Torngat Metals

AECOM

Strange Lake Rare Earth Mining Project

Initial Project Description (IPD) and Registration Document

Submitted to:

Impact Assessment Agency of Canada (IAAC, Federal Government)

Government of Newfoundland and Labrador (NFL)

Nunatsiavut Government (NG)

60697132

September 2023

Delivering a better world

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List of Acronyms and Abbreviations

ACS+ :	Analyse comparative entre les sexes plus
ATV:	All-terrain vehicle
BAT:	Best Available Technology
BFS:	Bankable feasibility study
BGGP:	Bureau de gestion des grands projets
BOD:	Biological oxygen demand
CCME:	Canadian Council of Ministers of the Environment
CEAA:	Canadian Environmental Assessment Agency
CEAEQ:	Centre d'Expertise en Analyse Environnementale du Québec
CH4:	Methane
CISSSCN:	Centre intégré de santé et de services sociaux de la Côte-Nord
CLSC:	Centre local de services communautaires
CNSC:	Canadian Nuclear Safety Commission
CO_2:	Carbon dioxide
COSEWIC:	Committee on the Status of Endangered Wildlife in Canada
dBA:	Ambient noise level
DFO:	Department of Fisheries and Oceans
DY:	Dysprosium
ECCC:	Environment and Climate Change Canada
EDO:	Environmental Discharge Objectives
EIA:	Environmental Impact Assessment
EIS:	Environmental impact statement
EPA:	Environment Protection Act
EPR:	Environmental preview report
EQA	Environmental Quality Act
ESG:	Environmental, social and governance
ESIS:	Environmental and Social Impacts Study
EV:	Electric Vehicle
FAFH	Fish and Fish Habitat
Fe	Iron
GBA+ :	Gender-based Analysis Plus
GHG:	Greenhouse gas emissions
GSC:	Geological Survey of Canada
HFC:	Hydrofluorocarbon

HHERA:	Human Health and Environmental Risk Assessment
IAA	Impact Assessment Act
IAAC:	Impact Assessment Agency of Canada
IAAC:	Impact Assessment Agency of Canada
IBA:	Impact and Benefit Agreement
IDLP:	Innu Development Limited Partnership
IDP:	Initial Project Description
INSPQ:	Institut national de santé publique du Québec
IOCC:	Iron Ore Company of Canada
IPCC:	Intergovernmental Panel on Climate Change
IPS:	Indigenous Peoples Survey
ISAQ	Inventory of Archaeological Sites in Quebec
JBNQA:	James Bay and Northern Quebec Agreement
JBRHSSC	James Bay Regional Health and Social Services Centre
KEAC:	Kativik Environmental Advisory Committee
KEQC:	Kativik Environmental Quality Commission
KRG:	Kativik Regional Government
LIL:	Labrador Inuit Lands
LILCA:	Labrador Inuit Lands Claims Agreement
LISA:	Labrador Inuit Settlement Area
LOD:	Limit of detection
LOM:	Life of Mine
LQE:	Loi sur la qualité de l'environnement au Québec
LRC:	Limited radius count
MCC:	Ministère de la Culture et des Communications du Québec
MDDEFP:	Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs (2012-2014)
MDDELCC:	Ministère du Développement durable, de l'Environnement et la Lutte contre les Changements climatiques (2014-2018)
MDDEP:	Ministère du Développement durable, de l'Environnement et des Parcs (2005-2012)
MELCC:	Ministère de l'Environnement, la Lutte contre les changements climatiques (2018-2022)
MELCCFP	Ministère de l'Environnement, de la Lutte aux Changements climatiques, de la Faune et des Parcs (2022-…)
MERN:	Ministère de l'Énergie et des Ressources naturelles (now MRNF)
MMDMER	Metal Mining and Diamond Mining Effluent Regulations
MOU:	Memorandum of understanding
MPMO:	Major Projects Management Office
MRC:	Regional County Municipality

MRNF:	Ministère des Ressources naturelles et des Forêts (formerly MERN)
MSSS :	Ministry of Health and Social Services
N_2O:	Nitrogen dioxide
NAPS:	National Air Pollution Surveillance
Nd:	Neodymium
NdFeB:	Alloy of neodymium, iron and boron
NEQA:	Northeastern Quebec Agreement
NG:	Nunatsiavut Government
NL:	Newfoundland and Labrador Government
NMEF:	Nunavik Mining Exploration Fund
NO_2:	Nitrogen dioxide
NORM:	Naturally Occurring Radioactive Materials
NRCan:	Natural Resources Canada
NTS:	National Cartographic Reference System
OEL:	Occasional effect level
PEA:	Preliminary Economic Assessments
PFC:	Perfluorocarbon
PFS:	Pre-Feasibility Study
Pr:	Praseodymium
QMEA:	Quebec Mineral Exploration Association
RDL:	Reported detection limits
REE:	Rare Earth Elements
RLS:	Réseau local de services
RRSSN:	Régie régionale de la santé et des services sociaux Nunavik
SARA:	Species at risk act
Scope 1:	Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization.
Scope 2:	Indirect GHG emissions from consumption of purchased electricity, heat, cooling or steam.
SECP:	Southeast Churchill Province
SF_6:	Sulfur hexafluoride
SLAC:	Strange Lake Alkali Complex
SLBZ:	Strange Lake B-Zone
SM:	Suspended matter
SO_2:	Sulfur dioxide
SPA	Saguenay Port Authority
SS	Suspended solids
t	Tonne

t/d	Tons per day
Tb:	Terbium
TEK:	Traditional Ecological Knowledge
TEL:	Threshold effect level
TPM:	Total Particulate Matter
TSP:	Total Suspended Particles
TSS:	Total suspended solids
UDI:	Undetermined distance index
US:	United States
VBA:	Voisey Bay Area
VEC:	Valuable Ecosystem Component
VOC:	Volatile Organic Compound
WC:	Water crossing

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Cover Letter (Separate Doc)

Introduction

Torngat Metals Ltd. (hereinafter referred to as "**Torngat Metals**") is a private Canadian company headquartered in Montreal. The project is a rare earth elements mining project in the Strange Lake deposit in Quebec, located 235 km northeast of Schefferville and 125 km west of Vale's nickel-copper mine near Nain in Labrador. Guided by ESG-I standards, Torngat Metals Ltd. aims to be recognized as a socially and environmentally responsible supplier of rare earths for the electric mobility, renewable energy, and other low-carbon footprint markets. Rare earths are essential to the decarbonization of our societies, and without them the transition to a green energy will be very difficult. To date over 85% of the market is controlled by China. The proposed mine and processing facilities will be key to the stabilization of the supply chain, ensuing North America controls of its supply of rare earth. The deposit of Strange Lake is one of the richest deposit in the world and contains large quantities of the four rare earth that produces the magnets necessary for EV motors. There are also eight other useful rare earth that are necessary for colours in smart phones and tablets, making flat screens possible and also key to medical equipment.

In general terms, the Strange Lake Rare Earth Mining Project (hereinafter referred to as "**Strange Lake Project**") includes the following elements:

- **Mine site** (Quebec, north of the 55th parallel):
  - Construction, operation, closure and restoration of a new mining complex, including:
    - Open-pit mining of a rare earth elements deposit (Zone-B): 30 years of operation is currently being considered.
    - Beneficiation plant.
    - Related infrastructure: waste rock and overburden stockpiles, low and medium-grade ore stockpiles, beneficiation residues stockpile, effluent treatment facilities, permanent camp, office and warehouse buildings).
    - Aerodrome with a runway length of 1 500 m.
- **Access road:** The access road is approximately 160 km long. It extends between the mining site and an existing port and will facilitate the transportation of ore by trucks to the ships.
  - Province of Quebec: The first 18 kilometers from the mine site are located within the territory of the province of Quebec.
  - Province of Newfoundland and Labrador, and LIL (Labrador Inuit Land): Outside the mine site, the preliminary design includes a seasonal access road of approximately 140 km. The road includes three major crossings.
- **Storage and handling facilities at an existing port:** The ore concentrate packed in bags and then in containers will be transported by trucks to a storage and handling facility on the east coast of Labrador.
  - The proposed site is a new container depot near the existing port of Vale's nickel-copper mine in Anaktalak Bay, NL[1].
- **Sea transportation of the ore concentrate to a process plant:** The ore concentrate, still packed in bags and then in containers will be transported to a pre-existing industrial port area in Sept-Îles, QC.
  - Transportation by ships from the existing port on the eastern coast of Labrador to a pre-existing industrial port area in Sept-Îles, QC.
- **High purity rare earth processing and separation plant:** The rare earth elements will be separated into oxides at a new process plant that will be built in the "Parc industriel ouest – Jonction Arnaud" of the Sept-Îles industrial port facility (QC).

[1] Although the Vale mine site is named Voisey's Bay, its port is located in Anaktalak Bay, just to the north.

The section 8 *Applicable Provisions* details the activities of the Project. Section 18 also addresses the *Implication of other Jurisdictions in the Project's Assessment.*

This document serves as a Registration Document (NG, NL), and the Initial Project Description (IDP) and the Table of Content and information presented are believed to be in accordance with Section 5 elements of the *Regulations Regarding Environmental Reviews of Initiatives on LIL* pertaining to the Project Notice filing (sections 25 à 40).

To comply with the Nunatsiavut Government requirements for the Registration phase, a table of concordance is available at Appendix A as per article 29 of the *Regulations Regarding Environmental Reviews of Initiatives on Labrador Inuit Lands.* This table aims at listing the factors set out in the Schedule of the Act (article 29) where the matter is addressed in the registration and, if a factor referred to in the schedule of the Act is not addressed in this document, the reasons why are provided.

PART A – GENERAL INFORMATION

1 Project Name

The title of the project is “Strange Lake Rare Earth Mining Project”.

In this document, the short title “Stange Lake Project" is used to simplify the text.

2 Identification of Proponent and Representative

2.1 Proponent Identification

The promoter is **Torngat Metals Ltd.** (hereinafter named Torngat Metals), a Canadian exploration company currently focused on developing its main project, the Strange Lake property in northeastern Quebec. A current update statement has been made to formalize the corporate name change from Quest Rare Minerals Ltd. to Torngat Metals Ltd or Métaux Torngat Ltée. The process and the certificate of amendments to the *Canada Business Corporations Act* dated July 26, 2018, are available in Appendix B.

Name of promoter:	**Torngat Metals Ltd.**
Address (head office):	625 Avenue du President Kennedy, suite 605 Montreal, Quebec H3A 1K2
Chief Executive:	
Name:	Dirk Naumann, Ph.D.
Title:	President and Chief Executive Officer (CEO)
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Phone number:	1 (613) 532-8232
Email address:	dirk.naumann@torngatmetals.com
Responsible for the environmental assessment of the project:	
Name:	Sylvie St-Jean
Title:	Vice-President Environment
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2.2 Representative Identification

Consultant:	**AECOM Consultants Inc.**
Address:	85, Ste-Catherine Street West Montreal, Quebec H2X 3P4
Project responsible:	Sonia Labrecque, biol. Project manager
Telephone number: Fax number: Email Address:	1 (581) 996-7435 (cell) 1 (418) 647-1011 sonia.labrecque@aecom.com
Quebec entreprise number (NEQ):	1161553129

3 Engagement Activities and Plans

This section presents the engagement activities and plans carried out with Government agencies and other stakeholders. The engagement activities and plans carried out with Indigenous communities and partners are presented in section 4.

3.1 Information and Consultation Activities Carried Out

The mine site is located on category III Land, that are subject to James Bay and Northern Quebec Agreement. This agreement governs land claims and Indigenous rights of the Nunavik Inuit and of the Naskapi Nation of Kawawachikamach. The mine site is covered by the administrative region of Nord-du-Québec and the Kativik Regional Government, located in Kuujjuaq, 325 km Northwest of the mining site.

The access road and the storage and handling facilities at Vale's Port are located on the Newfoundland and Labrador crown land, and on the Labrador Inuit Land (Category I), the Nunatsiavut Inuit Settlement Area (Category II) and the Voisey's Bay Area of the Nunatsiavut territory (Map 3-1). The access road and the storage and handling facilities are covered by the administration of the Newfoundland and Labrador Government and the Nunatsiavut Government.

The ore contentrate produced by the mine will be sent to a process plant located in Sept-Îles, Quebec, to prepare the final project products, which are the rare earth oxides. This plant is covered by the administration of the Quebec Government.

3.1.1 List of consultation activities carried out for the northern components of the Project (mine, road to the eastern coast of Labrador)

As part of the Strange Lake Project, Torngat Metals (previously Quest Rare Minerals) has presented the Project to various government stakeholders at the federal and provincial (Quebec and Newfoundland and Labrador) levels and to Indigenous governments (Nunavik and Nunatsiavut) since 2011. Several engagement activities have also been carried out with various stakeholders, mainly Indigenous groups from Quebec and Labrador (engagement activities carried out with Indigenous groups are presented in section 4).

Engagement activities have also been carried out with some non-Indigenous stakeholders, such as government representatives, outfitters and businesses that may have an interest in participating in the Project, but most of the consultations with non-Indigenous communities and groups that may show an interest in the Project have not yet been initiated.

Table 3-1 provides a summary of government, and other stakeholder groups consulted to date, as well as their main comments, whereas Map 3-2 outlines the northern communities in the project area.

Table 3-1: Government agencies and other stakeholders consulted since 2011

Type of consulting activities	Date	Stakeholders	Comments
Federal government Initial project presentation, follow-up meetings and communications, environmental assessment process	2011 – 2023 (ongoing)	– Bureau de gestion des grands projets (BGGP) – Representatives of the Canadian Environmental Assessment Agency (CEAA) / Impact Assessment Agency of Canada (IAAC) – Natural Resources Canada (NRCan) – Innovation, Science and Economic Development Canada – NSERC – Canadian Nuclear Safety Commission (CNSC) – Minister of Labour – Minister of Rural Economic Development – Atlantic Canada Opportunties Agency (ACOA) – Canada Infrasture Bank	– Project seen as important for the Canadian Critical Minerals Strategy – Interest in understanding all the potential project benefits, including exploring potential strategic opportunities that the project could enable, e.g. foundation of rare earth industry and downstream supply chain; future opportunity for an access road to become a resource corridor and route for electricity transmission – Project seen as potentially meeting criteria of multiple funding programs
Quebec government Initial project presentation, follow-up meetings and communications, environmental assessment process	2011 – 2023 (ongoing)	– Division des mines du ministère des Ressources naturelles – Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs (MDDEFP) – Ministère de l'Environnement, de la lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) – Secrétariat aux Affaires autochtones du Québec – Investissement Québec – Société du Plan Nord	– Project seen as important for the Quebec Plan for the Development of Critical and Strategic Minerals – Interest in understanding all the potential project benefits, including exploring potential strategic opportunities that the project could enable, e.g.foundation of rare earth industry and downstream supply chain – Project seen as potentially meeting criteria of multiple funding programs
Newfoundland and Labrador government Presentation of the proposed project; consultation plans; mobilization plans for Indigenous populations; environmental assessment process	2011 – 2023 (ongoing)	– Premier of Newfoundland and Labrador – Minister, Deputy Minister, Assistant Deputy Minister of Industry, Energy and Technology responsible for Mining and Mineral Development – Minister, Deputy Minister, Assistant Deputy Minister, and Director of the Department of Indigenous Affairs and Reconciliation; Labrador Affairs; Assistant Parliamentary Leader; Secretariat of Labrador Affairs – Executive Council – Director of Environmental Assessment and officials from the Department of Environment and Climate Change	– Project seen as important, and to have input into the Province's critical minerals strategy in development

Table 3-1: Government agencies and other stakeholders consulted since 2011 (Cont'd)

Type of consulting activities	Date	Stakeholders	Comments
Other stakeholders	2014 – 2023 (ongoing)	– Outfitters – Businesses interested in participating in the Project inlcuding Labrador North Chamber of Commerce, Indigenous business groups – Quebec Mineral Exploration Association (QMEA) – Other mining and metallurgical companies – Several universities and colleges, e.g. College of North Atlantic (CNA) – Building Trades Council – Senator of Newfoundland and Labrador; Chairman of the Fisheries and Oceans Committee – Newfoundland and Labrador Hydro	– Employment opportunities – Indigenous employment – Business and procurement – Innovation in mining (CNA) – Industrial participation in research projects – Opportunity to assess core samples (CNA) – Access to and availability of electricity

3.1.2 List of consultation activities carried out for the process plant

Consultation activities were carried out as part of the site selection process for the high purity rare earth processing and separation plant. Three potential sites were initially identified in the industrial port zones of Sept-Îles, Baie-Comeau and Saguenay. Meetings have been held with the relevant authorities between November 2022 and mid-2023, which allowed for onsite meetings with site managers, local and administrative authorities in each region. Preliminary contacts were also made with some Indigenous representatives of Sept-Îles area, although not exhaustive at this early stage. After a comparative evaluation of the sites, it was decided to concentrate efforts on two sites, namely Sept-Îles and Saguenay, and the discussions continue with the stakeholders. In July of 2023 several meetings were held with representatives, Sept-Îles was designated as the preferred site. Discussions with the local authorities are underway in order to sign a letter of understanding in order to negotiate terms (Appendix B). An engagement program will also be developed and carried out. Map 3-3 outlines the communities in the surroundings of Sept-Îles.

Table 3-2: Government agencies and other stakeholders consulted since 2022 in relation with the implementation of a process plant

Type of consulting activities	Date	Stakeholders	Comments
Quebec government Initial project presentation, site selection, follow-up meetings and communications	November 2022 – mid-2023 (ongoing)	– Investissement Québec – Société du Plan Nord – Division des mines du ministère des Ressources naturelles	– Project seen as important for the Quebec Plan for the Development of Critical and Strategic Minerals – Interest in understanding all the potential project benefits, including exploring potential strategic opportunities that the project could enable, e.g.foundation of rare earth industry and downstream supply chain – Project seen as potentially meeting criteria of multiple funding programs

Table 3-2: Government agencies and other stakeholders consulted since 2022 in relation with the implementation of a process plant (Cont'd)

Type of consulting activities	Date	Stakeholders	Comments
Local stakeholders – Sept-Îles Initial project presentation, site selection, follow-up meetings and communications	December 2022 – mid-2023 (ongoing)	– Développement Économique Sept-îles – Port de Sept-Îles – City Council of Sept-Îles – Chamber of commerce – Société de Développement Économique de Uashat Mak Mani-utenam (SDEUM)	– Project is seen as potentially providing the type of significant economic development opportunity to meet their needs, as long as environmental and social concerns are addressed
Local stakeholders – Baie-Comeau Initial project presentation, site selection, follow-up meetings and communications	December 2022 and February 2023	– Innovation et développement Manicouagan (CLD) – Corporation de gestion du port de Baie-Comeau (CGPBC) – Ville de Baie-Comeau	
Local stakeholders – Saguenay Initial project presentation, site selection, follow-up meetings and communications	November 2022 – mid-2023.	– Promotion Saguenay – Administration Portuaire du Saguenay	– Project is seen as potentially providing the type of significant economic development opportunity to meet their needs, as long as environmental and social concerns are addressed

From mid-2023, consultation activities will take place with both Indigenous and non-Indigenous people in the region of Sept-Îles, as part of the federal and provincial environmental impact assessment procedures.

3.2 Planned Information and Consultation Activities during the Conduct of the Environmental and Social Impact Study

As part of the environmental and social impact study, Torngat Metals plans to conduct new information and consultation activities with institutional stakeholders, communities, non-governmental groups or associations, and other stakeholders affected by the project.

Without limitation, Torngat Metals plans to carry out the following activities:

- Consultation with government ministries and agencies to obtain basic data for conducting studies on the physical, biological, and social environment.
- Consultation with non-Indigenous communities, such as Schefferville, Fermont, Labrador West, Goose Bay, Sept-Îles, that combines various techniques: village assemblies, interviews with target groups (territorial users, elders, youth, men, women), individual interviews with key stakeholders within communities (local administration services).
- Consultation with other key stakeholders such as environmental groups, chambers of commerce, citizens associations, outfitters and other stakeholders still to be identified to integrate their expectations and concerns into the Project.
- Establishment of consultation and grievance mechanisms allowing members of communities to express their questions and views online.

All results of these consultation activities will be recorded in the stakeholder management system developed by Torngat Metals as part of the project.

The following table presents a preliminary program to conduct consultation activities with the concerned non-Indigenous communities in Quebec and Labrador during the ESIA process.

Table 3-3: Preliminary consultation program with the concerned non-Indigenous communities in Quebec and Labrador

Phase	Projected Period	Stakeholder	Activity
Pre consultation phase	Q4 2023	– City Council: Sept-îles, Fermont, Schefferville, Goose Bay and Labrador West – Port of Sept-Îles – Labrador North Chamber of Commerce – Développement économique de Sept-Îles – MRC de Caniapiscau – CISSS de la Côte-Nord	Face to face meeting with key stakeholders to provide an update on the Strange Lake Project and to identify issues and stakeholders to be consulted during the ESIA
Consultation phase	Q1 2024	– City Council: Sept-îles, Fermont, Schefferville, Goose Bay and Labrador West – Port of Sept-Îles – Labrador North Chamber of Commerce – Développement économique de Sept-Îles – MRC de Caniapiscau – CISSS de la Côte-Nord – Department of health and social development of Goose Bay – Trade schools in Sept-îles and Goose Bay	Face to face meeting to gather socio-economic data and identify potential collaboration and partnership for the project development
	Q2 and Q3 2024	– Community associations representing or working with specific groups (women, youth, elder, unemployed, etc.) in Sept-Îles, Schefferville, Fermont Labrador West and Goose Bay. – Environmental and citizen groups in Sept-Îles, Schefferville, Fermont Labrador West and Goose Bay.	Face to face meetings and focus groups to gather socio-economic data and identify expectations and concerns
	Q4 2024	– Population of Sept-îles, Schefferville, Fermont, Labrador West and Goose Bay	Community meetings to present the project and the consultation findings, and to identify community expectations and concerns

The following Table 3.4 shows the results of our preliminary research by gender-based analysis plus, (GBA+ stakeholders and will be completed during further research and future discussions with these groups and associations.

Table 3-4 : Preliminary list of groups and organisations by GBA+ stakeholders, per region

Region / Community	Group / Association
Quebec Indigenous Communities and Nunavik Inuit Communities	• **Ungava Supervised Apartments:** Provide an affordable place to stay for individuals with mental-health problems and intellectual deficiencies. • **Tungasuvvik Women's Shelter:** Provides physical and psychological support to women and their children who are victims of domestic violence and abuse and experiencing difficulties. • **Qajaq Network:** Seeks to help men who are on a personal growth journey or who are experiencing difficulties. • **Isuarsivik Treatment Centre:** Provides a culturally based wellness program to help Inuit adopt a healthy, addiction-free lifestyle. • **Tusaajiapik Day Centre:** Provides support for elders and individuals lacking autonomy. • **Qarjuit Youth Council:** Provides a forum for Inuit youths of Nunavik where they can express themselves on social issues and well-being. • **Qarmaapik House:** Provides a safe place for youths to reside when they are not safe in their family home in Kangiqsualujjuaq. • **Uashat mak Mani-Utenam Youth Secretariat:** Develops youth leadership and gives them a voice in First Nations and non-Aboriginal government organizations. • **Saturviit Inuit Women's Association of Nunavik**: Reaches out to Nunavik's 14 communities and to Inuit women who have migrated south. • **Nunavik Youth House Association** • **Friendship Centers** (various locations)
Quebec Non-Indigenous Communities (Sept-Iles/Schefferville/ Fermont)	• **Maison d'aide et d'hébergement- Women's Shelter, Fermont** • **Maison des jeunes Alpha Youth Center, Fermont** • **Association des femmes unies de Sept-Îles** : Brings together women from all communities (Quebec, Innu and African). • **Autour d'Elles, Sept-Îles**: Shelter for women and their children who are victims of domestic violence. • **Envol**, **Family Center**, **Sept-Îles** : Strives to improve the situation of families in difficulty. • **Hommes Sept-Îls**: Provides support to men and fathers by offering support and enhancement services. • **Âtre de Sept-Îles** : Offers housing, living environment and supervised apartments for people living with a mental health problem. • **Transit Sept-Îles:** Welcomes, supports, houses people experiencing homelessness and/or social emergencies.
Indigenous and Inuit Communities of Labrador	• **Labrador Friendship Centre** • **Pauktuutit, Inuit Women of Canada:** Fosters awareness of the needs of Inuit women, advocates for equality and social improvements and engages men and boys in social programs. • **AnânauKatiget Tumingit Regional Inuit Women's Association Inc.**: Represents Labrador Inuit Women with the goal of advancing equal participation in all aspects of society. • **Daughters of Mikak:** Celebrating Inuit Women's Leadership in Nunatsiavut focuses on encouraging people to share stories that honour Nunatsiavut women. • **Provincial Indigenous Women's Steering Committee (PIWSC):** A group of nine Indigenous organizations and governments which support of the provincial Office of Women and Gender Equality. • **Nukum Munik Shelter**: Provides domestic Violence Help in Sheshatshui.

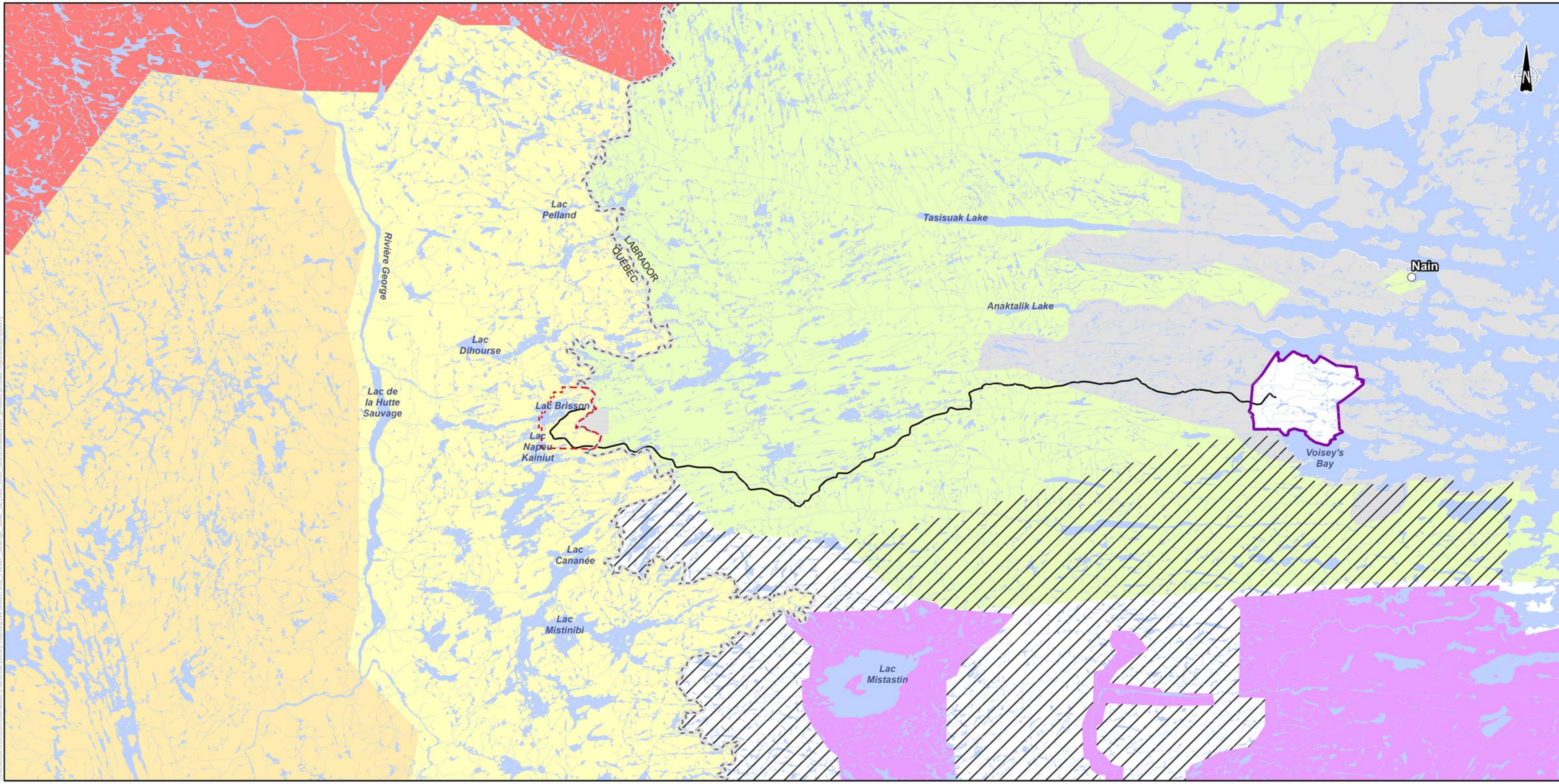
Table 3-4 : Preliminary list of groups and organisations by GBA+ stakeholders, per region (Cont'd)

Region / Community	Group / Association
Non-Indigenous Communities of Labrador	• **Mokami Status of Women:** An equality seeking, feminist organization that supports women and gender diverse individuals. • **Independent Living Resource Centre Newfoundland and Labrador :** A consumer-controlled organization committed to providing supports, resources, and opportunities for empowerment, which enable persons with disabilities to make informed choices about their lives. • **Office of Women and Gender Equality** in the government of NL. • **Violence Prevention Labrador**: Focuses on increasing awareness and attitudinal change and improving legislation, policy, programs, services, information, and facilities.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



INUIT DU LABRADOR / LABRADOR INUIT

Accord sur les revendications territoriales (2005) / Land Claims Agreement (2005) [1]

- Terres des Inuit du Labrador / Labrador Inuit Lands
- Limite de la zone LISA / Labrador Inuit Settlement Area
- Zone de Voisey Bay (exclue de LISA) / Voisey's Bay Area (excluded from LISA)

[1] *Labrador Inuit Land Claims Agreement (LILCA), Regional Planning Authority, 2008.*

[2] *Labrador Innu Land Claims Agreement in Principle (AIP), 2011.*
Note : This AIP only concerns the Newfoundland and Labrador portion of the Labrador Innu land claim, which extends in Quebec.

INNU DU LABRADOR / LABRADOR INNU NATION

Accord sur les revendications territoriales (2011) / Land Claims Agreement In Principle (2011) [2]

- Catégorie I / Category I
- Catégorie II / Category II

INUIT ET NASKAPI DU QUÉBEC / QUEBEC INUIT AND NASKAPI

Accord sur les revendications territoriales / Land Claims Agreement (1975) [1 and 2]
Terres de catégorie III / Category III Lands

- Droit d'usage prioritaire Inuit / Area of Primary Interest of the Inuit
- Droit d'usage prioritaire Inuit et Naskapi / Area of Common Interest for the Inuit and Naskapi
- Droit d'usage prioritaire Naskapi / Area of Primary Interest of the Naskapi

[1] *James Bay and Northern Quebec Agreement (JBNQA), 1975.*
[2] *Northern Quebec Agreement (NEQA), 1978.*

Note: Ces limites sont approximatives dû à l'échelle des cartes de référence et à la largeur des limites tracées. These boundaries remain approximate due to the scale of source maps and the width of the boundaries drawn.

Composantes du projet / Project Components

- Limite des concessions d'exploration minières détenues par Métaux Torngat / Outline of Torngat Metals Mineral Exploration Claims

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road

Autre / Other

- Frontière Québec et Labrador / Quebec and Labrador border

PRÉLIMINAIRE / PRELIMINARY

1:700 000

0 5 10 km

NAD 1983 UTM Zone 20N

Produit: Map 3-1 - Indigenous Land Rights

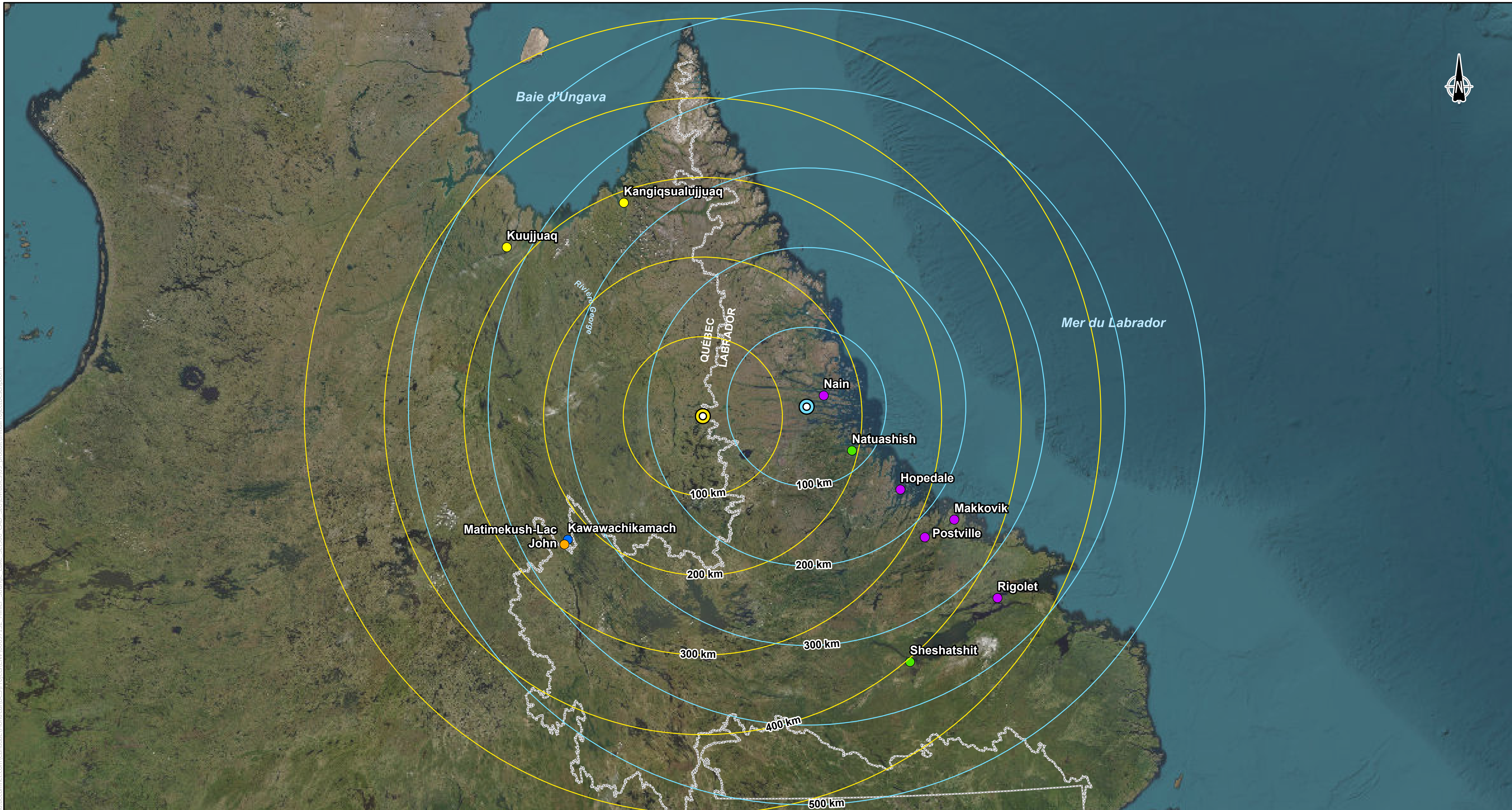
Date : 2023-08-22 13:28

Source:
Données topographiques / Topographic Data: NRCan, (2022)

Carte 3-1
Droits territoriaux autochtones

Map 3-1
Indigenous Land Rights

AECOM



Composantes du projet / Project components

- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port
- Site de la mine / Mine site

Communauté / Community

Québec
- Innu
- Inuit
- Naskapi

Labrador
- Innu
- Inuit

1:4 700 000

0 50 100 km

NAD 1983 UTM Zone 20N

Produit: Map 3-2 - Communities in the Project Area in the North

Date : 2023-08-22 14:32

Source:
Données topographiques / Topographic Data: NRCan (2022)

PRÉLIMINAIRE / PRELIMINARY

Carte 3-2
Communautés dans le secteur du Projet au Nord

Map 3-2
Communities in the Project Area in the North

AECOM

Composantes du projet / Project components

Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant

Communauté / Community
Québec
Innu

1:150 000
0 2 4 km
NAD 1983 UTM Zone 20N

Produit: Map 3-3 - Communities in the Project Area in Sept-Îles
Date : 2023-08-25 07:59

Source:
Données topographiques / Topographic Data: NRCan (2022)

PRÉLIMINAIRE / PRELIMINARY

Carte 3-3
Communautés dans le secteur du Projet à Sept-Îles

Map 3-3
Communities in the Project Area in Sept-Îles

AECOM

4 Engagement Activities and Plans with Indigenous Groups

4.1 Information and Consultation Activities Carried Out

4.1.1 List of consultation activities carried out for the northern components of the Project

Torngat Metals (previously Quest Rare Minerals) initiated informal meetings with Indigenous representatives from Nunavik and Labrador as early as 2008. Beginning in 2011, a series of more formal meetings was organized with key Indigenous communities, including follow-up meetings following changes in authorities. Between 2015 and 2021, due to a decrease in its corporate activities, engagement activities with stakeholders were reduced by keeping them informed of updates on the project.

Since 2022, thanks to new funding, Torngat Metals has restarted its formal consultation activities with the various governments and Indigenous groups. Meetings have been held with elected representatives, leaders and officials from the Nunatsiavut Assembly and the Innu Nation of Labrador in Ottawa in February 2023. Meetings were also held February in Kuujjuaq with the Makivvik Corporation, the Kativik Regional Administration, and the Kuujjuaq City Hall. A Community assembly was also held in February 2023 in Kangiqsualujjuaq. In April, May and June 2023, in-person and virtual meetings were held with representatives of the Nunavik and Nunatsiavut Inuit, the Innu Nation of Labrador, the Naskapi Nation of Kawawachikamach, and the Innu of Matimekush-Lac-John and Uashat mak Mani-Utenam in their respective communities.

Since Spring 2023, stakeholders and partners have access to a web platform providing project maps, database and reports.

The consulted Indigenous groups are as follows:

In Quebec

- The Nunavik Inuit, including the Makivvik Corporation, the Kativik Regional Government, as well as the northern communities and land corporations of Kangiqsualujjuaq and Kuujjuaq.
- The Naskapi Nation of Kawawachikamach.
- The Quebec Innu of Matimekush-Lac John and Ushat mak Mani-Utenam.

In Labrador

- The Nunatsiavut Inuit, including representatives of the Nunatsiavut Government legislative assembly, the Nunatsiavut Group of Companies, and the community of Nain, and various officials
- The Labrador Innu, including the Innu Nation of Labrador political representative, as well as the communities of Sheshatshiu and Natuashish, and various officials.

The consultation activities that have been carried out since 2011 have, among other things, made it possible to collect essential information for the impact study, particularly regarding the historical and contemporary use of the territories affected by the Project, as well as the socio-economic conditions of the communities. These activities have also made it possible to identify their expectations and concerns related to the Project, the overall concerns expressed by most communities being: the preservation of the water quality of the George River and its tributaries; the protection of caribou and valued species that are part of the diet of the populations; economic benefits that promote sustainable development of the communities concerned; access to relevant information related to the Project; and effective participation of communities in the development of the Project.

The (preliminary) Indigenous engagement strategy is available in Appendix C.

Caribou Working Group

More specifically, early in the engagement process with the Naskapi Nation Kawawachikamach in spring 2023, and prior to AECOM's field surveys, Torngat Metals put in place a Caribou Working Group in collaboration with the Nation. The purpose of those meetings is to review together the methodology of the different field work happening on the territory and to put in place mechanisms to avoid impacting the herd of George river caribous during those activities. Torngat Metals put in place an interactive map of all incidental observation of caribous by the field workers on a shared web platform. The link to the map and a PDF version is sent to all the communities in Quebec and Labrador once to several times a week, as soon as the field workers observe the presence of caribous. Those activities allowed to implement some mitigation solution when observing caribous in collaboration with different Indigenous groups. Torngat will reach out to other Indigenous communities in order to establish a similar Caribou working group.

Table 4-1 provides a summary of the consultation activities conducted with Indigenous groups to date, as well as their main comments.

Table 4-1: Government agencies, Indigenous groups, and other stakeholders consulted since 2011 in Quebec

Type of consulting activities	Date	Indigenous entities	Comments
Nunavik Inuit (Quebec) Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process, environmental assessment process	2012 – 2015	– Makivvik Corporation – Nunavik Mining Exploration Fund (NMEF) – Kativik Regional Administration (ARK) – Municipal authorities of Kuujjuaq and Kangiqsualujjuaq – Landholding Corporations of Kuujjuaq and Kangiqsualujjuaq – ARK Sustainable Employment Service – Representatives from the Employment Sector of the Northern Communities of Kangiqsualujjuaq – Regional and local development service of KRG – School principals in Kuujjuaq and Kangiqsualujjuaq – Representatives from Health Centres in Kuujjuaq and Kangiqsualujjuaq	– Expectations in terms of business opportunities for registered Inuit businesses – Concerns regarding the environmental protection, notably the water quality and fishes of the George River – Concerns on the protection of the Inuit diet and way of life – Expectations on potential Impact and Benefits Agreement (IBA) – Expectations on training and job opportunities
Nunavik Inuit (Quebec) Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process, environmental assessment process	2023 (ongoing)	– Municipal authorities of Kuujjuaq and Kangiqsualujjuaq – Landholding Corporations of Kuujjuaq and Kangiqsualujjuaq – Community meetings with elders and land users in Kangiqsualujjuaq – Nunavik Research Center	– Expectations in terms of business opportunities for registered Inuit businesses – Concerns regarding the environmental protection, notably the water quality and fishes of the George River – Concerns on the protection of the Inuit diet and way of life – Concerns regarding the radioactivity level and the potential contamination of the environment – Expectations on potential Impact and Benefits Agreement (IBA) – Expectations on training and job opportunities – Expectations regarding the Inuit participation in the decision making and the environmental monitoring of the Project – Expectations on potential Impact and Benefits Agreement (IBA)

Table 4-1: Government agencies, Indigenous groups, and other stakeholders consulted since 2011 in Quebec (Cont'd)

Type of consulting activities	Date	Indigenous entities	Comments
Naskapi Nation of Kawawachikamach Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process	2011 – 2015	– Leaders of the Naskapi Nation Council of Kawawachikamach – Elders, land users and community members of Kawawachikamach (through a public meeting) – Public Works Department – Naskapi Nation Bureau – Naskapi Development Corporation – Naskapi Police Services	– Expectations in terms of job and business opportunities – Concerns regarding the environmental protection, notably the caribou – Expectations on potential Impact and Benefits Agreement (IBA)
Naskapi Nation of Kawawachikamach Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process	2023 (ongoing)	– Leaders of the Naskapi Nation Council of Kawawachikamach – Elders, land users and community members of Kawawachikamach (through a public meeting)	– Expectations in terms of job and business opportunities – Concerns regarding the environmental protection, notably the caribou – Expectations on recognition of Naskapi interests in Labrador – Expectations on potential pre-development agreement (PDA) and Impact and Benefits Agreement (IBA) – Expectation to realize their own environmental studies – Expectations regarding the Naskapi participation in the decision making and the environmental monitoring of the Project
Québec Innu Information meetings and community engagement process	2012 – 2015	– Matimekush-Lac John First Nation Council – Aventures Ashini – Friends of Mushuau-Nipi	– Expectations on recognition of Innu rights and interests in the project's area – Concerns about the mining practices in the region over the past decades
Québec Innu Information meetings and community engagement process	2023 (ongoing)	– Matimekush-Lac John First Nation Council	– Expectations on recognition of Innu rights and interests in the project's area – Concerns about the mining practices in the region over the past decades – Expectations to build a strong partnership in terms of equity
Nunatsiavut Inuit (Labrador) Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process, environmental assessment process	2011 – 2015	– Nunatsiavut government leaders and ministers – Nunatsiavut Secretariat – Nunatsiavut Department of Land and Natural Resources – Nunatsiavut Department of Education and Economic Development – Nunatsiavut Department of Health and Social Development – Nunatsiavut Department of Culture and Tourism – Nunatsiavut Affairs Department – Representatives from the Inuit community government of Nain – Community meetings with elders and members of the Inuit community of Nunatsiavut in Nain	– Realization of their own land use study in collaboration with the Project – Concerns regarding the impacts on the Ikadlivik brook valley and its resources, notably the char – Concerns regarding the impacts of the projected road on the caribou – Expectations on business opportunities for the Inuit enterprises – Expectations on potential Impact and Benefits Agreement (IBA) – The Voisey's agreement to be seen as a model

Table 4-1: Government agencies, Indigenous groups, and other stakeholders consulted since 2011 in Quebec (Cont'd)

Type of consulting activities	Date	Indigenous entities	Comments
Nunatsiavut Inuit Introduction of revised plans (since Quest); environmental assessment process and expectations; updated information on traditional land use; engagement process; port options in Voisey's Bay; sensitivities to char and caribou; opportunities for business, employment and public markets	2023 (ongoing)	– President, Ministers of Education and Economic Development; Language, Culture and Tourism; and Lands and Natural Resources, – Deputy Ministers and officials of Nunatsiavut Secretariat; Education and Economic Development; Language, Culture and Tourism; Lands and Natural Resources, – Nunatsiavut Group of Companies	– Expectation to update their land use study – Expectations for a consultation of the 5 Inuit communities – Concerns regarding the impacts on the Ikadlivik brook valley and its resources, notably the char – Concerns regarding the impacts of the projected road on the caribou – Expectations on business opportunities for the Inuit enterprises – Expectations on potential Impact and Benefits Agreement (IBA) – The Voisey's agreement to be seen as a model – Concerns about the level of radioactivity and the environment contamination – Interest to take charge of the proposed road maintenance
Innu Nation of Labrador Baseline studies on socio-economic aspects and traditional land use, information meetings and community engagement process	2012 – 2015	– Leaders of the Innu Nation of Labrador – Innu Development Limited Partnership (IDLP) – Innu Mikun – Mushuau Innu Band Council of Natuashish and Sheshashiu Innu Band Council – Environment office of Innu Nation – Economic Development Advisors for the Mushuau and Sheshashiu Innu First Nations – Sheshatshiu Innu First Nation's Community Health Department – Community meetings with land users and other members of the Natuashish and Sheshashiu communities	– Expectations to be a partner in the construction and the maintenance of the proposed road – Expectations of business opportunities for Innu companies – Concerns on the potential impacts of the proposed road on caribou – Expectations on recognition of Innu interests in Quebec – Expectations on potential Impact and Benefits Agreement (IBA)
Innu Nation of Labrador Plans for the Voisey's Bay port; road design; overlap of Indigenous land claims; business, supply and employment opportunities for Labrador Innu; expectations for business participation; consultation plans for Innu communities	2023 (ongoing)	– Grand Chief of the Innu Nation of Labrador – IBA negotiators – Environmental Management and Analysis Branch of the Environment department – Land Rights Negotiator – Key Advisors	– Expectations of business opportunities for Innu companies – Concerns on the potential impacts of the proposed road on caribou – Expectations on potential Impact and Benefits Agreement (IBA)

4.1.2 List of consultation activities with Indigenous groups carried out in Sept-Îles area

Preliminary contacts with the Uashat mak Mani-Utenam Innu representatives were made for the High purity rare earth processing and separation plant in Sept-Îles, during a site visits in July 2023. Torngat Metals also met with the Société de Développement Économique de Uashat Mak Mani-utenam (SDEUM) to present the Strange Lake project. The SDEUM expressed Interest in understanding all the potential project benefits for the development of the process plant.

4.2 Planned Information and Consultation Activities with Indigenous groups during the Conduct of the Environmental and Social Impact Study

As part of the environmental and social impact study, Torngat Metals plans to conduct new information and consultation activities with the Indigenous authorities and communities affected by the project.

Without limitation, Torngat Metals plans to carry out the following activities:

- Consultation activities to obtain basic data for conducting studies on the physical, biological, and social environment, land use as well as closure vision.
- A consultation program that combines various techniques: village assemblies, interviews with target groups (territorial users, elders, youth, men, women), individual interviews with key stakeholders within communities (local administration services).
- A program of periodic visits to Indigenous communities concerned to inform them of project updates and opportunities.
- Diffusion of a set of information tools culturally adapted, in Indigenous language, developed in collaboration with the Indigenous groups.
- Establishment and collaboration with local monitoring committees and local liaison officers (communities still to be determined) on the main issues raised by the project.
- Establishment of consultation and grievance mechanisms allowing members of communities to express their questions and views online.
- Translation services will be provided at public meetings, as well as document translation to provide access to information to all.

All results of these consultation activities will be recorded in the stakeholder management system developed by Torngat Metals as part of the project.

The following table presents a preliminary program to conduct consultation activities with the concerned Indigenous communities in Quebec and Labrador during the ESIA process.

Table 4-2: Preliminary consultation program with the concerned Indigenous communities in Quebec and Labrador

Activity	Projected Period	Group/Representative	Activity Type	Topic
Fall 2023 preconsultation meetings	Q4 2023	Indigenous leadership and institutions: – Makivik – Inuit of Kangiqsualujjuaq and Kuujuaq (villages and LHC) – Nunavik research center – KRG – Naskapi council of Kawawachikamach – Innu council of Matimekush Lac-John – Innu council of Uashat mak Mani-Utenam – Nunatsiavut Government – Innu Nation	Face to face meeting with Indigenous leadership and administration	– Update on Strange Lake Project – Environmental and social impact assessment process – Indigenous participation in the social studies – Community consultation and liaison committee implementation – Torngat Metals procurement and training policies – Preliminary discussion on future agreements (PDA, funding of the local liaison committee, Indigenous participation in the preparation of the social studies)

Table 4-2: Preliminary consultation program with the concerned Indigenous communities in Quebec and Labrador (Cont'd)

Activity	Projected Period	Group/Representative	Activity Type	Topic
Fall 2023 preconsultation meetings	Q4 2023	Indigenous population: – Kangiqsualujjuaq – Kawawachikamach – Matimekush-Lac John – Uashat mak Mani-Utenam – Nain – Natuashish	Community meetings and radio broadcasting	– Update on Strange Lake Project – Environmental and social impacts assessment consultation process – Expectations and concerned of the Indigenous Peoples – Indigenous participation to the preparation and realization of the studies and other opportunities to contribute to the Project
Preparation of the ESIA consultation	Q1 2024	Indigenous leadership and institutions: – Makivik – Inuit of Kangiqsualujjuaq and Kuujuaq (villages and LHC) – Nunavik research center – KRG: Indigenous hunting, fishing and trapping support program, sustainable employment, regional and local development – Naskapi council of Kawawachikamach – Innu council of Matimekush Lac-John – Innu council of Uashat mak Mani-Utenam – Nunatsiavut Government: Education and economic development, Health and social development, Lands and Natural Resources. – Nunatsiavut villages authorities: Nain, Makkovik, Hopedale, Postville and Rigolet – Innu Nation – Environment office of Innu Nation – Natuashish and Sheshatshiu Councils	Face to face meetings	– Review of the Project Descriptions submitted to the Ministry of the Environment – Discussion on the consultation methodology

Table 4-2: Preliminary consultation program with the concerned Indigenous communities in Quebec and Labrador (Cont'd)

Activity	Projected Period	Group/Representative	Activity Type	Topic
Realization of the ESIA consultation	Q2 and Q3 2024	Indigenous population: – Kangiqsualujjuaq – Kawawachikamach – Matimekush-Lac John – Uashat mak Mani-Utenam – Nain, Makkovik, Hopedale, Postville and Rigolet – Natuashish – Sheshatshiu	Community meetings	– Presentation of the consultation methodology – Update on the project – Indigenous expectations and concerns about the Project
		Representatives, civil servants and other key informants of the above Indigenous villages	Individual face to face meetings	– Data collection to prepare the land use and the socio-economic studies: contemporary occupancy and land use; demographic and socio-economic profile (housing, education, health, employment, etc.) – Indigenous expectations and concerns about the Project
		Specific groups (elders, youth, women, men and GBA+ groups) of the above Indigenous villages	Focus groups	– Interview with specific groups of the community to have their point of view regarding the living conditions and quality of life within the community and to understand their aspirations and challenges – Indigenous expectations and concerns about the Project
		Indigenous population: – Kangiqsualujjuaq – Kawawachikamach – Matimekush-Lac John – Uashat mak Mani-Utenam – Nain, Makkovik, Hopedale, Postville and Rigolet – Natuashish – Sheshatshiu	Household survey	– Socio-economic data collection on the Indigenous households – Indigenous expectations and concerns about the Project

5 Previous Studies and Programs

5.1 Historical studies between 1967 and 2019

The Newfoundland and Labrador, Quebec and Federal governments conducted numerous geological surveys between 1967 and 2009. The first studies in this area were carried out by the Geological Survey of Canada (GSC) in 1967. These studies made it possible to establish a geological map of the Strange Lake and the George River area at a scale of 1 :250 000.

Between the 1970s and 1980s, the *Ministère de l'Énergie et des Ressources* (MER) of Quebec carried out detailed mapping of the George River area, located northwest of the property as well as geochemical sampling of stream (Beaumier, 1982).

In 1979 and 1980, the GSC and the Newfoundland and Labrador Department of Natural Resources jointly completed geochemical sampling of lake sediment, water and radiometric surveys. This survey has resulted in the identification of the strong geochemical dispersion pattern of the Strange Lake complex and exhibiting a significant mineralization in this area.

During the 1980s, the Iron Ore Company of Canada (IOCC) and a few private companies have carried out detailed geological mapping, geochemical sampling, radiometric surveys and hundreds of drill holes. This survey has made it possible to identify more accurately the Strange Lake alkaline complex and its mineralization: rare earth elements, zirconium, beryllium, niobium and yttrium.

The 1980s and 1990s also saw metallurgical testing and economic studies of the mineral potential of the Strange Lake area. This work was carried out by private companies including IOCC (Witteck Development Inc., 1982, IOCC,1985), Mitsui Mining and Smelting Co. (1996), as well as several other private companies. Other extensive geological surveys have also been conducted by government authorities (GSC, Newfoundland and Labrador).

In the 2000s, field exploration activities were focused on uranium mineralization. In 2006, Freewest Resources Canada Inc. acquired 23 mining claims for uranium exploration (Chamois, P. and Cook, B., 2007). The exploration program was subsequently transferred to its newly formed subsidiary, Quest Uranium Corporation, in 2007. In the same year, as a result of a share trade, Freewest transferred all of the Georges River mining claims to Quest Uranium Corporation. The Strange Lake rare earths mineralized area is partially included in, or adjacent to, the transferred claims.

From this moment, the company had focused its efforts on the development of this rare earth deposit and its name is changed to Quest Rare Minerals Ltd. In 2009, Quest Rare Minerals Ltd. acquired a block of claims from Quebec prospectors to consolidate its property. From 2009 to 2012, Quest conducted an extensive exploration program, including detailed mapping and extensive drilling of the Strange Lake Alkaline Complex mineralized zones, particularly the area identified as the B-Zone, adjacent to Lac Brisson and located in Quebec.

Several mineral resource estimate reports as well as preliminary economic assessments (PEA) have been published, along with the field work. In 2010, Wardrop published a Technical Report on the mineral resource estimate on the Strange Lake B-Zone deposit (updated 2011) as well as a PEA (Wardrop, 2010 a., 2010 b, 2011).

In 2012, Micon (Micon, 2012) prepared a new estimate of the mineral resources of the deposit and published a pre-feasibiliy study (PFS) in December 2013 followed by a PEA in 2014. This report was successively updated in 2014, 2017 and 2019 (Micon 2014, 2017, 2019). In the 2019 report, Micon presented a new interpretation of the deposit geological model, by Renaud Geological Consulting, also a signatory of the 2019 Micon report.

In parallel to these activities, and until 2017, Quest conducted several metallurgical, beneficiation and preliminary separation test work. In July 2018, Quest changed its name to Torngat Metals Ltd. (Torngat Metals) (Appendix B).

5.2 Environmental and baseline studies completed by AECOM

Several baseline studies were completed between 2011 and 2013 for the mine project on behalf of Torngat Metals Ltd. (formerly Quest Rare Minerals LTD). The Table 5-1 presents the available reports. Those reports will either be updated with more recent data, or their validity will be re-confirmed.

Table 5-1: Reports completed between 2012 and 2014 as part of the pre-feasibility study

Report Title	Project Component	Report Title	Project Component
Geochemistry Baseline	Mine Site	Surficial Geology, Geomorphology and Permafrost (Mine, Road and Port)	Northern Components
HHERA - Human Health and Ecological Risk Assessment	General	2013 Groundwater and Soil Technical Report - Mine	Mine Site
Landscape (Quebec & Labrador)	Northern Components	Surface Water Quantity (Hydrology)	Mine Site
Local Services Analysis	Northern Components	Government and Community Relations – Preliminary Communication and Engagement Plan	Northern Components
Mine and Port Site Potable Water Resources	Mine Site	Government and Community Relations – Stakeholder Mapping and Analysis - Mine Site, Road Corridor and Port Site	Northern Components
Asbestiform Amphibole Analysis (CO-16)	General	Government and Community Relations – Housing Infrastructure and temporary Accommodation Analysis - Mine Site, Road Corridor and Port Site	Northern Components
Weather - Environment Baseline Climate	Northern Components	Government and Community Relations – Local Services Analysis - Mine Site, Road Corridor and Port Site	Northern Components
Workforce and Recrutement Analysis	Northern Components	Government and Community Relations – Workforce and Recruitment Analysis – Mine Site, Road Corridor and Port Site	Northern Components
Consideration of Sustainable Development in the Strange Lake B-zone REE Project (with a Sustainability Matrix)	General	Government and Community Relations – Preliminary Strategic Plan for Training of Aboriginal Workforce – Mine Site, Road Corridor and Port Site	Northern Components
2013 Nighttime Illumination – Technical Memorandum	General	Social Baseline Studies - *Land Use and Traditional Ecological Knowledge (TEK) – Mine Site, Road Corridor and Port Site*	Northern Components
Secular equilibrium and radioactive decay	General	Social Baseline Studies - *Archeological Inventory – Mine Site*, Strange Lake B-Zone	Mine Site
Consideration of Climate Change Adaptation in the Strange Lake B-Zone REE Project	General	Social Baseline Studies - *Socio-Economic Profile, Northern Communities*	Northern Components
Mine Site Hydrogeology - Ground Water and Soil Investigation 2011-2012	Mine Site	Social Baseline Studies - *Landscape – Mine Site*, Strange Lake B-Zone	Mine Site
Ambient Air Quality, 2011	Mine Site	Social Baseline Studies - *Landscape – Road Corridor and Port Site*	Access Road
Background Noise Study, 2011	Mine Site	Semi-aquatic and Terrestrial Wildlife 2011-2013 -Biological Environment Baseline Surveys - **Amended Version**	Northern Components
Fluvial Geomorphology	Access Road	Social Baseline Studies - *Archeological Inventory – Road Corridor and Port Site -* **Amended Version**	Access Road

6 Applicable Strategic Assessments

The Project is in line with the publication of the Canadian Strategy on Critical Minerals (Natural Resources Canada, 2022), as well as the Quebec Plan for the Valorization of Critical and Strategic Minerals (Government of Quebec, 2020). The Strange Lake project is one of the rare earth deposits recognized as having global potential. See Section 7 *Project Rationale and Purpose* for more details.

6.1 Strategic Assessment under the IAA

Under the Impact Assessment Act (IAA), as per article:

95 (1) The Minister may establish a committee — or authorize the Agency — to conduct an assessment of

- *(a) any Government of Canada policy, plan or program — proposed or existing — that is relevant to conducting impact assessments; or*
- *(b) any issue that is relevant to conducting impact assessments of designated projects or of a class of designated projects ; and*

95 (2) The Minister may deem any assessment that provides guidance on how Canada's commitments in respect of climate change should be considered in impact assessments and that is prepared by a federal authority and commenced before the day on which this Act comes into force to be an assessment conducted under this section.

As part of better practices during the impact assessment of designated projects, ECCC developed the *Strategic Assessment of Climate Change* (SACC) (Revised October 2020; Government Canada, 2022) to protect the environment and communities, advance reconciliation with Indigenous people, while contributing to Canada's commitment to climate change. Strange Lake Rare Earth Mining Project will comply with SACC given as Torngat Metals is guided by ESG-I standards and aims to be recognized as a socially and environmentally responsible supplier of rare earths for the electric mobility, renewable energy, and other low-carbon footprint markets. Section 23 of the current document details the *Strategic Climate Change Assessment* including the greenhouse gas emissions (GHG), mitigation measures, net-zero plan, limitations and resilience to climate change.

6.2 Strategic Environmental Assessment

In Newfoundland and Labrador, Strategic environmental assessment (SEA) represents a broad-based approach to environmental assessment that examines the environmental effects on larger ecological setting, rather than a project or site-specific issues. According to the website (CNLOPB, 2023), no SEA is currently assessed.

Finally, we are not aware of any ongoing strategic environmental assessment in Nunatsiavut.

PART B – PROJECT INFORMATION

7 Project Rationale and Purpose

The purpose of the project is to produce rare earth oxides (REO) to sell on the market.

The Strange Lake Peralkali Complex has been known for many years as a world-class rare earth deposit in both quantity and quality. The timing for the Strange Lake Rare Earth Project now is ideal. Firstly, responsibly produced rare earths are urgently needed as part of the solution for climate change. Secondly, the timing is ideal since all the components for a responsible plan to bring the Strange Lake Projet into production are ready and in place. In partnership with Indigenous communities, the plan is to implement innovations with world-leading technical and engineering partners, to maximize social, environmental and financial benefits, while reducing any negative impacts and risks.

The products that will be produced are separated REO. The focus is specifically on the rare earth oxides needed for high performance permanent magnets, namely the light rare earth oxides (LREO) neodymium (Nd), praseodymium (Pr), and the heavy rare earth oxides (HREO) dysprosium (Dy), and terbium (Tb). The Strange Lake Project is particularly important in providing a new supply Dy and Tb. Currently, China supplies almost all of global Dy and Tb needs. The Strange Lake Project once in operation, is expected to be the largest global Dy and Tb supplier outside of China. The other 11 rare earths also have important value in their applications, however many of them are oversupplied. Torngat Metals will refine other valuable rare earths based on market conditions and production costs.

The rationale for the development of rare earth mining and refining in production is clearly described in the *Canadian Critical Minerals Strategy* (Natural Resources Canada, 2022):

> **Honourable Jonathan Wilkinson, Minister of Natural Resources**
> "Critical minerals are the building blocks for the green and digital economy. There is no energy transition without critical minerals: no batteries, no electric cars, no wind turbines and no solar panels. The sun provides raw energy, but electricity flows through copper. Wind turbines need manganese, platinum and rare earth magnets. Nuclear power requires uranium. Electric vehicles require batteries made with lithium, cobalt and nickel and magnets. Indium and tellurium are integral to solar panel manufacturing."

Among the 31 critical minerals identified in the Strategy on page 9, rare earth elements are one of the six prioritized minerals (Figure 7-1). The strategy articulates the growing needs for critical minerals including rare earth elements.

> **Foundations for a Competitive, Sustainable Economy**
> "Critical minerals are the building blocks for the green and digital economy. They are used in a wide range of essential products, from mobile phones to solar panels, electric vehicle batteries to medical and healthcare devices, to military and national defence applications. Without critical minerals, there can be no green energy transition for Canada and the world. By investing in critical minerals today, we are building a sustainable industrial base to support emission-reducing supply chains that will address climate change for generations to come (e.g., net-zero energy and transportation systems). Growth in green and digital applications is expected to boost the global demand for many critical minerals. According to the International Energy Agency, the energy sector's overall needs for critical minerals could increase by as much as six times by 2040. The North American zero-emission vehicle (ZEV) market alone is estimated to reach $174 billion by 2030, creating more than 220,000 jobs in mining, processing, and manufacturing."

The Strategy also compares the 31 critical minerals on Canada's list to the lists of other jurisdictions (Table 7-1). Rare earth elements are the only one to be on everyone's list of critical minerals.

Table 7-1 : Comparing Canada's Critical Mineral List (from Annex E of the Canadian Critical Minerals Strategy, Natural Resources Canada, 2022)

Critial minerals	Jurisdictions							
Rare earth elements group	Canada (2021)	EU (2020)	USA (2022)	Japan (2019)	Australia (2022)	South Africa (2022)	India (2016)	UK (2021)
	X	X	X	X	X	X	X	X

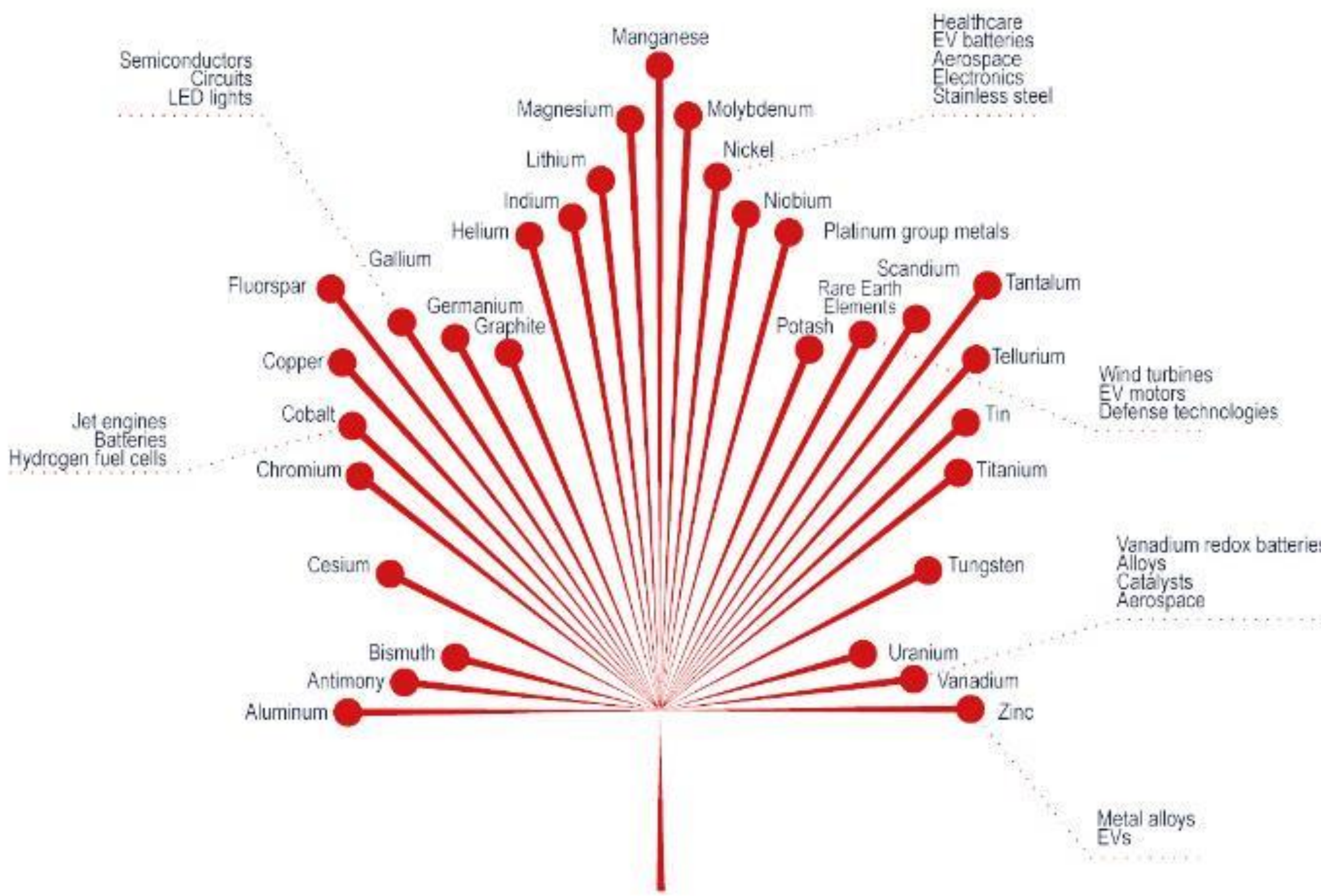


Figure 7-1 : Canada's critical Minerals and Dome of their Uses (from The Canadian Critical Minerals Strategy, p.9, Natural Resources Canada, 2022)

The rationale and approach for development of rare earth projects are also explained in the *Quebec Plan for the Development of Critical and Strategic Minerals* (Gouvernement du Québec, 2020).

> **"Why do we need to be interested in CSMs?**
> Minerals such as graphite, lithium, cobalt, nickel and the rare earth elements are among the materials indispensable to the green energy transition. They are necessary for the production of electric vehicles and renewable energy (wind turbines, solar panels) that allow us to achieve our objectives in GHG reduction and the fight against climate change.

> **Work According to Our Values**
> This is also a question of values and principles: we have the power, in our own territory, to govern CSMs development while respecting the local and Indigenous populations, ensure workers' health and safety and protect the environment. In short, to do things correctly, according to our priorities! Our high social and environmental standards and our guidance tools for businesses on social acceptability favour the development of winning projects for all.
>
> **Reduce Our Environmental Footprint**
> Given that these minerals are not renewable, we must think about strategies for optimum use of the available resources, particularly by betting on recirculation of extracted material. The circular economy, at the core of the Plan, depends on ecodesign, recycling and reuse of mineral resources.
>
> This future-oriented approach will allow us to reduce our environmental footprint and satisfy the demand for CSMs."

When the Government of Newfoundland and Labrador releases its Critical Minerals Strategy, it is anticipated to be consistent with both Canadian and Quebec Governments' strategies (Natural Resources Canada, 2022; Gouvernement du Québec, 2020) as released in December 2022 - *Support for Critical Mineral Exploration in Newfoundland and Labrador - News Releases (gov.nl.ca)* (Government of Newfoundland and Labrador, 2022).

> **Honourable Andrew Parsons, Minister of Industry, Energy and Technology**
> "The rise of critical minerals presents a real opportunity for Newfoundland and Labrador, given this province's tremendous critical mineral potential. Support for exploration is necessary to expand our future critical mineral production and our participation in the creation of those products necessary to drive the transition to a green economy."

The US Department of Energy has recently published a report titled "Critical Materials Assessment (USDOE, July 2023), in which the four rare earth elements targeted by the Strange Lake Project are highlighted as critical in both short term or mid term (see Figure 7-2AB).

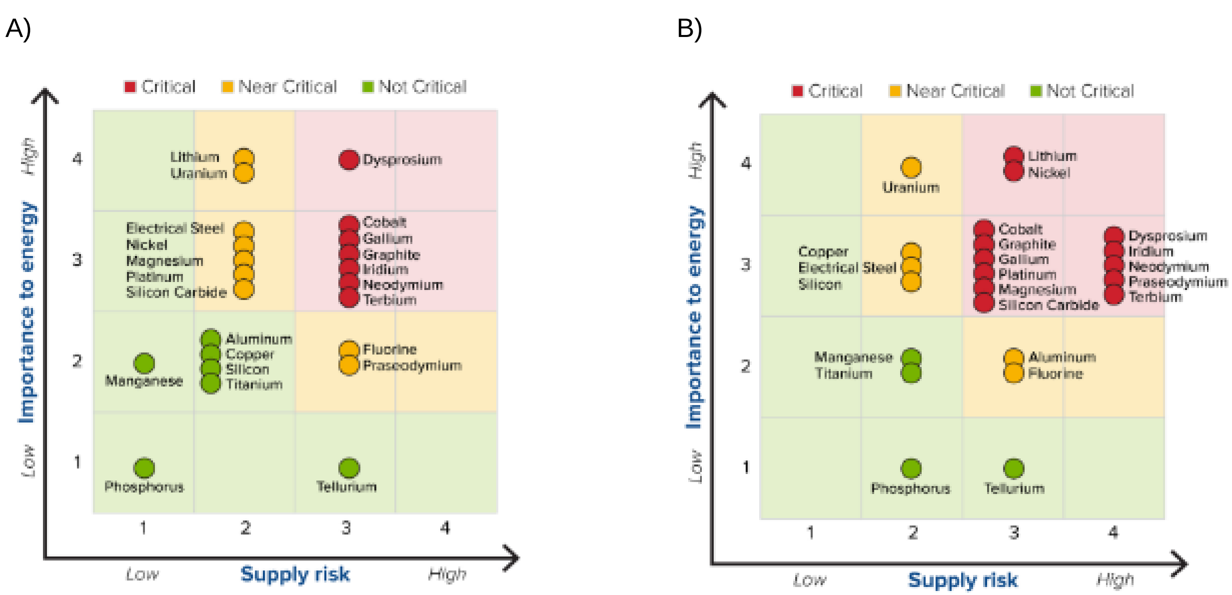


Figure 7-2 : A) Short-term (2020-2025) and B) Long-term (2025-2035 criticality matrix for key materials (from UDOE, 2023)

7.1 Rare Earth Elements Market

There are 15 rare earth elements (Table 7-2), plus 2 additional elements that are included due to their similar properties (yttrium and scandium). Rare earth are metallic elements that are not rare per se, but rare to be found in economically attractive deposits. In deposits, they are always found together, but in proportions unique to each deposit. They have valuable properties that make them essential in many applications. In fact, they are ubiquitous across may common products– everyone interacts with rare earth elements everyday.

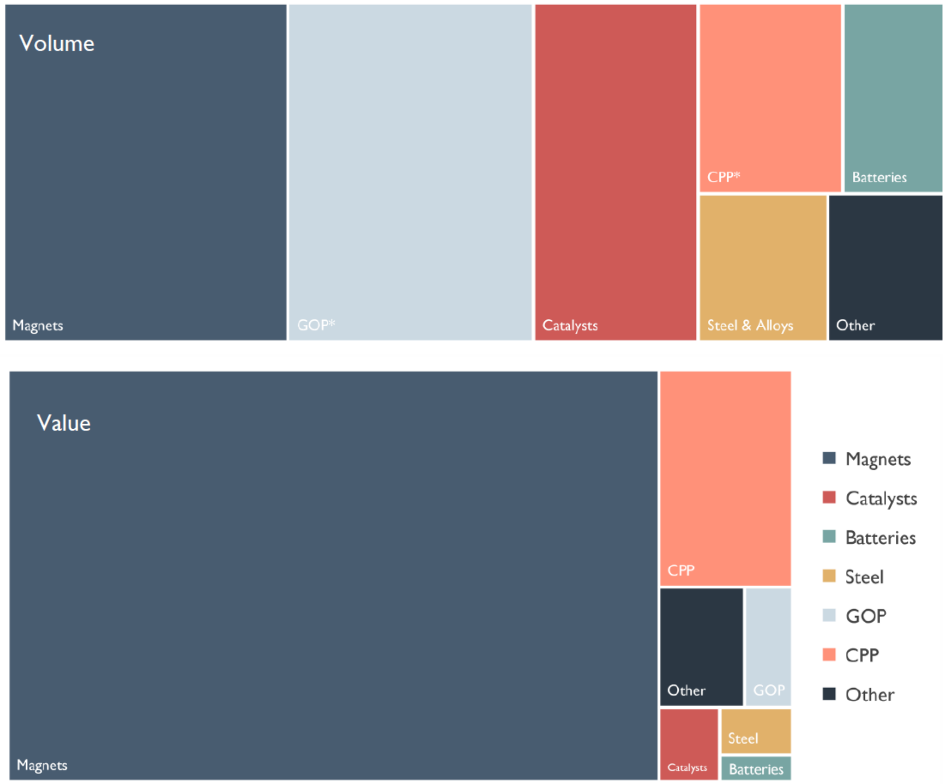
Table 7-2 : Applications and example end uses in daily life of rare earth elements (REE) (from Project Blue, 2022)

Critial minerals	Applications	Example end uses	Critial minerals	Applications	Example end uses
La	NiMH batteries, phosphors, catalysts, alloying, ceramics	Smart phones, gasoline	Tb	Phosphors, lighting, X- rays, magnets	Electric vehicles, smart phones, wind turbines
Ce	Polishing powder, optical glass, pigments, ceramics, catalysts, mixed metal	Screens, gasoline	Dy	NdFeB magnets, ceramics, lasers, nuclear fuel, phosphors, ceramics	Electric vehicles, smart phones, wind turbines
Pr	Glass and ceramics, CAT scans, magnets	Electric vehicles, smart phones, wind turbines	Ho	Lasers, medical and dental tech, pigments	Medical equipment
Nd	NdFeB magnet, optical and lasers		Er	Ceramics, pigments, optics, lasers	Screens, smartphones
Pm	Radiation source, FCC catalysts	Petroleum products	Tm	Lasers, x- rays, ceramics	Medical equipment
Sm	SmCo magnet, electric motors	High temperature motors	Yb	Fibre optics and lasers, radiation for x-rays	Telecommunications, medical equipment
Eu	Computer and TV displays, medical tech, lasers, fluorescent lighting	Smart phones, vehicles	Lu	X-ray phosphors, baggage scanners, oil exploration	Medical equipment
Gd	MRI, CT and X- rays	Medical equipment, screens, smartphones			

Each rare earth element is essential in their specific application. Some rare earths are used in high volumes compared to others. However, they are not supplied in nature in same proportion as their demand. This results in an oversupply of some rare earth elements and an undersupply of others, particularly since the demand for each rare earth is also unique to each application. The rare earth elements used in permanent magnets are the most important for economic viability of a rare earth project.

Figure 7-3 illustrates a graphic from Project Blue[2]. It highlights that the volume of rare earth elements used for permanent magnets is similar to a few other applications like glass polishing and catalysts. However, by value, the rare earth elements used for permanent magnets represent over 80% of the value of the rare earth element market.

[2] Project Blue is an organization providing market intelligence on energy transition supply chains and the critical materials which underpin them (https://projectblue.com/)



Source: *Project Blue*
Notes: *GOP- glass, optics & polishing*
CPP- ceramics, phosphors & pigments

Figure 7-3 : Rare Earth Demand by Volume and Value in 2022 (Project Blue)

Project Blue's long-term outlook for rare earth demand is for permanent magnets to be the key area of growth for the industry, which is forecast to account for over 47% of demand by volume by 2050. Nd will grow at a CAGR of 3.7%, however, HREEs critical in EV drivetrain magnets will see stronger relative CAGRs of 4.3% for Tb and 5.8% for Dy. Therefore, Project Blue projects that prices for the four permanent magnet rare earths will increase by 50-85% between 2023 and 2033.

Since permanent magnets are the most important application driving the economic attractiveness of developing a rare earth project, it is important to understand what they are.

Rare earth permanent magnets are everywhere and critical to each application:

- Electric vehicle drivetrain motors for passenger cars, trucks, buses
- Dozens of motors in all types of vehicles (power steering, windows, seats, etc.)
- Drones, planes
- Wind turbines
- Defense industry
- Industrial robots
- Industrial equipment (e.g. pumps)
- Air conditioners
- Elevators

- Appliances
- Medical imaging equipment
- Smartphones
- Headphones and speakers
- Hard drives (computers and servers)
- Sensors
- Consumer goods (jewellery, toys, etc.)
- And others.

Of particular importance are the permanent magnets that are essential for high efficiency motors used in electric vehicles, drones, robotics and increasingly in wind turbine generators. Electric vehicles (EVs) require a high-performance battery to store energy and a high-performance drive train motor to use the energy to move the vehicle. The battery system is unavoidably larger and more expensive than the drive train motor. This means that motor efficiency, enabled by permanent magnets, is critical because a less efficient motor requires a larger battery, which adds significant cost and weight.

The type of permanent magnet used in EVs contains the rare earths neodymium, praseodymium, dysprosium and in some cases terbium. The light rare earths—neodymium and praseodymium— are the key magnetic elements for producing a permanent magnet. Less understood though is the critical role that heavy rare earths—dysprosium and terbium—play in high performance applications such as a drivetrain motor. Heavy rare earths create a stronger magnet and allow the magnet to retain its magnetic properties in elevated temperatures during motor operation. (More technically, dysprosium and terbium increase the energy density of the magnet and improve the thermal stability, resulting in increased power, size efficiency and long-term reliability.) Dysprosium and terbium do not occur in significant quantities in most rare earth deposits, causing serious challenges matching supply to demand. Despite higher prices, dysprosium and terbium continue to be a cost-effective drive train motor solution considering the combined cost of the battery and motor system.

Over the past decade, there have been significant advances in permanent magnet technology to deploy dysprosium and terbium more efficiently. This has allowed the tight supply of dysprosium and terbium to be stretched over an ever-increasing number of EVs and other applications, but the need for heavy rare earths is continuously growing.

With the rapid acceleration of the production of EVs, dysprosium and terbium have risen to the top of the criticality list because they work so much better than any other options. However, due to the risks and uncertainty of supply security, there have been efforts to remove dysprosium and terbium entirely, or even to move to non-permanent magnet motors. These alternatives inevitably come with compromises to efficiency, performance, reliability, and costs. This means that companies and countries who can establish a long-term supply security for these two heavy rare earth elements will have a distinct and significant competitive advantage.

China controls almost 100% of the dysprosium and terbium supply. China's dysprosium and terbium supply comes from their domestic mining and up to 50% comes from ore concentrate from Myanmar. China is also increasingly importing concentrate from other countries.

Despite progress underway on other aspects of the supply chain, such as developing new magnet manufacturing facilities in North America, production will remain dependent on China unless secure dysprosium and terbium supply can be increased to support the rapidly growing demand for high efficiency permanent magnet motors.

