ROYAL NICKEL CORPORATION

DUMONT PROJECT

Environmental and Social Impact Assessment

SUMMARY

January 2013-01-21
Project: 111-15275-01

GENIVAR

DUMONT PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

SUMMARY

Presented to

Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs

and

Canadian Environmental Assessment Agency

JANUARY 2013

111-15275-01

NOTE TO THE READER

This document is a translation of a document originally written in French.

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Reference to cite:

GENIVAR. 2013*. Dumont Project, Environmental and Social Impact Assessment*. Summary. Report produced for Royal Nickel Corporation (RNC). December 2012. 97 pages.

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1. INTRODUCTION

Royal Nickel Corporation (RNC) plans to mine a nickel-bearing deposit, the Dumont Project, in a rural area located between the villages of Launay and Villemontel, about 25 km west of the town of Amos (Map 1). The project provides for construction of an ore processing plant (concentrator) with an initial capacity of 50,000 t/d at an average nickel content of 0.27%, and an increase in this capacity to 100,000 t/d effective in Year 5. The mine's projected life cycle is about 34 years.

RNC has decided to design, develop and implement its project in a sustainable manner, from initial planning through to closure. The aim is to harmoniously integrate the project into its host environment, while continuously supporting and stabilizing the region's economy and quality of life.

The Dumont Project is subject to the environmental impact assessment and review procedure under the Environment Quality Act (R.S.Q., c. Q-2; "EQA") and its Regulation Respecting Environmental Impact Assessment and Review (R.R.Q., c. Q-2, r. 23; s. 2(p)). The project is also subject to the comprehensive study procedure of the previous Canadian Environmental Assessment Act (R.S.C., 1992, c. 37; "CEA Act") because the project notice for the Dumont Project was deposited on December 6, 2011, under the previous Act, before its amendment came into force on July 6, 2012 under the name Canadian Environmental Assessment Act, 2012 (R.S.C., 2012, c. 19, s. 52).

This assessment contains all the knowledge and analytical elements necessary to satisfy the directive of the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec (MDDEFP) and the guidelines of the Canadian Environmental Assessment Agency (CEAA), and thereby the requirements of the EQA and the CEA Act.

The mining complex design presented in this impact assessment represents the mining infrastructure layout established in July 2012, which was modified from the configuration presented in the project notice submitted in December 2011 and in the pre-feasibility study. The main reason for the change was that it was not possible to comply with the Clean Air Regulation dust emission standards over the municipality of Launay using the former infrastructure configuration. The project optimization that led to the new mining concept is presented in detail in subsection 5.8 of the main impact assessment report.

Complementing its environmental efforts, RNC is ensuring that the social component of sustainable development occupies a predominant place in the design, construction and operation of the Dumont Project. The Company is highly visible in the community and intends to contribute to community life. Aware of the role it will play in the residents' quality of life and welfare, RNC intends to guide its choices and decisions through consultation and collaboration with the community.

1.1 Presentation of the Proponent

RNC is a corporation that operates in the mineral resources sector. It is primarily focused on the exploration, development, evaluation and acquisition of base metal and platinum group metal mining properties. RNC's main asset is the 100% owned Dumont Project, which it acquired in 2007.

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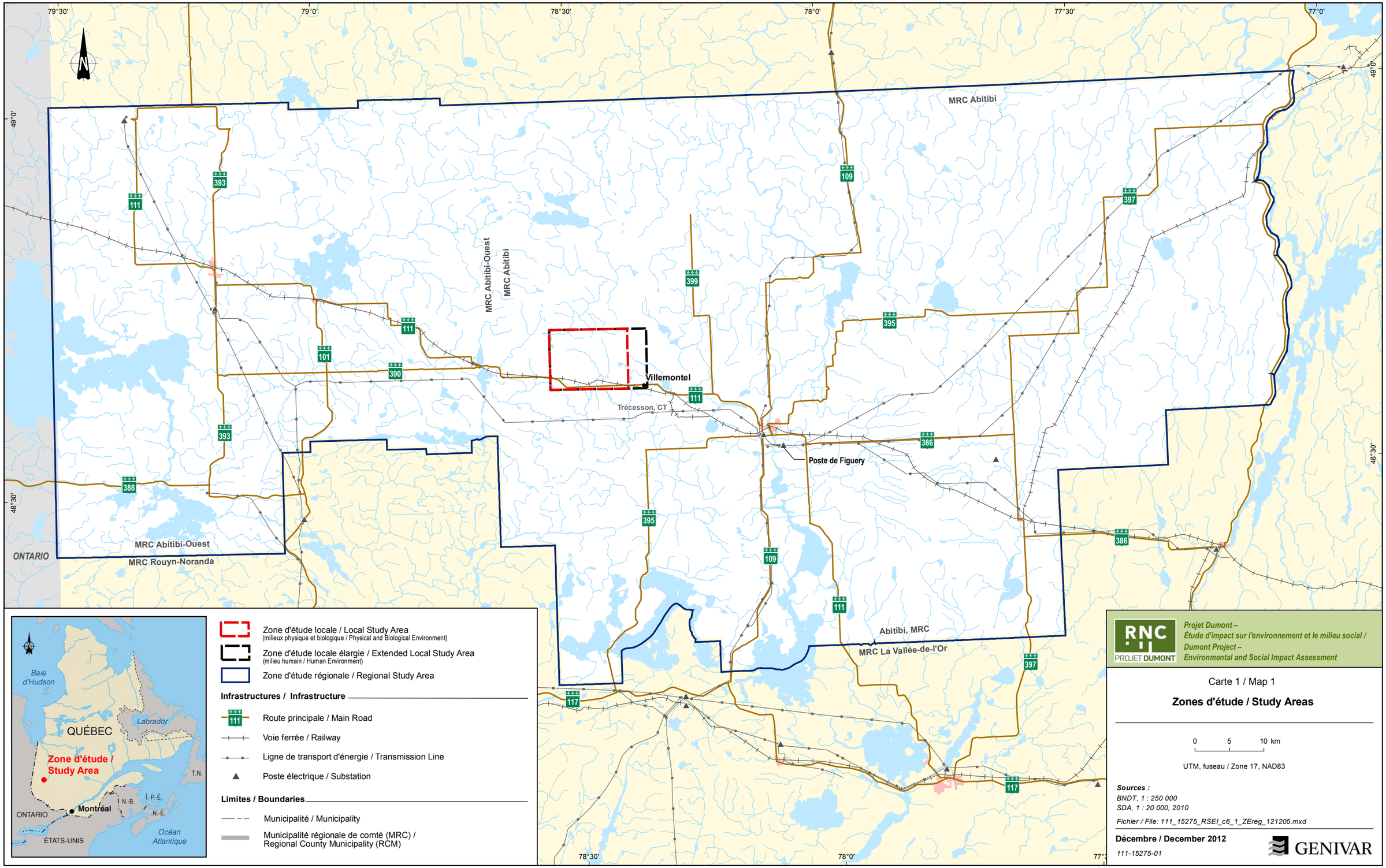

Zone d'étude locale / Local Study Area
(milieux physique et biologique / Physical and Biological Environment)

Zone d'étude locale élargie / Extended Local Study Area
(milieu humain / Human Environment)

Zone d'étude régionale / Regional Study Area

Infrastructures / Infrastructure

Route principale / Main Road

Voie ferrée / Railway

Ligne de transport d'énergie / Transmission Line

Poste électrique / Substation

Limites / Boundaries

Municipalité / Municipality

Municipalité régionale de comté (MRC) / Regional County Municipality (RCM)

Projet Dumont – Étude d'impact sur l'environnement et le milieu social / Dumont Project – Environmental and Social Impact Assessment

Carte 1 / Map 1

Zones d'étude / Study Areas

0 5 10 km

UTM, fuseau / Zone 17, NAD83

Sources :
BNDT, 1 : 250 000
SDA, 1 : 20 000, 2010

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Décembre / December 2012

111-15275-01

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2. CONTEXT AND JUSTIFICATION OF THE PROJECT

RNC's Dumont property is composed of 220 contiguous mining claims with a total area of 9,042 ha. The surface rights attached to the mining property are held in part by private interests, including RNC, while the remainder consists of public lands. In addition, part of the projected infrastructure falls within the permanent agricultural zone.

RNC acquired the Dumont property in late 2006. Initial core drilling work, followed by additional drilling and a preliminary economic evaluation of the mining project were conducted in 2007 and 2008. The estimate of the project's mineral resources relies on the database obtained from core drilling performed by RNC from 2007 to 2010. Between 2007 and 2009, and in 2011 and 2012, RNC preceded with several environmental characterization studies to describe the receiving environment and identify the potential presence of sensitive elements.

On November 1, 2011, RNC completed a pre-feasibility study for the Dumont Project. The conclusions showed interesting economic values, namely a net present value (NPV) after tax of $1.1 billion at an 8% discount rate, and reserves of 1.1 billion tonnes at a nickel grade of 0.27%. A revision of the pre-feasibility study was published on May 14, 2012, in which RNC confirmed a 31% increase in the NPV after tax at an 8% discount rate, due to an increase in the production rate, an increase in the nickel recovery rate, and a reduction of diesel consumption with the deployment of an electric trolley system for the haulage trucks.

On May 28, 2012, RNC mandated Ausenco Solutions Canada (Ausenco) and SRK Consulting (SRK) to produce feasibility study for the Dumont Project. The results of this study should be announced by mid-2013.

2.1 Legislative Context

In Québec, Division IV.1 of the Environment Quality Act (EQA) (R.S.Q., c. Q-2), obliges every person or group to follow the environmental impact assessment and review procedure before undertaking a project covered by the Regulation Respecting Environmental Impact Assessment and Review (R.R.Q., c. Q-2, r. 23). With an estimated production rate exceeding 7,000 metric tonnes per day, the Dumont mining project is subject to this procedure. The project notice was filed in December 2011, and the MDDEFP submitted its directive on January 23, 2012 stipulating the nature, scope and extent of the environmental and social impact assessment to be performed.

At the federal level, the project is subject to an assessment under the CEA Act (1992, c. 37). The Canadian Environmental Assessment Agency (CEAA) will act as federal coordinator because a comprehensive study is required. Canada's Department of Fisheries and Oceans (DFO) and Natural Resources Canada (NRCan) will act as permit issuing authorities, respectively under Section 35(2) of the Fisheries Act (R.S.C., 1985, c. F-14) and Section 7(1) of the Explosives Act (R.S.C., 1985, c. E-17). Moreover, Environment Canada and Health Canada can intervene as expert authorities.

The Dumont Project is subject to the Comprehensive Study List Regulations, which cover the proposed construction, decommissioning or abandonment of a metal mine, other than a gold mine, with an ore production capacity of 3,000 t/d or more (Section 16) and facilities for the extraction of 200,000 m^3/year or more of groundwater (Section 10).

2.2 Justification of the Project

Provincial and regional spinoffs

The mineral extraction sector contributes greatly to the Québec economy, for an annual value (contribution to GDP of activities related to mining production) of over $4 billion ($4.77 billion in 2008). The mining industry is also a major source of industrial investments, totalling, in Québec, $710 million for exploration/development, and $2.45 billion for the development of mining complexes. In 2010, Canadian mining companies produced 156,270 t of nickel for a total value of $3.51 billion, of which Québec contributed 29,791 t (19%). In 2011, Canadian production increased to 212,056 t for a value of $5.09 billion, of which 26,791 t was produced in Québec. In addition to concentrate production, the Canadian nickel industry also has major concentrate processing capacity.

In addition to generating major spinoffs through direct and indirect jobs, the Dumont Project will also yield major benefits in terms of in-province goods and services procurement, taxes, royalties, salaries and wages, and profits and dividends.

In 2008, mining production activities accounted for about 16,400 direct jobs and 14,000 indirect jobs through various suppliers (professional services, equipment manufacturers, suppliers of related goods and services, etc.). This represents 0.9 indirect jobs for each direct job. Nearly 70% of these indirect jobs are in the service sector. In 2011, 3,318 mining-related jobs in the Abitibi-Témiscamingue region represented about 20% of the reported total of 16,855 jobs.

With investments on the order of $15 billion, the Dumont Project will create some 52,000 jobs/year and will support many suppliers of goods and services in the province and in the Abitibi-Témiscamingue region. About one third of the operating expenses (about $13 billion) will be spent in Abitibi-Témiscamingue. The Dumont Project will thus provide leverage for the area by supporting the regional economy and stimulating some of the local economies.

Nickel market

The general context of the nickel market is favourable to the development of the Dumont Project. There is growing demand, especially from China, the leading nickel-consuming country and the world's top stainless steel producer. The Dumont Project is part of a global economic context characterized by an anticipated rise in nickel consumption. It will contribute to this growth for thirty years.

According to forecasts, world nickel consumption should reach 1.7 Mt in 2012. Global consumption should grow at a rate of slightly over 4% in the following years to reach 1.9 Mt in 2015. At a conservative annual growth rate of 3%, consumption in 2025 would be 2.5 Mt. Since 2000, China's demand for nickel has increased tenfold, rising from 63 kt to 702 kt in 2011. This situation results from the worldwide growth in the use of stainless steel.

In 2010, Canadian mining companies produced 156,270 t of nickel for a total value of $3.51 billion, of which Québec contributed 29,791 t (19%). In 2011, Canadian production increased to 212,056 t for a value of $5.09 billion, of which 26,791 t was produced in Québec.

3. CONSULTATIONS WITH THE COMMUNITY

RNC attaches great importance to consulting interested parties and wishes to consider the concerns and interests collected during every phase of the project. In this context, RNC has made a voluntary commitment to dialogue with the project's host communities and with groups interested by the mining sector.

This development approach comprises two main stages:

- the information and consultation process associated with the pre-feasibility study;
- the consultation process associated with the Environmental and Social Impact Assessment (ESIA).

To ensure a rigorous approach and to facilitate the dialogue with the company, RNC retained the services of a social engineering firm. Acting as a third party during the consultation activities, its role was to support RNC in the coordination of the consultation activities and to produce the minutes and reports documenting the discussions and how RNC integrated them into the development of the Dumont Project.

All the activities were documented and any concerns expressed by the project's various stakeholders were compiled. A report on the information and consultation process conducted during the pre-feasibility study was produced by Transfert Environnement in 2011. A second report on the consultation process associated with the ESIA will also be produced by Transfert Environnement and will be submitted to the relevant authorities when the consultation process on the impacts is completed.

The following types of communication were used during the consultation process:

- information sessions;
- open house events and site visits;
- feedback activities;
- establishment of advisory committees:
    - expanded advisory committee;
    - Municipalities/Company round-table.
- information and consultation processes for the Abitibiwinni First Nation of Pikogan.

Tables 1 and 2 respectively present the main concerns and the location selection criteria discussed during the information and consultation activities.

Table 1 Main issues of concern raised during the information and consultation processes

Category	Issues of concern
Information and consultation processes	• Operation, composition, resources and role of the committees • Access to information on the project • Purpose of the consultation process
Methods and means of impact analysis	• Credibility of the methods used to analyze the environmental and social impacts (e.g., questions regarding the methods selected to assess the project's social impacts) • Accuracy of the data used (e.g., presence of margin of error) • Continuous impact analysis • Accounting for related projects
Economic development	• Impacts on the local and regional economy • Maximization of local and regional spinoffs • Residential and industrial development • Retention of newcomers and population growth
Water	• Protection of groundwater (eskers, wells, etc.) • Contamination of surface water • Chemical composition, securing and management of effluent from the accumulation areas (waste rock piles and tailings storage facilities) • Mitigation and compensation measures for impacts on water
Soil and location of components	• Distance of components from the highway and residences • Area of the affected land
Fauna, flora and wetlands	• Impacts on large fauna • Compensation for destruction of wetlands
Visual impacts	• Effect on the landscape • Mitigation measures for visual impacts
Climate and air quality	• Dust emission • Dust control and mitigation measures
Human environment	• Use of the railway • Recreational tourism and agroforestry activities • Purchase of nearby residences and negotiating process • Real estate development • Increase in the value of housing and its impact on the ability of residents to pay their taxes • Benefits for the community in terms of infrastructure and community investment • Social fabric and quality of life
Health and safety	• Transport of chemicals • Health risk to workers and residents related to the presence of chrysotile in dust • Emergency response plan • Site securement

Table 1 Main issues of concern raised during the consultation process (cont'd)

Category	Issues of concern
Nuisances	• Noise • Nuisances during the exploration and development phases • Dust emissions • Road congestion • Heavy vehicle traffic
Restoration and post-closure	• Plan for site restoration and future use • Financial guarantees for site restoration • Economic diversification fund
Project (various)	• Possibility of gradually filling the pit • Exploratory drilling and boreholes • Profitability of the project • Consequences of a possible sale of the project

Table 2 Location selection criteria raised during the consultations

Issues	Location criteria
Noise, visual and dust nuisances	Components positioned north of Highway 111 so that trucks do not have to cross it
	Truck traffic areas concentrated far from Highway 111 and residences
	Highest pile (waste rock pile) far from Highway 111 and residences
	Lower piles (tailings storage facilities and overburden storage area) near Launay and Highway 111
	Temporary piles (low-grade ore pile) near downtown Launay and Highway 111
	Rapid revegetation (overburden storage area and tailings impoundment dikes) near downtown Launay and Highway 111
	Tailings storage facility far from Highway 111 and residences
Water	Components located within a single watershed (Villemontel River)
	One-kilometre buffer zones around the Launay and St-Mathieu-de-Berry eskers
Sensitive environments	Protection of the wetland habitat of the Slender-leaf Sundew (special-status species)
	Protection of the wetland east of Launay
	Protection of the woods near the Launay esker
	Protection of the known territory of the Rock Vole (special-status species)

4. COMPARATIVE ANALYSIS OF ALTERNATIVES

4.1 General

The comparison and selection of project execution variants are part of the environmental assessment process, which must highlight the objectives and selection criteria of the variant selected by the proponent.

As specified in the MDDEFP Directive for the Dumont Project and in the Guidelines for the Preparation of an Environmental Impact Statement under the Canadian Environmental Assessment Act, this section of the assessment includes the determination of the execution variants, the selection, by means of discriminating parameters, of the variant or variants on which the detailed impact assessment will be based, and finally, the description of the selected variant or variants.

This section summarizes the assessment and analysis of specific aspects of the Dumont Project, which were subjected to several different scenarios in order to achieve the objectives of an economically viable project while optimizing the environmental, social or technical aspects.

The variants and candidate alternatives analyzed in Volume 1 of the impact assessment are:

- a “no project” variant;
- various possible solutions for the extraction and processing of nickel ore;
- possible approaches for managing the process tailings;
- various alternatives for the transport of inputs and nickel concentrate;
- possible mining complex layouts;
- alternatives for the tailings storage facilities (TSF).

In this Summary, only the pit backfilling variants and the choice of mine waste impoundment sites are presented.

The proposed solutions take into account environmental, social, technical and economic issues.

In the specific case of the analysis of TSF alternatives, the recent Environment Canada document, Guidelines for the Assessment of Alternatives for Mine Waste Disposal, published in September 2011, was used to analyze the possible variants and select the best solution.

The following sections discuss the choices of the most conclusive Dumont Project variants.

4.2 Pit Backfilling Variant

The backfilling of the Dumont pit at the end of the project is one of the concerns most frequently raised by the regional population.

