sivumut Project. These are identified in the impact study.

Water quality in particular is regulated under the obligations contained in Directive 019 on the mining industry and by the environmental discharge objectives (EDOs) for the Sivumut project established by the MDDELCC in 2016.

It should be noted that the Ministry developed a methodology for determining the EDOs for each source of contamination based on surface water quality criteria, hydrodynamic conditions and environmental uses. This method is used to determine the concentrations and loads of contaminants that can be released into an aquatic environment without compromising water use. These concentrations and loads, called environmental discharge objectives or EDOs, are determined on the basis of the characteristics of the receiving environment and the level of quality necessary for maintaining water uses. EDOs are used to assess the environmental acceptability of existing or planned discharges and may justify additional interventions or modifications to the project.

The proponent considers the EDO approach too conservative for a project takes place in the North, and maintains that in reality, after 20 years operation, environmental monitoring efforts have shown no impact on the quality of fish flesh from the Deception River resulting from mining activities.

However, it should be noted that the three effluent streams at Raglan meet the definition of "watercourse" despite the fact that their flow is intermittent. The protection of aquatic life is not restricted to specific wildlife habitats or species of fish that are of interest to sports fishers. Small streams are recognized in the literature as essential habitats for maintaining biodiversity. This is why the EDOs protect these receiving streams in addition to the Deception River downstream. The low EDOs indicate the sensitivity of these environments that are responsible for the water quality downstream. This does not mean that the EDO values must all be reached 100% -- they are preventive values for identifying contaminants so that further studies, increased monitoring efforts or higher standards than those in Directive 019 can be requested. This means the proponent will have to justify why they are not achieved (not in terms of biology but in terms of technical or economic capacity) and to propose lower standards than those in the Directive based on the approved technology.

The proponent must monitor the water quality at the various effluents in accordance with the requirements in its ministerial authorization for Phase I and the regulations in force. One thing that the monitoring results revealed is that for the vast majority of metals, the average concentrations in the treated effluents have decreased over time, evidence of the efforts to improve water quality by recycling all process water (concentrator). For the Sivumut project, the same treatment systems will be used, but sand filters will be added (Katinniq sector). In the SPOON sector, processing will be continuous rather than batch processing. These changes may could a positive impact on effluent results.

Given that the EDO method is intended to be safe and preventive and that its goal is to avoid deterioration of aquatic environments, the Commission believes that the monitoring the proponent currently conducts on the three final effluents must be continued according to the modalities established by the Ministry of Sustainable Development, the Environment and the Fight against Climate Change.

4.7.2 Residual waste

The impacts assessment documents state that waste management is an important component of Raglan Mine operations. The activity is regulated by an internal operating procedure ISO-GEN-001 entitled Waste management, the guiding principles of which are similar to those in the Nunavik Residual Materials Management Plan and more generally to the principles of reduction at source, reuse, recycling, recovery and disposal. All staff working at the site are trained on how to sort the residual materials to ensure they are placed in the appropriate locations. An aide-memoire on the subject is available to everyone on the site.

Some residual materials are recovered and shipped to the south for recycling. These include used tires, used domestic batteries, spent vehicle batteries, empty wooden drums, ink cartridges, aluminum cans, computer hardware, electronic equipment, metals (when space is available on the *MV Arctic*), fluorescent tubes, compact fluorescent lamps, barrels of "boulets du concentrateur", old vehicles and non-functional equipment. Used oils are recycled for energy purposes for heating buildings and for operation of the domestic waste incinerator. Household waste including non-hazardous waste from the kitchen, housing complexes and offices and waste from the biodisk screens are all sent to the incinerator.

Other non-hazardous solid waste is carefully sorted into containers of "burnables", "non-burnables" and "recyclables." The burnable solid waste, including wood, paper and cardboard, is sent for burning at the burn site located at kilometer 86 on the road between Deception Bay and Katinniq. The ash is then buried at the Donaldson northern landfill (LEMN). The non-burnable waste is sent directly to the same landfill, accounting for an annual average of about 5,000 cubic metres of residual materials that cannot be recovered.

The landfill capacity is estimated at more than 500,000 m³ and at most, only 150,000 m³ has been deposited since it opened in the 1990s. At this rate, capacity is therefore sufficient to store non-recoverable residual materials for several more years. During Sivumut operations, about the same volume of residual materials will be produced. Thus, the landfill has the capacity to last beyond the end of Phase III, scheduled for 2041.

Hazardous waste is recovered and stored in appropriate and identified containers. The containers are then stored in shipping containers fitted with "bassins de rétention". Once these are full, they are shipped to authorized disposal sites in southern Quebec.