Due to the urgent need to close the supply gap of all rare earths, and critically the heavy rare earths, rare earth projects that have high quantities of dysprosium and terbium, are economically attractive, meet ESG criteria, and have social license, should be considered for development. Meeting climate change and decarbonization targets requires manufacturing of products that use critical minerals sourced from a responsible, traceable, fully independent and diverse supply chain.

7.2 The Role of the Strange Lake Rare Earth Project in the Permanent Magnet Supply Chain

Unlike most other rare earth projects, the Strange Lake deposit contains the full suite of critical light— neodymium and praseodymium, and heavy rare earths—dysprosium and terbium needed for permanent magnets. Most projects lack mineable quantities of these two heavy rare earths.

The permanent magnet supply chain starts from high purity separated rare earth oxides, conversion to their metal form, production of magnet alloys, production of magnets and finally assembly into finished electric motors.

Torngat Metals is in active discussions with potential customers and supply chain partners who need to secure their rare earth needs and who value responsible and traceable suppliers.

7.2.1 Project Economics

It is important to the rationale for the Strange Lake Project that the project must be economically attractive. On the revenue side, it is clear that the market demand is strong and growing over the short, medium and long-term, resulting in strong pricing forecasts. On the cost side, the project fundamentals are to continually strive for lowering cost by increasing efficiency. The project is on track to achieve the goal of being cost competitive compared to other existing and future suppliers, while always leading in environmental and social performance.

8 Applicable Provisions

The following section present the Strange Lake project activities and some activities which will be under the responsibility of third parties.

8.1 Physical Activities

Under the schedule to the *Physical Activities Regulations* (SOR/2019-285), the following physical activities will be undertaken by Torngat Metals:

- New Strange Lake rare earths mine with a maximum ore production capacity of 55,000 t/day (QC).
- New beneficiation pant with a maximum capacity of 17,000 tonnes of ore per day (QC).
- New aerodrome with a 1,500 m runway (QC).
- New private seasonal road between the mine site and the new container storage and handling facility in Anaktalak Bay on the east coast of Labrador, NL (see below).
- New container storage and handling facility at the existing port of Vale's nickel-copper mine in Anaktalak Bay on the east coast of Labrador, NL.
- Transport of ore concentrate by road from the mine (QC) to Vale's port (NL), then by ship to the existing port of Sept-Îles (QC).
- New rare earth processing and high purity separation plant in an existing industrial port area in Sept-Îles, Quebec.

Section 9 details the project description and outlines the other activities related to Strange Lake Project that will be under the responsibility of third party companies and are:

- Construction and operation of wind turbines at Mine Site
- Handling facilities at an existing port in Sept-Îles

As it stands, the current Project is not a component of a larger project. Under Section 7(1) of the IAAC, subject to subsection (3), the proposed project elements may cause:

(a) a change the following components of the environment that are within the legislative authority of Parliament:

(i) *fish* and *fish habitat*, as defined in subsection 2(1) of the Fisheries Act,

(ii) *aquatic species*, as defined in subsection 2(1) of the Species at Risk Act,

(iii) *migratory birds*, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994, and

(iv) any other component of the environment that is set out in Schedule 3;

(b) a change to the environment that would occur:

(ii) in a province other than the one in which the act or thing is done, or

(c) with respect to the Indigenous peoples of Canada, an impact — occurring in Canada and resulting from any change to the environment — on

(i) physical and cultural heritage,

(ii) the current use of lands and resources for traditional purposes, or

(iii) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance;

(d) any change occurring in Canada to the health, social or economic conditions of the Indigenous peoples of Canada; or

(e) any change to a health, social or economic matter within the legislative authority of Parliament that is set out in Schedule 3.

It is noteworthy that the Project involves the construction of infrastructures such as mine residue stockpiles (section 9.2.6) that may disrupt drainage and modify fish habitat and as such, a modification of Schedule 2 of the Metal Mining and Diamond Mining Effluent Regulations (MMDMER) may be required for the Project. Should such a scenario arise, appropriate consultation and studies will be undertaken.

In addition to respecting the Canadian laws and regulations, the Strange Lake Project will ensure that it respects those of Newfoundland and Labrador, Quebec and the Nunatsiavut government (section 18) as well as international standards in terms of environmental, social and governance (ESG) issues. Finally, its environmental follow-up/monitoring and restoration programs will be developed in such a way as to aim for carbon neutrality by 2050, all with a view to sustainable development.

9 Preliminary Project Description

9.1 Brief Description of the Project

The Strange Lake rare earth mining project is divided into three project phases: 1) Development and construction phase; 2) Operational exploitation phase (30-year operation); and 3) Closure and restoration phase.

During the 30-year operation phase, approximately 170 million tonnes of mining material will be extracted from an open pit, and between 2.5 to 6.0 million tonnes per year of crushed ore will be fed to the onsite beneficiation plant. Between 150,000 to 350,000 tonnes per year of rare earth ore concentrate will then be produced by on-site beneficiation plant with a processing capacity of 17,000 tonnes of crushed ore per day. The ore concentrate will be transported by road from the mine site to Vale's Port in Anaktalak Bay (NL) and then by ship to a rare earth processing and high purity separation plant to be built in an existing industrial port area in Sept-Îles, Quebec. The ore concentrate will be fed to the process plant at a maximum rate of 1,000 tonnes per day, which will produce between 2,800 and 5,500 tonnes per year of rare earth oxides (REO).

Throughout the document, the maps and figures available to facilitate the location and understanding of the project as well as its planned infrastructure are:

- Map Indigenous Land Rights - Quebec (Map 3-1)
- Map Communities in the Project Area in the North (Map 3-2)
- Map Communities in the Project Area in Sept-Îles (Map 3-3)
- Overall project Map (Map 9-1)
- Project components in the North (Map 9-2)
- Projet components in Sept-Îles (Map 9-3)
- Figure Typical Cross-Section of Single-Lane Seasonal Road (Figure 9-1)
- Map Torngat Metals Mineral Claims (Map 13-1)
- Map Strange Lake Alkali Complex (SLAC) and Bedrock Geology (Map 13-2)
- Map Watersheds within the Project Area in the North (Map 14-1)
- Map Watersheds within the Project Area in Sept-Îles (Map 14-2)
- Map Land Regions and Districts – Physigraphy (Map 14-3)
- Map Watercrossings along the seasonal access road (7 sheets and photos in Appendix D)
- Map Caribou Protected Areas (Map 14-4)

Map 9-1 illustrates the overall project and related activities for a better understanding of the Project logistics.

Map 9-2 illustrates the project components in the North, based on one of the variants being studied for the infrastructures at the Mine Site and the road alignment to the eastern coast of Labrador. For the process plant, project components in Sept-Îles are illustrated on Map 9-3.

Project variants are presented in Section 12.

9.2 Project components at the mine site

The following sections provide a brief description of the major components of the project.

The Strange Lake alkaline complex occupies a total area of 3,600 ha, whereas Lake Brisson occupies a total surface area of 3,200 ha. Lake Brisson flows into Napeu Kainut Lake, and then into the Déat River. The primary hydrographic basin is that of the George River, which is located about 100 km downstream of the mine site considering the water flow (the George River is approximately 30 km due West of the mine site).

9.2.1 Mine Pit

The project's mineral resources are contained in a single deposit identified as the B-Zone. The current mining plan developed over a 30-year period is to mine as much ore as possible in the first 18 years, in order to first process the ore containing a higher concentration of the desired elements (high-grade ore), and to stockpile the lower-grade ore for further processing in the remaining 12 years. The design of the mine pit takes into account a minimum distance without activities to ensure the protection of the Lake Brisson water.

Given the proximity of the deposit to the surface, the mine is designed to be operated as a standard open pit using trucks and mechanical shovels.

9.2.2 Explosives

The explosives manufacturing and storage facilities will be in the vicinity of the mine pit, within a radius of less than 5 km, on a junction of the main access road. The exact location of these facilities will be determined by ensuring that they are located at safe distances from other infrastructure and activity areas. Due to the proximity of the lake and water features, emulsion will be used as explosive. Emulsion generates significantly less nitrate species than ANFO.

9.2.3 Ore concentration facilities (beneficiation plant)

The ore concentration facilities at the mine site include a series of physical separation processes that will significantly reduce the quantity of concentrate to be shipped to the high purity rare earth processing and separation plant, which will be located in Sept-Îles, Quebec, as described later in section 9.5. The ore concentration processes that will be used in the plant is described later in section 10.2.

9.2.4 Ore Pile

The low and medium grade ore mined will be stockpiled for processing after year 18 of the mine plan. The lower grade ore stockpile will be placed to facilitate future reclaiming as shown on Map 9-2. The exact location will be determined following an *in-situ* verification considering technical and environmental constraints aimed at minimizing the potential effects on fish habitat.

The total surface area required for the ore storage is preliminarily estimated at 470 000 m^2.

The environmental design of the piles, to ensure groundwater protection and wastewater treatment, will be developed according to the *in-situ* conditions and the Directive 019 (MDDEP, 2012).

9.2.5 Waste rock and overburden piles and soils

The volumes of waste rock (often described as waste rock) to be stockpiled includes the quantities of waste rock and overburden from excavations for the construction of the collection pond(s) as well as for any surface infrastructure required for the operation site. Two sites are currently studied for the location of the waste rock storage area (Map 9-2).

The total surface area required for the waste rock and overburden storage is preliminarily estimated at 980 000 m^2.

Wherever possible, overburden and waste rock will be placed in separate piles east of the mine pit (Map 9-2).

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du projet / Project component

- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port
- Site de la mine / Mine site
- Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Route maritime projetée / Potential Shipping Route

Autre / Other

- Frontière provinciale / Province Boundary

0 100 200 km

North America Lambert Conformal Conic

Produit: Map 9-1 - Overall project map

Date : 2023-08-23 08:52

Source:
Données topographiques / Topographic Data: NRCan, (2022)

PRÉLIMINAIRE / PRELIMINARY

Carte 9-1
Carte globale du projet

Map 9-1
Overall project map

AECOM

The potential for reusing waste rock will be assessed based on geotechnical and geochemical data to establish its technical and environmental feasibility. Ideally, the waste rock will also be used to backfill the open pit once mining is complete. Waste rock that does not leach metals or generate acid may also be used for the construction of dikes, roads and/or storage platforms.

Similarly, topsoil or other soil suitable for revegetation will be characterised and stockpiled nearby for progressive or future site rehabilitation. Soil stockpiles will be protected against erosion by vegetating the surface with site appropriate seeds.

To ensure the protection of the groundwater and to facilitate water treatment, the environmental design of the piles, will be developed based on the *in situ* conditions and on the Quebec's Directive 019 (MDDEP, 2012). At a minimum, the design of the waste rock pile and the pile of overburden, will ensure that runoff from the piles is collected and directed to a settling pond for the treatment of suspended solids before discharge into the environment, should the water meet criteria. Should the water not meet criteria, it will be piped to the water treatment plant for further treatment. Stockpile characterisation such as geochemical and geotechnical studies are scheduled to commence in September of 2023 and will inform further design of the waste rock and overburden pile.

9.2.6 Mine Residue stockpile area

The residues from the concentration processes, which includes fractions from the magnetic separation and the flotation processes, will be deposited in the mine residue stockpile. In order to minimize the potential environmental impact, and subject to the approval of the authorities, the residues will be thickened, filtered, mixed with a cementing agent, transported by truck and deposited in the residuals management area. Generally, cemented backfill are inert, however, seepage and kinetic studies will be performed in order to determine the percentage cement to be used, the potential for long-term metal leaching and the potential source terms to be added in the water quality model. Map 9-2 illustrates the maximum expected size of this area, corresponding to the end of the Life of Mine (LOM) before active restoration. Five alternative locations for the mine residue stockpile (option 1, 2, 3, 4 and 4a) have been studied to date (see Table 9-1). Additional geochemical and geotechnical studies will be conducted in order to inform the design of the mine residue stockpile area and the retention basin that will be used for sedimentation and/or retention for associated water treatment. The environmental design to ensure groundwater protection and wastewater treatment will be developed based on *in-situ* conditions and Quebec's Directive 019 (MDDEP, 2012).

The total surface area required for the mine residue storage is preliminarily estimated at 1 387 500 m^2.

9.2.7 Access/haul roads

Access/haul roads will connect the mine to the various infrastructures within the site, i.e., the beneficiation plant, the camp site, other buildings as well as the stockpiles (ore, waste rock, overburden, and topsoil), the settling ponds, the residuals management area, the landfill site, and the airstrip. These roads will be unpaved and will have ditches collecting runoff water.

9.2.8 Aerodrome with a 1,500 m airstrip

A total of seven potential locations at the mine site have been identified for the airstrip, also within a 10 km radius of the mine pit. Only two options were retained after a more in-depth examination of the topography, drainage conditions, limitations related to surface obstacles, prevailing winds, and other environmental constraints (proximity to observed habitats of harlequin ducks, caribou, etc.), the distance of the facilities from the mine site and the alignment of the road. These options, both located in the southern part of the 10 km radius, were compared with each other in a preliminary manner, according to technical and environmental criteria. Subject to validation during future consultations and studies, the preferred site (Map 9-2) located approximately 12.5 km from the camp and processing facilities is the best option based on the following criteria:

- Prevailing winds – highest percentage of favourable prevailing winds.
- Environmental analysis – less potential impact on ecological systems and water resources.

The airfield facilities can be operational 24 hours a day. The runway and taxiway will be made from gravel. The aerodrome building will have a capacity to accommodate approximately 60 passengers, including washrooms, storage area and office space.

The new airfield will also include a building for aircraft storage and servicing, a private runway and fuel storage facility.

The runway is currently planned to be 1,500 m long by 30 m wide and made of gravel in the initial construction phase of the project, which would accommodate aircraft models such as the Bombardier Q400. The option to expand the runway to accommodate larger aircraft during the construction phase or later during the operation of the mine will be assessed as part of the pre-feasibility, feasibility, and impact assessment studies.

9.2.9 Other Buildings

The workers' camp will be modular in design and will meet industry standards for long-term and permanent accommodation for mine personnel, with additional space for truck drivers and other visitors. It is expected that enclosed walkways will connect the buildings, where possible. Its footprint in the environment includes the consideration of a protection zone around Lake Brisson. The width of this protection zone will be established based on the results of the hydrogeological modelling that will be carried out at the mine.

A multi-purpose building will include heated and unheated storage areas, a locker room, lockers, laundry, medical and fire protection facilities, laboratory, offices, and conference rooms as well as garages for maintenance, emergency vehicles and storage of emergency response equipment.

9.2.10 Water Supply

Lake Brisson is expected to be the main source of process water. The required water treatment for this industrial use will be established during the feasibility study. A pumping station will be installed on the shore of Lake Brisson, with a water intake deep enough to avoid problems related to the accumulation of ice during the winter. A heat traced pipeline of approximately 1.5 km will bring the water to the treatment plant. A 5-meter-wide access path will also be built along side the pipeline to facilitate inspections and repairs.

Lake Brisson is also a potential source of drinking water for human consumption. The SG-1 esker located to the east of the ore processing complex and the base camp is an underground water source which constitutes a second source of drinking water.

More detailed analysis will be completed to confirm the source of drinking water that will be used, and the treatment required. Drinking water will be analyzed and treated before use according to Health Canada and Quebec's Standards.

Groundwater from the esker will likely be the source of fire water. A fire water tank will be provided and connected to the fire protection system of the multi-purpose building and the camp. The water required for maintenance and for dust suppression will have separate containers.

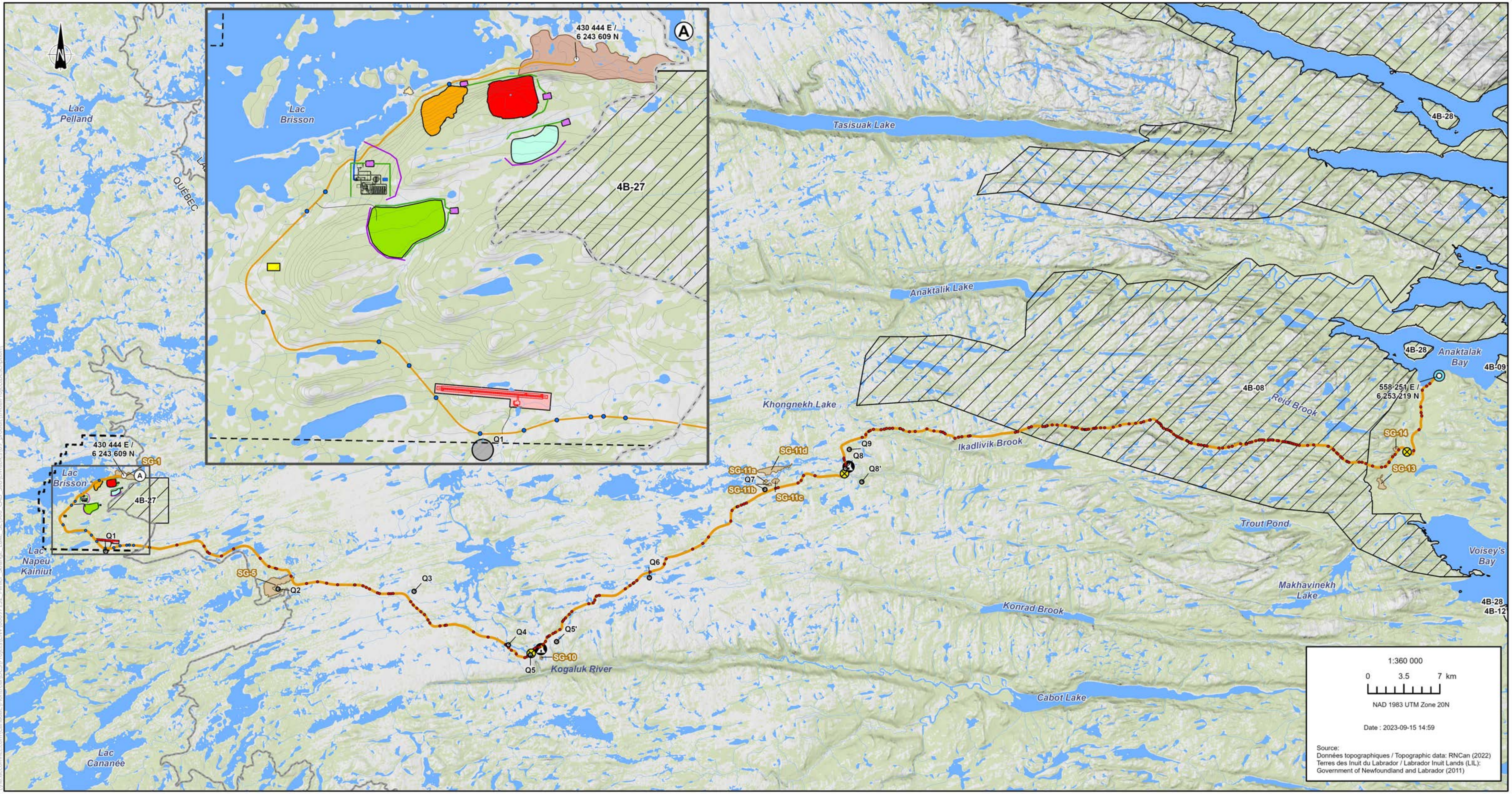
9.2.11 Domestic Wastewater Treatment

A modular wastewater treatment system will include septic and holding tanks and equalization tanks. The preferred technology will meet suspended matter (SM) and biological oxygen demand (BOD) criteria.

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée / Crossing (Labrador)
- Traversée / Crossing (Québec)
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Banc d'emprunt / Borrow pit (SG-xx)
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

Carte 9-2
Composantes du projet au Nord

Map 9-2
Project components in the North

PRÉLIMINAIRE / PRELIMINARY

AECOM

9.2.12 Process Wastewater Treatment

A complete water treatment plant (WTP), capable of treating to the required criteria will be built on site and all contact water not meeting criteria, including seepage from the stockpiles and process water from the beneficiation plant will be treated before discharge. Although the beneficiation plant will recycle water and be highly water usage efficient, the WTP will have the capacity to handle eventual plant upsets or purges. The discharge point of the WTP, potentially in Lake Brisson, will be assessed and will meet regulatory requirements.

9.2.13 Power supply

The electrical requirements of the mine, ore processing and milling facilities and all other on-site facilities are expected to be met by a combination of two types of electrical generating equipment, namely:

The power requirements of the mine, ore beneficiation plant and all other on-site facilities are estimated at 5 to 10 MW and are expected to be met by a combination of two types of electrical generating equipment, namely:

- a bank of diesel generators.
- wind turbines (project under study by third party). The use of renewable energy sources will reduce the use of fossil fuels in the Project. Renewable energy generation would not be under Torngat Metals but rather under a separate developer.

The aerodrome will have its own source of electrical energy supplied by a 250 kW diesel generator.

9.2.14 Fuel storage and supply

The arctic diesel tank as well as the unloading station will be placed in a containment area equipped with a geomembrane. Double-walled aboveground pipes will connect the reservoir to the generators. A fuel distribution station will be installed for the supply of heavy and light vehicles.

Subject to validation by the feasibility and pre-feasibility studies, a 30 m^3 capacity tank will be installed at the airfield for the storage of aviation fuel. This fuel reserve is intended for emergencies.

Fuel supply will be primarily by fuel tanker to the mine site, as required. At the mine site, the fuel will be transferred from the fuel tankers to an unloading and storage area which will be equipped with an appropriate containment area.

9.2.15 Stormwater management (outside activity areas)

All stormwater that has not been in contact with the ore or mine activities will be diverted from the work areas by a network of non-contact drainage ditches.

9.2.16 Waste management

Waste reduction at source, recycling and recovery channels will be favoured. To the extent practical, recyclable materials will be compacted on site before being transported to secondary materials markets using the same means of transportation as for supply. Residual hazardous materials and special waste will be stored on site in secure storage areas equipped with containment areas, before being shipped to authorized facilities for treatment or disposal. A northern landfill that complies with the requirements of division 4 of chapter II of the Quebec Regulation respecting the landfilling and incineration of residual materials will also be set up along the road to access between the airfield and the mine pit to landfill residual materials that cannot be recycled or recovered. An area will also be set up to carry out the bioremediation of contaminated soil and snow.

9.2.17 Emergency Response

Medical and emergency response facilities, including fire trucks, will be in the multipurpose building near the workers' camp. An ambulance will be available and parked in a dedicated space and an infirmary will be set up in the workers' camp. A storage area for environmental emergency equipment will also be provided in a centralized location in case of a potential major incident (i.e., spill).

9.2.18 Construction

9.2.18.1 Shipping during construction

All shipping and associated activities (crews, provisions, refueling and other supplies, waste management, etc.) will be contracted to a third party for both the Construction and Operations Phases of the Project. The potential shipping route(s) would be the same used by construction supply ships accessing the current port installation. Shipping during the Construction period would transport incoming equipment, materials and fuel. Recyclable materials, hazardous wastes, other materials and returning rental equipment would be periodically shipped off-site.

9.2.18.2 Access Road and Airstrip

Construction work at the mine site will begin with the completion of the last portion of the access road located in Quebec (0 to 18 kilometres of the road chaining) and the development of the airstrip.

A short temporary airstrip can currently be used by Twin Otter or smaller aircraft. This track is located along Lac Brisson approximately 400 m east of the temporary mining exploration camp. A temporary dock, also located near the temporary camp, could also be set up on the shores of Lac Brisson to accommodate seaplanes in the summer.

9.2.18.3 Camp, Mine, and Facilities

In addition to expanding the existing exploration camp as required, temporary camps may be established as part of site preparation and road construction at the mine site. Temporary worker camps might be established outside the mine site during construction, in particular during construction of the road on the Labrador portion. Options on this subject will be examined as part of the feasibility study and impact assessment. However, once the mine is in operation, there will only be one camp at the mine site.

Excavation at the mine site will follow the road construction and will begin with the development of the water treatment plant, the maintenance facility area and the fuel storage area as well as the construction of the various access roads to the site.

The ore transport roads will be 8 m wide between berms and will therefore be designed for trucks with a capacity of 55 tonnes. These roads will be built and extended as needed during pre-production and operation.

A borrow pit is located on esker G-1, approximately 2 km east of the B-Zone. This zone will first be mined for sand and gravel required for the civil works related to roads and preparation of the ore stockpiling area. Once levelled, part of this area can also be used as a temporary storage area. It should be noted that part of this esker is already being used by Torngat Metals as a temporary airstrip as part of its pre-development activities.

Subsequently, the construction of the beneficiation plant, buildings, fuel storage tanks and the installation of temporary generators can be undertaken. In addition, the civil work to lay out the foundation of the various storage areas and the settling pond(s) will be carried out. These facilities will allow the start of stripping operations of the mine site.

Next, the steel structures and mechanical equipment will be installed at the beneficiation plant and the residue thickening/filtration area. Finally, the electrical and instrumentation work will be completed, and the commissioning of all systems will take place.

9.2.18.4 Explosives

The selected explosives supplier will be responsible for the construction of an emulsion plant on the mine property, approximately 4.5 km from the mine pit, along the access road.

9.2.18.5 Stockpile areas, borrow pit

A drainage system consisting of contact water ditches and retention ponds will be built to receive the runoff water drained within the various stockpile areas (ore piles, concentrate piles, mine residue stockpiling area, etc.) and to prevent mixing with non-contact water runoff from outside the operating areas. Retention ponds will be located at the lowest elevation of each associated watershed and will avoid the mixing of water from different sources before the sampling points. A water treatment plant will also be installed, as well as a network of pipelines to convey the effluent from the ponds to this system.

Designs of the stockpile will be developed as part of the pre-feasibility and feasibility studies.

The development of a borrow pit area is currently planned at the mine site to provide construction materials (Map 9-1). In addition, secondary access roads will be constructed that will connect the plant, the borrow and stockpile areas.

9.2.19 Operation and maintenance

9.2.19.1 Mining operations

Mining will be operated by Torngat Metals with its own equipment and personnel. The mine will be operated according to an optimal ore extraction sequence developed over a period of 30 years. Mine operations include:

- drilling and blasting.
- ore excavation and transportation (hauling) to the processing area.
- the crushing of large blocks.
- excavation and transportation of waste rock to the waste rock pile.
- excavation and transportation of low/medium-grade ore to the ore stockpiles.

9.2.19.2 Explosives

The explosive supplier that will be selected will be responsible for supplying emulsions, non-electric detonators and other blasting accessories that will be used by the blasting team in the pit.

9.2.19.3 Mine dewatering

Pumping of water from and around the pit will be required to prevent flooding that would delay mining operations and to ensure the health and safety of the workers. The in-pit water originates from three sources: surface water (precipitation and runoff), infiltration of groundwater and potentially infiltration from Lake Brisson through a fault. Sumps will be constructed and maintained at the bottom of the pit in order to pump the water and direct it, if necessary, to the treatment system. Groundwater flowing towards the pit (and which will not have been in contact with the ore of the deposit) can be intercepted by a network of wells on the periphery of the pit from which it can be pumped and discharged into the environment or used as a source of water, should it meet discharge criteria.

9.2.19.4 Ore processing and concentration (beneficiation plant)

The crushing and x-ray sorting units will be designed to operate 365 days a year, 12 hours a day. The fine grinding, electromagnetic separation, flotation and dewatering equipment at the mine is designed to operate 365 days a year, 24 hours a day. Although the beneficiation plant will be designed and built to operate 365 days per year, it is anticipated that the operation may not stop during the coldest period of the year. The processes operated in the ore concentrating facilities (beneficiation plant) is described later in Section 10.2. As the operation of the mine site and the shipment schedule are slightly different (but overlapping), the logistics of the operation will be optimise to account for this.

9.2.19.5 Ore Concentrate Packing

The ore concentrate will be packed in “super-bags”, and these will then be placed in containers for shipping. No material will be shipped in bulk. Each superbag can contain 1 to 2 tonnes.

9.2.19.6 Mine Residue Management

The dry residues from the first separation steps (primary crushing and X-ray sorting) will mainly be waste rock, which will be stored in the waste rock storage area; depending on their characteristics, some material rejected during this first sorting could also be stored temporarily for potential subsequent use. The other fractions from the magnetic separation and flotation processes constitute the residues from the concentration processes. These residues, generated in a wet environment, will be decanted, and filtered.

Subject to obtaining the required authorizations, the thickened residues will be mixed with a cementing agent to improve its mechanical properties and prevent the resuspension of fine particles during precipitation or snowmelt. The thickened residues will be loaded onto trucks and transported to the mine residue stockpile area, which will be designed and managed in accordance with the requirements of Quebec’s Directive 019 (MDDEP, 2012). The thickened residues will be unloaded there and spread in 30 to 40 cm layers and then compacted with appropriate mobile equipment (dry stacking).

Seepage from the concentration processes residues is expected to be low due to the low hydraulic conductivity of these materials and the addition of a cementing agent. Contact between residues and groundwater will be minimized by installing a drainage system within the mine residue stockpile area. Any potential seepage will be collected and transported via a pipeline to a collection pond or to the water treatment plant where it will be treated, if necessary, before being discharged into the environment.

Runoff and snowmelt water from the surface of the mine residue stockpile area will be collected by a system of peripheral contact ditches and treated, if necessary, before being discharged into the environment.

The mine residue stockpile area will also be surrounded by a system of non-contact water ditches, drains and dikes to collect non-contact surface water runoff and diverting it from the stockpile area. Additional drains/ditches will be installed as needed during successive construction stages over the LOM. The non-contact diversion system will be constructed in stages to maximize the non-contact runoff diversion potential of the mine area.

9.2.19.7 Emergency Response

Qualified personnel trained in first aid and emergency response will be on-site. When required, an air ambulance will be available to transport patients to a hospital facility located in a major center such as the Labrador Health Center located in Happy Valley-Goose Bay. These same centers may be called upon to provide support in the event of an environmental emergency.

9.2.19.8 Discharges into the environment

The technical details will be presented in the Feasibility Study report to be produced later, which will be incorporated into the detailed project description, and in the EIA for the Project.

9.2.19.8.1 Air

The main sources of atmospheric emissions (greenhouse gases, particles, etc.) will be generated by mining, blasting, crushing, concentrate storage, stockpiles, electricity production (generators) as well as vehicle traffic for the transportation of ore, concentrate and other transportation activities on the site.

9.2.19.8.2 Liquid Effluents

Mine water and runoff water within the activity areas (contact water)

Several ponds will be needed to receive the contact water runoff within the various mine activity areas (pit, mining areas, ore piles, concentrate piles, mine residue stockpiling area, etc.). They will be located at the lowest elevation of each concerned area and will be positioned to avoid the mixing of water from different sources before the sampling points. After the sampling point, the water discharged from these retention ponds may be routed, if required, to a treatment system to ensure that any water discharged complies with the requirements of Directive 019. The possibility of reusing the water collected for the needs of the ore concentration facilities will be assessed to minimize the use of freshwater.

Extreme intense precipitation is rain that over a short period of time (5 minutes to a day) causes a large quantity of water that can overload the site's water management structure. Intensity-Duration-Frequency (IDF) curves provide a link between the intensity of short-duration precipitation events and their frequency of occurrence. These curves make it possible, among other things, to study the maximum annual amount of precipitation required over various durations for different recurrence periods. It is therefore useful for managing runoff water. Due to climate change, Paquin et al (2022) suggested that the values of the IDF in Northern Quebec could increase up to 83.5% at the end of the century (Tables 9-1 and 9-2).

Table 9-1 : Recommended increases (%) to be applied to IDF curves in reference climate (2000-2019) for estimating IDF curves for various future periods according to RCP 8.5 scenario

Horizon	Duration (hours)						
	1	2	6	12	24	48	72
2020-2040	15.0	14.0	12.0	10.0	8.5	8.0	7.5
2040-2060	33.5	32.0	27.0	22.5	19.5	17.5	16.5
2060-2080	57.0	54.5	45.5	38.5	33.0	30.0	28.0
2080-2100	83.5	80.5	67.0	56.5	48.5	44.0	41.0

The Table 9-2 presents the IDF values at the airport of Shefferville for the horizon 2071-2100 according to RCP 8.5 scenario.

Table 9-2 : Projected short duration rainfall intensity-duration-frequency for RCP 8.5 for the horizon 2071-2100

Duration	Return period					
	2 years	5 years	10 years	25 years	50 years	100 years
5 min	69.0	107.0	132.0	164.0	187.0	210.0
10 min	49.0	71.0	85.0	103.0	117.0	130.0
15 min	38.0	54.0	64.0	78.0	88.0	98.0
30 min	23.0	33.0	39.0	47.0	53.0	59.0
1 hour	16.0	22.0	27.0	32.0	35.0	39.0
2 hours	11.0	15.0	17.0	21.0	23.0	25.0
6 hours	5.8	7.5	8.4	9.8	11.0	12.0
12 hours	3.8	4.9	5.7	6.6	7.2	7.8
24 hours	2.5	3.2	3.8	4.4	4.9	5.5

Source : https://donneesclimatiques.ca

Wastewater from concentration processes (process wastewater)

In the current state of process development for the beneficiation plant, it is expected that all water will be recirculated, and the process will not generate a liquid discharge, except during sporadic events or plant upsets. A certain amount of freshwater may, however, be necessary (to be confirmed during the pre-feasibility and feasibility studies). Any discharge from the process will be treated appropriately before being released into the environment in order to ensure compliance with the MMDMER (ECCC), MELCCFP and Mining Industry Directive 019 (MDDEP 2012) quality criteria.

Washing Water

Washing and maintenance water in the buildings will be managed separately from mine water and sent to a water treatment unit before discharge. An oil-water separator (oil skimmer) will be installed.

Domestic wastewater

A domestic wastewater treatment unit will be installed to serve all camps, buildings, sanitary facilities and living environments.

Final effluent

Treated water will meet the applicable requirements and will be discharged into Lac Brisson, in a large bay located between the mine pit and the camp and processing area. Although the bathymetry of this portion of the lake has been mapped, the exact location of the discharge point will not be determined until the final site development plan has been completed and a proper water discharge/diffusion study and impacts on the receiving environment has been conducted.

9.2.19.9 Residual Materials

Residual materials will be managed by following the principles of the *Québec Residual Materials Management Policy* while considering the location of the project in an isolated northern territory. Reduction at source will first be prioritized by applying a purchasing policy that will favor durable goods, as well as reduced or easily recyclable packaging. Management methods will be selected by prioritizing recycling and recovery channels before disposal. As previously described, the elimination of ultimate waste residues will be carried out in a landfill in a northern environment, which will be laid out in accordance with the requirements of section 4 of chapter II of the *Regulation respecting the landfilling and incineration of residual materials*.

9.2.20 Closure and Restoration

Torngat Metals will prepare a conceptual closure plan that meets the requirements of Quebec *Loi sur les mines* - Mining Act and the *Guidelines for preparing mine closure plans in Québec* (*MERN, 2022*). The initial conceptual closure plan will be refined as the mine activity progresses. It is anticipated that the plan will be updated every five years.

The first step in developing any mine closure plan is to establish alignment on a uniform closure vision, including returning land use and closure objectives, and assessing potential closure strategies that agree with those objectives. These aspects are important as they will eventually guide the development of the Reclamation and Closure Plan, including closure prescriptions for the site. If the closure vision / objectives are developed early on in the mine life, this allows for development of closure designs for site infrastructure (waste rock facilities, stockpiles, mine residue stockpile area, etc.) in such a way that reduces long-term liability and costs associated with closure and create successful reclamation. Additionally, this information is done in collaboration with stakeholder representatives through engagement sessions. Regulatory requirements for closure and reclamation of the Project will be included when focusing on closure planning and closure plan development.

In addition, a Failure Mode Effect Assessment will be completed on the closure design to highlight risks ranked high and what mitigations or additional studies need to be completed in order to lower the risk. This will allow for data gaps to be identified and filled through additional studies as the Project progresses.

It anticipated that the end land use will be to provide wildlife habitats and that disturbed areas will return to their pre-mining condition such that traditional uses of the site can resume. It is also expected that there will be progressive restoration for the mine residue stockpile area, and any other suitable areas throughout its operation. According to the current mining plan scenario, the rehabilitation of the open pit will not begin until the end of its development, i.e., after year 18. Water treatment will be maintained until the water and seepage areas have achieved criteria. Typically, the closure plan is divided into section.

1. Progressive restoration, throughout the LOM
2. Active closure, where the buildings and ancillary structures are deconstructed, restoration is accelerated and water treatment is maintained
3. Passive closure, where water treatment is not required anymore, all area are restored and periodical sampling occurs.

The duration of the post-operation and post-restoration monitoring programs will be in accordance with the *Guidelines for preparing mine closure plans in Québec (MERN, 2022).*

9.3 Seasonal Road between the mine and the existing port facility

The containers of ore concentrate will be shipped by road and then by boat to a high purity rare earth separation plant using a hydrometallurgy process that will be located in Sept-Îles, Quebec (see next section and section 10.2).

9.3.1 Construction

A new road will be built to connect the mine site to a new container storage and handling facilities at the existing port of Vale's nickel-copper mine in Anaktalak Bay on the eastern coast of Labrador, NL. The total length of the access road is estimated at 160 km (Maps 9-1 and 9-2). The first 18 kilometres from the mine site are located on the territory of the province of Québec. Outside the mine site, the preliminary design envisions a seasonal access road with the following characteristics: a crushed rock or gravel surface capable of withstanding the expected traffic; a single lane with a width of between 5.4 and 8 m (with a right-of-way of 0.5 m on each side); no excavation in permafrost areas; a balance between cuts and fills as much as possible; minimal stream crossings and slopes of 11% maximum.

Figure 9-1 shows the typical roadway cross-section of three alternatives currently being considered. Another alternative being considered, not shown here, would be the construction of a seasonal low-speed road not designed for road vehicles; this option would require the use of more robust off-road trucks but, on the other hand, could allow to follow more the natural profile of the land. The road layout and design features will be determined in more detail as part of the pre-feasibility and feasibility studies.

Studies are underway to optimise the Road corridor. Currently, a total of 287 water crossings is reported: 13 out of the 287 being in Québec (4,5%), and 274 being in Labrador (95,5%). Three main watercrossings are planned (span bridge, arch culvert). Remaining water crossings will be provided by appropriate evaluation of watershed drainage prior to culvert sizing (see section 13.2 and Map 9-2).

Standard road construction methods would be adapted to northern conditions. Partial cleaning of vegetation would occur, permafrost would be protected as potential areas are mapped since the planning design phase. Reuse of material excavated at the Mine Site would be prioritized for the Québec Access Road. Any extra materials needed for the roadbed would be obtained from borrow pits (sand and gravel) and rock quarries Temporary worker camps might be established outside the mine site during construction. Options on this subject will be examined as part of the feasibility study and impact assessment, but potential locations are presented at Map 9-2 along the road corridor.

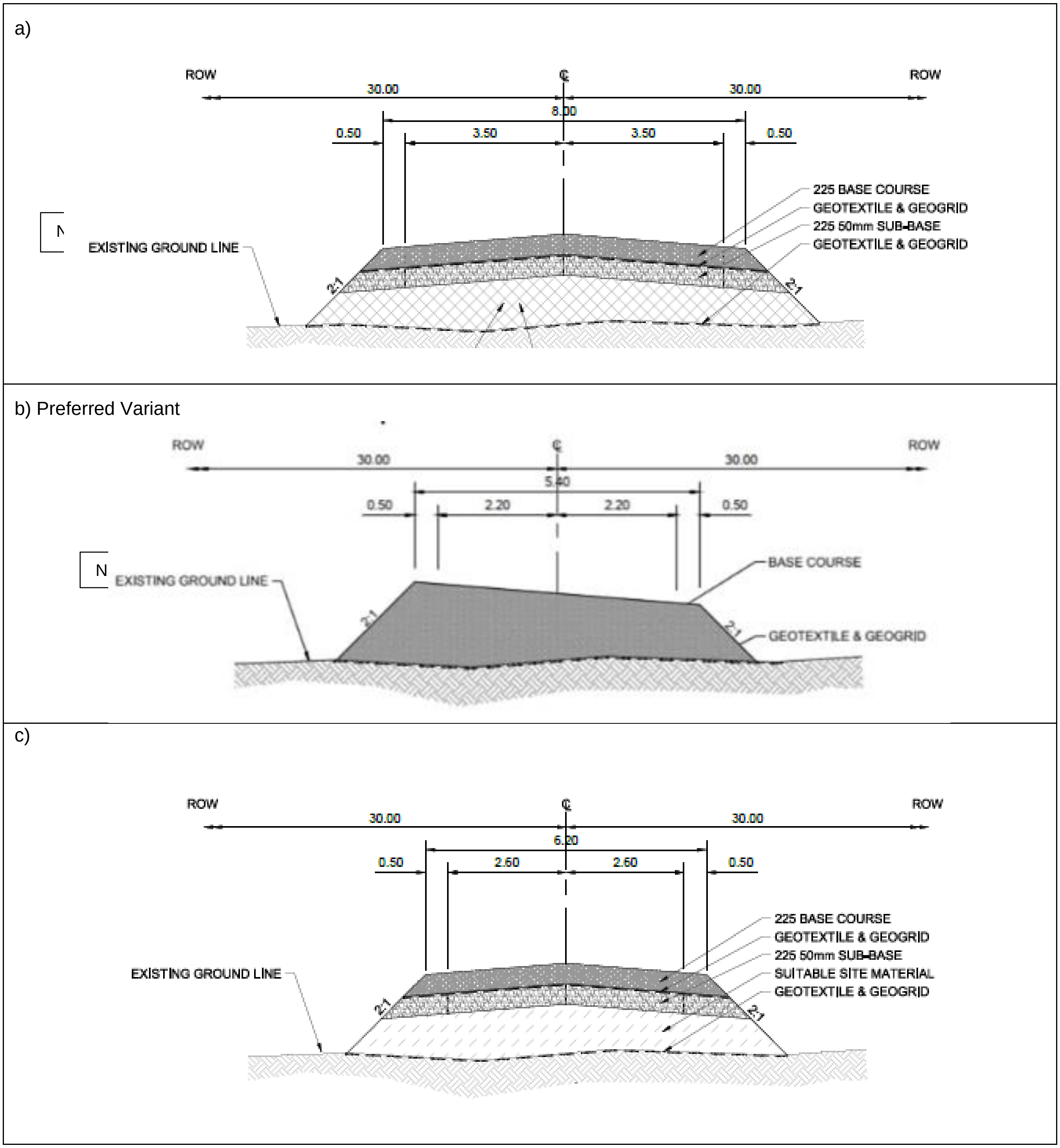


Figure 9-1: Typical sections of the access road a) one-lane seasonal (8 m section) b) one-lane two-way temporary gravel road (5.4 m width); c) winter road (6.2 m section). The road design will evolve during the project feasibility study

9.3.2 Operation and Maintenance

Overall, three main types of cargo will be shipped to and/or from Torngat Metals's operations: ore concentrate in superbags and containers, fuel and raw materials/general cargo mainly in containers. The latter would include incoming supplies such as food, chemicals used in the flotation process and in the water treatment, consumables used for machinery and facility maintenance, material, equipment and outgoing waste, other excess materials and any equipment no longer in use.

The ore concentrate will never be transported in bulk. The transportation will be carried out in accordance with the requirements of the *Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)*.

Trucking of ore concentrate from the mine site will involve transportation of mining material placed into superbags, and superbags will be loaded into maritime containers having a 30 tonnes capacity. Although mining activities would occur from 9 to 12 months annually, the road and transportation of mining material would rather be seasonal, for an estimated period of 8 to 9 months outside of the warmer months (approximately June to August).

Preliminary estimates of ore concentrate trucking capacities and flows, subject to validation during the pre-feasibility and feasibility studies, are as follows:

- Trucking capacity: 90 tonnes/truckload
- Truck loads per day: between 12 and 24 roundtrips
- Truck loads per year: between 1667 and 3333 roundtrips

Raw materials and general cargo, also packed into maritime containers, will be sent from the Port to the mine in general by the same trucks (roundtrip). Fuel will be transported by tanker trucks from the Port to the mine.

Truck operations and road maintenance will be done either by Torngat Metals directly or contracted to a local Indigenous owned business. Road maintenance would include grading, resurfacing and plowing-scarifying-sanding.

Torngat Metals aims to construct a private single-user mine access road with a minimal footprint while maintaining safe operations. Torngat Metals is open to consider future modifications to the design of this road, for instance if other users are interested in using the road. **However, any modifications to this effect are not included in the present project.**

9.4 Container storage and handling facilities at Vale's Port and transportation of the concentrate to Sept-Îles

During operations, the containers of ore concentrate will be shipped by trucks along the seasonal road corridor from the mine to the Vale's Port in Anaktalak Bay on the Labrador coast and then by boat to a rare earth processing and high purity separation plant that will be located in Sept-Îles.

As mentioned in the previous section, three main types of cargo will be shipped to and/or from Torngat Metals's operations and will transit at Vale's Port and at the new container storage and handling facilities : ore concentrate in superbags and containers, fuel and raw materials/general cargo mainly in containers. The latter would include incoming supplies such as food, chemicals used in the flotation process and in the water treatment, consumables used for machinery and facility maintenance, material, equipment and outgoing waste, other excess materials and any equipment no longer in use.

The ore concentrate will never be transported in bulk. The transportation will be carried out in accordance with the requirements of the *Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)*.

9.4.1 Container Storage and Handling Facilities at Vale's Port

Torngat Metals is in discussion with Vale to sign an agreement for the use of its port facilities (Appendix B). Since an agreement is not yet in place at the time of issuing the present document, this description is based on assumptions. Torngat Metals would lease space from the Port owner, and would include in the agreement all infrastructure upgrades and services required. Torngat Metals would fully comply with existing Indigenous agreements in force in relation with this Port.

The infrastructure upgrades at the Port would include:

- Container storage area
- Container crane
- Other storage facilities (to be confirmed by the feasibility study and the agreement with the owner): fuel storage tank with spill containment, warehouse
- No work will be done in or near the water, and no terminal expansion or modification is required

Port operations will be contracted either directly by Torngat Metals, or Port owner, or to local Indigenous owned businesses.

9.4.2 Transportation by ships

The current estimate of the number of shipments by boat from Vale's Port to Sept-Îles Port is the following:

- 5 to 10 shipments per year, during the summer period (no ice cover in the bay, approximately June to October);
- 30 kt payload per shipment (approximately 1,000 containers per shipment).

The increase on maritime transportation will be considered in the cumulative effects of the project.

The potential shipping route is illustrated on Map 9-1. The transit time between both Ports would be 11-12 days.

9.5 Rare Earth Processing and High Purity Separation Plant

Torngat Metals plans to set up a high purity rare earth processing and separation plant to receive and process the ore concentrate produced at the mining site. This process plant will be sized and optimized for the feed that will be extracted from the B-Zone of Strange Lake. The maximum daily capacity of this process plant would be between 1,000 tonnes of ore concentrate per day and up to 350,000 tonnes of ore concentrate per year. It would produce between 2,800 and 5,500 tonnes of separated rare earth oxides (REO) per year, as well as 14,000 tonnes of mixed rare earth oxides per year. However, these capacities are preliminary at this stage and will be determined by the pre-feasibility and feasibility studies to be carried out for this facility.

The new process plant would be built in the "Parc industriel ouest – Jonction Arnaud" of the Sept-Îles industrial port facility (QC). In terms of Port infrastructures, there are two Port areas potentially available for Torngat Metals' shipping needs, which are Pointe-aux-Basques (east of the bay) and Pointe-Noire (west of the bay). Both can be used for freight and are linked to the Jonction-Arnaud industrial park by rail. At this stage, the preferred option would be to use Pointe-Noire gateway and transport the closed containers of ore concentrate to the plant by using the existing SFPPN rail (see Map 9-3).

Torngat Metals will negotiate contracts with Sept-Îles Port authorities and the operator of the rail which will manage operations and make the necessary adjustments to their installations, if required.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composantes du projet / Project components

Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant

Chemin de fer / Railroad

Iron Ore Company of Canada

Société ferroviaire et portuaire de Pointe-Noire SEC

Autre / Other

Zone industralio-portuaire de Sept-Îles / Sept-îles industrial port area

Route principale / Primary road

Limite municipale / Municipal boundaries

Aire de concentration d'oiseaux aquatiques / Waterfowl concentration area

PRÉLIMINAIRE / PRELIMINARY

1:90 000

0 1 2 km

NAD 1983 UTM Zone 20N

Date : 2023-08-25 08:24

Source:
Données topographiques / Topographic Data: NRCan (2022)
Chemin de fer / Railroad: MRNF (2023)
Limite municipale / Municipal boundaries: MRNF (2023)
Aire protégée / Protected area: MELCCFP (2023)
Zone industralio-portuaire de Sept-Îles / Sept-îles industrial port area: Gouvernement du Québec (2018)

Carte 9-3
Composantes de projet à Sept-Îles

Map 9-3
Project components in Sept-Îles

AECOM

The process plant will include the following general areas / infrastructures:

- Siding rail and freight unloading facility
- Storage area (inside a building)
- Acid Baking area
- Water Leaching area
- Rare Earth Separation area
- Residue filtration/thickening
- Effluent Treatment Plant
- Residue Storage Facility
- Administration, workshops, warehouse, electrical substation
- Parking and landscaping

At this stage, it assumed that:

- The residue storage area will be located on the same site as the plant, on the eastern side.
- The final treated effluent will be discharged to the St-Lawrence River through a dedicated pipe and outlet.

However, different options will be evaluated and compared as part of the prefeasibility and feasibility studies and in the context of the impact assessment.

The figure 9.2 presents the general layout of the plant site. The processes are described later in section 10.3.

The residues from the process plant will be permanently stored in a dry stockpile. The total surface area required for the process plant residue storage is preliminarily estimated at 438 375 m^2. In order to minimize the potential environmental impact, and subject to the approval of the authorities, the residues will be thickened, filtered and mixed with a cementing agent before being deposited in the residuals management area. Generally, cemented backfill are inert, however, seepage and kinetic studies will be performed in order to determine the percentage of cement to be used, the potential for long-term metal leaching and the potential source terms to be added in the water quality model. Additional geochemical and geotechnical studies will be conducted in order to inform the design of the mine residue stockpile area and the retention basin that will be used for sedimentation and/or retention for associated water treatment. The environmental design to ensure groundwater protection and wastewater treatment will be developed based on *in-situ* conditions and Québec's Directive 019 (MDDEP, 2012).

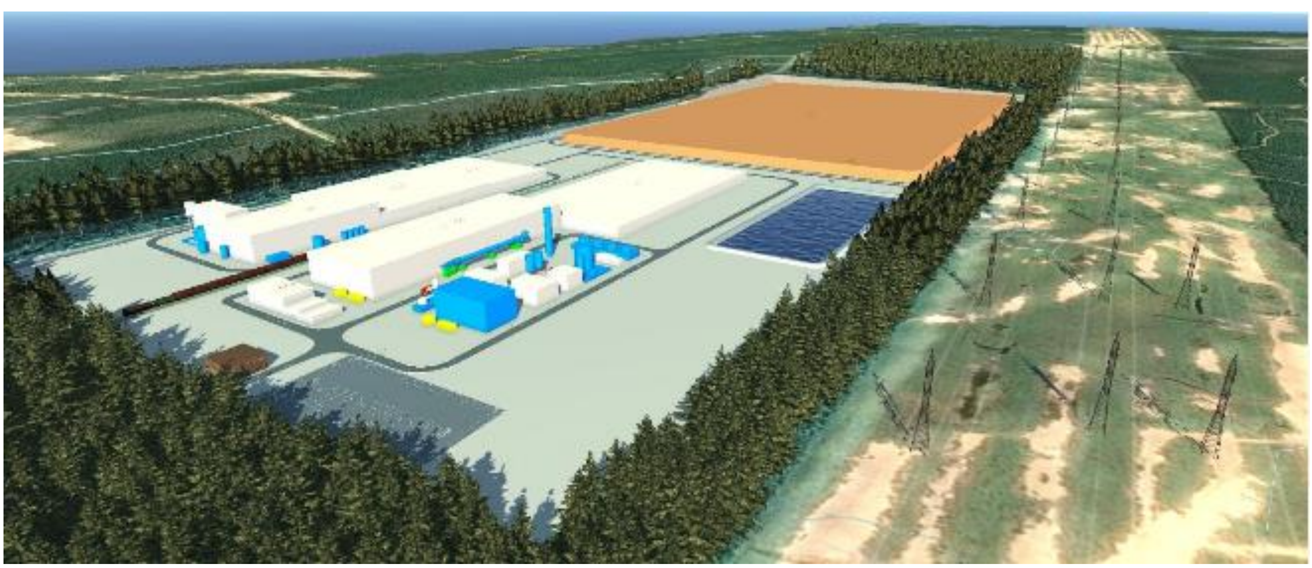


Figure 9-2 : Overview of the process plant site and of the residue storage area

9.6 Third Parties Activities

Renewable energy production at the mine site will be the responsibility of third parties.

9.6.1 Renewable energy production at Mine Site

In order to diminish the dependence to diesel and reduce the carbon footprint of the project, wind turbines, or in combination with other renewable energy, might be constructed at the Mine Site. A study will have to be conducted to determine the feasibility.

As mentioned previously in the description of the project components at the mine site, power requirements at the mine site are estimated to be between 5 and 10 MW for all operations including the needs at the beneficiation plant. Torngat Metals will build and operate an onsite power plant based on diesel generators. However, Torngat Metals aims to use as much renewable as possible to reduce diesel consumption. Torngat Metals will contract out the development of a wind turbine(s) including design, permitting, procurement, installation, and maintenance. Torngat Metals plans to seek bids from Indigenous owned businesses and companies committed to Indigenous hiring and procurement.

Torngat Metals is also evaluating the option of contracting out the construction and operation of a micro-grid, with the contract specifications to include as much renewables as possible, initially, as well as a requirement for upgrades over time as renewable technologies evolve.

9.7 Health, Safety and Environmental Management Policy

Torngat Metals is committed to ensuring the health and safety of all personnel, contractors, suppliers and the communities and environment within which they operate. As part of their Health, Safety and Environmental Management initiatives, Torngat Metals will fulfil all statutory HSE requirements, including employer “duty of care” obligations Torngat Metals’ Health and Safety Policy relies on the individual commitment of each employee to ensure that safety standards are upheld at all times. All Torngat Metals personnel, subcontractors and suppliers must adhere to the following guidelines:

9.7.1 Site-Specific Training Requirements

Torngat Metals will develop and implement educational and training tools to ensure all administrative and operational personnel have the appropriate knowledge and training to adhere to their HSE policies. Torngat Metals will:

- Develop site-specific training programs tailored to the conditions and risks of each location.
- Ensure that all personnel, subcontractors, and suppliers receive training relevant to their roles and responsibilities.
- Regularly update training modules to incorporate new information and best practices.

9.7.2 Emergency Spill Response

In the event of an accidental release within the environment on any of Torngat Metal’s sites, personnel will:

- Maintain a detailed spill response plan outlining containment, cleanup, and reporting procedures.
- Conduct regular spill response drills to ensure readiness and familiarity with protocols.
- Utilize advanced spill prevention technologies and practices to minimize the likelihood of spills.

9.7.3 Incident Response Protocols

In the event of any incident, our priority is to swiftly respond, mitigate impacts, and safeguard personnel. Our approach includes:

- Clear communication lines to promptly report incidents and activate response teams.
- Trained emergency response teams equipped with appropriate equipment and resources.
- Regular review and enhancement of incident response procedures based on lessons learned.

9.7.4 Evacuation Procedures

Safety is paramount, and our evacuation procedures are designed to protect everyone involved. We will:

- Establish evacuation routes and assembly points, regularly communicated to all personnel.
- Conduct evacuation drills to ensure familiarity with procedures and safe assembly.
- Collaborate with local authorities to ensure coordinated and effective evacuation efforts.

9.7.5 Risk Management Practices

To proactively address potential risks, our risk management practices encompass:

- Comprehensive risk assessments conducted before commencing operations and regularly thereafter.
- Implementation of engineering controls, administrative measures, and personal protective equipment to mitigate identified risks.
- Continuous monitoring and review of risks, with adjustments made to procedures and protocols as needed.

9.7.6 Safety Commitments towards Employees and Community Members

Our commitment to safety extends beyond our workforce to the communities we engage with. We pledge to:

- Provide comprehensive health and safety training to employees, contractors, and community members.
- Collaborate with local communities to develop culturally sensitive safety programs and initiatives.
- Regularly engage with community members to address concerns and improve safety measures.

9.7.7 Regulatory Compliance

We are committed to upholding all relevant laws, regulations, and standards governing health, safety, and environmental protection. Our efforts include:

- Regular audits to ensure compliance with local, regional, and national regulations.
- Continuous training to keep our workforce informed about evolving regulatory requirements.
- Collaboration with regulatory authorities to maintain open communication and ensure mutual understanding.

We understand that the success of our operations depends on a healthy and safe environment. This policy is an ongoing effort, subject to continuous review and improvement to ensure the highest standards of health, safety, regulatory compliance, and site-specific training. By adhering to these principles and working together, we can create a safer and more sustainable future for all.

9.8 Employment and Workforce

9.8.1 Construction

Upon the prefeasibility and feasibility studies, detailed engineering design will be more precise and workforce required for construction established. Thus, workforce will be presented in the EA, based on the National Occupational Classification (NOC, 2021). Torngat will hire an EPC Contractor to oversee all construction, including the mine site, the road and the plant site. Therefore, a precise estimate of the workforce is not available at the present time. For now, Table 9-3 outlines the estimated workforce by occupational classification groups and duration. Table 9-4 details the estimated contract labor force for civil, structural steel, mechanical and platework, piping, electrical, instrumentation and control, with a likely peak of 1000 workers.

Table 9-3 : Estimated workforce during the construction (number per occupation classification and duration)

Estimated Torngat During Construction	Peak	Duration
	nr.	mths.
Construction Environmental Monitoring	4	24
Construction Manangement	2	25
Health and Safety	8	25
Civil Engineering	4	25
Structural Steel	6	15
Mechanical and Platework	6	15
Piping	6	13
Electrical, Instrumentation and Control	6	13

Table 9-4 : Estimated contract labour for the construction (peak number, duration)

Estimated Construction (Contract Labour) Force	Peak	Duration
	nr.	mths.
Civil	150	24
Structural Steel	250	14
Mechanical and Platework	300	14
Piping	450	12
Electrical, Instrumentation and Control	400	12
Likely Peak	**1000**	

9.8.2 Operations

During the operation phase, it is estimated that the total workforce will be from 401 workers considering full-time and part-time positions. Table 9-5 details the departments, the positions, and number of people required.

It will be divided as follows:

- 127 workers in the North for the mine site, including road, supply chain and assay lab;
- 261 workers in Sept-Îles at the process plant;
- 35 workers for corporate.

The total annual wages and benefits costs for the total workforce is estimated to be $93,700,000 or an average annual income of $161,000.

9.8.3 Equity, Diversity and Inclusion

Torngat Metals understands the importance of having a diverse, equitable, and inclusive workforce that is better able to respond to challenges, attract top talent, and accomplish the Company's business goals, by benefiting from diverse backgrounds and experiences. Torngat Metals is committed to creating a working environment that provides all employees, particularly groups that have been historically underrepresented, with the opportunity to achieve their personal career goals in a fair and just manner, while fostering a culture of belonging and integration. These groups include, but are not limited to, Indigenous peoples, women, persons with disabilities, and visible minorities.

Table 9-5 : Workforce during the operations for all department and project components (mine, road, process plant)

Department	Position	# of People Required	Full-time Positions	Part-time Positions	Equivalent Full-time
CORPORATE	Chief Executive Officer	1	1	0	1
	Chief Financial Officer	1	1	0	1
	Chief Marketing Officer	1	1	0	1
	VP Environment	1	1	0	1
	VP Human Resources	1	1	0	1
	VP Finance	1	1	0	1
	VP Community Engagements & Partnerships	1	1	0	1
	VP Project Management	1	1	0	1
	VP Sales & Marketing	1	1	0	1
	VP Process Plant	1	1	0	1
	VP Mining	1	1	0	1
	HR Generalist	1	1	0	1
	HR Specialist	1	1	0	1
	Bilingual Recruiter	1	1	0	1
	Director of Corporate Accounting	1	1	0	1
	Corporate Accountant	1	1	0	1
	Manager Financial Reporting & Analysis	1	1	0	1
	Payroll Manager	1	1	0	1
	Accounts Payable Clerk	2	2	0	2
	Office Manager & Executive Assistant	1	1	0	1
	IT support	2	2	0	2
	Environment Staff	1	1	0	1
	Fire Captain (Mill)	1	1	0	1
	HS & E General Foreman	1	1	0	1
	Safety Advisors	1	1	0	1
	Elder	1	1	0	1
	Security Officer	3	3	0	3
	Social Worker	1	1	0	1
	Safety Controller	1	1	0	1
	Paramedic	2	2	0	2
MINE	Apprentice	1	1	0	1
	Blaster	1	1	0	1
	Blaster Assistant	1	1	0	1
	Drill Operators	1	1	0	1
	Environment Monitors (Mine & Port)	1	1	0	1
	Environmental Engineer	1	1	0	1
	Fire Captain (Mine & Port)	1	1	0	1
	General Labourer	1	1	0	1
	Grade Control Technicians	1	1	0	1
	Haul Truck Drivers	1	1	0	1
	Heavy Equipment Mechanics	1	1	0	1
	Helpers (Water Supply) – Mine	1	1	0	1
	Incinerator / Landfill Operator	1	1	0	1
	Inspectors / Radiation Techs (Mine & Port)	1	1	0	1

Table 9-5: Workforce during the operations for all department and project components (mine, road, process plant) (Cont'd)

Department	Position	# of People Required	Full-time Positions	Part-time Positions	Equivalent Full-time
MINE (cont'd)	Light Equipment Mechanics	1	1	0	1
	Loading Operators	1	1	0	1
	Lubeman	1	1	0	1
	Maintenance Foreman (Mine)	1	1	0	1
	Mine Engineer	1	1	0	1
	Mine Geologist	1	1	0	1
	Mine Operations General Foreman	1	1	0	1
	Mine Trainer	1	1	0	1
	Paramedics (Mine)	1	1	0	1
	Pipefitter (Water Supply) - Mine	1	1	0	1
	Potable Operator	1	1	0	1
	Security Officer (Mine)	1	1	0	1
	Senior Geologist	1	1	0	1
	Senior Mine Engineer	1	1	0	1
	Sewage Operator	1	1	0	1
	Support Operators	1	1	0	1
	Surveyors	1	1	0	1
	Tireman	1	1	0	1
	Warehouse Attendant	1	1	0	1
	Water Supply - Senior Technologist (Mine)	1	1	0	1
	Water Treatment Operator	1	1	0	1
ROAD	Road Truckers	14	14	0	14
	Bus Driver / Ambulance Driver	2	2	0	2
	Airport Lead / Freight and Passenger	2	2	0	2
	Airport Technician / Signal	2	2	0	2
	Forklift Operator / Inventory Technician	2	2	0	2
	Helpers – Transportation	2	2	0	2
	Truck Trainers	1	1	0	1
	Clerks	2	2	0	2
ROAD MAINTENANCE	Grade Operator	1.5	1	0.5	1.5
	Snow Plough Operator	1.5	1	0.5	1.5
	Yard Loader	1.5	1	0.5	1.5
	Snow Blower / Excavator / Soil operator	1.5	1	0.5	1.5
	Helpers	4	4	0	4
	Road Safety Drivers	2	2	0	2
	Transportation & Airport Foreman	2	2	0	2
	Road Maintenance Foreman	2	2	0	2
	Mine Camp Foreman	2	2	0	2
	Planner / Dispatcher / Inventory	2	2	0	2
	Clerks	2	2	0	2
	Attendant Generator / Conveyor	3	3	0	3
	Attendant Tank Farm	3	3	0	3

Table 9-5: Workforce during the operations for all department and project components (mine, road, process plant) (Cont'd)

Department	Position		# of People Required	Full-time Positions	Part-time Positions	Equivalent Full-time
SUPPLY CHAIN	General Foreman		1	1	0	1
	Transload Supervisor - Port		1	1	0	1
	Transload Supervisor – Mills		1	1	0	1
	Forklift Drivers		2	2	0	2
	Clerks		1	1	0	1
	IT Manager		1	1	0	1
	IT Assistant		1	1	0	1
	Planner / Dispatcher – Port		1	1	0	1
	Procurement Manager		1	1	0	1
	Inventory Lead		1	1	0	1
ASSAY LAB	Head of Laboratory		1	1	0	1
	Clerks		1	1	0	1
	Sulphation Chemists		8	8	0	8
	Hydromet / Effluent Chemists		8	8	0	8
	Separation Chemists		6	6	0	6
	ICP (MS) Specialists		4	4	0	4
BENEFICIATION	CRUSHER	FEL Operator	4.16	4	0.16	4.16
		Crusher Operator	4.16	4	0.16	4.16
	XRAY SORTING	Operator	4.16	4	0.16	4.16
	SECONDARY CRUSHING / WET MILLING / GRINGING – 1ST STAGE	Grinding Mill Operator	4.16	4	0.16	4.16
		Milling FEL Operator	4.16	4	0.16	4.16
		Crane Operator	1	1	0	1
		Plant Technician	1	1	0	1
	MAGNETIC SEPARATION	Operator	4.16	4	0.16	4.16
	WET MILLING – 2nd STAGE	Operator	4.16	4	0.16	4.16
	FLOATATION / CONCENTRATION	Operator	8.32	8	0.32	8.32
		Maintenance	4.16	4	0.16	4.16
	THICKENING & FILTRATION	Filtration Operators	4.16	4	0.16	4.16
	MAINTENANCE LABOUR	Maintenance Foreman	1	1	0	1
		Millwright	4.16	4	0.16	4.16
		Carpenter	4.16	4	0.16	4.16
		Pipefitter	4.16	4	0.16	4.16
		Welder Piping	4.16	4	0.16	4.16
		Electrician	4.16	4	0.16	4.16
		Technician Instrumentation	4.16	4	0.16	4.16

Table 9-5: Workforce during the operations for all department and project components (mine, road, process plant) (Cont'd)

Department	Position		# of People Required	Full-time Positions	Part-time Positions	Equivalent Full-time
SULPHATION	MANPOWER - OPERATIONS	Head of Sulphation	1	1	0	1
		Metallurgist Engineer	1	1	0	1
		Technology Engineer	1	1	0	1
		Chief Foreman	1	1	0	1
		Mill Trainer	4	4	0	4
		Mill Foreman	4	4	0	4
		Mixing Section Operators	8	8	0	8
		FB Section Operators	8	8	0	8
		Leaching / Filtration Operators	8	8	0	8
		Relief Operators	8	8	0	8
		Control Room Operators	4	4	0	4
		Process Control Technologist	4	4	0	4
		Transport & Logistics	8	8	0	8
		Sampler	4	4	0	4
	MANPOWER – MAINTENANCE	Head of Maintenance	1	1	0	1
		Maintenance Planner	1	1	0	1
		Data Entry Clerk	1	1	0	1
		Maintenance Foreman	1	1	0	1
		First Line Maintenance	8	8	0	8
		Millwright	2	2	0	2
		Carpenter	2	2	0	2
		Pipefitter	2	2	0	2
		Welders	2	2	0	2
		Brick Layers	2	2	0	2
		Electricians	2	2	0	2
		Technician Instrumentation	2	2	0	2
		Process Control	2	2	0	2
HYDROMET & SEPARATION	MANPOWER - OPERATIONS	Head of Hydromet & Separation	1	1	0	1
		Metallurgist Engineer	1	1	0	1
		Technology Engineer	1	1	0	1
		Chief Foreman	1	1	0	1
		Operators	4	4	0	4
		Hydromet Operators	12	12	0	12
		Thickening / Filtration Operators	8	8	0	8
		Calcining Operators	8	8	0	8
		Relief Operators	12	12	0	12
		Control Room Operators	4	4	0	4
		Transport & Logistics	12	12	0	12
		Samplers	4	4	0	4

Table 9-5: Workforce during the operations for all department and project components (mine, road, process plant) (Cont'd)

Department	Position		# of People Required	Full-time Positions	Part-time Positions	Equivalent Full-time
HYDROMET & SEPARATION	MANPOWER – MAINTENANCE	Maintenance Superintendent	1	1	0	1
		Maintenance Planner	1	1	0	1
		Data Entry Clerk	1	1	0	1
		Maintenance Foreman	1	1	0	1
		First Line Maintenance	8	8	0	8
		Millwright	2	2	0	2
		Carpenter	2	2	0	2
		Pipefitter	4	4	0	4
		Welders	2	2	0	2
		Maintenance Filters	2	2	0	2
		Electricians	2	2	0	2
		Technician Instrumentation	2	2	0	2
		Process Control	2	2	0	2
TOTAL			**401.04**	**396.32**	**4.72**	**401.04**

10 Production Process and Capacity

10.1 Operation of the Mine

The total amount of material mined over 30 years is estimated at 160,000,000 – 200,000,000 tonnes (dry basis). The quantity of material extracted annually will be of the order of 9 - 13 million metric tonnes. Mining will be carried out over periods that may vary from 9 to 12 months per year, depending on the year. The amount of material mined annually could vary significantly, however, as the mining strategy is to mine as much ore as possible in the first 18 years, in order to first process the ore containing a higher concentration of the desired elements (high-grade ore), and to stockpile the lower-grade ore for further processing in the remaining 12 years. Thus, it is currently planned that substantially all of the material will be mined during the first 18 years of mine operation, at a rate of 9.0 to 13.0 million metric tonnes per year.

The maximum quantity of material mined per day at any time over 30 years of operation is 55,000 tonnes per day.

10.2 Ore concentration process (Beneficiation plant)

The beneficiation plant would be fed with high grade ore for the first 18 years at a rate of between 2.5 and 3.0 million tonnes per year. For the remaining 12 years, the mill would be fed with lower grade stockpiled ore at a rate of 5.0 to 7.0 million tonnes per year. The separation processes that will be used in the beneficiation plant are currently being optimized. Although process variants are still under review and could significantly alter the exact sequence of operations, the beneficiation processes will include the following main steps:

- Primary crushing (dry process): the ore extracted from the mine pit containing gangue (waste rock) and recoverable minerals is first separated from the run-of-mine before being transported to the concentrator to be crushed and calibrated. This process essentially produces two fractions: a coarser fraction in the form of rocks about 30 mm in diameter and finer fraction less than 10 mm.
- X-ray sorting (dry process): the coarse fraction is routed to an X-ray scanner which allows the rocks to be separated according to their atomic density. This step makes it possible to retain the rocks containing sufficient ore and to remove the waste rocks (gangue), essentially made up of quartz.
- Fine grinding (in a wet environment): the fines from the primary crushing process and the rocks selected by the X-ray scanner are brought together to be subjected to a fine grinding (up to around 200 µm) carried out in a wet environment to avoid airborne emissions of fine particles.
- Magnetic separation (wet): the ore particles are then mixed with water and transported to a tank where a magnetically charged drum is used to successively separate a ferromagnetic fraction (essentially iron oxides), a diamagnetic fraction (magnetism in opposed direction like quartz and other gangue elements), and ultimately an intermediate fraction (paramagnetic) containing the bulk of the rare earths.
- Final grinding and flotation: after a very fine final grinding, which enables to free the valuable elements from their gangue in order to better separate them, the resulting slurry is pumped into tanks called flotation cells. The process consists in selectively floating the finely ground ore suspended in water by means of a foam formed by air injection. The selectivity is ensured by the precise dosing of reagents under very specific conditions. The flotation is carried out in a long series of successive operations before producing the final concentrated ore.
- Decanting and filtration: the fraction containing the final concentrate is decanted and filtered before being stored for shipping.

The dry residues from the first separation steps (primary crushing and X-ray sorting) are then stockpiled in the waste rock storage area; depending on their characteristics, some material from this first sorting could also be stockpiled separately for subsequent potential exploitation. The other fractions from the magnetic separation and flotation processes constitute the concentration processes residues; these residues, generated in a wet environment, are thickened and filtered before being transported to the mine residue stockpile area.

The water from the ore and residue decanting and filtration processes is treated, then reused in these same processes; this reuse in close circuit makes it possible to reduce the consumption of freshwater and the mine water discharge as much as possible.

The beneficiation plant will be designed to operate 12 months per year at a design production rate of 150,000 to 350,000 tonnes of concentrate annually (dry basis), over the 30 years of the project.

Under the current plan, the feed rate of crushed ore to the concentrator will vary to prioritize the most accessible high-grade ore. Thus, during the first 18 years of operation, the ore feed rate (mainly high grade) to the concentrator will average in the order of 2.5 to 3.0 million tonnes per year (dry basis). An expansion of the beneficiation plant will allow processing, during the 12 following years, approximately 6 million tonnes per year of medium/low-grade ore that has been stockpiled.

It is estimated that in its expanded version, the beneficiation plant will have the capacity to process up to 17,000 tonnes per day of crushed ore.

10.3 Rare Earth processing and high purity separation (Process plant)

As for the beneficiation plant, the processes that will be used in the rare earth processing and high purity separation plant are currently being optimized. Although process variants are still under review and could significantly alter the exact sequence of operations, the processes will include the following main steps:

- Acid baking (sulfation): the ore concentrate will be dried and then mixed with sulphuric acid, which heats up the mixture (exothermic reaction). The acid baking will then be carried out in a furnace. The surplus acid will be recovered and reused. Gas emissions will be treated with lime in a scrubber. In a second step, the sulfates produced by the acid baking will be processed at high temperature in a fluidized bed reactor, where the sulfates of the main elements of the gangue (other than the rare earth sulfates) will be decomposed in oxides, whereas the rare earth elements sulfates won’t be decomposed.
- Water leaching and rare earth separation: rare earth sulfates are separated and purified through a hydrometallurgical process that involves different stages of precipitations at different pH and temperature, as well as anion exchanges resins and dedicated solvent extraction steps. Two main hydrometallurgical options are being considered, one using chlorohydric acid, the other using nitric acid.

The characteristics of the water effluent will be highly dependent on the hydrometallurgical option selected, which will be done as part of the pre-feasibility study.

Under the current plan, the feed rate of concentrate ore to the process plant will vary between 150,000 to 350,000 depending on the rare earth concentration in the ore. It is estimated that the process plant will have the capacity to process up to 1,000 tonnes per day of concentrate ore.

10.4 Materials Handling

Table 10-1 presents an estimate of the quantities of materials that will be generated by the project (ore, concentrate, waste rock and concentration process residues. However, this operating scenario is subject to change based on pilot tests.

Over the project exploitation period, a maximum daily extraction capacity of 55,000 tonnes is estimated. The maximum mill feed at the beneficiation plant is estimated at 17,000 tonnes/day. The maximum feed at the process plant is estimated at 1,000 tonnes/day.

Table 10-1: Estimated quantities by type of material (30 years of operation) at the Mine and the Process Plant sites

Project Site Component	Mining material type	Annual average – Low estimate	Annual average- High estimate	Annual average – Low estimate	Annual average – High estimate	Maximum per day at any time over 30 years	Total over 30 years (Mine life)
		Years: 0 to 18		Years: 19 to 30			
Mine Site	Mined material (tonnes)	9,000,000	13,000,000	0	0	55,000	170,000,000
	Mill feed (beneficiation plant) (tonnes)	2,500,000	3,000,000	6,000,000	6,000,000	17,000	120,000,000
	Waste rocks from mining (tonnes)	500,000	1 000,000	0	0	4,200	10,000,000
	Low/medium grade ore (tonnes) (stockpiled for future use yr 19-30 as feed)	6,000,000	9,000,000	0	0	38,000	115,000,000
	Final Concentrate (tonnes)	150,000	200,000	300,000	350,000	1,000	6,000,000
	Concentrate % rare earth	10%	12%	8%	10%	n/a	n/a
	Mine residues (tonnes)	2,350,000	2,800,000	5,700,000	5,650,000	16,000	113,000,000
Process Plant (Sept-Îles)	Process plant feed (tonnes)	150,000	200,000	300,000	350,000	1,000	6,500,000
	Separated Rare Earth Oxides (tonnes)	2,800	3,200	5,000	5,500	16	115,000
	Residuals (tonnes)	147,200	196,800	295,000	344,500	980	7,000,000

10.5 Radionuclides

The radionuclides naturally found in the Strange Lake deposit are Thorium (Th-228, Th-230, Th-232) and Uranium (U-234, U-235, U-238). More precisely, natural thorium is practically exclusively Th-232, and a little amount of Th-230. Th-228 is a result of the disintegration of Th-232 in Ra-228 and Ra-228 in Th-228. All the descendants of Th-232 are emitting alpha and beta rays and some gamma rays. U-235 and U-238 are subject to complex disintegration chains (10 and 13 descendants of radionuclides) emitting alpha, beta, and gamma rays before reaching the stable forms of Lead-206 and 208.

However, these naturally occurring radioactive materials will not be modified at atomic level by either the concentration processes (beneficiation plant at mine site), the acid baking process or the hydrometallurgical process. Therefore, the natural radioactivity of these elements won't be modified by the processes. Because of their atomic characteristics, both Thorium (Th) and Uranium (U) will mostly follow the rare earth elements in the various processes. Based on a very preliminary mass balance, the various quantities and concentration of Uranium and Thorium that will be at each of the main processing steps are shown in the following table (Table 10-2). The ranges shown are based on the following:

- The highest Th and U concentrations/quantities shown are associated to the highest grade of ore, which will be mainly extracted during the first 5 years of mine operation (Y1 to Y5).
- The lowest Th and U concentrations/quantities shown are the average of the following years (Y6 – Y30)

At the process plant, all the radionuclides will be separated from the rare earth elements, which explain why the absolute quantities feed at the process plant will go into the residues.

In summary, the mining process is not affecting the radioactivity of those elements.

Table 10-2: Concentration and quantity of naturally occurring radionuclides at each processing steps

Step	Concentration ranges (ppm)		Quantity ranges (tonne/year)	
	Th	U	Th	U
Ore extracted	255 - 960	53 - 278	766 - 1025	159 - 297
Mine residue stockpile (concentration process residue – Mine site). Assumption: 20% cement is added	171 - 325	37 - 153	296 - 407	88 - 139
Ore concentrate transported from mine to process plant, in superbags and closed containers	1528 - 8010	280 - 1563	257 - 683	47 – 133
Process plant residue (Sept-Îles site). Assumption: 20% cement is added	1447 – 7583	265 - 1480	257 - 683	47 - 133

Concentration and quantity of naturally occurring radionuclides at each processing steps.

11 Project Schedule

Torngat Metals has developed a schedule outlining the duration and timing of key project phases including preparation, construction, operation, closure, and restoration, as well as environmental monitoring (post-operational, restoration phase) of the site. Following construction and start-up, the expected life of the mine is 30 years. No expansion is planned for the Torngat Metals project. Regular operations during this period will include maintenance, if necessary, replacement of certain original facilities.

The start dates for the construction phase have not been determined as of yet. However, they will be planned to minimize the project's environmental impacts. The start of the construction phase will also coincide with the reception of all the necessary authorizations, permits and funding.

A list of the main steps is provided below (Table 11-1).

Table 11-1: Strange Lake Project Milestones and Dates

Key milestone	Scheduled dates
Submission of the harmonized Initial Project Description and Registration document to IAAC, NG and NL	September and October 2023
Start of the final phase of the Pre-Feasibility Study	October 2024
Issuance of the Pre-Feasibility Study (PFS)	December 2024
Start of Feasibility Study (FS)	January 2025
Submission of the Environmental Impact Assessment report	May 2025
Feasibility Study completed	May 2025
Environmental Impact Assessment decision (IAAC)	2026
Development and construction phases	**2026-2027**
Detailed engineering, applications for certificates of authorization, obtaining certificates and construction work (in phases)	2026-2027
Beginning of mining operations and start of mining processing	End of 2027
Operational phase (30-year operation)	**2027-October 2057**
Closure and restoration phase	**2057-2062**
Active Closure: Restoration, re-vegetation and environmental monitoring ; Water Treatment in used until water quality has reached guidance	2057-2062
Passive Closure: periodical monitoring	2062-2072 (minimum duration)

12 Potential Alternatives

12.1 Alternatives for carrying out the project

Alternative designs have been considered for several components of the project and these have been and will be part of a comparative technical, environmental, social, and economic analysis process in order to select the best alternatives for the project. At the Mine Site, these components include the following:

- Mode of operation of the mine site.
- Mine and beneficiation plant capacity.
- Location of main camp, main infrastructure, and related infrastructure.
- Location (alignment) of the access road.
- Location of the airstrip.
- Location of final wastewater discharge point.
- Location of final discharge point for treated mine water.
- Method of supply and location of the drinking water withdrawal site.

Outside the mine site, alternatives have been considered regarding:

- Mode of transportation of the concentrated ore to the rare earth processing and high purity separation plant located outside the northern territory.
- Location of the rare earth processing and high purity separation plant outside of the northern territory

The main alternatives considered so far are described further below in sections 12.1.1 to 12.1.6.

Other alternatives would have to be studied and compared as part of the pre-feasibility and feasibility studies, and in the context of the impact assessment. The results of pilot tests on the process and the progressive development of more detailed engineering, as well as studies on the receiving environment (physical, biological, and social environments) will allow further optimization of the project for the needs of Torngat Metals, which could lead to the study of new variants. Within the framework of this optimization, the costs, the schedule, as well as the economic, technical, environmental, and social issues will be considered. Particularly at the environmental level, the GHG balance and the impact that climate change could have on the project are also considered in the comparative analysis of the variants.