At the end of the Dumont Project's life, it might be possible to return the materials accumulated on the surface back into the pit to fill the open spaces. The pit, with an available total available volume of 1,057 Mm^3 once the project is completed, would be able to accommodate 395 Mm^3 of tailings, 511 Mm^3 of waste rock, and 106 Mm^3 of overburden, leaving an unfilled volume of about 46 Mm^3. This means that even if all waste rock and overburden accumulated at surface are returned to the pit, it will not be possible to fill it completely to the original soil level. In such a case, ground and surface water would likely accumulate in the depression and create a submerged zone, which could not allow the space to be used for other purposes.

The costs associated with filling the Dumont Project pit would be substantial. They would include additional operating costs incurred over several years for the loading and transport of about 1.07 Gt of waste rock and 181.8 Mt of overburden. The cost of replacing trucks that reach the end of their life cycle would also need to be taken into account.

The authors of the feasibility study in progress have estimated the costs associated with completely filling the pit. They consider only the optimum case in which the waste rock and unconsolidated deposits could be tipped into the pit by overtopping; the need to send trucks down into the pit to unload the material would result in a significant increase in the costs, which are estimated as follows:

- waste rock: additional capital cost of $296.9 million, and additional operating cost of $1.28 billion;
- unconsolidated deposits: additional capital cost of $110.3 million, and additional operating cost of $238.4 million.

The capital costs thus would be $407.2 million, and the additional operating costs would be a little over $1.5 billion, for a total of nearly $2 billion.

The financial impact on the Dumont Project would represent a fatal flaw in the economic plan, since costs would be about double the financing of the project, and greater than the net present value of the project, currently valued at just under $1.4 billion.

4.3 Selection of Mine Waste Disposal Sites

The Environment Canada document Guidelines for the Assessment of Alternatives for Mine Waste Disposal describes the multicriteria analysis process that a mining project proponent must undertake in the event that a water body may be used as a tailings storage facility (TSF).

The Dumont Project is subject to such an analysis given that the proposed design may affect fish habitats.

Analytical approach

The analysis of alternatives mainly considered significant differences related to:

- constraints that define the available spaces, in particular:
  - water bodies and watercourses (fish habitats);
  - the watershed dividing the rivers flowing to James Bay and those flowing to the St. Lawrence River;
  - eskers, groundwater, water quality, and mining effluent;
  - designated or potential biological sanctuaries and wildlife habitats;
  - flora, special-status species, and wetlands;
  - air quality, dust, and climate change (GHG);
  - public and private infrastructure: roads, railway, power lines;
  - built-up and agricultural environments;
  - resort areas, recreational tourism zones, and traditional Aboriginal land uses.
- water management, in case of possible multiple effluents;
- extent of the TSF;
- length of access routes and volume of dikes to be constructed; this volume depends on the height and perimeter of the proposed layouts for various sites. For the access routes, special conditions such as the crossing a watercourse and/or public infrastructure were given particular emphasis;
- pumping distances of tailings and recirculated water;
- identification of candidate alternatives.

In all, eleven alternatives were identified as potential TSF sites. They have been identified by the letters A to K in Table 3.

Table 3 Candidate alternatives

Solution	Summary Description
A	**Layout proposed in the pre-feasibility study and the project notice:** Two tailings cells north of the pit Two main overburden piles east of the pit One waste rock pile northwest of the pit and the concentrator One low-grade ore pile west of the pit and the concentrator All the components located in the St. Lawrence watershed One explosives assembly unit and the waste rock and low-grade ore piles in the western part of the property Road and rail accesses from the south
B	**Same layout as for Solution A, except for the two tailings cells:** Two tailings cells moved northward, in the James Bay watershed The layout eliminates an encroachment on a special-status plants zone The layout eliminates a neutralization constraint for a future potential mineral resource in the northwest extension of the pit (layout A), and could allow a modification of the footprint of the waste rock pile, which also encroaches on this extension
C	**Same layout as for Solution A, except for the two tailings cells:** Two tailings cells moved eastward, east of Lac à la Savane and west of the Saint-Mathieu-Berry esker The site is completely situated in the James Bay watershed The solution allows the same advantages and modifications (waste rock) as Solution B
D	**Same layout as for Solution A except for the two tailings cells:** Two tailings cells moved northeastward, north of Lac du Centre and east of the Saint-Mathieu-Berry esker The site is completely situated in the James Bay watershed The solution allows the same advantages and modifications (waste rock) as Solution B
E	**Same layout as for solution A, except for the two tailings cells:** One tailings cell moved southeastward, south of Highway 111 The location does not have the capacity to accommodate all the tailings (45%) to a height of 50 m The site is completely located in the St. Lawrence watershed The solution could allow the same advantages and modifications (waste rock) as Solution B, provided that a portion of the tailings remains in the part envisioned in Solution A
F	**Same layout as for Solution A, except for the two tailings cells:** One tailings cell moved southward, south of Highway 111 The location does not have the capacity to accommodate all the tailings (88%) to a height of 50 m The site is completely located in the St. Lawrence watershed The solution could allow the same advantages and modifications (waste rock) as Solution B, provided that a portion of the tailings remains in the part envisioned in Solution A
G	**Same layout as for Solution A, except for the two tailings cells:** Two tailings cells moved southwestward, south of Highway 111 and southeast of Launay, in the St. Lawrence watershed The solution allows the same advantages and modifications (waste rock) as Solution B

Table 3 Candidate alternatives (cont'd)

Solution	Summary Description
H	**Same layout as for Solution A, except for the two tailings cells:** Two tailings cells moved southwestward, south of Highway 111 and southwest of Launay, in the St. Lawrence watershed The solution allows the same advantages and modifications (waste rock) as Solution B
I	**Same layout as for Solution A, except for the two tailings cells:** Two tailings cells moved northwestward The site is completely situated in the James Bay watershed The solution allows the same advantages and modifications (waste rock) as Solution B
J	**Moving the tailings and waste rock eastward, onto the Saint-Mathieu-Berry esker:** Only solution not encroaching on a fish habitat. The waste rock would be deposited at the same site to provide a scenario in which it would be considered a TSF. Three tailings cells are envisioned, contiguous to the waste rock piles The solution allows the same advantages and modifications (waste rock) as Solution B
K	**Layout proposed in the feasibility study:** Two tailings cells west of the pit and concentrator, in the western part of the property Two main overburden piles east of the pit, on both sides of a waste rock pile A main waste rock pile north-northeast of the pit, contiguous to a main low-grade ore pile situated immediately north of the pit A secondary low-grade ore pile immediately northwest of the pit All components situated in the St. Lawrence watershed Explosives assembly unit to the north, west of the main low-grade ore pile Road and rail access from the south

Screening of alternatives

Some of the eleven candidate alternatives are incompatible with certain operational or economic criteria that would make them viable. A screening analysis was performed to exclude some of the alternatives using the criteria established to test viability.

These criteria consider the following main variables:

1. The TSF must allow all anticipated process tailings to be impounded in a single accumulation area.
2. The TSF does not have the effect of neutralizing a potential mineral resource that may become economically viable in the future.
3. The TSF offers the possibility of increasing its impoundment capacity.
4. The TSF does not adversely affect the project's overall economic viability to the extent of rendering it unfeasible.
5. The TSF does not introduce a potential for malfunction that would pose an unacceptable risk to the environment, public infrastructure, or people.

6. The TSF does not conflict with designated plant or wildlife habitats or species. Some such features are present in the alternative assessment study area.
7. The TSF does not pose a major conflict with environmental or social issues of the host environment.

Based on these criteria, alternatives A, B, G, J and K were retained and subjected to the Environment Canada multicriteria analysis.

Result of scoring analysis

The analysis shows that Solution K (the layout proposed in the feasibility study) is the most favourable.

Solution K also obtains the best merit rating for the Environmental, Technical and Economic scores.

Overall, by using the indicator weightings of the analysis, the mining waste disposal site on the west side of the property (Solution K) appears to be the best TSF solution for the Dumont Project.

5. DESCRIPTION OF THE PROJECT

5.1 Highlights

The Dumont Project will use a conventional ore extraction method, via open pit mining (Map 2). The operation will use conventional methods and equipment for drilling and blasting, loading with power shovels and ore transport by truck. Various support equipment, also typical of this kind of operation, will also be used.

The operations plan is based on a potential resource of approximately 1.07 billion tonnes (Gt) and the extraction of 1.14 Gt of ore and 1.3 Gt of waste rock, for a waste rock to ore ratio of 1.14/1. Accounting for the initial investment required, the initial processing rate would be 50,000 t/d (50 kt/d), followed by an expansion to 100 kt/d starting in Year 5. Over the project's 34-year life cycle, 4.7 Mt of concentrate will be produced, representing 0.4% of the processed ore. Two years of construction/preproduction are added to the project's overall life cycle.

In the two years of preproduction corresponding to the construction period of the mining complex, a total of 56.9 Mt of material will be removed by stripping, including: 12 Mt of clay to be reused later, largely for restoration; 11.6 Mt of granular material of which 4 Mt will be used to construct the dike of the first cell of the process tailings storage facility; 14.6 Mt of waste rock used as construction aggregate and for the dike of the first cell of the tailings storage facility as well as for temporary roads in the work zone; and 18.7 Mt of ore that will be stockpiled prior to concentrator startup.

The material will be extracted from the pit according to the following steps:

- excavation of the upper clay;
- excavation of the upper cuts of the granular overburden and waste rock; once enough loading areas have been developed, the rest of this work will be assumed by the RNC fleet;
- extraction of waste rock and ore; and
- processing of the low-grade ore stockpiled near the concentrator, starting in Year 21.

Once the pit is completely mined, it will measure approximately 4.9 km long by 1.4 km wide and will have an approximate maximum depth of 560 m.

Most of the clay and granular overburden will be stored in two piles east of the pit. Three smaller temporary piles will be laid out on the west side. This material will be used for the restoration work.

Two tailings cells located about 1 km west of the pit will be used during operations, from Years 1 to 20. They will occupy an area of about 13.8 km^2. The first cell will receive tailings until Year 6 and the second until Year 20. The total accumulated at that time will be around 630 Mt of tailings, or about 146 Mt in Cell 1 and 484 Mt in Cell 2. The rest of the tailings (509 Mt) will be sent to the pit between Years 20 and 34.

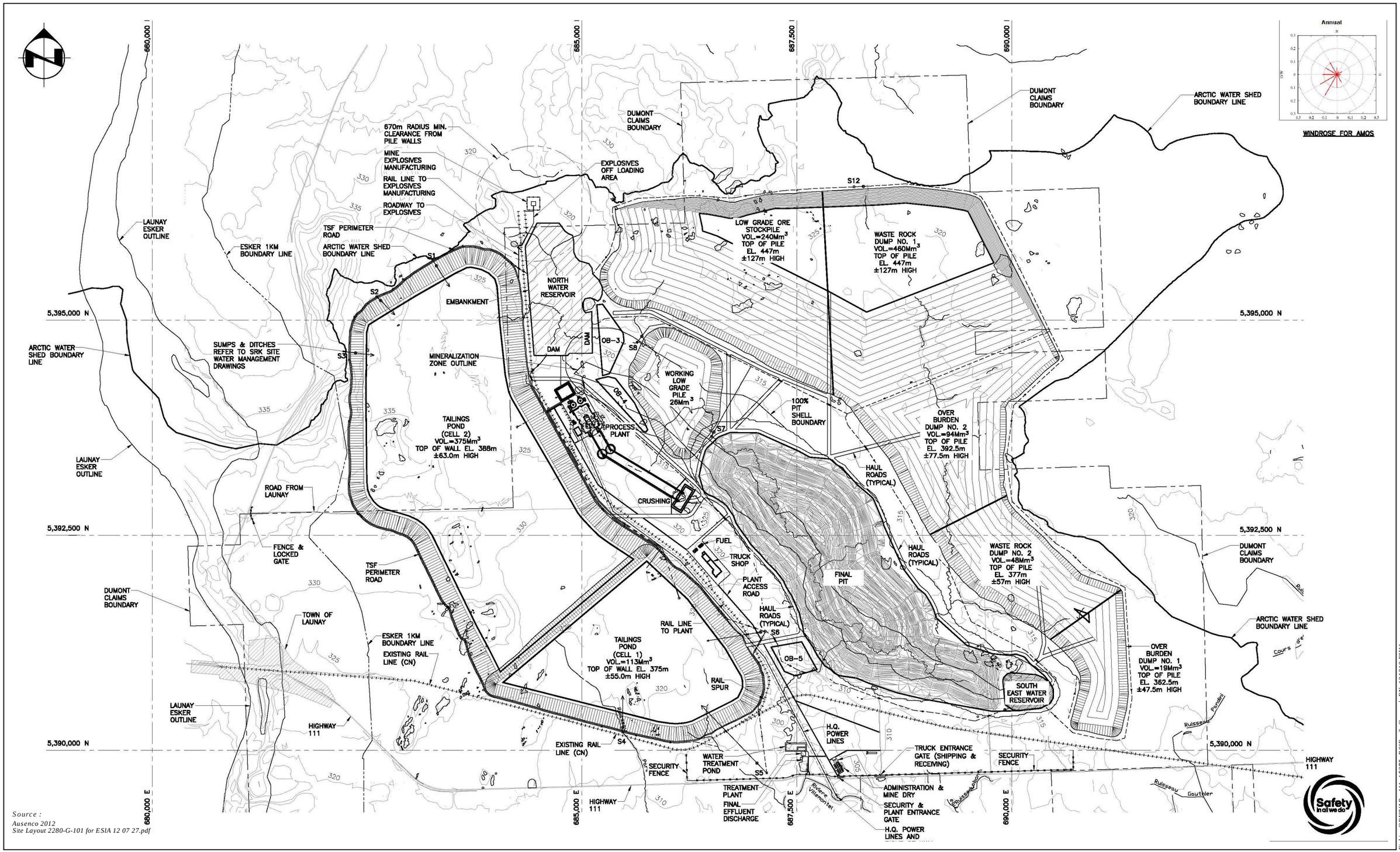
The tailings will be pumped from two tailings thickeners to the concentrator, at a density of about 40% solids. The pumping will be done at a rate of 4,250 m^3/h when the plant is processing 50,000 t of ore per day, and at 8,500 m^3/h when the second processing line will be operational, starting in Year 5.

Part of the waste rock will be used for constructing the tailings retention dikes (about 225 Mt of the 1.3 Gt total), and for other various uses such as aggregate production for concrete and road resurfacing, thereby reducing the amount to be stored to about 1,073 Mt. The unused waste rock will be stored in two piles located north and east of the pit. These piles will occupy respective surface areas of about 471 ha and 169 ha, at heights of about 127 m and 57 m.

The principal associated infrastructure consists of:

- An administration building, located near the main entrance and employee parking, including a reception area, offices, meeting and conference rooms, a medical clinic, a kitchenette and sanitary facilities.
- An employee locker room developed in a separate building near the administration building.
- A garage, expanded in Year 5, also containing storage spaces.
- A fuel depot with equipment refuelling facilities. A total of six diesel tanks of 150 m3 each are planned with a capacity equivalent to six days of consumption. After expansion, five additional tanks will be added, for a total storage capacity of 1,650 m^3.
- A warehouse and an explosives assembly unit that will be operated by an approved explosives supplier.
- A crusher for producing aggregate, which will be used for road maintenance and concrete preparation.

Map 2 General Layout of the Mines Infrastructure



Source :
Ausenco 2012
Site Layout 2280-G-101 for ESIA 12 07 27.pdf

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Several components of the mining infrastructure, such as the tailings storage facility, the waste rock piles and the overburden piles, can be progressively restored during the project. The rest of the infrastructure will be restored at the end of the project's life cycle, in accordance with the *Guide et modalités de préparation du plan et exigences générales en matière de restauration des sites miniers au Québec* (Guide and modalities of preparation of the plan and general requirements with respect to the restoration of mining sites in Québec) and MDDEFP Directive 019 for the mining industry.

The initial capital costs and the capital costs during the project will represent nearly $2.9 billion and the operating expenses of the mining site will be nearly $9.9 billion over the life of the project.

The plan at the pre-feasibility stage provides for commissioning in late 2015 if construction work begins in late 2013.

In view of the concerns raised by the region's population during the consultations, the project was designed and adjusted to create a compact layout in order to minimize the extent of the affected area, while determining the best placement of other components on the property in terms of functionality: haulage distances between the pit and concentrator as well as the piles, the location of the mobile machinery maintenance shop, the location of the fuel storage and refuelling site, a separate location for the explosives assembly at a distance from other components in accordance with regulations.

Compared to the scoping study, RNC incorporated several modifications into the Dumont Project at the stage of the pre-feasibility study and the current feasibility study to take into account concerns expressed by the population. The modifications included:

- Increasing the distance of the waste rock and ore piles from Highway 111 and the residences; this reduces their visual impact and also allows their heights to be increased, thus reducing the footprint of the affected area; these piles are the tallest elements in the accumulation areas, and the revised final location places their highest portions nearly 5.5 km from Highway 111.
- Maintenance of a distance of at least 1 km from the Launay esker and the Saint-Mathieu-Berry esker.
- Protection and creation of wooded zones around the property to form a visual screen.
- Protection of the wetland near Launay and a bog habitat of a special-status plant species northwest of the property.

- Partial filling of the pit with tailings produced by processing low-grade ore after 20 years.
- Modification of the mining plan to delay extraction of a portion of the ore in the southeast part of the pit. This will allow the creation and maintenance, for the duration of the project, of a pond inside the pit at its southeast end. This pond will serve as a water reservoir and sedimentation pond for management of the property's pit water and surface water.

5.2 Mineral Resources and Reserves

The mineral resource in the measured and indicated categories totals 1.62 Gt grading 0.27% nickel and 109 parts per million (ppm) cobalt.

Additional resources of 0.513 Gt grading 0.26% nickel are also estimated in the inferred resource category. The deposit also contains platinum and palladium. The nickel concentrate will contain concentrations of these precious metals.

5.3 Mineral Extraction

The mining plan provides for an extraction rate (ore and waste rock) of about 60 Mt/year (170 kt/d) up to Year 5, about 150 Mt/year (425 kt/d) in Years 6 to 15, and progressively about 400 kt/d thereafter, falling to zero at the beginning of Year 21 (Table 4). The mining operations are planned to run 24 hours a day, 365 days a year.

Table 4 Annual mining rates (Mt/year).

	Clays	Overburden	Waste rock	Ore	Waste rock and ore	Total extracted
Construction/preproduction (Years -2 and -1)	6	6	7	9	17	28
Years 1 to 4	6	14	12	30	42	62
Years 5 to 21	5	7	77	62	139	145
Years 22 to 34	-	-	-	-	-	-
Last year of extraction	7	16	21	21	21	21
Total (Mt)	50	146	1,299	1,144	2,443	2,638

The mining operations will be decoupled from the ore processing operations. Accelerated mining will make it possible to feed the concentrator with higher-grade ore during the first years and to accumulate lower-grade ore for processing, starting in Year 21. The low-grade ore temporarily stored during this period in the main pile (about 470 to 490 Mt) and 33 Mt in the second pile will then be processed for nickel recovery. One of the advantages of this approach is to allow the process tailings (44.7% of the total tailings produced by the project) to be deposited in the depleted pit, starting in Year 20, which markedly reduces the footprint of the tailings management facility.

Ore processing over the last 14 years of the project will require stockpiling a portion of the total 1.14 Gt of extracted ore.