An incinerator was installed in 1995 to address some environmental and employee health and safety issues. The open-air burning of domestic waste in the winter is very difficult in a northern environment. In addition, the presence of food waste at the burning site attracts animals and makes access more difficult for employees.

However according to the proponent, the incinerator will not keep the gases in the second does not make it possible to keep the gases in the secondary combustion chamber at 1000 ° C. for 1 second, as regulations require. At present, the air emissions sampling results reveal exceedances.

When the Commission visited the mine site in the summer of 2016, it was provided information to the effect that operating the incinerator was very expensive and Raglan was unwilling to take other measures to limit air emissions. They were considering the option of open burning the waste.

The Commission invites the proponent to continue its efforts aimed at ensuring that a minimum of waste ends up in a northern landfill. The Commission recognizes that the incinerator does not operate optimally and that there are several technical and monetary constraints to its operation. However, the proponent will have to present for approval of the Commission a detailed description of how it intends to manage the residual materials generated by operations during the next phases of the mine, including specifying the intended use of the incinerator and presenting possible alternatives, such as composting.

4.7.3 Caribou

The proponent's documents repeatedly emphasize the importance of caribou and the concerns that communities have expressed about the impact of the mine on this species.

Since the submission of the impact assessment, new data from Québec wildlife managers has revealed that the Leaf River herd is now in decline, with only 199,000 caribou now in the herd compared to 430,000 in 2011. Measures have already been announced to encourage the sustainability of the migratory caribou, including the closure of the sport hunt as of February 1, 2018. Meanwhile, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has determined that the status of migratory woodland caribou in eastern Canada should be changed to "Endangered."

Given the status of the species, its importance to the Inuit and the concerns that communities have about the impact of the mine on the caribou, the Commission believes that the proponent must pay special attention to the assessment of the mine impacts. Although the methodology used to evaluate the impact of the project on caribou was correctly applied, a more detailed study on the effects of disturbances on habitat selection and caribou survival would have been useful.

The Commission is aware that the Research Chair of Caribou Ungava recently began such research on migratory caribou in Nunavik, with the objective of determining the patterns of habitat selection on the species' summering and wintering areas, with particular attention to the simple and cumulative impacts of human activities. The study also hopes to determine the relationship between habitat selection strategy and individual survival in order to assess the demographic consequences for the population.

The Commission is of the opinion that this study will shed new light on, and result in a more accurate assessment of, the consequences of mining development on this species. In light of the results of this study, the proponent should re-assess the mitigation measures it plans in relation to caribou. This reassessment is all the more important since the population status of the Leaf River herd is likely to change between now and the beginning of Phase III.

4.7.4 Maritime transport in Deception Bay

Maritime transport is vital to Nunavik for the movement of fuel and of heavy or bulk goods. According to the impact assessment documents, no changes are planned to shipping frequency or the navigation period in Deception Bay. However, a document sent to the Commission in connection with the review of the environmental mitigation measures required under the Raglan Agreement indicate that the proponent would like to modify the navigation period.

The Commission advises the proponent that it will have to return to the Commission for authorization of any changes in connection to the navigation period. Any such request will need to document the impacts on seal populations in Deception Bay.

In addition, management of ballast water was one of the concerns raised during the public hearings conducted by the Commission. Specifically, interveners worried about the entry of new alien invasive species into Deception Bay. Under Canadian regulations, ballast water must be managed to ensure that this water is discharged appropriately so as to prevent the introduction of non-native bacteria, plants and animal species into Canadian waters. Transport Canada and the International Maritime Organization also have rules in place to avoid environmental problems arising from ballast water discharge. The Commission considers that this aspect is sufficiently regulated.

4.8 CONCLUSION

The Sivumut project is environmentally and socially acceptable as long as the proponent implements the proposed mitigation and compensation measures and meets the conditions contained in this report. However, the information describing Phase III is very limited, and thus the proponent will have to provide an update on that phase before it begins activities.

It is reasonable to assume that mining development will continue to expand with the arrival of new companies bringing their own transport and supply requirements. This new land use will change the environment and the way of life of those who inhabit the territory.

More generally, as the Commission was able to witness during the public hearings, mining development provokes very mixed feelings in the communities most directly affected by a given project, and people often perceive a conflict between their traditional way of life and the potential for personal and collective enrichment. The signing of an IBA between the proponent and the affected communities can certainly be a useful tool for the economic development of the territory. However, the Commission believes there is still much work to be done to bring these two worlds closer together.

In the Commission's view, mining development, which by its very nature is temporary, must be incorporated into a more general vision for the planning and development of the territory by all stakeholders, be they political or administrative. The impacts on the environment and lifestyle of the Inuit can only be truly minimized through planned, concerted, and long-term actions. It is urgent for politicians and administrative officials to take part in communication efforts so that the communities affected by a particular project do not feel powerless in the face of the upheavals mining development brings, which adds to the burden of the various upheavals Inuit society in Nunavik already faces.