For example, the following variants, and possibly other options, could therefore be considered for the optimization of the project:

- **Development phases:** During mine site preparation, a temporary winter road from the Labrador coast, or other means of transportation during the winter period (i.e., winter airstrip), will be evaluated to transport materials and heavy equipment to site prior to the start of construction.
- **Construction phase:** For buildings and equipment, options based on the use of modules, containers or prefabricated sections will be considered given the constraints associated with climatic conditions and restrictions related to available modes of transport.
- **Operational mining phase (30-year operation):** Alternatives to the mining plan could be developed and analyzed as part of the feasibility study. Similarly, since the ore concentration processes on the mine site is currently being optimized, this work could lead to the development of new variants.
- **Closure and restoration:** The current closure concept is based on the premise that the site will need to be returned to the pre-project conditions, i.e., as a wildlife habitat allowing traditional activities (hunting, fishing, and gathering) to resume. Depending on the results of the consultations with the communities and government authorities, options related to the ultimate use of the territory could be considered, for example, leaving in place the airstrip or a portion of the roads that could be used for regional development purposes.

12.1.1 Description of the Deposit and of the Technological and Location Variants

The characteristics of Strange Lake B-Zone deposit allow for only one mining mode, open pit. Underground mining tunnels is not an option at Strange Lake due to the rare earth elements located close to the surface.

Major improvements have been made since the prefeasibility study carried out in 2015 to reduce the environmental footprint and optimize the profitability of the project during the operational phase. More concentrated ore layers have been located in the deposit and will therefore be subject to targeted mining.

12.1.2 Ore processing/concentration plant (beneficiation plant) and related facilities

Various sites are studied for the location of the beneficiation plant. A selection study of potential sites will be conducted to choose the best location for it and its associated facilities in the vicinity of the mine. Map 9-2 presents a studied variant, where the plant and the workers' camp are located close enough to each other, so that it is possible to connect them by an enclosed walkway thus protecting the workers from the arctic cold.

The site selection will be based on economic, technical, environmental, social and health and safety criteria. In particular, the Indigenous communities concerned will be consulted to consider their knowledge of the territory and their concerns.

12.1.3 Mine Residue Stockpile

Several sites are being examined for the development of the mine residue stockpile area within a 10 km radius of the B-Zone deposit in which the mine pit will be located, as suggested by MDDEP's (2012) *Directive 019* on *the mining industry*. A large portion of this area was not selected for further examination due to topography, and the presence of water bodies and wetlands. The part of the area located in the province of Newfoundland and Labrador was also excluded. This is the eastern part of the zone (in Labrador, or in Québec near the provincial border). The north and west shores of Lake Brisson were not retained as options either.

Thus, five sites located south of the mine pit were delineated and examined in more detail. Table 9-1 presents the results of the preliminary comparative analysis of these sites. Option No. 1 appears to be the most appropriate site. This site is located within the Strange Lake alkaline complex, drilling has been carried out to confirm the absence of exploitable mineral resources under the proposed mine residue stockpile area. However, this site selection will have to be validated with the results of the consultations with the communities concerned, the pre-feasibility and feasibility studies, as well as the impact assessment.

Table 12-1: Potential site evaluation matrix - Mine residue stockpile area

MTAA Option nº	Mine residue management method	Results	Preliminary environmental justification	Other considerations (technical or legal)
1	Dry stacking of thickened residues	Preferred option	Site located in the same aquatic environment as site no. 4, but upstream from the latter	Within the Strange Lake alkaline complex containing REE mineralization, but drilling indicates that this area does not contain REE in economically exploitable concentration. Capacity probably sufficient for a 30-year period. The site can be significantly expanded, if necessary (to be confirmed by pre-feasibility and feasibility studies).
2	Dry stacking of thickened residues	Not retained for further consideration	Aquatic environment not well developed	Too far from B-Zone and too close to the Labrador-Québec border. Potential delays in the official determination of the interprovincial boundary for this site. Could be considered long-term for potential mine expansion. Partially outside the Strange Lake alkaline complex.
3	Dry stacking of thickened residues	Not retained for further consideration	Presence of ponds and streams with fish habitat	Unsuitable topography.
4	Deposition of residues in the form of slurry (pond)	Rejected	Presence of a small lake with presumed fish habitat, over an estimated area of 0.25 km^2	Better topography to install a dike that can contain slurry.
4A	Dry stacking of thickened residues	Second choice	Aquatic environment not well developed	Within the Strange Lake alkaline complex containing REE mineralization. Very close to the chosen option for the airstrip. Could be considered in the long term if option 1 proves insufficient or for the potential expansion of the mine.

12.1.4 Airstrip for fixed wing airplanes

A total of seven potential locations have been identified for the airstrip, also within a 10 km radius of the mine pit. Only two options were retained after a more in-depth examination of the topography, drainage conditions, limitations related to surface obstacles, prevailing winds, and other environmental constraints (proximity to observed habitats of harlequin ducks, caribou, etc.), the distance of the facilities from the mine site and the alignment of the road. These options, both located in the southern part of the 10 km radius, were compared with each other in a preliminary manner, according to technical and environmental criteria. Subject to validation during future consultations and studies, the preferred site (Map 2-1) appears to be the best option based on the following criteria:

- Prevailing winds – highest percentage of favourable prevailing winds.
- Environmental analysis – less potential impact on ecological systems and water resources.

12.1.5 Road Corridor Alignment

For the Road access related to the Mine Sitemany variants have been studied. One included passing the access road in the Québec province towards Schefferville. That was rejected as it would imply a major bridge and many impacts directly in the George River watershed Caribou herd protected area. Another variant studied was along a similar path through Labrador, but as a permanent road. It was wider and needed an entire port facility in Edward's Cove. This alignment would have created a new study area and necessitate marine wildlife, including marine mammals studies. The current road alignment seeks to reduce environmental effects by only operating seasonally and the design will be a narrower road that would connect to the existing road from Vale in the eastern end. The current design of the alignment will be slightly revisited on sections where sensitive habitats are reported in order to account for current land use mapping, the potential permafrost areas, and to minimise wetlands passing. Road drainage engineering will also,include the analysis of spring melt flows, seasonal features, associated erosion risk and a complete study of the permanent water crossings. In addition, a better mining plan will reduce the amount of material transported along the road corridor by truck by an estimated 10 fold. Access to the Project web platform was granted to stakeholders and partners in order to share an interactive map of the Project with all constraints and sensitive elements including land use).

12.1.6 Transportation by hybrid airships

An alternate form of transport to/from the mine site has been considered by Torngat Metals, which is the hybrid airship technology. Torngat Metals is following closely the final stages of development of this technology and considers the possibility to ship the containers of ore concentrate by cargo airship when this technology becomes commercially available and authorized. However, as this technology is not yet available and its development is not under Torngat Metals control, it has been decided not to include this option in the Project. Should the technology become available and if its promoter has obtained all the necessary authorizations, Torngat Metals will take the necessary steps to evaluate this transport option, make sure all compliance requirements would be met and, if deemed appropriate, negotiate with the supplier(s) involved.

12.2 Project Alternatives

There is no alternative or economically viable alternative to developing a mine site in order to extract the Strange Lake rare earth deposit. The Strange Lake project is the only feasible alternative to extract the rare earth minerals resources of this deposit.

PART C – LOCATION INFORMATION AND CONTEXT

13 Project Location

Appendix E outlines 37 sheets of the project components, at a scale of 1:12 500, from the Mine Site.

13.1 Geographical Coordinates

Mine site:

The Torngat Metals Strange Lake property is covered by maps from the National Topographic system map sheets (NTS: 24A08, 24A09, and 14D05). The project is located at the following geographical coordinates (decimal degrees, NAD83):

- B-Zone Deposit centroid: Latitude: 56.323 N; Longitude: - 64.166 W

Seasonal access road:

- Start of the access road in Québec: Latitude: 56.332 N; Longitude: - 64.125 W
- End of the access road in Eastern Labrador: Latitude: 56.353 N; Longitude: - 62.095 W

At the Québec-Labrador border, the Road corridor correspond to 18+000 kilometric point, at coordinates 56,270274 N; -64,089263 W. The total alignment of the Road corridor is approximately 162 km long, and ends in the vicinity of the Anaktalak Bay on the eastern coast of Labrador near Nain.

Optimisation of the Road corridor is still underway and is expected to be completed by Q3 2024. Currently, there are a total of 287 water crossings: 13 out of the 287 being in Québec (4,5%), and 274 being in Labrador (95,5%). From these, the current alignment would require the construction of three main water crossings at the following geographical coordinates:

1. Main Water Crossing #1 (#WC 116): 29 m span bridge at 56° 10' 50.70" North 63° 28' 55.32" West
2. Main Water Crossing #2 (#WC 177): 16 m span arch culvert at 56° 20' 19.99" North 62° 59' 25.46" West
3. Main Water Crossing #3 (#WC 555): 16 m span arch culvert at 56° 21 ’16.63’’ North 62° 06’ 14.93" West

Container storage and handling facilities at Vale’s Port (Edward’s Cove):

The new container storage and handling facilities would be built in Edward’s Cove (Anaktalak Bay), near the existing Vale’s Port, in Labrador. The exact location is still to be determined in collaboration with Vale.

Rare earth processing and high purity separation plant (“Process Plant”) :

The new process plant will be built in the “Parc industriel ouest – Jonction Arnaud” of the Sept-Îles industrial port facility, on the north shore of the St-Lawrence River in the province of Quebec, at the following geographical coordinates (decimal degrees, NAD83):

- Process plant site centroid: Latitude: 50.292 N; Longitude: - 66.385 W

13.2 Site Map

Strange Lake Rare Earth Mining Project main components are shown on maps provided at section 9 (Maps 9-1, 9-2 and 9-3). The communities nearest to the Project area are presented on Maps 3-2 and 3-3. At section 14 the watersheds, the land regions and districts as well as the caribou protected areas are presented Maps 14-1, 14-2, 14-3 and 14-4. Below, Maps 13-1 and 13-2 present the mining claims and the bedrock geology respectively.

13.2.1 Study areas

In order to carry out the different surveys and evaluate the project's impact on the different Valued Ecosystem Components, three study areas have been elaborated for the northern components as well as the Sept-Îles components.

The project study area consists of a 200 m buffer zone around different components. For the northern components (mine site, road corridor, and container storage and handling facilities), the 200 meter buffer zone was established from the mining lease or the preferred road corridor. A larger buffer could be considered in certain area of the road, should the landuse study suggest it would be pertinent. As for the Sept-Îles components, the 200 m buffer was added to the lot limits (Map 13-3 and 13-4). The project study area will be used to carry out most of the biophysical component's surveys.

The local study area for the northern components , which will be used for the land use study, corresponds to a 20 km buffer on either side of the road corridor, as well as a 50 km radius around the mining lease (Map 13-3). This 50 km radius covers the flow of water between Lake Brisson and George River. It also covers the Lac de la Hutte Sauvage, including the Wedge Point site (located on the western shore of the lake), which is an area of great historical and cultural importance to the Quebec Innu. It is important to note that an Innu from Matimekosh operated an adventure tourism business in 2012-2013 at this location. This local study area will also be used for the caribou component as they travel long distances and it will cover historical caving sites. For the Sept-Îles components, a 1 km buffer zone was established from the lot limits (Map 13-4). This study area will be used for the land use study.

The regional study area takes into consideration all the communities that will be impacted by the project (Map 13-5). The socio-economic conditions, local capacity and workforce analysis will be carried out within the limits of the regional study area. The human health, quality of life and psychosocial impacts will also be analyzed using this regional study area. The regional study area is the same for the northern components and the Sept-Îles components.

These study areas are preliminary and will be reevaluated once the final footprint of the components is established and the impact assessment is initiated.

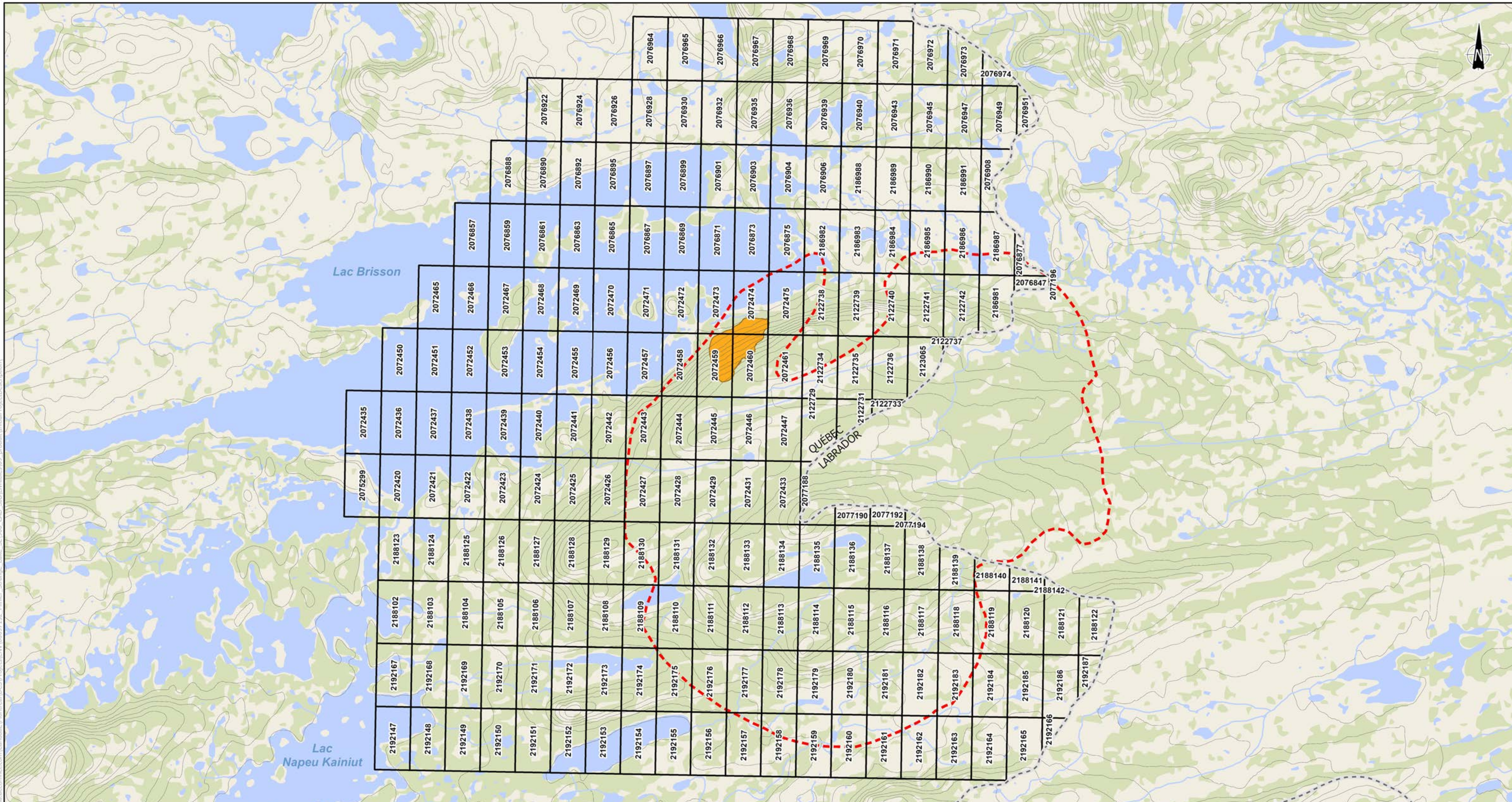
13.3 Official Land Description

All the mineral claims covering the B-Zone of the Strange Lake Project are owned in totality by Torngat Metals. The project is covered by 209 individual mineral claims in Québec and 63 “cells” in the Newfoundland and Labrador claims licence system. Those claims are covering a total area of approximately 9 994.65 ha (MICON, 2019). Map 13-1 illustres the Torngat Metals mining claims. The mineral claims in Québec cover the B-Zone and a portion of the Main Zone REE deposits. The current Torngat Metals claims cover the known extent of the Lac Brisson Pluton also known as Strange Lake Alkaline Complex (SLAC). Map 13-2 illustrates the Strange Lake Alkaline Complex (SLAC) as well as the property geology in relation the site topography.

The proposed rare earth processing and high purity separation plant will be located in the “Parc industriel ouest – Jonction Arnaud” in the industrial port facility of the City Sept-Îles (QC). In this case, the closest inhabited area (a portion of the city of Sept-îles) is located less than 3 km south of the proposed process plant site. In addition, the Sept-Îles detention facility is less than 2 km southwest of the planned plant site.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Complexe alcalin du lac Strange / Strange Lake Alkalic Complex

Gisement minier de la Zone B / B-Zone Mineral Deposit

Titre minier actif de Métaux Torngat / Torngat Metals Active Mining Claim

PRÉLIMINAIRE / PRELIMINARY

1:55 000

0 500 1 000 1 500 m

NAD 1983 UTM Zone 20N

Produit: Map 13-1 - Torngat Metals claims

Date : 2023-08-25 08:11

Source:
Données topographiques / Topographic Data: NRCan (2022)
Titres miniers / Mining Claims: MRNF (2023)

Carte 13-1
Titres miniers de Métaux Torngat

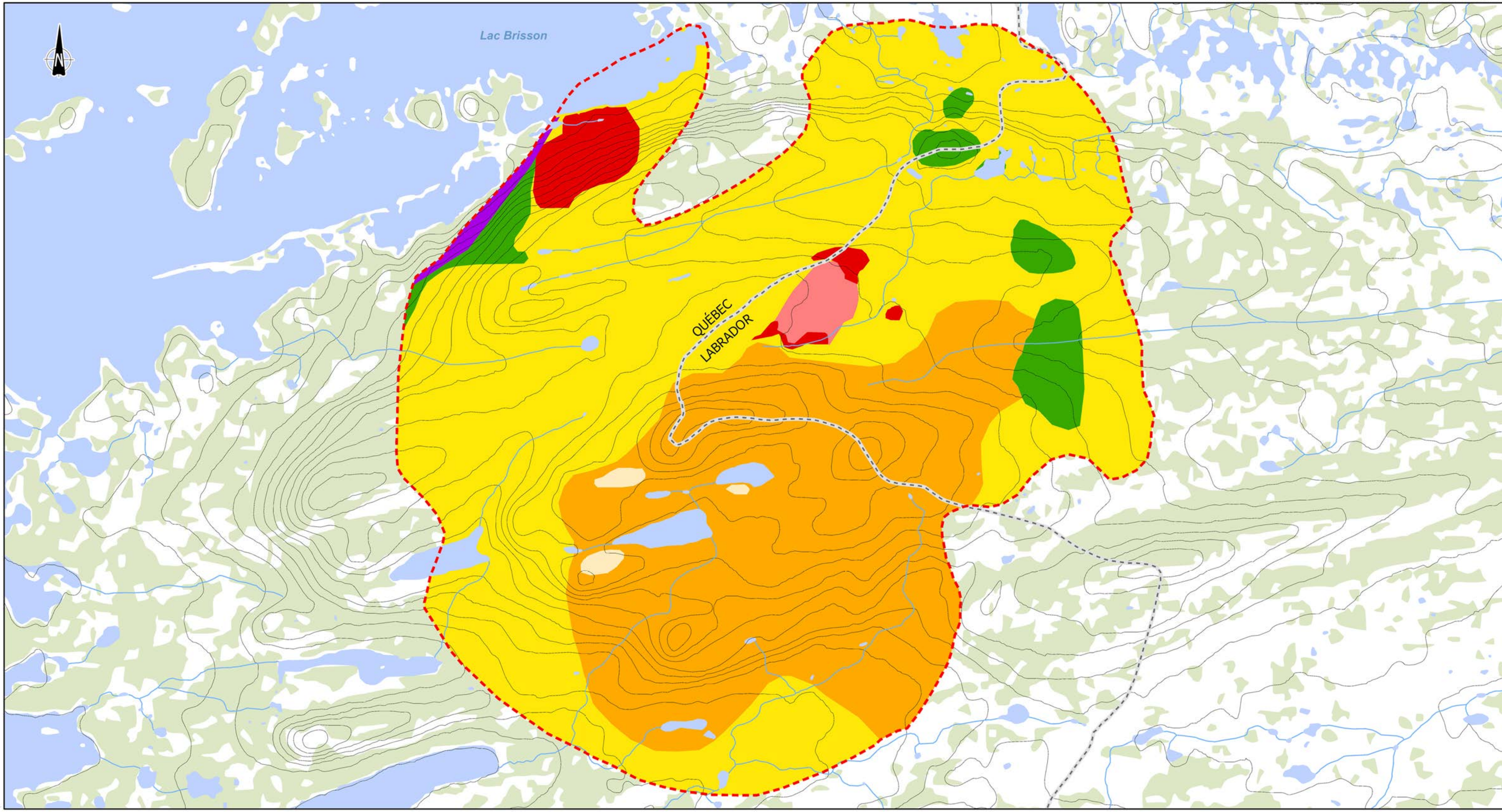
Map 13-1
Torngat Metals claims

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



- Complexe alcalin du lac Strange / Strange Lake Alkalic Complex
- Granite avec inclusions enrichies / Enriched inclusion-bearing granite
- Brèche à fluorite et hématite / Fluorite-hematite breccia
- Granite peralcalain hypersolvus / Hypersolvus granite
- Granite peralcalin subsolvus / Inclusion bearing subsolvus granite
- Granite peralcalin subsolvus / Quartz monzonite
- Pegmatite et aplite riche en terres rares / REE-bearing pegmatite-aplite
- Gneiss indifférentié / Unsubdivided gneiss

PRÉLIMINAIRE / PRELIMINARY

1:35 000

0 1 km

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic Data: NRCan (2022)
Géologie du roc / Bedrock Geology: Technical Report on the Preliminary Economic Assessment, MICON (2019)

Produit: Map 13-2 - Strange Lake Alkaline Complex and bedrock geology
Date : 2023-08-22 15:18

Carte 13-2
Complexe alcalin du lac Strange et géologie du roc

Map 13-2
Strange Lake Alkaline Complex and bedrock geology

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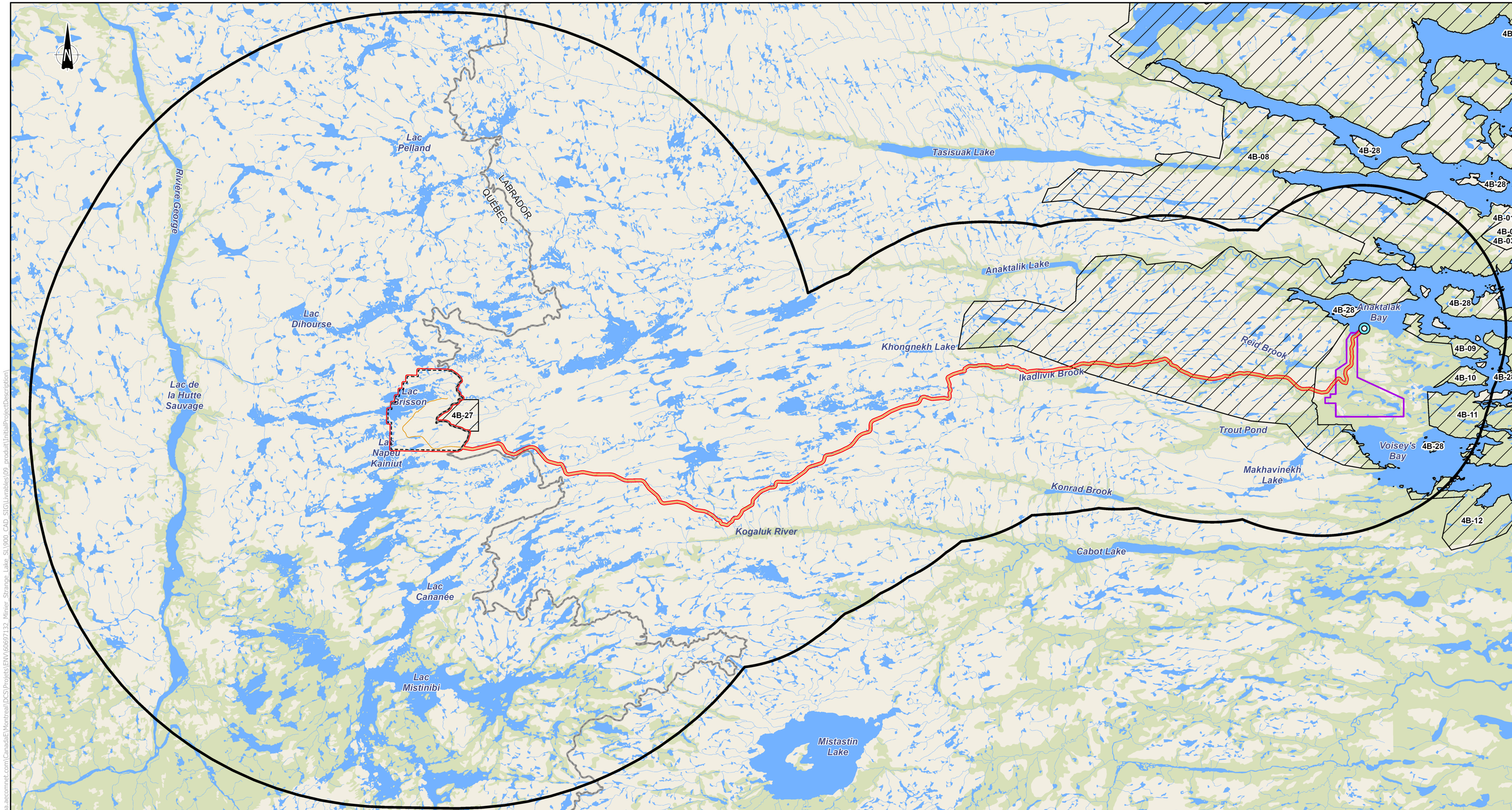
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Zone d'étude / Study area

Zone d'étude préliminaire du projet / Preliminary project study area [1]

Zone d'étude locale préliminaire / Preliminary local study area [2]

[1] Zone tampon de 200 m autour de la limite de propriété et de la route d'accès / 200 m buffer zone around the property limit and the access road)

[2] Zone tampon de 50 km autour de la limite de propriété et de 20 km autour de la route d'accès / 50 km buffer zone around the property limit and 20 km around the access road

Composante projet / Project component

Limite de propriété / Property limit

Route d'accès saisonnière proposée / Proposed seasonal access road

Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

Vale Inco Surface Lease / Bail de surface de Vale Inco

Frontière Québec et Labrador / Quebec and Labrador border

Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:520 000

0 5 10 km

NAD 1983 UTM Zone 20N

Date : 2023-09-15 09:20

Source:
Données topographiques / Topographic data: RNCan (2022)
Terres des Inuit du Labrador / Labrador Inuit Lands (LIL): Government of Newfoundland and Labrador (2011)

PRÉLIMINAIRE / PRELIMINARY

Carte 13-3
Zone d'étude préliminaire du projet et locale au Nord

Map 13-3
Preliminary Project and Local Study Area in the North

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MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Zone d'étude / Study area

- Zone d'étude préliminaire du projet / Preliminary local study area [1]
- Zone d'étude locale préliminaire / Preliminary local study area [2]

[1] *Zone tampon de 200 m autour du site potentiel de l'usine / 200 m buffer around the potential site of the plant*

[2] *Zone tampon de 1 km autour du site potentiel de l'usine / 1 km buffer around the potential site of the plant*

Composantes du projet / Project components

- Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant

Autre / Other

- Zone industralio-portuaire de Sept-Îles / Sept-îles industrial port area
- Route principale / Primary road
- Limite municipale / Municipal boundaries

PRÉLIMINAIRE / PRELIMINARY

1:62 000

0 1 2 km

NAD 1983 UTM Zone 20N

Date : 2023-09-15 09:41

Source:
Données topographiques / Topographic Data: NRCan (2022)
Limite municipale / Municipal boundaries: MRNF (2023)
Zone industrialo-portuaire de Sept-Îles / Sept-Îles industrial port area: Gouvernement du Québec (2018)

Carte 13-4
Zone d'étude préliminaire du projet et locale pour les composantes du projet à Sept-Îles

Map 13-4
Preliminary Project and Local Study Area for the project components in Sept-Îles

AECOM

Zone d'étude / Study Area

Zone d'étude régionale préliminaire / Preliminary Regional Study Area

Composantes du projet / Project components

- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port
- Site de la mine / Mine site
- Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant
- Route d'accès saisonnière proposée / Proposed seasonal access road

Communauté / Community

Québec
- Innu
- Inuit
- Naskapi

Labrador
- Innu
- Inuit

1:5 000 000

0 50 100 km

NAD 1983 UTM Zone 20N

Produit: Map 13-5 - Preliminary Regional Study Area

Date : 2023-09-20 10:26

Source:
Données topographiques / Topographic Data: NRCan (2022)

PRÉLIMINAIRE / PRELIMINARY

Carte 13-5
Zone d'étude régionale préliminaire

Map 13-5
Preliminary Regional Study Area

AECOM

13.4 Proximity to Nearest Local Communities

There is no permanent inhabited buildings within the project footprint related to the proposed mine site, road corridor and handling and storage facilities in Edward's Cove (Anaktalak Bay). The closest non-aboriginal community to these 3 projects component are Schefferville, which is located 235 km southwest of the mine site and Northwest River, located around 345 km south of the handling and storage facilities in Edward's Cove. However, Nain is located 156 km east of the proposed mine site and 26 km northeast of the handling and storage facilities, making it the closest community to these components.

The situation is different concerning the proposed process plant since it is planned to be located in the industrial port zone of the city of Sept-Îles. In this case, the closest inhabited area (a portion of the city of Sept-îles) is located less than 3 km south of the proposed process plant site. In addition, the Sept-Îles detention facility is less than 2 km southwest of the proposed plant site.

13.5 Proximity to Indigenous Communities

The proposed mine site is located in Nunavik, a territory administered by the Kativik Regional Government, located in Kuujjuaq, which is located 325 km northwest of the proposed mine site. The closest communities from the proposed mine site are mainly Indigenous communities:

- Nain (Newfoundland and Labrador), 156 km to the east;
- Natuashish (Newfoundland and Labrador), 194 km to the southeast;
- Hopedale (Newfoundland and Labrador), 263 km to the southeast;
- Postville (Newfoundland and Labrador), 317 km to the southeast;
- Makkovik (Newfoundland and Labrador), 341 km to the southeast;
- Kawawachikamach (Quebec), 230 km to the southwest;
- Matimekush-Lac John (Quebec), 237 km southwest;
- Kangiqsualujjuaq (Quebec), 343 km northwest;
- Sheshatshiu (Newfoundland and Labrador), 404 km to the southeast;
- Kuujjuaq (Quebec), 425 km to the northwest;
- Rigolet (Newfoundland and Labrador), 434 km to the southeast.

The closest communities from the handling and storage facilities in Edward's Cove are also Indigenous communities.

- Nain (Newfoundland and Labrador), 26 km to the northeast;
- Natuashish (Newfoundland and Labrador), 81 km to the southeast;
- Hopedale (Newfoundland and Labrador), 151 km to the southeast;
- Postville (Newfoundland and Labrador), 217 km to the southeast;
- Makkovik (Newfoundland and Labrador), 225 km to the southeast;
- Rigolet (Newfoundland and Labrador), 340 km to the southeast;
- Kawawachikamach (Quebec), 341 km to the southwest;
- Kangiqsualujjuaq (Quebec), 343 km to the northwest;

- Sheshatshiu (Newfoundland and Labrador), 345 km to the south;
- Matimekush-Lac John (Quebec), 347 km southwest;
- Kuujjuaq (Quebec), 424 km to the northwest.

The closest Indigenous communities from the proposed process plant in Sept-Îles are Uashat located 7 km to the south and Mani-utenam located 15 km to the southeast.

The lands involved by the present project are subject to different land agreements and/or land claims by Aboriginal groups (Map 3-1).

Nunavik Inuit (Quebec)

In 1975, Nunavik Inuit signed the James Bay and Northern Quebec Agreement (JBNQA), which led to the creation of 15 northern villages including Kujjuaq and Kangiqsualujjuaq. The signing of JBNQA also provided Nunavik Inuit with territorial rights on the lands concerned by the agreement. These lands are defined in the following groups:

- Category I lands are reserved exclusively for use by Inuit;
- Category II lands are considered public domain in Quebec but hunting, fishing and trapping rights are reserved for Inuit, while forestry, mining and tourism development authority is shared;
- Category III lands reserve some specific hunting and harvesting rights for Inuit, but all other uses are permitted under Quebec legislation concerning public lands.

According to the JBNQA, the proposed mine site and the Quebec portion of the corridor identified for the proposed seasonal road are located on Category III lands.

Naskapi Nation of Kawawachikamach

In 1975, the new Schefferville Naskapi Band decided to become involved in the negotiations leading to the signature of the James Bay and Northern Québec Agreement (JBNQA). The arrangement did not work and the JBNQA was signed without the band. In 1977, the Schefferville Naskapi began their own negotiations leading to the signature of the Northeastern Québec Agreement (NEQA) in January of 1978. Following this agreement, the community built a new village which was registered as the Naskapi village of Kawawachikamach in 1981. The Naskapi Nation of Kawawachikamach received some territorial rights on lands concerned by the agreement. These lands are defined as the following:

- Category I lands are reserved exclusively for the use of Naskapi;
- Category II lands are considered public domain in Quebec, but hunting, fishing and trapping rights are reserved for Naskapi, and forestry, mining and tourism development authority is shared;
- Category III lands reserve some specific hunting and harvesting rights for Naskapi, but all other uses are permitted under Quebec legislation concerning public lands.

According to the NEQA, the proposed mine site and the Quebec portion of the corridor identified for the proposed seasonal road are located on Category III lands. The Ungava Band, which became the Naskapi Nation of Kawawachikamach, is essentially using the territories concerned by the NEQA. It is, however, possible that some hunters travel to Inland Labrador for caribou hunting.

Quebec Innu

Unlike the Naskapi Nation of Kawawachikamach and the Nunavik Inuit, the Innu of Matimekush-Lac-John and Uashat mak Mani-Utenam have not signed any territorial agreement, and they are still engaged in an ongoing land claim process with the federal and provincial governments. The lands covered by this claim include the proposed mine site, as well as the western portion of the corridor identified for the proposed seasonal road (essentially the Québec portion, but also a small part of the Labrador portion).

Nunatsiavut Inuit (Labrador)

The Labrador Inuit Lands Claims Agreement (LILCA), signed in 2005 between Canada, Newfoundland and Labrador and the Nunatsiavut Inuit Government, recognized the Nunatsiavut Inuit's territorial rights in Northern Labrador. The agreement created two categories of land:

- The Labrador Inuit Settlement Area (LISA) consists of land and ocean (referred to as the Zone) extending to the limit of Canada's territorial sea. The Settlement Area includes Labrador Inuit Lands and the five Inuit communities of Nain, Hopedale, Makkovik, Postville and Rigolets. In the northern part of the Settlement Area, a large part of land is set aside for the establishment of the Torngat Mountains National Park (upgraded from a park reserve in 2008, after settling outstanding Labrador land claims of Quebec-based Inuit);
- Labrador Inuit Lands (LIL) cover a much smaller territory than LISA where Inuit have the exclusive rights to a 25 per cent ownership interest in subsurface resources, ownership of quarry materials, and to carving stone. LILis found mainly along the coast with one notable exception, the "main zone" of the Strange Lake peralkaline granite complex; a property about 2 km east-southeast of Torngat Metal B-Zone on the Labrador side which had been claimed/explored in the past by IOC (early 1980's).

The proposed mine site (entirely located in Québec) borders a Labrador Inuit Land. The corridor identified for the proposed seasonal access road is crossing a Labrador Inuit Settlement Area, as well as a Labrador Inuit Land, and will join the Voisey's Bay Area (VBA). VBA was created following the signature of IBAs between INCO (now Vale), Innu Nation of Labrador and Nunatsiavut Inuit Government concerning the exploitation of a nickel-copper-cobalt mine in the vicinities of the Bay. Innu and Inuit harvesting rights are recognized in the VBA.

Labrador Innu

In 2008, Innu Nation of Labrador signed the New Dawn Agreement with the Government of Newfoundland-and-Labrador. This land claim agreement in principle was endorsed by referendum by the Innu population in 2011. Three categories of land were identified and mapped:

- Labrador Innu Lands (Category I or CI) where the Innu have legal title, jurisdiction to make laws in relation to specific matters, and rights to resource royalty sharing and Impact and Benefit Agreements (IBAs) for land development.
- Labrador Innu Settlement Area (Category II or CII) remains Crown Land but the Innu have special rights and benefits concerning resource royalty sharing as well as consultation on environmental assessments, economic development and IBAs for major projects. The northern limit of the Category II Lands touches the south shore of Voisey's Bay, but it is just outside the project study area.
- Category III Lands (CIII) are areas where the Innu are able to conduct their traditional hunting for migratory species of wildlife without the need for provincial government permits.

Portions of the corridor identified for the proposed seasonal road are located a few kilometers north of the lands concerned by the New Dawn Agreement. This corridor is joining the Voisey's Bay Area (VBA), in which, Labrador Innu must be consulted and give their consent for any development projects.

13.6 Proximity to Federal Lands

To our knowledge, there is no federal land within the project study area.

Labrador Inuit land (LIL)

The project involves two Labrador Inuit Lands (LIL). First, the proposed mine site (in Quebec) borders on Labrador Inuit Land 4B-27. In addition, the corridor identified for the proposed seasonal road crosses Labrador Inuit Land 4B-28, which lies west of Voisey's Bay and Anaktalak Bay.

14 Biophysical Environment Description

The description of the biophysical environment takes into account the data acquired during the 2011-2014 baseline studies, i.e. as part of the last pre-feasibility study. This data will be updated and the methodological approaches are described in following sections (workplans for 2023-2024). The updated data will comply with the current regulatory and legislative frameworks.

For the 2023-2024 biophysical workplans, governmental departments of Quebec (Ministère de l'Environnement, de la Lutte aux changements climatiques, de la Faune et des Parcs, MELCCFP), Federal, NG and NL have been and will be contacted in order to assemble proper information on best timing for fieldwork assessments and inventories, such as for migratory birds, caribou, Arctic charr, and Indigenous land and resources uses.

Thus, each of the environmental components is treated in accordance with guidelines, guidance documents and standards. These are presented under each of the subsections and relate in particular to the following authorities:

Federal

- Impact Assessment Agency of Canada (IAAC) /Agence d'évaluation d'impact du Canada (AEIC)
- Environment and Climate Change Canada / Environnement et Changement Climatique Canada (ECCC)
- Health Canada / Santé Canada
- Transport Canada
- Natural Resources Canada / Ressources Naturelles Canada
- Department of Fisheries and Oceans / Pêches et Océans Canada

Provincial -*Québec*

- Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP)
- Commission de la qualité de l'environnement Kativik (CQEK)
- Ministère des Ressources naturelles et des Forêts (MRNF)

Provincial -*Government of Newfounland and Labrador*

- Department of Environment and Climate Change, Environmental Assessment Division

Nunatsiavut Government

- Department of Lands and Natural Resources
- Nunatsiavut Research Centre

At the time of writing this document (August 2023), engagement activities and data acquisition have started for wildlife (birds, water quality and water crossing fish habitat characterization along the access road in Quebec), and more surveys will be conducted in 2023-2024 for other components. A gap analysis was conducted in order to comprehensively address each component and identify gaps from the baseline studies that were elaborated between 2011 and 2014. Data acquisition will continue throughout 2023 and 2024 in order to elaborate new baseline studies and align with the Feasibility Study report to be produced. The acquired data will also be incorporated into the detailed project description, and in the EIA for the Project.

14.1 Physical environment

14.1.1 Climate

14.1.1.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The northern components of the Stange Lake Project are located in the Taiga ecozone of the Canadian Shield (ecozone 05), more specifically in the Kingurutik and Fraser Rivers ecoregion (05.3.077). Northern Quebec and Labrador are characterized by a cold subarctic climate zone with long, cold winters with heavy snowfall and short, cool summers. The average daily temperatures rise above freezing only from May to September, and during the winter months, temperatures can drop as low as -45°C. The minimum average annual temperature is -10°C, and the maximum is 0°C. Snow and ice cover freshwater bodies for six to eight months per year. Due to low evapotranspiration rates, the terrain becomes waterlogged in several areas during the summer months. Table 14-1 provides climate data (1981-2010) for the two nearest weather stations, Nain (156 km) in Labrador, and Kuujjuaq (325 km) in Quebec. The production of 1991-2020 climate normal is currently underway and will be published in the next months.

Table 14-1: Station data for calculating climatic normals in Canada from 1981 to 2010

	Nain - Newfoundland	Kuujjuaq - Quebec
Average Temperature - January (°C)	-17.6	-24.7
Average Temperature - July (°C)	10.1	11.8
Extreme maximum (°C)	33.3	33.1
Extreme minimum (°C)	-41.5	-49.8
Precipitation (mm)	925.4	541.6
Snowfall (cm)	475.3	251.7
Rainfall (mm)	450.2	295.5
Average snowcover (cm)	33	17

Source: https://climat.meteo.gc.ca/climate_normals/

In 2014, Durkalec et al. (2014) showed a significant upward trend in the mean annual temperature in Nain from 1985 to 2010 (Figure 14-1).

Studies to be carried out

Given the distance of the existing weather stations from the mine site, Torngat Metals is planning to install a weather station at the mine site in fall 2023. This station will continuously measure the following parameters: wind speed and direction, atmospheric pressure, air temperature, relative humidity, precipitation accumulation (pluviometry), snow depth, solar radiation. The station will be equipped with a data logger as well as with a satellite data transmitter.

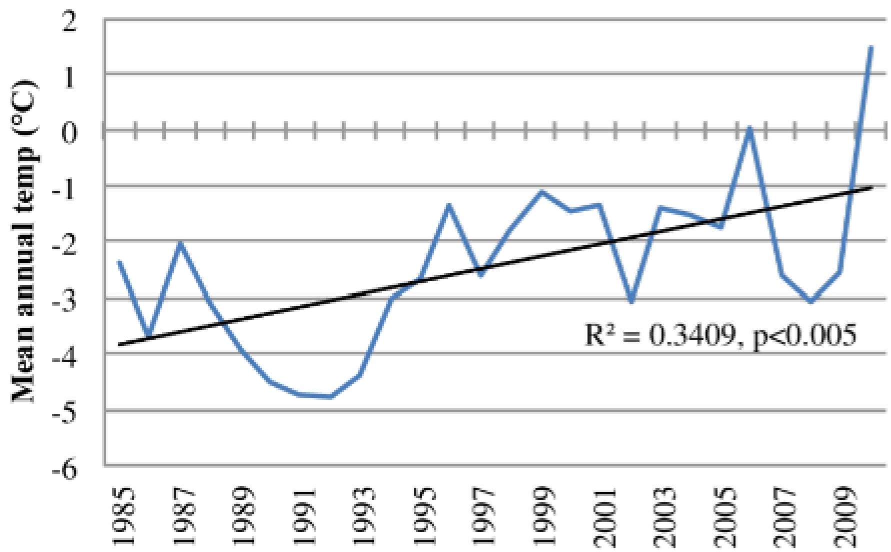


Figure 14-1 : Mean annual temperature in Nain from 1985 to 2010 (from Durkalec *et al.*, 2014)

14.1.1.2 Process Plant (Sept-Îles project component)

The process plant in Sept Îles is located in the Boreal Shield ecozone of the Canadian Shield (ecozone 06), more specifically in the Central Laurentian ecoregion (06.3.101). Northern Quebec is characterized by a cold subarctic climate zone with long, cold winters with heavy snowfall and short, cool summers. The minimum average annual temperature is -3.6°C, and the maximum is 5.6°C. Snow covers the lands for seven months per year. Table 14-2 provides climate data (1981-2010) at the Sept-Îles airport weather station.

Table 14-2 : Climatic normals at Sept-Îles from 1981 to 2010

Parameters	
Average Temperature - January (°C)	-15.3
Average Temperature - July (°C)	15.2
Extreme maximum (°C)	32.2
Extreme minimum (°C)	-43.3
Precipitation (mm)	1119.9
Snowfall (cm)	384.6
Rainfall (mm)	747.5
Average snowcover (cm)	16

Source: https://climat.meteo.gc.ca/climate_normals/

14.1.2 Ambient air quality

14.1.2.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The closest air quality monitoring station to the northern components of the project (mine, road, container storage and handling facilities) lis located in Goose Bay and measures only "ground-level ozone" (Government of Canada, 2023). Baseline data was collected *in situ* at the Strange Lake mine site in the fall of 2011. Ambient air quality at the mine site was assessed and compared to the NAAQOs, which are the equivalent of today's Canadian Ambient Air Quality Standards, or CAAQS. The CAAQS are established as air quality objectives (nitrogen dioxide (NO_2), sulphur dioxide (SO_2), fine particulate matter ($PM_{2.5}$) and ozone (O_3)) under the Canadian Environmental Protection Act of 1999. They also are the key element of the Air Quality Management System (AQMS) implemented by the federal government across the country (CCME, 2023). No air ambient sampling was undertaken in Labrador for the road corridor. It is important to note that all material shipped using the road will be containerised, there will be no bulk shipping, thus reducing the potential for air pollution from the ore concentrate dust. Ambient air quality parameters were selected based on the various pollutants likely to be emitted by the project since few pollutants from anthropogenic sources are emitted at the site location. The following pollutants were monitored: $PM_{2.5}$, PM_{10}, Total Suspended Particles (TSP), metals including a selection of eight rare earth elements ("particles"), SO_2, NO_2, volatile organic compounds (VOC), asbestos and radon. No anomalies were noted, and the air quality test results were typical of remote and undeveloped areas.

No concerns were raised with regards to the Vale's port vicinity at Edward's Cove, based upon 1995-1997 Environmental Studies for TSP, dustfall, SO_2, and NO_2 - prior to the Voisey's Bay Mine Project. The *2021 Ambiant Air Monitoring Report (Government of Newfounland and Labrador, 2021)* refers to air monitoring stations in Voisey's Bay. These stations were installed at three locations to monitor mining, processing and port activities. The Accommodation Unit station monitored the ambient levels of $PM_{2.5}$ and NO_x / NO_2 on a continuous basis. For NO_x / NO_2, the ambient air criteria were not exceeded on any occasion in 2021, however, for $PM_{2.5}$, the 24-hour criteria was exceeded on two occasions in July owing to a localized forest fire. The Crusher Site station monitored the ambient levels of NO_x / NO_2 on a continuous basis. The ambient air criteria were not exceeded on any occasion in 2021. The Port Site monitoring station monitored the ambient levels of Total Particulate Matter (TPM) on a continuous basis. The 24-hour ambient air criterion was exceeded on twenty-seven occasions in 2021, due in large part to the construction of new silos in the general vicinity. The construction resulted in the monitoring station being moved approximately 110 metres to the north-northwest in April. Of the twenty-seven exceedances, three occurred in May, five occurred in June, seven in July, eight in August, two in September and two in November.

Studies to be carried out:

Mine site:

The current standards that apply are dictated by the Clean Air Regulation (c. Q-2, r. 4.1) established under the Quebec Environment Quality Act. This Clean Air Regulation stipulates in Section 197 that construction of a stationary source of contamination is prohibited if it will likely result in an increase of the concentration of a contaminant above the air quality standards of contaminants listed in Schedule K (MELCCFP, 2023). In 2017, the MDDELCC (today MELCCFP) published the technical guidelines *Préparation et réalisation d'une modélisation de la dispersion des émissions atmosphériques (MELCCFP, 2017)*. These guidelines were developed to require that any mining promoter demonstrate compliance to the applicable air quality standards via a modeling study of the dispersion of atmospheric contaminants. In addition, *Directive 019 on the mining industry* (MDDEP, 2012) is the tool commonly used for the analysis of mining projects requiring the issuance of a certificate of authorization under the EQA, for projects subject to the environmental impact assessment and review procedure and for projects carried out on the territory of the Baie-James and Northern Quebec.

Hence, in regards to air emissions modeling activities, the following will be provided:

- All stationary and fugitive emission sources of particulate matter, vapors and gases generated by mining activities, to demonstrate compliance with the standards of the Clean Air Regulation. For each of these sources, it must specify:
  - The nature of the contaminants
  - The quantity emitted (metric ton/year)
  - The flow (m3/h),
  - The gas temperature (°C) and
  - The concentration of the contaminant (mg/Nm3)
- Indication on treatment systems or measures taken to prevent, eliminate or reduce the release of contaminants and the percentage of efficiency.
- Identification of the methods and places of storage, deposit or elimination of this dust (in case dry dust collectors are used).

It is expected that the climate and meteorological data source will be updated as a new meteorological station will be installed at the mining site in fall 2023. Recommendations regarding the air modeling options, inputs (meteorological data, topographic data, land cover, etc.) was provided using the *Guide de la modélisation de la dispersion atmosphérique (MDDEP, 2005)*. The air modeling workplan will be agreed with both federal and provincial (QC) governments before conducting any air emissions modeling activities.

Road corridor To Vale Port:

The Air Pollution Control Regulations, established under the Environmental Protection Act of Newfoundland and Labrador (2004), defines the ambient air quality standards (prescribed in Schedule A of the Regulations (Government of Newfounland and Labrador, 2004)) for the province. Because of this regulation, air monitoring could be required by the to establish baseline conditions for the road corridor and be compared to the provincial standards.

As previously mentioned, it is expected that climate and meteorological data (temperature, precipitation, wind speed & direction) will be monitored and collected at the Mine site from fall 2023. In addition, verifications will be made to confirm if other existing monitoring stations (i.e.: Vale Port, Schefferville) could be used and be representative within the planned road corridor.

Discussions will be held with the federal, provincial (NL) and Nunatisiavut governments to confirm baseline air monitoring strategy as well as the air emissions modeling technical specifications. A workplan will then be prepared in accordance with the requirements.

14.1.2.2 Process Plant (Sept-Îles project component)

An air quality study (MDDEP, 2010) was published by the MELCCFP in 2010 in which they reviewed Sept-Îles historical Air Quality data and conducted air sampling over a year. The study concluded that the air quality was influenced by the mining and metallurgy industries. On an annual basis, the Sept-Îles air quality was comparable to typical urban or suburban environments. However, the report note that over short periods (12 hours or less) total particulate concentrations may be elevated in the sectors located to the south and sometimes to the east of the city. Also, from June 2014 to May 2015, MELCCFP have conducted air quality sampling by installing their own monitoring station in the Parc-Ferland sector in Sept-Îles, a site close to the envisioned Torngat Metals Process Plant. $PM_{2.5}$, TPM, metals, VOCs, HAP, furan dioxin were sampled. This report (MDDELCC,2016) mentioned that no air quality threshold were exceeded during that period. Finally, the Northeast Institute for Research in Environment and occupational Health and Safety (INREST) published another air quality study (INREST, 2016) in 2016 for the Sept-Îles territory. Eight (8) sampling stations measured the following parameters between January 2012 and December 2013: TPM, $PM_{2.5}$, metals (Aluminium, Beryllium, Iron, Manganese), SO_2, HAP. Over the 24-month study period, criteria were exceeded on eleven (11) occasions, one event being for TPM and ten (10) for $PM_{2.5.}$ It was noted that the study scope was limited since all INREST private members were involved on a voluntary basis and did not monitor each above-mentioned parameters.

Studies to be carried out:

The Air Quality Standards applicable to the Sept-Îles Process Plant are dictated by the Clean Air Regulation (c. Q-2, r. 4.1) established under the Quebec Environment Quality Act. A preliminary desktop analysis will be conducted to identify representative air quality monitoring stations (NAPS, RSQAQ) for the Process Plant site. Following this exercise, a baseline air quality monitoring workplan will be developed and shared with regulatory authorities. The air modeling workplan and related subsequent activities will be undertaken when the process plant design will be sufficiently developed.

14.1.3 Ambient noise level

14.1.3.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

A background noise study was conducted by AECOM and published in December 2012, in the document *Strange Lake B-Zone – Physical Environment Baseline Surveys – Background Noise Study, 2011* (AECOM, 2012a). This study included approximately 24 hours of noise measurement data at one location identified to be representative of the general extents of the potential study area for the Project. The maximum hourly ambient sound levels (LAeq 1h) at the monitoring site were 37.7 dBA during the day and 31.5 dBA at night.

The consideration of noise and vibration effects on the surrounding environment is addressed by Quebec's Directive 019, which has been updated in 2012 (MDDEP 2012), after the background noise study was conducted. However, as the noise monitoring was conducted with respect to the Document 98-01 (MELCCFP publication *Traitement des plaints sur le bruit et exigences aux entreprises qui le g*énè*rent* 2006), which is referenced in Directive 019 for the assessment of stationary noise sources, the technical execution of this study still appears to be valid as this 2006 noise criteria document has not been updated since the time of reporting. The maximum hourly ambient sound levels (LAeq 1h) values mentioned above are still below the most stringent noise criteria (45 dBA-day, 40 dBA-night) set out in the Directive 019.

It is important to mention that no baseline noise monitoring was undertaken in Labrador representative of locations near the planned access road between sites. Background noise in the road's valley segment may be different compared to the plateau due to the presence of tree/wind interaction in the valley, and presence of a large water body in the plateau area.

Studies to be carried out:

The number of noise monitoring locations will be increased in the baseline noise assessment update to accurately capture more up-to-date background sound levels for the expected larger study areas, specifically at any potential noise sensitive locations of concern based on stakeholder consultation. Land use activities and their locations (e.g., hunting, gathering, spiritual, camp sites, etc.) will be further clarified as a part of the engagement process with the local Indigenous group(s) traditional knowledge holders in order to determine the locations of noise sensitive locations such as camp sites near project activities.

The field work to be conducted will also include baseline noise monitoring along the road segment between the site and the port storage facilities, at sensitive receptors located within appropriate distance. Monitoring will be carried out in accordance with current expected best industry practices, including:

- Installing portable wind meters to more accurately capture localized weather effects.
- Increasing measurement time from 24 hours to a minimum of 48 hours, as is typical in longer term monitoring assessments.
- Audio filtering of noise events that aren't typical of background noise levels near the project (e.g. helicopters, wildlife right next to the unit, thunder);
- Include the expanded footprint of the access road connecting to the container storage and handling facilities nearby Vale's port within the potential study area;
- Inclusion of the full data-set during reporting.

14.1.3.2 Process plant (Sept-Îles project component)

No background noise study is currently available for this site and the surrounding areas. The consideration of noise and vibration effects on the surrounding environment is addressed by Quebec's Directive 019 (MDDEP, 2012) and by Sept-Îles's zoning regulations nº2007-103 (Ville de Sept-Îles, 2007). It is recommended that the future noise baseline study considers sufficient noise monitoring locations to accurately capture current background noise levels for the larger expected study areas, particularly at any potential noise sensitive locations of concern based on stakeholder consultation. Other recommendations that are consistent with current expected industry best practices include:

- Installing portable wind meters to more accurately capture localized weather effects;
- Measurement time to a minimum of 48 hours, as is typical in longer term monitoring assessments.
- Audio filtering of noise events that aren't typical of background noise levels near the project (e.g. other industrial facilities & transportation activities);
- Inclusion of the full data-set during reporting.

Studies to be carried out:

The field work to be conducted will include baseline noise monitoring at sensitive receptors located within appropriate distance from the planned plant site, such as residences, schools, healthcare facilities, etc. Sensitive receptors will be identified using aerial photography, site visits and consultations with neighbouring communities. Monitoring will be carried out in accordance with provincial guidelines and with current expected best industry practices as in the case of the northern components of the project.

14.1.4 Geology

14.1.4.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The Strange Lake rare earth deposit is located in the Churchill geological province, which is exposed in northeastern Quebec. The Southeast Churchill Province (SECP) straddles the border between Quebec and Labrador. It is bordered to the west by the Superior Province, to the east by the Nain (part of the North Atlantic Craton and the Burwell lithotectonic domain) and Makkovik provinces, and to the south by the Grenville Province. The SECP is divided into six lithotectonic domains, from west to east: Labrador Trough, Rachel-Laporte, Baleine, George, Mistinibi-Raude, and Falcoz. The study area is located in the central-eastern part of the Mistinibi-Raude Domain (MRNF, 2020). This domain has a generally north-south orientation and spans approximately 290 km in length and 30 to 70 km in width. It is characterized by a significant proportion of intrusive rocks, mostly of intermediate to mafic composition. The Lake Brisson Pluton (The Strange Lake Peralkaline Complex, also known as the Strange Lake Alkaline Complex, which is associated with the deposit), stands out slightly from other intrusions due to its younger ages (1240 Ma) (MRNF, 2023; Charette *et al.*, 2019). It is important to note that the name "Lac Strange" or "Strange Lake" is often used to refer to the mineralized zones and the mining property in general. Map 13-2 illustrates the Strange Lake Alkaline Complex (SLAC), as well as the rock geology in relation to the site's topography. This region hosts several rare earth element, actinide, and base metal occurrences. Among them is the Crater Lake mining project located approximately a hundred kilometers south of the Strange Lake site. This project aims to exploit a scandium deposit (MRNF, 2023; Dubé-Loubert *et al.*, 2016).

The road will cross The Southeastern Churchill Province as well as the Nain Province before arriving at Edward's cove in the Anaktalak bay. The general bedrock geology along the road is mostly Paleoproterozoic to Mesoproterozoic. Principal rocks are metamorphic (gneisses, migmatite) and igneous (granite, granodiorite and granitoid). Numerous remnant glacial features are present at the surface.

The closest seismographs from the mine site, road and port are situated in Nain (NINL station), Schefferville (SCHQ station) and Kuujjuaq (KUQ station). Although earthquakes might occur throughout Canada, the region, both in the Quebec and Labrador province is not known for high seismic activity (Government of Canada, 2023. Background on earthquakes in eastern Canada). Since 1994, in a 300 km radius from Edward's cove, 79 seismic events occurred, the majority being in the Labrador Sea. The great majority of those events were less than magnitude 3.

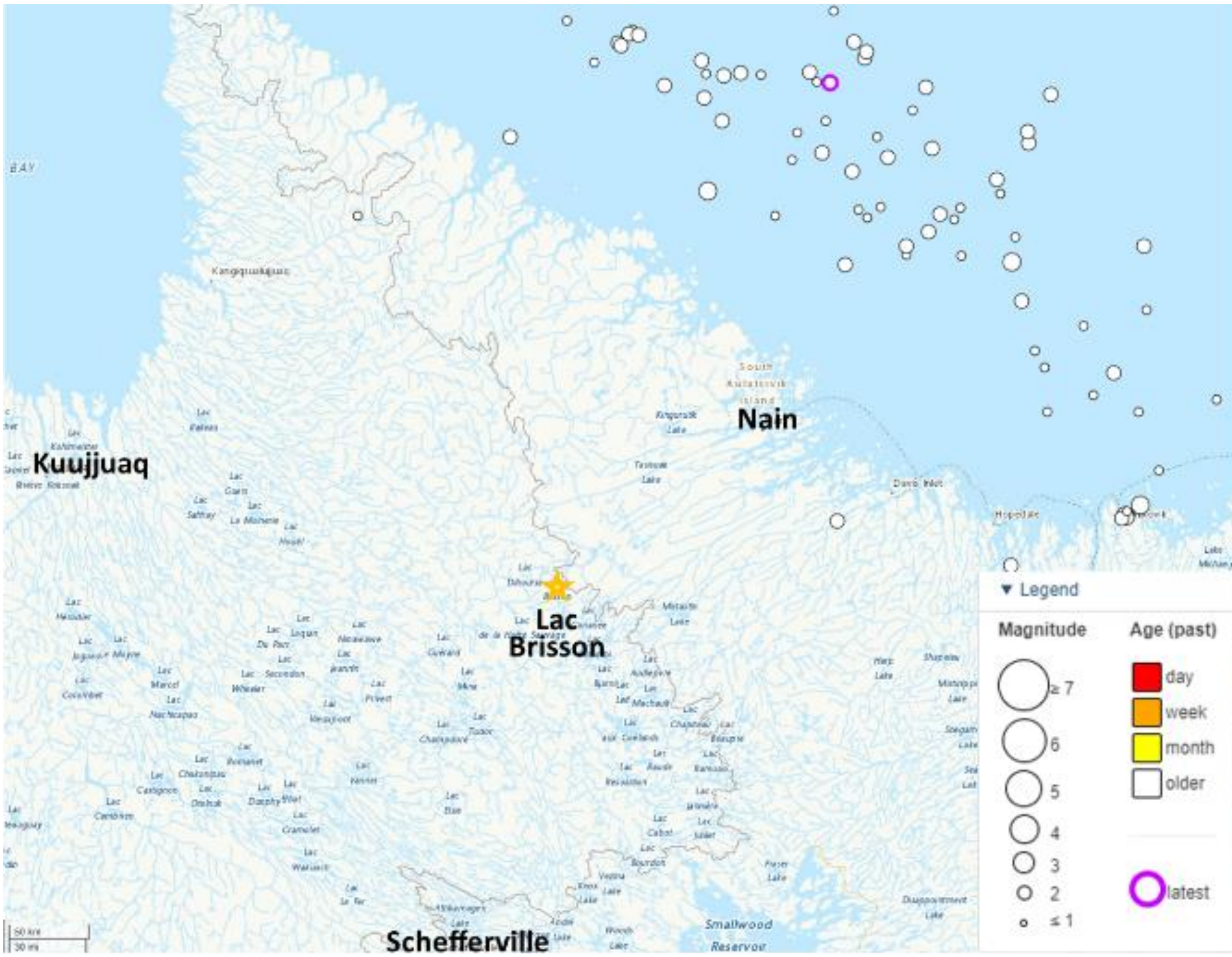


Figure 14-2: Major seismic events in a 300 km radius from Edward's cove since 1994[3] (zoomed on zone of interest).

14.1.4.2 Process plant (Sept-Îles project component)

Sept-îles is located in the Lower St. Lawrence Seismic zone (LSZ), also referred as "Lower-St. Lawrence-Quebec North Shore" which is a seismically active region of eastern Canada. While the region is active, no large earthquake has been reported or recorded. On average about 60 events are recorded annually. The regions is monitored by several seismograph: Ste-Marguerite (SMQ station), Islets-Caribou (ICQ station), Manicouagan (MNQ station), Cote-Nord (CNOQ station), Sainte-Felicite (SNFQ station), Port-Meunier Anticosti (PMAQ station).

[3] https://www.seismescanada.rncan.gc.ca/stndon/NEDB-BNDS/bulletin-en.php - consulted 07/10/2023

Since 1985, in a 300 km radius from Sept-Îles, more than 2000 events occurred, the majority being in the St. Lawrence River. The great majority of those events were less than magnitude 4. The most recent events that was more than magnitude 4 was on June 23, 1999. It was an earthquake of magnitude 5.1 occurring about 60 km south of Sept-îles.

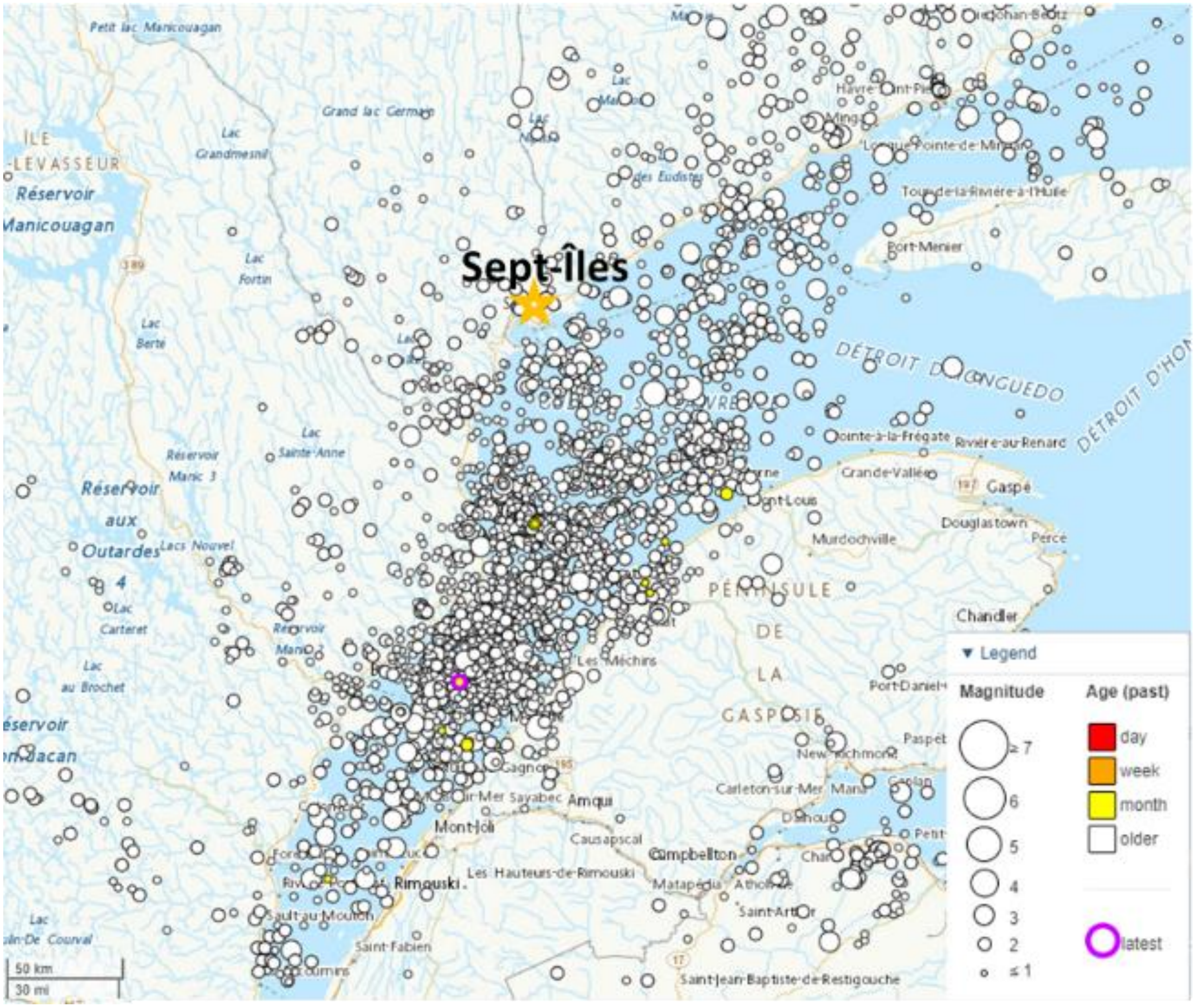


Figure 14-3 : Major seismic events in a 300 km radius from Sept-Îles since 1985[4].

The region of Sept-Îles is situated in the Grenville Province. The general bedrock geology is mostly Cambrian to Paleoproterozoic/Mesoproterozoic. Principal rocks are metamorphic (gneisses, migmatite) and igneous (anorthosite, gabbro, nelsonite, dunite).

[4] https://www.seismescanada.rncan.gc.ca/stndon/NEDB-BNDS/bulletin-en.php - consulted 07/10/2023

14.1.5 Surface geology, geomorphology, and permafrost

The basic conditions regarding surface geology, geomorphology, and permafrost in the environment of the northern components of the project have been assessed and described based on existing data, a field survey conducted in 2011, and the examination and interpretation of available aerial photos, including a high-resolution orthophotography (with a ground resolution of 15 to 25 cm) covering the mine area, produced in September 2012. The conditions prevailing in the environment of the process plant site in Sept-Îles have been assessed based on existing data in the literature. The following paragraphs summarize the information obtained within the scope of these surveys.

14.1.5.1 Surface geology and geomorphology

14.1.5.1.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The Strange Lake region is characterized by a rocky plateau with a gentle slope towards the lowlands of Ungava Bay. This plateau has an average elevation of 460 m and is traversed by the George River. The regional morphology is controlled by different glacial phases, as well as the Naskaupi glacial dam lake (Dubé-Loubert *et al.*, 2016). The entire study area was covered by the Laurentide Ice Sheet during the last phase of the Wisconsinan glaciation. The mine site is covered by a thick layer of glacial deposits consisting of basal till overlain by ablation till. The till has a grayish matrix composed of silt and sand with some clay and contains centimeter to millimeter-sized clasts (Dubé-Loubert *et al.*, 2016). This region is characterized by the presence of several typical glacial landforms oriented east-northeast/west-southwest, parallel to the glacial flow: roche moutonnée (asymmetric bedrock bumps or hills), drumlins, and crag and tail formations. Rogen moraines are also found, which appear as till ridges arranged perpendicular to the glacier flow. A thin layer of organic material generally covers the till. Surface drainage is poor on the till, especially in depressions between the drumlinoid ridges. Glaciers have also left behind fluvio-glacial deposits forming wide, visible bands in the study area. The presence of kames and kettles, as well as eskers forming long sinuous ridges in the landscape, is typical of this region. The thickness of the eskers varies between 5 and 25 m (Micon, 2019). They are generally composed of fluvio-glacial sands and gravels with some embedded cobbles. A glacial dispersal train over 40 kilometers long downstream of the deposit can also be observed (Dubé-Loubert *et al*., 2016).

Numerous remnant glacial features are present at the surface along the road. Towards the east of the road plateau segment, the till becomes thinner, poorly drained areas are less common, and higher relief rocky outcrops are more prevalent. Glaciofluvial sand and gravel deposits dominate the valley along Ikadlivik Brook, and are also important around Reid Brook and Little Reid Brook.

14.1.5.1.2 Process plant (Sept-Îles project component)

The process plant in Sept-Îles will be located in an area designated for industrial usage. According to Dredge (1971), the region of Sept-Îles can be divided into two major physiographic units, the Laurentian foreland and the Champlain plain. A well-defined escarpment, about 65 metres high, separates the two zones. The upland is a prominent chain of low hills, having a mean elevation of about 150 metres. Large quantities of sandy till and out-wash were deposited by glaciers which over-rode the area. These sediments have infilled former valleys and hillsides, producing a surface of subdued relief. The lower surface is a sand and clay plain built by recent coastal processes. Although elevations range from 0 to 60 metres, the region is almost flat; most of the relief is taken up as small scarps associated with strandlines and river terraces which mark positions of former sea levels.

14.1.5.2 Permafrost

14.1.5.2.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The mine site is located in a discontinuous permafrost zone where the ground remains permanently frozen beneath the surface on at least 50% of the land area. Several landforms typically associated with the presence of permafrost are present in the study area. These include extensive frost boils, polygonal ground areas, cryogenic mounds, and thermokarst lakes. The presence of some of these thermokarst lakes suggests that permafrost degradation is occurring locally within the project area. The thermal regime of the soil is dynamic and sensitive to changes that affect soil properties, surface cover (including snow), climate, and groundwater. Recent studies have shown that the thickness of the active layer appears to be deepening due to climate change.

Along the road, the plateau region corresponds to a zone of extensive discontinuous permafrost, the Ikadlivik valley has sporadic permafrost.

Studies to be carried out

As part of the impact assessment, an evaluation of the permafrost will be conducted in accordance with the procedures contained in Canadian Standards Association published CSA 4011, “Infrastructure in Permafrost: A Guideline for Climate Change”. This document provides guidance and practical advice on location and design for infrastructure in northern environments. The document describes the nature of permafrost, trends in climate change, foundation systems for community infrastructure, and presents a process for ensuring climate change is incorporated into design and location decisions.

14.1.5.2.2 Process plant (Sept-Îles project component)

There is no permafrost in Sept-Îles and as such, Sept-Îles is excluded from this evaluation.

14.1.5.3 Fluvial Geomorphology and Hydrology

14.1.5.3.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

Water is omnipresent in the northern Quebec landscape. The mine site is characterized by the presence of lakes, wetlands, and tributaries that drain the area over impermeable frozen substrates, dense basal till, or shallow till to bedrock. Approximately 80% of the mine site's area drains towards Lake Brisson, which waters, after flowing through Lake Napeu Kainiut, discharge into the Deat River watershed and ultimately leads to the George River (approximately 100 km downstream; Map 14-1). Besides the Napeu Kainuit watershed at the mine site (Déat River), the Kogaluk River, the Konrad Brook, the Ikadlivik Brook, the Reid Brook and Little Reid Brook watersheds are the watersheds along the road corridor in Labrador and LIL.

The road corridor plans to cross three main water crossings (1 bridge and 2 arch culverts), associated with three main watersheds, namely from west to east: in the Kogaluk River, in the Ikadlivik Brook, and in Reid Pond. Waters are also characterized with low buffering capacity. Culverts of lesser dimensions would be installed to cross the remaining smaller intermittent and permanent streams. The dominant watercourse substrate type is coarse; with erosion-sensitive materials surrounding about one third of the water crossings.

14.1.5.3.2 Process plant (Sept-Îles project component)

The process plant in Sept-Îles will be located in an area designated for industrial usage. However, the Au Foin River, a tributary of the Baie des Sept-Îles does cross the proposed area of the plant. A potential obstacle is mapped at the entrance of the tributary (CRECN, 2016; Map 14-2). A complete investigation of the site will be completed as part of the impacts assessment

14.1.6 Hydrogeology

14.1.6.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

An assessment of groundwater conditions was conducted at the mine site in 2011 and 2012 (AECOM, 2013b). Based on observations from borehole logs and permeability tests, three hydrostratigraphic units have been identified:

- An undifferentiated till overburden, with poor aquifer potential, is present in the till and is the primary hydrogeological unit covering the Site. The groundwater elevation is typically within 1 - 2 m of the surface. The hydraulic conductivity of the undifferentiated overburden ranges from 1.5 x 10-4 to 4.7 x 10-7 m/s.
- The esker aquifer is composed of well sorted, coarse-grained sediments. The hydraulic conductivity of the esker aquifer is high, ranging from 1.2 x 10-3 to 5.6 x 10-6 m/s. Groundwater elevations are 5 – 10 m below surface. The esker aquifer represents a potential source of potable water where the groundwater quality meets criteria for potable water but should be further evaluated for quality and yield prior to use.
- A fractured bedrock aquifer is present beneath the site. The hydraulic conductivity of the bedrock is moderate to low, ranging from 4.0 x 10-4 to 1.4 x 10-9 m/s. Groundwater elevations are typically within 1 or 2 m below the ground surface. Since the bedrock fracture density is likely to decrease with depth, the bedrock aquifer has a limited yield.

The vertical hydraulic gradient appears to be upward, from bedrock to the surficial deposits. The upward vertical gradient is most pronounced in the slope area of the B-Zone ore body and the esker.

Groundwater characterization in 2011 involved groundwater sampling from 14 monitoring wells while the 2012 groundwater characterization has involved the sampling of 25 monitoring wells. The pH varied between 5.3 and 7.3. Electrical conductivities are low to very low, which can be expected in water with very low to low dissolved solids content. The total alkalinity varied from <1 to 89 mg/l, which is low to very low. The total hardness was in the range of 10 to 410 mg/l. Considering the conductivity, total alkalinity and total hardness, the groundwater would be classified as soft to very soft. The results also showed that:

- Certain metal concentrations (Al, Cu, Ag, Zn) exceeded the Quebec seepage to surface water criteria. This indicates that the natural groundwater is already exceeding the recommended Quebec limits for groundwater discharge to surface water.
- Radionuclides were detected in most samples. Total concentrations are up to 28 Bq/L in samples from fractured bedrock below the esker aquifer.
- Rare earth elements were detected in many samples. The highest concentrations of REEs were detected in the esker aquifer and bedrock beneath. This information tends to confirm that the B-Zone ore body influences the groundwater quality in the downgradient in terms of groundwater flow from the mineralized zone.

<u>Studies to be undertaken</u>

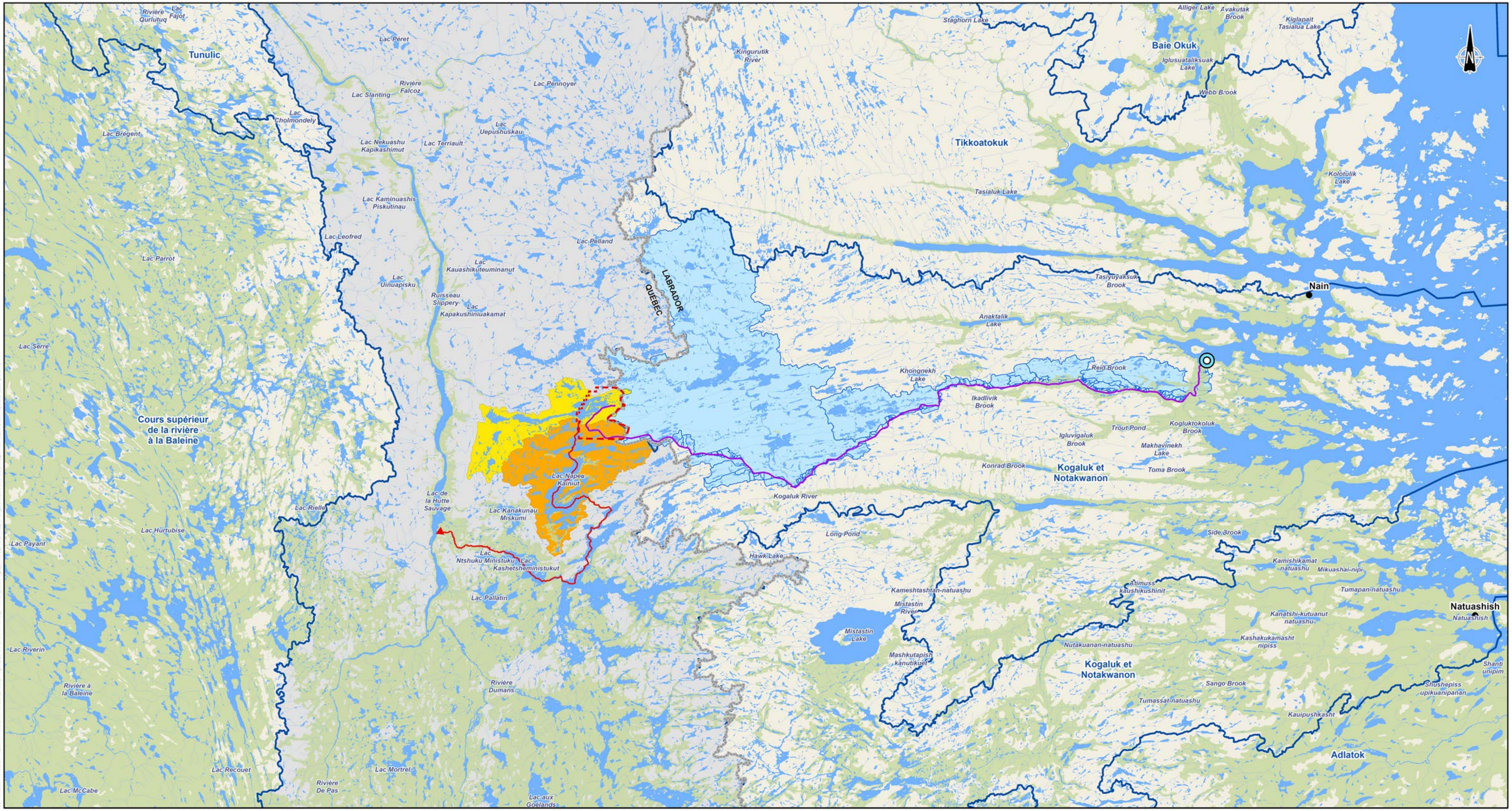
An additional groundwater characterization will be carried out at the mine site to take account of the new footprint of mine facilities, which will be determined by the prefeasibility study, as well as to comply with the impact assessment guidelines and other requirements that were updated since 2011-2012. For exemple, groundwater in the broader study area (one-kilometer radius) should be covered by the study and additional parameters have to be analysed.

Consultations with federal, provincial (NL) and Nunatsiavut authorities will be conducted to determine the initial groundwater characterization needed along the future seasonal road and in the future container storage and handling facility at Edward’s Cove.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composantes du projet / Project Component

- Limite des concessions d'exploration minières détenues par Métaux Torngat / Outline of Torngat Metals Mineral Exploration Claims
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Hydrographie / Hydrography

- Trajet de l'écoulement du lac Brisson à la rivière George / Water flow from Brisson lake to George river
- Bassin versant / Watershed
- Bassin versant de la Rivière George / George River Watershed
- Sous-bassin versant du lac Brisson / Brisson lake sub-watershed
- Sous-bassin versant du lac Napeu Kainiut / Napeu Kainiut lake sub-watershed
- Sous-bassin versant de la route d'accès / Access Road Sub-Watershed

Autre / Other

- Frontière Québec et Labrador / Quebec and Labrador border

PRÉLIMINAIRE / PRELIMINARY

1:800 000

0 10 20 km

NAD 1983 UTM Zone 20N

Date : 2023-08-23 11:34

Source:
Données topographiques / Topographic data: RNCan (2022)
Bassin versant / Watershed: National Hydro Network, RNCan (2023)

Carte 14-1
Bassins versants dans la zone du projet au Nord

Map 14-1
Watersheds within the Project area in the North

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composantes du projet / Project components

Site potentiel de l'usine de séparation des métaux de terres rares de haute pureté / Potential Site of the rare earth processing and high purity separation plant

Hydrographie / Hydrography

Bassin versant / Watershed

Cours d'eau / Watercourse

Marécage / Swamp

Milieu humide / Wetland

Tourbière / Bog

Autre / Other

Route principale / Primary road

PRÉLIMINAIRE / PRELIMINARY

Source:
Données topographiques / Topographic Data: NRCan (2022)
Hydrographie / Hydrography: MRNF (2023)
Bassin versant / Watershed: MELCCFP (2023)
Milieu humide / Wetland: MELCCFP (2019)

1:30 000

0 250 500 m

NAD 1983 UTM Zone 20N

Date : 2023-08-28 09:20

Carte 14-2
Bassins versants dans la zone de projet à Sept-Îles

Map 14-2
Watersheds within the Project area in Sept-Îles

AECOM

14.1.6.2 Process plant (Sept-Îles project component)

No groundwater characterization is currently available on the process plant surroundings in Sept-Îles. A groundwater characterization meeting the requirements of applicable guidelines will be conducted at the future process plant site as part of the impact assessment study.