Trolley assist system

Subject to the availability of energy, the demonstration of economic viability, and the concentrator expansion to 100,000 t/d capacity, an electric trolley assist system will be used to move vehicles during their ascent out of the pit when the pit configuration is conducive to its implementation. Electricity will be made available by cables installed along the truck ramps, according to an arrangement similar to that of tramways and electric trains.

Drilling and blasting

The explosives will be in the form of an ammonium nitrate emulsion (NH_4NO_3) in solution (hot water), mixed on site with diesel fuel, an emulsifying product to ensure good dispersion of the nitrate, and a water-diesel mixture during and after mixing the compounds. The assembly facility will be owned and operated by an approved supplier in accordance with the regulations and guidelines in force, particularly the assembly facility, which will be situated at least 1 km from any built infrastructure and 670 m from any active accumulation area. The rated production capacity of the facility will be 70 kt/year (200 t/d).

Delivery and loading of the explosive emulsion in the blast holes will be done by a subcontractor's specialized truck (15 to 20 t of emulsion). The emulsion will be sensitized during pumping into the blast holes by the addition of a sensitizing agent. Then, two primers (typically with 0.5 kg of explosive each) equipped with a detonator (about 1 g of explosive) connected to the shock tube will be used per hole. The detonations will be triggered according to a sequence that optimizes fragmentation and reduces blast vibrations.

5.4 Mining Infrastructure

Concentrator

The basic process for nickel ore extraction will follow this sequence:

- ore crushing and grinding, so as to release the nickel-bearing phases;
- removal of the very fine particle fraction (slimes);
- flotation recovery of a portion of the nickel contained in the slimes;
- flotation recovery of nickel in sulphide form;

- extraction, by magnetic separation, of additional non-sulphide nickel phases and their concentration in another flotation circuit;
- thickening, filtration and storage of the nickel concentrate, before loading for shipment to a nickel smelter; the concentrates produced in the three different circuits are mixed to produce a single concentrate;
- thickening of the process tailings before sending them to the tailings storage facility.

The concentrator will require about 80,000 m^3/d of process water at an ore processing rate of 50,000 t/d, and 160 000 m^3/d after increasing to a rate of 100,000 t/d following expansion of the concentrator. The main sources of water to replace the water trapped in the tailings will be: pit water, water recirculated from the tailings cell, water from the north reservoir to be developed in the upstream portion of the west branch of unnamed stream 1, and finally, the water that will be accumulated in the southeast portion of the pit from the beginning of mining operations, in a pond that will be isolated from the rest of the pit and that will receive the runoff water collected from the piles of waste rock and low-grade ore.

The Dumont Project will involve two phases: an initial facility capable of processing 50 kt/d of ore, followed by an expansion of the same processes and equipment to a total capacity of 100 kt/d, starting in the fifth year of commercial production.

The feed to the concentrator will be variable during the first five years and during the last year of operations. The nickel content of the ore and the quantity of concentrate and tailings will also vary over time. Table 5 presents the average and total annual variations in amount per major period of the project.

Table 5 Concentrator Production

Year	1	2 to 4	5	6 to 33	34	Total
Milled ore (Mt/year)	16.0	18.3	31.9	36.5	18.9	-
Milled ore (total Mt)	16.0	54.9	31.9	1,022.0	18.9	1,144
Concentrate (kt/year)	70	98 - 152	215	75 - 227	38	-
Concentrate (total kt)	70	359	215	3.993	37	4,674
Tailings (Mt/year)	15.9	18.2	31.7	36.3 – 36.4	18.8	-
Tailings (total Mt)	15.9	54.5	31.7	1,018.0	18.8	1,139

Overburden piles

Two main overburden piles will be developed on the east side of the pit. These locations were selected to minimize the hauling distance from the extraction sites in the north and south parts of the pit.

Overburden Pile #2 will be developed at the southeast end of the pit. Its surface area will be about 94 ha, for a maximum height of about 48 m. Its capacity will be 19 Mm^3 (about 32 Mt). Pile #1 will be constructed farther north, between two waste rock piles. Covering an area of about 269 ha, its maximum height will be around 78 m. Its capacity can reach 94 Mm^3 (150 Mt). The overburden will be extracted during the two years of construction/preproduction and the first 16 years of operation.

Another portion of the overburden, for a total of 14.1 Mt, will be stored temporarily in three small piles during the second year of the construction/preproduction phase and the first year of the operating phase. This material will be recovered for progressive and final restoration work.

Waste rock piles

Two waste rock piles will be developed east of the pit to minimize the hauling distances from the northern and southern parts of the pit. Waste Rock Pile #1, north of the pit, will occupy approximately 471 ha with a maximum height of 127 m, and will have a maximum capacity of about 460 Mm^3 (1,033 Mt). It will be contiguous to overburden Pile #1 (to the south) and the main low-grade ore pile (to the west).

Pile #2 will be located farther south, on the east side of the pit, between the two main overburden piles (#1 and #2). Covering an area of about 169 ha with a maximum height of 57 m, it will have a maximum capacity of 48 Mm^3 (99.5 Mt).

Tailings storage facility

A portion of the process tailings will be stored on surface, in two diked cells located on the west side of the property. A total of about 630 Mt of tailings will be stored in these cells between Years 1 and 20, at which time ore extraction in the deepest part of the pit will be completed. Beginning in Year 21, the remaining tailings, about 509 Mt, will be deposited in this deep part of the pit, so as not to interfere with eventual near-surface ore extraction activities southeast of the pit. The first of the two cells, on the south side of the tailings impoundment area, will receive about 150 Mt of tailings between Years 1 and 6. Starting in Year 7, some 490 Mt of tailings will be deposited in the second cell.

The two cells will be developed in succession. The dike of the first cell will have a final height of about 55 m. Its northernmost segment will be raised later, to become part of the second cell, which will have an ultimate height of about 63 m.

Exfiltration water management

Water management in the tailings storage facility depends primarily on limiting exfiltration losses by using clay cores in some sections of the dikes while waiting for tailings to accumulate on the upstream side to form a low-permeability barrier.

A network of ditches will control the drainage around a large part of the tailings storage facility, either by diverting non-contact water or by collecting runoff and/or exfiltration water. Gravity-induced surface water runoff will be allowed to flow freely in some sections and these areas will not require ditches. Sumps and pumping stations will be developed at low points to ensure the transfer of the collected water. The exfiltration losses thus will be reintroduced into the tailings storage facility to maximize the amount of water available for the processing plant.

Handling of the tailings

The tailings will be pumped from the tailings thickener at the concentrator. The initial facility will be sized for an ore processing rate of 50 kt/d. It will transport about 4,250 m^3/h of thickened slurry. A second pipeline will be added (from the second tailings thickener) when the processing rate increases to 100 kt/d.

In summer and for part of the fall, the tailings will be deposited in each cell using multiple discharge points simultaneously around the active cell. The selection of the discharge points, in operation at any given time, will allow a beach to form on the inner face of the dikes. This beach will create a separation between the pond and the dike, thereby reducing exfiltration and maximizing dike stability.

In winter and spring, however, deposition will be in subaquatic mode. The slurry will be discharged from a single point at a time, positioned so that this discharge goes into the pond. The objective is to prevent ice formation in the exposed beach section.

Concentrate loading and transport facilities

Assuming a typical maximum production of 130,000 to 150,000 tonnes of concentrate per year after expansion and 99 tonnes per rail car, four to five rail cars will be loaded per day. About ten cars would be shipped every two to three days. At a loading rate of around 300 t/h, the loader will operate about 3 to 4 hours per day.

Workers' camp

A temporary workers' camp will be developed near the parking lot of the future administration complex to house the workers from outside the area during the construction/preproduction period. An accommodation capacity of 500 people is being considered at the pre-feasibility stage. However, this capacity will be reviewed during the feasibility stage when the requirements and provenance of the workers will be defined.

5.5 Water Management Plan

The concentrator will require approximately 0.922 m^3/s (79,692 m^3/d) of process water at the initial operating rate of 50 kt/d. These values will be doubled to 1.84 m^3/s (159,383 m^3/d) when the processing rate is increased to 100 kt/d.

The main objectives of the water management plan, established in the pre-feasibility study, are to:

- ensure adequate water supply for the process;
- avoid drawing fresh water from the Villemontel River;
- maximize the release of non-contact water into the Villemontel River;
- maximize reuse of contact water (mine wastewater) during the process (closed circuit) and minimize the release of mine effluents;
- facilitate mining operations by limiting the entry of water into the pit and quickly discharging any infiltrating groundwater, rainwater or meltwater;
- ensure sediment control;
- collect and treat any contact water that could affect the quality of the receiving environment;
- protect the mine infrastructure and the local population in the case of an exceptional high water event.

This plan will be optimized at the feasibility stage (study in progress).

To compensate for water loss in the mine tailings, the following sources of water will be used to supply the concentrator, in order of priority:

- pit dewatering water;
- water accumulated in the tailings storage facility (Years 1 to 19);
- the north reservoir;
- the pit reservoir;
- water from the water treatment plant accumulation ponds;
- water from the Villemontel River (exceptional situations only).

The analyses performed in the pre-feasibility phase do not show the necessity of drawing water from the Villemontel River. However, to ensure a constant supply of water for the concentrator in case of a drought, a pumping station will be installed on

the left bank of the Villemontel River, and would be operated only in an emergency, when the reservoir water levels, particularly in the pit reservoir, fall to critical levels. In such a case, it will be preferable to fill the reservoirs during the high water period in order to minimize the impacts on the Villemontel River.

Water management in the operating phase

To summarize, water management of the Dumont Project in the operating phase involves:

- four dikes and a spillway crest on the west branch of unnamed stream 1 to constitute the north reservoir;
- early mining of the southeast portion of the pit and development of a water level control structure to constitute the pit reservoir;
- a network of 13 sumps and pumps to collect and redirect the water;
- a network of about 55 km of channels to collect, divert or redirect the contact and non-contact water;
- a switch allowing diversion of the non-contact water from the northeast portion of the watershed either to the Lac Villemontel outlet (Ruisseau Pandini) or to the pit reservoir;
- a high-capacity retention pond to collect the runoff water from the mining site, starting in the construction/preproduction phase, in order to manage its treatment efficiently (as required);
- a water treatment plant;
- a north reservoir with an area of nearly 1.2 km^2; and
- a reservoir formed by the southeast portion of the pit with a reserve capacity of 15 Mm^3 of water, capable of serving as a water source for the concentrator during the winter period.

The north reservoir dam is considered to be a high-capacity dam and the safety standards prescribed by the Dam Safety Regulation will apply.

A mine water treatment plant will be designed to treat mine water at a rate of 96 000 m^3/d. This treatment plant, which will be developed downstream from the site, will operate when it is no longer possible to accumulate water in the main reservoirs of the mining site (tailings storage facility, north reservoir and pit reservoir). In the pre-feasibility study, the water treatment plant will only operate between April 1 and December 1 because there will be no surplus water to manage during the winter.

Final effluent

The monthly average flow of the final effluent will vary between 0.03 and 1.13 m^3/s. Effluent flow will be at a maximum during the high water months (about 1.10 m^3/s in April and May), and it will be approximately 0.60 m^3/s during the summer and fall (July to November). There will be little or no flow in winter.

5.6 Residual Materials Management

The residual and hazardous materials produced by the Dumont Project will be typical of mining projects of this nature.

The residual materials management plan will be based on the 4R-D practices of the Québec Residual Materials Management Policy, which encourages the reduction, reuse, recycling and reclamation of residual materials before their disposal.

Hazardous materials

The following are the main hazardous residual substances (solid, liquid or gaseous) and materials contaminated by these substances that will be generated at the mining complex include:

- absorbents, rags or containers soiled by used oils;
- aerosol cylinders (e.g. lubricants and paint);
- batteries;
- used oils and greases, and their containers in the case of delivery in the form of barrels or bottles;
- used oil filters;
- solvents, antifreeze and other used corrosive products;
- fluorescents, halogen lamps or high pressure lamps;
- dry reagent packaging;
- scrap from maintenance shops;
- certain laboratory products, in small quantities.

Sulphuric acid is a hazardous material, but should not constitute a residual material. The only exceptional circumstance would be a spill, which would be recovered in liquid or solid phase (for example, soil contaminated by such an event). Spill recovery kits (absorbents, shovels, brooms, etc.) will be available at all locations where solvents or lubricants are handled.

All hazardous waste will be recovered by companies authorized to recover such products.

5.7 Related Projects

Power line

The main related project associated with the Dumont Project is the construction, by Hydro-Québec, of a branch power line to connect the mining site to the power transmission grid. This project will be the subject of a separate environmental assessment and application for government authorizations, which will be carried out by Hydro-Québec. The branch line will be constructed from a 120 kV line that connects to the existing grid about 8 km south of the mining site.

Magnetite production

Another possible related project, this one by RNC, consists of the potential production of a magnetite as a by-product. Preliminary laboratory tests indicate that a high-grade magnetite concentrate, with an iron content of about 68%, could be produced by using waste materials from the existing magnetic separation circuit at the concentrator. However, if magnetite production becomes feasible, RNC will apply for the required government authorizations for this subproject.

5.8 Mining Site Restoration

The Dumont Project is subject to the Mining Act (R.S.Q., c. M-13.1). RNC will thus be required to restore the mining property at the end of operations.

A restoration plan will be produced, in accordance with the requirements of the *Guide et modalités de préparation du plan et exigences générales en matière de restauration des sites miniers au Québec* (Guide and modalities of preparation of the plan and general requirements with respect to the restoration of mining sites in Québec). It will be submitted to the MRN before the beginning of operations and will be accompanied by a work schedule and a financial guarantee in accordance with the requirements of the Mining Act for restoration of the accumulation areas.

The stipulated accumulation areas include, in particular, the tailings storage facility, the waste rock piles, the concentrate and ore storage areas, the low-grade ore piles, and the overburden piles.

This plan will include, in particular, a detailed description of the restoration and reclamation work planned for both the operating and post-closure phases, such as surface water management, covering of waste rock and tailings, revegetation, dismantling of the mining complex, contaminated soil management (as required), site securement, etc. The plan will also be developed to ensure compliance with norms for liquids discharged into the receiving environment.

The first tailings cell will be filled during Year 6. The Dumont Project's mining activities (ore and waste rock) will end during Year 21. The process tailings produced starting in Year 20, amounting to just over 500 Mt (44% of the total), will be deposited in the pit.

This will make it possible to quickly begin restoration, before the end of the project, of the first tailings cell, the two waste rock piles, and the second tailings cell. Progressive restoration of the overburden piles will have begun earlier in the project's life cycle, and these materials will no longer be accumulating in approximately Year 16, at which time their final restoration can begin. Restoration of the waste rock piles will begin in Year 21.

The final restoration of the main low-grade ore pile can only be completed after the end of the project's life cycle (Year 34). It is important to note that RNC intends to consult stakeholders about the best restoration approach for the Dumont Project.

5.9 Performance Schedule

The mining design for the feasibility study was started in May 2012 and should be completed around the middle of 2013. The beginning of construction, conditional on obtaining the required authorizations, is scheduled during 2014, with commissioning of the first line of the concentrator in early 2016.

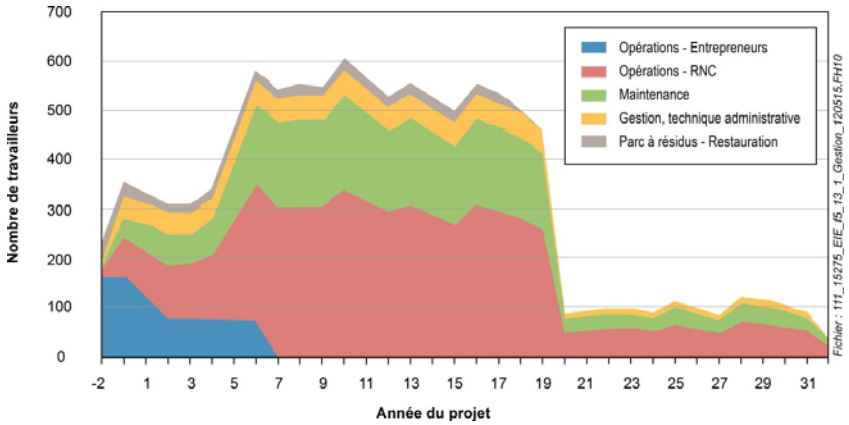
5.10 Project Costs

The Dumont Project is a major mining project. In its current definition, its initial and sustaining capital cost will represent approximately $2.5 billion, and its operating expenses at the mining site will represent nearly $10 billion, in addition to concentrate processing and refining expenses, which will total over $3 billion. In the pre-feasibility study, the restoration cost is estimated at between $30 million and $55 million.

5.11 Labour

Figure 1 shows the evolution of the workforce for the duration of the project, as estimated during the pre-feasibility stage, for mining and processing operations (contractor and RNC), maintenance activities, technical and administrative services, tailings dike construction, and restoration activities.

Figure 1 Evolution of the workforce.



Source: Ausenco, 2012.

Number of workers:
Operations – Contractors
Operations – RNC
Maintenance
Management, technical and administrative
Tailings storage facility – Restoration
Project year

The revised project parameters for the current feasibility study add one year (Year 20) to the mining activities, and the recovery of the stockpiled ore to feed the concentrator will extend the activities until Year 34 instead of Year 31. The number of jobs related to these mining activities, per period, will remain similar to the years illustrated in Figure 1.

During the first 4.5 years, the number of workers assigned to the mining operations will be about 106 for contractor activities and 298 for RNC employees. The latter includes employees of the explosives assembly unit, as well as maintenance and service employees. Some of these activities may be entrusted to a contractor at the beginning of the project.

After expansion of the concentrator, the number of employees assigned to mining operations will increase to a maximum of slightly over 600, before declining to about 100 workers when recovery of low-grade ore will become the concentrator's sole source of supply.

The workforce on the site will vary over the two-year construction period. During the most intense periods of activity, the number of workers may range between 1,000 and 1,400.

6. DESCRIPTION OF THE RECEIVING ENVIRONMENT

6.1 Geographical Context of the Project

This impact assessment includes three study zones that were defined to characterize the biophysical and human environments into which the project is implanted (Map 1). The necessity of considering three different study zones is justified by the fact that, in some cases, the project will only influence components located near the project infrastructure, while the effects on other aspects, namely the impacts on the human environment, will be felt on a broader scale.

Regional study zone

The regional study zone includes the regional county municipalities (RCM, known in French as MRC) of Abitibi and Abitibi-Ouest. It covers a territory with an area of about 11,566 km^2. This study zone was selected for the description of the social and economic components of the receiving environment.

Local study zones

The local study zone, with an area of nearly 98 km^2, occupies a portion of the township municipalities of Launay and Trécesson, as well as the municipality of Berry. The village of Launay is contained within this local study zone, situated southwest of the project infrastructure. The physical and biological components were inventoried in detail in this zone, where the majority of the project's impacts are concentrated.

For aspects pertaining to the human environment, such as planning and land use, the local study zone was expanded eastward to include the village of Villemontel.

6.2 Physical Environment

For the purposes of this summary of the Dumont Project Environmental and Social Impact Assessment, only the components affected by the project are described below.