5 DECISION AND CONDITIONS

This decision of the Kativik Environmental Quality Commission concerns the Sivumut project. Any modification or addition to the project as authorized must be submitted to the Commission for its decision. This decision is conditional on the fulfillment of the conditions enumerated below. The decision is valid insofar as the main work related to the access infrastructure and the start-up of operations at the mine site, including the refurbishment of the concentrator, are undertaken within five years from the date of authorization of this project by the Ministry of Sustainable Development, the Environment and the Fight against Climate Change.

After analyzing the documents submitted by the proponent and in consideration of the concerns raised at the public hearings held by the Commission:

The Kativik Environmental Quality Commission has decided that the Sivumut project can be authorized. However, the proponent must submit to the Administrator for approval, two years prior to the commencement of Phase III construction work, an update of the relevant sections of the impact assessment. This update must include, in particular, a detailed description of the project, its impacts, and the proposed mitigation and compensation measures. Any change to the choice of mining sites exploited in Phase III will require a new impact assessment.

- Condition 1.** The proponent's efforts in Phase I to promote and maintain Inuit jobs must be maintained at minimum at the same level during the Sivumut project.
- Condition 2.** The proponent must continue its research into the idea of capping the tailings facility using a geomembrane, or another method if a more promising approach is called for. The proponent must submit to the Administrator for information, within three months of project authorization, its communication strategy for sharing the results of this research and ensuring that it is properly disseminated.
- Condition 3.** The proponent will submit to the Administrator, for information, the five-year versions of the restoration plan as provided for in the *Mining Act*.
- Condition 4.** The proponent must submit to the Administrator for information, within six months of project authorization, a revised analysis of mitigation measures related to traditional land use after the study on this subject has been published.
- Condition 5.** Within one year of the authorization of the Sivumut project, the proponent must file with the Administrator, for information, its air emissions management plan. This document should provide a description of the emission sources at the project and of all the mitigation measures that the proponent undertakes to implement in response. The document will also include the results of dust control measures in the Deception Bay sector and an update on the planned mitigation measures.
- Condition 6.** The proponent will file with the Administrator, at the next filing of its annual Environmental Monitoring and Follow-up Report, a progressive reclamation work schedule for the following mine sites: Kikialik, Mines 2 and 3, and Qaqimajurk

Mine, as well as for the tailings facility. This timetable should include the various steps, such as the dismantling of infrastructure, the return of waste rock to the openings and underground workings, the water catchment basins, the water treatment plant. The report will include photos of the sites before reclamation work and the subsequent reports will contain photos documenting the reclamation work.

- Condition 7.** Within two years of the project authorization, the proponent must provide the Administrator with a detailed description of how it intends to manage the residual materials generated during Sivumut operations, including specifying the plans for using the incinerator and presenting other alternatives that might be initiated, such as composting.
- Condition 8.** Within two years of project authorization, the proponent will file with the Administrator, for information, all proposed mitigation measures for limiting the project's climate change impacts and increased greenhouse gas emissions. The proponent must also indicate how it intends to reduce potential climate change impacts on various project components. The proponent must also indicate how it intends to share the relevant information arising from the work of the expert committee on the long-term management of tailings and waste rock and the Sivumut sub-committee and ensure that this information is broadly disseminated.
- Condition 9.** Within three years from authorization, the proponent must re-assess its planned mitigation measures for caribou in light of the results of the study conducted by the Research Chair of Caribou Ungava, and inform the Administrator of any changes made to these measures.
- Condition 10.** The proponent must monitor the three final effluents using the methods established by the Department of Sustainable Development, the Environment and the Fight against Climate Change. After 3 of operation beginning with the authorization of the Sivumit Project, and every 3 years thereafter, the proponent must provide the Administrator an analysis report on the monitoring data of effluent quality. If EDO exceedances are observed, then the proponent must present the Administrator with the reason for the exceedances and the methods that the proponent intends to implement in order to meet the EDOs or come as close to them as possible.
- Condition 11.** The proponent will file with the Administrator for approval, three years after project authorization, an update of the Raglan Mine Monitoring and Monitoring Program. The program should cover all monitoring required in the authorization and highlight the changes made to the various environmental and social monitoring efforts for Phases II and III.
- Condition 12.** The monitoring program of social impacts should be developed in collaboration with the Kativik Regional Government and the Nunavik Regional Board of Health and Social Services. The program should include a protocol for monitoring the communication methods implemented with partners and communities. The protocol will include the method used to track each performance measure and indicator. It will also address the qualitative aspect of the Inuit worker inquiry process in order to ascertain their level of satisfaction with their working conditions and their general well-being at work.