14.1.7 Hydrology and Water Management

14.1.7.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The Quebec-Labrador border is delineated following the drainage basins/ watersheds. The study area occupied by the mine site is bordered on its eastern limit by a continental watershed divide, on its northwest limit by Lake Brisson, and on its western limit by the Lake Brisson outlet, e.g. Lake Napeu Kainiut watershed. From the outlet of Lake Brisson, water flows into the Deat River and eventually the George River, after running through a string of lakes for a total of 103 km. The George River is a large river that flows northwards up to the Ungava Bay (Arctic). At the mine site, the hydrological network is comprised of 19 sub-watersheds, eight of which drains into Lake Brisson. These eight sub-watersheds cover a total area of 18 km^2 (27% of the project area), of which 4.5 km^2 drain directly into the Lake Brisson. The other 11 sub-watersheds flow either towards Labrador or Lake Napeu Kainiut, directly south of the Mine Site.

Thus, approximately 80% of the mine site (51.3 km^2) is located in the northeastern part of the Deat River watershed (Quebec) and the remaining part (12.1 km^2) drains into the Notakwanon watershed (Labrador). Taken together, these sub-watersheds create a multi-basin pattern due to numerous surface depressions. Indeed, more than 90 small lakes or depressions are found in the project study area. Two types of oligotrophic lakes are common in this region: small, shallow, irregular ponds which occupy hollows eroded in the bedrock; and larger rock-basin lakes created by damming that resulted from natural accumulations (AECOM, 2012b).

Along the access road in Labrador, three main watersheds are encountered, namely from west to east: the Kogaluk River, the Ikadlivik Brook, and The Reid Brook.

In the northern components of the project, water management, drainage and hydraulic modeling will be performed to account for standards to undertake regarding the construction of a new rare earth mine and a road access (modification of drainage, discharges, sanitary waters, etc.) .

<u>Studies to be carried out</u>

<u>Mine site</u>

In Quebec, the current standards that apply are mainly driven by the Directive 019 for the mining industry (MDDEP, 2012), and its associated regulations such as the *Guide de caractérisation des résidus miniers et du minerai* (MELCC, 2020), *Radionucléides recommandés pour l'analyse de la radioactivité dans les matrices environnementales* (MDDELCC, 2017), as well as the Metal and Diamond Mining Effluent Regulations (SOR/2002-222) at the Federal Level. Specifically, in the *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel* (MDDELCC, 2017), and specifically under Appendix 3 *Annexe 3- Information à fournir- Modélisation hydrodynamique de l'effluent*, the characterization of the hydrology should include the low flows of the watercourse effluent receiver (Q2.7, Q10.7 and Q5.30). It must also assess the area of the watershed upstream from the discharge point of each effluent. A numerical modeling of the dilution and dispersion of the effluent (mining and waste) is necessary to establish the environmental discharge objectives if the receiving environment of the effluent has complex hydrodynamics or if we consider that the mixture of the effluent will not be complete over the entire watercourse at a distance of 250 meters from the discharge point (EDO; MELCC, 2022).

Hydraulic engineering work will be driven by the guidelines for mining project in Quebec. These guidelines will guide the identification of variants of infrastructure footprint based on the naturel drainage on site. Torngat Metals will propose project footprint variant fully aligned with integrating aspects of sustainable development and strategy, such as for discharge points (sanitary water, mining waters) or sedimentation ponds, etc.

Those regulations will also inform the applicable design criteria for the water management infrastructures (Ponds, ditches, culverts) by updating the hydrological study previously conducted (2011-2012) with analysis of the various data sets, validation in the current context. New data acquisition (2023-2024) will aim at measuring flow and depth using ADCP (acoustic doppler current profiler) equipment along with current standards in order to produce a detailed hydrological characterization of the study area. Those newly data will also serve to feed the drainage network model of the site and the hydrodynamic model. Moreover, in term of mine water balance, a monthly mine water balance with dry, average and wet climatic conditions will be developed on the most recent configuration projected for three typical years and integrating the climate change context. A model of the complete drainage network will be built. Hydrodynamic models for the characterization and delimitation of the plume dilution and dispersion of the mining effluent and adjacent area will also be developed. Data acquisition will be completed in order to conduct any additional studies potentially needed to improve the water management. *Hydrodynamic modelling to assess the dilution and dispersion of the mine effluent plume*

The hydrodynamic modeling aims to, firstly, delimitate the mining effluent plume in the receiving waters (Brisson Lake) and, secondly, evaluate the dilution rates at different distance to the effluent release point according to the provincial and federal environmental standards. Numerical modelling will also be performed to determine the dispersion under different environmental conditions (scenarios). The Cormix/Plumes model and TELEMAC/Deflt3D model will be used for the effluent modeling, as they are the recognized tools for analyzing and predicting the dilution of effluent plumes and for designing diffusers. The obtained results will allow to optimize both the location and the configuration of the effluent discharge site. Data acquired in 2011-2012 and available climate data from ECCC will be profitable to carry out this activity. In addition, new efforts will be deployed in 2023-2024 into the data acquisition in order to refine and validate the hydrodynamic model.

The mine effluent modeling will comply with the applicable guidelines and standards, such as the Directive 019 (MDDEP, 2012), on the guidelines on Calculation and Interpretation of Environmental Discharge Objectives (EDO) for Aquatic Contaminants MELCC (2022) and on the technical guide for conducting Metal Mining Effluent Plume Delineation Studies (ECCC, 2012).

Road Corridor to Port (Vale)

The road corridor is located between the Strange Lake B-Zone Deposit in Quebec and Anaktalak Bay on the coast of Labrador. Depending on the alignment, the total length of the road alternatives may vary between 166 km to 169 km. The main rivers flowing easterly in Labrador are the Kogaluk River, Kogluktokoluk Brook, Ikadlivik Brook, Reid Brook and Little Reid Brook. Ikadlivik Brook is a tributary of Kogluktokoluk Brook, which empties into the head of Voisey's Bay. Reid Brook's mouth empties at the same location as the Kogluktokoluk River and is normally considered as an extended tributary of the Kogluktokoluk–Ikadlivik River system. Reid Brook flows into Voisey's Bay while Little Reid Brook flows into Anaktalak Bay.

Specific hydraulic studies will be performed along the Road Corridor to verify the conformity of type of crossing (bridge, arch culvert, and culverts) according to the provincial and federal standards, while ensuring proper fish passage in all water level conditions.

At the three main water crossings, more comprehensive data will be gathered in order to complete a 1D / 2D hydraulic modeling in order to study the river behavior and to conduct the design of the main water crossings. Bathymetry surveys and Drone-Lidar surveys will be conducted.

14.1.7.2 Process plant (Sept-Îles project component)

The process plant in Sept-Îles will be located in an area designated for industrial usage. A hydrological analysis will be conducted to the site in order to characterize the hydrological portrait of the study area as well as the delimitation of the watersheds and the drainage network. At the project current stage of development, the characteristics and discharge point of the plant effluent are not yet known. A mining effluent plume modeling will be conducted in the receiving waters should an effluent is discharged from the plant into the Bay of Sept-Îles, in order to assess the dilution rates accordingly to the provincial and federal environmental standards.

14.1.8 Limnology

14.1.8.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

Limnology within the region of the mine site and along the road corridor in Labrador and LIL is typically characterized by oligotrophic conditions, which refers to waters with low nutrient input and low biological productivity. This is the case for the two main lakes at the mine site, Lake Brisson and Lake Napeu Kainiut. Despite being fed by several small lakes, ponds, and streams, some of which are intermittent, these oligotrophic conditions have been documented through various laboratory analyses of water samples in 2011-2012, as well as *in situ* measurements of certain surface water quality parameters. Similar results occurred while sampling at the three main water crossings along the road corridor.

14.1.8.2 Process plant (Sept-Îles project component)

The process plant in Sept-Îles includes overlapping to the drainage of the Au Foin River, which is a tributary of the Baie des Sept-Îles (Map 14-2). The Baie des Sept-îles is recognized as a high ecological value ecosystem, where tributaries such as the Au Foin River provide freshwaters with varying feeding resources and minerals. The presence of filamentous algae is reported along with the rainbow trout egg retention for the Au Foin River, of a total watershed of 562 m², which is a sign of eutrophication within the watershed (OBV Duplessis, 2021).

14.1.9 Surface water quality

14.1.9.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

Surface water quality was monitored in 2011 and 2012 at a total of 23 sampling stations located throughout the mine site to account for the spatial variability of different water bodies in the study area. The laboratory was asked to set detection limits (RDL) below the criteria in order to guarantee results comparable to the guidelines. Parameters included metals and metalloids, rare earth elements (REE) and associated minerals, radioisotopes, nutrients and trophic status indicators, and hydrocarbons. To account for temporal trends, water quality data was acquired for four seasons, including winter, and showed relatively low concentrations of metals, radioisotopes, nutrients, and other elements across the study area. Table 14-3 details the list of analytes considered in 2011-2012 (AECOM, 2013c).

Table 14-3 : Surface water parameters analysed in 2011-2012 at the Mine Site (AECOM, 2013c)

Ions, total metals and metalloids		Nutrients and others	Rare Earth Elements	Radioactives isotopes	Hydrocarbons and PAHs	BTEX	Phenols
Aluminium	Mercury	Ammonia	Cerium	Lead-210	Hydrocarbons C_{10}-C_{50}	Benzene	o-Cresol
Antimoiny	Molybdenum	Acidity	Dysprosium	Radium-226	Acenaphtene	Chlorobenzene	p-Cresol
Silver metal	Nickel	Alcalinity	Erbium	Radium-228	Acenaphtylene	Dichloro-1,2 benzene	Dimethyl-2,4 phenol
Arsenic	Niobium	Bicarbonates	Europium	Thorium-228	Anthracene	Dichloro-1,3 benzene	Nitro-4 phenol
Barium	Gold	Chloride	Gadolinium	Thorium-230	Benzo(a)anthracene	Dichloro-1,4 benzene	Phenols totaux
Beryllium	Palladium	Chlorophyll a	Holmium	Thorium-232	Benzo(a)pyrene	Ethylbenzene	Chloro-2 phenol
Bismuth	Lead	Conductivity *in situ*	Lanthanum	Uranium-234	Benzo(e)pyrene	Styrene	Chloro-3 phenol
Boron	Potassium	Conductivity *labo*	Luteum	Uranium-235	Benzo(b+j+k)fluoranthene	Toluene	Chloro-4 phenol
Bromine	Rhénium	Dissolved organic carbon	Neodymium	Uranium-238	Benzo(c)phenanthrene	Xylenes	Dichloro-2,3 phenol
Cadmium	Rubidium	Dissolved Oxygen *in situ*	Praseodymium		Benzo(g.h.i)perylene		Dichloro-2,4 + 2,5 phenol
Calcium	Selenium	Fluorides	Samarium		Chrysene		Dichloro-2,6 phenol
Chromium	Silicium	Hardness	Scandium		Dibenzo(a.h)anthracene		Dichloro-3,5 phenol
Cobalt	Sodium	Nitrates	Terbium		Dibenzo(a.i)pyrene		Pentachlorophenol
Copper	Strontium	Nitrites	Thulium		Dibenzo(a.h)pyrene		Tetrachloro-2,3,4,6 phenol
Total cyanides	Tantalum	pH *in situ*	Ytterbium		Dibenzo(a.l)pyrene		Tetrachloro-2,3,5,6 phenol
Tin	Thallium	pH labo	Yttrium		Dimethyl-7.12 benzo(a)anthracene		Trichloro-2,4,5 phenol
Iron	Thorium	Redox potential			Fluoranthene		Trichloro-2,4,6 phenol
Gallium	Thungsten	Sulfate			Fluorene		Chlorophenols
Germanium	Titanium	Sulphides			Indeno(1.2.3-cd)pyrene		
Hafnium	Uranium	Temperature *in situ*			Methyl-3 cholanthrene		
Indium	Vanadium	Total Nitrogen Kjeldahl			Naphtalene		
Lithium	Zinc	Total phosphorus			Phenanthrene		
Magnesium	Zirconium	Total suspended solids			Pyrene		
Manganese		Turbidity in situ			Methyl-1 naphtalene		
		Turbidity labo			Methyl-2 naphtalene		
					Dimethyl-1.3 naphtalene		
					Trimethyl-2.3.5 naphtalene		

The 2011-2012 datasets are considered historical reference baseline data, in which water quality values exceeding guideline concentrations will be highlighted but will not be considered representative of exposure conditions. Any indications of toxicity should be considered to be attributable to natural prevailing conditions within the study area. There are, however, no criteria for some metals[5], rare earth elements (REE[6]), radioactive isotopes, sulphides (H_2S), tellurium (Te), thorium (Th), potassium (K), sodium (Na), total Kjeldahl nitrogen (TKN), C_{10}-C_{50}, sulfates (SO_4), bicarbonates (HCO_3), acidity, alkalinity, hardness, conductivity, redox potential, and temperature.

The results indicate some seasonal and interannual variability for key parameters such as pH. Along the road corridor, surface water quality was addressed while sampling at the three main water crossings previously mentioned. Aluminium (Al) and iron (Fe) were the metals most frequently exceeding provincial and federal guidelines (MDDEP, CCME, 2012). More precisely, for the mine site, the 2011-2012 results are as follows:

- Physico-chemistry: low alkalinity values, which when considered in addition to low conductivity, low calcium and low sulfate values all suggest slightly acid water bodies with low buffer capacity to resist to pH variations. For the ecosystem trophic status, measurements indicated a relatively low concentration of nutrients with low organic production (low total phosphorus, chlorophyll *a*, nitrates, nitrites, nitrogen, ammonia and dissolved organic carbon), high dissolved oxygen concentrations, low turbidity, and low total dissolved solids.
- Metals: most trace metals within the study area had naturally low concentrations. The following metals were not detected for all stations: antimony (Sb), barium (Ba), bismuth (Bi), cadmium (Cd), cesium (Cs), chromium (Cr), cobalt (Co), gallium (Ga), germanium (Ge), gold (Au), hafnium (Hf), indium (In), lithium (Li), mercury (Hg), palladium (Pd), rhenium (Re), rubidium (Ru), selenium (Se), silver (Ag), tantalum (Ta), thallium (Tl), tin (Sn), titanium (Ti), tungsten (W), uranium (U), and vanadium (V). Trace metals that were frequently occurring at levels exceeding either provincial and/or CCME guidelines were the aluminium (Al) and iron (Fe). Other exceedances of guidelines concerned: beryllium (Be), copper (Cu), lead (Pb), and zinc (Zn).
- Rare earth elements (REEs) and associated minerals (Be, Nb, U, Th, Zr): all stations had concentration levels below the RDL for the various REEs, which varied from 0.010 mg/L to 0.500 mg/L depending on the element, except for one measurable value of yttrium (Y) (0.0071 mg/L). In terms of associated minerals, niobium (Nb), thorium (Th), zirconium (Zr), and uranium (U) were not detected at their reported detection limits (RDLs), which were 0.050 mg/L, 0.100 mg/L, and 0.500 mg/L, and 0.01 mg/L respectively. Only beryllium (Be) was reported at detectable concentrations in surface waters.
- Radioisotopes were investigated in streams and in lacustrine stations of Lake Brisson. The station closest to the deposit had a measurable value (>0.01 Bq/L) for both radioisotopes (Ra-226: 0.03 Bq/L, Th-228: 0.04 Bq/L) in surface waters in 2011. I In 2012, Th-228 (0.02 to 0.05 Bq/L) and U-234 (0.02 Bq/L) were detected in surface waters at each station. Th-230 (0.02 to 0.05 Bq/L) and Ra-226 (0.017 to 0.044 Bq/L) were detected at two stations.
- Polycyclic aromatic hydrocarbon (PAH), MAH/BTEX, phenols and hydrocarbons C10-C50 were not detected at their reported detection limits (RDLs), which were 0.0001 mg/L, 0.0003-0.001 mg/L, 0.001 mg/L, and 0.10 mg/L, respectively. Nonmetals such as tellurium (Te), total cyanides, fluorides, and boron (B) were not detected at their reported detection limits (RDLs), which were 0.010 mg/L for Te, 0.003 mg Cn/L for cyanides, 1 mg/L for fluorides, and 0.060 mg/L for B.

Along the road corridor, results are based on three samplings completed in 2012 to account for seasonality. Low concentration of nutrients (nitrates, nitrites, total Kjedahl nitrogen, total phosphorus) with low organic production as they were either slightly above detection for dissolved organic carbon or were not detected at their reported detection limits (RDL). These indicators of low nutrient inputs when considered in addition to low alkalinity, low mineral content (conductivity), low hardness reflecting low concentrations of calcium (Ca) and magnesium (Mg), high dissolved oxygen concentrations, low turbidity, and low total dissolved solids all indicate oligotrophic conditions. In terms of trace metals in surface water, none was reported in exceedance of the guidelines at any of the three

[5] Bismuth (Bi), cesium (Cs), gallium (Ga), germanium (Ge), gold (Au), hafnium (Hf), indium (In), niobium (Nb), rhenium (Re), rubidium (Rb), scandium (Sc), strontium (Sr), tantalum (Ta), tin (Sn), titanium (Ti), tungsten (W), zirconium (Zr)

[6] Rare earth elements= cerium (Ce), dysprosium (Dy), erbium (Er), lanthanum (La), neodymium (Nd), niobium (Nb), praseodymium (Pr), samarium (Sm), yttrium (Y), zirconium (Zr), Europium (Eu), gadolinium (Gd), Holmium (Ho), lutetium (Lu), Terbium (Tb), thulium (Tm), Ytterbium (Tb)

main water crossings. For water crossings where large culverts were planned, turbidity was measured as it is a valuable indicator of suspended particulates in water, and this is particularly useful in the context of erosion of stream banks and evaluation of sedimentation of spawning grounds. As for the three main water crossings, the *in situ* measurements revealed low conductivity and turbidity values, a pH close to neutral (pH=7), and high dissolved oxygen concentrations. Total suspended solids (TSS) concentrations were all lower than the reported detection limit (<2 mg/L).

No data was acquired to date at water crossings in the Vale port facilities surroundings, and data from 1997 Voisey's Bay EIS is not considered as current reference.

Studies to be carried out:

The *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel* [physicochemical characterization guide for the initial state of the aquatic environment before the implementation of an industrial project] (MDDELCC, 2017), was consulted. This Guide provides details on the frequency and periods of water sampling to establish the reference state. The Guide suggests that the sampling should be carried out monthly for a minimum of one year (or two years if technical problems occur during the ice period).

Since 2012, there are about 15 parameters whose water quality criteria for aquatic protection life have changed at federal and provincial levels. Torngat Metals plans to sample at the mine site area three times per year in 2023 and 2024. The data collected in 2011 and 2012 will be considered historical data and will be analysed to establish if a temporal trend (potentially linked to climate change) is noted between 2012 and now. The usage of field blanks and the taking of duplicates will be applied in this new sampling campaign, according to the terms of the Guide.

The parameters to be analysed will follow those listed in the Guide: total dissolved solids (TDS), total metals in trace and faecal coliforms. As the ice-free period is very short, however, it will not be possible to achieve a minimum of six samples (1 per month; temporal variability) in 2023. Nevertheless, Torngat Metals plans to investigate ice regime in the winters of 2023 and 2024, with three sampling under the ice at certain locations per winter. The quality criteria used to identify the thresholds that can induce a chronic effect on aquatic life are those of the MELCCFP (2023) and the CCME (2023). Finally, any methodology set out in the Guide (MDDELCC, 2017) will be applied. From the total stations sampled in 2011-2012, a subselection will be made depending on the variant of discharges. Subsampling will include one reference station that should not be affected by the mining activities, the outlet of Lake Brisson into Lake Napeu Kainiut, and four stations closer to the shore and mining infrastructures/activities.

No other sampling is planned along the road corridor in 2023-2024, except in sensitive habitats that could be identified by the communities. In the future port storage area, sampling is planned at three water crossings, where major contamination parameters such as petroleum hydrocarbons (C10-C50) would be measured given the activities already occurring in this area.

14.1.9.2 Process plant (Sept-Îles project component)

Reference water quality data was gathered in 2019 by the OBV Duplessis (2021), through 6 samplings that occurred from June to November 2019 on Au Foin River, such as the other tributaries of the Baie des Sept-Îles. Parameters analyzed were the ones considered in the *indice de qualité bactériologique et physicochimique ($IQBP_6$)*, namely: total phosphorus, fecal coliforms, suspended solids, ammoniacal nitrogen, nitrites-nitrates, and chlorophyll *a.* All parameters scored for good surface water quality in the Au Foin River (OBV Duplessis, 2021).

Studies to be carried out:

A full characterization will be undertaken on the future process plant site to comply with the *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel* [physicochemical characterization guide for the initial state of the aquatic environment before the implementation of an industrial project] (MDDELCC, 2017).

14.1.10 Soil quality

14.1.10.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

Soil quality was evaluated based on the results of analyses carried out in 2011 and 2012 on 33 soil samples collected at a depth range of 0.3 to 0.5 m and distributed across the proposed mine, stockpile areas and process plant areas and excluded the road. The sampling was done in accordance with the guidelines and best practices applicable at that time. The results are as follows:

- The soil quality analysis results show uniform conditions across the entire site, including concentrations of rare earth elements (REEs).
- Metal concentrations comply with the "A" criterion of the MDDELCC (Churchill-Rae).
- Low concentrations of radioisotopes Ra-226, Th-228, Th-230, Th-232, U-234, and U-238 were measured at some stations.

Total hydrocarbon concentrations, VOCs, and PAHs were all below their respective MDDELCC standards or detection thresholds for these parameters.

Studies to be carried out:

An additional soil characterization will need to be carried out at the mine site to take account of the new footprint of mine facilities, which will be determined by the prefeasibility study, as well as to comply with the Quebec's guidelines that were issued in 2016 regarding the physicochemical characterization of the initial state of the soil before the implementation of an industrial project (MELCC, 2016). As per these guidelines, soils in the broader study area (one-kilometer radius) should be covered by the study, and additional parameters have to be analysed to obtain better representative statistical set of data.

Consultations with federal, provincial (NL) and Nunatsiavut authorities will be conducted to determine the initial soil characterization needed along the future seasonal road and in the future container storage and handling facility at Edward's Cove.

14.1.10.2 Process plant (Sept-Îles project component)

No physicochemical data is currently available on the process plant surroundings in Sept-Îles A soil characterization meeting the requirements of the Quebec's guidelines on the physicochemical characterization of the initial state of the soil before the implementation of an industrial project (MELCC, 2016) will be conducted at the future process plant site.

14.1.11 Sediment quality

14.1.11.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

At the mine site, the sediments were sampled in 2011 and 2012 at seven lacustrine stations in Lake Brisson and five stream stations.

Arsenic, cadmium, and zinc exceeded the threshold effect level (TEL) in sediment according to Environment Canada and the MDDEP (2007) at four out of seven lacustrine stations within Lake Brisson, and in one out of five streams stations.

Along the road corridor, sediment quality analysis was performed at the three main water crossings along the road corridor. No parameter was found in excess of a threshold limit. As for PAHs and PH C_{10}-C_{50}, their concentrations were below the reported detection limit (RDL). However, the reported limit of detection (RDL) for Chromium (Cr) and Copper (Cu) are between the TEL and OEL criterion (Environment Canada and MDDEP, 2007), e.g. 45 mg/kg and 40 mg/kg respectively. The results obtained for metals, rare earth elements, and radioisotopes are considered to be representative of the natural and ambient levels specific to the study area based on local mineralogical conditions. Laboratory analysis results for nutrient indicators confirm the presence of oligotrophic environmental conditions. As for PAHs and PH C_{10}-C_{50}, their concentrations were below the limit of detection (LOD).

No data was acquired to date at water crossings in the Vale port facilities surroundings, and data from 1997 Voisey's Bay EIS is not considered as current reference.

Studies to be carried out:

Sediment quality criteria have not changed since 2007, so the interpretation of the results from the previous baseline study should be valid. The quality criteria used in 2011 and 2012 to identify the thresholds that can induce an effect on the aquatic life will be used (Environment Canada and MDDEP, 2007). Sediment quality sampling will be updated as well in 2024.

For sediment quality, the sampling frequency required in the new Guide (MDDELCC, 2017) is limited to one sampling. However, as with the surface water quality, more parameters will be added to comply with the Guide: total organic carbon, sulfur, humidity percentage, some metals, rare earth elements and radio-elements. As for surface water quality, sediment sampling stations will be planned in a representative reference area, at the Lake Brisson Outlet and at four stations in the vicinity of mining infrastructures and activities. Granulometry of surface sediment will also be completed in 2024 under laboratory analysis. Sampling or an analysis of the vertical state (by corer) of the sediments is not planned as this practice is only useful if the study site has a history of anthropogenic discharge (MDDELCC, 2017).

As for surface water quality, no other sampling is planned along the road corridor in 2023-2024, except for sensitive habitats that could be identified by the communities. In the future port storage area, sampling is planned at three water crossings, where major contamination parameters such as petroleum hydrocarbons (C10-C50) would be measured given the activities already occurring in this area.

14.1.11.2 Process plant (Sept-Îles project component)

No reference sediment quality data is currently available for the Au Foin River in the process plant surroundings in Sept-Îles,

A full sediment characterization will be undertaken in Sept-Îles for the process plant in 2024, as specified in the *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel* [physicochemical characterization guide for the initial state of the aquatic environment before the implementation of an industrial project] (MDDELCC, 2017).

14.2 Biological environment

As already mentioned, the information presented in the following sections is based on data already obtained in the past, mainly in 2011 and 2012, although new data acquisition has started in 2023. This baseline data will be updated as part of the impact environmental assessment study.

14.2.1 Vegetation and Wetlands

14.2.1.1 Strange Lake mine site, container storage and handling facilities (northern project component)

The mine site area is characterized by arctic vegetation dominated by wetlands. During the floristic surveys conducted in 2011 and 2012, wetlands covered 45% of the study area. Also, during these surveys, low habitat diversity was observed. Tall shrubs (dwarf birch and bog bilberry) and trees (white spruce) were restricted to the transitional slopes between the central plateau and Lac Brisson, as well as along streams and the edges of some lakes (larch). Greater plant diversity was found in riparian areas and near the shores of Lac Brisson. The most diverse environments were fens and marshes with calciphilous flora. Snowbeds were also unique microhabitats for the flora. At the mine site, a total of 88 plots were fully sampled and an additional 43 observation points were characterized for mapping purposes. A total of 115 vascular plant species were found in the mine site area of about 80 km^2 (lakes included). Twenty vegetation subclasses were defined on a structural basis for mapping purposes. The classification is hierarchical, allowing the generalization of vegetation cover into nine overall classes. Generally, the mine study area is characterized by arctic types of vegetation, with the dominance of dwarf shrubs and sedges. About half of the mine site is covered by vegetation types dominated by sedges alone (including tufted clubrush) or with dwarf shrubs. These are for the most part wetlands. Tall shrubs (American Dwarf birch, alpine bilberry) and trees (white spruce) are restricted to the transitional slope between the central plateau and Brisson Lake and along streams and some on the periphery of lakes (tamarack). Overall, the mine site is considered to have relatively low habitat diversity.

Wetlands are extensive and belong essentially to the fen type. The development of fens is favored by the surface run-off ubiquitous in this region. The topographical position of the central streamlined moraine plateau makes it an upstream source for 19 sub-watersheds. The physical landforms of longitudinal crests and large depressions also make the central plateau act as a “reservoir”. The presence of dense basal till and of permafrost are other factors restricting soil permeability and drainage.

The vegetation survey did not identify any flora protected under Quebec’s Threatened or Vulnerable Species Act, listed on Canada’s Species at Risk list or include any federal-level COSEWIC vascular plant candidate species at the time. Only one species, starwort chickweed (Cerastium cerastioides), was considered rare in Canada by Argus and Pryer (1990) and is likely to be designated threatened or vulnerable in Quebec in administrative regions of the Bas-Saint-Laurent and Gaspésie-Îles-de-la-Madeleine. One species of moss, Meesia hexasticha, is uncommon in eastern North America according to current knowledge and is likely to be designated threatened or vulnerable (Gouvernement du Québec, 2012). These two species were found about 3 km north-east of the B-Zone near a stream in the Glaciofluvial Deposit Complex.

Given that vegetation was relatively homogenous in the Brisson Lake area, no exceptional plant habitat was found. However, micro habitats can shelter particular plant species. A few sectors or habitats appeared to be more ecologically interesting or sensitive: Wetland habitats along streams, ponds and small depressions on the Naskaupi glacial lake deposits in the Glaciofluvial Deposit Complex (north-east of B-Zone); small meadow marshes along the shores of Brisson Lake or at the mouth of small stream outlets in Brisson Lake; fens of the Naskaupi Glacial Lake Lowlands in the western part of the study area; riparian Shrub Fens of the central Streamlined Moraine Plateau, and snowbeds.

Studies to be carried out:

Vegetation

The dataset for the terrestrial environments is presumably accurate given the absence of any human activities. Therefore, no new field inventories are planned in the study areas. The terrestrial environment work plan will present only the approach to update the documentation on these environments.

Literature review:

In order to obtain a current picture of the terrestrial environments present at the mine site, all available and relevant databases will be consulted in order to update information on potentially important terrestrial habitats. The databases consulted will be used to detect the presence of protected areas or exceptional habitats, or to gather any other information relevant to assessing the ecological value of terrestrial environments. The following databases will be consulted:

- Carte interactive Forêt ouverte of the ministère des Ressources naturelles et des Forêts (MRNF, 2023)
- Liste des habitats d'espèces floristiques menacées ou vulnérables du Québec (MELCCFP, 2023c)
- List of ecological and wilderness reserves in the province of Newfoundland and Labrador (Government of Newfoundland & Labrador, 2023a)
- List of Newfoundland and Labrador provincial parks(Government of Newfoundland & Labrador, 2023b)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Wetlands

The purpose of the wetlands work plan is to present in detail the methodology that will be used to identify, delineate and characterize the wetlands present in the study area. The proposed wetland methodology will follow the recommendations of the Quebec government (Lachance et al., 2021).

Literature review:

Prior to the start of field inventories, a literature review will be carried out to obtain the most up-to-date information required for field preparation and wetland characterization. The following databases will be consulted:

- Données de milieux humides potentiels de la carte interactive du MELCCFP (MELCCFP, 2023b)
- Plan régional de conservation des milieux humides de CIC pour la région administrative du Nord du Québec (CIC, 2009a)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Survey sites selection:

From the 2011 photo-interpretation of the study area and information gathered from any other relevant databases, wetlands will be classified according to their type (marsh, shrub swamp, treed swamp, pond or wooded or open peat bog) as required by Lachance et al. (2021). Considering that wetlands located north of the 49th parallel may have different characteristic from those observed in southern Quebec, the classes of wetlands and their definitions provided by Lachance et al. (2021) may lack some precision for northern wetlands. Thereby, types of wetlands will be adapted if necessary, according to *The Canadian Wetland Classification System* (National Wetlands Working Group,1997) which defines tundra specific wetland types.

Using photo-interpretation, sampling stations will be positioned within the study area, according to the following criteria:

- Station will be positioned in an area where the vegetation is homogeneous at the wetland level;
- The number of stations per homogeneous vegetation unit (HVU) will be informed by the recommendations developed by Lachance et al. (2021) in the context of a highly homogeneous vegetation unit in terms of floristic species, soil conditions and hydrological indicators. However, as the project is north of the 49th parallel, the MELCCFP has confirmed that this Guide does not need to be fully applied to the Strange Lake Project (Jessica Hawey, pers. Comm. May 5, 2023). Thus, adaptations can be applied to the number of stations to be carried

out in northern environments compared to what is proposed for southern Quebec in Lachance et al. (2021). Discussions will be held with concerned governments to adapt the number of stations required in a north conditions context;

- At least one station will be located in each wetland or wetland class forming part of a complex.

The position of the stations can be adjusted to the terrain, depending on the actual characteristics of the wetlands.

Field surveys:

The inventories will be carried out at a time of year when the floral species can be identified, i.e. during the flowering period. Generally, inventory periods should be between July and September for plant species located at this latitude.

In Quebec province, wetland characterization and delineation need to comply with the methodology proposed in the guide *Identification et délimitation des milieux humides du Québec Méridional* (Lachance et al., 2021). However, as mentioned before, it has been confirmed that this Guide does not need to be fully applied to the Strange Lake Project since the project is located north of the 49^{th} parallel (Jessica Hawey, pers. Comm. May 5, 2023). The methodology will therefore be adapted to northern particularities if necessary.

According to Lachance et al. (2021), the boundary of a wetland should be placed at the point where it moves from a predominance of facultative or obligate wetland vegetation to a predominance of terrestrial vegetation. However, the water status of northern plants is often unknown or not listed in Lachance et al. (2021). Therefore, this criterion will be applied if possible and a special attention will be paid to any general vegetation change to help in the wetland delineation process. The taxonomy used is that of the Canadian Vascular Plant Database (VASCAN) (Brouillet et al., 2010+).

In addition to botanical criteria, the determination of a wetland boundary according to Lachance et al. (2021) requires consideration of edaphic criteria (soil type, drainage and presence of speckles) and hydrological criteria (signs of water withdrawal, high water table, etc.). Consequently, soil borings will be carried out whenever possible to validate the nature of the soils and the presence of speckles. However, some soil components, such as drainage for example, will require adaptation given that the Guide is not adapted to northern territories. Any physical markings associated with the presence of water in the environment will also be noted (blackish litter, water-saturated soil, etc.).

For each station, the following information will be recorded:

- Validation of wetland class (pond, marsh, swamp, bog, etc.) and type;
- General description of the site;
- Presence or absence of a regular or intermittent watercourse or other hydrological link;
- Assessment of plant species cover, by height stratum;
- Detailed soil characterization;
- Identification of primary and secondary hydrological indices;
- Opportunistic inventory of animal species (songs, tracks, faeces, direct observations, etc.);
- Presence of endangered or invasive plant species;
- Presence and description of natural and anthropogenic disturbances;
- At least one photograph of each station;
- At least one soil photograph for each station.

Invasive plant species

The invasive plant species work plan is intended to describe in detail the methodology that will be implemented during future inventories in order to detect any invasive plant species that may be present in the study areas.

Literature review:

In order to obtain the most up-to-date information on invasive plant species present or potentially present in the study areas, a literature review will be carried out prior to the field inventories. This literature review will establish a list of the various invasive plant species present on the territory and considered as such by the various levels of government. To this end, the following databases will be consulted:

- Interactive map from MELCCFP's SENTINELLE tool (MELCCFP, 2023f)
- List of invasive plant species in Newfoundland and Labrador
- Guide to invasive plants in Canada (Government of Canada, 2023c)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Field surveys:

No specific surveys for invasive plant species are planned for future field surveys. However, particular attention will be paid to invasive plant species during all inventories and trips carried out in the study areas. Generally, the survey period should be between July and September for plant species located at this latitude. If an invasive plant species observation is made at a station or incidentally in the study areas, the following information will be collected:

- Species identification;
- Demographic description (isolated individual, colony, number of individuals, etc.);
- Assessment of species cover;
- Location of the individual or outline of the colony using GPS points;
- Photographs.

14.2.1.2 Road corridor, container storage and handling facilities (northern project components)

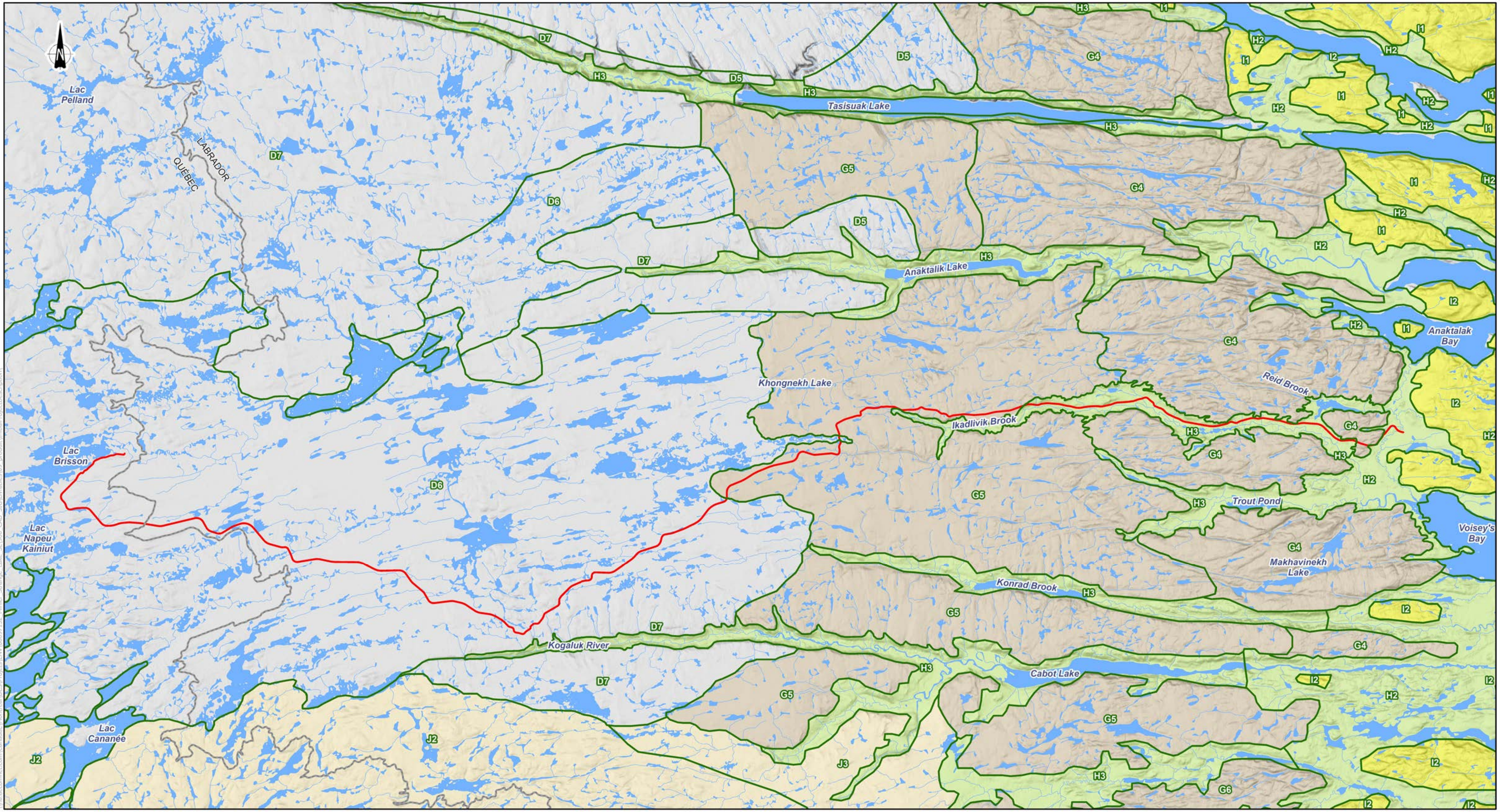
In the road corridor, a total of 68 plots were sampled in 23 different areas. A total of 148 vascular plant species were found in the 400 m strip along the proposed road alignment. Seventy-one ecological types were defined on the basis of vegetation structure (or potential vegetation), height of the shrub layer, surficial material (combination of thickness, texture and drainage) and particular physical features. These were lumped into 25 vegetation subclasses and generalized into 17 overall classes. The road corridor passes through three ecological Land Regions and vegetation types vary from one to another. The first third of the road corridor (~75 km) is inside the Western Plateau Land Region (Map 14-3), as the mine site and vegetation are very similar: 60% is described as Arctic Land communities largely dominated by Dwarf Shrublands and the other 40% is described as wetland communities, dominated by Sedge Fens, then by Shrub Fens. The Central Range Land Region, which covers the upland region from the Western Plateau to the Reid Brook Valley near Anaktalak Bay, is also dominated by the Shrubland class, representing 57% of the area, with Tall Shrubland subclasses occupying more area within this region than in the Western Plateau Region. The area occupied by fens is generally lower, covering about 13% of the area (Sedge Fen and Shrub Fen classes combined). Rocky Barrens (Bareland or Mixedland classes) occupy approximately 14% of land and Coniferous Moss Forests occupy approximately 8% of the area. The lowland valleys of Ikadlivik Brook and Reid Brook belong to the Fraser River Land Region. Nearly three quarters of this region is comprised of forested communities dominated by Coniferous Moss Forests (63%), while Shrublands occupy about 13% cover.

Wetlands form an important part of the landscape in the first 95 km road alignment section from the mine. In terms of floristic diversity, fens rank the highest, especially in a few specific locations such as the edges of streams, along slopes and other individual fens. Given the overall low diversity of the dominant dwarf shrub tundra, these areas dramatically contribute to the overall floristic diversity of the region. Palsa fens, uncommon in that area, may represent a sensitive feature.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Route d'accès / Access road

Route d'accès saisonnière proposé / Proposed seasonal access roade

Région écologique / Land Region

- Central Ranges
- Fraser River
- Mistastin Lake
- Saglek / Hopedale
- Western Plateau

District écologique / Land Region

- D5 - Western Plateau North
- D6 - Western Plateau Central
- D7 - Western Plateau East
- G4 - Central Ranges East
- G5 - Central Ranges West
- G6 - Central Ranges South
- H2 - Fraser River Lowlands
- H3 - Fraser River Valleys
- I1 - Saglek / Hopedale North
- I2 - Saglek / Hopedale South
- J1 - Mistastin Lake Shore
- J2 - Mistastin Lake Brrens
- J3 - Mistastin Lake East

Other / Autre

Frontière Québec et Labrador / Quebec and Labrador border

PRÉLIMINAIRE / PRELIMINARY

Source:
Topographic data / Données topographiques: RNCan (2022)
Land Region and District / Région et district écologique: JWEL (1997)

1:360 000

0 4 8 km

NAD 1983 UTM Zone 20N

Produit: Map 14-3 - Land Regions and Districts - Physiography
Date : 2023-08-25 07:39

Carte 14-3
Régions et districts écologiques - Physiographie

Map 14-3
Land Regions and Districts - Physiography

AECOM

The road corridor survey did not identify any vascular plants listed under provincial endangered species legislation (Quebec, Newfoundland and Labrador), listed as a Species at Risk in Canada or included among the federal-level COSEWIC vascular plant candidate species. Since no observed vascular plant has official protection in Labrador, rare species have been identified through provincial ranking criteria ranging from S1 to S3, as defined by the NatureServe International Network.

Ten rare plant species were encountered in the road corridor study area, including four species (Williams' Sedge, Saint John River locoweed, tufted pearlwort, and nard sedge) with S1 ranking (five or fewer occurrences in Labrador), and six species (alpine bartsia, milky draba, alpine cudweed, elephant's-head lousewort, hairy butterwort, and northern buttercup) listed as S2 (rare throughout their range). Fourteen uncommon (S3) species are also presented and compiled to document the presence of these species for inland Labrador.

In addition to the riparian habitats (shrub fens, shrub swamps, marshes or sedge fens) and some particular fens such as slope fens, the following habitats have the potential to contain rare species and high species diversity: the rocky shores found along upper Ikadlivik Brook, rocky summits near large rivers, and, especially, exposed rocky summits in the geological province of Nain. Within the Ikadlivik and Little Reid Brook valleys (Fraser River Land Region), no distinct habitats were observed, however sampling plots in these areas are very few in the scope of this study.

Studies to be carried out:

Vegetation

The dataset for the terrestrial environments is presumably accurate given the absence of any human activities. Therefore, no new field inventories are planned in the study areas. The terrestrial environment work plan will present only the approach to update the documentation on these environments.

Literature review:

In order to obtain a current picture of the terrestrial environments present in the road corridor, all available and relevant databases will be consulted in order to update information on potentially important terrestrial habitats. The databases consulted will be used to detect the presence of protected areas or exceptional habitats, or to gather any other information relevant to assessing the ecological value of terrestrial environments. The following databases will be consulted:

- List of ecological and wilderness reserves in the province of Newfoundland and Labrador (Government of Newfoundland & Labrador, 2023a)
- List of Newfoundland and Labrador provincial parks(Government of Newfoundland & Labrador, 2023b)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Wetlands

The purpose of the wetlands work plan is to present in detail the methodology that will be used to identify, delineate and characterize the wetlands present in the study area. The proposed wetland methodology will be inspired by previous surveys carried out in the study area in 2011-2012.

Literature review:

Prior to the start of field inventories, a literature review will be carried out to obtain the most up-to-date information required for field preparation and wetland characterization. The following databases will be consulted:

- Données de milieux humides potentiels de la carte interactive du MELCCFP (MELCCFP, 2023b)
- Plan régional de conservation des milieux humides de CIC pour la région administrative du Nord du Québec (CIC, 2009a)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Survey sites selection:

When possible, vegetation classification produce during the 2011-2012 vegetation inventory report (AECOM, 2013d) will be used, as some portions of the road corridor of the present study are the same as it were during the Quest Rare Minerals project. Indeed, a general classification of vegetation based on automatic classification of SPOT satellite data and analyzed with the eCognition software, was completed, and mapped for the entire length of the 5 km wide corridor of the Quest Rare Mineral project. A more detailed description and mapping of vegetation and surficial geology was also completed for the entire corridor, but only for a 400 m wide cross section centered on proposed preliminary road alignments. Since no human activities took place on the study area, the data are presumably accurate, nevertheless, dataset will be update if new data available.

To complete de vegetation classification, a photo-interpretation of the wetlands in the study areas will be carried out, based on stereoscopic screen analyses of the most recent orthophotographs and information from any other relevant databases. Wetlands will be classified according to their type (marsh, shrub swamp, treed swamp, pond or wooded or open peat bog) as defined by Lachance et al. (2021). Considering that wetlands located north of the 49th parallel may have different characteristic from those observed in southern Quebec, the classes of wetlands and their definitions provided by Lachance et al. (2021) may lack some precision for the northern wetlands. Thereby, types of wetlands will be adapted if necessary, according to *The Canadian Wetland Classification System* (National Wetlands Working Group,1997) which defines tundra specific wetland types.

Sampling stations will be positioned within the study area to validate the photo-interpretation and vegetation classification. The number of stations needed for validation will be to discuss with the concerned governments.

Field surveys:

The inventories will be carried out at a time of year when the floral species can be identified, i.e. during the flowering period. Generally, inventory periods should be between July and September for plant species located at this latitude.

The proposed wetland methodology will follow the recommendations of the Quebec government (Lachance et al., 2021). However, as mentioned before, methodology will be adapted to northern particularities if necessary.

According to Lachance et al. (2021), the boundary of a wetland should be placed at the point where it moves from a predominance of facultative or obligate wetland vegetation to a predominance of terrestrial vegetation. However, the water status of northern plants is often unknown or not listed in Lachance et al. (2021). Therefore, this criterion will be applied if possible and a special attention will be paid to any general vegetation change to help in the wetland delineation process. The taxonomy used is that of the Canadian Vascular Plant Database (VASCAN) (Brouillet et al., 2010+).

In addition to botanical criteria, the determination of a wetland boundary according to Lachance et al. (2021) requires consideration of edaphic criteria (soil type, drainage and presence of speckles) and hydrological criteria (signs of water withdrawal, high water table, etc.). Consequently, soil borings will be carried out whenever possible to validate the nature of the soils and the presence of speckles. However, some soil components, such as drainage for example, will require adaptation given that the Guide is not adapted to northern territories. Any physical markings associated with the presence of water in the environment will also be noted (blackish litter, water-saturated soil, etc.).

For each station, the following information will be recorded:

- Validation of wetland class (pond, marsh, swamp, bog, etc.) and type;
- General description of the site;
- Presence or absence of a regular or intermittent watercourse or other hydrological link;
- Assessment of plant species cover, by height stratum;
- Detailed soil characterization;
- Identification of primary and secondary hydrological indices;
- Opportunistic inventory of animal species (songs, tracks, faeces, direct observations, etc.);
- Presence of endangered or invasive plant species;
- Presence and description of natural and anthropogenic disturbances;
- At least one photograph of each station;
- At least one soil photograph for each station.

Invasive plant species

The invasive plant species work plan is intended to describe in detail the methodology that will be implemented during future inventories in order to detect any invasive plant species that may be present in the study areas.

Literature review:

In order to obtain the most up-to-date information on invasive plant species present or potentially present in the study areas, a literature review will be carried out prior to the field inventories. This literature review will establish a list of the various invasive plant species present on the territory and considered as such by the various levels of government. To this end, the following databases will be consulted:

- Interactive map from MELCCFP's SENTINELLE tool (MELCCFP, 2023f)
- List of invasive plant species in Newfoundland and Labrador
- Guide to invasive plants in Canada (Government of Canada, 2023c)
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Field surveys:

No specific surveys for invasive plant species are planned for future field surveys. However, particular attention will be paid to invasive plant species during all inventories and trips carried out in the study areas. Generally, the survey period should be between July and September for plant species located at this latitude. If an invasive plant species observation is made at a station or incidentally in the study areas, the following information will be collected:

- Species identification;
- Demographic description (isolated individual, colony, number of individuals, etc.);
- Assessment of species cover;
- Location of the individual or outline of the colony using GPS points;
- Photographs.

14.2.1.3 Process plant (Sept-Îles project component)

Sept-Îles is located in the bioclimatic zone of balsam fir dominated stands with black spruce and black spruce dominated stands with moss. More precisely, the study area is characterized by a balsam fir dominated stands with white birch and mountain maple on mesic sites. Where soils are well drained, black spruce dominated stands with moss are found, while balsam fir dominated stands with white birch and white alder characterize hydric sites. The information provide by the port of Sept-Îles (dated 2023-02-03) suggest the presence of at least three bogs at the proposed process plant site (Map 14-2). Other bogs and swamps are also found along the Au Foin River.

Studies to be carried out:

Vegetation

The proposed study area of the process plant will be subject to new field inventories. Thus, new terrestrial vegetation surveys will be carried out.

Literature review:

In order to obtain a current picture of the terrestrial environments present at the process plant, all available and relevant databases will be consulted in order to update information on potentially important terrestrial habitats. The databases consulted will be used to detect the presence of protected areas or exceptional habitats, or to gather any other information relevant to assessing the ecological value of terrestrial environments. The following databases will be consulted:

- Carte interactive Forêt ouverte du ministère des Ressources naturelles et des Forêts (MRNF, 2023)
- Liste des habitats d'espèces floristiques menacées ou vulnérables du Québec (MELCCFP, 2023c)

Wetlands

The purpose of the wetlands work plan is to present in detail the methodology that will be used to identify, delineate and characterize the wetlands present in the study area. The proposed wetland methodology will follow the recommendations of the Quebec government (Lachance et al., 2021).

Literature review:

Prior to the start of field inventories, a literature review will be carried out to obtain the most up-to-date information required for field preparation and wetland characterization. The following databases will be consulted:

- Données de milieux humides potentiels de la carte interactive du MELCCFP (MELCCFP, 2023b)
- Plan régional de conservation des milieux humides de CIC pour la région administrative de la Côte-Nord (CIC, 2009b)

Survey sites selection:

A photo-interpretation of the wetlands in the study areas will be carried out, based on stereoscopic screen analyses of the most recent orthophotographs and information from any other relevant databases. Wetlands will be classified according to their type (marsh, shrub swamp, treed swamp, pond or wooded or open peat bog) as defined by Lachance et al. (2021).

Using photo-interpretation, sampling stations will be positioned within the study area, according to the following criteria:

- Stations will be positioned in an area where the vegetation is homogeneous at the wetland level;
- The number of stations per homogeneous vegetation unit (HVU) will be determined according to the recommendations developed by Lachance et al. (2021) (Table 14-4);
- At least one station will be located in each wetland or wetland class forming part of a complex.

For HVUs larger than 10 ha, the inventory effort per area may decrease. A sampling strategy adapted to the site and meeting recognized scientific criteria could be developed and proposed in conjunction with the various government authorities.

In addition, the position of the stations can be adjusted to the terrain, depending on the actual characteristics of the wetlands.

Table 14-4: Recommended number of stations based on UVH area in standard and homogeneous vegetation conditions

Surface area (ha)	Number of stations	
	Standard conditions	Homogeneous vegetation conditions
≤ 0,003*	0	0
]0,003-0,3]	1	1
]0,3-0,6]	2	2
]0,6-1]	3	3
]1-10[	4 to 30 (3 for each additional ha)	4 to 12 (1 for each additional ha)
≥ 10	Variable	Variable

*A wetland that occupies more than 0.003 ha, but where all the HVUs occupy less than 0.003 ha, must nevertheless be inventoried. In this case, the professional in charge of the file will suggest an appropriate method.

Source : adapted from Lachance *et al.* 2021

Field surveys:

The inventories will be carried out at a time of year when the floral species can be identified, i.e. during the flowering period. As the flowering period of the various species is not always identical, two inventory periods may be necessary, including one at the beginning of the season for the earliest species. Generally, inventory periods should be between June and September for plant species located at this latitude.

In the Quebec province, wetland characterization and delineation need to comply with the methodology proposed in the guide Identification et délimitation des milieux humides du Québec Méridional (Lachance et al., 2021).

Following the simplified delineation of Lachance et al. (2021), the boundary of a wetland will thus be placed at the point where it moves from a predominance of facultative or obligate wetland vegetation to a predominance of terrestrial vegetation. The taxonomy used is that of the Canadian Vascular Plant Database (VASCAN) (Brouillet et al., 2010+).

In addition to botanical criteria, the determination of a wetland boundary according to Lachance et al. (2021) requires consideration of edaphic criteria (soil type, drainage and presence of speckles) and hydrological criteria (signs of water withdrawal, high water table, etc.). Consequently, soil borings will be carried out whenever possible to validate the nature of the soils and the presence of speckles. Any physical markings associated with the presence of water in the environment will also be noted (blackish litter, water-saturated soil, etc.).

For each station, the following information will be recorded:

- Validation of wetland class (pond, marsh, swamp, bog, etc.) and type;
- General description of the site;
- Presence or absence of a regular or intermittent watercourse or other hydrological link;
- Assessment of plant species cover, by height stratum;
- Detailed soil characterization;
- Identification of primary and secondary hydrological indices;
- Opportunistic inventory of animal species (songs, tracks, faeces, direct observations, etc.);
- Presence of endangered or invasive plant species;
- Presence and description of natural and anthropogenic disturbances;
- At least one photograph of each station;
- At least one soil photograph for each station.

Invasive plant species

The invasive plant species work plan is intended to describe in detail the methodology that will be implemented during future inventories in order to detect any invasive plant species that may be present in the study areas.

Literature review:

In order to obtain the most up-to-date information on invasive plant species present or potentially present in the study areas, a literature review will be carried out prior to the field inventories. This literature review will establish a list of the various invasive plant species present on the territory and considered as such. To this end, the Interactive map from MELCCFP's SENTINELLE tool (MELCCFP, 2023f) will be consulted.

Field surveys:

No specific surveys for invasive plant species are planned for field surveys. However, particular attention will be paid to invasive plant species during all inventories and trips carried out in the study areas. Generally, the survey period should be between June and September for plant species located at this latitude. If an invasive plant species observation is made at a station or incidentally in the study areas, the following information will be collected:

- Species identification;
- Demographic description (isolated individual, colony, number of individuals, etc.);
- Assessment of species cover;
- Location of the individual or outline of the colony using GPS points;
- Photographs.

14.2.2 Fish and Fish Habitat (FAFH)

14.2.2.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The following subsections describes the aquatic environment based on reference baseline data acquired in 2011-2012 at the mine site, and at the three main water crossings along the road corridor. This dataset is probably still accurate given the absence of any human activities since then. However current data acquisition (field surveys to be conducted in 2023-2024) will be used to confirm the current habitats and document any potential changes.

14.2.2.1.1 Fish Habitat Assessment

Although cold waters are characterized by a poor nutrient environment, such ecosystems support many trophic levels, including fish. However, species and densities of individuals are generally lower in comparison to southern or more temperate areas. Aquatic life in the lower part of the watersheds is in general richer in abundance and diversity than in the upper headwaters, or in some of the smaller surrounding watersheds, where connectivity is interrupted and obstacles to fish passage exist.

At the mine site, the overall fish habitat encountered consisted of permanent and intermittent streams, some small lakes with connecting channels, isolated ponds that may receive surface water runoff from the surrounding landscape, and two major lakes: Lake Brisson and Lake Napeu. Aquatic vegetation was absent and instream cover very low in abundance and distribution. No thermocline was observed in August 2012 and, therefore, temperature is not influencing oxygen availability throughout the water column. Dissolved oxygen concentrations were high (7.9 to 9.75 mg/L) for the range in water temperature of 14.7 to 15.5 °C from the bottom to the surface of the lake.

Lake Brisson is the largest lake located in the study area covering 3,220.9 ha. Therefore, only the area pertaining to the development of the mining site was surveyed during aquatic field studies conducted in 2011-2012. Likewise, given a large number of water crossings along the road corridor (450 on different road alignment variants), aerial assessment of flow type (intermittent, permanent) was made everywhere, but sampling occurred mostly at the three main water crossings, as well as other water crossings with permanent flow and large watershed area (>4 km²; n=51). Habitat type determination was made according to DFO (McCarthy *et al.*,*draft,* revised 2010).

The fish habitat characteristics that were recorded within an electrofishing reach (100 m²) was made according to MRNF Common Standards namely the *Guide de normalisation des méthodes d'inventaire ichtyologique en eaux intérieures* (Service de la faune aquatique, 2011). As per DFO Standard Methods (Sooley *et al.*, 1998), baseline information collected in the streams included the following fish habitat characteristics: flow pattern, flow type, channel width, substrates, riparian vegetation cover, water velocities and water depth. Most of the streams at the mine site provided feeding habitat for brook trout, and some rearing and potential spawning habitat based on fry presence.

Along the road corridor, from the 54 ground surveys using electrofishing on a 100 m reach (50 m downstream and upstream of water crossings), 25 were determined to be fishless (46%). Many of them (44%, n=11) had natural obstacles to fish passage and migration within the surveyed section. Obstacles were of two types: vertical drop (cascade, waterfalls) and low flow barrier (low water level flowing over exposed boulders or bedrock).

14.2.2.1.2 Fish Communities

At the mine site, fishing efforts were conducted in August 2011 and August 2012, using several fishing gears (gillnets in 2011, trapnets and fish pots in 2012, and electrofishing in the streams). Fish were captured at all but two of the fishing stations. One of these is located near the proposed low grade ore stockpile.

The fish community is composed of eight species (Arctic char, brook trout, lake trout, round whitefish, longnose sucker, burbot, lake chub and mottled sculpin), typically found in cold freshwater thermal regime. Longnose sucker and lake trout were the most abundant species in lakes, while brook trout was the dominant species in stream catches. Juveniles of lake trout, lake chub and longnose sucker were also found in some streams. Both lake trout and Arctic char were found to be using the same lacustrine habitat. Most water courses with fish presence were represented by an aquatic ecosystem dominated by brook trout owing to suitable heterogeneous habitat characteristics including habitat types and substrates that provide holding, rearing and/or potential spawning habitats for the species. Salmonid young-of-the-year individuals were caught at 10 water crossings, and at each the three main water crossings (#116, 177, and 509). The presence of young-of-the-year indicated probable spawning at or nearby the site of observation. One lake trout was caught by angling at #116 (proposed bridge 1) during the spawning assessment.

Both resident and anadromous forms of brook trout were thought to be represented in the catch although this was not confirmed in the surveys. The anadromous form was considered to be mainly associated with the eastern portion of the road corridor (WC#509 3rd main water crossing) and at water crossings associated with Ikadlivik Brook; where Arctic char and Atlantic salmon were also part of the aquatic fish community. Two stocks of Arctic char reside in the eastern end of the road corridor: the Nain stock and the Voisey's Bay stock. Components of Voisey's Bay stock can migrate to accessible freshwater habitat in Reid Brook, Kogluktokoluk Brook (including its tributary, Ikadlivik Brook), where a large amount of freshwater habitat is available (Vale Inco, 1997).

14.2.2.1.3 Salmonid spawning sites

At the mine site, salmonid spawning was assessed in 2012 with the installation of 30 egg collectors on two potential salmonid spawning areas in Lake Brisson to ensure that these sensitive habitats are not impacted by the project. Of the potential habitats surveyed, one spawning site was confirmed in October 2012 along an esker near a tributary leading to Lake Napeu Kainiut. Two sizes of eggs were collected; the smallest eggs (2.5 to 3.5 mm) being from the Arctic char females (2.5 to 4.3 mm), and largest (5 to 6 mm) from lake trout females (Scott and Crossman, 1973). This area can now be considered a confirmed spawning ground for salmonids (Arctic char, lake trout). However, no eggs were observed in the area closer to the B-Zone deposit. Fall investigations were conducted at sites with preferential characteristics for salmonid reproduction at stream habitats and surrounding small lakes. The stream reaches covered during this assessment ranged from 65 to 261 m long. No eggs or redds were observed in the streams during this spawning investigation. An aggregation of 25 adult brook trout was observed in proximity to spawning habitats (gravel beds), and spawning was therefore inferred in this reach. The water temperature at time of investigation was 6.77 °C which is consistent with preferred brook trout spawning conditions. This site is located at the entrance to the bay proximal to the spawning ground along the esker.

Along the road corridor, 15 water courses were identified during ground surveys as having habitat characteristics suitable for salmonid reproduction. These sites were re-visited again during the spawning period, e.g. between October 1st and October 6th 2012, to assess spawning activity. Salmonid spawning grounds were confirmed, based on observations of redds and spawners, for four water courses including the third main water crossing (#509). The spawning habitat found at proposed bridge 3 (#509) is indirectly connected to Ikadlivik Brook, through Reid Brook, which is normally considered as an extended tributary of the Kogluktokoluk Brook and Ikadlivik Brook system. A helicopter survey was conducted October 4th 2012 on Reid Brook along Ikadlivik Brook from stream crossing (main water crossing #509) to Reid Pond. Many potential Arctic char spawners (approximately 50) were observed at two different locations in Ikadlivik Brook within a reach of high spawning potential.

Only brook trout redds were observed at crossing #509, , and no char redds were apparent. However, many char spawners were observed upstream of Reid Falls, which is considered a passable obstacle during the spawning period, and Arctic char have been reported spawning along Reid Brook. The anadromous Arctic char of Voisey's Bay stock would exhibit a general distribution pattern along the main stem of the Reid Brook, Kogluktokoluk Brook and Ikadlivik Brook system. The freshwater environment is therefore used for spawning, and rearing, and most of the Arctic char spawners in Reid Brook (below Reid Falls) move into Ikadlivik Brook for over-wintering. The estuarine and marine environments are used for feeding during the summer months (Vale Inco, 1997).

At proposed bridge 1 (#116), the capture of a male extruding milt upstream of crossing indicated possible proximate spawning.

14.2.2.1.4 Benthic Invertebrates

Benthic macroinvertebrates communities within the study area are representative of the ecoregion, e.g. eastern Canadian Taïga Shield and George Plateau. Similar to the fish communities, the taxa richness and diversity are low compared to southern areas in temperate regions. Several factors may be responsible for the overall low benthos including substrate type and sediment quality, and oligotrophic conditions (low productivity, low plankton biomass, low nutrients). At the mine site, stream stations were less diversified (mean of 5 ± 2 taxa) than lacustrine stations (mean of 7 ± 3 taxa). The benthic invertebrate communities present in the lacustrine and stream stations sampled were composed of species relatively tolerant to nutrient enrichment and increased trace metal contamination in water. Along the road corridor, the benthic invertebrate community identified at the three main water crossings (proposed bridges) show variable composition, densities and taxonomic richness. The highest benthic density was obtained at water crossing #116 (proposed bridge 1: 2,154 org./m²), and the lowest, at water crossing #177 (bridge 2: 231 org./m²). The highest taxonomic richness (n=10 taxa) was observed at water crossing #509. Two proposed bridges (water crossing #116 and 177) were dominated by *Chironomidae* larvae, whereas bridge 3 (water crossing 509) was dominated evenly by four taxa: *Chironomidae* larvae, *Ceratopogonidae* sp., *Cyprididae* sp. and *Chloroperlidae* sp, and the absence of *Sphaeriidae*. Plecoptera *Chloroperlidae* were observed only at proposed bridge 3 (Mine Site included) including benthic organisms known to be less tolerant to pollution, with the Plecoptera *Chloroperlida*e and Plecoptera *Leuctridae* being very intolerant to water pollution (Mandaville, 2002).

14.2.2.1.5 Biological monitoring (fish tissues)

According to Environment Canada (2012), the species selected for tissue analyses should be, if present, a recreational, subsistence and/or commercial species. On a site-specific basis, the species selected for tissue analysis should be chosen based on local consumption (excluding commercial species that may not contribute to local consumption). Tissue analyses should be conducted on eight samples, if possible, from one sex (male or female) and age class (Environment Canada, 2012).

At the mine site, lake trout was designated as the preferred species for tissue analyses. Fish tissue samples (muscle or fish flesh) were analyzed in the laboratory for the following elements:

- Metals (Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Ti, Tl, U, V, Zn);
- Mercury (Hg);
- Rare earth elements (Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sm, Tb, Tm, Yb, Y) and associated minerals, including, niobium (Nb), zirconium (Zr), as well as uranium (U) and thorium (Th).

Studies to be carried out

As per the current planning, data acquisition will be performed in 2023 and 2024, at the mine site and along the access road in Quebec and Labrador (water crossings). Sampling will comply with the modernized *Fisheries Act* (2019) under subsections 34(2), 36(5), and 38(9) annexed to Metal and Diamond Mining Effluent Regulations (MDMER, 2023). Those regulations have more stringent requirements for the fish, fish habitat protection and pollution prevention than the previous regulations. For example, these regulations prohibit the deposit of deleterious substances in water frequented by fish unless authorized and prohibits combining the effluent with water or any other effluent for the purpose of diluting effluent before it is deposited. In addition, where there is a potential effect to species at risk (SAR) or species of conservation concern (SOCC), death of fish, and harmful alteration, disruption or destruction (HADD) of fish habitat, the potential effects need to be addressed with the agencies.

Moreover, the new Appendix, *Annexe I Autre renseignements requis pour un projet minier* (Mine ou usine de traitement de minerai ; MELCC, 2022), from part II of the *Règlement relative à l'évaluation et l'examen des impacts sur l'environnement de certains projets* (chapitre Q-2, r.23.1) of the *Loi sur la qualité de l'Environnement (LQE)* for mining projects, does trigger many new requirements. For the aquatic environment, a specific guideline was developed and published in 2017 by the MDDELCC: *Guide de caractérisation physicochimique de l'état initial du milieu aquatique avant l'implantation d'un projet industriel* (MDDELCC, 2017), and have specific requirements on the sampling of surface water and the sediment quality as mentioned in sections 14.1.8 and 14.1.10 as well as in the hydrology and water management (Section 14.1.6). Compliance with Annexe I (MELCC, 2022) also require additional sampling to provide accurate and compliant information of the receiving environment before the implementation of a new mining project such as Torngat Metals.

The methods or guidelines described in SCF (2011) for Quebec are still current. However, these guidelines could impact the aquatic resources in Lake Brisson fish community because of the level of fishing effort needed for experimental fishing (population dynamics purpose). As the lake surface area is 3200 ha which would equal to 32 night-net, it could represent a take of 150 lake trout. V. Leclerc from MFFP (February 2023) provided a new (unpublished) guideline for northern habitats (MFFP, 2018) but this new guideline is not available to Fisheries and Oceans, Quebec Region. Upcoming fishing effort will consist of gillnetting again with adding deeper stations; e.g. less than 10 night-net fishing will be performed.

In terms of biological monitoring, contamination levels at a reference site for two fish species (lake trout, longnose sucker) will be investigated (MELCC, 2022), as prescribed by D. Laliberté (MELCC, February 2023). Fish and fish habitat (FAFH) assessment will also have to include other smaller lakes and connected streams that could be affected by the proposed mining infrastructures. A more exhaustive habitat characterization will be performed in order to assess the impacts and calculate the losses of fish habitats for all the lakes and watercourses likely to be impacted by the project at the mine site. This will include the upstream part of Napeu Lake where secondary effluents (from mine tailings sites) could flow. Gathering such precise data is important as the Project aims at reducing to minimal any watercourse / water diversion related to the footprint of the projected infrastructures. When fully addressed, the results will give the engineering team information to decide which project variant should be kept in order to minimise environmental impacts of the project. The fish habitat assessment could also be optimized along the shore with drone photogrammetry data acquisition as it defines the elevation on the shores.

As per DFO Standard Methods in Labrador (Sooley *et al.*, 1998), baseline information for FAFH at water crossings along the road access will be including the following fish habitat characteristics:

1. Flow pattern, flow type (meso-habitat: falls/chute, rapids, run, riffle, lotic channel, flat/steady, glide, pool)
2. Channel width (channel wetted and bankfull width),
3. Substrate composition, riparian vegetation cover, water velocities,

4 Water depth and potential salmonid habitat (spawning, rearing, feeding, migration), such as described by McCarthy *et al.* (*draft,* revised 2010).

FAFH sampling periods will include aerial surveys at high water level (spring freshet and fall spawning investigation) and as well as summer (low-level) to avoid fish windows, increase eletrofishing and vegetation inventory results. This assessment will help support considerations for the ecosystem, such as for Arctic char migrations and critical habitats, as well as important fishing locations for the communities. At the moment of this document submission, the alignment has 287 water crossings, 274 in Labrador and 13 in Quebec. More than 50% of water crossings are of intermittent flow (at least 143 in Labrador and at least 5 in Quebec; Table 14-5) based on validated aerial surveys, GIS and drainage analysis. Natural obstacles that hinder the free passage of fish will be assessed. Larger FAFH, such as the three main water crossings (#116, 177, 555) will be electrofished and data will be collected on fish catch and *in situ* water quality. Fall spawning investigation will be conducted at sites with potential habitat for salmonid reproduction.

Table 14-5: Number of water crossings along the current road alignment (May 2023), by Province.

Province	Flow type	Total	Classification			
			Class A	Class B	Class C	Class D
Upstream Drainage from water crossing			< 2 km^2	> 2 and < 4 km^2	> 4 km^2 but narrow	> 4 km^2 and large
	Total May 2023	**287**	**252 (234)**	**14**	**16**	**5**
Labrador	Intermittent	143 (52,2% of Lab)	139	3	1	0
	Permanent	87	71	2	11	3
	Nil (none- no drainage after aerial validation, only depression)	18*	18*			
	New water crossing to assess 2023	26	15	7	2	2
	Total Labrador	**274*(256)**	**243* (225)**	**12**	**14**	**5**
Quebec	Intermittent	5	5			
	Permanent	3	1		2	
	Nil	0				
	New water crossing to assess 2023	**5**	**3**	**2**		
	Total Quebec	**13**	**9**	**2**	**2**	**0**

The FAFH approach was provided to DFO in July 2023 and provides a screening of characterization efforts based on drainage/flow type but in consideration of aerial assessment. Information gathered at water crossing will be comprehensive enough to have a registry of each water crossing, habitat type, area impacted, and culvert size planned. Thus, *Best Management practise for the protection of freshwater fish habitat in Newfoundalnd and Labrador* (DFO, 2022), DFO policy for applying measures to offset advserse effects of FAFH (DFO, 2019), and interim code of practice (DFO, 2020ab) and Quebec MPO (2016) *Lignes directrices pour les traversées de cours d'eau du Québec* will be reference documents in the planning phase in order to minimize impact on fish passage through water crossing management. In 2023, the 13 water crossings from province of Quebec were surveyed (aerial, ground). The water crossing in the Labrador will be assessed in 2024. Appendix D illustrates all water crossings assessed from aerial surveys and for which photographies are presented as an atlas. Map 9-2 also locates each of watercrossing along the road alignment (unlabeled owed to the map scale).

14.2.2.2 Process plant (Sept-Îles project component)

From fish surveys held in 2019, the Au Foin River was fished using one fyke net and two species of stickleback were reported, the threespine and the fourspine stickleback. Spawning of rainbow smelt is confirmed on the Au Foin River, along with Du Poste, Clet and Hall rivers (Calderon, 1996; MDDEP, 2009; OBV Duplessis, 2021). The presence of filamentous algae was reported has having influence on retaining/fixing eggs from the rainbow smelt (CRECN, 2016). The American eel is also reported to be using the Au Foin River (threatened in Canada according to COSEPAC/COSEWIC, 2012), and of concerns in Quebec (LEMVQ) (CRECN, 2016). A large number of eels was also reported by Calderon (1996), along the Hall and des Rapides rivers. On the Hall River, an eel-ladder was design and installed at the Hall dam by AECOM in 2021 for OBV Duplessis in collaboration with the Conseil de la nation huronne-wendat (CNHW) to secure free passage upstream, and collaboration of the owner, la Société ferroviaire et portuaire de Pointe-Noire (SFPPN) (OBV Duplessis, 2021).

A total of 21 fish species is reported in the Baie des Sept-Îles (CRECN, 2016). During the winter, the rainbow smelt is fished by recreative fishermen given the large concentration of fish. In the Baie des Sept-Îles, DFO aquatic species at risk map (DFO, 2023), no critical habitat is reported. The presence of species at risk is nevertheless reported for one marine fish species, the spotted wolffish. Other species are marine mammals.

Studies to be carried out

The preliminary project footprint of the process plant in Sept-Îles overlaps drainage sections of the Au Foin River. Therefore, the FAFH assessment will include the tributary as a whole, from its confluence at the Baie des Sept-Îles to the head of the river. The total watershed is of 562 m^2 (OBV Duplessis, 2021).

Spawning investigations are planned in May-June 2024 to clearly delineate the spawning grounds of the rainbow smelt in the Au Foin River. For the American eel, specific summer fishing campaign (night surveys at restrictive flow sections, electrofishing, eel fyke nets) will be performed along with FAFH characterization surveys. Brook trout could also be using the downstream reach of the Au Foin River. Nonlethal gears (fyke nets, minnow traps) will be preferred for the fish community surveys. To account for the tide effect, the use of a seine at the mouth of the river will provide information on small species and on juveniles (downward to low tide).

14.2.3 Amphibians and reptiles

14.2.3.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

No amphibians or reptiles were observed or heard in and around the project study area during the various field surveys conducted in 2011, 2012, and 2013. However, the mink frog and wood frog may be present within the study area at this latitude.

The distribution range of 11 species of amphibians or reptiles overlap the process plant insertion area. None of them are species at risk federally or provincially.

Studies to be carried out

The dataset for amphibians and reptiles is most likely still accurate given the absence of any human activities. Therefore, no new field inventories of are planned at the mine site, but any incidental observations of species at risk will be compiled as part of the data and incorporated into the study results. The terrestrial environment work plan will be to update the documentation on these environments.

In order to obtain a current picture of the amphibians and reptiles components present at the mine site and road corridor, all available and relevant databases will be consulted in order to update the existing information. The following databases will be consulted:

- CDPNQ,
- Canadian Wildlife Service (CWS) databases,
- COSEWIC,
- Government website Fisheries, Forestry and Agriculture, Province of Newfoundland and Labrador
- Atlantic Canada Conservation Data Centre (AC CDC),
- Nature Counts web portal
- List of species at risk in Canada
- List of wildlife species designated as threatened or vulnerable or likely to be so in Quebec

14.2.3.2 Process plant (Sept-Îles project component)

The range of 11 species of amphibians or reptiles occurs in the process plant insertion area (Table 14-6). None of them are species at risk federally or provincially.

Table 14-6: Amphibians or reptiles potentially present in the insertion area

Common name
Eastern Newt
Blue-spotted Salamander
Two-lined Salamander
Redback Salamander
American Toad
Spring Peeper
Wood Frog
Leopard Frog
Green Frog
Mink Frog
Common Gartersnake

Studies to be carried out

Amphibians and reptiles surveys at the process plant will be carried out within the study area. The proposed methodology will follow the current standardized protocols the MELCCFP. A literature review will also be carried out.

14.2.4 Avian fauna

14.2.4.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

Birds surveys were carried out in 2011 and 2012. The results of these surveys are described in the following sections. Additional surveys are to be carried out in 2023 and 2024. All the results of the surveys will be incorporated in the baseline report for the environmental assessment.

14.2.4.1.1 Waterfowl and seabirds

A total of 208 individuals and 77 indicated breeding pairs from 11 waterfowl species (1 species of goose, 2 species of dabbling duck and 9 species of diving duck) and one loon species were observed at the mine site during the first 2011 aerial breeding pair survey. During the second aerial survey, carried out five or six days later, a total of 173 ducks and geese were observed. This number included 73 indicated pairs. The relative abundance of the various species was the same as for the first aerial survey, with the exception of the hooded merganser, which was not seen again during the second aerial survey, and the common goldeneye, which was not seen during the first aerial survey.

The size of the groups observed ranged from 1 to 17 individuals [primarily one (35%) or two (39%)], for an average of 2.4 individuals per observation. A total of 10 species considered to be breeding was surveyed in the study area, including 90 breeding pairs. On average, 44.5 to 44.8 indicated pairs were observed per 100 km^2. Expressed in linear kilometres of shoreline, the average waterfowl density ranged from 4.2 to 4.6 individuals, or 1.7 to 1.8 breeding pairs per 10 km of shoreline, regardless of the species, during the first and second surveys, respectively.

The species with the highest number of individuals was the Canada goose with 27 indicated pairs. This species made up 47% and 42% of the total numbers during the first and second aerial surveys, respectively, and was followed in abundance by the green-winged teal with 14 indicated pairs (second aerial survey), the long-tailed duck with 11 indicated pairs (first aerial survey), the red-breasted merganser, also with 11 indicated pairs (second aerial survey) and the northern pintail with 9 indicated pairs (first aerial survey).

During the waterfowl aerial survey in the road corridor, a total of 169 individuals and 86.5 indicated breeding pairs from 12 waterfowl species (1 species of goose, 3 species of dabbling duck, and 8 species of diving duck) and one loon species were observed.

The size of the groups observed ranged from 1 to 4 birds, for an average of 1.9 per observation. A total of 11 species considered to be breeding were found in the study area, including 87.5 breeding pairs. On average, 40.8 indicated pairs were observed per 100 km^2. Expressed in linear kilometres of shoreline, the average waterfowl density ranged from 2.9 individuals, or 1.5 breeding pairs per 10 km of shoreline, regardless of the species, during waterfowl aerial survey.

Studies to be carried out

Method

Target species include all species of waterfowl (anseriformes), as well as other waterfowl species (e.g. loons, shorebirds, gulls, etc.).

Aerial surveys will be carried out by helicopter. The crew will consist of a pilot, a navigator-observer seated to his left, an observer seated behind the pilot and a note-taker-observer seated behind the navigator-observer.

The crew will conduct a visual count (direct count) of all birds observed while flying over the shores of lakes, ponds, wetlands and streams. Aerial surveys will be carried out at an altitude of 50 m and a speed of 100 km/h.

The widest sections of some water bodies will be covered one shore at a time, while the narrowest sections will be covered from the middle of the water body. An aerial survey will also be carried out on the shores of all islands located in lakes and water bodies. Where surfaces are still frozen, only the unfrozen areas will be surveyed.

The overflights will take place in June. Counts will be carried out during the day, taking into account the studies of Bordage (1985) who observed that in the north, no time of day was significantly more favourable than another for counting ducks.

Data collection

The navigator-observer seated at the front will be responsible for navigation, detecting and identifying birds, and positioning observations on a 1:40,000 scale map.

The observer seated behind the pilot will monitor his side of the helicopter and take photos. The observer-note-taker seated behind the observer-navigator will be responsible for detecting birds missed by the observer-navigator, taking the GPS position of all sightings and sending the sighting number to the observer-navigator, as well as transcribing the data from the other crew members onto the survey forms.

Information collected will include: date, aerial survey number, team members, weather data, observation conditions, duration of survey and start and end times, GPS position number, species present, number of individuals, sex of individuals, behavior of individuals (posed, perched, in flight), and habitats where they were found (body of water, river or stream, bog, terrestrial). At the end of each field day, the forms will be reviewed and the GPS points, itineraries and digital photographs will be downloaded onto a laptop. In addition, files will be backed up daily and stored on a USB stick.

14.2.4.1.2 Raptors

During the 2011 surveys, six species of raptors were observed around the mine site. During the first aerial waterfowl survey in June 2011, 18 individuals from four different species were observed. A total of three raptors were observed during the second aerial waterfowl survey. In addition, 22 individuals from four different species were seen during the caribou surveys. The rough-legged hawk was the most abundant species, with 27 individuals and eight nests, followed by the peregrine falcon, with seven individuals observed near four nests. The golden eagle, short-eared owl and bald eagle were observed on a few occasions, while the osprey was seen only once. Three of the above species were confirmed breeders: the golden eagle, the rough-legged hawk, and the peregrine falcon. The other species are possible breeders.