6.2.1 Wind

In Val-d'Or, southerly winds are predominant year-round, with a frequency of about 20%. In summer, winds tend to blow from the northwest, southwest and west at least 15% of the time each. In winter, northwesterly and westerly winds are just as frequent as in summer, but winds from the southwest blow twice as less often than in summer, while those from the southeast become more frequent.

6.2.2 Air Quality

The air quality in the local study zone is considered very good since it is measured in a rural area where there are few industrial activities. According to the National Pollutant Release Inventory, the nearest industrial plants are located more than 6 km from the Dumont Project.

To characterize the current air quality, the initial particulate concentrations were obtained from:

- measurements taken by the stations of the MDDEFP Air Quality Monitoring Network;
- initial concentrations mentioned in Schedule K of the Clean Air Regulation (CAR; R.R.Q., c. Q-2, r. 4.1).

Thus, for modelling purposes, the initial concentrations for total particulate matter (24 h) and fine particulate matter (24 h) are respectively 40 µg/m^3 and 15 µg/m^3.

6.2.3 Noise Exposure

To assess the noise exposure in the study zone, noise level readings were taken at six locations on the periphery of the projected mining infrastructure.

Table 6 presents the minimum, maximum and mean hourly noise levels over a 24-hour period at each measuring point. The applicable sound limits are presented in Table 7.

6.2.4 Geology

Local Geology

The local study zone is located mainly in the geological units constituting the Amos Group, composed of volcanic and intrusive rocks. The nickel deposit is found in the peridotite and dunite unit.

Geochemical characterization of the rock of the Dumont deposit

Static and kinetic tests were used to assess the chemical composition of the mine waste, their potential to generate acid mine drainage and their potential to mobilize metals when they are exposed to atmospheric conditions.

Table 6 Noise levels at the receiving points[1] during a 24-hour period from October 11 to 12, 2011

Receiving point	Daytime		Nighttime		Noise level $L_{Aeq\ 24\ h}$ (dBA)
	Minimum hourly level $L_{Aeq\ 1h}$ (dBA)	Maximum hourly level $L_{Aeq\ 1h}$ (dBA)	Minimum hourly level $L_{Aeq\ 1h}$ (dBA)	Maximum hourly level $L_{Aeq\ 1h}$ (dBA)	
P1	42	51	31	52	48
P2	53	57	42	57	52
P3	56	60	46	57	56
P4	53	55	42	52	52
P5	62	67	51	64	62
P6	60	64	50	61	61

Noise level rounded to 1 dBA, ref.: $2x10^{-5}$ Pa.
P1: 105 Route du 6e-au-10e-Rang, Launay
P2: 841 Rue des Pionniers (Highway 111), Launay
P3: 1183 Highway 111, Launay
P4: 1423 Highway 111, Launay
P5: 46 Highway 111, Trécesson
P6: 188 Highway 111, Trécesson

Table 7 Applicable Noise level limits according to Instruction Memo 98-01 of the Québec Government

Receiving point	Zone	Noise levels LAeq 1h (dBA)[1]	
	(NI 98-01)	Daytime (7:00 to 19:00)	Nighttime (19:00 to 7:00)
105 Route du 6e-au-10e-Rang (P1)	N/A	N/A	N/A
841 Rue des Pionniers (P2)	III	55	50
1183 Highway 111 (P3)	I	56	46
1423 Highway 111 (P4)	I	53	42
46 Highway 111 (P5)	I	62	51
188 Highway 111 (P6)	III	60	50

1 Noise level rounded to 1 dBA, ref.: $2x10^{-5}$ Pa.

The geochemical characterization results indicate that clay, sand and gravel present in the proposed footprint of the Dumont Project pit will consist of low-risk waste according to the requirements of Directive 019 on Mine Waste Classification.

Some waste rock and process tailings samples are leachable in terms of copper, chromium and/or nickel according to leaching tests. However, such leaching conditions should not occur with the alkaline lithologies of the Dumont deposit.

Moreover, results of the CTEU-9 leaching test indicated that chromium copper and nickel were mobile in some samples and lithologies, but not generally. Also, results of the SPLP leaching test indicated no mobilization of metals, except for a few isolated samples.

The results of kinetic tests, which are considered more representative of expected field conditions, show that all of the waste rock samples comply with resurgence criteria for surface water and infiltration criteria for sewers. The pH values for the peridotite samples and one of the four dunite samples are greater than 9.5, which is the limit for a mining effluent according to Directive 019. The kinetic test results thus invalidate the static test results for metal mobility observed for some samples in the CTEU-9 test.

The kinetic tests on tailings samples and the process water analyses suggest a possibility of chromium mobilization in the solid phase of the tailings.

6.2.5 Geomorphology

The surface deposits of the study zone are largely composed of clay and silt from the glaciolacustrine unit. The presence of these deposits means that water infiltration in the soil is not very efficient, leading to the accumulation of organic deposits over large areas. The thickness of these organic or peat soils generally ranges from 0.1 to 0.5 m, but greater thicknesses are observed in the north, northeast and southwest areas and at the centre of the study zone. In these places, the organic deposits range from 1.0 to 4.0 m thick.

The detailed stratigraphy of the unconsolidated deposits in the study zone was documented by means of 127 geotechnical boreholes drilled in 2011 and 2012. In general, the thickness of the deposits increases gradually, reaching over 40 m at the projected pit site.

The fluvioglacial deposits are concentrated in the eskers, which form elongated sand deposits, all oriented in a northwest/southeast direction. With respect to the Dumont Project, they are found to the west (Launay esker), at its centre (unnamed esker) and to the east (Saint-Mathieu-Berry esker).

Two major eskers, the Launay and Saint-Mathieu-Berry eskers, are exposed at surface in the study zone and in neighbouring areas. A third unnamed esker borders the southern part of the study zone and is adjacent to the projected pit.

6.2.6 Hydrogeology

Hydrogeological units

Four hydrostratigraphic units were identified in the study zone:

- the glaciolacustrine deposit horizon;
- the fluvioglacial deposit horizon;
- the till horizon;
- the bedrock.

Piezometry and flow velocity

The groundwater in the overburden and the bedrock generally flows in the same directions: from northwest to southeast in the western part of the study zone and from north to south in the eastern part. Flow directions are consistent with local topography and surface water flow.

The groundwater level is generally near the surface of the soil, at a depth of less than one metre, except in the areas of the unnamed and Launay eskers, where the piezometric level is deeper.

Groundwater velocities are around 0.6 m/year to 1.1 m/year in the overburden and 7.8 m/year to 15.3 m/year in the surface rock. The flow velocities do not exceed 0.06 m/year in the deep rock

Groundwater quality

The groundwater quality in the study zone is generally good. Only a few of the analyzed parameters show exceedances, sometimes point-source exceedances, of the RESIE criteria for drinking water, and then only in certain observation wells. These parameters are arsenic, copper, manganese, nickel, zinc and pH.

Aquifer classification

The water in the bedrock and the overburden of the study zone, other than the water in the eskers, is considered to come from Class II hydrogeological formations because it is used only locally to supply water to private properties along Highway 111.

However, the Launay and unnamed eskers are Class I hydrogeological formations. These formations can supply a sufficient quantity of water of satisfactory quality and, in case of need, could constitute a source of supply for a community.

6.2.7 Hydrography and Hydrology

Hydrography

The local study zone is located in the St. Lawrence River watershed, which includes the Villemontel and Kinojévis Rivers. It is found right at the boundary with the James Bay watershed, where the Harricana River flows.

The vast majority of the study zone drains into the Villemontel River. This river connects with the Kinojévis River, which flows into the Ottawa River in the St. Lawrence watershed. The slope of the Villemontel River, between its confluence with

unnamed stream 1 and the zone of influence of the Kinojévis River (27.9 km downstream), is 0.03%, representing an elevation drop of only 8.8 m between these two points. It flows in steps, i.e. a succession of water bodies of constant elevation controlled by sills or beaver dams. During the month of August 2012, the streamflow measured in the Villemontel River ranged from 0.3 to 0.5 m^3/s (severe low water level).

Unnamed stream 1, a tributary of the Villemontel River, is the principal watercourse that will be affected by the project. At its mouth, where it empties into the Villemontel River, unnamed stream 1 drains a total area of 50 km^2. The average slope of this watercourse is 0.3%.

Two other watercourses, Ruisseau Paré and unnamed stream 2, are found in the study zone. These streams empty directly into the Villemontel River, a little upstream from unnamed stream 1.

Hydrology

Flows of unnamed stream 1

The mean annual flow of unnamed stream 1, near its mouth where it empties into the Villemontel River, is estimated at 0.7 m^3/s. The low-water flows of unnamed stream 1 seem to be more severe during the summer season than in winter. A flow of 7.9 m^3/s was measured on April 30, 2011. This value is considered to be close to the two-year flood recurrence interval.

Flow of the Villemontel River

The mean annual flow calculated on the Villemontel River downstream from unnamed stream 1 is between 3.2 and 4.0 m^3/s. Upstream from unnamed stream 1, a flow of 0.9 m^3/s was measured in the winter low-water period on February 23 and 24, 2011, which represents a specific flow of 4.3 $l/s/km^2$. Downstream from unnamed stream 1, a flow of 1 m^3/s was measured on September 28, 2011. A flow of 50.3 m^3/s was measured on April 30, 2011. This value is considered to be close to the two-year flood recurrence interval, based on field observations, which suggest a water level near the Natural High-Water Level (NHWL).

6.2.8 Surface Water and Sediment Quality

Surface Water Quality

In general, the surface water of the local study zone is slightly alkaline (pH most often slightly higher than 7.0) and moderately hard (total hardness most often between 17 and 57 mg/L). It is rich in organic carbon, which is mainly found in dissolved form, at

concentrations ranging between 4 and 28 mg/L. The turbidity is highly variable from one station to another, and high values, reaching nearly 30 nephelometric turbidity units (NTU), were measured in some samples.

The sampled stations are separated into three distinct groups based on surface water characteristics. The Villemontel River differs from the other watercourses in several regards. Its water is harder and its major ion concentration is higher, which translates into a specific conductance about twice as high.

Among the measured nutrients, the total phosphorus concentrations are sometimes very high (up to 0.10 mg/L), frequently exceeding the criterion proposed by the Canadian Council of Ministers of the Environment and the MDDEFP, which is intended to prevent eutrophization of water bodies. Exceedances were observed at all stations, which is evidence of eutrophic aquatic environments.

Among the measured metals, the aluminium concentrations are especially high. They generally exceed the MDDEFP's chronic aquatic life toxicity criterion of 0.087 mg/L. In November 2009, they also exceeded the acute aquatic life toxicity criterion (0.75 mg/L) in five out of seven samples. The exceedance of the chronic aquatic life toxicity criterion is not rare in northern Québec, but the exceedance of the acute aquatic life toxicity criterion is less frequent.

The iron concentrations regularly exceed chronic aquatic life toxicity criterion.

Sediment quality

The total chromium concentration in the sediments generally exceeds the rare effect level (REL) of the Québec criteria, for all sampling years. In addition, the threshold effect level (TEL) and the Canadian guideline were exceeded in nearly 50% of the samples. High chromium concentrations capable of producing harmful effects on organisms are frequently measured in the soils and sediments derived from serpentine, a family of minerals frequently found in the local study zone.

Other criteria exceedances were observed, albeit more rarely, for cadmium, copper and lead. These exceedances mainly come from Lac à la Savane.

6.3 Biological Environment

6.3.1 Vegetation

Terrestrial vegetation

Throughout the local study zone, terrestrial environments cover 39% of the surface area (3,786 ha), while wetlands occupy 57% (5,540 ha). The remainder is composed of anthropogenic environments, such as agricultural fields and housing (399 ha; 4.1%). The terrestrial environments comprise 17 main types of vegetation, including

deciduous (9%), mixed (15%), and coniferous (46%) stands, as well as other types of terrestrial environments (30%), such as uncultivated grassland. Recent cutting has fragmented several environments.

The majority of the terrestrial environments have medium ecological value. However, intolerant deciduous trees, uncultivated grassland, scrubland and recent cuttings have low ecological value. The anthropogenic environments have an ecological value ranging from low to very low.

Small areas of black spruce and jack pine stands have high ecological value. The black spruce stands are located in the bog east of Launay. They form thin forest strips, surrounded by open bog of high ecological value. Together with the bog, they form a diversity of interesting plant habitats. The jack pine stands contain Woolly Beachheather and Sand Jointweed, two special-status plants with high ecological value. This area is highly valued by the population and will not be disturbed by the Dumont Project.

Wetlands

Open bogs and tree swamps represent 65% of all wetlands in the local study zone. Wooded bogs and shrub swamps account for 34%. Finally, associated ponds and marshes represent about 1% of the wetlands.

The majority of the wetlands have medium ecological value. Two open bogs have high ecological value and one bog-pool system has very high ecological value.

Special-status plant species

Three special-status species were inventoried in the study zone. They are the Slender-leaf Sundew, the Woolly Beachheather and the Sand Jointweed. These species are likely to be designated threatened or vulnerable in Québec; they do not have federal protected status.

6.3.2 Fauna

6.3.2.1 Ichthyofauna

Inventoried species

The inventories conducted between 2007 and 2012 counted 24 fish species in the watercourses of the study zone (Lac à la Savane, Lac Doyon, Lac Gauthier, and Ruisseau Pandini, the outlet of Lac Villemontel). Among these species, the White Sucker, the Brook Stickleback and the Trout-perch are the most widespread.

In the Villemontel River, a few cyprinid species and larger-sized species, such as the Rock Bass, the Northern Pike, the Walleye and the Yellow Perch, were captured.

In the watercourses of the study zone, the inventories conducted in the habitats most prospective for Brook Trout were unable to capture any specimen of this species. The Villemontel River and its tributaries offer low habitat potential for this salmonid because the water is generally very turbid, the bed is composed of clay and silt, and the flow is mainly lentic.

The tributaries of the Villemontel River contain at least 17 fish species, most being cyprinids and other small-sized species. No species of recreational interest was inventoried. The most common species are the White Sucker, the Brook Stickleback, the Common Shiner, the Trout-perch, the Lemon-bellied White-eye and the Pearl Dace. Finally, electrofishing in Ruisseau Paré and unnamed stream 2 revealed the presence of Brook Stickleback in the first watercourse and the absence of fish in the second.

6.3.2.2 Herpetofauna

The local study zone shelters a good diversity of anurans, with six species detected. These are common and widespread species in Québec: the Northern Spring Peeper, the Wood Frog, the American Toad, the Mink Frog, the Green Frog and the Leopard Frog.

During the fieldwork, only a few Common Garter Snakes were observed.

6.3.2.3 Avifauna

A total of 99 bird species were detected in the study zone during the 2008 and 2011 inventories (Table 8).

Table 8 Summary of bird species inventoried in 2008 and 2011

Total number of species (2008 + 2011)	99
Number of species detected in 2008	44
Number of species detected in 2011	94
Number of special-status species	3

Breeding bird densities

The breeding bird density was established from the results collected at the listening stations, for each habitat represented in the study zone. The Nashville Warbler (*Vermivora ruficapilla*) and the White-throated Sparrow (*Zonotrichia albicollis*) are the

most common breeding bird, with respective average densities of 53.7 and 28.5 pairs/km^2. Among the special-status species, the Rusty Blackbird and the Olive-sided Flycatcher show respective densities of 0.24 and 1.96 pairs/km^2. For all species and all habitats combined, the average density of breeding bird pairs is estimated at 329.1 ± 86.9 pairs/km^2 for the entire study zone.

6.3.2.4 Mammals

The trapping of micromammals made it possible to capture three insectivore species: the Northern Short-tailed Shrew, the Masked Shrew and the Pygmy Shrew. The other three captured species belong to the order of rodents, namely the Southern Red-backed Vole, the Rock Vole and the Western Heather Vole.

Considering the trapping effort and the diversity of habitats inventoried, the micromammal densities and species diversity are relatively low in the study zone.

Excluding the micromammals (presented in the preceding section), at least thirty other species may be present in the study zone.

6.3.2.5 Special-Status Wildlife Species

Avifauna

The special-status birds inventoried in the study zone are the Common Nighthawk, the Rusty Blackbird and the Olive-sided Flycatcher.

Species that may be present in the study zone based on the observed habitats, but which were not detected during the inventories, are the Peregrine Falcon, the Short-eared Owl, the Bald Eagle and the Great Grey Owl.

Mammals

Among the captured mammal species, only one is on the list of species likely to be designated threatened or vulnerable in Québec: the Rock Vole.

Mammal species that may be present in the study zone based on the observed habitats are the Least Weasel, the Wolverine, the Silver-haired Bat, the Hoary Bat and the Eastern Red Bat.

6.4 Human Environment

6.4.1 Planning and Land Use

The regional study area is located in the administrative region of Abitibi-Témiscamingue. This region consists of four regional county municipalities (RCM): Témiscamingue, Abitibi-Ouest, Abitibi and La Vallée-de-l'Or, and one city with non-RCM status (equivalent territory), Rouyn-Noranda. The study territory is completely included in the Abitibi and Abitibi-Ouest RCMs (Map 1). It mostly covers the township municipality of Launay and, to a lesser extent, land belonging to the municipality of Berry, on the northeast, and the township municipality of Trécesson, on the southeast. The community of Villemontel is an integral part of the municipality of Trécesson. The city of Amos, the regional hub of the Abitibi RCM, is located about 25 km east of the expanded local study zone.

The expanded local study zone is mainly composed of lands in the public domain, some of which are intramunicipal public lands (IPL), under the managerial responsibility of the Abitibi RCM. Certain public lands have been assigned for forest concessions and timber rights. The rest of the study zone is private property. The permanent agricultural zone, i.e. the agricultural zone preserved under the Act respecting the preservation of agricultural land and agricultural activities, covers the southeastern part of the study zone.

6.4.2 Population and Regional Economy

Population distribution, growth and age structure

The Abitibi-Témiscamingue region had 145,690 inhabitants in 2011, representing 1.8% of Québec's population. With 12,671 inhabitants in 2011, Amos is the most important populated centre in the regional study zone. In the other six territories bordering the expanded local study zone, the population varies between 203 (Lac-Chicobi) and 1,138 inhabitants (Trécesson).

Housing

Among the municipalities considered, Amos has the lowest proportion of owner-occupied dwellings (60.7%). Conversely, Launay, Trécesson and Lac-Chicobi had the highest proportion (over 90%). The private dwelling occupancy rate exceeded 90% in 2011. The rates were nearly 95% in Amos, and 99% in Launay.

Labour market

The activity[1] and employment[2] rates of the Abitibi-Témiscamingue population, between 2006 and 2011, were respectively 4.3% and 7.9% for the region as a whole.

In 2006, primary sector jobs accounted for a large proportion of workers: 12.9% in the Abitibi RCM, 16.8% in the Abitibi-Ouest RCM and 13.8% in Abitibi-Témiscamingue, compared to 3.7% across Québec. Amos and Trécesson stood out from the other study zone territories with a lower proportion of primary sector jobs (respectively 8% and 6.8%) and a larger share of tertiary sector jobs (77.7% and 77.1%).

6.4.3 Land Use

Residential Environment

The built-up environment extends on both sides of Route 111. The population density remains very low for the municipality of Launay (0.9 inhabitants/km^2), compared to Trécesson (6.5 inhabitants/km^2), where the density is higher than average for the Abitibi RCM (3.2 inhabitants/km^2). The municipality of Launay has 85 dwellings, the majority of which are single-family residences. In the Villemontel sector, there are 71 residences.

Institutions

The educational institutions of Launay and Trécesson are under the jurisdiction of Commission Scolaire Harricana. École Sainte-Thérèse in Launay accommodates 33 pupils from kindergarten to Grade 3, although it has a capacity of 90. In Villemontel, École Morency serves 33 pupils from Grades 3 to 6; it can accommodate 120. Pre-kindergarten is offered exceptionally, for the 2011-2012 school year, at two schools; this service is usually offered only at École Morency. School enrollments have been in decline for the past few years, due to the low birth rate and the lack of jobs in the area, and the absence of childcare service. To this effect, RNC helped finance an extracurricular childcare service at École Sainte-Thérèse in Launay and École Morency in Villemontel for the 2012-2013 school year.

6.4.4 Resorts, Recreation and Tourism

In the expanded local study zone, there is a provincial cycling network, the Route Verte, as well as the Trans-Québec No. 93 provincial snowmobile trail. The development work on a portion of the Trans-Québec No. 93 provincial snowmobile trail, which has been moved north of the project site, will be carried out in winter 2012-2013.

[1] The activity rate is defined as the percentage of the economically active population relative to the number of persons age 15 years and over.

[2] Also called the employment-population ratio, the employment rate designates the number of persons who work relative to the population age 15 years and over.

Finally, a quad trail runs through the northeast sector of the study zone. This all-season trail connects to the La Sarre area.

Hunting, fishing and trapping

In the public territory of the study zone, the study found eight MRN shelter leases, as well as hunting camps and shelters on private lands. There is little fishing activity in the study zone, even though some enthusiasts occasionally frequent the Villemontel River and the beaver ponds scattered along its tributaries. Five registered trapping grounds are partially included within the study zone.

6.4.5 Forest and Agriculture

Forest

The study zone overlaps Forest Management Unit (FMU/UAF) 086-51 (MRNF, 2011c) and also overlaps Forest Reserve (RFC) 086001. The most recent cut dates back to 2010-2011 and several logging operations have been performed at the projected location of the Dumont Project's mining infrastructures.

Agriculture

A permanent agricultural zone, used for forage crops and pasturage, is present at the western end of the study zone. It is mainly located on both sides of Highway 111 in the municipalities of Trécesson and Launay. This zone contains six agriculture producers, including three beef cattle producers.

6.4.6 Aboriginal Presence

No Aboriginal community constituted as an Indian reserve or settlement is present in the expanded local study zone of the Dumont Project. The Aboriginal community located closest to the project is Pikogan (Algonquin Abitibiwinni First Nation).

The presence of members of the Pikogan community near the project is mainly concentrated in the vicinity of Lac Chicobi, about fifteen kilometres north of the expanded local study zone. This land, mainly used by the Mapachee family, essentially corresponds to the Lac Chicobi watershed, part of which is within the expanded local study zone.

6.4.7 Infrastructure

Transportation

Road infrastructure

The local study zone is crossed from east to west by provincial highway 111. The annual average daily traffic (AADT) from 1990 to 2010 on Highway 111 between Villemontel and Route 399 ranged between 2,700 and 3,700 vehicles. In 1998, the traffic was half its 1996 level. Traffic remained stable at about 1,700 vehicles from 1998 to 2003 and has increased since 2003. Over the past five years, the increase is a little over 3% per year; it reached 2,350 vehicles in 2010. In 2008, the most recent year for which trucking statistics are available, trucks accounted for 18% of the traffic on this road section.

Moreover, there has been little fluctuation of traffic on Highway 111, between the projected entrance of the Dumont Mine and Launay, with a low of 1,300 vehicles in 1996 and a high of 1,780 vehicles in 1993 and 1995. On Route du 6^{e}-au-10^{e}-Rang, traffic flows remain low with fewer than 200 vehicles per day on average.

Rail infrastructure

The section of the Taschereau Subdivision of the Canadian National Railway passes through the study zone from east to west. The train schedule varies according to the users' shipping forecasts, which are submitted weekly. There are generally three trains a week between 7 a.m. and 3 p.m.

Municipal infrastructure

Amos' aqueduct network serves part of the municipality of Trécesson. However, the urban perimeters of Launay and the Villemontel sector are not served by a municipal aqueduct network, nor are the residences located along Highway 111 between Launay and the Villemontel area. For the majority of these residents, drinking water is supplied from individual wells.

6.4.8 Landscape

The landscape is a boreal forest landscape, with coniferous and deciduous woods. It is fairly flat but hillier in some places. The projected mining complex occurs in an environment covered by fields, uncultivated grassland and scrubland, and mixed wood forests, mostly consisting of conifers (black spruce, jack pine), but also some poplar stands and mixed stands of birch with conifers.

6.4.9 Heritage and Archeology

The former Villemontel post office is among the sites dating back to the colonization of the Abitibi RCM. The municipality of Trécesson wants to ensure its preservation.

An archeological potential study conducted in 2008 did not reveal any high-potential zones in the local study zone. However, medium-potential zones are present on the shores of the Villemontel River and low-potential zones are present on the banks of the west and east branches of unnamed stream 1.

7. IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL IMPACTS

7.1 General Approach

The general approach retained complies with federal and provincial requirements for carrying out environmental assessments. The process used to identify and assess the importance of the impacts on the environment mainly relies on detailed descriptions of the project and the environment, consultations with stakeholders, and lessons learned from the performance of similar projects.

7.2 Assessment of the Impacts on the Receiving Environment

The importance of each impact is determined by an overall judgment by experts that focuses on the effect of the impact's sources on a component of the environment and integrates the criteria of intensity, extent, duration and probability of occurrence. The importance of an impact also integrates the effect of the proposed mitigation measures. The assessment is performed only once and constitutes the residual impact.

Table 9 summarizes the impacts of the Dumont Project for the construction/preproduction, operating and closure phases. On the whole, the majority of the impacts are of little or very little importance.

It is worth noting the existence of several positive impacts, particularly for the components of the human environment (Table 9).

Medium residual importance levels are considered for the following impacts:

Physical environment

- GHG emissions in the operating phase;
- Loss of soil usable for other purposes during the operating phase;
- Changes to the water and sediment regimes during the construction/preproduction and operating phases;
- Changes to the groundwater flow regime (lowering of the water table) during the operating phase.

Biological environment

- Loss of forest habitats during the operating phase;
- Loss of bird habitats during the operating phase;
- Loss of mammal habitats during the operating phase.

Human environment

- Loss of jobs and reduced purchasing in the region during the closure phase;
- Possible deterioration of the economic security of households and reduction of community services during the closure phase;
- Encroachment on a portion of the land used by members of the Pikogan community for all phases of the project;
- Deterioration of the quality of life for part of the neighbouring population due to concerns about the potential effect of the project on the environment and health during the operating phase;
- Potential economic difficulties for low-income or fixed-income individuals and pressure on the existing services during the construction/preproduction phase;
- Changes to the scenery as viewed by moving and stationary observers at some locations during the operating phase.

Only one impact is qualified as very important and important according to the Canadian Environmental Assessment Act, namely the risk of nitrogen dioxide formation at concentrations likely to affect health. This impact is considered to be a cause for concern due to the proximity of some residents of Launay and Villemontel and the scope of the blasting activities for ore extraction from the pit. The atmospheric dispersion studies of airborne nitrogen dioxide concentrations during blasting will allow a more precise assessment of the health risks and the need to set up preventive measures or review the conditions of intervention as laid out in the emergency response plan, in order to ensure adequate protection of the workers and nearby populations.

Table 9 Synthesis of potential impacts of the Dumont Project

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Air Quality	Construction/ preproduction	Clearing and stripping of soil, fill and muck, organization of the site, construction of mining facilities, machinery circulation and operation	Increase in airborne dust (parameter not modelled in the construction/preproduction phase) and contaminant/GHG emissions (breakdown presented in Operations).	N/A	AIR5, AIR10	AIR2, AIR3, AIR10, AIR11, AIR12, AIR13	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring and follow-up
	Operations	Pit, overburden piles, low-grade ore piles, waste rock piles, tailings storage facility, mining complex, road and train transport, machinery operation	Increase in airborne dust • Exceedances for total particulate matter occur at most four times a year in the worst-case scenario (6th year of operations); • For fine particulate matter (2.5 µm), no exceedance is expected; • Routing on the mine site is the leading contributor of dust.	N/A	AIR6, AIR9	AIR2, AIR3, AIR7, AIR8, AIR10, AIR11, AIR12, AIR13	Low	Local	Long	High	Negative	Low importance/ Not important	Monitoring and oversight
		All mining complex activities	Contaminant and greenhouse gas emissions: • Dumont Project GHG emissions are estimated at approx. 4,025,305 tCO_2eq, or about 0.14% of Québec's emissions	N/A	AIR5	AIR1, AIR4	Low	Regional	Long	High	Negative	Medium importance/ Not important	
		Pit blasts	Risk of nitrogen dioxide formation at concentrations likely to affect health: • Conduct an atmospheric dispersion study to determine airborne nitrogen dioxide concentrations during blasting and to assess the health risks to nearby populations.	N/A		AIR10, AIR11	High	Local	Medium	Medium	Negative	High importance/ Important	Monitoring and oversight
	Closure	No specific impact on air quality is expected during the mine site restoration period. Revegetation of the disturbed sites will have a beneficial effect on air quality by reducing dust generation and fugitive emissions.											
Noise Exposure	Construction/ preproduction	Road transportation, machinery circulation and operation, pit stripping, construction site	Increase in noise along the periphery of the work zones: • Simulations show that noise generated by the mine complies with noise criteria when all mitigation measures are taken into account.	N/A	NOISE8	NOISE1, NOISE2, NOISE3, NOISE4, NOISE5	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring and oversight
	Operations	Road transportation, machinery traffic and operation, pit mining and the concentrator	Increase in noise along the periphery of the mine site: • Once all mitigation measures are applied, simulations indicate compliance with noise level criteria at all sites with sensitive receptors for all years modelled.	N/A	NOISE8	NOISE1, NOISE2, NOISE3, NOISE4, NOISE5, NOISE6, NOISE7	Low	Local	Long	High	Negative	Low importance/ Not important	Monitoring and oversight
	Closure	Upon closure in Year 34, several infrastructure components will have undergone progressive restoration, such as the tailings storage facility, the waste rock piles and the overburden piles. Noise will be considerably lower than during the construction/preproduction and operating phases. For these reasons, no significant noise impact is expected during the closure phase.											

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Soil	Construction/ preproduction	Construction site, road transport, machinery circulation, fuel depots	Soil contamination risk: • In the event of an accidental spill, the contaminated soil will be removed for disposal at an authorized site.	N/A	SOIL1, SOIL2, SOIL4, SOIL5, SOIL6	_	Low	Point-source	Short	Medium	Negative	Very low/ Not important	Monitoring
	Operations	Road transport, machinery circulation, fuel depots	Risk of soil contamination by hydrocarbons: • Impact identical to the construction/preproduction phase.	N/A	SOIL1, SOIL2, SOIL4, SOIL5, SOIL6	-	Low	Point-source	Long	Medium	Negative	Very low/ Not important	Monitoring
		Soil stripping, development of mining infrastructure	Lose of soil that could be used for other purposes: • Overall encroachment of the Dumont Project is estimated at about 47 km^2; • A large portion of this land (about 75%) will be restored at the end of mining operations.	N/A	SOIL3	-	Medium	Local	Long	High	Negative	Medium importance/ Not important	-
		Soil stripping, road transport, machinery circulation, pit stripping, waste rock piles, ore piles, overburden piles	Possible increase in metal concentrations at soil surface around mining infrastructure components: • Increase in dust concentrations and deposition on surrounding soil could change the soil's physicochemical quality.	N/A	Same mitigation measures as for dust.		Low	Local	Long	Medium	Negative	Low/ Not important	Monitoring and oversight
	Closure	Upon closure of the mining complex, around Year 34, the remaining infrastructure components (buildings, concentrator, ore piles, etc.) will be dismantled and restored. Consequently, a portion of the land excluded from development and reserved for industrial purposes will become available again for other uses. The impact on the soil during the closure phase is thus positive.									Positive		
Water and Sediment Regime	Construction/ preproduction	Construction site, soil stripping, dams, tailings storage facility	Changes to the water flow pattern during the work: • Inflow of sediment in the Villemontel River during prolonged periods of rain or during heavy rainfall; • The work will have to be supervised very closely during the first months of the construction/preproduction period to ensure efficient runoff management in the work areas.	N/A	HSR3, HSR4		Medium	Local	Short	High	Negative	Medium importance/ Not important	Monitoring
		Soil stripping, , dams, , tailings storage facility, concentrator	Changes to the surface water flow pattern: • Channelling of most of unnamed stream 1; • Reduction of the mean annual flow of the Villemontel River by about 8% downstream from the mining complex.	N/A	HSR2, HSR4, HSR5		Medium	Local	Long	High	Negative	Medium importance/ Not important	Monitoring and oversight
	Operations	Dams, surface water collection and channelling systems, overburden piles	Possible increase in erosion and sediment transport in the watercourses: • Continued removal and stockpiling of overburden during pit stripping up to Year 16 of operations. These activities may cause erosion and sediment transport to the Villemontel River.	N/A	HSR1, HSR2, HSR3, HSR4, HSR5, HSR6, HSR7, HSR8		Low	Local	Medium	Medium	Negative	Low importance/ Not important	Monitoring and oversight
	Closure	The water treatment plant will operate until monitoring results show that water quality meets the required criteria. For this reason, no significant impact on sediment transport to the Villemontel River is expected during the closure phase.											

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Surface Water and Sediment Quality	Construction/ preproduction	Construction site, soil stripping, pit stripping, dike and road construction, emplacement of overburden piles	Increase in water turbidity: • High-turbidity episodes could occur during the first weeks of construction outside the frost period; • Murky water can be managed adequately once the retention ponds and mobile filtration plant are operating efficiently.	N/A	WATER4, WATER5, WATER6, WATER8	WATER15, WATER16	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring and oversight
	Operations	Dam, overburden piles, waste rock piles, ore piles	Possible increase in water turbidity: • Suspended solids will be measured on a weekly basis before releasing the final Dumont mine effluent. In case of concentrations that exceed the norms, the water will be treated to eliminate its particulate load.	N/A	WATER5, WATER6, WATER9,	WATER3, WATER11, WATER10, WATER14, WATER15, WATER16	Low	Local	Long	Medium	Negative	Low importance/ Not important	Monitoring and oversight
		Concentrator, tailings storage facility, waste rock and ore piles, pit water	Possible degradation of water quality and sediment load downstream from the final effluent release point: • The waste rock and mine tailings of the Dumont Project are classified as leachable according to Directive 019 for the mining industry; • It may be necessary to lower the copper, chromium and nickel concentrations in the contact water; • The mine wastewater purification system will be developed to achieve optimal treatment performance.	N/A	WATER1, WATER2, WATER8, WATER9, WATER12, WATER13	WATER16	Low	Local	Long	Medium	Negative	Low importance/ Not important	Oversight
	Closure	At the current prefeasibility stage, it is not possible to assess the potential impacts on water quality at closure and in the following years because there are too many unknowns, particularly the details of the restoration plan and contaminant load study, which were unavailable at the time of writing.											

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Ground-water	Construction/ preproduction	Construction site, road transport, machinery circulation, fuel depots	Risk of groundwater contamination: • Risks of contamination due to a major accidental spill; • In the presence of soil with very low permeability, it is very unlikely that such a spill would reach the the water table before it is recovered;	N/A	GW2	GW1, GW3, GW6, INF2	Low	Local	Long	Medium	Negative	Low importance/ Not important	Monitoring and oversight
		Soil stripping, pit stripping, development of the pit pond, dam construction, emplacement of overburden piles	Changes to local flow regime: • It is possible that the first effects on groundwater (lowering of the water table), in the southeast part of the pit along Highway 111, may become noticeable before the end of the construction/preproduction phase.	N/A		GW6	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring and oversight
	Operations	Road transport, machinery circulation, fuel depots, tailings storage facility, ore and waste rock piles, pit infilling using tailings starting in Year 20	Risk of groundwater contamination: • The presence of material classified as leachable (tailings storage facility and waste rock piles) represents a risk of vertical migration of certain metals; • The risk is very low where the substratum below the mining infrastructure components is relatively impermeable.	N/A	GW2	GW1, GW3, GW4, GW5, GW6	Low	Local	Long	Low	Negative	Low importance/ Not important	Oversightand compensation
		Pit dewatering and shutdown of dewatering	Changes to the groundwater flow regime: • Pit dewatering will cause lowering of the water table by approximately 1 to 5 m along Highway 111, which could affect nearly 20 wells; • At the end of the pit dewatering period, in Year 19, the maximum area affected by water table lowering (equivalent to 1 m) will not reach the Launay and Saint-Mathieu-Berry eskers; • Starting in Year 20, groundwater will gradually flow back into the pit until equilibrium is reached with the groundwater in the neighbouring soil;	N/A	-	GW6	Medium	Local	Long	High	Negative	Medium importance/ Not important	Oversight

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Ground-water (cont'd)	Closure	Tailings storage facility, waste rock piles, tailings at the bottom of the pit	Risk of groundwater contamination: • The risk of groundwater contamination is similar to the risk during the operating phase; • Possible vertical migration of contaminants is unlikely and will be verified by a network of monitoring wells that will be kept in place as long as this risk is present.	N/A	-	GW6	Low	Local	Long	Low	Negative	Low importance/ Not important	Oversight
Vegetation and Ecoforestry	Operations	Presence of infrastructure	Loss of forest habitats (2,190 ha).	Medium	VEG1, VEG2, VEG3, VEG6	-	Medium	Local	Long	High	Negative	Medium importance/ Not important	Monitoring
	Closure	Restoration	Revegetation of the disturbed sites will have a beneficial effect on regrowth by encouraging the natural establishment of forest stands in the medium and long term.								Positive		
Wetlands	Operations	Presence of infrastructure	Los of wetlands (2,525 ha): • ponds (15.6 ha); • marshes (32.8 ha); • swamps (1,247.3 ha); • bogs (1,229.0 ha). All the wetlands are in situation 3 according to the MDDEFP analysis process. Compensation for loss of these environments is to be expected.	High	VEG1, VEG2, VEG3, VEG6	VEG4	Medium	Local	Long	High	Negative	Low importance*/ Not important	Monitoring, compensation and oversight
Special-Status Plant Species	Construction/ preproduction	Stripping and clearing	Potential loss of plants of special-status species.	Because favourable habitats for special-status plants were the main focus during the inventories, the probability that affected areas contain colonies of such plants is very low. For the above reasons, no impact on special-status plant species is expected.									