During the 2012 survey in the road corridor, 18 individuals belonging to five different species were observed in the 4 km buffer zone on either side of the road options. The peregrine falcon was the most numerous with seven individuals, followed by the golden eagle with six sightings, the merlin with two, the gyrfalcon with one sighting, and one short-eared owl. Another raptor, an eagle, was seen too briefly to allow proper identification. In addition, a total of three active nests were found in the road corridor study area, all of which were peregrine falcon nests. Twenty-seven old and unidentified raptors nests were also observed.

Studies to be carried out

Method

The raptor survey will be carried out at the same time as the waterfowl survey, i.e. in June. The counting technique will be to directly count and describe each individual and each nest observed. During the surveys, all raptor sightings will be recorded and plotted on 1:50,000 scale maps. GPS positions will also be recorded. The shores of lakes and rivers in the waterfowl study area, as well as all outstanding cliffs in the study zone (5 km perimeter around the project), will be closely examined to locate raptor nests. Cliffs over 8 m high will be identified beforehand and plotted on 1:50,000 scale maps. Aerial surveys will be carried out using a helicopter.

Data collection

During the surveys, the helicopter will fly parallel to the cliff face, separated from it by a distance of about 50 m. The number of passes will depend on the height of the cliff: the first pass will start a few metres below the top of the cliff, and the other passes will be made progressively lower. Observers will scan the cliffs for nests. The search will be based on clues to the presence or use of a nest, such as droppings, feathers, one or more adults flying off the cliff, prey remains and ochre-coloured nitrophilous lichen. Digital photographs will systematically be taken to illustrate the habitats used.

For each raptor sighting, the following information will be recorded by the navigator: species, GPS point number, number of individuals and type of activity (e.g. moving, resting, feeding, brooding, defending territory). For each nest, the navigator will note the type of support, nest contents (number of eggs and chicks), nest orientation, condition, size, presence and length of overhang and presence of nitrophilous lichen. The navigator will also determine the nest's altitude using the helicopter's altimeter. A nest will be considered unoccupied for the current year when no sign of occupation is observed. Conversely, the nest will be considered occupied when a pair is seen on or near the nest, or when signs of reproduction or a freshly decorated nest are observed.

14.2.4.1.3 Passerines, Game Birds and Shorebirds

Two methods are used for bird surveys by point counts: 1) the radius circular plot (LRC method) and 2) the undetermined distance index (UDI) method. The LRC method involves counting, from a fixed point, all birds seen or heard within a 50 m radius circular plot for two consecutive 5-minute periods (10 minutes in all). The 50 m radius covers an area large enough to allow detection of the most inconspicuous species, while remaining within the auditory and visual detection range of most bird species. Plot boundaries will be determined using visual reference points located 50 m from the point-counting site. The UDI method differs from the LRC method in that there is no limitation on sampling distance. The advantage of the UDI technique is that it covers a larger area than the LRC method, which generally makes it possible to study species with a larger territory or less common species. The UDI method will be used in conjunction with the LRC method.

Before realising the survey, the point count will be preceded by a pause of at least 5 minutes after the arrival of the observer, to mitigate the effect of the observer on bird activity. During this break, the observer will describe the habitats present within the 50 m radius covered by the LRC. Vegetation cover, the number of vertical vegetation strata, visibility and the presence of fallen woody debris will be noted. During the count, two birds of the same species will be considered as two distinct individuals when they are seen or heard simultaneously, when they call to each other or when they can be differentiated on the basis of morphological characteristics.

A total of 20 species were detected during the point count survey at the mine site. Of these, 18 were detected using the limited radius count method, and two additional species were detected beyond the 50 m of the point counts using the undetermined distance index method. Most of the species detected consisted of passerines (14 species) However, five shorebird species and the willow ptarmigan were also heard or observed during the survey. In addition, a pair of lesser yellowlegs, some spotted sandpipers and a few dark-eyed juncos were heard after the 10-minute survey period.

The average density established by the LRC data was 5.97 breeding pairs per hectare. The most abundant species were the Lapland longspur (1.67 pairs per hectare), the American tree sparrow (0.79 pairs per hectare), the American pipit (0.66 pairs per hectare) and the horned lark (0.57 pairs per hectare). Lapland longspurs were often observed in the June 2011 surveys, and nests were also found in scrubland alongside Lake Brisson. Two other species (Semipalmated Plover and Common raven), were detected outside the 50 m radius from each point count. In addition to being the most abundant species, the Lapland longspur was also the species with the most constancy, that is, the one heard or observed most frequently (21 of the 29 study area point counts). The average Shannon Diversity Index is 1.06 for the mine site based on the survey results collected.

For the road corridor, in order to compare bird communities from different vegetation cover types, each point count surveyed on the Western Plateau, Central Ranges and in the Ikadlivik Brook valley was assigned to a vegetation class type. For the Ikadlivik Brook valley point counts the original cover units defined and the stratified sampling plan were used. For the western portion of the road corridor in which point count locations were selected systematically, the underlying vegetation cover type was first assigned, but checked and reclassified to fit field data recorded during the point count surveys. In order to obtain meaningful statistics, vegetation cover types was regrouped in three classes that shared structural and plant cover characteristics. The following classes were selected and each point count was than assigned to one of the three classes:

- ecotones and deciduous forests: wetlands, shrublands, mixed-deciduous forest, and deciduous forest;
- heaths: rocky heaths, shrub and herbaceous heaths, mixed heaths;
- coniferous forests: mixed forest in which spruce (Picea spp.) dominates, closed resinous, lichen-resinous, and open resinous.

Richness, diversity indices and bird densities were calculated for each class. Point counts that fell into coniferous forests or similar habitat types had a greater bird Shannon diversity index and density compared to ecotone/deciduous and heaths habitats. The average density established by the LRC data was 4.38 breeding pairs/ha, and the average Shannon Diversity Index for the coniferous point counts is 0.86, both parameters being about two times higher than those obtained in ecotone and heath habitats. Actually, the average density significantly differed between habitats ($p = 0.038$) and was significantly higher in conifer habitats than in ecotone habitats ($p = 0.039$), but there were no statistical difference between conifer habitats and heath habitats ($p = 0.082$).

Ecotone and Deciduous Forests

A total of 17 species were detected during the point count survey. Of these, 9 breeding species were detected using the limited radius count (LRC) method, and 8 additional species were detected beyond the 50 m of the point counts using the undetermined distance index (UDI) method. An average of 1.30 species was detected within each 50 m radius circular plot (LRC method) and this average was 5.10 species per point count with the UDI method. The average density established by the LRC data was 1.78 breeding pairs/ha, the lowest values among the three habitat types analyzed. The average Shannon diversity index for this habitat class is 0.39, the same value obtained for heath habitats.

The most abundant breeding species according to the LRC method were the dark-eyed junco (0.38 pairs per hectare), the Swainson's thrush (0.25 pairs per hectare), the grey jay (0.25 pairs per hectare), and the pine siskin (0.25 pairs per hectare). In addition to being the most abundant breeding species, the dark-eyed junco was also the species with the most constancy i.e. the one heard or observed most frequently (3 of the 10 ecotone point counts). Otherwise, the pine siskin, which was one of the most abundant species in ecotone habitat, was absent in the point count carried out in heath and conifer habitats. Also, although not the most abundant breeding species within the 50 m radius circular plot (LRC method), the common redpoll was by far the most numerous species detected by the UDI method (2.60 pairs per point count).

Heaths

A total of 17 species were detected during the point count survey. Of these, 10 breeding species were detected using LRC method, and 7 additional species were detected beyond the 50 m of the point counts using the UDI method. An average of 1.50 species was detected within each 50 m radius circular plot (LRC method), and this average was 4.44 species per point count with the UDI method. The average density established by the LRC data was 2.19 breeding pairs per hectare, which was slightly higher than what was observed in the ecotone/deciduous forest habitat. The average Shannon diversity index for the heath point counts is 0.39, similar to the value obtained for the ecotone and deciduous forests.

The most abundant breeding species according to the LRC method were the horned lark (0.42 pairs per hectare), the common redpoll (0.35 pairs per hectare), the American pipit (0.35 pairs per hectare), the white-crowned sparrow (0.28 pairs per hectare) and the savannah sparrow (0.28 pairs per hectare). In addition to being the most abundant breeding species, the horned lark was also one of the two species (American Pipit was the other) with the most constancy (5 of the 18 heath point counts). These two species were also unique to the heath habitat since no individual was observed in the ecotone and conifer point counts. According to the UDI method, the common redpoll was the most abundant species detected in heath habitats (2.50 pairs per point count).

Coniferous Forests

A total of 16 species were detected in this habitat class. Of these, 15 breeding species were detected using the LRC method, and 1 additional species was detected beyond the 50 m radius of the point counts using the UDI method. An average of 2.75 species was detected within each 50 m radius circular plot (LRC method), whereas the average was 5.94 species per point count with the UDI method. In the Voisey's Bay region, the average density of birds (breeding pairs of migratory and resident species plus individuals of nomadic resident species) observed in 1996 in 4 experimental plots was 4.54 per ha (JWEL, 1997c). This density was established in spruce-fir/dwarf shrub habitats using the territory mapping method that included nomadic and gregarious resident species (pine grosbeak, white-winged crossbill and common redpoll). If these species are excluded from computations, the breeding density obtained was 1.90 pairs/ha for JWEL (1997c) and 2.86 breeding pairs/ha for our study. However, differences might be due to different survey methods.

The most abundant breeding species according to the LRC method were the common redpoll (0.72 pair/ha), the white-winged crossbill (0.64 pair/ha), the American robin (0.48 pair/ha), the yellow-rumped Warbler (0.48 pair/ha), and the grey Jay (0.48 pair/ha) (Table 3-15). In addition to being the second most abundant breeding species, the white-winged crossbill was also the species with the highest constancy (6 out of 16 point counts). This species was also highly associated with conifer habitats since none was present within the 50 m radius circular plot (LRC method) in the two other habitat types. With the UDI method, it was also the common redpoll that was the most numerous species detected in coniferous habitat (4.31 pairs per point count). In the spruce-fir/dwarf shrub habitat of the Voisey's Bay region, the most numerous species were the same as in the present study, namely the common redpoll, the yellow-rumped warbler, the white-winged crossbill and the dark-eyed junco (JWEL, 1997c).

Studies to be carried out

Literature review

Data collection for the avifauna component involves consulting all relevant databases. The following databases, as well as any scientific articles or other relevant references, will be consulted:

- Atlas des Oiseaux nicheurs du Québec,
- CDPNQ,
- eBird,
- Canadian Wildlife Service (CWS) databases,
- Quebec and Newfoundland and Labrador databases,
- COSEWIC,
- MELCCFP,
- Government website Fisheries, Forestry and Agriculture, Province of Newfoundland and Labrador
- Atlantic Canada Conservation Data Centre (AC CDC),
- Nature Counts web portal
- List of species at risk in Canada
- List of wildlife species designated as threatened or vulnerable or likely to be so in Quebec
- Strange Lake B-Zone. Biological Environment Baseline Surveys. Semi-aquatic and Terrestrial Wildlife - 2011-2013.
- Quest Rare Minerals Ltd. Final Report. September 2015.

Field Surveys

The songbird inventory includes counts of passerines, woodpeckers, grouse and shorebirds. Should other species be detected during these surveys, they will also be counted and recorded, but will not be included in the analysis.

Songbird species diversity and abundance will be documented by point counts using transect sampling for the road corridor. For the mine site, a 2 km grid will be superimposed on the previously defined study area map. All grid intersection points located within or near the mine site study area will be sampled. If any points are located in waterbodies, they will potentially be removed. In order to adequately sample the different vegetation strata at the mine site, a listening station will be added in the wooded area along Brisson Lake, near the camp.

Data collection

Point counts will be carried out during the month of June. The songbird survey will thus be timed to coincide as closely as possible with the territorial behaviour of most passerines.

The point count survey method is based on CWS guidelines. Efforts will be made to carry out point counts in suitable weather conditions (i.e. temperatures between 0 and 14 °C, with no precipitation and winds of less than 10 knots) to increase the probability of detecting birds. Surveys will be carried out between 5:00 and 10:30 a.m., when birds are most active (Robbins, 1981). Two teams will be required for the surveys, each consisting of a bird song specialist and a second person to ensure safety during the work.

Point counts will combine two different methods to optimize the time allocated to field surveys. The first method is a Limited Radius Count (LRC; Bibby et al., 1992), while the second is an Unlimited Distance Index (UDI; Blondel et al., 1981).

The LRC method involves counting, from a fixed point, all birds seen or heard within a 50 m radius circular plot for two consecutive 5-minute periods (10 minutes in all). The 50 m radius covers an area large enough to allow detection of the most inconspicuous species, while remaining within the auditory and visual detection range of most bird species. Plot boundaries will be determined using visual reference points located 50 m from the point-counting site.

The UDI method differs from the LRC method in that there is no limitation on sampling distance. The advantage of the UDI technique is that it covers a larger area than the LRC method, which generally makes it possible to study species with a larger territory or less common species. The UDI method will be used in conjunction with the LRC method.

Before realising the survey the point count will be preceded by a pause of at least 5 minutes after the arrival of the helicopter observer, to mitigate the effect of the helicopter on bird activity. During this break, the observer will describe the habitats present within the 50 m radius covered by the LRC. Vegetation cover, the number of vertical vegetation strata, visibility and the presence of fallen woody debris will be noted. During the count, two birds of the same species will be considered as two distinct individuals when they are seen or heard simultaneously, when they call to each other or when they can be differentiated on the basis of morphological characteristics.

The results will be converted into the number of pair-equivalents according to information from the Atlas des oiseaux nesteurs du Québec (2011): an individual singing or emitting an alarm call, an occupied nest or a family have been considered to represent a pair; only a silent individual outside its breeding habitat will not be considered a pair-equivalent.

14.2.4.2 Process plant (Sept-Îles project component)

Avian communities found in terrestrial habitats in the vicinity of Sept-Îles are typical of the boreal forest ecosystems. These habitats are the breeding grounds of many groups of migratory and resident birds' species such as woodpeckers, thrushes, warblers, sparrows, crossbills and birds of prey. Wetlands and aquatic habitats are also abundant in the landscape, and they provide staging and breeding habitats for numerous ducks, geese, loons, shorebirds and gulls species. Commonly seen species are black duck, common goldeneye, common merganser, green-winged teal, Canada goose, spotted sandpiper and herring gull.

<u>Studies to be carried out:</u>

Literature review

Data collection for the avifauna component involves consulting all relevant databases. The following databases, as well as any scientific articles or other relevant references, will be consulted:

- Atlas des Oiseaux nicheurs du Québec;
- CDPNQ;
- eBird;
- Canadian Wildlife Service (CWS) databases;

- COSEWIC;
- MELCCFP;
- Nature Counts web portal;
- List of species at risk in Canada;
- List of wildlife species designated as threatened or vulnerable or likely to be so in Quebec.

Field Surveys

The songbird inventory includes counts of passerines, woodpeckers, grouse and shorebirds. Should other species be detected during these surveys, they will also be counted and recorded, but will not be included in the analysis.

Songbird species diversity and abundance will be documented by point counts using transect sampling for the road corridor. For the process plant, a 2 km grid will be superimposed on the previously defined study area map. All grid intersection points located within or near the mine site study area will be sampled. If any points are located in waterbodies, they will potentially be removed.

Data collection

Point counts will be carried out between mid-May and mid-June. The songbird survey will thus be timed to coincide as closely as possible with the territorial behaviour of most passerines.

The point count survey method is based on CWS guidelines. Efforts will be made to carry out point counts in suitable weather conditions (i.e. temperatures between 0 and 14 °C, with no precipitation and winds of less than 10 knots) to increase the probability of detecting birds. Surveys will be carried out between 5:00 and 10:30 a.m., when birds are most active (Robbins, 1981).

Point counts will combine the same two different methods, LRC and UDI, as described above to optimize the time allocated to field surveys.

The results will be converted into the number of pair-equivalents according to information from the Atlas des oiseaux nesteurs du Québec (2011): an individual singing or emitting an alarm call, an occupied nest or a family have been considered to represent a pair; only a silent individual outside its breeding habitat will not be considered a pair-equivalent.

14.2.5 Mammals

14.2.5.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

During a survey of snow tracks around the mine site in 2012, tracks of seven different animal species were observed, primarily in wooded areas. Arctic fox and red fox tracks were most frequently observed in the plots.

Five species were identified during a survey of micromammals: the deer mouse, the meadow vole, the eastern heather vole, the Gapper's red-backed vole and the masked shrew. These are common species in northern Quebec and Labrador.

During summer, the most frequently observed mammals were black bear, arctic fox, red fox, arctic hare, red squirrel, and gray wolf.

14.2.5.1.1 Caribou

Historical observations of migratory caribou herds of Quebec and Labrador have undergone significant demographic changes. A first detectable population peak occurred between 1870 and 1890, based on a consensus between historical reviews and an index developed to estimate the population size of the George River Caribou Herd. This population peak was followed by 3 crashes resulting in a record low in 1956 (Table 14-7). The population then began to recover gradually and reached record high numbers again in the 90's. However, the population has been experiencing a rapid decline in recent years (Bergerud *et al.*, 2008).

The George River caribou population is the only known caribou herd using the project area. Data on this herd have been gathered by Quebec and Labrador wildlife managers, as well by universities, since the early 1970s. The Quebec and Labrador governments have been monitoring the migratory tundra caribou herd's seasonal movements for at least the last 30 years by means of radio collars fitted individuals.

Table 14-7: George River Caribou Herd Demographic Changes

Year	Estimated Number of Caribou	Reference
1956	5,000	Bergerud *et al.*, 2008
1993	776,000	Couturier *et al.*, 1996
2001	385,000	Couturier *et al.*, 2004
2010	74,000	MRNF, 2010
2012	27,600	MRNF, 2012
2014	14,200	Gouv. Qc, 2014

Using telemetry data available from the MRNF (formerly MERN) from 2000 to 2012, the southern limit of the traditional calving grounds of the George River herd was located at least 40 km north of B-Zone. The same data indicate that a small proportion (4.3%) of tagged caribou were located within 30 km of the project area. During the annual migration cycle, September and October are the months when the greatest number of marked caribou moved near the project area during their fall migration to reach winter habitats located to the south and east.

This data will be updated with telemetry data available for the years following 2012.

During the June 2011 aerial surveys at the mine site, a total of 62 caribou groups were observed, for a total of 480 individuals. The individuals observed included 392 adults (82%) and 88 yearlings (one year-old juveniles) (18%), for an average of 1.4 juveniles per group. No newborn calves were observed within the mine site or a 20 buffer zone surveyed.

At the time of the aerial surveys, a single caribou group was observed in the immediate project area. This group was composed of 16 adults, including eight males and two females and six undetermined. All other groups were in the 20 km buffer zone surveyed around the mine site. The average number of caribou per group was 7.7 ± 1.3 (confidence interval of 95%).

In addition to the aerial survey, two groups of three and four caribou were seen near the exploration camp or at about 5 km southwest of the exploration camp. Three bulls formed the group of three and the group of four was composed of one bull and at least 2 cows.

During the October 2012 aerial surveys in the road corridor, a total of five caribou groups were observed in the study area, for a total of 266 individuals. The individuals observed included 260 adults (98%), one yearling (one year-old juvenile) (0.3%), and five calves (1.9%) for an average of 1 calf per group. The number of caribou per group varied between 11 and 174 for an average of 53.2. Among caribou for which the sex could be determined, females counted for 65% (n = 102) and males 35% (n = 54).

Additional field inventories are planned for 2024.

Map 14-4 presents the caribou protection areas and historical caribou ranges.

Studies to be carried out:

The George River caribou population is the only known caribou herd in the project area.

Literature review

Data collection for the caribou component involves consultation of all relevant databases. The following databases, as well as any scientific articles or other relevant references, will be consulted:

- CDPNQ
- Canadian Wildilfe Service (CWS) data,
- Quebec and Newfoundland-Labrador government data,
- COSEWIC/COSEPAC,
- MRNF monitoring data
- Atlantic Canada Conservation Data Centre (AC CDC)
- Nature Counts web portal
- Newfoundland and Labrador Fisheries, Forestry and Agriculture government website
- List of species at risk in Canada
- Liste des espèces fauniques désignées menacées ou vulnérables ou susceptibles de l'être du Québec (in French only)
- Strange Lake B-Zone. Biological Environment Baseline Surveys. Semi-aquatic and Terrestrial Wildlife - 2011-2013. Quest Rare Minerals Ltd. Final Report. September 2015.

Traditional knowledge from the different Indigenous communities will also be taken into consideration.

Field Surveys

Torngat Metals canceled the field caribou field surveys that were planned in 2023 following a request from the Caribou Working Group that was set up in collaboration with the Naskapi Nation of Kawawachikamach (see section 4.1.1). This measure aims to avoid disturbance of the herd. Analysis will rather be conducted with the existing telemetry data.

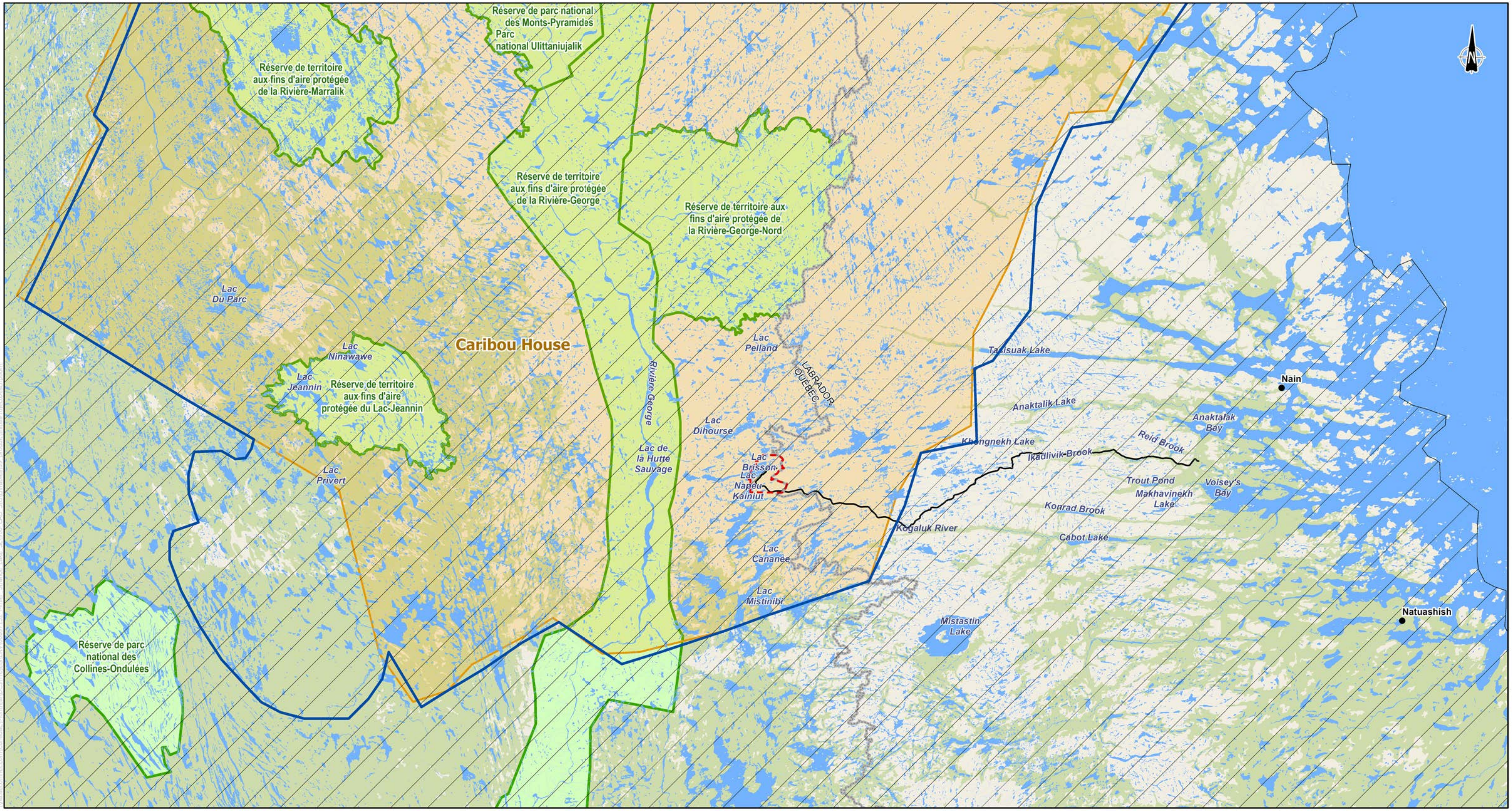
Telemetry data from George River caribou fitted with radio collars have been obtained from the MELCCFP in Quebec, and should be obtained by other governments for the sole use of this baseline study. The request was specifically for data gathered from 2000 to 2022, and covering a 100 km area around the mining site, and along a 100 km strip on either side of the road corridor to the Nain region along coastal Labrador. Every recording specifies the radio-tagged individual’s number, sex, recording date and time, as well as the X and Y coordinates for each reading. The collars transmit the position of individual animals every five days through the Argos satellite system and have an accuracy of 150 m.

To map distributions and most used crossing areas, analyses will be performed using the density function from the Spatial Analyst Extension of ArcGIS to identify potential crossings and movements between two subsequent recordings within the proposed road corridor. The model parameters include a search radius of 3 km.

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composantes du projet / Project Component

Limite des concessions d'exploration minières détenues par Métaux Torngat / Outline of Torngat Metals Mineral Exploration Claims

Route d'accès saisonnière proposée / Proposed seasonal access road

Caribou / Caribou

Caribou House

Aire de mise bas historique du caribou de la rivière George / George River Caribou Historical Calving Grounds

Habitat historique du caribou de la rivière George / George River Caribou Historical Home Range

Autre / Other

Aire protégée / Protected area

Frontière Québec et Labrador / Quebec and Labrador border

PRÉLIMINAIRE / PRELIMINARY

Source:
Données topographiques / Topographic data: RNCan (2022)
Aire protégée / Protected Area: MELCC (2023)
Caribou House: https://nunatukavut.ca/site/uploads/2019/05/upcart-strategy-2017-11-07-eng-signed-sm.pdf, SNAP (2017)
Aire d'habitat et de mise bas historique du caribou de la rivière George / Calving and Home Ranges of the George River Caribou: Newfoundland and Labrador Government (2023)

1:1 100 000

0 10 20 km

NAD 1983 UTM Zone 20N

Produit: Map 14-4 - Caribou Protection Areas

Date : 2023-08-31 08:14

Carte 14-4
Aires de protection du Caribou

Map 14-4
Caribou Protection Areas

AECOM

Studies to be carried out:

The George River caribou population is the only known caribou herd in the project area.

Literature review

Data collection for the caribou component involves consultation of all relevant databases. The following databases, as well as any scientific articles or other relevant references, will be consulted:

- CDPNQ
- Canadian Wildilfe Service (CWS) data,
- Quebec and Newfoundland-Labrador government data,
- COSEWIC/COSEPAC,
- MRNF monitoring data
- Atlantic Canada Conservation Data Centre (AC CDC)
- Nature Counts web portal
- Newfoundland and Labrador Fisheries, Forestry and Agriculture government website
- List of species at risk in Canada
- Liste des espèces fauniques désignées menacées ou vulnérables ou susceptibles de l'être du Québec (in French only)
- Strange Lake B-Zone. Biological Environment Baseline Surveys. Semi-aquatic and Terrestrial Wildlife - 2011-2013. Quest Rare Minerals Ltd. Final Report. September 2015.

Traditional knowledge from the different Indigenous communities will also be taken into consideration.

Field Surveys

Torngat Metals canceled the field caribou field surveys that were planned in 2023 following a request from the Caribou Working Group that was set up in collaboration with the Naskapi Nation of Kawawachikamach (see section 4.1.1). This measure aims to avoid disturbance of the herd. Analysis will rather be conducted with the existing telemetry data.

Telemetry data from George River caribou fitted with radio collars have been obtained from the MELCCFP in Quebec, and should be obtained by other governments for the sole use of this baseline study. The request was specifically for data gathered from 2000 to 2022, and covering a 100 km area around the mining site, and along a 100 km strip on either side of the road corridor to the Nain region along coastal Labrador. Every recording specifies the radio-tagged individual’s number, sex, recording date and time, as well as the X and Y coordinates for each reading. The collars transmit the position of individual animals every five days through the Argos satellite system and have an accuracy of 150 m.

To map distributions and most used crossing areas, analyses will be performed using the density function from the Spatial Analyst Extension of ArcGIS to identify potential crossings and movements between two subsequent recordings within the proposed road corridor. The model parameters include a search radius of 3 km.

14.2.5.1.2 Chiropterans (bats)

A field survey was conducted early summer 2023 but the acoustic data have not yet been processed at the time of producing this document.

<u>Studies to be conducted</u>

Literature review

Data collection for the bats component involves consulting all relevant databases. The following databases, as well as any scientific articles or other relevant references, will be consulted:

- CDPNQ
- Canadian Wildilfe Service (CWS) data,
- Quebec and Newfoundland-Labrador government data,
- COSEWIC/COSEPAC,
- MRNF
- Atlantic Canada Conservation Data Centre (AC CDC)
- Nature Counts web portal
- Newfoundland and Labrador Fisheries, Forestry and Agriculture government website
- List of species at risk in Canada
- Liste des espèces fauniques désignées menacées ou vulnérables ou susceptibles de l'être du Québec (in French only)
- Strange Lake B-Zone. Biological Environment Baseline Surveys. Semi-aquatic and Terrestrial Wildlife - 2011-2013. Quest Rare Minerals Ltd. Final Report. September 2015.

Field Surveys

Despite the absence of trees in the mine area, acoustic surveys for chiropterans will be sampled throughout the sites of northern components of the project.

The *Recueil des protocoles standardisés d'inventaires acoustiques de chauves-souris au Québec* (MFFP, August 2022) will be used to conduct bat surveys.

No other specific surveys will be carried out for other wildlife, but any incidental observations will be noted and included in the survey results.

14.2.5.2 Process plant (Sept-Îles project component)

Large mammals such as moose and black bears are common and can be found in all habitats in the area particularly in young stands or early successional forests. Many furbearer species such as the beaver, the gray wolf, the red fox, the American marten, the ermine, the river otter, the muskrat, and the striped skunk also occupy the area. Red squirrels and various species of voles and other microtine rodents are also highly present and sometimes abundant in many habitats found in this region.

<u>Studies to be conducted</u>

No specific mammal field surveys are currently planned in Sept-Îles, but any incidental observations will be noted and included in the survey results.

14.2.6 Terrestrial Species at risk

14.2.6.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The following text presents the conservation status for sensitive species observed during the 2011, 2012 and 2013 surveys:

- The Harlequin duck is listed as a species of special concern in Canada and is considered vulnerable under the legislation of Quebec and Newfoundland and Labrador.
- All raptor species observed, with the exception of the osprey and the rough-legged hawk, have conservation status under provincial or federal legislation.
  - Golden eagle: no federal status but considered vulnerable in Quebec
  - Peregrine falcon: no federal status but vulnerable in Quebec and in Newfoundland and Labrador
  - Bald eagle: no federal status but considered vulnerable in Quebec
  - Short-eared owl: federally special concern, vulnerable in Newfoundland and Labrador and likely to be designated threatened or vulnerable in Quebec. It should be noted that it is currently under review to change its status. It is considered threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- Caribou are an important issue given the value of this animal to Indigenous and non-Indigenous people in Quebec and Newfoundland and Labrador, and the recent decline in the George River migratory herd population (from 74,000 in 2010 to 14,200 in 2014). Regardless, this population does not have legal conservation status. COSEWIC, for one, considers it endangered and it is currently under review for addition to the SARA schedule. This migratory population is not listed as threatened or vulnerable in Quebec or in Newfoundland and Labrador.
- No other wildlife or plant species with conservation status were observed during the 2011, 2012 and 2013 surveys.

Studies to be conducted:

In order to obtain the most up-to-date information on the conservation status of species present or potentially present in the study areas, a literature review will be carried out prior to the field inventories. The review will update the conservation status of the various species at risk previously identified in the study areas, to add rare or species at risk or their habitats to the list of species potentially present, or to identify habitats favourable to the presence of some of these species. The following databases will be consulted:

- Interactive map of MELCCFP – Aires protégées au Québec (version 31 December 2023) (MELCCFP, 2023d)
- Interactive map (website) on species with precarious situation occurrences (CDPNQ, 2023)
- Canada Species at Risk List(Gouvernement du Canada, 2023b)
- COSEWIC candiate list (COSEWIC, 2023)
- Updated list of rare plant species in the northern Quebec (provided by Jessica Hawey, 17 March 2023)
- Liste des espèces floristiques désignées menacées ou vulnérables ou susceptibles de l'être du Québec (MELCCFP, 2023e)
- Liste des habitats d'espèces floristiques menacées ou vulnérables du Québec (MELCCFP, 2023c)
- Les Bryophytes rares du Québec, seconde édition (Tardif, Faubert et Lavoie, 2019)
- Canadian Wildilfe Service (CWS) data
- List of plant species at risk in the province of Newfoundland and Labrador (Government of Newfoundland & Labrador, 2023c)

- List of ecological and wilderness reserves in the province of Newfoundland and Labrador (Government of Newfoundland & Labrador, 2023a)
- COSEWIC data
- Atlantic Canada Conservation Data Centre (ACCDC)
- Web Nature Counts portal
- Government website Fisheries, Forestry and Agriculture, Province of Newfoundland and Labrador
- Strange Lake Zone B. Biological environmental baseline surveys. Semi-aquatic and terrestrial wildlife - 2011-2013. Quest Rare Minerals Ltd. Final report. (AECOM, 2015).
- 2011-2012 vegetation inventory report for Quest Rare Minerals Ltd. in the Strange Lake area, Zone B (AECOM, 2013d)

Based on the information obtained from the literature review and photo-interpretation, potential habitats for rare or endangered species will be identified. Specific surveys for rare or endangered species will then be carried out in these habitats. Habitats in which the occurrence of rare or endangered species has been recorded in the past will also be identified for specific inventories. In addition to these previously identified sites, particular attention will be paid to the presence of rare or endangered species during all inventories carried out.

Field surveys

Inventories will be carried out at a time of year when rare or endangered plant species can be identified, i.e. during their flowering period. Depending on the flowering period of the various species likely to be found in the study areas, two inventory periods may be necessary, including one at the beginning of the season for the earliest species. As a general rule, inventory periods should be between July and September for floristic species located at this latitude.

During all floristic inventories in the study areas, a report will be made of any incidental observation of a rare species or a species at risk in or near the inventory stations. When a rare or endangered species is observed, the following information will be collected:

- Species identification;
- Demographic description (isolated individual, colony, number of individuals, etc.);
- Species recovery assessment;
- Location of the individual or outline of the colony using GPS points;
- Photographs.

Particular attention will also be given to uncommon plant species during all plant inventories. If unknown species are observed, the following steps will be taken:

- Take a photo of the species;
- Collect a specimen;
- Locate the individual or colony using GPS points;
- Identification on return from the field;
- If identification still proves impossible, the specimen(s) will be sent for identification by an expert in northern plant identification;
- Validation of species status.

An active search will be carried out at specific sites for rare or endangered species. To this end, the area will be walked in search of any rare or endangered species potentially present. During these inventories, any observations of rare or endangered species or unknown species will be recorded according to the methodology explained above.

No specific wildlife surveys will be carried out for this component. Field visits will be planned only in cases where habitats or species at risk have been observed during previous inventories, but any incidental observations of species at risk will be compiled as part of the data and incorporated into the study results.

14.2.6.2 Process plant (Sept-Îles project component)

According to the CDPNQ, six wildlife species at risk can be found within a 8 km radius of the potential process plant location. The Barrow's Goldeneye is vulnerable, the Yellow Rail is endangered, the Short-eared Owl, the Saltmarsh Sharp-Tailed Sparrow and the Rock Vole are likely to be designated and the Bank Sparrow is a candidate.

<u>Studies to be conducted:</u>

No specific survey for species at risk will be conducted. This component is covered within the other workplans described for the process plant. However, all the potential habitats for species at risk will be surveyed.

14.2.7 Aquatic Species at risk

14.2.7.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

In the north, for the mine site, access road and port, no aquatic fish species at risk is reported. Nevertheless, salmon and arctic charr are sensitive species with high significance to communities. The marine environment in the port, and along the marine transportation does involves marine mammals, and wolffish (northern, spotted).

14.2.7.2 Process plant (Sept-Îles project component)

For the process Plant, the American eel is a threatened species according to COSEWIC (2012) for which large abundance are reported in the Au Foin River. Fish passage will have to be assessed from the Baie des Sept-Îles towards the process plant. Also, plant discharge could be directed towards the Baie des Sept-Îles, after treatment.

Although already considered the largest industrial port facility infrastructure in Quebec, according to the DFO aquatic species at risk map, the presence of species at risk is nevertheless reported for one marine fish species, the spotted wolffish, and four marine mammals, the white shark and the luth Tortuga (DFO, 2023).

Whereas no critical habitat is reported by DFO (2023), Baie des Sept-Îles is an important seagrass habitat for many species, and according to the MELCCFP wildlife habitat mapping, the Baie des Sept-Îles is an aquatic species concentration area. The mouth of the Au Foin River being at the junction of the Aire de concentration d'oiseaux aquatiques de la Baie des Sept-Îles #4 and #5. The Réserve de territoire aux fins d'aire protégée du Marais-de-la-Baie-de-Sept-Îles is also officially mapped.

<u>Studies to be conducted:</u>

No specific survey for species at risk will be conducted, as this component is covered within the FAFH workplan described for the process plant (fish passage, investigation for the American eel).

15 Socio-Economic and Human Health Description

15.1 Land Use and Traditional Ecological Knowledge

The development of the Strange Lake Mining Project could potentially lead to changes associated with land and resources use. Development, construction, operation, as well as closure and restoration of the proposed mining site, seasonal access road and handling and storage facilities in Edward's Cove could affect the activities of different Indigenous groups such as the Nunavik Inuit, Naskapi Nation of Kawawachikamach, Quebec Innu, Nunatsiavut Inuit, and Labrador Innu. It could also have an impact on Indigenous and non-Indigenous businesses and organisations such as tourism companies, outfitters, parks and mining companies.

A study on land use and traditional ecological knowledge (TEK) was conducted between 2012 and 2013 in relation with the Quest Rare Mineral (AECOM, 2013e)[7]. The study revealed that the territories located within or bordering the project's study area were traditionally used by several Indigenous groupsIt also showed that some groups still visited these territories. The described use was sporadic and of low intensity in the mining site area. Nunavik Inuit had not engaged in recent activities there. However, Inuit from Kangiqsualujjuaq, who heavily use the George River, expressed concerns about the potential effects of the proposed project on the water quality of the river. Naskapi users from Quebec and Labrador Innu users visited the mining site area for activities such as winter caribou hunting and spring waterfowl hunting. The corridor identified for road development (which is essentially the corridor identified for this project) was used in part by Nunatsiavut Inuit for activities at various times of the year. Nunatsiavut Inuit also expressed concerns about the effects of having an access road near the Ikadlivik Brook, particularly regarding the impact on Arctic char populations. To a lesser extent, Labrador Innu also engaged in hunting and fishing activities near the corridor identified for road development. The 2012-2013 study showed that Nunavik Inuit had historically used the territories traversed by the corridor identified for road development but had not engaged in activities there since the 1960s-70s. All Indigenous groups encountered at the time (Nunavik Inuit, Naskapi Nation of Kawawachikamach , Nunatsiavut Inuit, Labrador Innu) also expressed concerns about the effect of the project (essentially the mining site and the road) on caribou. Maps showing land use and occupancy by the various Indigenous groups considered in the 2012-2013 AECOM study are presented in Appendix F.

Furthermore, the study conducted in 2012-2013 revealed that both Indigenous and non-Indigenous businesses offered recreational activities near the proposed mining site. The owner of one of these businesses, an Innu from Matimekush, expressed concerns about the potential effects of the project on the water quality of the George River, where he operated activities.

In addition to the proposed mining site, the seasonal access road and the handling and storage facilities in Edward's Cove, as well as the process plant in Sept-Îles, Quebec (industrial port zone of Sept-Îles) will be evaluated. The Innu of Uashat mak Mani-Utenam are likely to engage in land use activities in the vicinities of the Sept-Îles industrial port zone. City of Sept-Îles and the MRC of Sept-Rivières (having jurisdiction in the Sept-Îles area) will also be concerned by the project, as well as various Indigenous and non-Indigenous organisations and businesses practicing activities in the vicinities of the proposed separation plant. Since the implementation of a process plant in Sept-Îles was not part of Quest Rare Minerals' initial project, no study was conducted concerning the traditional ecological knowledge and the land use performed by Indigenous groups in the area nor the land use and occupation performed by Indigenous and non-Indigenous organisations or businesses.

A new land use study of the affected areas (the proposed mine site, seasonal access road and handling and storage facilities) will be performed with the same Indigenous groups and businesses as in 2012-13. In the case of Nunatsiavut, the land use study will be conducted by the same lead researchers under the direction of the Nunatsiavut Government. This new land use study will also include the Innu Uashat mak Mani-Utenam concerning their potential use of the proposed mining site area as well as the proposed process plant in Sept-Îles.

[7] This study was carried out by AECOM in most of the »Indigenous communities concerned. However, in the case of Nunatsiavut, the land use study was conducted by Chris Furgal, Agata Durkalec, Katie Winters and coll. This land use study was then provided to AECOM for consideration and the results were incorporated in AECOM study.

The first step of this study will consist of telephone or videoconference interviews with local leaders or managers with a good knowledge of land use in each of the Indigenous communities concerned (Nunavik communities of Kuujjuaq and Kangiqsualujuaq, Naskapi community of Kawawachikamach, Nunatsiavut communities of Nain, Hopedale, Makkovik, Postville and Rigolet, Quebec Innu communities of Matimekush – Lac-John and Uashat mak Mani-utenam, as well as Labrador Innu communities of Sheshatshiu and Natuashish). These interviews will be the starting point for the study, providing an overview of the situation. They will also identify various studies that could have been carried out by the communities, or in conjunction with them, concerning their traditional ecological knowledge or their occupation and use of the territory concerned by the present project[8]. These firsts interviews will also make it possible to determine whether the land concerned by the present project (or its surroundings) has been visited by members of these communities in the last five years. If it appears that the land has been used by members of the community, more detailed interviews will be carried out with local land users (people practising traditional or recreational activities on the land concerned). These interviews may be conducted by videoconference or directly in the communities. The number of users to be interviewed will be determined with the various communities concerned, depending on the intensity of use. The choice of users to be interviewed will also be made in consultation with each of the communities concerned. People of different genders and ages will be identified to ensure good representativeness and to take into account the points of view of different sections of the population. Informants may be interviewed individually or in small groups. Where necessary, interviews will be conducted in the native language of the people interviewed, with the assistance of a local interpreter.

The interviews with land users will aim to provide a good description of the current use of the area concerned by the present project (visited areas, activities carried out, used or harvested resources, length of stay, season or period of use, approximate number of users, activities planned for the coming years, etc.). The various interviews conducted during the study (with local managers and land users) will also make it possible to gather their expectations and concerns regarding the present project. In addition, relevant information about traditional knowledge (such as the valued species, valued places used, etc.) mentioned by local leaders or land users during the interviews will be collected.

In order to provide an accurate description of the activities currently practised by Indigenous and non-Indigenous businesses within or near the land affected by the development and the operation of the proposed mining site, seasonal road and handling and storage facilities in Edward’s Cove, a new desktop study will be carried out. This study will focus on current and projected activities likely to take place within and/or near the lands affected and will be made through available sources, such as business and organisation websites or available environmental studies previously carried out in concerned areas. Following this desktop study, additional information will be gathered through telephone interviews conducted with representatives of the organisations and businesses identified in the literature. These interviews will help validate and refine the information gathered during the documentary research. They will also inform on the expectations and concerns of the various businesses and organisations in relation to the proposed project.

The methodology presented here may be adjusted in response to requests from the various Indigenous groups. It is also possible that certain Indigenous groups will themselves conduct parts of the land use and TEK study or the entire portion of the study concerning them. Specifically, for the Nunatsiavut Inuit, the land use study will be performed according to the rules issued by the Nunatsiavut Research Centre[9]. All the information gathered during the land use and TEK study will be used to assess the effects of the project and determine appropriate mitigation measures. As previously mentioned, the new land use study will be performed with the same Indigenous groups and businesses as in 2012-13 and performed by the same lead researchers under the direction of the Nunatsiavut Government.

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[8] If applicable, and if the community or communities concerned are willing to share these studies, the information presented could be used in for the land use and TEK study.

[9] According to NG Regulations regarding environmental reviews of initiatives on Labrador Inuit Lands (art.24): Registration must be consistent with Land Use Plan: *a proponent shall not register, and the minister shall not accept for registration, and initiative that is not a permitted land use or an approved discretionary use under the Land Use Plan*

In order to properly document non-Indigenous land use and occupation within and near the Sept-Îles industrial-port area, the following components will be taken into account: the administrative framework, land tenure, land management and development, land use, commercial and industrial activities, recreational and tourism activities, the built environment, infrastructures, heritage elements, as well as planning and development projects. These components will be documented through two complementary activities: a literature review, and interviews with local/regional organisations and stakeholders.

The literature review will be carried out using the various sources available. With regard to the administrative framework and land tenure, available geomatic databases will be consulted. With regard to land management and planning, the Sept-Rivières MRC's land use and development plan (schéma d'aménagement et de développement - SAD) will be consulted, as will the city of Sept-Îles' urban plan and zoning bylaws, and the Duplessis watershed organization's water master plan. Data from various levels of government will also be taken into account. In addition to infrastructure, the built environment, land use and commercial, industrial, and recreational activities will be characterized using information obtained from the various geomatic databases available. In addition, the websites of various local and regional businesses and organisations will be consulted, providing information on current infrastructures and uses, as well as on future planning and development projects. The websites of various ministries and government agencies (notably the *Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs* and the Canadian Wildlife Service) will also be consulted to describe the potential uses of the area. Heritage elements will be described in particular through consultation of planning documents, as well as by extracting and analyzing data from the *Patrimoine culturel du Québec* available on the website of the *Ministère de la Culture et des Communications*. In addition, for all the aspect of the non-Indigenous land use and occupation near the proposed processing and separation plan, relevant information from various available environmental studies previously carried out in the Sept-Îles industrial port area will be consulted.

To supplement the information provided by the literature review, representatives of the organisations and businesses identified in the literature review will be consulted by telephone or videoconference. Interviews will focus on representatives of the City of Sept-Îles and the Sept-Rivières MRC, but may also be conducted with representatives of other organisations or businesses, such as Duplessis watershed organisation, hunting and fishing associations, commercial fishing association, MELCCFP wildlife protection officer, etc.). In addition to gathering information to describe the current situation, the interviews will also help identify and locate planned development projects, and document the expectations and concerns of the various organisations and businesses regarding Strange Lake Mining Project.

15.2 Socio-economic Conditions, Local Capacity Analysis, and Workforce Analysis

As part of the Quest Rare Minerals project, studies were conducted with different Indigenous and non-Indigenous communities that could potentially be affected by the project, aiming to describe their socio-economic conditions, local services, and workforce capacities (AECOM, 2013f, 2013g, and 2013h). Several issues were raised during that time. For Indigenous communities, these issues included education levels, health, social problems, and economic characteristics such as limited employment opportunities, high unemployment rates, and low specialization levels. All Indigenous groups encountered shared common values related to the preservation of natural habitats and traditional harvesting activities. Non-Indigenous communities affected by the Strange Lake project (namely Schefferville, Fermont, Sept-Îles) were experiencing an economic boom in the mining and/or resource sectors, leading to an increasing demand for accommodations, infrastructure, and municipal services.

Within the framework of the present project, a new documentary study will be carried out using available sources. This will provide up-to-date socio-economic information on the various communities involved, as well as an accurate description and assessment of their local services and workforce.

Telephone interviews will also be conducted with key informants in the involved communities, as well as with government organisations to document specific topics such as education, health care and health issues, social services and social issues, housing, economic development, as well as the labour force situation and the ability of local businesses to meet the needs of Torngat Metals. Once again, the methodology presented here may be adjusted in response to requests from the various Indigenous groups concerned. It is also possible that certain Indigenous groups will choose to conduct all or part of the portion of the study concerning them.

The following sections provide a brief overview of the socio-economic conditions of the different Indigenous and non-Indigenous communities involved in the present project. It is important to mention that the data presented in Socio-Economic and Human Health section (section 15) are based on an initial review of available literature. Information presented will be complemented during the impact study to provide a more accurate and updated socio-economic and health profile. This update and refinement of data will be done through further literature research, as well as meetings and interviews with stakeholders from the concerned communities. It is important to note that the list of communities affected by the project is subject to change; other communities may be added to this list during the study and analysis.

Under the Impact Assessment Act (IAA), sex, gender and intersecting identities are a factor to be taken into account when assessing the impact of a designated project (section 22(1)(s)). Indeed women, girls, young people, the elderly and people with different gender identities experience development projects differently. Thereby, it is also important to mention that the data will be presented using GBA plus, so that we can subsequently assess the social, economic, health and environmental effects, both positive and negative, and impacts on Indigenous peoples and other population groups. Methods will be intersectional (include multiple identity factors) and will depend on the communities. In doing so, GBA Plus ensures that negative effects can be identified and mitigated. This leads to better results and more informed decision-making in the public interest.

15.2.1 Non-Indigenous and Indigenous communities in Quebec

15.2.1.1 Sept-Îles

The population of the city of Sept-Îles was 24,569 in 2021, a decrease of 3.3% since the 2016 census (25,400 inhabitants). In 2021, the average age was 43.2 years, compared to 42.8 years for the entire province of Quebec and 43.9 years in the Côte-Nord region. Just over 63% of the population (15,520 inhabitants) was in the 15-64 age group, a similar percentage to the province as a whole. Among the population aged 15 and over, 23% had no diploma (18.2% in Quebec and 27.7% in the Côte-Nord region), 21% had only a high school diploma (21.4% in Quebec and 21% in the Côte-Nord region), and 55% had obtained a certificate, diploma, or post-secondary degree (60.4% in Quebec and 51.4% in the Côte-Nord region). The primary language spoken in households was French (94%, compared to 77.5% for the entire province of Quebec) (Statistics Canada, 2023).

In 2021, the median annual household income in Sept-Îles was $80,000, a median income higher than that of the province of Quebec ($72,500) and the Côte-Nord region ($76,500). The labor force represented 65% of the population. The employment rate was 61.7%, a rate higher than the overall rate for Quebec (59.3%), while the unemployment rate was 5%, a rate lower than that of the province and the Côte-Nord region (7.6% and 7.5%). The occupied jobs were primarily in the tertiary sector (71%), with a significant portion (22%) also in the secondary sector. The primary sector accounted for 7% of the occupied jobs. The sector with the most workers was healthcare and social assistance (1,970 people), followed by retail trade (1,760 people) (Statistics Canada, 2023).

15.2.1.2 Fermont

Between 2016 and 2021, the population of Fermont decreased by 8.8%, going from 2,474 inhabitants to 2,256 inhabitants. In 2021, the 15-64 age group represented 73% of the population (1,650 inhabitants), and the average age was 33 years, which is about ten years below the Quebec average (42.8 years) and the Côte-Nord region average (43.9 years). Among the population aged 15 and over, nearly 9% had no diploma, which is half the rate of Quebec (18.2%) and one-third the rate of the entire Côte-Nord region (27.7%); 19% had only a high school diploma (21.4% in Quebec and 21% in the Côte-Nord region), and 72% had obtained a certificate, diploma, or post-secondary degree (60.4% in Quebec and 51.4% in the Côte-Nord region). Similar to Sept-Îles, French was the dominant language spoken at home with 96% (Statistics Canada, 2023).

In 2021, the labor force participation rate in Fermont was 82.5%, and the employment rate was 80.5%. These rates were the highest among all the communities involved in the project, surpassing those of the province (64.1% and 60.5%) and the entire Côte-Nord region (59.3% and 55.9%). The unemployment rate in Fermont, which was only 2.4%, was the lowest among all the communities affected by the project. In the same year, the unemployment rate was 7.6% for the entire Quebec and 7.5% in the Côte-Nord region. The median annual household income was $172,000, which was the highest among all the communities involved in the project and significantly higher than the median income for the entire province ($72,500) or the entire region ($76,500). As Fermont is a mining town, the primary sector accounted for a little over half (55%) of the occupied jobs. The secondary sector accounted for only 12%, while the tertiary sector represented one-third (33%) of the occupied jobs (Statistics Canada, 2023).

15.2.1.3 Schefferville

The population of the municipality of Schefferville had 244 inhabitants in 2021, compared to only 130 in 2016, representing a significant increase of 87%. In 2021, the average age was 37 years, which is lower than the overall average for the province (42.8 years) and the Côte-Nord region (43.9 years). Three quarters (75%) of the population of Schefferville was in the 15-64 age group. Among the population aged 15 and over, 12.8% had no diploma (18.2% in Quebec and 27.7% in the Côte-Nord region), 23.1% had only a high school diploma (21.4% in Quebec and 21% in the Côte-Nord region), and 61.5% had a certificate, diploma, or post-secondary degree (60.4% in Quebec and 51.4% in the Côte-Nord region). The primary language spoken in households was French (40%), followed by English (20%) and Indigenous languages (16%) (Statistics Canada, 2023).

In 2021, the labor force participation rate in Schefferville was 79.5%, which was higher than the rate in Quebec (64.1%) and the Côte-Nord region (60.5%). The employment rate was 74.4% (59.3% in Quebec and 55.9% in the Côte-Nord region), and the unemployment rate was 6.5%, which was lower than the rates for the entire province (7.6%) and the Côte-Nord region (7.5%). The median household income was $83,200 in 2016 (no data available for 2021). In 2021, no residents of Schefferville were employed in the primary sector, and only 5% of the jobs were in the secondary sector (transportation and warehousing), indicating that the majority of jobs were related to the tertiary sector. The fields that employed the most workers were education (50 people) and public administration (40 people) (Statistics Canada, 2023).

15.2.1.4 Kuujjuaq

Kuujjuaq is one of the 14 northern villages in Nunavik. The community saw its population decline by 3% between 2016 (2,754 inhabitants) and 2021 (2,668 inhabitants). In 2021, women accounted for nearly 52% of the population, the same proportion as for the entire province of Quebec, and the largest age group was the 15-64 age group (1,740 inhabitants). The average age was 30.5 years, which is significantly lower than the average age in the province (42.8 years). In 2021, nearly 42% of the residents of Kuujjuaq had no diploma, more than twice the rate for the entire province (18.2%). Additionally, 21% had only a high school diploma (21.4% in Quebec), while 38% of the residents had a certificate, diploma, or post-secondary degree (60.4% in Quebec). The primary language spoken at home was Inuktitut, used in 56% of households, followed by English (23% of households) and French (14%) (Statistics Canada, 2023).

In 2021, Kuujjuaq had an unemployment rate of 4.2%, which was one of the lowest among the communities involved in the current project and lower than the provincial rate (7.6%). The labor force participation rate was 75.3% (64.1% in Quebec), and the employment rate was 72.1% (59.3% in Quebec). The median household income was $110,000 per year, which was higher than the overall province median income ($72,500). However, it is important to note that the cost of living is higher in Nunavik than in the southern part of the province. The tertiary sector was the largest employment sector, accounting for just over 90% of the occupied jobs. This is largely explained by the fact that Kuujjuaq serves as the administrative and political center of Nunavik. The secondary and primary sectors accounted for only 7% and 2% of the occupied jobs, respectively (Statistics Canada, 2023).

15.2.1.5 Kangiqsualujjuaq

Kangiqsualujjuaq is another northern village in Nunavik. Its population increased by 1.5% between 2016 (942 inhabitants) and 2021 (956 inhabitants). In 2021, men were the majority and represented 53% of the population. The average age of the residents was 27.2 years, which is also significantly lower than the average age in the province (42.8 years). The largest age group was the 15-64 age group, accounting for 62% of the population (595 inhabitants). In 2021, nearly 71% of the population aged 15 and over had no diploma, which was more than three times the rate for the entire province (18.2%). Additionally, 18% had only a high school diploma (21.4% in Quebec), and nearly 8% had a certificate, diploma, or post-secondary degree (60.4% in Quebec). Inuktitut was the main language spoken in households (used in 91.6% of households) (Statistics Canada, 2023).

In 2021, Kangiqsualujjuaq had an unemployment rate of 12.2%, which was the highest rate among all the communities involved in the proposed project, significantly surpassing the rate of the province of Quebec (7.6%). The labor force participation rate was 64.6%, and the employment rate was 57.5%, relatively similar to the rates in Quebec (64.1% and 59.3% respectively). The median household income was $91,000, which is higher than the prevailing income for the entire province ($72,500), where the cost of living is generally lower. The tertiary sector (mainly education and public administration) accounted for just over 90% of the occupied jobs. The primary (4%) and secondary (5%) sectors represented only a small proportion of the occupied jobs.

15.2.1.6 Kawawachikamach

The Naskapi community of Kawawachikamach had a population of 641 inhabitants in 2021, representing a 6.7% increase since 2016 (601 inhabitants). In 2021, the average age in the community was 31.1 years, which is about ten years younger than the average for the province of Quebec (42.8 years). The 15-64 age group accounted for a little over two-thirds of the population (67.2%). Among the population aged 15 and over, 53.5% had no diploma, a proportion three times higher than the provincial average for Quebec (18.2%). Additionally, 25% held only a high school diploma (21.4% in Quebec), and 22.8% had a certificate, diploma, or post-secondary degree (60.4% in Quebec). The primary language spoken in households was Naskapi (68.8%), followed by English at 19.5% (Statistics Canada, 2023).

In 2021, the activity rate in Kawawachikamach was 52.2%. The employment rate was 47.8%, while the unemployment rate was 10.4%. These indicators were less favorable than the overall rates for the province of Quebec (64.1%, 60.5%, and 7.6% respectively) and the Côte-Nord region (59.3%, 55.9%, and 7.5% respectively). The median household income was $89,000, which was higher than the province ($72,500) and the Côte-Nord region ($76,500). The majority of jobs in the community were concentrated in the tertiary sector (75% of occupied jobs), particularly in public administration. The primary sector accounted for just under 10% of occupied jobs, and the secondary sector accounted for approximately 15% (Statistics Canada, 2023).

15.2.1.7 Matimekush – Lac John

The two Innu communities of Matimekush and Lac John are administered by the same band council and are therefore considered a single entity. The population of this entity increased by 3.6% between 2016 (638 inhabitants) and 2021 (661 inhabitants). Women were the majority, accounting for 58% of the population. The 15-64 age group was the largest, representing almost 60% of the population. The average age was 30.6 years, which is more than ten years younger than the average for the province of Quebec (42.8 years) and the Côte-Nord region (43.9 years). Nearly 54% of the population aged 15 and over had no diploma, a proportion three times higher than the Quebec average (18.2%). Only 13% held a high school diploma (21.4% in Quebec), while nearly 34% had a certificate, diploma, or post-secondary degree (60.4% in Quebec). Indigenous languages (Innu, Naskapi, and Inuktitut) were the most spoken in households (used in 88% of households), followed by French at around 9%, and English at 3% (Statistics Canada, 2023).

In 2021, the activity rate for Matimekush-Lac John was 60.9%, which was lower than the overall rate for the province (64.1%) but similar to the rate for the Côte-Nord region (60.5%). The employment rate was 54% (59.3% in Quebec and 55.9% in the Côte-Nord region), and the unemployment rate was 11.3%, significantly higher than the provincial (7.6%) and regional (7.5%) averages. The median household income was $84,000, which was higher than the income in Quebec ($72,500) and the Côte-Nord region ($76,500). The majority of occupied jobs were in the tertiary sector (around 80% of occupied jobs). The primary sector accounted for a little less than 10% of occupied jobs, and the secondary sector accounted for a little over 10% (Statistics Canada, 2023).

15.2.1.8 Uashat mak Mani-Utenam

Like Matimekush and Lac John, the Innu communities of Uashat and Mani-Utenam are administered by the same band council and are therefore considered a single entity. The population experienced a decrease of 2.6% between 2016 and 2021, going from 1,592 to 1,550 inhabitants. In 2021, women were slightly in the majority (51%). The average age in the community was 32.4 years, which is about ten years younger than the average for the province of Quebec (42.8 years) and the Côte-Nord region (43.9 years). The 15-64 age group was the largest, representing 61.4% of the population. Nearly 58% of the population aged 15 and over had no diploma, a proportion three times higher than the overall Quebec average (18.2%). Additionally, 13% held only a high school diploma (21.4% in Quebec), and 29% had obtained a certificate, diploma, or post-secondary degree, which is half the rate of the overall Quebec population (60.4%). French was the most frequently spoken language at home (used in 61% of households). It is also worth noting that Innu was the main language used in 37% of households (Statistics Canada, 2023).

In 2021, the Uashat mak Mani-Utenam community had an unemployment rate of 12.2%, which is much higher than the provincial (7.6%) and regional (7.5%) rates. The employment rate (40.4%) was also lower than the rates for the province as a whole (59.3%) and the region (55.9%). The activity rate was only 46%, compared to 64.1% in Quebec and 60.5% in the Côte-Nord region. The median household income was also lower in Uashat mak Mani-Utenam ($67,000) than the income for the province as a whole ($72,500) and the Côte-Nord region ($76,500). The main employment sector was the tertiary sector (nearly 80% of occupied jobs), with many people working in the public administration sector. The primary sector accounted for just under 5% of occupied jobs, and the secondary sector accounted for a little over 15% (Statistics Canada, 2023).

15.2.2 Non-Indigenous and Indigenous Communities in Labrador

15.2.2.1 Happy Valley-Goose Bay

Happy Valley-Goose Bay had a population of 8,040 inhabitants in 2021. Between 2016 and 2021, its population remained stable with a slight decrease of -0.9%. In 2021, the age group of 15-64 years was the largest, representing 69.6% of the population. The average age was 39.2 years, which was similar to the overall Labrador average (38.4 years) but lower than the average for the province of Newfoundland and Labrador (45.5 years). Over half (58.8%) of the population aged 15 and over held a certificate, diploma, or post-secondary degree, which was a higher proportion than in Labrador (52.9%) and the entire province (51.9%). However, nearly 30% only had a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and a little over 13% had no diploma, which was lower than the rates in Labrador (21.2%) and the entire province (20.4%). English was the dominant language, being the language spoken in 94.7% of households, a percentage similar to that of the province (97.9% of households) and slightly higher than in the overall Labrador region (90.5% of households). Innu (1.6%) and French (0.4%) were spoken in a marginal number of households (Statistics Canada, 2023).

In 2021, the activity rate in Happy Valley-Goose Bay was 71.5%, and the employment rate was 64.4%, which were the highest activity and employment rates among the Labrador communities covered by the project. These rates were respectively higher than 67.6% in Labrador (67.6% for the employment rate and 59.1% for the activity rate) and 56.1% for the province as a whole (56.1% for for the employment rate, and 59.1% in Labrador and 47.5% for the province as a whole for the activity rate). The unemployment rate in Happy Valley-Goose Bay was of also the lowest (9.7%, which was the lowest among the communities covered by the project in Labrador, and lower than the rate for the province (15.2%) and Labrador (12.6%). The median household income was $107,000, which was lower than Labrador ($112,000), but higher than the province of Newfoundland and Labrador ($71,500). The tertiary sector accounted for 78% of occupied jobs, primarily in the fields of healthcare, social assistance, and public administration. This is mainly due to Happy Valley-Goose Bay being the central public service centre for Labrador, with several institutions and services located there. The secondary sector accounted for 16% of occupied jobs, and the primary sector was the least significant, accounting for only 6% of occupied jobs (Statistics Canada, 2023).

15.2.2.2 North West River

The municipality of North West River experienced a slight increase (2.4%) in its population between 2016 and 2021, growing from 547 to 560 inhabitants. In 2021, women accounted for nearly 53% of the population, and the age group of 15-64 years was the largest, representing 61% of the population. The average age was 44.4 years, a figure similar to the overall average for the province of Newfoundland and Labrador (45.5 years) but higher than that of Labrador (38.4 years). Just under 14% of the population aged 15 and over had no diploma, a proportion lower than the rates in Labrador (21.2%) and the entire province (20.4%). Nearly 30% of the population aged 15 and over in North West River held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 56% had obtained a certificate, diploma, or post-secondary degree (52.9% in Labrador and 51.9% for Newfoundland and Labrador). English was the most commonly spoken language at home, being used in 99% of households (Statistics Canada, 2023).

In 2021, the activity rate was 61.7% and the employment rate was 53.2%, which was slightly less favorable than the overall Labrador rates (67.6% and 59.1% respectively), but more favorable than the rates for the entire province (56.1% for employment rate and 47.5% for activity rate). The unemployment rate was 12.1%, a rate similar to that of Labrador (12.6%) and lower than that of the province (15.2%). The median household income was $94,000 per year, which was lower than Labrador ($112,000), but higher than the province of Newfoundland and Labrador ($71,500). The primary and secondary sectors accounted for only 10% each of the occupied jobs in the community. On the other hand, the tertiary sector was much more significant, representing 80% of the occupied jobs. It is worth noting that one in six jobs in North West River was related to public administration (Statistics Canada, 2023).

15.2.2.3 Labrador City

The town of Labrador City had a population of 7,412 inhabitants in 2021, which was slightly higher than in 2016, when the population was 7,220. In 2021, men accounted for nearly 52% of the population, and the age group of 15-64 years was the largest, representing 70.5% of the population. The average age was 37.8 years, which was younger than the overall average for the province of Newfoundland and Labrador (45.5 years) and slightly younger than that of Labrador (38.4 years). A little more than 11% of the population aged 15 and over had no diploma, a proportion lower than the rates in Labrador (21.2%) and the entire province (20.4%). Nearly 27% of the population aged 15 and over in Labrador City held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 61.6% had obtained a certificate, diploma, or post-secondary degree, which was a higher rate than for Labrador (52.9%) and Newfoundland and Labrador (51.9%). English was the most commonly spoken language at home, being used in 94% of households (Statistics Canada, 2023).

In 2021, the activity rate was 72.6% and the employment rate was 68.6%, which was more favorable than the overall Labrador rates (67.6% and 59.1% respectively), and much more favorable than the rates for the entire province (56.1% for employment rate and 47.5% for activity rate). The unemployment rate was 5.5%, a rate much lower than the Labrador (12.6%) and the province (15.2%) rates. The median household income was $147,000 per year, which was higher than Labrador ($112,000), and much higher than the province of Newfoundland and Labrador ($71,500). The primary sector accounted for a large share of the jobs market in Labrador City in 2021, representing almost 43% of all jobs. This is hardly surprising, given that the mining sector is the main economic driver in the town.The secondary sector also accounted for a significant proportion of jobs, representing 11%. However, it was the tertiary sector that was the most important, accounting for almost 47% of jobs. (Statistics Canada, 2023).

15.2.2.4 Wabush

The town of Wabush had a population of 1,964 in 2021, which was slightly higher than its 2016 population (1,906 inhabitants). In 2021, men accounted for a little more than 51% of the population, and the age group of 15-64 years was the largest, representing nearly 70% of the population. The average age was 36.8 years, which was a little bit younger than the overall average for Labrador (38.4 years) and much younger that overall average for the province of Newfoundland and Labrador (45.5 years). Just over 10% of the population aged 15 and over had no diploma, a proportion much lower than the rates in Labrador (21.2%) and the entire province (20.4%). A little more than 26% of the population aged 15 and over in Wabush held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 63.2% had obtained a certificate, diploma, or post-secondary degree (52.9% in Labrador and 51.9% for Newfoundland and Labrador). English was the most commonly spoken language at home, being used in 97% of households (Statistics Canada, 2023).

In 2021, the activity rate was 76.7% and the employment rate was 73.3%, which was much more favorable than the overall Labrador rates (67.6% and 59.1% respectively) and the entire province rates (56.1% for employment rate and 47.5% for activity rate). The unemployment rate was 4.5%, which was the lowest among the Labrador communities concerned by the current project and much lower than the Labrador overall average (12.6%) and that of the province (15.2%). The median household income was $151,000 per year, which was much higher than the overall value for Labrador ($112,000) and for the province of Newfoundland and Labrador ($71,500). The primary sector was a major part of the job market, accounting for just over 36% of jobs. As in Wabush, the importance of the primary sector is essentially linked to the major role played by the mining industry in the local economy. The secondary sector also played a significant role, accounting for almost 14% of jobs in the town. However, the tertiary sector was the most important, accounting for around 50% of jobs (Statistics Canada, 2023).

15.2.2.5 Nain

Nain is an Inuit community in Labrador. Its population has dropped by nearly a quarter (24.7%) between 2016 and 2021, decreasing from 1,125 to 847 inhabitants. In 2021, the most significant age group was the 15-64 years, representing almost two-thirds (64%) of the population. The average age was 30.6 years, which is slightly lower than the overall Labrador average (38.4 years) and much lower than the average for the province of Newfoundland and Labrador (45.5 years). Nearly 41% of the population aged 15 and over had no diploma, more than double the proportion in Labrador (21.2%) and the entire province (20.4%). One-third (33%) of the population aged 15 and over held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 27% had obtained a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the overall Newfoundland and Labrador (51.9%)). English was the most frequently spoken language at home (used in 93.5% of households). It is worth noting that Inuktitut was the main language spoken in only 4% of households (Statistics Canada, 2023).

The activity rate in Nain was 58.5% in 2021 (59.1% in Labrador and 47.5% for the entire province). The employment rate was only 52.5% (67.6% in Labrador and 56.1% for the entire province), and the unemployment rate stood at 10.1%, lower than both Labrador (12.6%) and the province (15.2%). The median household income was $89,000, a figure lower than Labrador ($112,000) but higher than the province of Newfoundland and Labrador ($71,500). The majority of jobs in Nain were in the tertiary sector (71%). Public administration employed a significant number of workers, which is not surprising as Nain is the political and administrative center of Nunatsiavut. Nearly 20% of the occupied jobs were related to the secondary sector, and only 10% of the jobs were in the primary sector (Statistics Canada, 2023).

15.2.2.6 Hopedale

Hopedale, an Inuit community in Labrador, has seen its population increase by 3.8% since 2016. In 2016, the population was 574 inhabitants, and the 2021 census reported 596 inhabitants. In 2021, over 66% of the population belonged to the 15-64 age group (395 individuals). The average age in the community was 32.6 years, which is lower than the Labrador average (38.4 years) and significantly lower than the average for the province of Newfoundland and Labrador (45.5 years). Among the population aged 15 and over, 37.9% had no diploma, a significantly higher proportion than in Labrador (21.2%) and the entire province (20.4%). Furthermore, 36.8% had only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 40.4% held a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the overall Newfoundland and Labrador (51.9%)). The primary language spoken in households was English, used in almost all homes (99% of them), slightly higher than the province (97.9% of households) and slightly higher than the overall Labrador (90.5% of households) (Statistics Canada, 2023).

In 2021, the activity rate in Hopedale was 49.4%, and the employment rate was 39.1%. The unemployment rate was significant, reaching 20.9%, surpassing both the province of Newfoundland and Labrador (15.2%) and Labrador itself (12.6%). The median household income was $71,000, similar to that of the province of Newfoundland and Labrador ($71,500) but lower than Labrador ($112,000). The tertiary sector was the largest employment sector (slightly over 80% of occupied jobs). The primary and secondary sectors had less significance, accounting for only 10% and 8% of occupied jobs, respectively (Statistics Canada, 2023).

15.2.2.7 Makkovik

The population of the Inuit community of Makkovik was 365 inhabitants in 2021, a decrease of 3.2% since the 2016 population census (377 inhabitants). In 2021, the average age was 37.5 years, making the population slightly younger than Labrador (where the average age was 38.4 years) and significantly younger than the entire province of Newfoundland and Labrador (where the average age was 45.5 years). The 15-64 age group was the most significant, representing approximately two-thirds (67%) of the population. Among the population aged 15 and over, 28% had no diploma, which was higher than in Labrador (21.2%) and in the entire province (20.4%). Additionally, nearly 30% held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 40% possessed a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the overall Newfoundland and Labrador (51.9%)). The primary language spoken in households was English, used in 98.6% of households (Statistics Canada, 2023).

In 2021, the activity rate in Makkovik was 57.9% (59.1% in Labrador and 47.5% for the entire province), and the employment rate was 42.1% (67.6% in Labrador and 56.1% for the entire province). The unemployment rate was the highest among the communities in Labrador covered by the proposed project, with over a quarter of the active population unemployed (27.3%). However, this rate was lower than the unemployment rate for the entire Nunatsiavut (29.7%). It is worth mentioning that the unemployment rate for the province of Newfoundland and Labrador was 15.2%, and for Labrador, it was 12.6% for the same year. The tertiary sector was the most significant employment sector (66% of occupied jobs). Nevertheless, the primary (18%) and secondary (16%) sectors also had notable shares of local employment. The median household income was $79,500 (Statistics Canada, 2023).

15.2.2.8 Postville

The population of the Inuit community of Postville was 188 inhabitants in 2021, an increase of 6.2% since the 2016 population census (177 inhabitants). In 2021, the average age was 41.6 years, making the population slightly younger than the average for the entire province of Newfoundland and Labrador (45.5 years), but older than the average for Labrador (38.4 years). The 15-64 age group was representing 57,9 of the population. Among the population aged 15 and over, 34.5% had no diploma, which was much higher than the overall values for Labrador (21.2%) and in the entire province (20.4%). Additionally, a little more than 24% held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 44.8% possessed a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the Province (51.9%)). The primary language spoken in households was English, used in 100% of households (Statistics Canada, 2023).

In 2021, the economic conditions in Postville were less favorable than in Labrador as a whole or in the province as a whole. The activity rate was 62.1% compared with 59.1% in Labrador and 47.5% for the entire province. The employment rate was 48.3% compared with 67.6% in Labrador and 56.1% for the entire province. The unemployment rate was of 16.7% which was sightly higher than the rate for the province of Newfoundland and Labrador (15.2%), and higher than the rate for Labrador (12.6%). However, the unemployment rate in Postville was lower than the rate for the entire Nunatsiavut (29.7%). Nearly 24% of jobs in the community in 2021 was in the primary sector. However, the rest of the jobs held (roughly 76%) were in the tertiary sector. The median household income in Postville for 2020 is not known (Statistics Canada, 2023).

15.2.2.9 Rigolet

The population of the Inuit community of Rigolet was 327 inhabitants in 2021, compared with 305 inhabitants in 2016 (an increase of 10.7%). In 2021, the average age was 38.3 years, making the population younger than the average for the entire province of Newfoundland and Labrador (45.5 years), but same age of the average for Labrador (38.4 years). The 15-64 age group was representing 63,1 of the population. Among the population aged 15 and over, 32.0% had no diploma, which was much higher than the overall values for Labrador (21.2%) and in the entire province (20.4%). Besides, 20.0% held only a high school diploma (compared to 25.9% in Labrador and 27.6% for Newfoundland and Labrador), and 48.0% possessed a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the Province (51.9%)). The primary language spoken in households was English, used in 98.5% of households (Statistics Canada, 2023).

In 2021, the economic condition was less favorable in Rigolet than in Labrador as a whole or in the province as a whole. The activity rate was 48,0% compared with 59.1% in Labrador and 47.5% for the entire province. The employment rate was 32.0% which was much less than in the entire Labrador (67.6%) and the entire province (56.1%). The unemployment rate was of 33.3% which was much higher than the rate for the province of Newfoundland and Labrador (15.2%), and higher than the rate for Labrador (12.6%). It was also higher than the rate for the entire Nunatsiavut (29.7%). In 2021, a little more than 16% of jobs in the community was in the primary sector. The rest of the jobs held (almost 85%) were in the tertiary sector. The median household for 2020 was of $73,500 in Rigolet, which was lower than the value for Labrador as a whole ($112,000) but slightly higher than the value for the province as a whole ($71,500) (Statistics Canada, 2023).

15.2.2.10 Sheshatshiu

Sheshatshiu is one of the two Innu communities in Labrador. Its population has grown by 18% between 2016 and 2021, from 671 to 796 inhabitants. In 2021, women were the majority, representing nearly 57% of the population. The average age was 31 years, and 58.8% of the population belonged to the 15-64 age group. Nearly half of the population aged 15 and over (46%) had no diploma, which was more than double the proportion in Labrador (21.2%) and the entire province of Newfoundland and Labrador (20.4%). Furthermore, nearly 26% had only a high school diploma (a similar proportion to Labrador (25.9%) and Newfoundland and Labrador (27.6%)), and 28% had obtained a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the overall Newfoundland and Labrador (51.9%)). The Innu language was the most frequently spoken at home, used in 44.6% of households, followed by English (38.2%) (Statistics Canada, 2023).

In 2021, the activity rate in Sheshatshiu was low, reaching only 57.4%. The employment rate was 42%, which was also relatively low. Accordingly, the unemployment rate was very high, standing at 25.8%, representing a quarter of the active population. The median household income was $88,000. The tertiary sector was the most significant employment sector (82% of occupied jobs). Several individuals (130 out of 420 people in the active population) held jobs in the fields of health and social assistance. The primary and secondary sectors were less important sectors of activity, accounting for only 8% and 10% of occupied jobs, respectively (Statistics Canada, 2023).

15.2.2.11 Natuashish

The second Innu community in Labrador, Natuashish, had 856 inhabitants in 2021, a decrease of 8.7% since 2016 (938 inhabitants). In 2021, the average age was 25.5 years, making the population significantly younger than Labrador (38.4 years) and even younger than the overall province of Newfoundland and Labrador (45.5 years). Approximately 59.3% of the population (510 individuals) belonged to the 15-64 age group. Nearly 58% of the population aged 15 and over had no diploma, which was three times higher than in Labrador overall (21.2%) and the entire province of Newfoundland and Labrador (20.4%). Additionally, 14% held only a high school diploma, and 28% possessed a certificate, diploma, or post-secondary degree (a lower proportion than in Labrador (52.9%) and the overall Newfoundland and Labrador (51.9%)). The most spoken language at home was Innu (used in 69% of households), followed by English (15.8%) (Statistics Canada, 2023).

In 2021, the activity rate in Natuashish was 53.5%, and the employment rate was 44.9%. The unemployment rate was 17.5%, and the median household income was $108,000, which was the highest median income among the Labrador communities covered by the proposed project but still lower than the overall Labrador income ($112,000). Almost all (98%) of the occupied jobs in Natuashish were in the tertiary sector, and half of these jobs were related to public administration (Statistics Canada, 2023).

15.3 Human Health, Quality of Life and Psychosocial Impacts

The Ministry of Health and Social Services (MSSS) of Quebec states that the health status of the population is influenced by a set of factors related to both individuals and their physical, economic, political, and sociocultural environments. These factors are also known as "determinants of health" (MSSS, 2022). For Indigenous peoples, including the Inuit, health is a holistic concept that encompasses not only the absence of disease but also the "physical, spiritual, mental, economic, emotional, environmental, social, and cultural well-being of individuals, families, and communities" (Ministry of Health of British Columbia, 2002).

An assessment of risks to human health and the environment was planned in 2013 for the Quest Rare Minerals project. The first step of this study was completed, which involved developing a conceptual model for the entire project, including the mine, a road, a port, and a refining plant. This conceptual model identifies potentially concerning contaminants (including radionuclides), identifies ecological and human receptors potentially exposed to project activities, and identifies exposure pathways for the selected receptors for risk assessment. This conceptual model, based on the Quest Rare Minerals project, will need to be updated according to the planned activities for Torngat Metals as described in this initial project description.

No study on quality of life and psychosocial impacts had been conducted as part of the Quest Rare Minerals project. A comprehensive study on human health, on quality of life and psychosocial impacts will be conducted as part of the current project.

The first step will be to establish the baseline : using available data, the baseline study will describe the determinants of health using indicators that identify the main characteristics of the environment in which the various components of the Torngat Metals project will be inserted. Various characteristics, and therefore determinants of health, belonging to several fields (individual characteristics, living environments, systems and infrastructure and the overall context) will be documented in the impact study as reference conditions. It should be noted that some of these characteristics have already been discussed in section 15.2 (Socio-economic Conditions, Local Capacity Analysis, and Workforce Analysis). The characteristics/determinants of health that will be documented transversally during the impact assessment process include, but are not limited to : the health status of the population (overall health, physical health and psychological health); individual characteristics (socio-economic characteristics, lifestyle habits and behaviours, including the consumption of country food where applicable); living environments (family environment, workplace environment, local community); systems and infratructure (health and social services, employment support and social solidarity, housing); and the overall context (socio-economic context, demographic context, environmental context).

The following sections provide a brief health profile and individual characteristics of the different Indigenous and non-Indigenous communities that may be affected by the current project. It is important to note that the data presented in this section are based on an initial review of available literature. The presented information will be supplemented during the impact assessment process to provide a more accurate and updated health determinants portrait. This portrait will at least include all determinants listed in the paragraph above. For instance, among others, the social and health services available and the state of supply and demand for these services will be characterized using the most up-to-date data available. This updating and refinement of data will be carried out through further literature research, as well as meetings and interviews with key informants from the affected communities. Methods will be intersectional (including multiple identity factors) and will be adapted to the concerns and realities of the communities concerned. It is important to emphasize that the list of communities affected by the project is subject to change; additional communities may be added to this list during the study and analysis.