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Aquatic Fauna	Construction/ preproduction	All construction work	Avoidance of turbidity zones by fish.	Medium	WATER8, WATER9, WATER12, AQF1, AQF2, AQF3	WATER3, WATER10, WATER11, WATER14, WATER15, WATER16,	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring
		Refuelling and machinery maintenance, as well as residual and hazardous materials	Fish mortality or emigration in case of accidental spills.	Medium	WATER1, WATER2	-	Low	Point-source	Short	Low	Negative	Very low importance/ Not important	Monitoring
		Circulation and operation of machinery and access roads	Disturbance of fish.	Medium	-	-	Low	Point-source	Short	High	Negative	Low importance/ Not important	-
	Operations	Presence of infrastructure	Aquatic habitat loss by infilling of watercourses (31 ha).	Medium		AQF4, AQF5	Medium	Local	Long	High	Negative	Very low importance*/ Not important	Monitoring, compensation and oversight
		Mining effluent	Possible changes to the aquatic community downstream from the mining effluent release point.	Medium	WATER8, WATER9, WATER12, WATER13	WATER16	Low	Local	Long	Low	Negative	Low importance/ Not important	Monitoring and oversight
	Closure	Restoration	No specific negative impact on aquatic fauna generated by mine site restoration is expected. At the end of the Dumont mine operations, the watercourse diversion channels will be redeveloped, so that they can be recolonized by fish.										
Herpetofauna	Construction/ preproduction	All construction work	Anuran breeding disturbed by noise.	High	-	-	Medium	Point-source	Short	Medium	Negative	Low importance/ Not important	-
		Machinery traffic and operation	Accidental death of amphibians and reptiles.	High	-	-	Medium	Point-source	Short	Medium	Negative	Low importance/ Not important	-
	Operations	Presence of infrastructure	Habitat loss for amphibians and reptiles (2,525 ha).	High	VEG1	-	Medium	Local	Long	High	Negative	Low importance*/ Not important	Compensation (wetlands)
Avian Fauna	Construction/ preproduction	All construction work	Breeding pairs disturbed by noise.	High	BIRD1, BIRD2	-	Low	Point-source	Short	High	Negative	Low importance/ Not important	Monitoring
	Operations	Deforestation and presence of infrastructure	Habitat loss for birds (4,715 ha).	High	BIRD1, BIRD2	-	Medium	Local	Medium	High	Negative	Medium importance/ Not important	Monitoring
	Closure	Restoration	No specific impact on avian fauna is expected to be caused by mine site restoration. It is even likely that after the piles, the tailings storage facility and the site as a whole are restored, certain habitats may again be available for forest birds and for species that prefer open environments.										

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Mammals	Construction/ preproduction	All construction work	Mammals disturbed by noise.	High	-	-	Medium	Point-source	Short	Medium	Negative	Low importance/ Not important	-
		Machinery circulation and operation	Mammal deaths.	High	MAM1, MAM2	-	Low	Point-source	Short	Medium	Negative	Very low importance/ Not important	Monitoring
	Operations	Presence of infrastructure	Habitat loss for mammals (4,715 ha).	High	VEG1	-	Medium	Local	Long	High	Negative	Medium importance/ Not important	-
	Closure	Restoration	The restoration of several mining infrastructure components, once the vegetation is well established, will allow several mammal species to return within the project footprint.								Positive		
Special-Status Wildlife Species	Operations	Stripping and clearing, presence of infrastructure	Potential habitat loss: • Olive-sided Flycatcher(1,565 ha); • Rusty Blackbird (2,838 ha); • Common Nighthawk (1,660 ha).	High	BIRD1, BIRD2	-	Low	Local	Long	High	Negative	Low importance/ Not important	Monitoring
		Stripping and clearing, presence of infrastructure	Potential habitat loss for the Rock Vole.	High	VEG1	-	Low	Point-source	Long	High	Negative	Very low importance*/ Not important	Compensation and oversight
Local and Regional Economy	Construction/ preproduction	Labour and purchasing	Creation or maintenance of jobs and economic spinoffs with local and regional suppliers.	N/A	ECO 1	ECO 6	N/A	N/A	N/A	N/A	Positive	N/A	
	Operations	Labour and purchasing	• Creation or maintenance of jobs and economic spinoffs with local and regional suppliers; • Increase in employability of regional labour; • Upward pressure on wages and labour transfer.	N/A	ECO1	ECO3 POP5 LAB9 ECO6 POP9 ECO7	N/A	N/A	N/A	N/A	Positive	N/A	
	Closure	• Labour and purchasing • End of mine operation • Final restoration	• Creation or maintenance of jobs and economic spinoffs with local and regional suppliers; • Loss of jobs and reduction of purchasing in the region; • Decrease in real estate values.	High	ECO1	ECO4 ECO5	Medium	Regional	Medium	Medium	Positive Negative	N/A Medium importance/ Not important	
Residential Land Use	Construction/ preproduction	See Operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Operations	Acquisition of properties by RNC	Decrease in the number of private dwellings and possibility of losing residents in Launay and Trécesson.	Medium	N/A	POP12 POP1, POP4,	Low	Local	Long	High	Negative	Low/ Not important	Compensation – (POP 12)
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Industrial Land Use	Construction/ preproduction	See Operations											
	Operations	Labour and purchasing	Possibility of redeveloping the industrial zone near the Dumont Project site.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Positive	N/A	
	Closure	See Operations											
Resorts, Recreation and Tourism (Hunting and Trapping)	Construction/ preproduction	See Operations											
	Operations	Presence of the mining complex in general	• Loss of five leased shelters on public lands and hunting camps or shelters on private lands; • Displacement of hunting activities; • Encroachment of the project on registered trapping grounds that are currently vacant.	High	RESORT1		Medium	Point-source	Long	High	Negative	Low/ Not important	Compensation – (VIL1)
	Closure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Resorts, Recreation and Tourism (Berry Picking)	Construction/ preproduction	See Operations											
	Operations	Presence of the mining complex in general	Berry picking activity likely to be displaced to sector more remote from the projected mine site.	Medium		N/A	Low	Point-source	Long	Medium	Negative	Very low importance/ Not important	
	Closure	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Forest and Agriculture	Construction/ preproduction	Clearing Stripping	See Operations.										
	Operations	Presence of the mining complex in general	• Loss of harvestable commercial forest; • Unavailability of agricultural land.	Medium	ECO2	AGR1	Low	Point-source	Long	High	Negative	Low importance/ Not important	Compensation
	Closure	N/A	N/A	N/A / N/A		N/A	N/A	N/A	N/A	N/A		N/A	
Road Traffic	Construction/ preproduction	Machinery circulation and operation	Increase in the number of vehicles on Highway 111.	Medium	TRAF3 TRAF4 TRAF6	TRAF2, TRAF7, TRAF9	Low	Local	Short	High	Negative	Low importance/ Not important	
	Operations	Road transport and machinery operation	Increase in the number of vehicles and trucks on Highway 111.	Medium	TRAF3 TRAF4 TRAF6	TRAF1, TRAF2, TRAF5, TRAF7, TRAF9	Low	Local	Long	High	Negative	Low importance/ Not important	
	Closure	Final restoration	Increase in the number of vehicles on Highway 111.	N/A / Medium	TRAF6	TRAF5, TRAF7, TRAF9	Low	Local	Short	High	Negative	Low	

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Municipal and Individual Buildings and Utility Infrastructures	Operations	The pit	Low risk of damage to municipal and individual buildings and utility infrastructures due to vibrations caused by blasting at the mine.	N/A	VIB2 VIB3 VIB4	VIB1 VIB4 VIB5 INF1 INF2	N/A	N/A	N/A	N/A		No significant impact	
Heritage and Archeology	Construction/ preproduction	• Stripping and clearing; • Fill and muck; • Construction of mining facilities.	Encroachment of the project on zones with archeological potential.	Low	ARC1 ARC2		Low	Point-source	Short	Low		Very low importance/ Not important	Monitoring
	Operations	• The pit; • Overburden accumulation areas; • Low-grade ore accumulation areas; • Waste rock piles; • Tailings storage facility; • Progressive restoration and rehabilitation.	Encroachment of the project on zones with archeological potential.	Low	ARC1 ARC2		Low	Point-source	Long	Low		Very low importance/ Not important	Monitoring
	Closure	N/A	N/A	N/A / N/A		N/A	N/A / N/A	N/A	N/A	N/A		N/A	
Aboriginal Presence	Construction/ preproduction	• Labour and purchasing	Employment for the members of the Pikogan community.		ABO2	ABO1					Positive	N/A	
	Operations Closure	• Presence of the mining complex in general	Encroachment on a portion of the land used by members of the Pikogan community.	High	LAB1		Medium	Point-source	Long	High	Negative	Medium importance/ Not important	

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Psychological Welfare of the Population	Construction/ preproduction	N/A	N/A	N/A / N/A		LAB8, POP8	N/A / N/A	N/A	N/A	N/A		No significant impact	
	Operations	• Acquisition of properties; • The pit; • Overburden accumulation areas; • Low-grade ore accumulation areas; • Waste rock piles; • Tailings storage facility; • Road and train transport and operation of machinery; • Progressive restoration and rehabilitation.	Deterioration of the quality of life for some of the neighbouring population due to concerns about the project's potential effect on the environment and health.	High	POP10 POP11	LIFE1 LIFE2 LIFE3 LIFE4 POP2 POP8 MOE8	Medium	Local	Long	High	Negative	Medium importance/ Not important	Compensation
	Closure	Final restoration	Possible deterioration of the quality of life for some of the neighbouring population due to concerns about the project's potential effect on the environment and health due to contamination of the environment by mine tailings.	High		LIFE1	Medium	Local	Medium	Low	Negative	Low importance/ Not important	Follow-up of complaints
Economic Security of the Population and Community Services	Construction/ preproduction	Labour and purchasing	• Improvement of the population`s economic security. • Improvement of commercial services. • Potential economic difficulties for low-income or fixed-income people. • Pressure on existing services.	N/A High	N/A ECO1	N/A ECO6	N/A Medium	N/A Regional	N/A Medium	N/A Medium	Positive Negative	N/A Medium importance/ Not important	
	Operations	Labour and purchasing	• Improvement of the population`s economic security. • Improvement of municipal, community and commercial services. • Potential economic difficulties for low-income or fixed-income people.	N/A	ECO1	ECO3 ECO6 POP8 POP1 LIFE4	N/A	N/A	N/A	N/A	Positive	N/A	

Table 9 Synthesis of potential impacts of the Dumont Project (cont'd)

Element affected	Project phase	Impact source	Description of the impact	Overall environmental value (ecosystemic/ socioeconomic)	Common mitigation measures	Special mitigation measures	Residual intensity of the impact	Extent of the impact	Duration of the impact	Probability of occurrence	Nature of the impact	Importance of residual impact	Improvement or compensation measures, Required oversight or monitoring program
Economic Security of the Population and Community Services (cont'd)	Closure	• Labour and purchasing • Final restoration • End of operation of the mine	• Job losses and reduction of purchasing in the region; • Possible deterioration of economic security of households; • Reduction of community services.	High	ECO1	ECO4 ECO5	Medium	Regional	Medium	Medium	Negative	Medium importance/ Not important	
Social Cohesion	Construction/ preproduction	Labour and purchasing	Low risk of degradation of social cohesion of the community during construction of the mining facilities.	N/A	N/A	SOC1	N/A	N/A	N/A	N/A	N/A	No significant impact	
	Operations	Labour and purchasing	Minor risk of deterioration of social cohesion of the community	High	ECO1	POP1, SOC1	Medium	Local	Medium	Low	Negative	Low importance/ Not important	
	Closure	Labour and purchasing	Low risk of questioning of social cohesion of the community	High	ECO1	ECO4 ECO5	Medium	Local	Medium	Low	Negative	Low importance/ Not important	
Attachment to the Community	Construction/ preproduction	Labour and purchasing	Strengthening of the local population's attachment to their community	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Positive	N/A	
	Operations	Labour and purchasing	Strengthening of the local population's attachment to their community	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Positive	N/A	
	Closure	End of operation of the mine	Erosion of the local population's attachment to their community	High	ECO1	ECO4 ECO5	Medium	Local	Medium	Low	Negative	Low importance/ Not important	
Landscape	Construction/ preproduction	Presence of the construction site	Changes to the scenery viewed by moving and stationary observers.	Medium	LAND3, LAND4	LAND1	Low	Local	Short	High	Negative	Low importance/ Not important	Monitoring
	Operations	Presence of the piles and tailings storage facility	Changes to the scenery viewed by mobile and stationary observers.	Medium	LAND4	LAND1 LAND2 LAND6	Medium to low	Point-source	Long	High	Negative	Medium to low importance	Monitoring
	Closure	Presence of the piles and tailings storage facility	Changes to the scenery viewed by mobile and stationary observers.	N/A	LAND5	N/A	N/A	N/A	N/A	N/A	Positive	N/A	

Notes: The common and special mitigation measures are listed in Table 7-26.

When followed by an asterisk, the importance of the residual impact was reassessed based on the compensation to be made.

Table 10 compiles the common and special mitigation measures that will be implemented during the development of the Dumont Project. These measures were ratified by the upper management of RNC, who undertake to implement and enforce them. Moreover, most of these measures were submitted to the mining contractor who was awarded the contract for site preparation and initial pit stripping, to ensure their applicability under actual field conditions. Adjustments then were made to certain mitigation measures to reflect the comments of this contractor. Compensation measures for the Dumont Project are listed in Table 11.

Table 10 Common and special mitigation measures for the Dumont Project

Number	Measure
Air Quality	
*AIR1	Set-up a shuttle bus system from the main local population centres for each shift to promote mass transit.
*AIR2	To minimize dust generation during stripping or grading work, water dry soils as necessary to maintain a damp surface.
*AIR3	To limit dust dispersion on unpaved roads, spray them with water and dust suppressants.
*AIR4	Implement an electric trolley assist system to move vehicles during their ascent out of the pit when the pit configuration becomes conducive to its implementation subject to the availability of energy, the demonstration of economic viability, and concentrator expansion to 100,000 t/d capacity. This would reduce diesel consumption by about 28% over the life of the project.
AIR5	Vehicles used will conform to the standards of the *Regulation respecting environmental standards for heavy vehicles*. In addition, fuels used will conform to the regulatory provisions of the *Petroleum Products Act* and the *Canadian Environmental Protection Act*, which concern the maximum concentrations of lead (< 30 mg/l), sulphur (15 mg/ kg), phosphorus (1.3 mg/l) and benzene (< 1.5%) in fuels.
AIR6	Closed conveyors will be used for handling ore and concentrate.
*AIR7	To limit the dispersion of mine tailings into the environment, water the dry surfaces of the impoundment areas as often as required to keep the surface damp until a mineral crust has formed which will effectively control dust dispersion.
*AIR8	Install dust control systems around primary crushers to capture dust and fibres, if necessary. The base of this equipment will be sprayed, as needed, during the summer and tarps will be installed during the winter.
AIR9	Equip all drilling rigs with dust collection devices (filter bag).
*AIR10	Install detectors around the pit to measure real-time nitrogen oxide concentrations during blasting.
*AIR11	Conduct an atmospheric dispersion study to model the airborne nitrogen dioxide concentrations during blasting under certain conditions. This study, which will be completed before the first blasting operation, will be used to assess the health risks for the neighbouring population and to orient the design of future versions of the emergency response plan, which could provide for preventive measures.
*AIR12	Use only chrysotile fibre-free granular materials (gabbro and volcanic rock) for the surface of haulage roads.
*AIR 13	Periodically analyze silt concentrations on the roads to assess maintenance needs. Maintenance of driving surfaces will be very rigorous so as to maintain very low fine particulate concentrations.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Noise Exposure	
*NOISE1	As noise level requirements are more restrictive at night, conduct daytime operations in areas most likely to contribute to noise exceedance at the residences along Highway 111. Thus, depending on noise levels to be observed, no activity will be permitted on Overburden Dump #2 and on the south and west portions of Waste Rock Pile #2 during the night. No activity will be permitted in the south portion of Cell #1 of the tailings storage facility at night.
*NOISE2	At night, mobile equipment will use a stroboscope as a back-up alarm.
*NOISE3	During the daytime, mobile equipment will use white noise back up alarms.
*NOISE4	When possible, equipment and routes used will be away from residences. Whenever possible, machinery traffic (graders, tank trucks, service equipment, etc.) must avoid the south portion of the mine site (near Highway 111) and trucks must use the northern access to the piles, on a priority basis. Moreover, near Highway 111, only wheeled bulldozers, which are less noisy, will be used.
*NOISE5	Depending on the noise levels to be observed, all mechanical equipment (haulage trucks, tank trucks, power shovels, bulldozers, etc.) will be soundproofed (muffler on the exhaust systems, buckets, radiators, etc.).
*NOISE6	Develop a berm of at least 10 m high around the primary crushers.
*NOISE7	Implement an electric trolley assist system to move vehicles during their ascent out of the pit when the pit configuration becomes conducive to its implementation subject to the availability of energy, the demonstration of economic viability, and concentrator expansion to 100,000 t/d capacity. This would reduce diesel consumption by about 28% over the life of the project.
NOISE8	Ensure adequate maintenance of equipment as well as good condition of mufflers and catalytic converters.
Soil	
SOIL1	Inspect the machinery before first use and regularly thereafter to ensure it is in good running order (no hydrocarbon leaks).
SOIL2	Make sure emergency petroleum product and hazardous material spill recovery kits are easily accessible at all times and equip the site machinery with absorbents for rapid intervention.
SOIL3	To reduce the use of borrow pits, supply all needs for aggregate from overburden and waste rock extracted from the pit. The waste rock will be crushed on site.
SOIL4	Take precautions to avoid spillage of explosives near blast holes and recover spilled products, if necessary.
SOIL5	Fuel tanks will be double-walled or will have 110% secondary containment.
SOIL6	Immediately report accidental spills to the person responsible for the emergency response plan, which will have been developed and approved prior to the beginning of work. Immediately isolate the affected area and clean up promptly. Alert Environment Canada (1-866-283-2333) and the MDDEFP (1-866-694-5454) promptly. Remove the contaminated soil and dispose of it at an approved location. Log all spills and the corrective measures taken by RNC in an internal registry.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Vibrations	
*VIB1	Install a network to monitor ground vibrations and air pressure near homes and wells. This network will include 2 to 3 permanent seismographs with remote communication set up to evaluate vibrations and air overpressure.
VIB2	For properties not acquired by RNC within 1 km of the pit, the maximum allowable soil vibration speed at the point of impact is 12.7 mm/s and the maximum allowable air pressure at all residences is 128 linear decibels.
VIB3	If there are residences within 1 km of the pit, prohibit blasting between 7 p.m. and 7 a.m.
*VIB4	The foundations of residences not acquired by RNC and situated within 1 km of blast zones will undergo a preliminary inspection by a qualified person to document their pre-blast condition. These same foundations will be reinspected at the beginning of the production to verify the evolution of the condition of the structures and to assess the effect of blasting-related vibrations. In the event that the Dumont project is shown to have an impact, RNC will compensate the affected owners.
*VIB5	Optimize the blast detonation sequence timing based on monitoring network observations in order to reduce the risk of amplification of vibrations and air overpressure.
Water and Sediment Regime	
*WSR1	To minimize sediment inflow, interrupt road drainage ditches a few metres above the natural high water line of unnamed stream 1 or install riprap in the ditch for about 100 metres upstream of the road crossing and lay a membrane on the embankment at the crossing.
*WSR2	To minimize the consequences of a reduction in the flow rate of the Villemontel River downstream from the mine site, no water will be drawn from the river except in an exceptional situation.
*WSR3	During soil stripping activities, require contractors to deploy effective erosion control systems, so as to comply with water quality standards (TSS concentrations) in the Villemontel River. This system may include controlling surface water flow in work areas with temporary catch basins and pumping water to vegetated areas to filter suspended solids. To the extent possible, machinery traffic will be planned so that rutting will be perpendicular to the natural slopes.
*WSR4	At the beginning of the construction period, develop a retention basin upstream from the water treatment plant to collect runoff water and the water from unnamed stream 1. These ponds will be used to measure TSS concentrations and for primary treatment, when necessary, to avoid any increase over 25 mg/l in TSS concentration in the Villemontel River. To meet this standard, a mobile filtration unit will be installed beside this pond to filter out fine particulate matter from the water, as needed. During production, the water treatment plant will be operated if required.
*WSR5	At the beginning of the production phase, the eastern portion of the pit will have been excavated and will serve as a reservoir to accumulate much of the mine site water (15 Mm^3 capacity). Some of the TSS will be deposited as sediment in this pond. When the capacity of this reservoir is exceeded, the overflow will be routed to the water treatment plant.
*WSR6	To minimize erosion of overburden dumps and favour the restoration of a natural ecosystem, they will be stabilized progressively, first with grasses, then by planting shrubs and trees of several species. To control runoff and avoid the development of gullies and limit sediment transport on the slopes of overburden dumps, reverse-sloped terraces will be developed along the embankments.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
*WSR7	To ensure the stability of overburden dumps and to avoid erosion of clays, they will be encapsulated in the center of the piles and covered with more stable granular materials (sand and gravel).
*WSR8	To favour restoration of the waste rock piles and better control water and wind erosion of fine particulate matter, a plateau will be developed in the upper portion of the pile. On this plateau, plantlets, young shrubs and trees will be planted to serve as a seed bank, to stabilize the pile, to increase ecological diversity and for better integration into the landscape. Grasses and legumes will be sown on the slopes and measures will be taken to favour their germination.
Surface Water and Sediment Quality	
WATER1	Machinery parking, washing and maintenance areas will be at least 60 m from any watercourse, including diversion channels.
WATER2	Machinery will be refuelled under supervision, at least 30 m from any watercourse, including diversion channels.
*WATER3	To minimize sediment inflow, interrupt road drainage ditches a few metres above the natural high water line of unnamed stream 1 or install riprap in the ditch for about 100 metres upstream of the road crossing and lay a membrane on the embankment at the crossing.
WATER4	Use clean granular material for the installation of cofferdams for the construction of dikes, when required.
WATER5	Stabilize disturbed areas (e.g. talus slopes and overburden dumps) progressively.
WATER6	Use effective methods to prevent the transport of fine particulate matter into the aquatic environment beyond the immediate work area.
WATER7	Send used oils from machinery to a disposal site designated for that purpose.
WATER8	Use a mobile biodisk treatment unit to treat domestic wastewater to bring this water up to the standards for BOD5, coliforms, SPM and phosphorus.
WATER9	Waste rock piles, low-grade ore piles and overburdendumps, as well as the tailings storage facility, will be surrounded by collector ditches so that drainage water is recirculated.
*WATER10	To minimize erosion of overburden dumps and favour the restoration of a natural ecosystem, they will be stabilized progressively, first with grasses, then by planting shrubs and trees of several species. To control runoff and avoid the development of gullies and limit sediment transport on the slopes of overburden dumps, reverse-sloped terraces will be developed along the embankments.
*WATER11	To ensure the stability of overburden dumps and to avoid erosion of clays, they will be encapsulated in the center of the piles and covered with more stable granular materials (sand and gravel).
WATER12	To limit surface water infiltration and favour the rapid establishment of plant cover, the mine tailings cells, upon their restoration, will be covered with about 15 cm of soil, composed of a mixture of brown clay, sand and gravel and organic materials, which will have been reserved at the beginning of the project. Once the material is put in place, it will be sown with a mixture of grasses and legumes (e.g. Clover, Red Fescue, Ryegrass and Fowl Bluegrass).
WATER13	To minimize the dissolution of nitrates and ammonia in the pit water, use an ANFO emulsion with low dissolution capacity.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Surface Water and Sediment Quality (continued)	
*WATER14	At the beginning of the construction period, develop a retention basin upstream from the water treatment plant to collect runoff water and the water from unnamed stream 1. These ponds will be used to measure TSS concentrations and for primary treatment, when necessary, to avoid any increase over 25 mg/l in TSS concentration in the Villemontel River. To meet this standard, a mobile filtration unit will be installed beside this pond to filter out fine particulate matter from the water, as needed. During production, the water treatment plant will be operated if required.
*WATER15	During soil stripping activities, require contractors to deploy effective erosion control systems, so as to comply with water quality standards (TSS concentrations) in the Villemontel River. This system may include controlling surface water flow in work areas with temporary catch basins and pumping water to vegetated areas to filter suspended solids. To the extent possible, machinery traffic will be planned so that rutting will be perpendicular to the natural slopes.
*WATER16	Wherever possible, use the effluent from the mobile biodisk treatment unit to for various uses (e.g. watering landscaped areas and and roads, transfer to the concentrator reservoir, etc.), before releasing it in to the aquatic environment via the final effluent.
Groundwater Quality and Flow Regime	
*GW1	To protect groundwater in the unnamed esker in the southeast part of the property, limit clearing to the minimum required for conducting the work to the southeast of the pit.
GW2	To prevent groundwater contamination, no machinery maintenance or refuelling will be authorized outside designated areas. These areas must be located outside groundwater recharge zones (ex.: rocky outcrops) and the unnamed esker in the southeast part of the property. Refuelling points will be clearly signposted.
*GW3	To protect the groundwater in the esker, work on the periphery of the southeast portion of the pit must be performed while ensuring that soil and humus is protected to avoid soil stripping and rutting outside the work area.
*GW4	To minimize the risks of groundwater contamination in the sensitive sectors, infrastructure and accumulation areas were designed so as not to encroach on a buffer zone one kilometre wide from the eastern surface limit of the Launay esker. This zone extends along the Launay esker located next to the property.
*GW5	The results of the kinetic tests on the project's waste rock and mine tailings show that they are considered leachable according to Directive A for the mining industry. The results of the current groundwater flow numerical model indicate that, overall, under the tailings storage facility, the maximum daily percolation rate will be less than 3.3 l/m². This meets Directive 019 criterion for a Level A impermeability as required for leachable tailings.
*GW6	Monitoring wells will be used to quickly identify any eventual qualitative and quantitative changes in groundwater. In the event that these changes are likely to affect human consumption, the population will be warned immediately and appropriate measures will be implemented by RNC to maintain the drinking water supply.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Vegetation	
VEG1	Machinery will not circulate outside work areas, which will be identified with solid, weather-resistant, tear-resistant material, in a highly visible colour.
VEG2	During forest clearing, pay special attention to protecting vegetation along the edge of work areas. Whenever possible, prevent trees from falling outside the limits of the clearing area and in watercourses.
VEG3	Forestry slash and woody debris will be shredded, burned or reclaimed off site. After shredding, the wood chips will be reused when needed for temporary stabilization, soil fertilization or restoration of the waste rock pile and riprap dikes. If they are burned, the necessary fire prevention precautions will be taken and prior authorization from the SOPFEU will have been obtained.
*VEG4	Make drainage ditches for the southwest portion of Cell #2 of the tailings storage facility, the northeast portion of Waste Rock Pile #1 and the east margin of Consolidated Deposit Dump #1 impermeable in order to avoid draining the bogs with high ecological value.
VEG5	For revegetation work, ensure that the seed mixture is free of invasive species. Favour indigenous seed species appropriate to the plant hardiness zone.
VEG6	Recover wood which has market value, cut it into lengths and stack it in accordance with the cutting permit.
Aquatic Fauna	
AQF1	Use clean granular material for the installation of cofferdams and stabilize them with a geotextile membrane or riprap.
AQF2	Stabilize disturbed areas (e.g. talus slopes and overburden dumps) progressively.
AQF3	Use effective methods to prevent the transport of fine particulate matter into the aquatic environment beyond the immediate work area.
*AQF4	To minimize the consequences of a reduction in the flow rate of the Villemontel River downstream from the mine site, no water will be drawn from the river except in an exceptional situation.
*AQF5	During infilling of watercourses and beaver ponds, favour methods that will allow the fish to flee the site.
Avian Fauna	
BIRD1	Machinery will not circulate outside the limits of the work areas and a fence will be installed at the limit of the protection perimeter of designated sensitive areas.
BIRD2	To avoid affecting the current year's hatchlings, perform forest clearing outside the bird nesting period (May 1 to August 15).
Mammals	
MAM1	Prior to all the clearing work, award a trapping contract to capture as many fur-bearing animals as possible, especially the less mobile species, such as beaver. Control beaver activities throughout the life of the project.
MAM2	Make the workers aware that it is important not to feed animals and not to leave food lying around so as not to attract fur-bearing animals. Awareness can be raised by means of posters and information sessions.
Development and Land Use	
TER1	Deploy a waste management plan based on the principles of the 4R-D principle (reuse, reduction, recovery, recycling and disposal).
*TER2	Make a direct or indirect financial contribution to the development of local establishments offering childcare services.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Agriculture	
*AGR1	Maintain agricultural and forestry vocation of the lands acquired by RNC that will not be affected by the projected mining infrastructure.
Infrastructure and Services	
*INF1	The foundations of residences not acquired by RNC and situated within 1 km of blast zones will undergo a preliminary inspection by a qualified person to document their pre-blast condition. These same foundations will be reinspected at the beginning of the production to verify the evolution of the condition of the structures and to assess the effect of blasting-related vibrations. In the event that the Dumont project is shown to have an influence, RNC will compensate the affected owners.
*INF2	In the event that monitoring shows the mine's influence on private wells (water quality and supply flow), corrective work will be undertaken at RNC's expense.
INF3	Prior to all the clearing work, award a trapping contract to capture as many fur-bearing animals as possible, especially the less mobile species, such as beaver. Control beaver activities throughout the life of the project.
Transportation and Traffic	
*TRAF1	To avoid affecting traffic flow, facilitate access to the mining complex and allow safe turning, take steps with the MTQ to study the establishment of turning lanes on Route 111. A more detailed analysis should be conducted when the mining operations are better defined.
*TRAF2	Set-up a shuttle bus system from the main local population centres for each shift to promote mass transit.
TRAF3	Take steps with the MTQ to add signage on Route 111 in both directions to warn drivers about the presence of an access road with truck traffic.
TRAF4	Install a level crossing with flashing lights and a gate at the main access point across the CN tracks.
*TRAF5	Subject to competitive pricing and adequate flexibility, favour transportation of goods by train, both to supply the mining complex and ship concentrate.
TRAF6	Group oversize/overweight trucks in convoys, whenever possible.
*TRAF7	To minimize impacts on traffic, the preferred route for oversize/overweight trucks will be Route 109 from Route 117 so as to avoid the roundabouts in Amos, which unlike those in Val d'Or are not designed to accommodate such trucks.
TRAF8	To ensure safety for aircraft, notify NAV Canada before each blasting operation.
*TRAF9	The location of the mine site's planned access point could pose a visibility problem. So that the safety of motorists using Route 111 is not affected, the access point will comply with the road design standards regarding visibility distances. Using detailed surveys of Route 111's vertical profile, this problem will be addressed during the feasibility phase so that a safe solution is found.
Resorts, Recreation and Tourism	
VIL1	Negotiate compensation with recreational leaseholders (rough shelters).
VIL2	Collaborate with regional organizations (CLD, chambers of commerce, etc.) to inform them in advance of accommodation needs so as to optimize existing services (inventory of existing rooms and possibility of commercial accommodations) and create new ones, as needed, to respond to demand from both residents and workers.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Population	
*POP1	Develop a cooperation and partnership framework agreement which defines the relationship between Launay and RNC with regard to community requests and projects.
*POP2	Open a liaison office in Launay by the end of 2012 to inform the population regarding the project, to listen to their concerns and to gather individuals' comments and suggestions.
POP3	Advise residents and land users of the start and end dates for the construction work.
*POP4	When making agreements to acquire properties, offer the owners a choice of qualified professionals to perform appraisals or obtain notarial or tax advice. RNC will cover the fees for these appraisals, advisory services and notarial deeds regarding the agreements and acquisitions.
*POP5	Adopt a hiring policy which will quickly identify labour needs so that the entities providing training can prepare and potential trainees can enroll.
*POP6	Establish a workforce training plan in partnership with Emploi-Québec, Commission scolaire Harricana and its mining industry training service
*POP7	Adhere to a "stay in school" charter: RNC will encourage school perseverance and continuing education for its personnel.
*POP8	Make a direct or indirect financial contribution to the development of local establishments offering childcare services.
*POP9	Create an RNC scholarship for students enrolled in recognized training institutions.
POP10	Blasting times will be indicated on signs located at the site security gated access points. This information will also be disseminated in Launay, Villemontel and Guyenne.
POP11	Negotiate acquisition conditions by mutual agreement with the owners of displaced households.
*POP12	Assume municipal taxes for 5 years, up to $10,000, for citizens whose residence is purchased and who wish to relocate within the same municipality (Launay or Trécesson).
Aboriginal Peoples	
*ABO1	Develop a memorandum of understanding and cooperation agreement regarding the participation of the Pikogan community in the Dumont Project.
ABO2	Implement mechanisms for the integration of workers, especially for members of Aboriginal communities (information sessions, dedicated human resources staff).
Economy	
ECO1	RNC will favour companies that have their head office based near the project in the tendering process when their competency and pricing are competitive. This will translate into a policy aimed at optimizing the purchasing of goods and services in the region.
ECO2	Recover wood which has market value, cut it into lengths and stack it in accordance with the cutting permit.
*ECO3	Promote a workforce training plan in partnership with Emploi-Québec, Commission scolaire Harricana and its industry training service and/or Corporation de l'enseignement et de formation d'Amos-Région for training adapted to the mining industry.
*ECO4	Notify the host communities early about the cessation of mining activities. The regional socioeconomic community and citizens will be associated with planning of the cessation of mining activities through the creation of a community advisory committee to help mitigate effects of the post-production period and develop an effective process for its management.
*ECO5	Develop a life cycle plan for the Dumont project in terms of sustainable socioeconomic development for the host communities.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Economy (continued)	
*ECO6	Collaborate with regional organizations (CLD, chambers of commerce, etc.) to inform them in advance of accommodation needs so as to optimize existing services (inventory of existing rooms and possibility of commercial accommodations) and create new ones, as needed, to respond to demand from both residents and workers.
*ECO7	Establish a partnership with a research institution on projects relating to RNC's activities.
Labour	
LAB1	Implement mechanisms for the integration of workers, especially for members of Aboriginal communities (information sessions, dedicated human resources staff).
LAB2	Institute disciplinary measures to counter discriminatory behaviour.
LAB3	Implement and maintain a rigorous occupational health and safety program.
LAB4	Implement specific measures to protect workers exposed to chrysotile asbestos fibres.
LAB5	Implement a Workplace Hazardous Materials Information System (WHMIS).
*LAB6	Set-up a shuttle bus system from the main local population centres for each shift to promote mass transit.
*LAB7	Promote a workforce training plan in partnership with Emploi-Québec, Commission scolaire Harricana and its industry training service and/or Corporation de l'enseignement et de formation d'Amos-Région for training adapted to the mining industry.
*LAB8	Adopt a hiring policy which will quickly identify labour needs so that the entities providing the training can prepare and potential trainees can enroll.
*LAB9	Adhere to a "stay in school" charter: RNC will encourage school perseverance and continuing education for its personnel.
*LAB10	Create an RNC scholarship for students enrolled in recognized training institutions.
Social Fabric	
*SOC1	Assume municipal taxes for 5 years, up to $10,000, for citizens whose residence is purchased and who wish to relocate within the same municipality (Launay or Trécesson).
Quality of Life	
*LIFE1	Establish participatory vigilance of the project's impacts and nuisances through a Citizens' Monitoring Committee, an internal community relations department and an ongoing communications program to provide information on environmental monitoring, receive complaints and make necessary adjustments.
*LIFE2	Prior to the beginning of construction, develop a plan for preventive management, control and treatment of nuisances.
*LIFE3	Compensate adequately for nuisances, damage and any harm caused by the project when RNC's liability is proved.
*LIFE4	Contribute actively to community life and regional development, including via donations and sponsorships.

Table 10 Common and special mitigation measures for the Dumont Project (continued)

Number	Measure
Landscape	
*LAND1	In open areas north of Route 111, plant vegetation screens to blend in with the existing forest, to screen certain mining infrastructure. Mixed plantations, 30% deciduous and 70% coniferous, will create natural visual barriers with a width varying between 25 and 35 m, while blending in with the existing vegetation. This work will be conducted starting in 2012 to promote the rapid growth of tree cover. Reforestation work may be performed on properties not belonging to RNC, subject to agreement with the land owners concerned.
*LAND2	To mitigate the visual impact of the waste rock piles and to promote their revegetation during restoration, a plateau at least 3 m wide will be developed in their upper portion. This plateau will be covered with organic earth and planted with coniferous trees.
LAND3	Preserve the existing forested border on the RNC properties north of Route 111.
LAND4	At the end of construction work, redevelop and restore the disturbed areas according to the closure plan so that they blend in as much as possible with the natural landscape (revegetation).
LAND5	Implement a mine site restoration plan which will prioritize the improvement of the site's natural landscape.
*LAND6	To minimize erosion of overburden dumps and favour the restoration of a natural ecosystem, they will be stabilized progressively, first with grasses, then by planting shrubs and trees of several species. To control runoff and avoid the development of gullies and limit sediment transport on the slopes of overburden dumps, reverse-sloped terraces will be developed along the embankments.
Heritage and Archaeology	
ARC1	If vestiges of interest are discovered during the work, immediately inform the person in charge of the work and take measures to protect the site.
ARC2	Conduct a brief archaeological inventory in the areas with medium potential identified during the archaeological potential study that are affected by the work. If vestiges are discovered, deploy protective measures to avoid compromising their integrity. Conduct an archaeological dig if the site cannot be protected.

* Special mitigation measure.

Table 11 Compensation measures for the Dumont Project

Measure	Description of the measure
Groundwater Quality	RNC will take corrective actions in the event that some residents see the capacity of their well or the physicochemical quality of their water affected by the project.
Forestry Capacity	The uncultivated lands acquired by RNC for the development of the project will be reforested. Other surfaces could also be reforested elsewhere within the forest management unit (FMU/UAF) to compensate for the loss of forest production capacity.
Rock Vole	Habitat developments to promote the rock vole, a species likely to be designated threatened or vulnerable, will be performed in the Lac à la Savane sector and/or west of the projected tailings storage facility, where individuals of this species have been captured.
Wetlands	A wetland encroachment compensation project will be developed and submitted to the MDDEP and Environment Canada for approval.
Fish Habitat	A program to compensate for destruction, deterioration and disturbance of fish habitats will be developed and implemented to the satisfaction of Fisheries and Oceans Canada (DFO).
Rough Shelter	RNC plans to compensate rough shelter leaseholders.

8. CUMULATIVE EFFECTS

The two valued ecosystem components (VEC) chosen for the analysis of cumulative effects are groundwater and wetlands.

Groundwater

Groundwater is highly valued on a regional scale, because this resource is present in large quantities and is of high quality, especially in the eskers. The most voluminous eskers of northwestern Québec are found in the Abitibi RCM and contain many aquifer reservoirs.

The analysis of the impacts of the project on esker groundwater shows that the residual effect on the groundwater will be of low to medium importance.

The project's main impacts, which potentially could be cumulative with other projects, actions or events, mainly concern the risks of contamination and alteration of the groundwater flow regime.