Subsequently, the second step will be to assess impacts on human health, on quality of life and psychosocial impacts. These impacts will be assessed on those aspects of the determinants of health for which concerns will be expressed during Torngat Metals's information and consultation activities. To identify relevant issues and assess the impacts on these issues, concerns, perceptions, and potential consequences (reactions and actions) of the population regarding the project will be documented through interviews and stakeholder engagement programs and subsequently analyzed. This aspect is treated in section 22 of this document.

It is therefore also important to mention that the health profiles will be presented using GBA Plus, so that we can then assess the health and social effects, both positive and negative, and the impacts on Indigenous peoples and other population groups. Women, girls, young people, the elderly and people with different gender identities experience development projects differently, so GBA Plus will help to identify and mitigate the negative effects of the proposed project on these different population groups.

The health and well-being of Indigenous populations in Canada are influenced by a multitude of historical and current sociosanitary determinants resulting from social, economic, political, and geographical issues (Reading & Wein, 2009; King *et al.*, 2009; Phillips, 2019). Generally, the physical and mental health of Indigenous populations is poorer than that of non-Indigenous populations, resulting in shorter life expectancy among Indigenous populations. This situation arises from inequities stemming from social exclusion, discrimination, racism, loss of territory, and loss of sociocultural resources experienced by Indigenous communities. Social determinants of health affect the health of human beings worldwide, and in most countries, minorities and Indigenous peoples have poorer health conditions than other population groups (Adelson, 2005; King *et al.*, 2009; Reading & Wein, 2009; Phillips, 2019).

Although the overall health of Indigenous populations in Canada is improving (Health Canada, 2016), significant differences still exist compared to non-Indigenous populations. For example, as is also the case in other colonized countries, Indigenous populations in Canada have a diabetes rate 3 to 5 times higher than the general population (Horn *et al.*, 2007; Canadian Diabetes Association, 2013).

Diabetes is a serious chronic disease characterized by high blood sugar levels. This disease results from the body's inability to produce sufficient insulin (type 1) or effectively use the insulin produced by the pancreas (type 2). Diabetes can lead to various complications: in the long term, hyperglycemia can damage blood vessels, nerves, and organs such as the kidneys, eyes, and heart, ultimately leading to death. Diabetes is the leading cause of blindness in industrialized countries and is also considered the primary cause of non-traumatic amputations. Type 2 diabetes is more common in individuals who are overweight or obese and in sedentary individuals; it is largely preventable through healthier lifestyles. In Quebec, as elsewhere in Canada, Indigenous populations are particularly affected. The risk of developing diabetes is estimated to be three to five times higher among Indigenous people than in the overall Canadian population (Therriault Y. *et al.*, 2018). Thus, while type 2 diabetes and obesity are major health issues for all Canadians, they are even more significant for several Indigenous communities in the country (Khayyhat Kholghi *et al.*, 2017; Young *et al.*, 2000).

Furthermore, in Canada, suicide rates among First Nations, Metis, and Inuit populations remain higher than those observed in the non-Indigenous population. However, suicide rates vary depending on the community, Indigenous group, age group, and sex. In 2011-2016, suicide rates among First Nations, Metis, and Inuit were significantly higher than those among the non-Indigenous population: the suicide rate among First Nations (24.3 deaths per 100,000 person-years at risk) was three times higher than that of the non-Indigenous population (8.0 deaths per 100,000 person-years at risk) (Kumar M. B. and Tjepkema M., 2019).

15.3.1 Quebec

15.3.1.1 Nunavik Inuit

In the Arctic, Inuit inhabit Inuit Nunangat (the Inuit homeland) and its four constituent regions. Inuit thus inhabit Nunavik (northern Quebec), Nunatsiavut (northern Labrador), Nunavut as well as the Inuvialuit region of the Northwest Territories (Statistics Canada, 2015).

Nunavik is a vast territory located north of the 55th parallel, with approximately 12,000 inhabitants. Nunavik Inuit are distributed among 14 villages, ranging in size from 100 to 2,700 residents. The largest community is Kuujjuaq. These villages, located several hundred kilometers apart, are situated along the coastlines of Hudson Bay, Hudson Strait, and Ungava Bay (where the communities of Kuujjuaq and Kangiqsualujjuaq are located). Around a hundred Inuit live in Chisasibi, a Cree village in James Bay (Government of Quebec, 2023a).

In general, the overall health and well-being levels of the Inuit are lower than those of the general population in Canada (Chief Public Health Officer, 2008). Indicators of this health disparity include lower levels of self-rated health, both general and mental, as excellent or very good (Wallace, 2014; Gionet and Roshanafshar, 2013; Tait, 2008; Gionet and Roshanafshar, 2013). Inuit are more likely to report respiratory disorders such as asthma (Gionet and Roshanafshar, 2013) and tuberculosis compared to the non-Indigenous population in Canada (Public Health Agency of Canada, 2015). Additionally, Inuit have a shorter life expectancy and higher infant mortality rates compared to the overall Canadian population (Wilkins *et al.*, 2008) (Statistics Canada, 2016a).

Age Groups

As discussed in section 15.2 "Socio-economic Context," the population of Nunavik is relatively young: over a third (34%) of the residents are under 15 years old. This proportion is almost twice as high as in the entire province of Quebec (16%).

The proportion of elderly individuals (65 years and older) is lower in Nunavik compared to other parts of the province, but it is expected to increase in the future. Therefore, it will be necessary to adjust services to meet the specific needs of the elderly population in the region (RRSSN and INSPQ, 2015).

Well-being and Personal Resources

<u>Self-rated health or perceived health</u>

Self-rated health (or perceived health) is a general measure of well-being that has been established as a reliable and valid indicator of the population's health status, as well as its relationship with specific dimensions such as mortality and healthcare utilization, in several studies (Burström and Fredlund, 2001; DeSalvo, Bloser, Reynolds, He, and Muntner, 2005; Rohrer, Arif, Denison, Young, and Adamson, 2007; Camirand *et al.*, 2009).

According to the 2012 Aboriginal Peoples Survey (APS) (Statistics Canada, 2015), 37% of Inuit in Nunavik perceived their health as "excellent" or "very good," while the rate for all Inuit in Canada was 45%. The rate for Inuit in Nunavik was the lowest among all regions in Quebec and lower than the Quebec average, where 59% of the population reported excellent or very good health. For the whole of Canada, this proportion was slightly higher at 63% (Canadian Community Health Survey, 2012).

<u>Self-esteem, pride, and psychological distress</u>

In general, the majority of Nunavimmiut have a positive self-esteem (80% have normal or high self-esteem), take pride in their culture (90%), and almost three-quarters are satisfied or very satisfied with their lives, with higher proportions among the elderly.

However, psychological distress is prevalent, especially among young people, as evidenced by high rates of alcohol and drug abuse, violence, and suicide. Among all rural regions in the province of Quebec, Nunavik has the highest rates of injuries. Young males are the most affected population, and the main causes of injuries are road accidents (cars, trucks, ATVs, or snowmobiles), where alcohol consumption is a significant factor (RRSSN and INSPQ, 2015).

Health-influencing Behaviors

Tobacco

The health risks associated with tobacco use include heart disease, mouth and lung cancer, emphysema, and bronchitis (Health Canada, 2023). In 2012, 16% of the total population aged 15 and older in Canada smoked daily (Canadian Community Health Survey, 2012). According to the 2012 APS, half (52%) of Inuit aged 15 and older smoked cigarettes daily, with the percentage rising to 67% among Nunavimmiut, which is the highest rate among the four Inuit regions.

Alcohol

Abusive alcohol[10] consumption is linked to health and social problems, including cancer, liver cirrhosis, fetal alcohol spectrum disorders, motor vehicle accidents, alcohol poisoning, family disruptions, crime, and violence (Health Canada, 2021).

In 2012, one-third of Nunavimmiut (34%) reported abusive alcohol consumption, while the figure was 26% for all Inuit aged 15 and older (30% for men and 23% for women), accounting for approximately a quarter of them. In the same year, 18% of the total population aged 15 and older in Canada reported abusive alcohol consumption (Canadian Community Health Survey, 2012).

Health Problems

Prevalence of obesity

Obesity is associated with chronic health problems such as type 2 diabetes, hypertension, cardiovascular diseases, gallbladder diseases, and certain types of cancer (Navaneelan and Janz, 2014). In Nunavik, as in industrialized countries in general, dietary and lifestyle changes have resulted in an increase in the obesity rate. In 2004, 30% of adults were overweight, and 28% suffered from obesity, with the 50 to 74 age group being the most affected. This represents a significant increase since, in 1992, 21% of Nunavimmiut were overweight and 19% were obese (RRSSN and INSPQ, 2015).

Chronic Health Problems

The APS defined a "chronic health problem" as a long-term problem that is expected to last or has already lasted for at least six months and has been diagnosed by a healthcare professional. In 2012, 31% of Inuit in Nunavik reported at least one chronic health problem, and this figure was 43% for all Inuit (47% for women and 39% for men) (Statistics Canada, 2015).

The most commonly reported chronic health problems among Inuit in Nunavik were hypertension (9% compared to 12% for all Inuit), arthritis (5% compared to 12% for all Inuit), asthma (4% compared to 7% for all Inuit), and mood disorders (5% compared to 7% for all Inuit), such as depression or bipolar disorder. Diabetes (excluding gestational diabetes) was reported by 2% of Inuit in Nunavik (and 5% of all Inuit). The vast majority of all diabetes cases (including gestational diabetes) were type 2 diabetes. For the total population of Canada, the respective figures were 4% for hypertension, 10% for arthritis, 8% for asthma, 8% for mood disorders, and 4% for diabetes (Statistics Canada, 2015).

[10] Five or more drinks on one occasion, at least once a month (Statistics Canada, 2013a)

Among Inuit, diabetes is not yet as prevalent as in some other Indigenous nations. The hypothesis that Inuit benefit from genetic protection against diabetes has been refuted by research. The low incidence of diabetes among Inuit is instead attributed to the maintenance of a relatively active lifestyle and a traditional diet until very recently. However, several experts state that the decline in the traditional diet and the increasing sedentary lifestyle will contribute to increasing obesity and diabetes rates in the medium and long term. These predictions are also based on the increasing rates of metabolic syndromes within these populations (Dewailly, Chateau-Degat *et al.*, 2007) (RRSSN and INSPQ, 2015).

Cardiovascular diseases are the most prevalent type of chronic diseases in the Nunavik region, and their rates are higher than the Quebec average. Just like with diabetes, the initial hypothesis that Inuit were protected against cardiovascular diseases has been refuted. It is rather the high content of omega-3 fatty acids in the traditional food that has so far reduced the risk of heart diseases in this population. Researchers also link the reduction in traditional food among young Inuit to the parallel increase in cardiovascular diseases (Dewailly, Blanchet *et al.*, 2001) (RRSSN and INSPQ, 2015).

In the future, similar to diabetes, the incidence rate of cardiovascular diseases is still likely to increase due to the abandonment of traditional diet and lifestyle, as well as smoking (RRSSN and INSPQ, 2015).

Chronic diseases mainly affect adult Inuit, although they are increasingly appearing earlier in life (RRSSN and INSPQ, 2015).

Food Insecurity

Food security exists "when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organisation, 1996). The absence of food security (food insecurity) is a factor that contributes to poor health, as it is associated with limited mobility, multiple chronic health problems, and experiencing major depression and distress (Tarasuk, 2009). Accessing healthy food in northern regions is much more costly than in southern Canada, and food insecurity is a well-known problem among the Inuit (Rosol, Huet, Wood, Lennie, Osborne, & Egeland, 2011).

In 2012, 41% of Inuit aged 15 and older lived in households that experienced food insecurity in the past 12 months. In Nunavik, this rate was 55%, while for the total population of Canada, the rate was 8%.

Hospitalizations and Deaths

The cancer hospitalization rate in Nunavik is similar to the overall rate in the province of Quebec, except for lung cancer, which significantly exceeds the provincial average, likely due to the high smoking rate in Nunavik.

Respiratory diseases account for one in four deaths among the elderly, and respiratory failure is the leading cause of hospitalization in Nunavik, which is undoubtedly related to high smoking rates and overcrowded housing.

The second leading cause of hospitalization in the region is digestive system disorders, a higher position than in the rest of Quebec. Gastroenteritis is likely also attributable to overcrowded housing and the consumption of contaminated water or food (RRSSN and INSPQ, 2015).

Life Expectancy at Birth

Regarding life expectancy at birth, as reported in the "Portrait of Nunavik Health - The Health of Youth, Adults, and the Elderly" (RRSSN and INSPQ, 2015), there is a gap between the life expectancy of Nunavimmiut and that of other Quebecers. For Inuit in Nunavik, life expectancy is 65 years for men and 69 years for women, while in Quebec as a whole, these respective figures are 79 years and 84 years, representing a difference of about fifteen years. A gap is also observed with the James Bay Cree, where life expectancy for men and women is 75 years and 82 years, respectively. Among the four Inuit regions in Canada, Nunavik has the shortest life expectancy (MSSS, 2010).

This gap can be explained by several health problems. For men, suicides, at 37%, rank first and account for over a third of the gap. They are followed by unintentional injuries (trauma) at 19%. For women, the leading causes of mortality are cancer and respiratory diseases (24%), also followed by unintentional injuries. Suicide and injuries mainly affect teenagers and young adults, while cancer and respiratory diseases primarily affect older individuals (RRSSN and INSPQ, 2015).

Regarding suicide specifically, the number of cases tripled in Nunavik, from 11 cases in 2015 to 35 cases in 2019. The suicide rate is the highest in the province, with a rate of 177.1 per 100,000 people (13.1 per 100,000 people in Quebec as a whole) (Levesque, Rassy, & Genest, 2022 in MSSS, 2022). The difficulties in accessing specialized care and services, recruitment and retention issues for human resources, the ongoing impacts of colonization, socio-economic difficulties, culturally and linguistically inappropriate practices are some of the factors that may explain the rates in Nunavik (MSSS, 2022).

In 2015, the authors of the "Portrait of Nunavik Health - The Health of Youth, Adults, and the Elderly" conducted by the Nunavik Regional Board of Health and Social Services in collaboration with the National Institute of Public Health of Quebec noted that many of the observed issues are attributable to the abandonment of traditional ways of life, as well as the increase in smoking, substance abuse, and psychological distress. The authors emphasize that interventions aimed at changing these behaviors are unlikely to be successful if the social, cultural, and economic factors underlying these difficulties are also not taken into account. They also mention that concrete measures are necessary to improve access to housing, employment, and culturally adapted health services, as well as addressing the collective consequences of intergenerational trauma, thus enabling long-term improvements in the health and well-being of Nunavimmiut.

It should be noted that a national survey on Inuit health called "Qanuippitaa?" is currently underway (2023). It is the first national program of its kind to be fully led by Inuit from across Inuit Nunangat.

15.3.1.2 Naskapi Nation of Kawawachikamach

In Quebec, the Naskapi Nation has approximately 1,450 people (Government of Quebec, 2023b). About 641 of them were based in the sole Naskapi village in Quebec, Kawawachikamach, located in northern Quebec, about 15 kilometers from Schefferville, according to the 2021 Census of Population (Statistics Canada, 2023).

The sedentarization of the Naskapi people has been accompanied by various health problems previously unknown to this community (Nematau Innu, 2010 in Hémond, 2012). Among these is diabetes: 28% of the population is affected by type 2 diabetes, which can be caused by genetic predisposition, excess weight, or lack of physical activity (Diabète Québec, 2009; Nation of Kawawachikamach, 2011b in Hémond, 2012).

In the year 2000, the Naskapi community expressed the desire to manage its healthcare system to meet its specific needs according to their culture and identity. Negotiations with the government of Quebec led to the creation of the Naskapi CLSC[11] (Local Community Service Center) managed by the community (Hémond, 2012).

Available data on the health of the Naskapi people are addressed in section 15.3.1.5, within the geographical framework of the local service network (RLS[12]) of Kawawachikamach (Naskapi CLSC). This RLS is part of the Caniapiscau Regional County Municipality (MRC), which includes two RLS territories: the Caniapiscau RLS and the Kawawachikamach RLS (Naskapi CLSC).

[11] Centre local de services communautaires
[12] Réseau local de services

15.3.1.3 Quebec Innu (Matimekush - Lac John and Uashat mak Mani-Utenam communities)

In Quebec, the Innu Nation has over 16,000 people, making it the third most populous Indigenous nation in the province, following the Mohawk and Cree nations. Seven out of the nine Innu communities in Quebec are located along the north coast of the St. Lawrence River (Essipit, Pessamit, Uashat mak Mani-Utenam, Ekuanitshit, Nutashkan, Unamen-shipu, and Pakua-shipi. Another community, Mashteuiatsh, is situated near Lac-Saint-Jean, while the Matimekush–Lac John community is adjacent to Schefferville (Government of Quebec, 2023c).

The Uashat mak Mani-Utenam community is located in two sites: Uashat, bordering the city of Sept-Îles, and Mani-Utenam (Maliotenam), which is about 14 km further east. The available health data for the Uashat mak Mani-Utenam community are also addressed in section 15.3.1.5, along with the available health data for the Innu of Matimekush–Lac John. The latter is addressed within the geographical framework of the Caniapiscau local service network (RLS). As mentioned earlier, the Caniapiscau Regional County Municipality (MRC) indeed includes two RLS territories: the Caniapiscau RLS and the Kawawachikamach RLS (Naskapi CLSC). The Caniapiscau RLS comprises the municipalities of Fermont and Schefferville, as well as the Innu community of Matimekush-Lac-John.

15.3.1.4 Non-Indigenous Communities: Sept-Îles, Fermont, and Schefferville

The city of Sept-Îles is located in the Sept-Rivières Regional County Municipality (MRC) in the Côte-Nord administrative region of Quebec. The expansive territory of the Caniapiscau MRC is also situated in the Côte-Nord region. This MRC's territory encompasses the cities of Fermont and Schefferville, as well as the Innu community of Matimekush-Lac John, and the Naskapi community of Kawawachikamach.

As previously mentioned, the Caniapiscau MRC includes two local service network (RLS) territories: the Caniapiscau RLS and the Kawawachikamach RLS (Naskapi CLSC). The Caniapiscau RLS comprises the municipalities of Fermont and Schefferville, as well as the Innu community of Matimekush-Lac-John.

The available health data for the non-Indigenous populations of the Côte-Nord region are also addressed in section 15.3.1.5.

15.3.1.5 Health Data on Naskapi, Innu, and Non-Indigenous Communities in Quebec affected by the Project

This section highlights certain available health data for the Côte-Nord region, the Caniapiscau RLS, and the Kawawachikamach RLS (Naskapi CLSC), as well as for the entire province of Quebec. These data are explained and supplemented with specific elements in the following text, particularly for the Innu community of Uashat mak Mani-Utenam.

These data are derived from an initial overview of the available literature. They will be further complemented during the impact study to provide a more precise and up-to-date health profile of the communities affected by the project. This updating and refinement of the data will occur through further literature research, as well as through meetings and interviews with stakeholders from the concerned communities. It is important to note that the list of communities affected by the project is subject to change; other communities may be added to this list during the study and analysis.

Much of the data comes from the document *« Portrait de santé et de bien-être de la population nord-côtière »* (Therriault Y. et al., 2018) which presents data for the Côte-Nord region, the Caniapiscau RLS, and the Kawawachikamach RLS (Naskapi CLSC) when available, as well as for the entire province of Quebec. For this reason, this section is entitled "Health data on Naskapi, Innu and non-Indigenous communities in Quebec affected by the project". However, this does not mean that the data will be presented jointly for these Indigenous and non-Indigenous communities in the Impact Assessment report. Of course, the data for the Innu, Naskapi and non-Aboriginal communities will be presented and analyzed separately for each of the communities concerned. This is also the case in the following paragraphs, where a distinction is made whenever necessary.

Well-being and Personal Resources

Self-reported Health or Perceived Health

In 2011-2012, nearly 52% of Côte-Nord region residents perceived their health as "excellent" or "very good," a lower rate compared to the overall rate in Quebec (around 60%). Regarding mental health, nearly 73% of Côte-Nord region residents considered their mental health to be "excellent" or "very good," which is comparable to the rest of Quebec (75%). In 2014-2015, approximately 12% of the population aged 15 and above in the Côte-Nord region perceived their health as "fair" or "poor," a higher proportion than the rest of Quebec (around 10%). However, in the Caniapiscau local service network (RLS) territory, this perception was much less prevalent, as only 6.2% of residents perceived their health as "fair" or "poor" (Therriault Y. *et al.*, 2018).

Sense of Belonging to the Local Community

In 2011-2012, the vast majority of Côte-Nord region residents aged 15 and above (94.5%) reported being satisfied with their social life, a proportion similar to that in the overall Quebec population (Therriault Y. *et al.*, 2018). The region is characterized by a strong sense of belonging, with 78% of Côte-Nord region residents having a very strong or somewhat strong sense of belonging to their local community, a significantly higher proportion than the rest of Quebec (57%).

Health Influencing Behaviors

The lifestyle habits of Côte-Nord region residents indicate a similar rate of excessive alcohol consumption compared to the rest of the province, but higher rates of smoking, overweight, and obesity are observed in the Côte-Nord region.

Tobacco

In 2014-2015, just under a quarter (23%) of Côte-Nord region residents aged 15 and above smoked cigarettes on a daily or occasional basis, which was higher than the proportion observed in Quebec (19%). In the Caniapiscau RLS, the smoking rate was approximately 22%, the lowest proportion among the RLSs in the Côte-Nord region (Therriault Y. *et al.*, 2018).

Alcohol

In 2010, over a quarter (28%) of the adult population in the Côte-Nord region displayed patterns of excessive alcohol consumption. In the local service network territories (RLSs), the percentage of adults with excessive alcohol consumption ranged from 24% (Basse-Côte-Nord RLS) to nearly 39% (Caniapiscau RLS). The Caniapiscau RLS was the only RLS that showed significantly higher rates of alcohol consumption compared to the rest of the Côte-Nord region (Therriault Y. *et al.*, 2018).

Health Issues

The health status of the population in the Côte-Nord region exhibits some disparities compared to the overall Quebec population. Indeed, the vast majority of indicators related to disease prevalence rates (diabetes, lung cancer) or mortality rates (cancers, circulatory system diseases, respiratory system diseases, accidental injuries, suicides, and self-inflicted injuries) are higher than those in Quebec.

Prevalence of Obesity

In the Caniapiscau RLS (24%) and the Côte-Nord region (26%), there is a higher proportion of obese individuals compared to the rest of the province of Quebec, where the proportion is 19% (Therriault Y. *et al.*, 2018).

Diabetes

In 2014-2015, approximately 10% of the population in the Côte-Nord region, aged 20 and above, were living with diabetes, a higher proportion of diabetic individuals than the overall rate in Quebec (8%). With the exception of Port-Cartier (8.1%), the local service network territories (RLSs) in the Côte-Nord region had higher proportions of diabetic individuals than the prevailing rates for the rest of Quebec. Furthermore, the Naskapi CLSC, with 23.5% of diabetic individuals, had by far the highest proportion of diabetics among the eight RLSs in the Côte-Nord region. The Caniapiscau RLS had a rate of 10.9% (Therriault Y. *et al.*, 2018).

In 2014-2015, in proportion, diabetes and hypertension were more prevalent chronic diseases among men and women in the Côte-Nord region. The higher proportion of sugary drink consumption among Côte-Nord region residents compared to the overall rate in Quebec constituted a significant risk factor (Therriault Y. *et al.*, 2018).

Lung Cancer

The Côte-Nord region has a higher proportion of individuals affected by lung cancer compared to the prevailing rate in the province of Quebec, with approximately 2 out of 1,000 people (CISSSCN, 2018).

Uashat mak Mani-Utenam: Huntington's Disease

The 2018-2023 health plan for Uashat mak Mani-Utenam highlighted that the community is the second epicenter of Huntington's disease[13] in the world, affecting 1 person out of 190 (Innu Takuaikan Uashat Mak Mani-Utenam, 2017).

Deaths

Life Expectancy at Birth

In the Côte-Nord region, life expectancy at birth is proportionally lower than the rest of Quebec. In 2010-2012, life expectancy was 82.9 years for Côte-Nord region women compared to 83.7 years for women across Quebec, and 80.4 years for Côte-Nord region men compared to 81.7 years for men across Quebec.

For the Caniapiscau RLS territory, the life expectancy at birth, for both sexes combined, was 77.5 years for the period 2008-2012, which was the shortest life expectancy among seven of the eight RLSs in the Côte-Nord region. Note that data for the 8th RLS, the Naskapi CLSC, was not published (Therriault Y. *et al.*, 2018).

Mortality

For the period 2008-2012, the mortality rate for the Côte-Nord region for all causes was 800 per 100,000 people (754 per 100,000 people for the rest of Quebec). The Côte-Nord region residents were proportionally more likely to die from all types of cancers and lung cancer than the rest of the Quebec population, particularly due to smoking patterns in the 1980s-1990s (Therriault Y. *et al.*, 2018).

Among the causes of death, the Côte-Nord region had higher rates than the rest of Quebec for several causes, including cancers, respiratory system diseases, accidental injuries, suicides, and self-inflicted injuries.

[13] Huntington's disease is an inherited disorder that causes certain nerve cells in the brain to die. People are born with the gene that causes the disease, but symptoms usually do not appear until mid-adulthood (Alzheimer Society, 2023).

Among the territories of the 8 RLSs in the Côte-Nord region, the Naskapi CLSC had the highest adjusted mortality rate, with 1,394.2 per 100,000 people, which is a significantly higher mortality rate than the rest of the Côte-Nord region. The Caniapiscau RLS territory also had a higher rate than that of the Côte-Nord region, with 991.2 per 100,000 people (Therriault Y. *et al.*, 2018). The main causes of death on this territory were cancer (24%), heart diseases (12%), unintentional injuries (12%), diabetes (7%), and lower respiratory tract diseases (7%) (CISSCN, 2018).

Regarding specific Indigenous communities, the Uashat mak Mani-Utenam community has faced multiple suicides in recent years, especially in 2015, where 5 members took their own lives within nine months. A coroner's investigation took place, and the report was published in 2016. It noted that between 1994 and 2015, 44 people died by suicide in Uashat mak Mani-Utenam, with a total population of approximately 3,400 residents (Bureau du Coroner du Québec, 2017).

As mentioned at the beginning of the section, in Canada, suicide rates among First Nations, Metis, and Inuit populations are consistently higher than those observed in the non-Indigenous population, with variations based on community, Indigenous group, age group, and gender (Kumar M. B. and Tjepkema M. 2019).

15.3.2 Labrador

This section presents certain available health data for the Labrador-Grenfell Health region[14], specific communities, as well as for the entire province of Newfoundland and Labrador.

As mentioned for the communities in Quebec, this data is derived from an initial overview of available literature. Currently, the data is partial and will be supplemented during the impact study to provide a more precise and updated health profile of the communities affected by the project. This updating and refinement of data will be done through further literature research as well as through meetings and interviews with stakeholders from the concerned communities. It is important to note that the list of communities affected by the project is evolving, and other communities may be added to this list during the study and analysis.

15.3.2.1 Nunatsiavut Inuit (communities of Nain, Hopedale and Makkovik)

Nunatsiavut (which means "our beautiful land" in Inuktitut) is located in the northern part of the Labrador Peninsula. Approximately 2,300 Inuit people, known as Nunatsiavummiut (a term meaning "people of Nunatsiavut" in Inuktitut), live along the Labrador coast, mainly in five communities. Nain, with a population of 1,100 residents, is the largest Inuit community in Labrador and serves as the administrative center, while Hopedale is the legislative capital (Inuit Tapiriit Kanatami, 2023).

Hunting and fishing continue to dominate the Inuit's diet and the regional economy. The government and service industries are the main employers in Nunatsiavut, but the Voisey's Bay nickel mine is expected to boost the local economy in the coming years by employing Inuit individuals from neighboring regions (Inuit Tapiriit Kanatami, 2023).

As mentioned in the section on Inuit in Nunavik, it is worth noting that a national health survey for Inuit, Qanuippitaa, is currently underway (2023). It is the first national program of its kind to be entirely led by Inuit from across Inuit Nunangat.

[14] The Labrador-Grenfell Regional Health Authority is one of the five health zones in Newfoundland and Labrador, covering Labrador and all communities north of Bartlett's Harbour on the Northern Peninsula. Within this zone, health and community services are provided to approximately 37,000 people (Statistics Canada, 2016 Census data), including three Indigenous groups: Innu, Inuit, and Southern Inuit (Inuit-Metis or Metis of Labrador). However, it should be noted that as of April 1, 2023, all regional health authorities and the Newfoundland and Labrador Centre for Health Information are transitioning to a single provincial health authority (Labrador-Grenfell Health, 2023). The geographic divisions, however, are retained for the purpose of data presentation.

Self-Reported or Perceived Health

According to the 2012 Aboriginal Peoples Survey (APS) (Statistics Canada, 2015), 50% of Inuit in Nunatsiavut perceived their health as "excellent" or "very good," compared to 45% for all Inuit and 63% for the total population of Canada. It should be noted that this proportion was lower among Inuit in Nunavik, where 37% perceived their health as "excellent" or "very good" (Statistics Canada, Canadian Community Health Survey, 2012).

Regarding mental health, in 2011-2012, a higher proportion of people (78.2%) in the Labrador-Grenfell Health region perceived their mental health as "excellent" or "very good" compared to the overall province (73.2%) (Statistics Canada, 2015)[15].

The sense of belonging to the local community in 2011-2012 approached 90% for the Labrador-Grenfell Health region as a whole and 77% for the province. Around 93% of people reported being satisfied or very satisfied with life in the Labrador-Grenfell Health region as a whole and in the province (in both cases).

Health Issues

<u>Prevalence of Obesity</u>

In 2011-2014, in the Labrador-Grenfell Health region and the province as a whole, approximately two-thirds of residents were overweight or obese (69% and 66%, respectively).

<u>Diabetes</u>

In 2011-2012, diabetes affected just under 10% of the population in the province of Newfoundland and Labrador.

Health-Influencing Behaviors

<u>Tobacco</u>

According to the 2012 APS (Statistics Canada, 2015), half (50%) of Inuit aged 15 and older in Nunatsiavut smoked cigarettes daily, which was a lower daily usage rate compared to the overall Inuit Nunangat (52%). Nunatsiavut was the only Inuit region out of the four that had a lower daily tobacco usage rate than the overall Inuit Nunangat. It should be noted that the rates were 67% for Nunavimmiut and 16% for the total population of Canada (Canadian Community Health Survey, 2012).

<u>Alcohol</u>

In 2012, nearly half (47%) of Inuit in Nunatsiavut reported alcohol abuse, while the figure was 26% for all Inuit aged 15 and older (30% for men and 23% for women), representing approximately one-quarter of them. In the same year, 34% of Inuit in Nunavik and 18% of the total Canadian population aged 15 and older indicated alcohol abuse (Canadian Community Health Survey, 2012).

Food Insecurity

In 2012, 41% of Inuit aged 15 and older lived in households that experienced food insecurity in the past 12 months. In Nunatsiavut, this rate was 45%. It should be noted that the rate was 55% in Nunavik and 8% in the total Canadian population.

[15] It should be noted that the exercise has some limitations, as different time periods are sometimes compared. However, this comparison appears to be acceptable in the context of the current exercise, which is to draw a summary portrait of the health context.

15.3.2.2 Labrador Innu (Sheshatshiu and Natuashish communities)

The Labrador Innu population consists of approximately 2,200 individuals, the majority of whom live in the two communities of Sheshatshiu and Natuashish.

It is generally accepted that the Labrador Innu's forced transformation from nomadic hunters to sedentary residents within the space of a generation is the starting point for most of the Innu's social and health ills (Backhouse, C. & McRae, D., 2002; McRae, D.M., 1993). This sudden shift in the Innu way of life led to profound changes where Innu self-sufficiency was replaced by dependence on government services, traditional food by groceries and activity by lethargy (Innu of Sheshatshiu and Natuashish, 2014).

In addition, the lack of resources to address all aspects of health in their communities, and the great distance separating them from services that could be offered in greater numbers have also had a direct impact on Labrador Innu health, particularly mental health and addiction issues (Celeste McKay Consulting Inc. and McRae D., 2021).

The social and health ills of the Labrador Innu are reflected in the problems affecting individuals and families in Sheshatshiu and Natuashish today. According to the Canadian Human Rights Commission's follow-up report on the human rights of the Labrador Innu (Celeste McKay Consulting Inc. and McRae D., 2021), members of this Indigenous group are facing a significant health crisis. The average age of death among them is much younger than the average age of death in Newfoundland and Labrador, and the high infant mortality rate is an important factor in the very low average age of death. For the two Labrador Innu communities, the mortality rate is about three times higher than the average rate for all First Nations in Canada. Another important factor is the high and persistent suicide rate in Sheshatshiu and Natuashish (Celeste McKay Consulting Inc. and McRae D., 2021). More specifically, data from two reports (Health Needs Assessment (FNIHB, 2012) and Labrador Innu Comprehensive Healing Strategy Impact Assessment (INAC, 2009)) presented below illustrate the health and social issues affecting both communities :

- Prenatal use of drugs, alcohol and solvents was 4 to 6 times higher than that reported in the general Canadian population (2008-2009 data in FNIHB, 2012);
- Prenatal smoking are 5 to 6 times higher than in the general Canadian population (FNIHB, 2012) ;
- Oral health scores are significantly lower (3 times in Shetashtshit and 5 times in Natuashish) than those of the general Canadian population (FNIHB, 2012);
- The suicide rate is 75.7 per 100,000 population in Sheshatshiu and in 164.1 per 100,000 population in Natuashish, which contrasts with the Canadian general population data of 11.0 per 100,000 population (FNIHB, 2012) ;
- The average age at death is 48 in Sheshastshsiu and 47 in the Natuashish, while the Newfoundland and Labrador average is 74 (FNIHB, 2012) ;
- The violent crime rate in 2010 was 31.31 per 100 people in Sheshatshiu and was 23.69 per 100 people in Natuashish, while the general Canadian population rate is 1.28 per 100 (FNIHB, 2012).
- The average infant mortality rate among First Nations in Canada is 6.4 per 1,000 live births, while the average rate is 17.8 per 1,000 live births in Sheshatshiu and 18.7 per 1,000 live births in Natuashish (INAC, 2009).
- Members both communities have identified the following needs that are not adequately met by existing healing programs: Addictions; lack of infrastructure; limited training and mentoring; recreation programs for children and youth; education and post-secondary initiatives; teen pregnancy; lack of access to healthy food; abuse; justice issues (INAC, 2009).

In October 2019, the population of Sheshatshiu experienced a suicide crisis with ten suicide attempts in one week, following numerous deaths from natural causes. This tragedy is part of a crisis that has been going on for decades. According to a study published in the American Journal of Public Health, of the 128 deaths by suicide in Labrador (and 617 in the province as a whole) between 1992 and 2009, 28 occurred in Labrador's two Innu communities. Overall, the study found that the suicide rate in Labrador was almost three times higher than in Canada as a whole, but that the rate was ten times higher in the Innu communities than nationally. The Innu report that the incidence of suicide remains disproportionately high, despite a decline in the number of suicides since the community left Davis Inlet (Celeste McKay Consulting Inc. and McRae D., 2021).

The secretariat of the Innu Round Table, which coordinates prevention services in the two Innu communities of Labrador, has highlighted the seriousness of a number of other community problems, such as drug and/or alcohol abuse. Over a four-year period, a third of the people admitted to the emergency department of the Labrador Health Centre were Innu. Almost half of the emergency room visits were alcohol-related and one third were drug-related. Of those admitted to the health centre, one in five had attempted suicide. The Natuashish band council has banned alcohol on its territory, but this measure remains very difficult to enforce.

Further research and interviews conducted as part of the impact assessment process will help to characterize and refine the health profile of in Sheshatshiu and Natuashish.

15.3.2.3 Non-Indigenous Communities: Happy Valley-Goose Bay and Northwest River

The town of Happy Valley-Goose Bay is located in the central part of Labrador. With a population of approximately 8,000, it is the most populous urban center in the region. Incorporated in 1973, the municipality includes the former town of Happy Valley and the district of Goose Bay.

Northwest River, also situated in the central part of Labrador, is a small town with a population of 560 in 2021. It faces the Innu community of Sheshatshiu, with a bridge connecting Northwest River to Sheshatshiu and the mainland. No specific and/or usable data on the health of the residents of Northwest River could be found during this preliminary work. Further research and interviews during the impact study will help characterize the health profile of this locality.

Well-being and personal resources

<u>Self-reported or perceived health</u>

In 2011-2012, nearly 52% of the residents of Happy Valley-Goose Bay perceived their health as "excellent" or "very good," a lower rate compared to the overall Newfoundland and Labrador (60%) and the Labrador-Grenfell Health region as a whole (64.7%).

Health Issues

<u>Prevalence of Obesity</u>

In 2015-2016, almost three-quarters of the residents of Happy Valley-Goose Bay (74.1%) were overweight or obese, higher than the prevalence in the Labrador-Grenfell Health region as a whole (69%) and the province as a whole (66%) in 2011-2012, where these proportions are also high.

<u>Diabetes</u>

In 2014-2015, 9.1% of the population of Happy Valley-Goose Bay lived with diabetes, a similar proportion to the overall Newfoundland and Labrador (9.4%) in 2011-2012. However, in the Labrador-Grenfell Health region, this proportion was slightly lower (8.3%).

Health-Influencing Behaviors

<u>Tobacco</u>

In 2015-2016, a quarter (25%) of the residents of Happy Valley-Goose Bay smoked cigarettes daily or occasionally, slightly higher than the proportion observed in the province as a whole in 2011-2012 (23.2%), but lower than the prevalence in the Labrador-Grenfell Health region (29.2%).

Alcohol

In 2015-2016, over 40% (41.1%) of the adult population in Happy Valley-Goose Bay displayed alcohol abuse, similar to the rate observed in Nunatsiavut (47%). In the province and the Labrador-Grenfell Health region, these rates were around a quarter of the population (26.8% and 28.1%, respectively).

Deaths

Regarding deaths, no directly specific figures for the communities involved whether Indigenous or allochthonous, could be documented during this initial overview. However, data from the Labrador-Grenfell Health region and the province of Newfoundland and Labrador show that life expectancy was similar between these two entities, both for the general population (around 78 years) and for women (around 80 years) and men (around 76 years). Furthermore, the rates of death caused by accidental injuries, suicides, or self-inflicted injuries were proportionally higher in the Labrador-Grenfell Health region than in the province of Newfoundland and Labrador. In fact, in 2005-2007, these figures were respectively 37% for the Labrador-Grenfell Health region compared to 21.9% for the province of Newfoundland and Labrador, and 28% for the Labrador-Grenfell Health region compared to 9.7% for the province of Newfoundland and Labrador.

15.4 Archaeology

Two archaeological inventories were conducted at the proposed mining site in 2011 and 2012 as part of the Quest Rare Minerals project (AECOM, 2013i). A cache dating back to the Maritime Archaic period was found at an elevation of 508 meters above current sea level, potentially on the shores of the former glacial lake Naskaupi. This small pile of stones was located at the boundary of the B-Zone mineral deposit, approximately 500 meters from the shore and 63 meters above the level of Lake Brisson (site HbDb-b). It was anticipated that this structure could be affected by the final phase of the proposed mining plan for the project.

Three concentrations of anthropogenic quartz flakes and a concentration of burned bone fragments were also found on the surface within an area of 100 square meters. This site (HbDb-3) was located 7 meters above the level of Lake Brisson, approximately a little over 50 meters from the helipad used at the exploration camp, and less than 100 meters from the lake. Another site with several stone flakes was discovered near Lake Brisson, at the end of the airstrip at the exploration camp. These two sites were not dated (HbDa-1).

Further work will be necessary to ensure that the new configuration of the mining site does not affect any potential archaeological resources. Therefore, an archaeological reassessment will be carried out, which may lead to an on-site archaeological inventory. Additionally, an archaeological excavation will be required at the HbDb-b site identified in 2012-2013 within the B-Zone mineral deposit at the mining site.

Furthermore, several known archaeological sites are located near or within the corridor identified in 2011-2013 for the construction of a road, and in the area identified for the implementation of the handling and storage facilities in Edward’s Cove, including:

- HbCv-01, HbCv-06 et HbCv-07 north of the Kogaluk River;
- HcCo-01, HcCo-02, HcCo-03, HcCo-01, HcCo-05 et HbCm-02 along the Ikadlivik Brook;
- HcCm-20, HcCm-21, HcCm-22, HcCm-23, HcCm-24, HcCm-26 et HcCm-30 near Little Reid Brook;
- HcCm-6, HcCm-7, HcCm-8, HcCm-9, et HcCm-10 along Edward's Cove.

The inventories conducted along the road corridor and Edward’s Cove in 2012 did not identify any new archaeological sites (AECOM, 2014). However, a reassessment of the sites expanded the extent of two known sites, HcCm-08 and HcCm-20.

As with the mining site, additional work will be necessary to ensure that the new configuration of the projected road and associated borrow pits do not impact any potential archaeological resources. Thus, an archaeological reassessment will have to be carried out, which will possibly lead to an archaeological inventory on site.

Since the establishment of an ore processing and separation plant in Sept-Îles was not part of Quest Rare Minerals' project, no archaeological study has yet been carried out on the site planned for the implementation of this plant. According to the Inventaire des sites archéologiques du Québec (Gouvernement du Québec, MCC, 2023), there are no known archaeological sites on the site identified for the processing and separation plant. The closest known archaeological sites are located further south, in downtown Sept-Îles, near Baie de Sept-Îles, some 7.5 km away. Nevertheless, an archaeological assessment will be carried out concerning the identified site for the implementation of the plant, which may lead to an on-site archaeological inventory.

15.5 Landscape

Landscape studies were conducted in 2012-2013 regarding the Quest Rare Minerals project. The study conducted for the proposed mining site indicated that it is characterized by open, sparse, stunted vegetation covering a series of hills and depressions, providing observers with a wide field of vision over a hilly topography with little human development (AECOM, 2013j). This is the case in most viewpoints, especially when navigating the eastern part of Lake Brisson. The study also indicated that this landscape was infrequently used and therefore considered to have moderate intrinsic value for both Indigenous and non-Indigenous users.

Regarding the proposed road and the surroundings of Eward’s Cove, the study indicated that the landscape within the corridor identified at the time exhibited variable sensitivity to the development of new infrastructure (AECOM, 2013k). Thus, the westernmost portion of the corridor had low resistance, mainly due to its low capacity for absorption and its monotonous landscape, despite the open panoramic views. The central portion of the corridor could present moderate sensitivity if the road was built on the plateau (due to the moderate visual value of the landscape) or high sensitivity if it was constructed in the valley of the Ikadlivik River (due to the high visual value of the landscape and its interest among the Indigenous communities in this area). Finally, the easternmost portion of the corridor (roughly near Little Reid Brook and near Edward’s Cove) exhibited moderate sensitivity due to its high visual accessibility and the moderate visual value of the landscape.

Since the configuration of the proposed mining site and the projected seasonal road are different from those planned for the Quest Rare Minerals project, and since the use of the area may have changed since the last study, a new landscape study is planned as part of the current project. This landscape study will also include the site of the proposed ore processing and separation plant in Sept-Îles.

15.6 Areas of Interest

There are no known protected areas within or immediately near the proposed mining site, road corridor or handling and storage facilities in Edward’s Cove. The Kuururjuaq National Park, Ulittaniujalik National Park, and the Pyramides Mountains National Park Reserve, are all located more than 200 kilometers north of the proposed mining site. In Addition, the Rivière-George territorial reserve for protected area purposes is located about 30 kilometers west of the proposed mining site. With an average width of 40 kilometers, this territory stretches for approximately 350 kilometers along the George River.

Besides, several protected areas are located close to the site of the proposed processing and separation plant in Sept-Îles. The closest are in Sept-Îles Bay, less than 3 km south of the planned site. These are the Baie des Sept-Îles 4 and 5 waterfowl areas, and the Marais-de-la-Baie-de-Sept-Îles protected area reserve. Three biological refuges (09451R042, 09451R044 and 09451R048) are located north of the proposed plant site, at 5.05, 6.25 and 8.15 km respectively. In addition, the proposed Moisie River Aquatic Reserve and the Rivière-Moisie Protected Area Reserve are located approximately 11 km east of the proposed plant site.

PART D – FEDERAL, PROVINCIAL, TERRITORIAL, INDIGENOUS AND MUNICIPAL INVOLVEMENT AND EFFECTS

16 Project Funding

Torngat Metals has received a private investment in 2022 to complete the pre-feasibility study (PFS), the bankable feasibility study (BFS) and the impact assessment. The Strange Lake Project under Torngat Metals is not depending on government agency funding; federal nor provincial funding.

17 Federal Lands

No federal land is located within the territories concerned by the Strange Lake Project.

18 Implication of Jurisdictions in the Project's Assessment

Considering the scope of the Strange Lake Rare Earth Mining Project and its location in Québec for the mining site and its access road (north of the 55th parallel), as well as in Labrador, Labrador Inuit Settlement Area (LISA) and Labrador Inuit Land (LIL) for the majority of the access road to the existing port on the eastern coast (see Map 3-1), the project is subjected to environmental assessments and approval from several government authorities for complying to Nunatsiavut Government (NG,) the Newfoundland and Labrador Government (NL) and the Québec Government (MELCCFP/Kativik), and the Federal Governement through the Impact Assessment Agency of Canada (IAAC). All regulators have divisions and/or department leading the analysis and permitting/authroization process. The main regulators are described in more detail in the following subsections.

As stated in the Cover Letter and Introduction sections only one registration document / IDP (this Document) is presented to all three authorities (besides Québec MELCCFP & Kativik process). Article 19 (f)[16] and Part 10 of the *Regulations regarding the review of initiatives on Labrador Inuit Lands* of the Environmental Review Regulations (CSL E-4, 31-03-2017, original enactment NGSL 2012-07) concerns specifically the Reviews[17].

The Proponent understands that permits will be required from all jurisdictions independently from the environmental assessment process.

18.1 Governement of Canada (Federal)

In addition to the Impact Assessment Act, Torngat Metals will ensure compliance with various regulations. Therefore they will apply for permits and authorizations necessary for the construction and operation of the project. Table 18-1 is a preliminary list of federal permits or approvals that might have to be obtained.

[16] Information notice of initiatives and requests for Environment Division's advice 19. A proponent may give the Environment Division written notice of an initiative and request the Division's informal advice on whether or not the initiative: ((f): may be the subject of a project-specific harmonization agreement

[17] https://www.nunatsiavut.com/wp-content/uploads/2018/12/E-004-Environmental-Review-Regulations31-03-2017.pdf

Table 18-1: Preliminary List of Federal Permits and Authorizations

Federal Authorizations/permits	Regulation and responsible authority
License for the manufacture and storage of explosives	Explosives Act (Natural Resources Canada)
Permit for the transport of explosives	Explosives Act (Natural Resources Canada)
Permit to carry out an activity involving a species at risk	Species at Risk Act (DFO and ECCC)
Construction of the airstrip/ aerodrome/heliport	Canadian Aviation Regulations and Standards (Transport Canada)

18.2 Nunatsiavut Government

This Registration document addresses the requirements of the Nunatsiavut Government (NG) under the *Nunatsiavut Environmental Protection Act* (CIL 31-12-2012 N-5)[18], the Labrador Inuit Land Claims Act and Labrador Inuit Land Claims Agreement, and their Regulations Regarding the Review of Initiatives on LIL, as well as according to the Environmental Assessment process in Labrador Inuit Settlement Area[19] (LISA) and outside Labrador Inuit Lands (LIL). The LIL comprises 23 chapters, some of which are applicable to the Project.

It is important to understand that a single document has been produced to satisfy the requirements of all three levels of government (NG, Federal and NL) due to the collaborative context of this project under detailed impact assessment (Detailed Review Process) and the processes under section 4.14 of the Nunatsiavut Environmental Protection Act (ref. Harmonization of Environmental Assessments)[20]:

This Document is in accordance with Section 5 elements of the *Regulations Regarding Environmental Reviews of Initiatives on LIL* pertaining to the Project Notice filing (sections 25 à 40).

As stated in the Labrador Inuit Land Claims Agreement on the subject of Environmental Assessment process on Labrador Inuit Lands, an Environmental Assessment must contain a description of the existing environment (11.2.10 (d)).

In addition to the application of the *Nunatsiavut Environmental Protection Act* permits and authorizations will have to be obtained. Table 18-2 provides a preliminary list of applicable permits and authorizations. The Nunatsiavut Government's register of laws and regulations is available on their website (Nunatsiavut Government, 2023).

Table 18-2: Preliminary List of Permits and Approvals for the Nunatsiavut Government

Provincial Authorizations/permits	Regulation and responsible authority
Nunatsiavut Environmental Protection Act IL 2010-07	Environmental Assessment Registration and Certificate of Approval
Building Accessibility Act	Building and Accessibility Exemption Registration
Nain Inuit Community Government	Development Permits
Nain Inuit Community Government Municipal Plan 2016-2026, 2016	Municipal Plan amendment
Nain Inuit Community Government Development Regulations	Building Permits

[18] https://www.nunatsiavut.com/wp-content/uploads/2021/06/CIL-31-12-2012-N-5-Nunatsiavut-Environmental-Protection-Act.pdf
[19] https://www.gov.nl.ca/exec/iar/files/lilca_impplan_ch11.pdf
[20] NG: Nunatsiavut Environmental Protection Act : https://www.nunatsiavut.com/wp-content/uploads/2021/06/CIL-31-12-2012-N-5-Nunatsiavut-Environmental-Protection-Act.pdf

18.3 Québec Government Process

In Quebec, project components located north of the 55th parallel (mine, beneficiation plant, aerodrome and portion of road located in Quebec) are subject to a separate process from that applicable south of the 55th parallel (Sept-Îles Process Plant).

18.3.1 Mining project (North of the 55th parallel)

In terms of the environmental assessment procedure, in accordance with the terms set out in the James Bay and Northern Québec Agreement (JBNQA), Chapter II of the Environment Quality Act - *Loi sur l'environnement du Québec* (LQE) (L.R.Q, c. Q-2) provides specific provisions applicable to the northern regions of Québec. The applicable environmental assessment procedures are different in that representatives of the Indigenous communities living there are directly involved in the decision-making process.

The Strange Lake Rare Earth Mining Project (Strange Lake Project) is located north of the 55th parallel, a region for which the JBNQA created the Kativik Environmental Advisory Committee (KEAC). The KEAC oversees the application and administration of the environmental protection regimes provided for in the JBNQA. On the other hand, the preliminary assessment and review of projects are carried out by the Kativik Environmental Quality Commission (KEQC).

Appendices A and B of the *Environment Quality Act* and the JBNQA specify which development projects are compulsorily subject as well as those which are compulsorily excluded from the environmental impact assessment and review procedure of the Environmental and Social Impacts Study (ESIS) and review. Any mining project, including the expansion, transformation or modification of an existing mining operation and any access road to a locality or road infrastructure for a new project are automatically subject to this ESIS and the procedure assessment and review of the *Environment Quality Act* and the *Réglement relatif à l'évaluation et l'examen des impacts sur l'environnement de certains projets* - Regulation respecting the assessment and review of the environmental impacts of certain projects.

In the case of the Strange Lake Project, the procedure is led by the representative of the *ministère de l'Environnement et de la Lutte contre les Changements climatiques, de la Faune et des Parcs du Québec* (MELCCFP), i.e., the Industrial, Mining, Energy and Northern Projects Environmental Assessment Branch. For its part, the KEQC carries out the analysis and the evaluation.

In addition to the application of the *Environment Quality Act* permits and authorizations will have to be obtained. Table 18-3 provides a preliminary list of applicable permits and authorizations.

18.3.2 Process Plant (Sept-Îles)

Chapter I of the Environment Quality Act defines the environmental impact assessment and review procedure that applies in the southern part of Quebec (south of the 55th parallel). Under the "Regulation respecting the environmental impact assessment and review of certain projects", the construction of a rare earth ore processing plant is subject to this environmental impact assessment and review procedure, regardless of the plant's capacity.

In addition to the application of the Environmental Quality Act, permits and authorizations will have to be obtained such as for the North of the 55th parallel (see Table 18-3).

Table 18-3: Preliminary List of Permits and Approvals for the Quebec Government (North and South of the 55th parallel)

Provincial Authorizations/permits	Regulation and responsible authority
Ministerial authorization for the construction and operation of the mine	Environmental Quality Act
Specific authorization for the construction and operation of an industrial establishment or the use of an industrial process that could modify the quality of the environment	Environmental Quality Act
Authorization for any activity involving the withdrawal of groundwater or surface water (dewatering, keeping dry, water supply, etc.)	Environmental Quality Act
Authorization for water management or treatment facilities	Environmental Quality Act Regulation respecting the quality of drinking water
Specific authorization for any work, construction or other intervention in wetlands and hydric environments covered by the Act	Environmental Quality Act
Compensation plan	Act respecting compensation measures for projects affecting a wetland or water body
Authorization for devices or equipment intended to prevent, reduce or stop the release of contaminants into the atmosphere	Environmental Quality Act
Authorization for the establishment and operation of a waste disposal facility [N]	Environmental Quality Act
Industrial sanitation certificate	Environmental Quality Act
Authorization to carry out an activity likely to modify wildlife habitat	The Wildlife Conservation and Enhancement Act
Authorization to construct or upgrade a multi-use path [N]	Sustainable Forest Management Act [N]
Permits for use of high-risk petroleum equipment [N]	Safety Code and Building Code. These codes are governed by the Building Act [N]
Approval of the tailings site (waste rock and tailings facility) and the mill site	Mining Act
Redevelopment and Restoration Plan Approval	Mining Act
Authorization to use public land	Crown Lands Act
Explosives permit [N]	Explosives Act [N]
Sûreté du Québec permit [N]	Explosives Act [N]

[N]: Exclusive to North of the 55th parallel

18.4 Governement of Newfoundland and Labrador

This Registration Document also complies with the provincial government of Newfoundland and Labrador (NL) under the *Environmental Protection Act* (SNL, 2002 cE-14.2) and the Environmental Assessment Regulations, 2003[21].

As dictated by the Environment Protection Act (EPA) of the province (2002 cE-14.2 s57), an Environmental impact statement (EIS) or Environmental preview report (EPR) may be needed for the road corridor. A description of the local environment that will be affected by the project would then be needed.

[21] NL : Environmental Assessment. Guide to the Process https://www.gov.nl.ca/ecc/files/GUIDE-TO-THE-PROCESS_Jan-2023.pdf

According to the Newfoundland and Labrador Regulations[22] anyone who plans a project having a significant impact on the nature, social and economic environment is required to establish the Environmental Assessment (EA).

In addition to the application of the *Environmental Protection Act* permits and authorizations will have to be obtained. Table 18-4 provides a preliminary list of applicable permits and authorizations.

Table 18-4: Preliminary List of Permits and Approvals for the Government of Newfoundland and Labrador

Provincial Authorizations/permits	Regulation and responsible authority
Access/ haul road construction	Urban and Rural Planning Act
	Protected Road Zoning Regulations
Wood cutting	Forestry Act – cutting of timber
Development in wetlands	Water resources Act

22 GUIDE-TO-THE-PROCESS_May-2022.pdf (gov.nl.ca)

PART E – MAIN ISSUES AND POTENTIAL EFFECTS OF THE PROJECT

19 Potential Changes to the Environment

19.1 Description of the main issues

The main environmental and social issues specific to the northern and Sept-Îles components of the Strange Lake rare earth mining project that can be identified at this preliminary stage of project development are summarized in Table 19-1 and detailed in the following paragraphs.

The completion of pre-feasibility and feasibility studies will make it possible to validate or clarify these various issues, and eventually to identify new ones.

During the environmental impact assessment, the potential effects will not only be addressed for the study area where modifications are planned but will also be made at a larger scale, at the level of an enlarged study area, for addressing appropriately the potential effects of the different ecosystems and communities that might be affected by the Project and others through time (see Section 25 Cumulative effects).

Table 19-1: Key environmental issues of the Strange Lake mining project

Development, construction	Operation	Closure, restoration	Issues	Physical environment	Biological environment	Social environment
X	X	X	Protection of human health and quality of life in communities	X	X	X
X	X	X	Protection of biodiversity, both flora and fauna, especially species at risk		X	X
X	X	X	Preservation of the quality and ecological functions of receiving environments, notably wetlands, bodies of water and soils, including permafrost in the north	X	X	
X	X	X	Maintenance, access and conciliation of land use			X
X	X	X	Climate change and the balance of GHG emissions	X		
X	X	X	Social acceptability			X

19.1.1 Issue - Protection of human health and quality of life in communities

The human health and quality of life of communities residing or active in the study areas of the various project components could be affected by the implementation of the different phases of the project, in particular with regard to:

- risks associated with the potential release of contaminants (metals, radioactive elements) into air, water or soil, and their movement through the ecosystem and food chain ;
- socio-economic impacts of the project ;
- psychosocial effects of the project.

More specifically, a rare earth mining project raises issues of toxicity and radioactivity of the contaminants generated by the different phases of the project. These concerns have been expressed in consultations conducted in the communities closest to the project in Québec and Labrador. In the north, specific concerns relate to the consequences of mining activities on the quality of water, air, soil, or plants and eventually on the traditional diet of these populations (berries, caribou, fish). In Sept-Îles, concerns could be raised about industrial wastewater discharges and atmospheric emissions from the plant, as well as their effect on the environment and inhabited areas. Moreover, the presence of radionuclides in process residues stored on land adjacent to the plant could also raise concerns, even if these elements are naturally occurring radioisotopes. Therefore, a Human Health and Environmental Risk Assessment (HHERA) will be an integral part of the impact study that will be conducted for this project. This HHERA will identify not only the contaminants of concern but also the ecological and human receptors potentially exposed to the project activities and to identify the exposure pathways of the receptors retained for the risk assessment. The references used for this HHERA are those of the *Centre d'Expertise en Analyse Environnementale du Québec* (CEAEQ) on radiotoxic risks (2015) and other applicable guidelines from Health Canada (2018, 2022) according to *Guidance for Evaluating Human Health Impacts in Environmental Assessment: country foods,* the *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Radiological Impacts* (Health Canada, 2016) and current *Interim Guidance Document for the Health Impact Assessment of Designated Projects under the Impact Assessment Act,* Impact Assessment Agency of Canada (2020) through *Analyzing Health, Social and Economical Effects under the Impact Assessment Act,* and Environment Canada.

19.1.2 Issue - Protection of biodiversity, both flora and fauna, including species at risk and species of importance to Indigenous communities

In the north, the project's integration environment is both rich and fragile in terms of biodiversity. It includes sensitive habitats for species valued by Indigenous communities occupying or using the land, such as the caribou and the Arctic char. Species at risk are also likely to be found in the northern study area. In Sept-Îles, the projected plant site is overlapping some drainage of the Au Foin River, where the presence of American eel and a spawning ground of rainbow smelt are reported. The presence of wetlands is also suspected on this site.

The protection of biodiversity therefore concerns:

- protection of sensitive habitats of fish communities (such as salmonids in the North and rainbow smelt in Sept-Îles), benthic organisms, aquatic plants, and species at risk ;
- maintaining migratory corridors for caribou, Arctic char, American eel, and migratory birds ;
- protection and preservation of the territory's wildlife and flora resources valued by stakeholders, in particular by the Indigenous groups concerned (notably caribou, Arctic char, etc.).

19.1.3 Issue - Preservation of the quality and ecological functions of receiving environments, notably wetlands, bodies of water and soils, including permafrost

Due to the location of the projects northern components in a territory characterized by numerous watercourses and the presence of permafrost, the project's integration environment has specific characteristics that must be taken into account and preserved as far as possible. In Sept-Îles, the projected plant site is overlapping patches of wetlands, and the drainage of the Au Foin River, which is a tributary of the Baie des Sept-Îles. It is also possible that the final treated effluent of the process plant be discharged to the St-Lawrence River at the Baie des Sept-Îles, through a dedicated pipe and outlet. The Baie des Sept-Îles is recognized as a high ecological value ecosystem, where tributaries such as the Au Foin River provide freshwaters with varying feeding resources and minerals.

Therefore, particular attention must be paid to the following characteristics of receiving environments:

- hydrodynamic conditions (water and sedimentary regime, drainage) ;
- wetlands, aquatic and riparian environments ;
- soils, including permafrost in the north that may be affected by the excavation of a pit at the mine site and along the road corridor.

19.1.4 Issue - Maintenance and conciliation of land uses in the north

The possible disruption of land and resources use during the various phases of the project is a major issue for the project's northern components. Indeed, the northern areas where the mine, the road and the port storage area will be inserted is used by various Indigenous communities and potentially by Indigenous and non-Indigenous businesses. Maintaining access to the territory and reconciling current and planned uses is therefore an important issue for the project.

19.1.5 Issue - Climate Change and the Balance of GHG Emissions

The purpose of the project is to exploit resources that are essential to the transition of the economy to renewable energy. Indeed, the main rare earth elements targeted by the exploitation will improve energy performance both during the production of electricity (e.g., wind energy) and during the use of electrical energy (e.g., motors). In this sense, the project aims to contribute to the fight against climate change. Nevertheless, the balance of GHG emissions of each phase of the project, the strategies for reducing these emissions and their possible offsetting are important issues.

As a large part of the project is carried out in a northern territory particularly sensitive to climate change, the risks arising from these climate changes on the implementation of the various phases of the project also constitute a significant issue.

19.1.6 Issue - Social Acceptability

In accordance with the principles of sustainable development, social acceptability is an essential condition for the realization of any project likely to impact the biophysical and human environments. In the case of the Strange Lake rare earth mining project, acceptance of the project by the Indigenous and non-Indigenous communities directly affected will be particularly important, both in northern and Sept-Îles areas.

19.1.7 Taking into Account Environmental and Social Issues in Project Design

The nature and intensity of anticipated positive and negative impacts of the project on the receiving environment are largely associated with the characteristics of the project components, and therefore on their design. The following is a summary of the project phases and key activities of the Strange Lake project which can be source of impacts (see details in section 9):

- **Northern project components:**
  - **Development phase (preliminary work) and construction:** installation of temporary facilities (camp, road), site preparation, fuel storage area, use and movement of machinery, road construction and infrastructure and establishment of the mine residue stockpile and other mining materials stockpiles (stripping, excavation, grading, backfilling), water supply network, drainage of runoff water, mine water, domestic wastewater, etc. ;
  - **Operational phase (30-year operation):** transportation and processing of ore, presence, and use of related infrastructure (plant, etc.), presence of workers (living environment and travel), waste management;
  - **Closure and restoration phase**: Closure of the mine site, appropriate remediation activities (progressive dismantling of project infrastructure; heavy equipment traffic, mobile and stationary equipment, materials; presence of workers (living environment and travel).
- **Sept-Îles project components:**
  - **Development phase (preliminary work) and construction:** site preparation, use and movement of machinery, rail siding / access road construction and infrastructure, establishment of the process residue stockpile (stripping, excavation, grading, backfilling), construction of plant and associated facilities, including industrial wastewater treatment plant and its discharge point, etc. ;
  - **Operational phase (30-year operation):** transportation of ore concentrate from the port terminal to the plant, operation of the plant, wastewater and air emission treatment, residue management ; presence of workers;

- **Closure and restoration phase**: Closure of the plant and of the residue stockpile, appropriate remediation activities.

The potential environmental and social issues associated with these activities will be taken into account from the earliest stages of project design (pre-feasibility, feasibly) right through to detailed design, in order to eliminate or reduce potential impacts at source as much as possible, as well as to enhance the positive impacts.

19.2 Description of the main anticipated impacts of the project on the receiving environment, planned mitigation or restoration measures

The main apprehended impacts of the Project on the receiving environment were considered by assessing the potential Valued Ecosystem Components (VECs) and analyzing their potential interactions with the Project. The following list presents the most relevant criteria for the selection of potential VECs:

- the recognition of the importance of a component through legislation, regulation or policy ;
- the sensitivity or vulnerability of the component ;
- the uniqueness or rarity of the component ;
- the sustainability (durability) of the component or ecosystem ;
- the value or importance assigned to the resource by stakeholders ;
- the risks to health, safety or well-being of the public ;
- the ecosystem characteristics, both of the northern environment (beyond the forest line and in the presence of discontinuous permafrost) and of the Sept-Îles environment.

Table 19-2 presents the key environmental components and indicators to be considered as a basis for identifying VECs. The VECs are selected while taking into consideration the above mentionned criteria, which include the potential interactions with the project, presence within the spatial boundaries, Indigenous interests or rights, and priorities of the federal, provincial, territorial or municipal governments. During the impact assessment, the potential effect analysis will also be addressed as a whole and will include the assessment of interactions between VECs and this, in the regional study area. The existing baseline conditions will be discussed for each of the VECs using existing literature, reports, government data, and field data collected for the Project. Mitigation measures will include best management practices as well as project-specific measures that may be required as a result of the discipline-specific evaluations.

Table 19-2: Draft list of critical environmental components, key indicators and Project rationale for selection

Critical environmental components	Examples of key indicators	Rationale for choice
Physical environment		
Greenhouse gases, air quality	• Greenhouse gases – Metric Tons of CO2 eq. • Concentration of ambient air contaminants (dust – Particulate matter, metals, Volatile Organic Compounds (VOCs), radioactive elements, CO2, CO, NOx, SOx)	• Importance of complying with various provincial regulations and standards specific to the property limits • Essential to life and the maintenance of human health and well-being and the biological environment • Potential for transboundary effects, affecting Labrador
Acoustic environment (ambient noise and vibrations)	• Ambient noise level (dB), vibrations	• Importance of complying with different provincial regulations and standards specific to the property limits at the sensitive receptor location • Essential to life, the maintenance of human health and well-being, and the biological environment
Soil health	• Soil health • Terrain stability and soil erosion • Effect on permafrost freeze-thaw cycle (northern components of the project)	• Importance for maintaining soil stability • Serves as a pathway for interactions between the Project and other components of the environment
Water and sediment regime, water and sediment quality	• Surface and groundwater quantity and quality	• Importance to human life and ecosystem functions, particularly in the George River watershed for the northern components of the Project, and in the Baie des Sept Îles • Serves as a pathway for interactions between the Project and other components of the environment
Biological environment		
Vegetation and wetlands	• Abundance and diversity of terrestrial plant communities • Abundance and diversity of wetlands	• Fundamental role in maintaining terrestrial, riparian and wetland ecosystems (biodiversity, hydrological function, wildlife habitats, traditional use of resources, etc.) • Susceptibility of certain types of vegetation in the northern environment to disturbance
Aquatic fauna (benthos, fish) and habitats	• Species presence and population abundance • Habitat quality and abundance	• Subsistence significance for Indigenous communities, biological, cultural, other use (recreational) • Legal protection of habitats under provincial and federal legislation • Maintaining biodiversity • Fragility (lower resilience, reduced growth rate, lower productivity) of aquatic habitats in northern environments
Avifauna (migratory and non-migratory birds)	• Abundance and diversity of migratory and non-migratory birds • Habitat quality and abundance	• Social, cultural and economic importance (migratory bird watching and hunting) to local populations and Indigenous people • Maintaining biodiversity
Caribou	• Migratory George River herd	• Biological, cultural and subsistence significance for Indigenous peoples • Herd in a precarious situation following a drastic decline in the population

Table 19-2: Draft list of critical environmental components, key indicators and Project rationale for selection (Cont'd)

Critical environmental components	Examples of key indicators	Rationale for choice
Biological environment		
Flora and fauna species at risk or in precarious situation	• Plants at risk, threatened or vulnerable • Wildlife species at risk, threatened or vulnerable	• Protection of species, their habitat and biodiversity • Legal protection of species and their habitat under the federal Species at Risk Act, Québec's Act respecting threatened or vulnerable species and Newfoundland and Labrador Endangered Species Act (e.g., harlequin duck, peregrine falcon)
Social environment		
Current and traditional use of land and resources - for Indigenous peoples and the general population	• Current and traditional use of land and resources for recreational or commercial purposes • Traditional and current use of land for subsistence, cultural or recreational purposes by Indigenous and non-Indigenous people • Protected areas	• Important and valued component on the socio-economic and cultural level • Reflects the characteristics, traditions and values shared by users from many communities, including Indigenous communities • Potential interactions with outfitters, adventure tourism businesses or protected area managers serving this region
Cultural heritage	• Historical, archaeological and heritage sites and resources	• Identification of a few sites, especially on the periphery of the proposed development • Management of these resources deemed important and at risk
Human quality of life and health	• Quality of life, well-being and health of people and communities	• Potential interactions between the Project and the population and communities, both Indigenous and non-Indigenous • Health risks arising from the potential emission of contaminants and their movement through the ecosystem, as well as psychosocial effects
Employment and economy	• Jobs • Workforce training • Local and regional economy • Business development in services, supplies and equipment	• Socio-economic impacts of the Project for local and regional communities (positive and negative)
Landscape	• Views of the mining complex, especially from Lake Brisson • View of the process plant and of the process residue stockpile, particularly from populated areas or viewpoints valued by residents and visitors	• The tundra is recognized as a landscape devoid of trees and human infrastructure, so significant visibility of the Project is anticipated • Sept-Îles is recognized as a prime destination for outdoor activities.

Some of the potential environmental effects are outlined in more detail in the following subsections, based on the project phases and for the most likely VECs. VECs are discussed based on potential interactions with project impact sources for the different phases of the Project while combining them with specific mitigation measures to mitigate anticipated impacts. This process will be undertaken using a vision of the application of the precautionary principle in order to account for all direct and indirect potential effects as well as their induced harm to the ecosystem.

Specifically, Table 19-3 addresses the sources of potential effects and potential change upon project phases for the fish and fish habitat as defined in subsection 2(1) of the *Fisheries Act,* and the aquatic species definition under the subsection 2(1) of the *Species at Risk Act* and the migratory birds as defined in subsection 2(1) of the *Migratory Birds Convention Act.* The effect assessment on fish and fish habitat (FAFH) and migratory birds will identify the Project activities and infrastructure that may adversely affect the FAFH and migratory birds environmental valued components (EVCs) and will identify mitigation measures to minimize or eliminate potential effects. The effect assessment will provide an evaluation of residual effects, considering the implementation of mitigation measures, and a significance determination will be provided. Information on the methodology to identify, evaluate, and rate the adverse effects and determine their significance will be provided in the detailed project description (DPD), and the Environmental Impact Assessment (EIA). Thus, the EIA will include the baseline data for the FAFH and migratory birds, and will include an analysis of effects from the project interactions, an assessment of residual and cumulative effects, and determining the significance of effects to all EVCs, such as water and sediment quality. More details on the EIA effects assessment approach will be outlined in the DPD. The significance of the Arctic char for the communities will be addressed in the effects assessment (land use mapping, critical habitats, fishing areas)

Table19-3: Fish and fish habitat (FAFH) and migratory birds potential change, mitigation measures under the project phases based on the main sources of potential effects

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Development and construction phase			
Fish and Fish Habitat (fish, benthic invertebrates, aquatic plants) and surface water/ sediment quality	• Construction of the access road • Mine Site preparation works • Process plant site preparation works • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of temporary infrastructures and facilities • Construction of permanent infrastructures and facilities • Watercrossings along the road access • Potential temporary watercourse diversion and change to natural drainage • Presence of workers (including camp and waste, emissions and discharges) • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of aquatic habitats • Modification of water and sediment quality (inputs to the aquatic environment) • Degradation of fish habitat • Possible modification of aquatic communities • Impediment to the free movement of fish • Detour of waterways at the mine site, and watercrossings along the access road • Erosion, risk of spills altering the aquatic environment or groundwater	• Localisation and preservation of all sensitive habitats (spawning grounds, rearing habitats) for salmonids (Arctic char, Atlantic salmon, brook trout, lake trout) • Providing safe passage for fish for altered water bodies • Examining all alternatives in the planning phase to avoid/minimise the harmful alteration, disruption or destruction of fish habitat • Preliminary and regular inspection of the machinery to ensure its good condition and operation. Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Install a geomembrane downstream of crossings and around work areas to intercept SM particles, use culverts of sufficient size so as not to significantly narrow the flow sections at crossing points, prevent the transport of fine particles during work by installing sediment barriers around the edges of aquatic environments. • Prohibit fording in waterways (intermittent and permanent) • Submit a Compensation Plan for fish and fish habitats if residual impacts cannot be mitigated at the planning phases above, adapted to the specific environment

Table 19-3: Fish and fish habitat (FAFH) and migratory birds potential change, mitigation measures under the project phases based on the main sources of potential effects (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Development and construction phase			
Migratory Birds	• Construction of the access road • Mine Site preparation works • Process plant site preparation works • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of temporary infrastructures and facilities • Construction of permanent infrastructures and facilities • Presence of workers (including camp and waste, emissions and discharges) • Addition of light source • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants) • Permanent or temporary loss of nesting and rearing habitats • Noise disturbance to breeding pairs, broods and migratory birds • Light sources may alter the orientation of birds during migration	• Fencing to limit circulation outside of working areas in bird nesting habitats • Avoid any tree and brush cutting and circulation on undisturbed soil during nesting period • Preliminary and regular inspection of the machinery to ensure its good condition and operation • Avoid leaving vehicles running unnecessarily • Light sources facing downwards • Use of green light sources

Table 19-3: Fish and fish habitat (FAFH) and migratory birds potential change, mitigation measures under the project phases based on the main sources of potential effects (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Operational Phase			
Fish and Fish Habitat (fish, benthic invertebrates, aquatic plants) and surface water/ sediment quality	• Excavation of the pit • Transportation of the ore along the road access, shipment of goods, raw materials • Treatment and concentration of the ore that will include water management and treatment, discharges (effluent) • Rare earth processing and separation potentially requiring wastewater treatment and discharge • Mine residues and waste rock management • Process plant residue management • Mining and transportation activities • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of workers (including camp and waste, emissions and discharges) • Transport by ship from and to Sept-Îles Port • Transportation from the port to the processing plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of aquatic habitats • Modification of water and sediment quality (inputs to the aquatic environment) • Degradation of fish habitat • Possible modification of aquatic communities • Impediment to the free movement of fish • Detour of waterways at the Mine Site, and watercrossings along the access road • Erosion, risk of spills altering the aquatic environment or groundwater • Same as above, adapted to the specific environment	• Preliminary and regular inspection of the machinery to ensure its good condition and operation. Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Application of all mitigation measures to protect the air, water, sediment and soil quality, such as the use of dust suppressants, water treatment, and implementation of measures related to contamination hazards at the Mine Site and along the Road Corridor (transportation) • Environmental monitoring and follow-up programs¸ • For expansion/stabilisation/maintenance work: see Construction phase mitigation measures to minimise the harmful alteration, disruption or destruction of fish habitat, and protect air, water, sediment and soil quality. • Same as above, adapted to the specific environment

Table 19-3: Fish and fish habitat (FAFH) and migratory birds potential change, mitigation measures under the project phases based on the main sources of potential effects (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Migratory Birds	• Excavation of the pit • Transportation of the ore along the road access, shipment of goods, raw materials • Treatment and concentration of the ore that will include water management and treatment, discharges (effluent) • Rare earth processing and separation potentially requiring wastewater treatment and discharge • Mine residue and waste rock management • Process plant residue management • Mining and transportation activities • Use and circulation of heavy machinery and fixed and mobile equipment (Mine, Road) • Presence of workers (including camp and waste, emissions and discharges) • Addition of light source • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of nesting habitats • Noise disturbance to breeding pairs and migratory bird • Light sources may alter the orientation of birds during migration	• Preliminary and regular inspection of the machinery to ensure its good condition and operation to reduce noise disturbance during nesting and brood rearing • Avoid leaving vehicles running unnecessarily • If new working areas are required, proceed to nest searches and avoid disturbing nesting areas before fledging if active nests found • Light sources facing downwards • Use of green light sources

Table 19-3: Fish and fish habitat (FAFH) and migratory birds potential change, mitigation measures under the project phases based on the main sources of potential effects (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Closure and Restoration Phase			
Fish and Fish Habitat (fish, benthic invertebrates, aquatic plants) and surface water/ sediment quality	• Progressive dismantling activities of the project infrastructures • Use and circulation of heavy machinery and fixed and mobile equipment ((mine, road, port storage facilities, process plant) • Presence of workers (including camp and waste, emissions and discharges)	• Erosion, risk of spills altering the aquatic environment or groundwater • Modification of water and sediment quality (inputs to the aquatic environment)	• Restoration Plan and monitoring, aiming at restablishing natural drainage (natural state of the receiving env., where feasible), e.g. apply mitigation measures to comply with regulations for proper Mine restoration according to *Guide de préparation du plan de réaménagement et de restauration des sites miniers du Québec* • Application of all mitigation measures to protect the air, water, sediment and soil quality, such as the use of dust suppressants, water treatment, and implementation of measures related to contamination hazards. For closure and restoration work: see Construction phase mitigation measures to minimise the harmful alteration, disruption or destruction of fish habitat, and protect air, water, sediment and soil quality.
Migratory Birds	• Progressive dismantling activities of the project infrastructures • Use and circulation of heavy machinery and fixed and mobile equipment (Mine, Road) • Presence of workers (including camp and waste, emissions and discharges)	• Noise disturbance to breeding pairs and migratory bird	• Restoration Plan and monitoring

The next three subsections (19.2.1 to 19.2.3) provides the sources of potential effects of the project according to main activities likely to impact the receiving environment and its EVCs during the phases of the project (development and construction, operations, closure and restoration)

19.2.1 Development and construction phases

19.2.1.1 Activities likely to impact receiving environment

19.2.1.1.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

The main activities likely to impact the receiving environment during this phase of the project are:

- Construction of the access road (and development of watercourse crossings)
- Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.)
- Improvements to the temporary camp facilities and fuel storage area at the Mine Site
- Construction of airfield facilities at the Mine Site
- Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc.
- Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.)
- Construction and development of industrial plants and their buildings (crushing plants, concentration plants, utilities, etc.) at the Mine Site

- Connexion of the seasonal access road to the existing Vale's Port
- Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area
- Construction of the container storage and handling area, buildings, drainage, etc.
- Transport by ship for delivery of equipment to the Mine Site

19.2.1.1.2 Process Plant (Sept-Îles project component)

- Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, blasting, etc.)
- Construction and development of industrial facilities and their buildings
- Construction of process residue storage facility
- Construction of treated wastewater pipe and outlet (if any)
- Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)

19.2.1.2 Physical environment

The impacts associated with this phase on the physical environment of each project component are essentially:

- Greenhouse gases (GHGs): sources of emissions associated with fossil fuels, other sources of GHGs (e.g., explosives, refrigerants, etc.)
- Air quality: sources of atmospheric emissions (dust - particulate material, metallic dust, volatile organic compounds (VOCs), radioactive elements from the deposit, gases – CO2, NOx, SO2. At the mine site, it should be noted that considering the proximity of the site to the provincial border, the study area will cover the areas potentially impacted on the Newfoundland and Labrador side
- Acoustic environment: noise level and vibrations: blasting, use of machinery, equipment.
- Soil quality: soil disturbance by stripping, blasting, excavation, risk of contamination due to accidental spills, soil subsidence
- Water and sediment regime: modification of surface water flow patterns, water regime, possible increase in erosion and sediment transport in watercourses, sediment transport when breaches are opened) potential sanitary and mining discharges.
- Water and sediment quality: potential detour of watercourses, erosion, risk of spills affecting the aquatic environment or groundwater, risk of increased SM.

The following Table 19-4 presents, on a preliminary basis, the potential impacts of the project's development and construction phases on the physical environment, as well as mitigation measures that could be applied in response to the impacts apprehended during both phases. The assessment of the impacts related to the issues raised and the development of mitigation measures in consultation with stakeholders, in particular the Indigenous communities directly concerned, will validate, refine and complete this preliminary list of mitigation measures.

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Greenhouse gases	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Emissions associated with fossil fuels; • Other emissions of GHGs (e.g., explosives, refrigerants, etc.)	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Promote the use of machinery and vehicles that minimize air emissions (e.g., low fuel consumption), according to the latest Environment and Climate Change Canada (ECCC) standards, or zero-emission vehicles, for on-road and off-road vehicles • Promote the use of generators that minimize fuel consumption and therefore have low atmospheric emissions • Establish a procedure for shutting down heavy vehicles when they are not needed • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Inspect air conditioning, ventilation, and heating units to ensure proper operation of equipment and limit the risk of refrigerant leaks, if necessary

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Air quality	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Atmospheric emissions (dust - particulate material, metallic dust, volatile organic compounds (VOCs), • Radioactive elements from the deposit, gases – CO2, NOx, SO2,)	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Promote the use of machinery and vehicles that minimize air emissions (e.g., low fuel consumption), according to the latest Environment and Climate Change Canada (ECCC) standards, or zero-emission vehicles, for on-road and off-road vehicles • Promote the use of generators that minimize fuel consumption and therefore have low atmospheric emissions • Establish a procedure for shutting down heavy vehicles when they are not needed • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Apply dust control measures according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., construction of seasonal access roads)

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Acoustic environment	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Noise level and vibrations produced by blasting, use of machinery, equipment, etc..	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Establish a procedure for shutting down heavy vehicles when they are not needed • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Use light vehicles that have effective mufflers to reduce noise level at the source • Use sound barriers (e.g., walls, fences, soundproofing mound) around construction sites to limit the propagation of noise to sensitive receptors.

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Soil quality	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Soil disturbance by stripping, blasting and excavation, • Risk of contamination due to accidental spills, • Effects of work on permafrost and soil subsidence (northern areas). • Soil disturbance by stripping, blasting and excavation, • Risk of contamination due to accidental spills, •	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Use light vehicles that have effective Inspect air conditioning, ventilation, and heating units to ensure proper operation of equipment and limit the risk of refrigerant leaks, if necessary • Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Construction of major infrastructure with measures to prevent thawing of permafrost

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Water and sediment regime	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Modification of surface water flow patterns and water regime • Increase in erosion and sediment transport in watercourses, • Sediment transport when breaches are opened, • Potential sanitary and mining discharges.	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Use light vehicles that have effective mufflers to reduce noise level at the source • Apply dust control measures according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., construction of seasonal access roads) • Inspect air conditioning, ventilation, and heating units to ensure proper operation of equipment and limit the risk of refrigerant leaks, if necessary • Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Install a geomembrane downstream of crossings and around work areas to intercept SM particles, use culverts of sufficient size so as not to significantly narrow the flow sections at crossing points, prevent the transport of fine particles during work by installing sediment barriers around the edges of aquatic environments

Table 19-4: Preliminary list of potential impacts on physical environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Water and sediment quality	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Transport by ship for delivery of equipment to the Mine Site • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Potential detour of watercourses, • Erosion, • Risk of spills affecting the aquatic environment or groundwater, • Risk of increased SM	• Preliminary and regular inspection of the machinery to ensure its good condition and operation • Implement a preventive maintenance program, inspection of equipment to ensure its proper functioning • Use light vehicles that have effective mufflers to reduce noise level at the source • Apply dust control measures according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., construction of seasonal access roads) • Inspect air conditioning, ventilation, and heating units to ensure proper operation of equipment and limit the risk of refrigerant leaks, if necessary • Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Install a geomembrane downstream of crossings and around work areas to intercept SM particles, use culverts of sufficient size so as not to significantly narrow the flow sections at crossing points, prevent the transport of fine particles during work by installing sediment barriers around the edges of aquatic environments

19.2.1.3 Biological environment

The impacts associated with this phase on the biological environment of each project component are essentially:

- Vegetation and wetlands: loss, fragmentation and degradation of terrestrial wildlife and plant habitats, deterioration and alteration of ecological functions of terrestrial habitats, wetlands and water bodies, potential input of contaminants into terrestrial and aquatic habitats (e.g., dust deposition on vegetation and in waterbodies);
- Aquatic fauna (benthos, fish, aquatic plants) and their habitats: permanent or temporary loss of aquatic habitats, modification of water and sediment quality (inputs to the aquatic environment), degradation of fish habitat, possible modification of aquatic communities, impediments to the free movement of fish, detour of waterways at the Mine Site, and watercrossings along the access road (Mine Site, Road Corridor);
- Migratory and non-migratory birds: Loss of bird habitat, noise disturbance to breeding pairs, broods and migratory birds, potential nest destruction and risk of nest abandonment;
- Caribou: potential habitat loss, noise disturbance, disturbance linked to human presence and activities, dust deposits on vegetation and habitat quality, barrier effect on migration ;
- Fauna and flora species in precarious situations: Potential loss of habitat or degradation due to the infrastructure footprint, dust/trampling, and noise disturbance.

The following Table 19-5 presents, on a preliminary basis, the potential impacts of the project's development and construction phases on the biological environment, as well as the mitigation measures that could be applied in response to apprehended impacts of both phases. The impact assessment related to the issues raised and the development of mitigation measures in consultation with the stakeholders, in particular the Indigenous communities directly concerned, will make it possible to validate, specify and complete this preliminary list.

Table 19-5: Preliminary list of potential impacts on biological environment and mitigation measures (development and construction phases)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation measures
Vegetation and wetlands	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their buildings (crushing plants, concentration plants, utilities, etc.) at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area • Construction of the container storage and handling area, buildings, drainage, etc. • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Loss, fragmentation and degradation of terrestrial wildlife and plant habitats, • Deterioration and alteration of ecological functions of terrestrial habitats, wetlands and water bodies, • Potential input of contaminants into terrestrial and aquatic habitats (e.g., dust deposition on vegetation and in waterbodies)	• Fencing to limit circulation outside of working areas • Installing culverts in a manner that does not impede the flow of water • Preliminary and regular inspection of the machinery to ensure its good condition and operation

Table 19-5: Preliminary list of potential impacts on biological environment and mitigation measures (development and construction phases) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation measures
Fish and Fish Habitat (fish, benthic invertebrates, aquatic plants) and surface water/ sediment quality	• Construction of the access road • Mine Site preparation works • Process plant site preparation works • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of temporary infrastructures and facilities • Construction of permanent infrastructures and facilities • Watercrossings along the road access • Potential temporary watercourse diversion and change to natural drainage • Presence of workers (including camp and waste, emissions and discharges) • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of aquatic habitats • Modification of water and sediment quality (inputs to the aquatic environment) • Degradation of fish habitat • Possible modification of aquatic communities • Impediment to the free movement of fish • Detour of waterways at the mine site, and watercrossings along the access road • Erosion, risk of spills altering the aquatic environment or groundwater	• Localisation and preservation of all sensitive habitats (spawning grounds, rearing habitats) for salmonids (Arctic char, Atlantic salmon, brook trout, lake trout) • Providing safe passage for fish for altered water bodies • Examining all alternatives in the planning phase to avoid/minimise the harmful alteration, disruption or destruction of fish habitat • Preliminary and regular inspection of the machinery to ensure its good condition and operation. Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Install a geomembrane downstream of crossings and around work areas to intercept SM particles, use culverts of sufficient size so as not to significantly narrow the flow sections at crossing points, prevent the transport of fine particles during work by installing sediment barriers around the edges of aquatic environments. • Prohibit fording in waterways (intermittent and permanent) • Submit a Compensation Plan for fish and fish habitats if residual impacts cannot be mitigated at the planning phase

Table 19-5: Preliminary list of potential impacts on biological environment and mitigation measures (development and construction phases) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation measures
Migratory Birds and non migratory birds	• Construction of the access road • Mine Site preparation works • Process plant site preparation works • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of temporary infrastructures and facilities • Construction of permanent infrastructures and facilities • Presence of workers (including camp and waste, emissions and discharges) • Addition of light source • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants) • Permanent or temporary loss of nesting and rearing habitats • Noise disturbance to breeding pairs, broodsand migratory birds • Light sources may alter the orientation of birds during migration	• Fencing to limit circulation outside of working areas in bird nesting habitats • Avoid any tree and brush cutting and circulation on undisturbed soil during nesting period • Preliminary and regular inspection of the machinery to ensure its good condition and operation • Avoid leaving vehicles running unnecessarily • Light sources facing downwards • Use of green light sources
Caribou	• Construction of the access road (and development of watercourse crossings) • Mine Site preparation (stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Improvements to the temporary camp facilities and fuel storage area at the Mine Site • Construction of airfield facilities at the Mine Site • Circulation of heavy machinery and fixed and mobile equipment at Mine Site and along the Road Corridor, delivery of equipment to the Mine Site, etc. • Construction of mine site infrastructure: retention basins, water treatment systems, ore storage areas, waste rocks piles, mine residue storage area, traffic lanes, etc.) • Construction and development of industrial plants and their buildings (crushing plants, concentration plants, utilities, etc.) at the Mine Site • Connexion of the seasonal access road to the existing Vale's Port • Circulation of heavy machinery and fixed and mobile equipment at the container storage and handling area	• Potential habitat loss, • Noise disturbance, • Disturbance linked to human presence and activities, • Dust deposits on vegetation and habitat quality, • Barrier effect on migration	• Fencing to limit circulation outside of working areas • Preliminary and regular inspection of the machinery to ensure its good condition and operation • Avoid leaving vehicles running unnecessarily • Modify the shoulders of the road along migration paths so that caribou can easily cross over • Adjust traffic level during spring and fall migration of caribou along the road to minimize disturbance • Prohibit all movement of equipment and people towards caribou observed within approximately 250 m of work sites or road access • Suspend noise activities (such as blasting) when a caribou is observed within 1 km, and drilling/crushing if a female with a calf is observed within 1 km. Wait 30 minutes before resuming suspended activities

19.2.1.4 Social Environment

The impacts of the Strange Lake Project on the social environment will be identified as part of the environmental assessment process. However, based on the information available, we expect that the project's development and construction phases are likely to have the following effects:

- Quality of life and human health: concerns and potential impacts of the Project on quality of life and health in local and regional communities (such as reduced access to traditional food, possible contamination or fear of contamination. On the other hand, the Project will creat jobs, provide business opportunities and increase purchasing power and availability of quality food in the local market);
- Social and economic aspects: socio-economic impacts of the project on local and regional communities (such as possible tensions, job creation, labour shortage, possible issues for the workers hired by the project and their families, contracts opportunities for local and regional businesses, development of unique technological expertise) ;
- Cultural heritage: the potential disturbance of archeological resources ;
- Land use: disruption of the current use of the land and resources by Indigenous peoples and the general population, disturbance of the components and resources of the land valued by the various stakeholders, particularly those valued by Indigenous groups (notably caribou, Arctic charr and water quality of the George Riverand Ikadlivik Brook), modification of the landscape (visual degradation).

The following Table 19-6 presents, on a preliminary basis, the potential impacts of the project's development and construction phases on the social environment, as well as mitigation measures that could be applied in response to the impacts apprehended during both phases. The impact assessment related to the issues raised and the development of mitigation measures in consultation with the stakeholders, in particular the Indigenous communities directly concerned, will make it possible to validate, specify and complete this preliminary list.

Table 19-6: Preliminary list of potential impacts on social environment and mitigation measures (development and construction phases)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Quality of life and human health	• Construction of the access road • Mine Site preparation and construction • Construction of the container storage and handling area, buildings, drainage, etc. • Circulation of heavy machinery and fixed and mobile equipment at Mine Site, along the Road Corridor and at the container storage and handling area • Transport by ship for for delivery of equipment to the Mine Site • Hiring workers from local and regional communities • Awarding contracts within local and regional communities • Process plant site preparation in Sept-îles • Hiring workers from local and regional communities • Awarding contracts within local and regional communities	• Reduced access to quality food coming from the land and from traditional activities • Possible contamination of valued species • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • Safety issues for people using the areas where the work will be carried out during development and construction phases • Better income for people hired as part of the project • Better access to quality food from the store due to better income	• Inform local and regional communities (Indigenous and non-Indigenous communities concerned by the project) of the schedule for the work planned during both phases, as well as the potential risks for users. Throughout the phase, maintain contact with local and regional communities authorities to enable them to identify any problems concerning the use of the land by their population. • Inform the Indigenous and non-Indigenous users concerned (outfitters, adventure tourism companies, protected area managers, etc.) of the planned work schedule, as well as the potential risks to users during both phases. Maintain contact with these people throughout the phases to allow them to identify potential land use issues • Install signs indicating the presence of traffic lanes or work/operation areas in their vicinity to inform users who may be traveling or engaging in activities in the area • Fence off work areas • Maintain accessibility to areas not targeted for work throughout the two phases • In the event that traffic is temporarily or permanently restricted on trails utilized by users, plan bypass or new safe travel routes in consultation with Indigenous communities authorities or other relevant stakeholders. Inform the affected population of these bypass routes or new travel routes • Throughout the phase, regularly inform workers of the potential presence of users on the territory concerned, particularly along the access roads used • Implement measures to limit the spread of dust • Implement measures to limit the impact of maritime transport on the activities practised by Indigenous groups in the bays concerned • Carry out a prior and regular inspection of the machinery and equipment used to ensure that they are in good condition and functioning properly (so as not to generate excessive noise) • Limit machinery traffic to work areas • If possible, isolate the main noise sources with absorbent material • Avoid putting in place measures to facilitate wildlife harvesting activities by workers on site during throughout both phases • Provide for site restoration after the development and construction phases • Funding and support for community-led country food programs • Establish an environmental monitoring program to ensure that mitigation measures are met during both phases of the project

Table 19-6: Preliminary list of potential impacts on social environment and mitigation measures (development and construction phases) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Socio-economic condition	• Construction of the access road • Mine Site preparation and construction • Construction of the container storage and handling area, buildings, drainage, etc. • Circulation of heavy machinery and fixed and mobile equipment at Mine Site, along the Road Corridor and at the container storage and handling area • for delivery of equipment to the Mine Site • Hiring of workers from local and regional communities • Awarding of contracts within local and regional communities • Process plant site preparation in Sept-îles • Hiring workers from local and regional communities • Awarding contracts within local and regional communities • Arrival and presence of workers from outside in the Sept-Îles region	• Job creation in local and regional communities, and better income for the people hired as part of the project • Contracts for local and regional businesses • Capacity building for the communities • As a result of local employment and potential business development a higher retention of youth and working age population • Contributing to the problem of labour shortages • Social issues for the workers hired by the project and their families, • Tensions in local and regional communities concerning the project • Job creation in Sept-Îles area and better income for the people hired as part of the project • Contracts for businesses in Sept-Îles area • Development of unique technological expertise in the region • Contributing to the problem of labour shortages in Sept-îles area • Social issues for the workers hired by the project and their families • Contribution to the housing shortage in Sept-Îles and the region • Increased pressure on infrastructure in Sept-Îles and the region • Tensions in local and regional communities concerning the project	• Preferential hiring of workers from local or regional communities, especially within the Indigenous communities concerned • Implement proactive programs to increase the participation in the workforce by women, and full range of diverse community members • Favour local or regional companies that have the competence for the tasks requested in the call for tenders procedure, before undertaking requests to companies based elsewhere in Québec, Labrador or abroad • Training of all Torngat employees at all locations on understanding Indigenous communities' cultures, histories and strengths, in alignment with Torngat's values and goals while also meeting recommendations from the Truth and Reconciliation Commission

Table 19-6: Preliminary list of potential impacts on social environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Cultural heritage	• Construction of the access road • Mine Site preparation and construction • Construction of the container storage and handling area, buildings, drainage, etc. • Circulation of heavy machinery and fixed and mobile equipment at Mine Site, along the Road Corridor and at the container storage and handling area • for delivery of equipment to the Mine Site • Process plant site preparation in Sept-îles	• Alteration or destruction of archeological sites or archaeological resources during development work	• Take appropriate measures to avoid disturbing known archeological resources • If archaeological remains are discovered, stop the work, take steps to protect the site and inform the relevant authorities, i.e. the Ministère de la culture et des Communications du Québec (MCC) in Quebec, the Provincial Archaeology Office of the Newfoundland and Labrador Department of Tourism, Culture, Arts and Recreation and the Nunatsiavut Government Archaeology and Heritage Officer.
Land use	• Construction of the access road • Mine Site preparation and construction • Construction of the container storage and handling area, buildings, drainage, etc. • Circulation of heavy machinery and fixed and mobile equipment at Mine Site, along the Road Corridor and at the container storage and handling area • Transport by ship for for delivery of equipment to the Mine Site	• Disturbance of the current use of the land and resources by Indigenous peoples and the general population, • Disruption of the components and resources of the land valued by the various stakeholders, particularly those valued by Indigenous groups • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • modification of the landscape (visual degradation).	• Inform local and regional communities (Indigenous and non-Indigenous communities concerned by the project) of the schedule for the work planned during both phases, as well as the potential risks for users. Throughout both phases, maintain contact with local and regional communities authorities to enable them to identify any problems concerning the use of the land by their population. • Inform the Indigenous and non-Indigenous users concerned (outfitters, adventure tourism companies, protected area managers, etc.) of the planned work schedule, as well as the potential risks to users during both phases. Maintain contact with these people throughout the phases to allow them to identify potential land use issues • Install signs indicating the presence of traffic lanes or work/operation areas in their vicinity to inform users who may be traveling or engaging in activities in the area • Fence off work areas • Maintain accessibility to areas not targeted for work throughout the two phases • In the event that traffic is temporarily or permanently restricted on trails utilized by users, plan bypass or new safe travel routes in consultation with Indigenous communities authorities or other relevant stakeholders. Inform the affected population of these bypass routes or new travel routes • Throughout both phases, regularly inform workers of the potential presence of users on the territory concerned, particularly along the access roads used • Implement measures to limit the spread of dust

Table 19-6: Preliminary list of potential impacts on social environment and mitigation measures (development and construction phases)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Land use (Cont'd)			• Implement measures to limit the impact of maritime transport on the activities practised by Indigenous groups in the bays concerned • Carry out a prior and regular inspection of the machinery and equipment used to ensure that they are in good condition and functioning properly (so as not to generate excessive noise) • Limit machinery traffic to work areas • If possible, isolate the main noise sources with absorbent material • Avoid putting in place measures to facilitate wildlife harvesting activities by workers on site during throughout both phases • Provide for site restoration after the development and construction phases • Funding and support for community-led country food programs • Establish an environmental monitoring program to ensure that mitigation measures are met during both phases of the project

19.2.2 Operational phase (30-year operation)

19.2.2.1 Activities likely to impact receiving environment

19.2.2.1.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

At the Mine Site, the main activities likely to have impacts on the receiving environment during this phase of the project are:

- Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.).
- Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation).
- Activities related to the presence and use of infrastructure related to the mine site.
- The presence of workers (living environment and travel).
- Waste and mine residue management.
- Delivery of equipment and raw materials, shipment of product (concentrated ore).

Along the road access, the main activities are:

- transportation by truck from the mine to the port: ore concentrate in superbags, wastes
- transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel)
- road maintenance.

At the container storage and handling facilities (near Vale's Port) are:

- Containers handling.
- Fuel Handling
- Use of storage infrastructure (containers, fuel)
- Waste management.
- Transport by ship from and to Vale's Port

19.2.2.1.2 Process Plant (Sept-Îles project component)

At the Process Plant, the main activities are:

- Transport by ship from and to Sept-Îles Port
- Transportation from the port to the process plant site by existing rail of the material (superbags in containers).
- High purity separation of rare earths by acid baking and hydrometallurgical processes.
- Wastewater treatment and discharge.
- Air emissions treatment
- Presence of workers.
- Process residue management.

19.2.2.2 Physical environment

The impacts associated with this phase on the physical environment of each project component are essentially:

- Greenhouse gases (GHGs): emission sources associated with fossil fuels, other GHG sources (i.e. refrigerants)
- Air quality: sources of atmospheric emissions (dust - particulate material, metallic dust, volatile organic compounds (VOCs), radioactive elements from the deposit). At the mine site, it should be noted that considering the proximity of the site to the provincial border, the study area will cover the areas potentially impacted on the Newfoundland and Labrador side.
- Acoustic environment: noise level and vibrations: machinery traffic, fixed (process) and mobile equipment, blasting, air transport.
- Soil quality: risks of contamination following accidental spills, effects of work on permafrost and soil subsidence (northern areas).
- Water and sediment regime: possible spills and sediment transport, potential sanitary and mining discharges.
- Water and sediment quality: possible temporary diversion of watercourses, erosion, risk of spills altering the aquatic environment or groundwater, risk of increased SS during maintenance work, etc.

The following Table 19-7 presents, on a preliminary basis, the potential impacts of the project's opreation on physical environment, as well as mitigation measures that could be applied in response to the impacts apprehended during this phase. The assessment of the impacts related to the issues raised and the development of mitigation measures in consultation with stakeholders, in particular the Indigenous communities directly concerned, will validate, refine and complete this preliminary list of mitigation measures.

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Greenhouse gases	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Transport by ship from and to Sept-Îles Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Emission sources associated with fossil fuels, other GHG sources	• Develop and implement management plans for GHG emissions, according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Promote the use of low-emission (e.g., fuel-efficient) and zero-emission machinery and vehicles, according to the latest Environment and Climate Change Canada (ECCC) standards for on- and off-road vehicles. • Promote the use of generators that minimize fuel consumption and therefore have low atmospheric emissions. • Establish a procedure for shutting down heavy vehicles when they are not needed. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Evaluate the feasibility of using renewable energy (e.g., solar, wind) to decarbonize the energy supply of operations and implement the best available solutions. • Inspect air conditioning, ventilation and heating equipment to ensure proper operation and limit the risk of refrigerant leaks, if any. • Study the feasibility and implement the best technologies for carbon capture and sequestration, such as carbon dioxide mineralization and revegetation of tailings sites. • Develop and implement a carbon management plan to reduce GHGs and eventually achieve net-zero goals by 2050, with a focus on renewable energy sources and non-fossil fuel transportation. In particular, promote air transport by airship instead of road transport, as soon as technically and economically feasible and approved by the authorities.

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Air quality	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Sources of atmospheric emissions (dust - particulate material, metallic dust, volatile organic compounds (VOCs), • Radioactive elements from the deposit	• Develop and implement management plans for air emissions according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Use air treatment equipment to reduce dust emissions from industrial process equipment (mills, crushers, conveyors, furnace, etc.) or transportation. • Promote the use of low-emission (e.g., fuel-efficient) and zero-emission machinery and vehicles, according to the latest Environment and Climate Change Canada (ECCC) standards for on- and off-road vehicles. • Promote the use of generators that minimize fuel consumption and therefore have low atmospheric emissions. • Establish a procedure for shutting down heavy vehicles when they are not needed. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Apply dust suppressants according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., operation of seasonal access roads) • Evaluate the feasibility of using renewable energy (e.g., solar, wind) to decarbonize the energy supply of operations and implement the best available solutions. • Carry out and update atmospheric and acoustic modelling to confirm compliance with provincial regulations at the property boundary (air quality) and at the surrounding sensitive receptors' location (noise, vibrations, etc.). • Dispose of excavated material in a manner that minimizes the dispersion of suspended matter

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Accoustic Environment	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Increased noise level and vibrations: from machinery traffic, fixed (process) and mobile equipment, blasting and air transport	• Develop and implement management plans for ambient noise according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Use light vehicles that have effective mufflers to reduce noise level at the source • Establish a procedure for shutting down heavy vehicles when they are not needed. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Evaluate the feasibility of using renewable energy (e.g., solar, wind) to decarbonize the energy supply of operations and implement the best available solutions. • Carry out and update atmospheric and acoustic modelling to confirm compliance with provincial regulations at the property boundary (air quality) and at the surrounding sensitive receptors' location (noise, vibrations, etc.).

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Soil Quality	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Soil disturbance by stripping, blasting and excavation, • Risk of contamination due to accidental spills, • Effects of work on permafrost and soil subsidence • Soil disturbance by stripping, blasting and excavation • Risk of contamination due to accidental spills	• Develop and implement management plans for liquid effluents, mine and process residual materials, air emissions and ambient noise according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Conduct preventive inspections of fuel storage areas and make an emergency petroleum and hazardous materials recovery kit available in machinery, vehicles and site facilities. • Evaluate the feasibility of using renewable energy (e.g., solar, wind) to decarbonize the energy supply of operations and implement the best available solutions. • Inspect air conditioning, ventilation and heating equipment to ensure proper operation and limit the risk of refrigerant leaks, if any. • Dispose of excavated material in a manner that minimizes the dispersion of suspended matter • Temporary ore storage areas shall be constructed on a compacted gravel base surrounded by a collection ditch

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Water and sediment regime	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Possible spills and sediment transport, • Potential sanitary and mining discharges	• Develop and implement management plans for liquid effluents, mine and process residual materials, air emissions and ambient noise according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Use air treatment equipment to reduce dust emissions from industrial process equipment (mills, crushers, conveyors, furnace, etc.) or transportation. • Apply dust suppressants according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., operation of seasonal access roads) • Conduct preventive inspections of fuel storage areas and make an emergency petroleum and hazardous materials recovery kit available in machinery, vehicles and site facilities. • Evaluate the feasibility of using renewable energy (e.g., solar, wind) to decarbonize the energy supply of operations and implement the best available solutions. • Optimize and control processes to maximize water reuse, reduce freshwater inputs and minimize discharges • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Dispose of excavated material in a manner that minimizes the dispersion of suspended matter • Temporary ore storage areas shall be constructed on a compacted gravel base surrounded by a collection ditch

Table 19-7: Preliminary list of potential impacts on physical environment and mitigation measures (operational phase) (Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Water and sediment quality	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Process plant site preparation (tree cutting, stripping, excavation, grading, backfilling, development of drainage systems, etc.) • Construction and development of industrial facilities and their buildings • Construction of process residue storage facility • Construction of treated wastewater pipe and outlet (if any) • Construction of the rail siding (to be added to the existing rail between the process plant and the port of Sept-Îles)	• Possible temporary diversion of watercourses • Erosion • Risk of spills altering the aquatic environment or groundwater • Risk of increased SS during maintenance work	• Develop and implement management plans for liquid effluents, mine and process residual materials, air emissions and ambient noise according to the Best Available Technology (BAT) approach, while respecting legal and regulatory requirements. • Use air treatment equipment to reduce dust emissions from industrial process equipment (mills, crushers, conveyors, furnace, etc.) or transportation. • Implement a preventive maintenance and inspection program for equipment to ensure its proper functioning • Apply dust suppressants according to the conditions (meteorology) and development activities that have an impact on dust generation (e.g., construction of seasonal access roads) • Conduct preventive inspections of fuel storage areas and make an emergency petroleum and hazardous materials recovery kit available in machinery, vehicles and site facilities. • Optimize and control processes to maximize water reuse, reduce freshwater inputs and minimize discharges • Locate parking, washing and maintenance areas for machinery at least 60 m from any watercourse. Refuelling of machinery shall be carried out under constant supervision and at a minimum distance of 30 m from a watercourse. • Dispose of excavated material in a manner that minimizes the dispersion of suspended matter • Temporary ore storage areas shall be constructed on a compacted gravel base surrounded by a collection ditch

19.2.2.3 Biological environment

The impacts associated with this phase on the biological environment of each project component are essentially:

- Vegetation and wetlands: loss, fragmentation and degradation of terrestrial wildlife and plant habitats, deterioration and alteration of ecological functions of wetlands and water bodies, potential input of contaminants into terrestrial habitats (e.g., dust deposition on vegetation);
- Aquatic fauna (benthos, fish, aquatic plants) and their habitats: permanent or temporary loss of aquatic habitats, modification of water and sediment quality (inputs to the aquatic environment), degradation of fish habitat, possible modification of aquatic communities, impediments to the free movement of fish, possible temporary diversion of watercourses at the Mine Site, and watercrossings along the access road (Mine Site, Road Corridor);
- Migratory and non-migratory birds: loss of bird habitat, noise disturbance to breeding pairs, broods and migratory birds, potential nest destruction and risk of nest abandonment
- Caribou: potential habitat loss, noise disturbance, disturbance linked to human presence and activities, dust deposits on vegetation and habitat quality, barrier effect on migration ;
- Fauna and flora species in precarious situation: potential loss of habitat or degradation due to the infrastructure footprint, dust/trampling, and noise disturbance.

The following Table 19-8 presents, on a preliminary basis, the potential impacts of the project's operational phase on the biological environment, as well as the mitigation measures that could be applied in response to apprehended impacts for this phase. The impact assessment related to the issues raised and the development of mitigation measures in consultation with the stakeholders, in particular the Indigenous communities directly concerned, will make it possible to validate, specify and complete this preliminary list.

Table 19-8: Preliminary list of potential impacts on biological environment and mitigation measures (operational phase)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation[23]
Vegetation and wetlands	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management	• Loss, fragmentation and degradation of terrestrial wildlife and plant habitats • Deterioration and alteration of ecological functions of wetlands and water bodies • Potential input of contaminants into terrestrial habitats (e.g., dust deposition on vegetation)	• Fencing to limit circulation outside of working areas • Prohibit fording of streams (intermittent and permanent) • Avoid movement of any vehicle or construction equipment within 20 m of a permanent watercourse or 5 m of an intermittent watercourse and, if such movement is necessary, divert water flowing in ruts to a vegetated area at least 20 m from a watercourse • Remove solids from domestic wastewater with a treatment unit • Preliminary and regular inspection of the machinery to ensure its good condition and operation

[23] In addition to these measures, the ones listed in the previous section are also included. Indeed, these measures allow for the reduction of sources of contamination in the air, water and soil in addition to reducing the impact of noise.

Table 19-8: Preliminary list of potential impacts on biological environment and mitigation measures (operational phase)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Fish and Fish Habitat (fish, benthic invertebrates, aquatic plants) and surface water/ sediment quality	• Excavation of the pit • Transportation of the ore along the road access, shipment of goods, raw materials • Treatment and concentration of the ore that will include water management and treatment, discharges (effluent) • Rare earth processing and separation potentially requiring wastewater treatment and discharge • Mine residues and waste rock management • Process plant residue management • Mining and transportation activities • Use and circulation of heavy machinery and fixed and mobile equipment (mine, road, port storage facilities, process plant) • Presence of workers (including camp and waste, emissions and discharges) • Transport by ship from and to Sept-Îles Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of aquatic habitats • Modification of water and sediment quality (inputs to the aquatic environment) • Degradation of fish habitat • Possible modification of aquatic communities • Impediment to the free movement of fish • Detour of waterways at the Mine Site, and watercrossings along the access road • Erosion, risk of spills altering the aquatic environment or groundwater	• Preliminary and regular inspection of the machinery to ensure its good condition and operation. Carry out preventive inspections of fuel storage areas and supply emergency kit for the recovery of petroleum products and hazardous materials available in vehicles, machinery and worksite facilities • Application of all mitigation measures to protect the air, water, sediment and soil quality, such as the use of dust suppressants, water treatment, and implementation of measures related to contamination hazards at the Mine Site and along the Road Corridor (transportation) • Environmental monitoring and follow-up programs¸ For expansion/stabilisation/maintenance work: see Construction phase mitigation measures to minimise the harmful alteration, disruption or destruction of fish habitat, and protect air, water, sediment and soil quality.

Table 19-8: Preliminary list of potential impacts on biological environment and mitigation measures (operational phase)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Migratory Birds and non migratory birds	• Excavation of the pit • Transportation of the ore along the road access, shipment of goods, raw materials • Treatment and concentration of the ore that will include water management and treatment, discharges (effluent) • Rare earth processing and separation potentially requiring wastewater treatment and discharge • Mine residue and waste rock management • Process plant residue management • Mining and transportation activities • Use and circulation of heavy machinery and fixed and mobile equipment (Mine, Road) • Presence of workers (including camp and waste, emissions and discharges) • Addition of light source • Transport by ship from and to Sept-Îles Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Alteration of ecological functions of wildlife habitats in the ecosystem (terrestrial habitats, wetlands and water bodies) via potential input of contaminants • Permanent or temporary loss of nesting habitats • Noise disturbance to breeding pairs and migratory bird • Light sources may alter the orientation of birds during migration	• Preliminary and regular inspection of the machinery to ensure its good condition and operation to reduce noise disturbance during nesting and brood rearing • Avoid leaving vehicles running unnecessarily • If new working areas are required, proceed to nest searches and avoid disturbing nesting areas before fledging if active nests found • Light sources facing downwards • Use of green light sources

Table 19-8: Preliminary list of potential impacts on biological environment and mitigation measures (operational phase)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Caribou	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • Activities related to the presence and use of infrastructure related to the mine site. • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • Transportation by truck from the mine to the port: ore concentrate in superbags, wastes • Transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • Road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port	• Noise disturbance • Disturbance linked to human presence and activities • Dust deposits on vegetation and habitat quality • Barrier effect on migration	• Fencing to limit circulation • Preliminary and regular inspection of the machinery to ensure its good condition and operation • Avoid leaving vehicles running unnecessarily • Prohibit all movement of equipment and people towards caribou observed within approximately 250 m of work sites or road accesses • Suspend noise activities (such as blasting) when a caribou is observed within 1 km, and drilling/crushing if a female accompanied by a calf is observed within 1 km. Wait 30 minutes before resuming suspended activities • Avoid any tree and brushcutting and surface alteration during the bird nesting and rearing period

19.2.2.4 Social Environment

In terms of the social environment, the impacts apprehended during the operational phase are essentially the same as during the development and construction phases. However, given the longer duration of this phase, the intensity of the effects is likely to be higher. Thus, regarding the social environment, the potential impacts related to this phase are:

- Quality of life and human health: concerns and potential impacts of the Strange Lake Project on quality of life and human health in local and regional communities (such as reduced access to traditional food, contamination or fear of contamination);
- Social and economic aspects: socio-economic impacts of the project on local and regional communities (such as possible tensions, job creation, labour shortage, possible issues for the workers hired by the project and their families (fly-in fly-out at the mine site and at the ore processing and separation plant), contracts for local and regional companies; housing scarcity and rising rental costs in Sept-Îles due to the arrival of outside workers at the ore processing and separation plant);
- Cultural heritage: the potential disturbance of archeological resources ;
- Land use: disturbance of the current use of the land and resources by Indigenous peoples and the general population, disruption of the components and resources of the land valued by the various stakeholders, particularly those valued by Indigenous groups (notably caribou, arctic charr and water quality in George River and Ikadlivik Brook), modification of the landscape (visual degradation).

The following Table 19-9 presents, on a preliminary basis, the potential impacts of the project's operational phase on the social environment, as well as the mitigation measures that could be applied in response to apprehended impacts. The impact assessment related to the issues raised and the development of mitigation measures in consultation with the stakeholders, in particular the Indigenous communities directly concerned, will make it possible to validate, specify and complete this preliminary list.

Table 19-9: Preliminary list of potential impacts on social environment and mitigation measures (operational phase)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Quality of life and human health	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • transportation by truck from the mine to the port: ore concentrate in superbags, wastes • transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management • Transport by ship from and to Vale's Port • Hiring workers from local and regional communities • Awarding contracts within local and regional communities • Transport by ship from and to Sept-Îles Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers) • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management. • Hiring workers from local and regional communities • Awarding contracts within local and regional communities	• Reduced access to quality food coming from the land and from traditional activities • Possible contamination of valued species • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • Safety issues for people using the areas where the work will be carried out during optrational phase • Better income for people hired as part of the project • Better acces to quality food coming from the store due to better income	• Inform local and regional communities (Indigenous and non-Indigenous communities concerned by the project) of the schedule for the work planned during this phase, as well as the potential risks for users. Throughout the phase, maintain contact with local and regional communities authorities to enable them to identify any problems concerning the use of the land by their population. • Inform the Indigenous and non-Indigenous users concerned (outfitters, adventure tourism companies, protected area managers, etc.) of the planned work schedule, as well as the potential risks to users during this phase. Maintain contact with these people throughout the phases to allow them to identify potential land use issues • Install signs indicating the presence of traffic lanes or work/operation areas in their vicinity to inform users who may be traveling or engaging in activities in the area • Fence off work areas • Maintain accessibility to areas not targeted for work throughout the phase • In the event that traffic is temporarily or permanently restricted on trails utilized by users, plan bypass or new safe travel routes in consultation with Indigenous communities authorities or other relevant stakeholders. Inform the affected population of these bypass routes or new travel routes • Throughout the phase, regularly inform workers of the potential presence of users on the territory concerned, particularly along the access roads used • Implement measures to limit the spread of dust • Implement measures to limit the impact of maritime transport on the activities practised by Indigenous groups in the bays concerned • Carry out a prior and regular inspection of the machinery and equipment used to ensure that they are in good condition and functioning properly (so as not to generate excessive noise) • Limit machinery traffic to work areas • If possible, isolate the main noise sources with absorbent material • Avoid putting in place measures to facilitate wildlife harvesting activities by workers on site during throughout this phase • Provide for site restoration after the development phase of the sites • Funding and support for community-led country food programs • Establish an environmental monitoring program to ensure that mitigation measures are met during this phase of the project

Table 19-9: Preliminary list of potential impacts on social environment and mitigation measures (operational phase)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Socio-economic condition	• Hiring of workers from local and regional communities • Awarding of contracts within local and regional communities • Hiring workers from local and regional communities for the process plant operation in Sept-îles • Awarding contracts within local and regional communities • Arrival and presence of workers from outside in the Sept-Îles region	• Job creation in local and regional communities, and better income for the people hired as part of the project • Contracts for local and regional businesses • Capacity building for the communities • As a result of local employment and potential business development a higher retention of youth and working age population • Contributing to the problem of labour shortages • Social issues for the workers hired by the project and their families, • Tensions in local and regional communities concerning the project • Job creation in Sept-Îles area and better income for the people hired as part of the project • Contracts for businesses in Sept-Îles area • Capacity building for the communities • As a result of local employment and potential business development a higher retention of youth and working age population • Contributing to the problem of labour shortages in Sept-îles area • Social issues for the workers hired by the project and their families • Contribution to the housing shortage in Sept-Îles and the region • Increased pressure on infrastructure in Sept-Îles and the region • Tensions in local and regional communities concerning the project	• Preferential hiring of workers from local or regional communities, especially within the Indigenous communities concerned • Implement proactive programs to increase the participation in the workforce by women, and full range of diverse community members • Favour local or regional companies that have the competence for the tasks requested in the call for tenders procedure, before undertaking requests to companies based elsewhere in Québec, Labrador or abroad • Training of all Torngat employees at all locations on understanding Indigenous communities' cultures, histories and strengths, in alignment with Torngat's values and goals while also meeting recommendations from the Truth and Reconciliation Commission
Cultural heritage	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Road maintenance (excavation of borrow pits)	• Alteration or destruction of archeological sites or archaeological resources during development work	• Take appropriate measures to avoid disturbing known archeological resources • If archaeological remains are discovered, stop the work, take steps to protect the site and inform the relevant authorities, i.e. the Ministère de la culture et des Communications du Québec (MCC) in Quebec, the Provincial Archaeology Office of the Newfoundland and Labrador Department of Tourism, Culture, Arts and Recreation and the Nunatsiavut Government Archaeology and Heritage Officer.

Table 19-9: Preliminary list of potential impacts on social environment and mitigation measures (operational phase)(Cont'd)

Critical environmental components	Sources of potential effects	Potential Changes	Mitigation
Land use	• Excavation of the pit and transportation of the ore (blasting, excavation, movement of heavy machinery and fixed and mobile equipment, materials etc.). • Treatment and concentration of the ore by physical processes (crushing, grinding, X-ray sorting, electromagnetic separation, flotation). • The presence of workers (living environment and travel). • Waste and mine residue management. • Delivery of equipment and raw materials, shipment of product (concentrated ore). • transportation by truck from the mine to the port: ore concentrate in superbags, wastes • transportation by truck from the port to the mine: fuel, equipment, raw materials and goods (all in containers except fuel) • road maintenance. • Containers handling. • Fuel Handling • Use of storage infrastructure (containers, fuel) • Waste management. • Transport by ship from and to Vale's Port • Transport by ship from and to Sept-Îles Port • Transportation from the port to the process plant site by existing rail of the material (superbags in containers). • High purity separation of rare earths by acid baking and hydrometallurgical processes. • Wastewater treatment and discharge. • Air emissions treatment • Presence of workers. • Process residue management.	• Disturbance of the current use of the land and resources by Indigenous peoples and the general population, • Disruption of the components and resources of the land valued by the various stakeholders, particularly those valued by Indigenous groups • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • modification of the landscape (visual degradation).	• Inform local and regional communities (Indigenous and non-Indigenous communities concerned by the project) of the schedule for the work planned during this phase, as well as the potential risks for users. Throughout the phase, maintain contact with local and regional communities authorities to enable them to identify any problems concerning the use of the land by their population. • Inform the Indigenous and non-Indigenous users concerned (outfitters, adventure tourism companies, protected area managers, etc.) of the planned work schedule, as well as the potential risks to users during this phase. Maintain contact with these people throughout the phases to allow them to identify potential land use issues • Install signs indicating the presence of traffic lanes or work/operation areas in their vicinity to inform users who may be traveling or engaging in activities in the area • Fence off work areas • Maintain accessibility to areas not targeted for work throughout the phase • In the event that traffic is temporarily or permanently restricted on trails utilized by users, plan bypass or new safe travel routes in consultation with Indigenous communities authorities or other relevant stakeholders. Inform the affected population of these bypass routes or new travel routes • Throughout the phase, regularly inform workers of the potential presence of users on the territory concerned, particularly along the access roads used • Implement measures to limit the spread of dust • •mplement measures to limit the impact of maritime transport on the activities practised by Indigenous groups in the bays concerned • Carry out a prior and regular inspection of the machinery and equipment used to ensure that they are in good condition and functioning properly (so as not to generate excessive noise) • Limit machinery traffic to work areas • If possible, isolate the main noise sources with absorbent material • Avoid putting in place measures to facilitate wildlife harvesting activities by workers on site during throughout this phase • Provide for site restoration after the development phase of the sites • Funding and support for community-led country food programs • Establish an environmental monitoring program to ensure that mitigation measures are met during this phase of the project

19.2.3 Closure and restoration phase

19.2.3.1 Activities likely to impact receiving environment

19.2.3.1.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components)

At the Mine Site, the main activities likely to have impacts on the receiving environment during this phase of the project are:

- Progressive dismantling activities of the project infrastructures
- Site restoration
- Movement of heavy machinery, mobile and fixed equipment, materials
- Presence of workers (living environment and travel)

The restoration phase aims at restoring the site to its natural state and will mainly generate positive impacts on the receiving environment. The work that will be carried out during this phase will be like that of the development and construction phases; the sources of impacts and mitigation measures will therefore be similar, with the exception that the vehicles and machinery used at this time should be mostly, if not entirely, of the zero-emission type (post-2050).

In addition, this work will aim to rehabilitate the receiving environment as well as the functions of the biophysical and social environments, i.e., air, soil, water and sediment quality, wildlife and plant habitats (plant recovery, end of disturbance), occupations and uses that prevailed before the project. However, socio-economic impacts resulting from the loss of jobs will require the implementation of relocation measures and support for the demobilized workforce.

Access road: after the mine restoration and rehabilitation phases, should the communities request it, the road might be either given to the communities for providing better access to their territories, or used as a basis for a future public road. If the reusing or upgrading of the road is not desired, the road corridor would be subject to a restoration to its natural state.

Container storage and handling facilities (Vale's Port): after the mine restoration and rehabilitation phases, this area might be turned over to the port operator, or dismantled and restored.

19.2.3.1.2 Process Plant (Sept-Îles project component)

At the process plant , the main activities likely to have impacts on the receiving environment during this phase of the project are:

- Progressive dismantling activities of the project infrastructures
- Site restoration, including for the residue storage facility
- Movement of heavy machinery, mobile and fixed equipment, materials
- Presence of workers (living environment and travel)

19.2.3.2 Physical, biological and social environments

The impacts and mitigation measures associated with this closure and restoration phase are generally similar to those of the construction phase.

19.2.4 Environmental Monitoring and Follow-up programs

In parallel with the application of specific and general mitigation measures, the development of rigorous environmental surveillance and monitoring programs will make it possible to reduce the apprehended negative impacts of the project. In addition, the implementation of mitigation measures, such as the use of dust suppressants, will make it possible to limit the disturbances.

Furthermore, additional studies during the development and construction phases and continuously during the operational phase will make it possible to identify and apply appropriate mitigation measures to adequately protect the sensitive components of the receiving environment (physical, biological, social). Finally, the consultations already initiated and those that will follow will make it possible to adequately consider the concerns of the Indigenous communities.

20 Potential Changes to the Environment (federal lands, other provinces or land)

The Strange Lake Rare Earth Mining project is located in Quebec for the Mine site, the airstrip and the process plant. The seasonal road corridor has 18 km in Quebec, and the remaining 142 km in Labrador and Labrador Inuit Land (LIL). No effluent or runoff water from the Project in Quebec will reach the Newfoundland and Labrador territory. All discharges from the mine site will be directed towards the receiving environment of the mining activities, e.g. Lake Brisson, within Lake Napeu Kainut watershed, then into the Déat River and the George River watershed.

Considering the proximity of the provincial boundary of Labrador with respect to Torngat Metals' mining claims, it is however possible that the mining Project air emissions (mainly dust) reach Newfoundland and Labrador. According to the meteorological data collected between 2011 and 2014, prevailing winds are from the south-west direction.

It is noteworthy that all potential changes to the environment will be addressed on a large-scale study area and will be comprehensively detailed in the impact assessment study, including the mitigation measures and the environmental monitoring and follow-up programs for each phase of the Project, accordingly, to reduce the significance of the adverse effects of the Project.

21 Anticipated changes and impacts on Indigenous communities - physical and cultural heritage, use of lands and resources, historical, archaeological significance

Since the Strange Lake Project has not yet been the subject of an impact assessment, its effects on Indigenous communities are not yet clearly defined. However, based on available data and experience from previous studies, certain potential impacts can be expected. As it was mentioned at section 19.2, development, construction, operational, as well as closure and restoration phases might have different impacts on the social environment. Concerning the mining site, the road corridor and the storage and handling facilities, most of these impacts would be felt by the Indigenous groups: the Nunavik Inuit (mainly from the communities of Kangigsualujjuaq and Kuujjuaq), the Naskapi Nation of Kawawachikamach (the community of Kawawachikamach), the Quebec Innu (mainly the communities of Matimekush - Lac John but also Uashat mak Mani-utenam), the Nunatsiavut Inuit (communities of Nain, Hopedale, Makkovik, Rigolet and Postville) and the Labrador Innu (communities of Sheshatshiu and Natuashish). Concerning the implementation of an ore processing and separation plant in Sept-Îles changes and impacts would be felt by the Innu of Uashat mak Mani-utenam.

Concerning cultural heritage, work carried out as part of the preparation and construction of the proposed mine site seasonal road, handling and storage facilities as well as the processing and separation plant could potentially destroy archaeological sites present in the affected areas. Similar effects on archaeological resources could also occur during the operation of the mining site (ore excavation) and of the seasonal road (borrow pit mining). The same mitigation measures as those mentioned in section 19.2 concerning archaeological resources could be applied in response to the impacts apprehended.

The different phases of the project could also cause a disruption of the current and projected use of the land and resources by Indigenous people. According to information obtained during the study conducted in 2012-2013, Indigenous land users are frequenting the area of the proposed mine site and its surroundings, as well as areas crossed by or located near the proposed seasonal road and along Edward's Cove[24].

In addition, the surroundings of the industrial port zone of Sept-Îles are likely to be used by Innu from Uashat mak Mani-utenam. It is therefore possible that the noise, dust and vibrations produced by the various works carried out as part of the preparation and construction phase, during the operation phase, and during the closure and restoration phase, could be perceived by aboriginal users, resulting in a disturbance of the peace and quietness of the site for them, as well as a potential deterioration in the practice of certain activities such as hunting. It is also possible that the noise, dust and vibrations produced during the various phases of the project could affect the resources (animals and plants) exploited and/or valued by Indigenous users, which again could adversely affect the practice of certain traditional activities, such as hunting, fishing, trapping or gathering. It is also possible that Indigenous groups may reduce or even stop practising certain traditional activities because of fears of resource contamination(proven or not) linked to the project. It is also possible that access to certain areas could be restricted or interrupted as a result of the work carried out during the various phases of the project. This could have an impact on Indigenous users whose traffic routes and/or activity areas cross or are located within the affected areas. Safety issues (risk of collisions/accidents during the various phase of the project) could also be raised for these same users. In addition, Indigenous land users frequenting the surroundings of the proposed mining site, seasonal road, handling and storage facilities in Edward's Cove and process and separation plant in Sept-Îles will be able to see these new elements, which could lead to a visual disturbance of the landscape during construction and operation phases. Once again, the same mitigation measures as those mentioned in section 19.2 concerning land and resource use could be applied to limit the impacts apprehended. Additional mitigation measures may also be defined at the time of the impact assessment, in conjunction with the Indigenous communities concerned, based on their expectations and concerns regarding the proposed project.

[24] As mentioned on section 15.1 a new land use and traditional ecological knowledge study will be conducted in order to update the information gathered in 2012-13

Table 21-1 lists the potential impacts of the proposed project on Indigenous communities concerning physical and cultural heritage, as well asuses of land and ressources. This list is based on the different phases of the project.

Table 21-1: List of anticipated changes and impacts on Indigenous communities - physical and cultural heritage, use of lands and resources

Preparation and construction phases
Potential destruction or alteration of archaeological sites present in on the mining site (ore excavation) or on the borrow pit located along the seasonnal road
Disruption of the current and projected use of the land and resources by Indigenous people • Disturbance of the peace and quietness of used sites / areas (noise, vibration, dusts); • Deterioration in the practice of certain activities due to the impact on used and values ressources; • Interruption of access to certain areas used for activities • Circulation interruption on traffic routes routes (i.e. Snowmobile/ATV trails, navigation routes, etc.) intersecting with or located within the affected areas • Reduction or cessation of certain activities in or near the areas affected by the project due to fears of resource contamination(proven or not) linked to the project. • Safety issues (risk of collisions/accidents)
Visual disturbance of the landscape
Operation phase
Potential destruction or alteration of archaeological sites present in on the mining site (ore excavation) or on the borrow pit located along the seasonnal road
Disruption of the current and projected use of the land and resources by Indigenous people • Disturbance of the peace and quietness of used sites / areas (noise, vibration, dusts); • Deterioration in the practice of certain activities due to the impact on used and values ressources; • Interruption of access to certain areas used for activities • Circulation interruption on traffic routes routes (i.e. Snowmobile/ATV trails, navigation routes, etc.) intersecting with or located within the affected areas • Reduction or cessation of certain activities in or near the areas affected by the project due to fears of resource contamination(proven or not) linked to the project. • Safety issues (risk of collisions/accidents)
Visual disturbance of the landscape
Active Closure and restoration phase
Disruption of the current and projected use of the land and resources by Indigenous people • Disturbance of the peace and quietness of used sites / areas (noise, vibration, dusts); • Deterioration in the practice of certain activities due to the impact on used and values ressources; • Interruption of access to certain areas used for activities • Circulation interruption on traffic routes routes (i.e. Snowmobile/ATV trails, navigation routes, etc.) intersecting with or located within the affected areas • Reduction or cessation of certain activities in or near the areas affected by the project due to fears of resource contamination(proven or not) linked to the project. • Safety issues (risk of collisions/accidents)

As mentioned and described in section 15, appropriate studies will be conducted to assess the project's effect on the cultural and historical heritage of Indigenous communities, as well as on their land use and the resources they value. To date, the following communities have been identified for these studies :

- Nunavik Inuit : Kuujjuaq and Kangiqsulujjuaq;
- Naskapi Nation : Kawawachikamach;
- Quebec Innu : Matimekush – Lac-John and Uashat mak Mani-utenam;
- Nunatsiavut Inuit : Nain, Hopedale, Makkovik, Postville and Rigolet;
- Labrador Innu: Sheshatshiu and Natuashish;

22 Anticipated changes and impacts on Indigenous communities – health, social or economic conditions

Potential impacts on Indigenous communities are not only limited to the traditional activities performed on the land but are also including impacts on socio-economic conditions, human health and quality of life among Indigenous communities. For instance, contracts could be awarded to Indigenous businesses as part of the various phases of the proposed project. Business partnerships could also be created between the proponent and Indigenous businesses, communities or groups. In addition, jobs (direct and indirect) could be created in the various Indigenous communities affected by the project, both in Quebec and in Labrador[25]. All of this could contribute to improving economic conditions in the communities concerned. However, the creation of new jobs and the influx of capital could also have negative socio-economic effects. One example is the worsening of the labour shortage that some communities are currently experiencing. Furthermore, some Indigenous workers hired as part of the proposed project will have to move away from home during their work periods (fly-in fly-out), including those who will be working at the mine site or the handling and storage facility and who will be housed on site in a workers' camp. This situation could lead to changes in living conditions and habits for these workers and their families. In particular, workers will have to adapt to a new living environment and the distance from their community. Families, for their part, will have to cope with the prolonged absence of workers. A better income can also exacerbate certain problems already present among workers and their families, such as drug and/or alcohol abuse, or gambling problems.

There may also be impacts on health and quality of life, particularly in terms of access to quality food. Admittedly, by having a better income, the families of workers employed on the project could benefit from greater purchasing power, making it easier for them to buy quality food. However, for many northern communities like those involved in the present project, quality food often comes from the land and from traditional activities (hunting, fishing, trapping and gathering). It is therefore possible that by taking a job related to this project, people from Indigenous communities will have less time to devote to these traditional activities, which could lead to a reduction in the consumption of food from the land for them and their family. Furthermore, as mentioned in section 21, it is also possible that the work carried out as part of the various phases of the project will have an impact on traditional activities, access to the land or even on the various animal and plant resources exploited by the Indigenous groups (such as movement of game due to the noise produced, change in surfacewater quality, potential contamination of resources). As mentioned in the previous section, it is also possible that Indigenous groups may reduce or even stop practising certain traditional activities because of fears (proven or not) linked to the project. In any case, this could once again result in a reduction in access to traditional food and therefore in the consumption of quality food.

Furthermore, the arrival of large-scale projects such as the proposed project is generally perceived in different ways by members of a same community. Some will be in favour, while others will be vehemently opposed. It is therefore possible that this project could fuel existing tensions or even create new ones within the Indigenous communities concerned.

To limit the anticipated impacts of the project on the socio-economic conditions, quality of life and health within the concerned Indigenous communities, the preliminary mitigation measures presented in section 19.2 could be applied. As stated in section 21, additional mitigation measures may also be defined at the time of the impact assessment, in conjunction with the Indigenous communities concerned, based on their expectations and concerns regarding the proposed project.

As mentioned and described in section 15, appropriate studies will be conducted to assess the Strange Lake project's effect on human health, quality of life and socio-economic conditions among the various Indigenous communities concerned. To date, the communities identified for these studies are the same as those listed at the end of section 21.

[25] Torngat Metals Ltd plans to hire nearly 600 workers during the operation phase, including just over 250 at the mine site and nearly 300 at the ore processing and separation plant. Since the proponent intends to promote the hiring of Indigenous workers, we can expect that a certain number of workers from communities identified in the environmental assessment will be hired.

As explained in section 15.3, the first step in baseline studies is to describe the determinants of health, where possible, using a series of indicators that allow us to compare the regional or local situation with that of Quebec or Labrador as a whole. This will enable us to identify the main characteristics of the environments in which Torngat Metals's project components will be inserted.

Then, in a second phase, the impacts on human health, quality of life and socio-economic conditions will be assessed on the basis of the health determinants identified (in particular those for which concerns will be raised during the engagement activities held with the Indigenous communities concerned). Given the characteristics of the project and the environments in which its various components will be located, some preliminary determinants for which concerns could emerge could be: employment, income and employability of the population; modification of the living environment or territory; access to traditional food; alcohol consumption and risk behaviours; family environment; social cohesion; health and social services; housing; municipal infrastructures and services; demographic context.

Thereby, it is important to mention that the health and social impact assessment will be realized using GBA plus, so that the health and social effects on Indigenous peoples , both positive and negative, will be assessed taking into account the various population groups. Indeed, as already said, women, girls, young people, the elderly and people with different gender identities experience development projects differently. Using a GBA Plus approach will ensure that negative effects for every population groups can be identified and mitigated.

In addition, it is important to note that all "human receptors" likely to be impacted by changes to the biophysical environment, social (including cultural) or economic conditions will be identified and located during the impact assessment process. The term "human receptor" refers to all inhabited or used areas likely to be impacted, such as dwellings, camps, areas used for traditional activities, recreational areas, health and social services establishments, educational establishments, etc. To this end, the project components (proposed mine site, seasonal road, handling and storage facilities in Edwards Cove as well as the or separation plant in Sept-Îles), will be precisely located. Currently available information on those project components is presented in section 9 of this document.

Table 22-1 lists the potential impacts of the proposed project on Indigenous communities concerning health social and economic conditions. This list is based on the different phases of the project.

Table 22-1: List of anticipated changes and impacts on Indigenous communities – health, social and economic conditions

<table>
<tr><th>Development and construction phases</th></tr>
<tr><td>Impacts on health

Better income may results in a better access to quality food coming from the store
Reduced access to quality food coming from the land and from traditional activities
Possible contamination of valued species
Reduction or cessation of traditional activities because of fears (proven or not) linked to the project.
Safety issues for people using the areas where the work will be carried out during development and construction phases
</td></tr>
<tr><td>Impact on social and economic conditions

Job creation in local and regional communities, and better income for the people hired as part of the project
Contracts for local and regional businesses
Capacity building for the communities
As a result of local employment and potential business development a higher retention of youth and working age population
Growing and building new training and education programs to support community members be prepared for employment by Torngat Metals or by other organizations
Scholarship programs and funding community-led programs to increase graduation rates
Funding for community-led social, cultural and economic development programs and opportunities
Contributing to the problem of labour shortages
Social issues for the workers hired by the project and their families (

For the workers: being away from family and friends, adaotation to a new living and working environment, exacerbation of social issues such as drug or alccol abuse
For the family: prolonged absence of a family member, exacerbation of social issues such as drug or alccol abuse

Tensions in local and regional communities concerning the project
Increased pressure on infrastructure in Sept-Îles and the surrounding region
</td></tr>
</table>

Table 22-1: List of anticipated changes and impacts on Indigenous communities – health, social and economic conditions (Cont'd)

Operation phase
Impacts on health • Better income may results in a better access to quality food coming from the store • Reduced access to quality food coming from the land and from traditional activities • Possible contamination of valued species • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • Safety issues for people using the areas where the work will be carried out during operation phase

Impact on social and economic conditions
• Job creation in local and regional communities, and better income for the people hired as part of the project
• Contracts for local and regional businesses
• Capacity building for the communities
• As a result of local employment and potential business development a higher retention of youth and working age population
• Growing and building new training and education programs to support community members be prepared for employment by Torngat Metals or by other organizations
• Scholarship programs and funding community-led programs to increase graduation rates
• Funding for community-led social, cultural and economic development programs and opportunities
• Contributing to the problem of labour shortages
• Social issues for the workers hired by the project and their families (
    ○ For the workers: being away from family and friends, adaptation to a new living and working environment, exacerbation of social issues such as drug or alccol abuse
    ○ For the family: prolonged absence of a family member, exacerbation of social issues such as drug or alccol abuse
• Tensions in local and regional communities concerning the project
• Increased pressure on infrastructure in Sept-Îles and the surrounding region

Closure and restoration phase
Impacts on health • Better income may results in a better access to quality food coming from the store • Reduced access to quality food coming from the land and from traditional activities • Possible contamination of valued species • Reduction or cessation of traditional activities because of fears (proven or not) linked to the project. • Safety issues for people using the areas where the work will be carried out during closure and and restoration phase

23 Strategic Climate Change Assessment

In order to enable consistent, predictable, efficient and transparent consideration of climate change throughout the impact assessment process, Environment and Climate Change Canada (ECCC) has developed the strategic assessment of climate change (SACC), as mentioned in section 6. The latter is conducted under section 95 of the Impact Assessment Act (IAA) and it applies to designated projects under the IAA. The SACC describes the greenhouse gas and climate change information that project proponents need to submit at each phase of a federal impact assessment and requires proponents of projects with a lifetime beyond 2050 to provide a credible plan that describes how the project will achieve net- zero emissions by 2050. The sections below described how these objectives will be achieved in the current project.

23.1 Greenhouse Gas Emissions (GHG)

The GHG emissions quantification allows the identification of carbon sources and their relative significance to give a better understanding of the most impactful mitigation strategies which may apply. The quantification of GHG emissions will consider the seven gases defined as GHGs under the United Nations Intergovernmental Panel on Climate Change (IPCC[26]) and by Environment and Climate Change Canada:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs – a family of gases);
- Nitrogen trifluoride (NF_3);
- Perfluorocarbons (PFCs – another family of gases); and
- Sulphur hexafluoride (SF_6).

It is anticipated that GHG will mostly be emitted as CO_2, CH_4 and N_2O, but nevertheless, each gas will be quantified using an appropriate emissions factor (Table 23-1) based on the source of fuels and activities shown in Table 23-1 and Table 23-2. The latter are converted into tonne of CO_2 equivalent (tCO_2-eq) using global warming potential (GWP) which is the heat absorbed by any greenhouse gas in the atmosphere, as a multiple of the heat that would be absorbed by the same mass of carbon dioxide. The scope of emissions inventory of the Project will include all direct emissions (Scope 1) associated to combustion of fossil fuels by stationery and mobility sources and any major indirect emissions (Scope 2).

The initial estimation of GHG emissions associated with the Project includes the operational phase of the mining site, the road and the plant since there's no details available at this stage for the construction and decommissioning phases. In addition, this estimation does not include the concentrate transport from Vale Port to Sept-Îles Process Plant, as well as the Sept-Îles' Process Plant (construction, operation, decomissioning) as data was not available at the time of the assessment. The estimation will be updated and completed as part of the impact assessment.

23.1.1 Data Requirements and Gathering of Quantifiable Data

Carbon accounting begins with appropriate setting data collection templates which defines aspects of GHG quantification aligning with the physical scope of the activities taking place throughout all life cycle stages of the project. Collecting the data utilized to quantify the inputs and outputs in the GHG emissions assessment process is a critical component of the reporting and methodology development. To distinguish the data collecting process related to GHG quantification, the project will be categorized into three (3) separate phases: construction, operation and decommissioning.

[26] Climate Change 2022: Impacts, Adaptions and Vulnerability, Working Group II contribution to the Sixth Assessment Report.

The GHG quantification period will match the required service life of the infrastructure asset. It will include all activities leading to carbon emissions within the system boundary, and only exclude activities that do not significantly change the result of the quantification (i.e.: less than 1% of total GHG emissions) with justification from assumptions, inputs, and data gaps used and sensitivity analysis demonstrating validity of exclusions.

The boundaries for the construction phase include the details of the equipment involved in the project and land use. GHG emissions and carbon sink removal resulting from the project's land use conversion will have a direct impact in the GHG assessment. This assessment will be conducted, according to the area of land affected in each land use category of the intergovernmental panel of climate change (IPCC)[27]. The emissions associated with the operation phase will be evaluated through the equipment involved in the operation of the facilities, transportation of the materials, waste and waste treatment, when applicable. Decomissioning emissions include activities related to the closure of the facilities including equipment, transportation, waste treatment and land use.

23.1.2 Net Greenhouse Gas Quantification Methodology

The GHG quantification assessment will be conducted using the key principles of relevancy, completeness, consistency, accuracy, transparency, and conservativeness. These principles are aligned with the CSA-ISO 14064[28] standards, the GHG Protocol[29] standards, and are defined below. It is also noted that the emission factors (Table 23-1) will be provided by National Inventory Report (NIR)[30] and additional recognized references (i.e.: Quebec standard for GHG quantification[31], US EPA).

- **Relevance:** The relevance of GHG sources, data and methodologies regarding the selected, defined documented and used boundaries.
- **Completeness:** All relevant GHG emissions will be included in the assessment with supporting information on criteria and procedures. The GHG quantification assessment will describe what sources will be included and excluded.
- **Consistency:** The assessment shall enable meaningful comparisons in GHG-related information. Consistent methodologies and data sources for carbon management are to be used to allow comparison over time.
- **Accuracy:** The assessment must reduce bias and uncertainties as far as is practical. GHG quantification will be based on available data, emission factors and estimation methodologies used, recognizing that uncertainties exist due to the early stage of the project and to emission factor availabilities for the identified activities. A conservative approach will be undertaken in the latter cases.
- **Transparency:** The assessment must disclose sufficient and appropriate GHG related information to allow conclusions and decisions to be made with reasonable confidence.
- **Conservativeness:** The assessment must use conservative assumptions, values and, and procedures to ensure that GHG emission reductions are not over-estimated.

Table 23-1: Emission Factors

Fuel Type	Source of Fuel	g CO_2/L	g CH4/L	g N_2O/L	Source
Diesel	Mobile	2,681	0.11	0.15	NIR 2020-Part 2
	Fixed	2,663	0.13	0.4	Q-2, r.15, Tableau 1.3
	Off-road Vehicles	2,681	0.07	0.02	NIR 2020-Part 2
		g CO_2/KWh	g CH_4/KWh	g N_2O/KWh	Source
Electricity	Fixed	1.50	0	0	NIR 2020-Part 3

[27] Land Use, Land-Use Change, and Forestry — IPCC
[28] ISO 14064-1:2018 Inventaires des GES et mesure de l'empreinte carbone | Product | CSA Group
[29] Homepage | GHG Protocol
[30] Canada's official greenhouse gas inventory - Canada.ca
[31] guide-quantification-ges.pdf (gouv.qc.ca)

23.2 Direct GHG Emissions

Over the operation phase, mining site shows the main sources of scope 1 GHG emissions are related to the combustion gases generated by the circulation of trucks, machinery, and generators. It is assumed that the mine site and all associated infrastructure are running on diesel-fueled generators. According to the maximum production scenario of the operation phase over 30 years (2029-2059), the direct emissions of mine site would be approximately 485,533 tCO_2 equivalent (Table 23-2).

The road's sources of GHG emissions would be exclusively related to the scope 1 emissions linked with trucks on the road and handling of mineral materials which has been estimated to be around 38,010 tCO_2 equivalent over the same period of 30 years.

Table 23-2: GHG Emission Values

Scope	Site	Fuel Consumption (L/y)	tCO_2/yr	tCH_4/yr	tN_2O/yr	tCO_2-eq/yr	tCO_2-eq/operational Phase (30 years)
Scope 1 emissions	Mine	5,861,800	15,627	7.20	1.97	16,184	485,533
	Road	465,000	1,246	0.51	0.07	1,267	38,010
Scope 2 emissions	Mine and Plant	25,736,880	38.61	0.0	0.0	38.61	1,158

23.3 Acquired Energy GHG Emissions

At this stage of the Project, it is known that hydroelectricity will be supplied through Hydro-Quebec for the process plant, which will reduce scope 1 emissions by removing the large amount of GHGs emitted typically by generators. According to the available data, this would be only known source of scope 2 emissions at this stage of the project. This acquired energy GHG emission has been estimated to be 1 158 tCO_2 equivalent over the operation phase. Note that it is expected that the Sept-Îles Process Plant will also consume hydroelectricity from Hydro-Quebec. This data will be integrated in the GHG assessment as the Plant's energy balance will be assessed.

23.4 Net GHG Emissions

By combining the direct and indirect emissions from the available information, the estimation of the maximum net GHG emissions for the operation phase is 524,701 tCO_2-eq over the entire 30 years of operation phase (2029-2059). Table 23-2 outlines the details on the methodology and calculations.

23.5 Avoided Domestic GHG Emissions

The Project is not avoiding any domestic GHG emissions.

23.6 Mitigation measures, net-zero plan

As per required by SACC guidelines, the federal requirements for developing and implementing a net-zero plan for 2050 will be included in the impact study. Stemming from the need to find innovative ways to reduce carbon within the infrastructure delivery process, a baseline will be established to set the goals and develop mitigation measures.

The development and implementation of mitigation measures will follow the principles outlined below:

- Emphasis on reducing the net GHG emissions of the project as early as possible during the project's lifetime;
- Based on the concept of energy efficiency, the BAT/BEP (Best Available Technologies / Best Environmental Practice) reduces energy and resource consumption at the source;
- A BAT/BEP will be performed over the project's lifetime, including any emerging technologies and practices that may become technically and/or economically feasible during the lifetime of the project;

The BAT/BEP Determination process, shown in the figure below, will involve a structured analysis developed into six steps to identify and select the most effective technologies, techniques and practices that are technically and economically feasible to minimize GHG emissions associated with the project. The scope of the BAT/BEP analysis will consider all main sources of emissions of the project, from the construction, operation, and decommissioning phases, within the scope of the project. This provides the flexibility to create project-wide scenarios that include technologies and practices minimizing GHG emissions from the main emission sources of the project.

Figure 23-1 : Steps of the BAT/BEP Process [32]

At this stage in the project, the mitigation measures leading to the greatest GHG emissions reduction are listed below:

- Electric generators
- Energy-efficient and/or electric vehicles
- Energy-efficient, hybrid and/or electric machinery
- Use of biofuels
- Renewable energy production – wind, solar
- Implementation of an energy management system (ISO 50 001)
- Renewable Energy Purchase Agreements (under Renewable Energy Certificates) – Off-site
- Carbon capture and offset

Additional mitigation measures considered include :

- Use of local materials
- Using repurposed or recycled or materials
- Low-carbon materials selection
- Minimizing building heating and cooling requirements and associated systems
- Minimizing waste
- Minimizing site transport
- Efficient construction methods (e.g., modular systems, precision manufacturing and MMC) contributing to better built quality, reducing construction-phase waste and need for repairs in the post completion and defects period (snagging)
- Lightweight construction which uses less material
- Encourage durable construction and flexible design

[32]. Source : https://www.canada.ca/en/environment-climate-change/corporate/transparency/consultations/draft-technical-guide-strategic-assessment-climate-change.html#toc24

23.7 Limitations

It should be noted that the available data at this stage of the Project is insufficient to provide a precise GHG emissions estimation (construction and decommissioning phases, Sept-Îles Process Plant design data, marine transport of concentrate from Vale Port to Sept-Îles Plant), therefore the current GHG emissions calculation has been developed using the data available to date and considering the maximum production rate over the entire 30 years of operational phase. The estimation will be reassessed as part of the impact study as the Project moves forward.

23.8 Resilience to Climate Change

As part of the strategic climate change assessment, a climate change resilience analysis will be conducted. This will include a selection of weather-related risks that may change under current and anticipated climate change. in 2021, ECCC has published a technical guide that provides instructions and details on the level of information for the climate change resilience assessment. The climate change resilience analysis will be completed in accordance with this document and also the procedures contained in Canadian Standards Association published CSA 4011, “Infrastructure in Permafrost: A Guideline for Climate Change”. This document provides guidance and practical advice on location and design for infrastructure in northern environments. The document describes the nature of permafrost, trends in climate change, foundation systems for community infrastructure, and presents a process for ensuring climate change is incorporated into design and location decisions. In that context, the following activities will be conducted:

- Assessment of the interactions of historical climate conditions with the project area, both in terms of trends in key climate variables (e.g., precipitation or temperature) and records of extreme events (e.g., heat waves, floods).
- Collect information and observations from the Indigenous peoples affected by the Project;
- Analysis of projected future changes in the climate using climate model projections for two ranges of emission scenarios also called the Representative Concentration Pathway (RCP). These scenarios will be the intermediate scenarios (RCP 4.5) and the high emission scenario (RCP 8.5). Uncertainty, including estimates of the level of confidence in the projections of changes to the likelihood of a given climate hazard of interest will be evaluated.
- Determination of climate indicators, which represents conditions or events that can cause loss of productivity, damage to the infrastructure, harm to employees or visitors, etc. The probability associated with an indicator will be calculated from observations at weather stations and climate simulations.
- Assessment of the potential climate change vulnerability. This screening determines the exposure, sensitivity, and adaptive capacity of project assets/components, the people and the environment to the selected climate indicators. Assets and operations that are exposed, sensitive and have low inherent capacity to adapt will go to the next stage of Risk Analysis. The latter will be conducted to evaluate the impacts of the climate indicators on each of the project components by evaluating their likelihood of occurrence and their potential consequences to the project, environment and people.
- Risk will be evaluated in order to rank them from unacceptable risks to acceptable levels. This risk evaluation will provide the basis for identifying when risk treatment and adaptation measures are necessary. These adaptation measures will be divided by the implementation stage:
  - Design: Measures to be incorporated during the design phase of assets for these to be resilient to future climate risks and to prevent costly revamps.
  - Operations and Maintenance (O&M): Measures to be incorporated over the lifespan of the assets during operation and maintenance to ensure resiliency.
  - Policy: Measures to be executed to always provide and maintain safe and healthy working

24 Waste, Emissions and Discharge

The project description at Section 9 already includes information on the wastes, emissions and discharge from the project activities. GHG emissions are detailed in the previous section (Section 23). This section 24 summarizes the main points.

24.1 Waste

24.1.1 Solid Waste

Domestic and other non-hazardous wastes will be generated by the activities and by the workforce at the mine site and at the process plant. As mentioned previously in section 9.2.18.9, these solid wastes will be managed by following the principles of the Quebec Residual Materials Management Policy while considering, in the case of the mine, the location of the project in an isolated northern territory. Reduction at source, recycling and recovery methods will be considered before disposal. In the north, the elimination of ultimate waste residues will be carried out in a landfill meeting the specific requirements for such facility in a northern environment.

24.1.2 Hazardous Materials and Hazardous Waste

The list of the main chemicals that could be used in the beneficiation process in the north and in the process plant at Sept-Îles will be established based on the prefeasibility and feasibility studies, and will be considered in the impact assessment. The storage of all hazardous materials will be designed in accordance with applicable regulations and best practices.

Potential hazardous waste generated by the activities in the north could include waste hydrocarbons from machinery maintenance, antifreeze, various solvents, used oils and used batteries, etc. In the Sept-Îles process plant, it is hazardous wastes that could be produced by the project activities in the north and in the process plant at Sept-Îles will be established based on the prefeasibility and feasibility studies, and will be considered in the impact assessment. All hazardous wastes will be stored in appropriate containers for transport off-site to an approved disposal facility.

24.1.2.1 Residue From Mining Operation and Ore Concentration Process

Mining operations, ore concentration and ore processing and separation produces significant amounts of waste, including overburden, waste rocks and mine/process plant residue. As mentioned previously in section 9.2, these waste will be segregated, settled and filtered when produced in a wet environment, and then stockpiled in specific storage areas adapted to their nature and meeting the requirements of all applicable regulations and guidelines.

As part of the PFS and of the impact assessment, waste rocks, ore and residues from the various steps of the concentration process and process plant that will be generated from completed or ongoing pilot tests will be sampled and characterized in accordance with the “Guide de caractérisation des résidus et du minerai” (MELCC, 2020) and the “Guide des Radionucléides Recommandés pour l’Analyse de la Radioactivité dans les Matrices Environnementales - MELCC, 2017”, to support the design of the various storage facitilies. It is to be noted that around 30 ore samples were characterized in 2012 and 2013 following the Directive 019 on the mining industry (MDDEP, 2012). This directive is still in effect but some sections are currently being revised and new guidelines on mine residue and ore characterization (mentioned above, MELCC, 2017 and 2020) are now in force. Samples with low, medium and high grade of rare earth elements have been analysed (Bernier 2013). For guidance only, the results show that, following the Directive 019 criteria, those samples cannot be described as “low risk” because of the silver, arsenic and copper content. Moreover, those elements have a reachable risk level classified as “intermediate”. Also, following the same criteria, the tested samples do not present a risk of acid generation. As for the radioactivity risk in those same samples, it has been classified as “intermediate”. Those conclusions will potentially be revised according to the company's updated mining plan and processes, following the updates of the Directive and the new characterization guides mentioned above.

Owed to the natural radioactivity in the deposit area at the mine site, the guide on the recommended radionuclide for the analysis of radioactivity in environmental matrices will be considered in all physical and biological baseline studies to be conducted, as well as in the mine and process engineering design.

24.1.2.2 Residue from rare earth processing and high purity separation plant

As mentioned previously in section 9.2, the rare earth processing and separation produce residues. These residues will be segregated, settled and filtered, and then stockpiled in a residue storage facility located next to the plant, adapted to their nature and meeting the requirements of all applicable regulations and guidelines.

The residues from the process plant will be permanently stored in a dry stockpile. In order to minimize the potential environmental impact, and subject to the approval of the authorities, the residues will be thickened, filtered and mixed with a cementing agent before being deposited in the residual management area. Generally, cemented backfill are inert, however, seepage and kinetic studies will be performed in order to determine the percentage cement to be used, the potential for long-term metal leaching and the potential source terms to be added in the water quality model. Additional geochemical and geotechnical studies will be conducted in order to inform the design of the mine residue stockpile area and the retention basin that will be used for sedimentation and/or retention for associated water treatment. The environmental design to ensure groundwater protection and wastewater treatment will be developed based on *in-situ* conditions and Quebec's Directive 019 (MDDEP, 2012).

As previously explained in section 10.5, a part of the natural radioactivity present in the Strange Lake deposit will remain in the concentrate processed at the Sept-iles plant and will ultimately be found in the process plant residues, Therefore, the guide on the recommended radionuclide for the analysis of radioactivity in environmental matrices will be considered in all physical and biological baseline studies to be conducted, as well as in the process engineering design.

24.2 Emissions

24.2.1 Air Emissions

The Strange Lake Rare Earth Mining project can generate various air emissions by the different activities and project component (mine site & process plant, road) involved in the process. The potential sources of emissions, mainly generated by the construction & operation phases are:

- Excavation, drilling, blasting, loading, offloading of overburden, mine rock and ore: These operations can release dust and particulate matter into the air. The particles may contain substances such as particulate matter less than or equal to 2.5 µm ($PM_{2.5}$), particulate matter less than or equal to 10 µm (PM_{10}), total particulate matter (TPM). Considering the nature of the deposit, the particles may also contain crystalline silica and heavy metals, including some radionuclides in their natural state.
- Energy consumption: The significant energy inputs mostly come from fuel-based sources and can lead to exhaust gases, particulate matters and greenhouse gas emissions including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (NO_2).
- Transportation: vehicles and heavy equipment travels contribute to emissions of contaminants in the air. This includes emissions from trucks, trains, or airplanes used to transport onsite workers, materials or equipment.
- Crushing, grinding and concentration processes (beneficiation plant at the mine site): the crushing and grinding of the ore will take place in a controlled environment equipped with dust collection equipment. Nevertheless, this process may release some dust and particulate matter in the environment. The flotation process used to concentrate the ore will use chemicals that will be mostly delivered to site in a crystal or powder form. Improper handling, storage or disposal of these chemicals can lead to air emissions.

- Acid baking of the ore concentrate (rare earth processing and high purity separation plant in Sept-Îles): the effluent gas from the furnace used in this process will be treated by a scrubber. Nevertheless, this process may release some pollutants in the environment.
- Material storage: ore storage (stockpiles of various grades, before treatment), waste rock storage and overburden storage can lead to the release of pollutants such as dust or particulates carried by wind or erosion into the air. At the output of the beneficiation plant, the dewatered concentrate will be stored in big bags and containers before shipping, which will prevent emissions.
- Waste materials and residue disposal: mining operations, ore concentration and rare earth separation processes produces significant amounts of waste, including mine residue at the mine site, as well as process plant residue in Sept-Îles. Improper management of these waste materials can lead to the release of pollutants such as dust or particulates carried by wind or erosion into the air.

Air emissions will be assessed in detail as part of the impact assessment. Various mitigation measures will be implemented to ensure control on the atmospheric pollution.

24.2.2 Noise and Vibrations

Noise could be emitted mainly by machinery and trucks during both construction and closure and restoration phases of all project components. Some blasting may also be required during construction at specific locations (to be confirmed by future engineering studies). At the mine site, blasting, movements of machinery, crushing operations, electricity production would be the main sources of noise and vibrations during the operation phase. Aircraft movements at the aerodrome will generate noise sporadically. Trucking will also generate noise at the mine site and along the seasonal road, up to the container storage and handling area near the Vale's Port. Container handling machinery will also be a noise source in the Port area. At the process plant site in Sept-Îles, the main sources of noise during operation phase would come from the transportation for ore concentrate from the port terminal to the plant site, and from the machinery movements at the residue disposal facility.

Noise and vibrations will be assessed in detail as part of the impact assessment, as well as determination and selection of mitigation measures.

24.2.3 Light Emissions

In the north, the mine site and its associated facilities, the camp and the aerodrome may generate light that can cause nuisances mainly for the wildlife. In Sept-Îles, lighting will also be installed around the plant and residue storage facility. Light emissions will be assessed in detail as part of the impact assessment and mitigation measures will be identified.

24.2.4 Greenhouse Gas Emissions

Section 23 details specifically the GHG emissions. GHG emissions will be assessed in detail as part of the impact assessment as per the SACC guidelines & requirements.

24.3 Water Discharges

Water discharges into the environment at the mine site have been detailed at section 9.2. As previously mentioned, several ponds will receive the contact water from the various mine activity areas (pit, mining areas, ore piles, concentrate piles, mine residue stockpiling area, etc.). They will be positioned to avoid the mixing of water from different sources before the measurement points. After this measurement point, the water discharged from these retention ponds may be routed, if required, to a treatment system to ensure that any water discharged complies with the requirements of Directive 019. The possibility of reusing the water collected for the needs of the ore concentration facilities will be assessed to minimize the use of freshwater.

In the current state of process development for the ore treatment and concentration plant, it is expected that all water will be recirculated, and the process will not generate liquid discharges, except during sporadic events. A certain amount of freshwater may, however, be necessary (to be confirmed during the pre-feasibility and feasibility studies). Any sporadic discharge from the process will be analyzed and treated appropriately before being released into the environment. Having a recirculating circuit will help minimize the frequency and amount of water discharges into the environment. Nevertheless, the project will include at least one final mining effluent. This aspect will be detailed in the environmental impact assessment, as the current process is not finalized. The volume of water will be evaluated according to the final production rate, which will influence the amount of water required for the operations and the rate of recirculation.

The characteristics and discharge point of the treated wastewater into the environment at the process plant site and are not yet known. Different options will be evaluated and compared as part of the prefeasibility and feasibility studies and in the context of the impact assessment. Treated wastewater meeting the regulatory requirements might be discharged into the municipal sewer. The final treated effluent meeting the criteria set by the authorities might also be discharged to the St-Lawrence River (Bay of Sept-Îles) through a dedicated pipe and outlet.

25 Cumulative Effects

Cumulative effects are defined as changes affecting the environment caused by an action combined with the effect of past, present or future activities. Cumulative effects therefore result from the combined effect of the present project and those stemming from other activities (past, actual or future) taking place on the same geographical location, or territory (study area).