Several projects, actions or events of a positive nature aimed at protecting and conserving groundwater were identified in the study zone. These will help minimize the impacts on this resource.

On the whole, after the application of mitigation measures, there is no reason to anticipate that the construction/preproduction and production phases of the Dumont Project will have important effects on the groundwater on the scale of the Abitibi and Abitibi-Ouest RCMs. Therefore, no measures in addition to those already foreseen in the environmental assessment are envisioned.

Wetlands

Wetlands have great value because they fulfill multiple functions. In particular, they play an important role in water regulation and filtration. They also serve as a habitat for many plant and wildlife species. Wetlands are protected by various laws and regulation. Moreover, there are many wetlands in the Abitibi-Témiscamingue region.

The mining infrastructure of the Dumont Project will result in the loss of about 2,525 ha of wetlands, representing 1.33% of the wetlands in the Abitibi RCM and 1.16% of those in the study zone of the cumulative effects on wetlands. The analysis of the project's impacts on wetlands shows that the residual effect on these environments will be very important on the local scale of the Dumont Project, but of little importance on the scale of the Abitibi RCM.

The project's main impacts, which potentially could be cumulative with other projects, actions or events, mainly concern the alteration and loss of wetlands. It was impossible to determine the wetland areas affected by the other projects, actions or events. However, these wetland losses can be qualified as unimportant, in view of the great extent of the wetlands in the study zone. Moreover, other positive projects, actions or events contribute to the protection and conservation of wetlands in the study zone. In fact, protected sites contribute to protect and conserve certain wetlands in the study zone.

In short, despite the Dumont Project's strong encroachment on wetlands, the deployment of a compensation project, combined with the ubiquity of wetlands in the region and the low urbanization pressure, mean that the cumulative effect is unimportant.

9. OVERSIGHT AND MONITORING PROGRAM

9.1 Oversight

The environmental oversight performed during the project will consist of ensuring the observance of RNC's environmental commitments and obligations. It will also verify the integration of proposed mitigation measures into the project and ensure compliance with environmental laws, regulations and other considerations decreed in government permits, both for the design specifications and for the subcontracts.

One of oversight program's roles will consist in ensuring that all the authorization and permit applications necessary for the project have been submitted and that certificates of authorization and permits have been issued.

During work, mitigation measures will be applied rigorously. The person responsible for environmental oversight will make regular visits to the work sites and document d fulfillment of commitments, obligations, measures and other prescriptions from authorities. This person will also assess the quality and effectiveness of the measures applied and document any observed non-conformity. This person then will report on observations to the person responsible for the project site and to RNC so that appropriate corrective actions are agreed on and adopted as soon as possible.

9.2 Monitoring

The environmental monitoring program the Dumont Project has the objective of monitoring the evolution of certain sensitive environmental components, some of them in accordance with the federal and provincial requirements.

The protocols that will detail the location of monitoring stations, parameters to be measured and analytical detection limits, measuring equipment, data collection methodology, analysis of the data, and reports to be produced will be developed after government authorizations are issued. This will allow inclusion of conditions of authorization and government requirements in order to produce a complete and detailed social and environmental monitoring program for the Dumont Project.

At this stage of the project, the following environmental monitoring is anticipated:

- Effluent and water quality monitoring in the receiving environment:
  - Mining effluent and water quality
  - Monitoring during closure phase
  - Sanitary effluent
  - Monitoring of the water quality of Lac Chicobi and the Chicobi River
- Biological monitoring:
  - Monitoring of fish populations
  - Monitoring of benthic invertebrate communities
  - Sediment quality monitoring
  - Toxicity tests
- Groundwater monitoring;
- Air quality monitoring:
  - Total suspended particulate matter and metals
  - Fine particulate matter
  - Nitrogen oxides (NOx)
- Dust deposition monitoring around the mine site;
- Chrysotile exposure monitoring;
- Noise monitoring:
  - Neighbouring environment
  - Mine site
- Vibration and air pressure monitoring;
- Monitoring of the stability of the dam and the dikes of the tailings storage facility;
- Citizens' Monitoring Committee; and
- Monitoring of the project's performance in relation to sustainable development principles.

10 ACCIDENT RISK MANAGEMENT

This chapter presents the main accident risks related to the construction and production phases of the Dumont Project. These risks can have consequences for the environment or for workers' safety. Some risks can also have impacts on citizens or public infrastructure, because project facilities are located less than one kilometre from Route 111, secondary roads, a railway and some residences. The planned facilities are also located about 6 km west of the centre of the village Villemontel and about twenty kilometres northwest of Amos.

For each accident risk identified, causal factors are identified and summary control measures are provided as prevention. A preliminary emergency response plan appropriate to the risks identified has also been developed (Volume 2, Part 2, Schedule 20). These measures conform to regulations and industry best practices.

A final emergency responseplan will be developed for each phase of construction and production. Any event that may threaten or strongly affect components of the environment, workers or society, will trigger the emergency response plan.

RNC prevention program for health and safety

A prevention program has been developed and will be implemented by RNC to reduce accident risks. This program, which will be updated continuously, presents RNC's environmental policy and the policies on alcohol, drug and tobacco use, among others. The health and safety responsibilities and obligations of the employer, workers and subcontractors are also detailed. This program includes prevention measures that must be adopted by all workers, practices to protect workers' health and the environment, a customized training program, monitoring and control measures, and a continuous improvement process.

The risks present in the operations of RNC and those of its contractors will be managed in accordance with this program in order to prevent any major impact on workers' health or on the environment.

Emergency response plan

RNC provides for the reduction of accident risks at the source by taking them into account in the design phase of project facilities and by using proven safety and planning technologies. A detailed analysis of risks conforming to the "Guide de gestion des accidents industriels majeurs" (Major industrial accidents management guide), developed by the Conseil pour la réduction des accidents industriels majeurs (CRAIM),

will be prepared once project construction and production parameters have been specified (feasibility phase). The implementation of adapted safety measures will also seek to reduce these risks.

The main accident risks associated with construction and production, which are given in detail in the environmental and social impact assessment report, are as follows:

- petroleum product spill;
- hazardous material spill or leak;
- nickel concentrate spill;
- fire;
- explosion;
- collapse of structures or failure of dams or dikes;
- major accident in the pit;
- major accident at the mining complex.

11 SUSTAINABLE DEVELOPMENT

11.1 Initiatives

RNC attaches great importance to consulting stakeholders concerned by its activities. This commitment to consult the population and the organizations contributes significantly to RNC's consideration of sustainable development. Two initiatives reflect this intention: consultation of stakeholders and the consultation process implemented during studies for the Dumont Project.

Regarding governance, RNC has policies, including one in the environment and another in health and safety, which reflect its vision and its values with respect to these areas. The Company also participates in the BNQ 21000 pilot project with the aim of informing its reflection on other issues that also contribute to sustainable development.

Consultation process implemented during Dumont Project prefeasibility and impact studies

In advance of the government mandated assessment process, RNC has consulted host communities and groups that have expressed opinions on the planned type of mining. This voluntary process was initiated in the winter of 2011. It has involved two distinct phases, the first related to the prefeasibility study and the second integrated in the impact assessment. RNC intends to pursue this process at each stage of project development.

- The objectives pursued during the first stage of the process were to:
  - ensure good dissemination of information on the nature and advancement of the project;
  - collect concerns, comments and suggestions in order to improve the prefeasibility study and the content of the future impact assessment; and
  - present how the elements provided by the consultation were considered and how they modified the project.
- The objectives pursued during the second stage, during the completion of the impact assessment, are to:
  - provide vulgarised information to interested parties;
  - allow examination of the various aspects of the project, its impacts, and the content of the impact assessment;
  - address stakeholders' concerns, comments and suggestions proactively; and
  - present how elements provided by the consultation were considered and integrated.

By creating forums (advisory committee, Municipalities and company round-table, public meetings, open house, etc.) and mechanisms to ensure participation and exchanges (third-party facilitation, direct discussion with the experts, etc.), RNC is better able to appreciate the perceptions and eventual expectations of stakeholders, to foster understanding of mutual interests and thus develop relationships with them.

11.2 Dumont Project

The 16 sustainable development principles were taken into account during the performance of the environment and social impact assessment (ESIA). The use of sustainability indicators for the activities related to the mine's construction and production will also allow monitoring of the implementation of sustainable development principles.

Methodologically, a synthesis matrix was prepared to facilitate the understanding of how the 16 principles will support the ESIA process and the mitigation and environmental monitoring measures proposed to deal with the issues raised. The analysis shows that RNC, through its commitments and actions, is already very committed to sustainable development principles.

RNC has a very clear perception of its involvement in sustainable development and is very committed to it. The sustainability monitoring indicators for each of the 16 principles will also allow production of an accounting every three years. RNC's approach regarding sustainable development can be cited as an example in the mineral exploration sector.

12 CONCLUSION

The economic spinoffs of the Dumont Project are substantial, with an investment of approximately $2.5 billion (initial cost of construction/preproduction and sustaining capital) and production expenditures estimated at approximately $13,000 million, over a project life cycle of 34 years. For Québec as a whole, value creation is estimated at about $10,000 million. The Abitibi-Témiscamingue region will not be left out, and should account for about one third of production expenditures. Over the life of the project, the number of direct and indirect jobs that will be created by the Dumont Project totals approximately 52,000 person-years. These few statistics are enough to show that the Dumont Project will be a major economic engine which will contribute to the revitalization of certain local and neighbouring communities for more than thirty years.

Without a doubt, the Dumont Project is a very large-scale project due to the considerable size and capacity of the projected infrastructure and its longevity (over 30 years). One of the main issues associated with this mining project is results from its considerable footprint over nearly 50 km² of territory. This encroachment into an undeveloped territory translates into substantial losses of aquatic habitats, wetlands and forest habitats used by wildlife. However, compensation for wetlands and fish habitats will limit the importance of the residual impacts on these components of the environment. Furthermore, the optimizations achieved between the prefeasibility and feasibility phases of the project have made it possible to protect a very valuable bog-pool system which is the habitat of a special-status plant species, the Slender-leaf Sundew. Consequently, the project mining infrastructure no longer encroaches into habitats of high ecological value for fauna and flora. Gradual mine site restoration will favour rapid revegetation of certain infrastructure (e.g. the tailings storage facility), which will allow the establishment of a new ecosystem and the use of this land for other purposes upon cessation of RNC's activities.

Two optimizations to the Dumont Project have reduced its overall encroachment. First of all, accelerated pit mining and cessation of extraction activities in Year 20 will allow over 500 Mt of mine tailings to be deposited in the pit. This represents nearly 45% of all mine tailings produced by the concentrator. Secondly, over 200 Mt of waste rock extracted from the pit will be reclaimed on the mine site for the construction or maintenance of various infrastructure (dike, road surfacing, etc.) instead of being impounded.

The study of the layout variants shows that a compact layout is the solution with the least impact. Indeed, such a layout concentrates the environmental impacts, especially encroachment into a single watershed, and minimizes nuisances, such as noise, dust and traffic. Moreover, around the mine site, the presence of sensitive elements (e.g.

eskers), resort areas (Lac Davy and Lac Centre), agricultural territories, protected areas (muskrat habitats) and built-up environments limited the number of sites conducive to the implantation of infrastructure such as the tailings storage facility and the piles. To the north, the presence of mining infrastructure is not desirable in order to avoid encroaching on the Harricana River watershed, which flows into southern James Bay, and where part of the territory, including Lac Chicobi and its tributaries, is highly valued by the members of the Abitibiwinni First Nation. On the south side, several elements represent constraints that favoured the proposed layout, particularly the built and agricultural environments, the Villemontel River, and public traffic infrastructure, such as the railway and Route 111.

The Dumont Project stands out from many mining projects due to the alkalinity of its ore. The many tests performed in the laboratory and in the field give reason to conclude that the ore, waste rock and mine tailings storage areas will not produce acidic conditions that could lead to environmental problems. Moreover, although the ore and the waste rock are classified as leachable according to Directive 019 on the mining industry, it is not anticipated that metals will be found in higher concentrations than regulated criteria. Monitoring of the final effluent will allow assessment of the concentrations of the metals in the water and the necessity of treating it. One should note that the Dumont Project mine effluent will not flow during the winter, the time when the dilution potential of the receiving aquatic environment, the Villemontel River, is at its lowest.

Due to the proximity of eskers with high aquifer potential, groundwater undoubtedly is a major concern of the project. Conscious of the value attached to this resource regionally, RNC has voluntarily imposed constraints on the project to minimize the groundwater impacts, such as observance of a one-kilometre buffer zone along the Launay esker, where no mining infrastructure is to be installed. Accounting for groundwater in project design and in the assessment of the impacts translated into the completion of an extensive program of drilling and installation of observation wells. The data collected made it possible to establish the current physicochemical conditions and will allow monitoring of the evolution of several parameters under production conditions in a network of monitoring wells. Even though significant alterations in the physicochemical quality of the groundwater are not anticipated, primarily due to the almost continuous presence of a layer of fine materials (silt and clay) under the foundation of the highest-risk infrastructure, RNC has made the commitment to regularize the situation of residents who may be impacted by the Dumont Project. This measure would mainly concern the residents established along Highway 111, who may see a reduction in the groundwater level of their wells. Indeed, pit dewatering will lower the water table, which could affect the wells of about twenty residences along Route 111 and the water of an unnamed esker.

For water quality, one of the main issues will be effective control of erosion and sediment transport in the work areas and on the piles. Otherwise, it is likely that some high-turbidity episodes will occur, especially at the beginning of the construction period, if there is heavy rainfall. Turbidwater can be managed adequately once the retention basins and the treatment plant can be operated efficiently. To minimize sediment inflow into the Villemontel River, which will be measured periodically by analyzing the TSS concentrations downstream and upstream from the confluence of the mining effluent, RNC intends to implement a wide range of mitigation measures and emphasize oversight and monitoring activities.

The Dumont Project certainly is a major contributor in terms of GHG emissions, although two special conditions allow reduction of the magnitude of this phenomenon. First, the probable deployment of an electric trolley system to assist haulage trucks during their ascent from the pit or on certain piles, will allow fuel consumption to be reduced over 25%, which will lower GHG emissions accordingly. Moreover, preliminary studies conducted by UQAT show a real potential for carbon sequestration by the mine tailings and the waste rock through a spontaneous carbonation process. On the whole, the tailings storage facility would contribute to sequester over 130,000 tCO_2eq for the duration of its production, a minimal reduction of 3% of the Dumont Project's carbon footprint. Optimizations can be achieved to improve the efficiency of the reaction responsible for sequestration, both on the surface of the tailings storage facility and on the waste rock piles.

Preliminary dust modelling performed on the preliminary mining concept, as published in the project notice, showed major exceedances of the maximum concentration standards under the Clean Air Regulation, especially in the population centre of Launay and along Route 111. Based on these results, RNC decided to review the site layout, so as to remove from Launay the activity that contributes the most to generation of dust (trucking). Due to the large volumes of material transported between the pit and the waste rock and ore piles, they were relocated north of the mine site, while the tailings storage facility was relocated west of the pit. With these changes, and considering the rigorous application of a dust control program, including regular watering of the road surfaces, the modelled dust levels indicate that exceedances at the sensitive receptors could occur no more than four times a year in the worst-case scenario, namely in Year 6 of production at the mining complex. For fine particulate matter (2.5 µm), no exceedance of standards is anticipated.

The chrysotile present in the Dumont deposit will be controlled at the source by the use of dust control measures to prevent its airborne suspension, and by the rigorous application of the dust control program at the mining complex. As mentioned previously, trucking on haulage roads is the leading contributor of the dust modelled for the production phase. For this reason, RNC will only use chrysotile-free rock to

produce the aggregate necessary for road maintenance. These measures will contribute to maintain low airborne asbestos-fibre concentrations at levels that do not risk affecting the health of workers or of the residents living near its mining complex.

Among other nuisances, the noise level could inconvenience certain residents. Compliance with the maximum acceptable levels is conditional on the application of a wide range of mitigation measures (e.g. muffling all the mechanical equipment, restrict nighttime activities for the sectors near Route 111, etc.). In the production phase, trucking and operation of machinery will be the main noise sources attributable to mining activities. These sources will have greater effects when they occur near Route 111, where the sensitive receptors are concentrated. In the population centres of Launay and Villemontel, the mining activities will have no significant effect on the current noise levels.

A preventive management, control and treatment plan for nuisances will be developed before the beginning of construction of the mining complex. The monitoring that will be deployed will allow precise measurement of the project's impacts, such as airborne dust concentrations and ambient noise levels. If RNC is proven to be responsible for nuisances, damage or any harm judged to be unacceptable, compensation will be negotiated with the persons involved.

Eager to favour the best possible insertion of its project into the environment, RNC voluntarily implemented a comprehensive consultation program with stakeholders from the first stages of development of the project at the beginning of 2011. The consultations took various forms, such as information sessions, the establishment of a Municipalities and Company round-table, the organizing of open house events and site visits, the organizing of meetings with the Conseil de la Première Nation Abitibiwinni and the deployment of an advisory committee (which has 36 members). The concerns and information gathered during many consultation sessions made it possible to improve the project and thus reduce its environmental impacts or optimize its social and economic spinoffs. In this context, a cooperation and partnership agreement was signed with the municipality of Launay.

To secure the project's land requirements in the southern portion of the site, RNC has also entered into a number of agreements for the acquisition of private properties and others are in negotiation. Aware that the acquisitions may have important repercussions for localities with small populations, RNC intends to implement measures to limit the socioeconomic impacts associated with displacement of residents. For example, RNC has already committed to defray municipal taxes for 5 years, up to a limit of $10,000, for citizens whose residence is bought out and who wish to resettle in the same municipality (Launay or Trécesson).

Despite its considerable footprint, the Dumont Project will have few significant impacts on land use, especially on agricultural or forest activities. Some activities will be more affected, such as big game hunting, while certain rough shelter leaseholders will have to relocate. However, RNC will negotiate agreements with the persons concerned.

The consultation of the Abitibiwinni First Nation helped draw a portrait of land use for traditional purposes. At this stage of the project, this exercise gives reason to anticipate that the mining infrastructure and activities will have little or no affect on the activities of the Pikogan members. RNC nonetheless intends to develop a memorandum of understanding and partnership to formalise Pikogan community's participation in the Dumont Project.

Special attention will be paid to environmental oversight during work and to monitoring activities, in order to limit impacts at the source, measure the impacts, and make changes to the mining activities if required, so that problems are addressed. The environmental monitoring program involves many components, which will be updated as the project evolves and when the requirements of the government authorities will be known. The environmental monitoring program will be submitted to the responsible authorities in its final version for approval, before the beginning of construction. Moreover, the environmental monitoring results will not only be submitted to the government departments concerned, but to the Citizens' Monitoring Committee, which will be established to ensure participatory vigilance regarding the project's impacts and nuisances. This monitoring committee, as well as the community relations department and the ongoing communications program that will be established by RNC, will make it possible to inform the residents who could be concerned about the project's effects on their health and their environment. The establishment of various communications activities and ongoing dialogue will help reduce apprehensions and the psychosocial effects that could result from them.

During the development phases of the Dumont Project, RNC's corporate commitment to the sustainable development of its mining project has already translated into a wide range of social and environmental actions. For the future phases, construction/preproduction and production, RNC reiterates its commitment to continue in the same vein in order to ensure the best possible integration of the project into the environment while respecting the host communities.