These cumulative effects can occur over a certain time and at a certain distance from the project. The current section evaluates how the exploitation of the Strange Lake Rare Earth Mining Project activities, can exert cumulative impacts on Valued Ecosystem Components (VECs) in the territory (study area). The assessment of the cumulative effects therefore involves:

1. Identifying the VECs to be considered in the analysis of the cumulative effects
2. Identifying and justifying the spatial and temporal limits of the analysis, based on the intrinsic characteristics of the VECs and their distribution
3. Identifying past, present or future activities in the territory considered that may affect these same VECs
4. Determining whether the effects of the Stange Lake project on a VEC accrue with the effects of other project activities
5. Determining whether the combined effects of the Strange Lake project and other activities risk causing current or future change to the VECs and whether additional mitigation measures should be deployed

Cumulative impacts will therefore be presented after the residual impact assessment, taking into account mitigation measures, so that the reader can clearly distinguish them from the direct or indirect impacts of the main project.

25.1 Identification of the VECs Considered

The VECs considered for the assessment of the cumulative impacts arise from the six environmental and social issues identified in section 19.1 of this report. The most relevant criteria for the selection of potential VECs are as follows:

1. the recognition of the importance of a component through legislation, regulation or policy ;
2. the sensitivity or vulnerability of the component ;
3. the uniqueness or rarity of the component ;
4. the sustainability (durability) of the component or ecosystem ;
5. the value or importance assigned to the resource by stakeholders;
6. the risks to health, safety or well-being of the public;
7. the ecosystem characteristics, both of the northern environment (beyond the forest line and in the presence of discontinuous permafrost) and of the Sept-Îles environment.

In the case of biodiversity, the species or groups of species considered as VECs for the analysis of cumulative effects in the present study are those with an increased risk of being disturbed by the mining activities and collisions with road vehicles (ex. caribou) and those valued by Indigenous and non-Indigenous groups concerned by the project (ex. caribou, Arctic char, water quality). These VECs will be revised during the elaboration of the project. They will be bonified if necessary.

25.2 Identification and Justification of the Spatial and Temporal Limits of the Analysis

For the northern activities (mine site, seasonal access road, storage facilities in Edward's Cove), the spatial boundaries considered for this analysis extend beyond those of the proposed mine site and the preferred corridor identified for the proposed seasonal road. The limits of the bio-physical environment will include projects likely to have had or will have an impact on valued VECs such as the George River caribou herd, as well as George River and Ikalivik Brook water quality. Concerning social environment, the spatial limits for the purposes of the analysis will be extended to include other projects that have had or will have an impact on access to land and resources, archaeological resources, socio-economic conditions, health as well as psychosocial condition of the Aboriginal and non-Aboriginal communities affected by the project.

For the process plant in Sept-Îles, the spatial boundaries considered for this analysis also extend beyond those of the proposed plant and residue storage facility site. The limits of the bio-physical environment will include projects likely to have had or will have an impact on valued VECs such as the Au Foin River and the Baie des Sept-Îles and their biological components. The spatial limits of the social environment for the purposes of the analysis will be extended to include other projects that have had or will have an impact on valued VECs such as socio-economic conditions, health, psychosocial condition of the Aboriginal and non-Aboriginal communities affected by the project, as well as landscape.

It is difficult to establish time limits at this stage. As a preliminary step, we propose to consider a period of 15 years for past activities. If necessary, this limit will be reviewed during the analysis. Concerning future activities, the anticipated operation phase of the Strange Lake project extends to 30 years from construction, and includes the closure and restoration phase up to 2072. For the purposes of this analysis, the lifecycle of the projected mine will include the timelines from construction (starting in 2027) until restoration (2072). The temporal limit on the territory that will be considered for future activities is then approximately 45 years.

25.3 Identification of Past, Present and Future Activities Potentially Affecting VECs

The analysis will identify other activities or development projects (past, present or future) that may have an impact on VECs of biophysical environment, like air quality (ex: atmospheric pollution coming from industries south of the site), caribou and other terrestrial wildlife, Arctic char, waterfowl (ex: fragmentation of the territory, creation of dams). It will also consider past, present and future activities that have had, are having or are likely to have an effect on the VECs of the social environment, such as land use activities performed by the Indigenous and non-Indigenous communities (ex: opening up of the territory due to road development by other mining companies), as well socio-economic and health conditions of Indigenous and non-Indigenous communities (such as the accentuation of the effect on labour shortages or other socio-economic impacts associated with the implementation of other projects).

Known projects (already completed, in progress or planned) likely to have an impact on the valued components of the environment include the following:

In the northern areas: Strange Lake mine site, road corridor, container storage and handling facilities:

- Mining activities in Voisey's Bay Area by Vale Inco and related maritime and port activities in Anaktalak Bay and Edwards Cove;
- Wind Micro-Grid Project in Nain. The project construction was scheduled for July 2022 and the commencement of commercial operation is scheduled for October 2023.
- Activities related to the New Nain Airport project, for which baselines are ongoing (2022-2024), and construction is planned for 2027-2030;
- The projected construction of a Road leading to Northern Labrador. The Government of Newfoundland and Labrador, Department of Transportation and Infrastructure, published a request for proposals under a Prefeasibility Study in October 2022, for a potential extension of the Trans-Labrador Highway into Nunatsiavut.
- Mining activities around Schefferville by Labrador Iron Mines Ltd and Tata Steel Minerals Canada;

In the Sept-Îles area: rare earth processing and separation plant

- Alouette aluminum smelter refurbishment project.
- Any project (modernization, renovation…) on the Port of Sept-Îles infrastructures
- Possible Arnaud Mine project (phosphate and apatite);
- Mining activities around Schefferville by Labrador Iron Mines Ltd and Tata Steel Minerals Canada;
- Construction of housing units and infrastructures at Uashat and Mani-Utenam

25.4 Effects of the project on VECs accrue with the effects of other activities

Concerning biophysical components cumulative effects could be:

- atmospheric pollution due to the emission of dust particles of the project and other projects;
- maritime and port activities in Anaktalak Bay and Edwards Cove in addition to that already generated by other projects;
- caribou habitat fragmentation in addition to that already generated by other projects;
- additional light sources that might interfere with bird migration;
- possible treated wastewater discharge in the Baie des Sept-Îles.

Concerning cultural heritage and the use of land and resources by Indigenous and non-Indigenous groups cumulative effects could be:

- increased pressure on archaeological resources in addition to that already generated by other projects;
- opening up of the territory due to the accumulation of road development;
- additional disturbance of land use activities performed by Indigenous and non-Indigenous groups (noise, dusts, vibration, restriction or interruption of access to certain areas or traffic routes);
- additional impacts on resources valued by Indigenous and non-Indigenous groups (such as the caribou, and Arctic charr);
- additional visual disturbance of the landscape.

Concerning quality of life, socioeconomic conditions and health conditions among local and regional communities (Indigenous and non-Indigenous), cumulative effects could be:

- accentuation of the effect on labour shortages due to the demand for employees for different large-scale projects in the same region;
- increased pressure on businesses and infrastructure (particularly accommodation infrastructure) if major projects are carried out at the same time in the same region.
- possible exacerbation of other socio-economic impacts associated with the implementation of other projects;
- possible exacerbation of tensions within communities regarding development;
- additional sources of potential contamination of consumed resources (animal and plant);
- increased reduction in access to traditional food.

PART F – SUMMARY (Separate Doc)

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Appendix A
Table of concordance to Nunatsiavut Government (Registration Document)

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
Legislation	*Nunatsiavut Environmental Protection Act* , IL 2010-07 a, section 4.18 *Environmental Review Regulations* CSL E-4 (31-03-2017), Original Enactment NGSL 2012-07 *informations stated in Section 27*	*Newfoundland and Labrador Environmental Protection Act, 2002* *Environmental Assessment Regulations, 2003* , Amended 2021	*Impact Assessment Act* *Physical Activities Regulations* *Information and Management of Time Limits Regulations*		
Format and Submission	A 26 Written and documented. Paper and PDF with bookmarking and linking features	The original (including attached large-scale maps) plus a minimum of 1 paper copy and 1 digital copy (including maps) should be submitted. The Minister may require additional paper copies.	Submit documents and data files through the Impact Assessment Agency Proponent Portal.		
	A 32 Six copies of the registration shall be provided to the minister and one copy shall be provided to the AngajukKâk of the 2 Inuit Communities in closest proximity to the site of the initiative.	A separate cover letter with the Registration document attached. The cover letter should include the telephone number, mailing address and email address for the proponent and the principal contact person for the purpose of environmental assessment.	Any information required to be submitted by a proponent under the Act must be in a machine-readable format; and		
	A 33 Registration shall be submitted to the minister of Lands and Natural Resources, Nunatsiavut Government, 25 Ikajuktauvik Road, P.O. Box 70, Nain, NL, Canada A0P 1L0.	The completed Registration with digital / paper copies and covering letter should be sent to: Minister of Environment and Climate Change PO Box 8700 St. John's NL A1B 4J6 Attention: Director of Environmental Assessment	Include a plain-language summary of the information in English and in French.		
	A 26 d) Provide the information referred to in section 27	Re: submission of computerized documents. - Ensure all electronic documents are accurate, legible and formatted properly before submission. - PDF format preferred, other format may be accepted. - Computer file(s) should be identical to the paper copy. - If multiple files are required, each file should be labelled to reflect its order of appearance in the paper copy (e.g., Registration, Appendix 1 etc.) - For maps, choose a font size for labels and legends that is easily read on screen or in print. - Present maps in horizontal format to facilitate reading on the screen. - Label all maps, charts, graphs etc. horizontally. - Hyperlink headings in Table of Contents (including lists of figures/tables etc.) to body of document. - Hyperlink from references in text to maps/appendices etc. - Include a single file of the entire document and: where the entire document is a large file, divide it into smaller files generally file size should not exceed 2-3 MB and no file should exceed 5 MB			
Other Jurisdictions	A 25 A proponent must register the proponent's initiative with the minister for purposes of both summary reviews and detailed reviews: (a) by delivering to the minister the same information that the proponent has provided to: (i) the Government of Newfoundland and Labrador with respect to Environmental Assessment of the initiative pursuant to Provincial Law and (ii) the responsible authority of the Government of Canada with respect to Environmental Assessment of the initiative under federal Law; or (b) where the initiative is not subject to federal or Provincial A 35 (b) Where the initiative is subject to an Environmental Assessment under federal or Provincial Law, immediately provide the minister with a copy of any request, directive or decision issued by an Authority in relation to the initiative and a copy of any information provided by the proponent to an Authority in relation to the initiative.				

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
Plain Language Summary	A 31 A plain language summary in English and Inuktitut of the information included in the registration	If there is a summary, include it as a separate file	A plain-language summary of the information that is required under items 1 to 24 in English and in French.	Part F - Summary	N/A
Table of Concordance	A 29 A registration shall address factors set out in the Schedule to the Act and in section 11.2.10 of the Labrador Inuit Land Claims Agreement and contain a detailed table of concordance listing those factors and indicating the section(s) or page(s) where the matter is addressed in the registration and, if a factor referred to in the schedule to the Act is not addressed in the registration, provide the reasons why not.			Appendix A (This document)	N/A
Exemption	*A 27 (w) If the proponent seeks an exemption from review pursuant to subsection 4.5.2(b) of the Act, a formal request for exemption stating the reasons why the initiative should be exempt from review and outlining the proposed terms and conditions if any that would apply to the initiative if an exemption is granted*				
Environmental Assessment Authority			A list of any jurisdictions that have powers, duties or functions in relation to an assessment of the project's environmental effects.	Part D - Federal, Provincial, Territorial, indigenous and municipal involvement and effects/18 Implication of jurisdication in the project's assessment	p 183
			The provisions in the schedule to the Physical Activities Regulations describing the project, in whole or in part.	Part B - Project Information/ 8 Applicable provisions	p 39
Proponent Name	A27 (a) full and detailed information about the proponent including contact information;	Proponent: Name of Corporate Body: Chief Executive Officer: Name: Official Title: Principal Contact Person for purposes of environmental assessment: Name: Official Title:	The proponent's name and contact information and the name and contact information of their primary representative for the purpose of the description of the project.	Part A - General information / 2 - Identification of proponent and representative	p 3
Project Name	A 27 (b) the name by which the initiative is to be identified;	Name of the Undertaking	The project's name	Part A - General information / 1 - Project name	p 3
Need/Purpose/Rationale		Purpose/Rationale/Need for the Undertaking	A statement of the purpose of and need for the project, including any potential benefits.	Part B- Project information/ 7 - Project rationale and purpose	p 31
Schedule	A 27 (f) detailed information about the nature, scope, phases, and duration of the initiative and all activities associated with the initiative including:	Earliest and latest dates when project construction could commence (assuming all approvals are in place). Briefly state reasons for selection of dates.	The anticipated schedule for the project's construction, operation, decommissioning and abandonment, including any expansions of the project.	Part B- Project information/ 11 - Project Schedule (Table 11-1 Strange Lake Milestones and dates)	p 75
Financial and Benefits	A 27 (s) a statement of the costs of the initiative including capital and operating costs and a comparative estimate of the GST, HST, income tax and royalty revenues, that will accrue to the federal, provincial and Nunatsiavut Governments as a result of the initiative			Not included in the Registration Document - EXPL: This information is regulated by the Quebec province and cannot be made public before approval.	N/A
	A 27 (j) size of the workforce to be employed at each site during each stage or phase of the initiative together with estimates of its energy, resource and material consumption and the wages to be paid in respect of the workforce	Occupations for construction and operation phases Number of employees required for construction and operations and expected duration of employment.		Part B - Project Information / 9.8 Employment and Workforce + 9.2.13 Power supply + 9.6.1 Renewable energy production at Mine site + 9.2.9 Other buildings. Complementary information will be determined in the PFS and FS. Those data will be integrated in the Impact assessment. - More information will be presented in the PFS, FS and impact assessment	p 63, p 49, p 62, p 46
		Enumeration and breakdown of occupations anticipated according to the National Occupational Classification 2021		Not included in the Registration Document - EXPL: This information is regulated by the Quebec province and cannot be made public before approval.	N/A
		Information is used to determine if any hazardous occupations are involved.		Not included in the Registration Document - EXPL: This information is regulated by the Quebec province and cannot be made public before approval.	N/A
		Identify how employment equity will be addressed relative to age and gender.		Part B - Project information/ 9.8.3 Equity, diversity and inclusion	p 64

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
Location		(i) Geographic Location Description of the proposed site, including boundaries if possible.	Proposed location	Part B Project Information/9.1 Brief descripion of the project (Map 9-1 : Overall project Map + Map 9-2: Project components in the North + Map 9-3 : Project components in Sept-îles) + Part C - Location Information and context / 13.1 Geographical coordinates + 13.2 Site Map + 13.3 Official Land description (Map 13-1 Mineral claims)	p 41, p 43, p 47, p 59, p 81, p 82, p 83
		Large scale (e.g. 1:12,500) original base map(s) and/or recent air photos indicating site location relative to existing communities and transportation facilities, and showing proposed route of access. The National Topographic Survey edition should be affixed to the map(s).		Part A - General information/ 3.1 Information and consultation activites carried out (Map 3-2 Communities in the Project Area and Map 3-3 Communities in the project area in Sept-iles) + Appendix F Project component maps (37 sheets)	p 5, p 11, p 13
	A 27 (c) Identification of each parcel of Labrador Inuit Lands (LIL) on which a site will be located and each parcel of LIL that may be impacted		Project's proximity to any federal lands. A list of federal lands that may be used for the project.	Part A - General information/ 3.1 Information and consultation activites carried out (Map 3-1 Indigenous Land Rights) + Part B Project information/9.1 Brief descripion of the project (Map 9-2: Project components in the North) + Part C - Location Information and context /13.5 Proximity to indigenous communities + 13.6 Proximity to federal lands	p 5, p 13, p 47, p 93, p 96,
Project Description	A 27 (f) detailed information about the nature, scope, phases, and duration of the initiative and all activities associated with the initiative including:	Description of the Undertaking (Project Description):	Type or sector	Introduction + Part B - Project information /9.1 Brief description of the project + 11 Project Schedule	p 41, p 75
	(i) all infrastructure and facilities to be constructed and to be used in carrying out the initiative and for purposes of servicing or accessing the site;	(II) Physical Features : describe major physical features of the undertaking, including buildings, other large structures, roads, pipelines, transmission lines, marine facilities, etc. Describe major physical features of the undertaking, including buildings, other large structures, roads, pipelines, transmission lines, marine facilities, etc.	A list of all activities, infrastructure, permanent or temporary structures and physical works to be included in and associated with the construction, operation and decommissioning of the project.	Part B - Project Information / 9.2 Project components at the mine site (designated physical activity) + 9.3 Seasonal Road between the mine and the existing port facility + 9.4 Container storage and handling facilities at Vale's Port and transportation of the concentrate to Sept-Îles + 9.5 Rare Earth processing and high purity separation Plant	p 41, p 55, p 57, p 58
	(ii) the nature and source or sources of energy to be used for purposes of the initiative;			Part B - Project Information / 9.2.13 Power supply + 9.6.1 Renewable energy production at Mine site	p 49, p 62
		Provide size of the area to be affected by the project.		Part C - Location information and context/14.1.6.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components) - More information will be presented in the PFS, FS and impact assessment	p 108
		Attach an artist's conceptual drawing/visual rendering/aerial imagery.		Part B Project information/9.1 Brief descripion of the project (Map 9-2: Project components in the North) - More information will be presented in the PFS, FS and impact assessment	p 47
		(III) Construction Approximate total construction period (if staged, list - each stage and its approximate duration). Proposed date of first physical construction related activity.		Part B - Project Information / 11-Project schedule + Part E - Main issues and potential effects of the project/19.1.7 Taking into account environmental and social issues in project design - More information will be presented in the PFS, FS and impact assessment	p 75, p 191
		Potential sources of pollutants during construction period(s) including airborne emissions, liquid effluents and solid waste materials.		Part E - Main issues and potential effects of the project/24 Waste, emissions and discharge	p 251
		Any potential causes of resource conflicts.		Part E - Main issues and potential effects of the project/21 Anticipated changes and impacts on Indigenous communities - physical and cultural heritage, use of lands and resources, historical, archaeological significance) + 22 Anticipated changes and impacts on Indigenous communities – health, social or economic conditions	p 237, p 241
		Measures to mitigate potential adverse environmental effects on receptors and resource/land use conflicts.		Part E - Main issues and potential effects of the project/19.2.1.4 Social environment	p 211
		(iv) Operation/maintenance			

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
		Estimated period of operation, if not permanent.		Part B - Project Information / 11-Project schedule + Part E - Main issues and potential effects of the project/19.1.7 Taking into account environmental and social issues in project design	p 75, p 191
		All potential sources of pollutants during operating, including airborne emissions, liquid effluents and solid waste materials.		Part E - Main issues and potential effects of the project/24 Waste, emissions and discharge	p 251
		Any potential causes of resource conflicts.		Part E - Main issues and potential effects of the project/21 Anticipated changes and impacts on Indigenous communities - physical and cultural heritage, use of lands and resources, historical, archaeological significance) + 22 Anticipated changes and impacts on Indigenous communities – health, social or economic conditions	p 237, p 241
		Measures to mitigate potential adverse environmental effects on receptor and resource/land use conflicts.		Part E - Main issues and potential effects of the project/19.2.2.4 Social Environment	p 228
	(iii) the source of all Water to be used at or for each site, including water to be used for transportation, and the geographic locations of the water;			Part B - Project information / 9.2.10 Water supply + 9.4 Container storage and handling facilities at Vale's Port and transportation of the concentrate to Sept-Îles + Part C Location information and context/13.1 Geographical cordinates +13.2 site map + 14.1.5.3.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components) + 14.1.6.1 Strange Lake mine site, road corridor, container storage and handling facilities (northern project components) + 14.1.7.2 Processing plant (Sept-Îles project component)	p 46, p 57, p 81, p 82, p 107, p 108, p 114
	(iv) a full description of all Water withdrawal and transmission facilities including the total capability of the Water withdrawal facilities, the total withdrawal capability per day and the amount to be withdrawn from each Water source, the uses to be made of the Water, the place or places and nature of use, discharge treatment and discharge facilities, and the place or places of Water discharge;			Not included in the Registration Document - EXPL: This information will be designed during the next phase (Prefeasability Study) and data will be integrated in the impact assessment	N/A
	A 27(g) detailed information about the means of accessing the site;			Part A - General information / 3 - Engagement Activies and plans (Map 3-1 Indigenous Land rights) +Part B Project Information/9.1 Brief descripion of the project (Map 9-1 : Overall project Map + Map 9-2: Project components in the North + Map 9-3 : Project components in Sept-îles)	p 13, p 43, p 47, p 59
	A 27 (h) identification and summary of any prior or continuing developments or undertakings, including Exploration and undertakings in existence prior to December 1, 2005, carried out at the site and of any prior or continuing permits, leases or grants of freehold issued by the Government of Newfoundland and Labrador or the Nunatsiavut Government in relation to any such developments or undertakings;			Part A - General information/5 Previous studies and programs -	p 27

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
	A 7 (i) identification and composition of all consumable materials and supplies to be stockpiled or stored on site;			9.2.2 Explosives+ 9.2.4 Ore pile + 9.2.5 Unused rock ad overburden piles and soils + 9.2.6 Mine residue stockpile area + 9.2.14 Fuel storage and supply + 9.4 Container storage and handling facilities at Vale's Port and transportation of the concentrate to Sept-Îles +9.5 Rare Earth processing and high purity separation Plant - Complementary information will be determined in the PFS and FS. Those data will be integrated in the Impact assessment.	p 42, p 49, p 57, p 58
	A27 (k) a description of the natural resources to be used in the initiative and activities related to the initiative			Introduction + Part B- Project information/7 Project Rationale and Purpose + 9.1 Brief description of the project + Part C Location information and context/13.2 Site map (Map 13-2 Strange Lake Alkaline Complex and bedrock geology) + 14.1.4 Geology	p 1, p 31, p 41, p 85, p 103
Alternatives	A 27 (n) description of alternatives to the initiative and a description of the advantages and disadvantages to a safe and healthy environment in each ecosystem in which Environmental Effects of each alternative are likely to occur		Potential alternative means of carrying out the project that the proponent is considering and that are technically and economically feasible, including use of best available technologies; and	Part B - Project information / 12 Potential alternatives. More information will be presented in the PFS, FS and impact assessment with the presentation of each variants of the project and estimated impacts.	p 76
		Additional information on any alternatives which may have been considered and rejected, but which may still be regarded as viable. Reasons for the rejection of those alternatives should be included.	Potential alternatives to the project that the proponent is considering and that are technically and economically feasible.		
Financial Information	A 27 (q) description of the financial measures and securities available to guarantee payment of the costs of the review of the initiative, implementation of the environmental protection plan and payment of the costs of abandonment, closure and restoration of each site	Provide the estimated capital cost of the undertaking. If this project depends upon a grant or loan of capital funds from a government agency (federal, provincial or otherwise) provide the name and address of the department or agency from which funds have been requested.	A description of any financial support that federal authorities are, or may be, providing to the project.	Part D - Federal, Provincial, Territorial, Indigenous and municipal involvement and effects./ 16 - Project funding - More information will be presented in the PFS, FS and impact assessment.	p 183
Other Permitting Requirements		List the permits, licences, approvals and other required authorizations, together with names of the authorities responsible for issuing them (e.g., federal government department, provincial government department, municipal council, etc.)		Part D - Federal, Provincial, Territorial, indigenous and municipal involvement and effects/18 Implication of Jurisdictions in the Project's Assessment	p 183
	A 27 (r) If the Environment Division's informal advice has not been obtained, a statement containing proponent's views, with reasons, as to whether the initiative should be subjected to a summary or detailed assessment.			N/A	N/A
Engagement		Public consultation that was conducted to address construction and operations/maintenance concerns	A summary of any engagement undertaken with any jurisdiction or other party, including a summary of key issues raised and the results of the engagement, and a brief description of any plan for future engagement.	Part A - General information/ 3 Engagement activities and plans	p 5
Indigenous Engagement		Indigenous consultation that was conducted to address construction and operations/maintenance concerns	List of Indigenous groups that may be affected by the project, a summary of any engagement undertaken with the Indigenous peoples, including a summary of key issues raised and the results of the engagement, and a brief description of plans for future engagement.	Part A - General information/ 4 Engagement activities and plans with indigenous groups	p 19
			The legal description of land to be used for the project, including, if the land has already been acquired, the title, deed or document and any authorization relating to a water lot;	Part A - General information/5 Previous studies and programs + Part C - Location information and context/13.3 Official Land Description	p 27, p 82

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
Existing Biophysical Environment	A 27 (e) Detailed information about the bio-physical environment including description of the nature and extent of Water and wetlands, vegetation and topsoil within site boundaries and the species of Wildlife, Plants, Fish and Aquatic Plants for which the site provides habitat	Describe the physical and biological environments within the area potentially affected by the project, e.g., topography, water bodies, vegetation, wildlife species, fish, threatened/endangered species and potential adverse environmental effects, etc.	A brief description of the physical and biological environment of the project's location, based on information that is available to the public.	Part C - Location Information and context / 14 Biophysical environement description	p 97
	A 27 (d) Detailed sketch map or maps, survey plan or aerial photographs/satellite imagery of site and environs, showing:				
	(i) site boundaries;			Part B Project Information/9.1 Brief descripion of the project (Map 9-1 : Overall project Map + Map 9-2: Project components in the North + Map 9-3 : Project components in Sept-îles) + Part C - Location Information and context / 13.1 Geographical coordinates + 13.2 Site Map + 13.3 Official Land description (Map 13-1 Mineral claims)	p 43, p 47, p 59, p 81, p 82, p 85
	(ii) any existing infrastructure, developments or debris within the site;			Part B Project Information/9.1 Brief descripion of the project (Map 9-2: Project components in the North)	p 47
	(iii) all significant natural features within the site, including any body of Water and known subsurface Water; (iv) location and distance of all significant natural features in the environs of the site, including any permanent or seasonal body of Water;			Part C Location information and context/ 14.1.5.3 Fluvial Geomorphology and hydrology (Map 14-1 Watersheds within the Project area in the north + Map 14-2 Watersheds within the project area in Sept-îles) + 14.2.1 Vegetation and wetlands (Map 14-3 Land regions and districts)	p 107, p 109, p 111, p 125
	(v) proposed location within site boundaries of the principal project features or where an activity, undertaking, structure, installation or facility is planned			Part B Project Information/9.1 Brief descripion of the project (Map 9-1 : Overall project Map + Map 9-2: Project components in the North)	p 43, p 47
Existing Human Environment	(vi) the proposed access to the site and its location in relation to existing Aullâsimavet, buildings, trails, wharves, airstrips, power lines or roads in the vicinity;	Describe protected areas, residential/public/ commercial/industrial/recreational infrastructure, human receptors of potential adverse environmental effects, etc.	The project's proximity to any permanent, seasonal or temporary residences and to the nearest affected communities.	Part A - General information/ 3.1 Information and consultation activites carried out (Map 3-1 Indigenous Land Rights and Map 3-2 communities in the project area) Annexe F - These informations will be updatedin the PFS, the FS as well as in the impact assessment.	p 13, p 15
	(vii) the location of the site in relation to the nearest Inuit Community, Aullâsimavet, camps, cabins, houses, dwellings, roads and other existing infrastructure whether in seasonal or year-round use		Project's proximity to land used for traditional purposes by Indigenous peoples, land in a reserve as defined in subsection 2(1) of the Indian Act, First Nation land as defined in subsection 2(1) of the First Nations Land Management Act, land subject to a comprehensive land claim agreement or a self-government agreement and any other land set aside for the use and benefit of Indigenous peoples		
			Brief description of health, social and economic context in the region where the project is located, based on information that is available to the public or derived from any engagement undertaken.	Part C - Location Information and context / 15 socio-economic and human health description	p 157
Effects Assessment	A 27 (l) environmental impact statement containing a description of the Environmental Effects that may be caused by the initiative and all ecosystems in which the effects may occur including:				
	(i) a description of the existing environment in each ecosystem;			Part C - Location Information and context /14.1.Physical environment + 14.2 Biological environment + 14.2.1 Vegetation and wetlands (Map 14-3 Land regions and districts) + 15 Socio-Economic and human health description - During the environmental impact assessment, the potential effects will be studied on a larger area, for addressing appropriately the potential effects of the different ecosystems and communities that might be affected by the Project and others through time. The environment description will be updated and completed with those data.	p 98, p 120, p 121, p 125, p 157

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
	(ii) a description of the biological diversity of each ecosystem;			Part C - Location Information and context / 14.2 Biological environment/*from* 14.2.1 Vegetation and Wetlands *to* 14.2.7 Aquatic species at risk. The environment description will be updated and completed during the base line study to be done for the impact assessment.	p 121 to p 155
	(iii) an assessment of the carrying capacity of each ecosystem and description of the ways in which the initiative is in harmony with the carrying capacity of the ecosystems;			Part E Main issus and potential effects of the project/ 19.2 Description of the main anticipated impacts of the projects on the receiving environment, planned mitigation or restoration measures - During the impact assessment, the potential effect analysis will be addressed as a whole and will include the assessment of the carrying capacity of the different ecosystems in the project study area. The existing baseline conditions will be discussed for each of the Valued Ecosystem Components using existing literature, reports, government data, and field data collected for the Project.	p 192
	(iv) a description of the wastes that will be produced by, and in relation to, the initiative and a description of the places where the wastes will be produced and how they will be managed and disposed of;		A list of the types of waste and emissions that are likely to be generated — in the air, in or on water and in or on land — during any phase of the project.	Part B - Project Information / 9.2.5 unused rock and overburden piles and soil + 9.2.6 Mine residue stockpile area + 9.2.11 Domestic wastewater treatment+9.2.12 Processing wastewater treatment + 9.2.16 waste management + 9.2.19.6 Mine residue management + 9.2.19.8 Discharges into the environment + 9.2.19.9 Residual materials + 9.5 Rare Earth processing and high purity separation Plant + Part E Main issues and potential effects of the project/24 Waste, emissions and discharge	p 42, p 45, 46, p 49, p 52, p 48, p 52, p 54, p58, p 251
	(v) a description of pollution of the environment by and in relation to, the initiative;			Part B - Project Information/9.2.19.8 Discharges into the environment + Part E Main issues and potential effects of the project/24 Waste, emissions and discharge. Complementary information will be determined in the PFS and FS, and integrated in the Impact assessment.	p 52, p 251
	(vi) a description of the effects of the initiative on the health and safety of the environment in each ecosystem affected by the initiative;		A list of any changes that, as a result of the carrying out of the project, may be caused to the following components of the environment that are within the legislative authority of Parliament: fish and fish habitat, as defined in subsection 2(1) of the Fisheries Act; aquatic species, as defined in subsection 2(1) of the Species at Risk Act; and migratory birds, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994.	Part E - Main issues and potential effects of the project/ 19.2 Description of the main anticipated impacts of the project on the receiving environment, planned mitigation or restoration measures + 19.2.1.3 Biological environment (Development and construction phases) + 19.2.2.3Biological environment (Operational phase) + 20 Potential changes to the environment (federal lands, other province or land) + 22 Anticipated changes and impacts on indigenous communities - health, social or economic conditions + 25.4 Effects of the projects on VECs accrue with the effects of other activities. Complementary information will be determined in the PFS and FS, and integrated in the Impact assessment.	p 192, p 206, p 223, p 235, p 241, p 257
			Brief description of any change, resulting from the project, that may occur in Canada to the health, social or economic conditions of Indigenous peoples of Canada, based on publicly available information or derived from engagement with Indigenous peoples.	Part E - Main issues and potential effects of the project/22 Anticipated changes and impacts on indigenous communities - health, social or economic conditions. Complementary information will be determined in the PFS and FS, and integrated in the Impact assessment.	p 241

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
	(vii) identification of features and aspects of the initiative in which the precautionary principle has been applied and a description of the circumstances that have necessitated application of the precautionary principle; and			Part E Main issus and potential effects of the project/ 19.2 Description of the main anticipated impacts of the projects on the receiving environment, planned mitigation or restoration measures + 25.4 Effects of the projects on VECs accrue with the effects of other activities. - The potential environmental effects are based on the project phases and for the most likely Valued Ecosystem Components. VECs are discussed based on potential interactions with project impact sources for the different phases of the Project while combining them with specific mitigation measures to mitigate anticipated impacts. This process will be undertaken using a vision of the application of the precautionary principle in order to account for all direct and indirect potential effects as well as their induced harm to the ecosystem. this will be presented in the impact assessment. Nonetheless, precautionory principles are taken into account for each step of the project design.	p 190, p 257
	(viii) a description of proposed measures and arrangements in relation to the initiative that will serve the purpose of the Act as set in section 1.3 of the Act (voir note);		With respect to the Indigenous peoples of Canada, a brief description of the impact — that, as a result of the project, may occur in Canada and result from any change to the environment — on physical and cultural heritage, the current use of lands and resources for traditional purposes and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, based on information available to the public or derived from engagement undertaken with Indigenous peoples of Canada.	Part E Main issues and potential effects of the project / *from* 19.1.1 Issue - Protection of human health and quality of life in communities *to* 19.1.7 Taking into account environmental and social issues in project design + 19.2 Description of the main anticipated impacts of the project on the receiving environment, planned mitigation or resteration measures + 21 Anticipated changes and impacts on indigenous communities - physical and cultural heritage, use of lands and resources, historical, archeological significance + 22 Anticipated changes and impacts on indigenous communities - health, social or economic conditions.	p 187 to p 189, p 190, p 237, p 241
			A list of any changes to the environment that, as a result of the project, may occur on federal lands, in a province other than the province in which the project is proposed to be carried out or outside Canada.	Part E - Main issues and potential effects of the project/ 20 Potential changes to the environment (federal lands, other province or land)	p 235
	A 27 (m) for purposes of subsection (l) the predicted Environmental Effects shall not be confined to the site or site boundaries and the predictions are to extend to ecological systems that may be affected by the initiative;				
Environmental Protection and Mitigation	A 27 (o) description of measures being taken by the proponent to meet the requirements of sections 1.4.8 and 1.4.9 of the Environment Act including:				
	(i) description of measures that will be taken to avoid, prevent and mitigate the Effects of the initiative;			Part E Main issus and potential effects of the project/ 19.2 Description of the main anticipated impacts of the projects on the receiving environment, planned mitigation or restoration measures. This present preliminary data and more information will be presented in the impact assessment	p 190
	(ii) a detailed environmental protection plan;			Part E Main issus and potential effects of the project/ 19.1 Description of the main issues + 24 Waste, emissions and discharge. This present preliminary data and more information will be presented in the impact assessment	p 187, p 251

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
	(iii) plans for monitoring and evaluation of Effects			Part B - Project Information /8.1 Physical activities - Designated project + 9.2.20 Closure and restoration + 11 Project schedule (Table 11-1 Strange Lake Milestones and dates) + Part C - Location Information and context/ 14.2.2.1.5 Biological monitoring (fish tissues) + Part E - Main issues and potential effects of the project/ 19.2.1.4 Social environment (Development and construction phases) + 19.2.2.4 Social environment (Operational phase) + 19.2.4 Environmental surveillance and monitoring programs +20 Potential changes to the Environment (federal lands, other province or land)	p 39, p 54, p 75, p136, p 211, p 228, p 233, p 235
	(iv) reclamation and closure plan including, where appropriate, plan for progressive reclamation of site			Part B - Project Information /9.2.20 Closure and restoration + 11 Project schedule (Table 11-1 Strange Lake Milestones and dates) + Part C - Location Information and context/ 14.2.2.1.5 Biological monitoring (fish tissues) + Part E - Main issues and potential effects of the project/ 19.2.3 Closure and restoration phase.	p 54, p 75, p 136, p 232
Cumulative Effects	A 27 (p) identification and description of the cumulative Effects of the initiative			Part E - Main issues and potential effects of the project/ 25 Cumulative effects (NG)	p 255
Future Studies	A 27 (v) outline of design of studies not yet undertaken or that are necessary to provide additional information for purposes of the environmental review of the initiative;			The reports presented in section 5 will be updated. The sections 14 and 15 present the list of new reports that will be produced for additional information and data.	p 27, p 97, p 157
References	A 27 (u) list with full citations for all sources of information relied on in the registration	Provide a bibliography of all project-related documents already generated by or for the proponent.		References	p 261
Other Information and/or Documents	A 27 (t) a copy of all reports and studies carried out to satisfy these registration requirements	Provide one copy of any reports on environmental work already performed by or for the proponent		Reports of the Quest periode are available on Plan Engage	N/A
	A 27 (x) any other information that is required by the Act and these Regulations and that the Applicant deems relevant and wishes to provide.				
			Any study or plan, relevant to the project, that is being or has been conducted in respect of the region of the project, including a regional assessment that is being or has been carried out under section 92 or 93 of the Act or by any jurisdiction, including by or on behalf of an Indigenous governing body, if the study or plan is available to the public.	Part A - General information/5 Previous studies and programs	p 27
			Any strategic assessment(?), relevant to the project, that is being or has been carried out under section 95 of the Act.	Part A - General information/6 Applicable Strategic Assessments	p 29
Various Requirements	A 28 The minister may, having regard to the size, nature and duration of an initiative, issue a directive varying the requirements of Section 27 with respect to the registration of an initiative or a class of initiatives.				N/A
	A 34 The minister may require the proponent to provide additional information and documentation relating to the initiative and may specify to whom, how, when and where the additional information or documentation is to be provided.			N/A	N/A

Requirement	NG Registration for Environmental Review	NLECC Registration Document	IAA: Initial Project Description	Localisation in the Registration document	Page
Fees	A 38 A registration remains incomplete until the registration fee has been paid.	Fees apply to private and public sector proponents. Non-profit organizations are exempt.	*Cost Recovery Regulations* under the *Canadian Environmental Assessment Act, 2012*, which apply under the IAA until new Regulations are established, limit cost recovery to impact assessments by review panel.		N/A
	A 39 $1,000 (schedule B) on registration of an initiative for review (summary or detailed) paid in cash or by money order, bank draft or certified cheque payable to the Nunatsiavut Government, 25 Ikajuktauvik Road, P.O. Box 70, Nain, NL, Canada A0P 1L0.	All proponents are subject to a registration fee of $400 (plus HST) due upon submission of the registration document. HST applies for private sector proponents. Cheque or money order payable to the Newfoundland Exchequer. Online payment is available.		N/A	
		Fees or proof of payment (e.g., cashier's receipt from Department of Finance) shall be submitted to the Environmental Assessment Division.			

Appendix B
CONFIDENTIEL DOCUMENTS

Current Update Statement

(Change of Name of Corporation from Quest Rare Minerals Ltd. to Torngat Metals Ltd.)

Certificate of Amendment to the Canada Business Corporations Act, Letters from Sept-Îles and Vale,

Appendix B was sent by email to the project manager

Appendix C
Stakeholder Engagement Strategy (Draft)

Torngat Metals Indigenous Engagement Strategy

Strange Lake Project

Project Number: 60697132

September 2023

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Client (as defined below) in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental, or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

AECOM shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. AECOM accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

AECOM agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but AECOM makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

Without in any way limiting the generality of the foregoing, any estimates or opinions regarding probable construction costs or construction schedule provided by AECOM represent AECOM's professional judgement in light of its experience and the knowledge and information available to it at the time of preparation. Since AECOM has no control over market or economic conditions, prices for construction labour, equipment or materials or bidding procedures, AECOM, its directors, officers and employees are not able to, nor do they, make any representations, warranties or guarantees whatsoever, whether express or implied, with respect to such estimates or opinions, or their variance from actual construction costs or schedules, and accept no responsibility for any loss or damage arising therefrom or in any way related thereto. Persons relying on such estimates or opinions do so at their own risk.

Except (1) as agreed to in writing by AECOM and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Report and the Information may be used and relied upon only by Client.

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This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

AECOM: 2015-04-13

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Prepared for:

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1. Context

AECOM has been assigned to prepare an Indigenous Engagement Strategy (IES) for the Strange Lake project. This mandate is conducted on the behalf of Torngat Metals.

The IES is part of a relaunch of the Strange Lake project due to a new financing of 50 million US dollars by Cerberus Capital Management, a financing which will allow Torngat Metals to carry out the pre-feasibility and feasibility studies.

The IES draws inspiration from and relies on all the engagement work with indigenous groups carried out during the 2011-2015 period, i.e. the negotiations for the signing of IBAs, the work in collaboration with these groups to carry out environmental and social studies as well as the economic benefits in terms of jobs and contracts.

Given that the socio-economic and environmental risks have changed since 2015, there is a need to review and adapt the IES to the 2023 context.

2. IES Approach and Objectives

We believe that successful Indigenous engagement programs build trust and confidence in the Project. This is best achieved through early and ongoing interaction. Effective community engagement allows the different groups to ask questions and express their views, wishes and concerns to those responsible for making decisions – on a continuous real-time basis (not just through limited formal consultation sessions). This improves the quality of project-related decisions and supports the development of mutually acceptable and effective Impact and Benefit Agreements (IBA's) with Indigenous groups and other opportunities that will create shared value for key groups and Torngat Metals.

The main goal of the IES is to obtain FPIC (Free, Prior and Informed Consent) for the Project and complete the approvals following best practices, and being innovative and while also managing the overall timelines and costs. In support of this Project goal, the IES is designed to meet the following objectives:

- Gain key Indigenous support for the project and efficiently manage the indigenous environmental review process, as well as other government and non-government interests.
- Indigenous groups understand that Torngat is undertaking a thorough and detailed planning process that values community input, and provides a genuine opportunity for them to contribute and influence Project decision-making.
- Indigenous groups understand the differences (and similarities) between rare earth mining and other types of mining, especially uranium mining, and on the potential impacts, risks and benefits (e.g., economic, social) of operating a rare earth mine, processing plant and Residue Storage Facilities (RSF) in their respective area.
- Gain trust that Torngat will take appropriate and timely action to minimize or mitigate negative effects on social and environmental components valued by community members. These might include impacts to the environment, human health, important or sacred places, traditional hunting grounds or harvested species, and other social, economic and cultural interests.
- Together identify and pursue a range of partnership opportunities.
- We avoid missteps, miscommunications and avoid being the cause of project "blockers"

- Meet and exceed regulatory requirements related to Indigenous communication and consultation.

3. IES Content

The Indigenous Engagement Strategy revolves around four different axis: 1- resuming the dialogue with key Indigenous groups; 2- updating the stakeholder engagement plan and associated management tools; 3- negotiation of agreements with the Indigenous groups; 4- establishing collaboration with Indigenous groups for the realization of environmental and social studies.

3.1 Resume the dialogue with Key Indigenous Groups

Since 2015, Torngat Metals has been able to maintain minimal dialogue with key Indigenous groups, including the Nunavik Inuit and the Nunatsiavut Inuit. This represents an important asset for a rapid relaunch of discussions regarding the potential participation of these groups to the project, whether for the environmental and social assessment process or for their participation in works related to pre-feasibility and feasibility phases.

The main objectives to resume the dialogue with key Indigenous groups are the following:

- Provide an update of the Strange Lake project.
- Identify Indigenous expectations/concerns and potential collaboration.
- Establish the foundations for ongoing dialogue for environmental and social impact assessment processes and MOU/IBA negotiations.

Already at the end of 2022, Torngat Metals invited Makivik Corporation and Kativik Government to meetings to present the current status of the project and to identify the new expectations of these groups.

Between the end of 2022 and September 2023, many formal discussions with the Indigenous groups leadership in Quebec and Labrador. Except fot the Innu of Uashat mak Mani-Utenam, all of the groups contacted by Torngat Metals have participated in the previous engagement program between 2011 and 2015, namely the Nunavik Inuit, the Nunatsiavut Inuit, the Naskapi, the Labrador Innu (Innu Nation) and the Matimekush-Lac John Innu (Innu of Schefferville).

The level of engagement to be deployed with each of these groups is high and Torngat Metals is developing a robust stakeholder engagement plan to ensure that the Indigenous groups fully participate to the development of the Strange Lake Project.

3.2 Updating the stakeholder engagement plan and associated management tools

Developing an integrated environmental and social management system has now become a standard imposed by international lenders. Best practices suggest setting up, early in the project, a system integrating a stakeholder engagement plan (SEP), stakeholder engagement activity tracking and recording tools, and reporting formats on the social performance of the project.

Stakeholder Engagement Plan

In order to meet the best industry practices, Torngat Metals will update the stakeholder engagement plan (SEP) prepared in 2014 based upon the following guiding principles:

- Understand who is interested in the project and seek to build relationships with those key groups and to feel comfortable engaging in collaborative and productive discussions about managing potential effects and maximizing potential benefits.

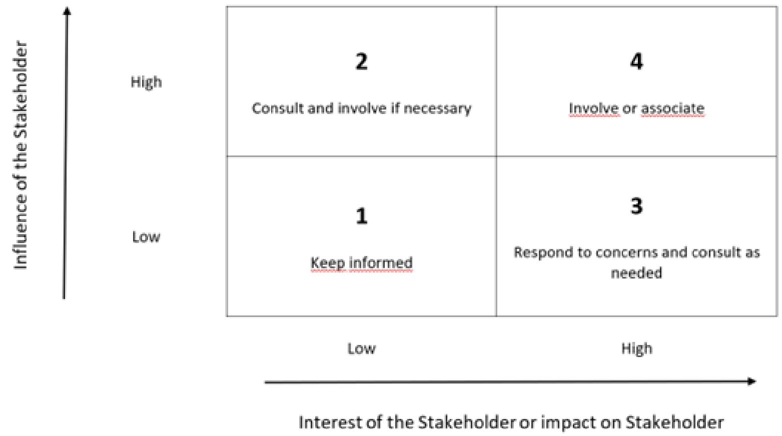
- Communicate in a clear and understandable manner with those most interested or directly affected by the proposed mine.
- Provide simple communication materials that educate, inform and motivate.
- Engage people early in the process and maintain a regular and open dialogue throughout the life of the project, to understand Indigenous issues and to identify mutually-acceptable approaches to address key concerns.
- Provide substantial opportunities to receive community feedback and exchange ideas, with appropriate adaptations to access opinions across demographic groups (age, gender, etc); thereby helping to minimize conflict and build constructive consensus.
- Listen to and carefully consider concerns and ideas; recognizing that diversity of opinion will contribute to fair and informed decisions and will result in the most appropriate project design.
- Communicate decisions in a timely manner and respond to information requests as fully and as quickly as possible.
- Set clear and realistic timetables for receiving and responding to input.
- Regularly monitor and evaluate how the Proponent is communicating with Indigenous and non Indigenous groups throughout the process.
- Identify appropriate ways to facilitate and/or improve effective communications between project team members.

The SEP will include the following elements:

- laws, regulations and standards that apply to the project with respect to Indigenous and non Indigenous groups consultation;
- records of previous engagement activities with Indigenous and non Indigenous groups;
- Indigenous and non Indigenous groups mapping and analysis;
- information, consultation and engagement tools and means used;
- calendar of Indigenous and non Indigenous groups engagement activities;
- grievance management mechanism;
- roles and responsibilities for implementing the plan;
- implementation budget.

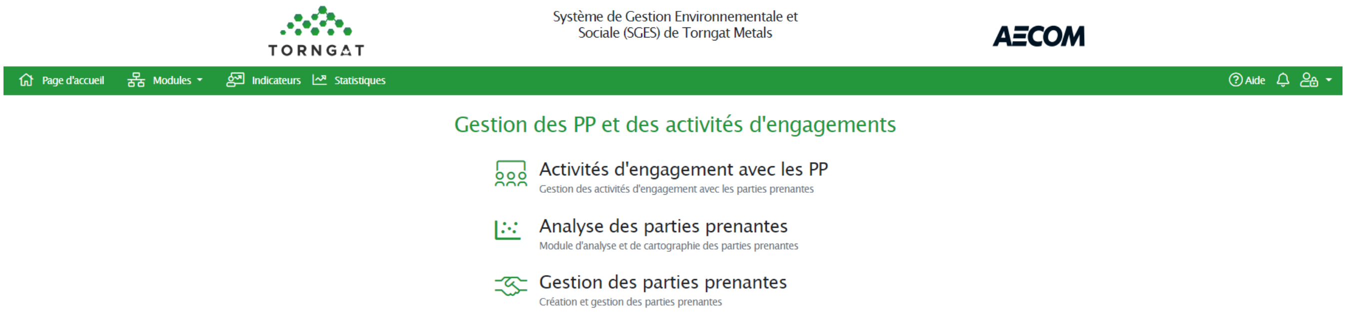
The Indigenous and non Indigenous groups mapping and analysis will help to determine the type of engagement to be conducted based on each stakeholder's level of interest and influence. It takes into account two fundamental criteria: the group's ability to influence the project and their level of interest in the project. The goal of the mapping is to define the different categorization of the Indigenous and non Indigenous groups (Involve, Consult, Inform). In this way, it is determined whether each group's level of interest in the project is low or high and whether their level of influence is low or high.

The next figure presents the influence/interest stakeholder analysis matrix.


Influence of the Stakeholder
High
Low
2
Consult and involve if necessary
4
Involve or associate
1
Keep informed
3
Respond to concerns and consult as needed
Low
High
Interest of the Stakeholder or impact on Stakeholder

Stakeholder engagement activity tracking and recording tools

In parallel with the planning work, Torngat is developing integrated management tools on an online platform accessible to internal project stakeholders. This platform is equipped with a stakeholders register, an interest/influence analysis matrix, as well as a directory of planned and carried out stakeholder engagement activities. A screen shot of the platform is presented below. A tutorial will be developed to support Torngat Metals and AECOM users.



Other management and communication tools

Preparing a stakeholder engagement plan is also an opportunity to update and develop the various management and communication tools necessary for the dialogue with the stakeholders. Among them, the following:

- **Project Governance & Internal Communications**: This document identifies the decision-making individuals on the project team, as well as the internal chain of reviews necessary before communications materials (e.g., letters, reports, website updates, etc) will be finalized and released. It also recommends appropriate channels for informing project team members of progress, emerging issues and new key messages. A core communications team will be established (Torngat + consultants). A dedicated communications and community-relations spokeperson will be designated. This team will also consider the relevance and timing of having local liaison officer in key communities such as Nain, Kuujjuaq or Kangiqsualujjuaq. They could be indigenous sub-consultants with the mandate to receive concerns and request for information in person (without giving informations).
- **Stakeholder Input & Response Tracking**: Tracking communications with stakeholders is essential for responding quickly and accurately to questions or concerns as the project progresses. This document will identify who receives and uploads the stakeholder correspondence and verbal exchanges into the platform for quick retrieval. Identifying a responsible individual on the project team creates a streamlined approach that will help ease response delays and will quickly notify the project leadership of any incoming issues or concerns.
- **Media Scanning**: Monitoring media and social media offers an excellent way to assess stakeholder and media opinions as they change over time. Key search terms, websites, and search techniques will be formalized to ensure that the project is getting consistent results. Setting the search terms and frequency will be decided in close communication with Torngat.
- **Communicating with the Media**: A protocol document should be prepared to determine which individuals are permitted to speak to the media related to the project. The document should also identify which media sources will be used to publicized notices, open houses, and other project messages to a wide audience. A preference will be given to regional outlets (e.g., local radio, newsletters) to cover the widest area possible.
- **Social Crisis Management Strategy**: an emergency communication response strategy to determine key actions and messages to address a potential crisis at the local level.
- **Public Event Procedure & Planning Checklist**: This checklist provides the project team with a consistent approach to setting up and participating in public events. The document should determine the format, the frequency of the events, and which team members should attend.

- **Master Q&A**: Provides the core team with a summary of the questions expected and the answers to be provided.The benefit of this approach is to increase the number of staff authorized to respond to expected questions posed by stakeholders regarding key issues. Delegating these types of responses will save Torngat time and will also create budget efficiencies.
- **Fact Sheets (e.g., Strange Lake Project, Why Here, Potential Benefits, Rare Earth Elements, Mining Operations, Approvals Process, Radioactivity, etc.):** Fact sheets provide a greater level of detail about the project to the general public and proactively answer Frequently Asked Questions. The fact sheets often use visuals, including diagrams, maps or photographs to explain the key concepts. Specific Fact Sheets will need to be developed for the Northern and Southern Project Areas.
- **Web-site content**: Website content should mirror the Key Points, Project Story and newsletter as a secondary way of reading about the project. Video content or links will also enhance the experience of stakeholders using the website - as is already the case on Torngat's corporate website.
- **Radio Scripts**: General radio scripts will be prepared as a template for project descriptions and notifications for public events (i.e. information sessions).
- **Media Releases, as required:** A media release template will be developed to be prepared for issues arising during the pre-feasibility and feasibility phases.
- **Sustainability and Social Responsibility Report for Torngat**. Torngat will request AECOM;s support to provide key content when Torngat develops their stand-alone ESG-I report

3.3 Negotiation of agreements with Indigenous groups

Torngat Metals recognizes that the Strange Lake Project mine, roadway, port and plant will be located on lands in Quebec and Labrador subject to Indigenous land claims agreements and unresolved claims. Torngat Metals will avoid infringement of any rights and is committed to consult and negotiate with the concerned Indigenous groups in order to obtain Free, Prior and Informed Consent (FPIC).

An effective tool to build a collaborative relationship with impacted indigenous groups is the signing of Impact and Benefit Agreements (IBAs). This type of agreement typically provides to the impacted groups socio-economic benefits such as employment and training, business opportunities, cultural and social support, environmental protection and financial provisions.

To carry out this process, the Strange Lake project needs legal services to guide Torngat throughout the negotiations with the Indigenous groups of Quebec and Labrador. This process is in itself very complex because the Strange Lake project affects the rights and interests of several Indigenous groups in Quebec and Labrador and could potentially trigger the environmental assessment process of 5 different jurisdictions, including 2 Indigenous. Consequently, the support of two legal teams (one for Quebec and one for Labrador) is required. Already, Torngat Metals has retained the services of the firm Stewart McKelvey for the Labrador negotiation process and the firm McCarthy Tétrault for the Quebec negotiation.

The two legal teams will have to work together to establish an overall strategy. The legal teams will also have support from the AECOM technical team for the identification and analysis of the impacts of the project on indigenous rights as well as to report the consultation outcomes. To do so, a Torngat Metals / AECOM / legal teams committee will have to be set up and periodic meetings should be organized.

Also, preliminary work will have to be carried out to establish the basis for future negotiations: a careful verification of the mining leases of Torngat Metals and a review and update of the analysis of the Indigenous rights conducted in 2013 by the firms of Goodland O'Flaherty and Heenen Blaikie.

3.4 Establishing collaboration with Indigenous groups for the realization of environmental and social studies

The last strategic axis in terms of engagement with Indigenous groups is the search for potential collaborations with the groups concerned to update and carry out the basic studies necessary for the environmental and social impact assessment process.

Already in 2013-2014, the Nunatsiavut Inuit had signed an agreement with Quest Rare Minerals to carry out the land use study. The AECOM team then played an important role in defining the terms of reference and monitoring the work of the Inuit. A similar approach will also be beneficial for the current phase of the project.

Otherwise, Torngat Metals will rely on existing projects in Indigenous communities by offering financial support to encourage the participation of these groups in environmental and monitoring studies. Future engagement activities with Indigenous groups will help to identify similar projects or opportunities to create and foster collaboration.

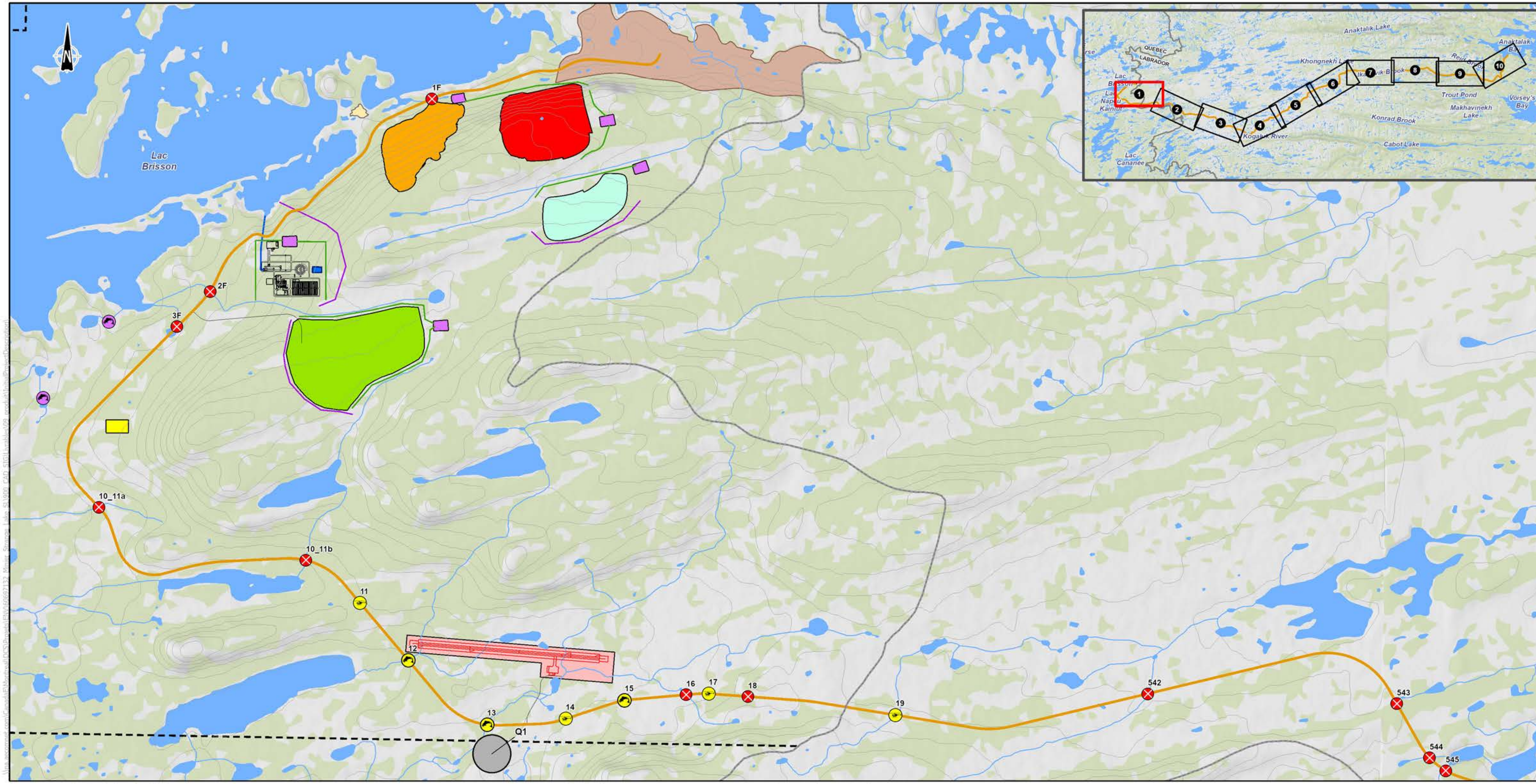
As a preliminary step, a gap study regarding studies performed between 2011 and 2015 and current regulatory requirements will further target opportunities for collaboration with these groups. Also, the various exchanges that will take place during the activities to relaunch the dialogue with the key stakeholders will make it possible to clarify the expectations and the opportunities for collaboration.

Appendix D
Watercrossings along the access road
(7 sheets and aerial photos)

MÉTAUX **TORNGAT** METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



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NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D

Feuillet - 1

Traversées de cours d'eau le long de la route d'accès saisonnière

Appendix D

Sheet - 1

Water crossing along the seasonal access road

AECOM

MÉTAUX TORNGAT METALS

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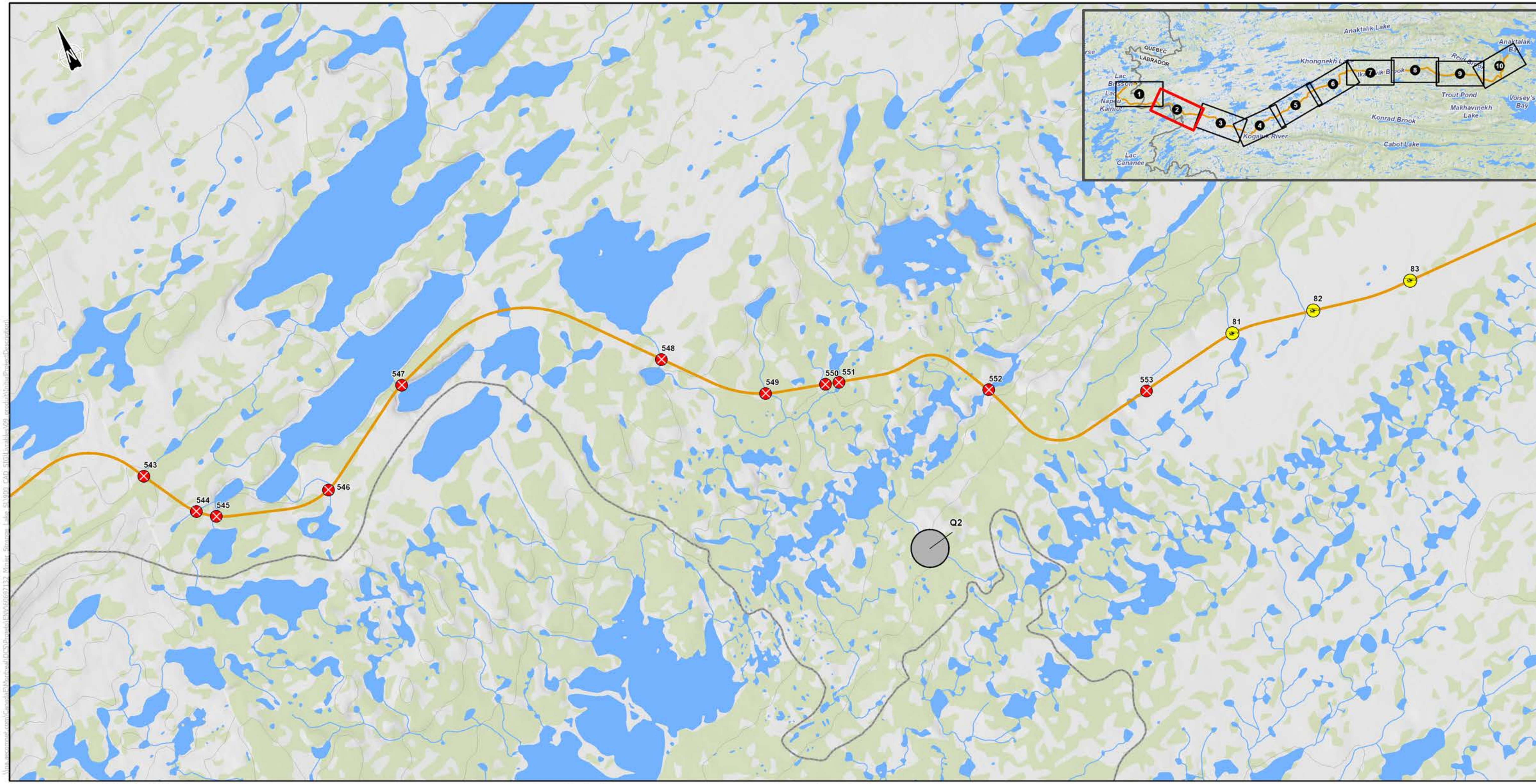

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Annexe D

Feuillet - 2

Traversées de cours d'eau le long de la route d'accès saisonnière

Appendix D

Sheet - 2

Water crossing along the seasonal access road

AECOM

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PRÉLIMINAIRE / PRELIMINARY

Annexe D

Feuillet - 3

Traversées de cours d'eau le long de la route d'accès saisonnière

Appendix D

Sheet - 3

Water crossing along the seasonal access road

AECOM

MÉTAUX
TORNGAT
METALS

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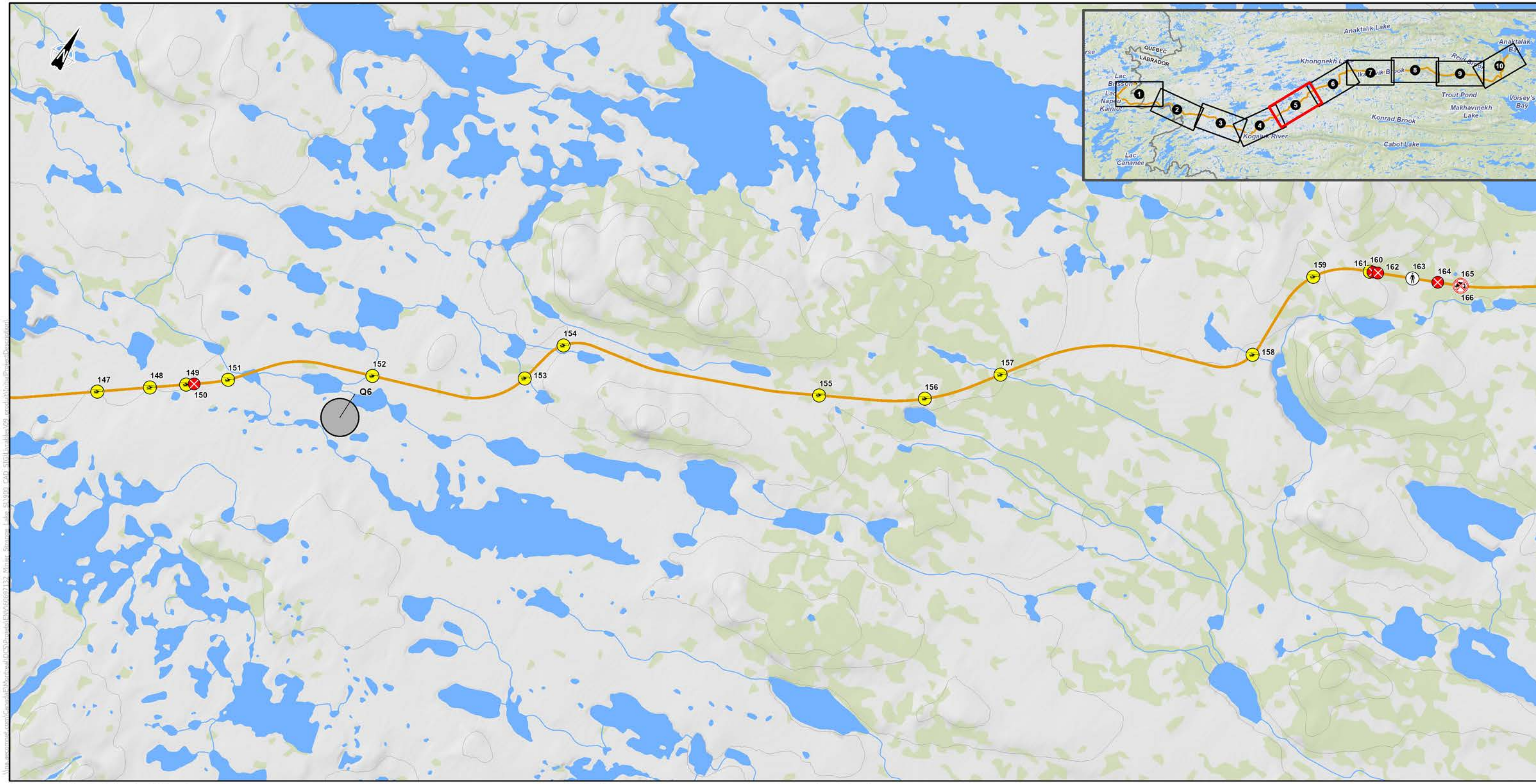

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- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000

0 500 1 000 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D
Feuillet - 5
Traversées de cours d'eau le long de la route d'accès saisonnière

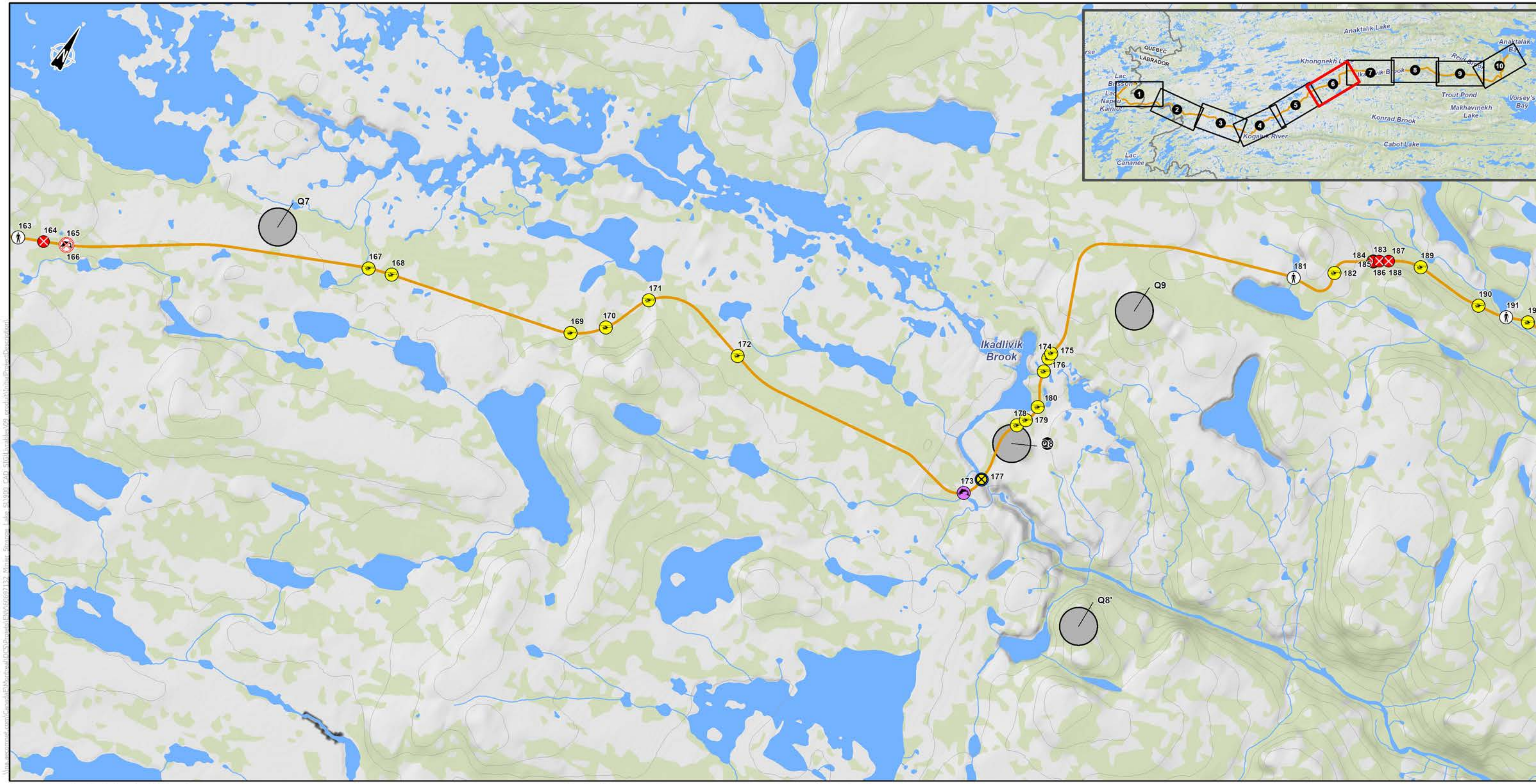
Appendix D
Sheet - 5
Water crossing along the seasonal access road

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Inventaire aquatique / Aquatic survey

- Habitat du saumon d'atlantique et/ou de l'omble chevalier / Atlantic salmon and/or Arctic char habitat
- Frayère à salmonidés confirmée / Confirmed Salmonid Spawning Ground
- Habitat du poisson mais aucun salmonidés / Fish habitat but no salmonids
- Habitat d'alevinage de l'omble de fontaine / Brook trout rearing habitat and nursery
- Habitat du poisson pour l'omble de fontaine / Fish habitat for brook trout
- Concentration de géniteurs d'omble chevalier / Aggregation of Arctic char spawners
- Aucun habitat du poisson / No fish habitat
- Inventaire au sol / Ground survey
- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000
0 500 1 000 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D
Feuillet - 6
Traversées de cours d'eau le long de la route d'accès saisonnière

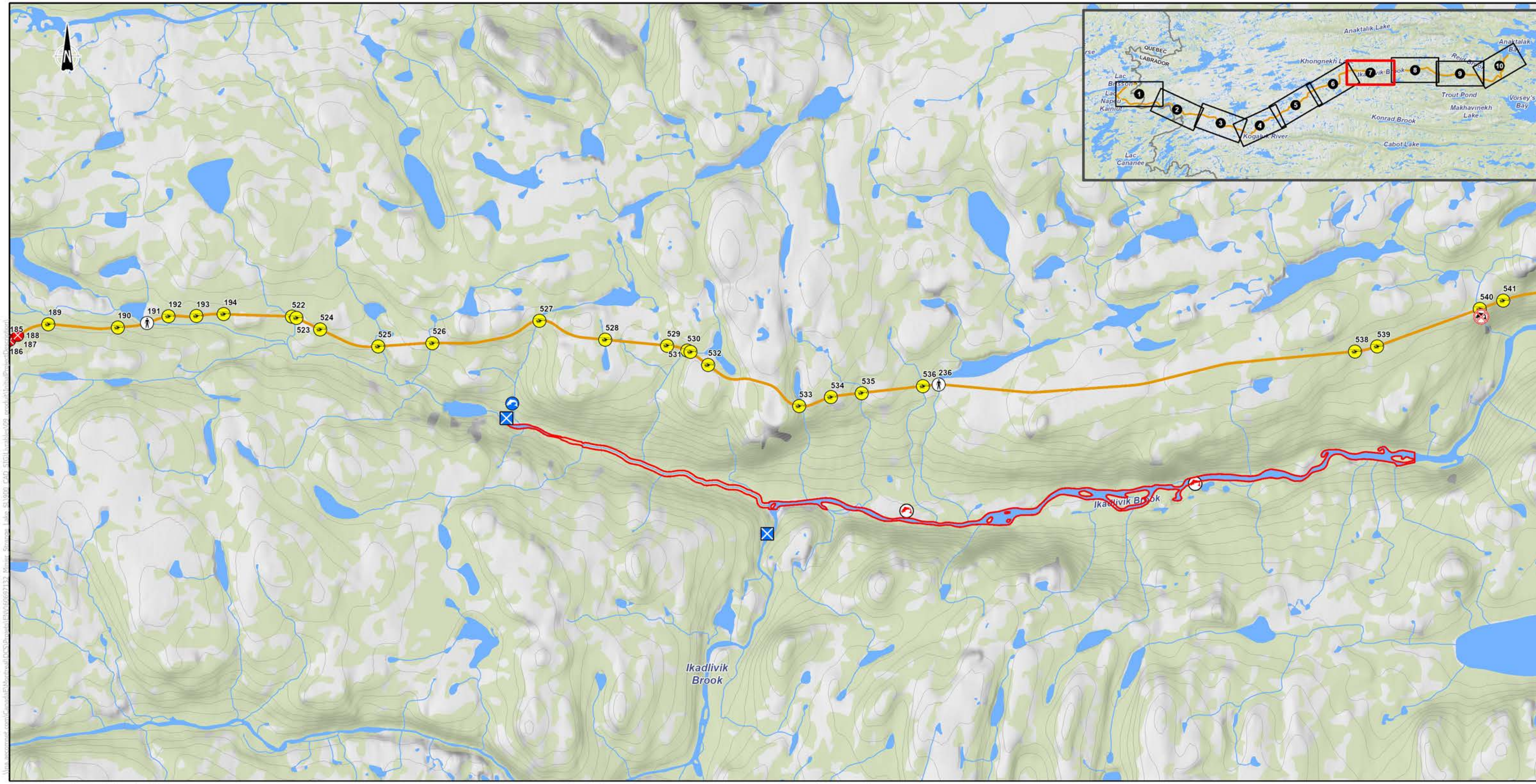
Appendix D
Sheet - 6
Water crossing along the seasonal access road

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Inventaire aquatique / Aquatic survey

- Habitat du saumon d'atlantique et/ou de l'omble chevalier / Atlantic salmon and/or Arctic char habitat
- Frayère à salmonidés confirmée / Confirmed Salmonid Spawning Ground
- Habitat du poisson mais aucun salmonidés / Fish habitat but no salmonids
- Habitat d'alevinage de l'omble de fontaine / Brook trout rearing habitat and nursery
- Habitat du poisson pour l'omble de fontaine / Fish habitat for brook trout
- Concentration de géniteurs d'omble chevalier / Aggregation of Arctic char spawners
- Aucun habitat du poisson / No fish habitat
- Inventaire au sol / Ground survey
- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000

0 500 1 000 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D
Feuillet - 7
Traversées de cours d'eau le long de la route d'accès saisonnière

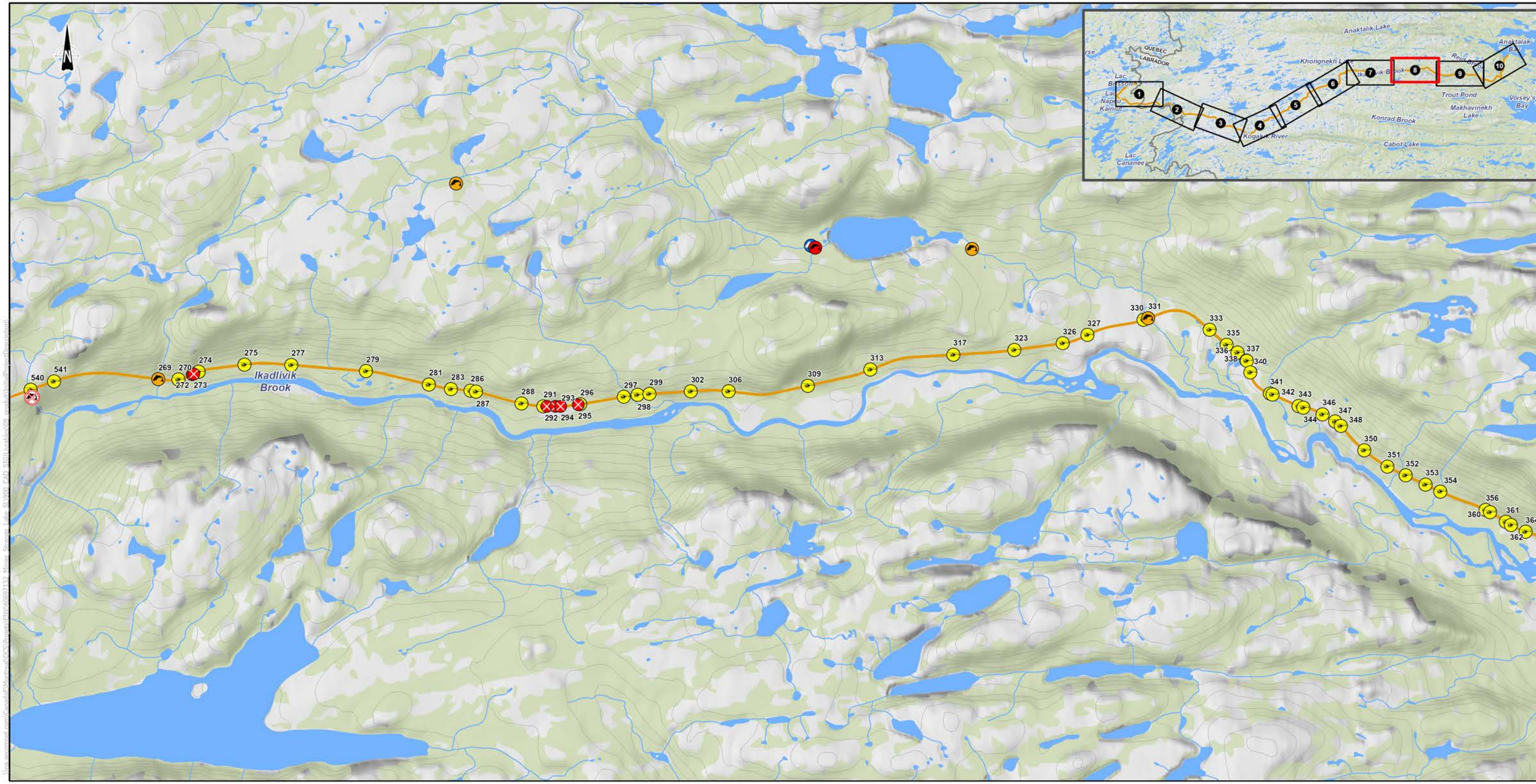
Appendix D
Sheet - 7
Water crossing along the seasonal access road

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Inventaire aquatique / Aquatic survey

- Habitat du saumon d'atlantique et/ou de l'omble chevalier / Atlantic salmon and/or Arctic char habitat
- Frayère à salmonidés confirmée / Confirmed Salmonid Spawning Ground
- Habitat du poisson mais aucun salmonidés / Fish habitat but no salmonids
- Habitat d'alevinage de l'omble de fontaine / Brook trout rearing habitat and nursery
- Habitat du poisson pour l'omble de fontaine / Fish habitat for brook trout
- Concentration de géniteurs d'omble chevalier / Aggregation of Arctic char spawners
- Aucun habitat du poisson / No fish habitat
- Inventaire au sol / Ground survey
- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000

0 500 1 000 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D
Feuillet - 8
Traversées de cours d'eau le long de la route d'accès saisonnière

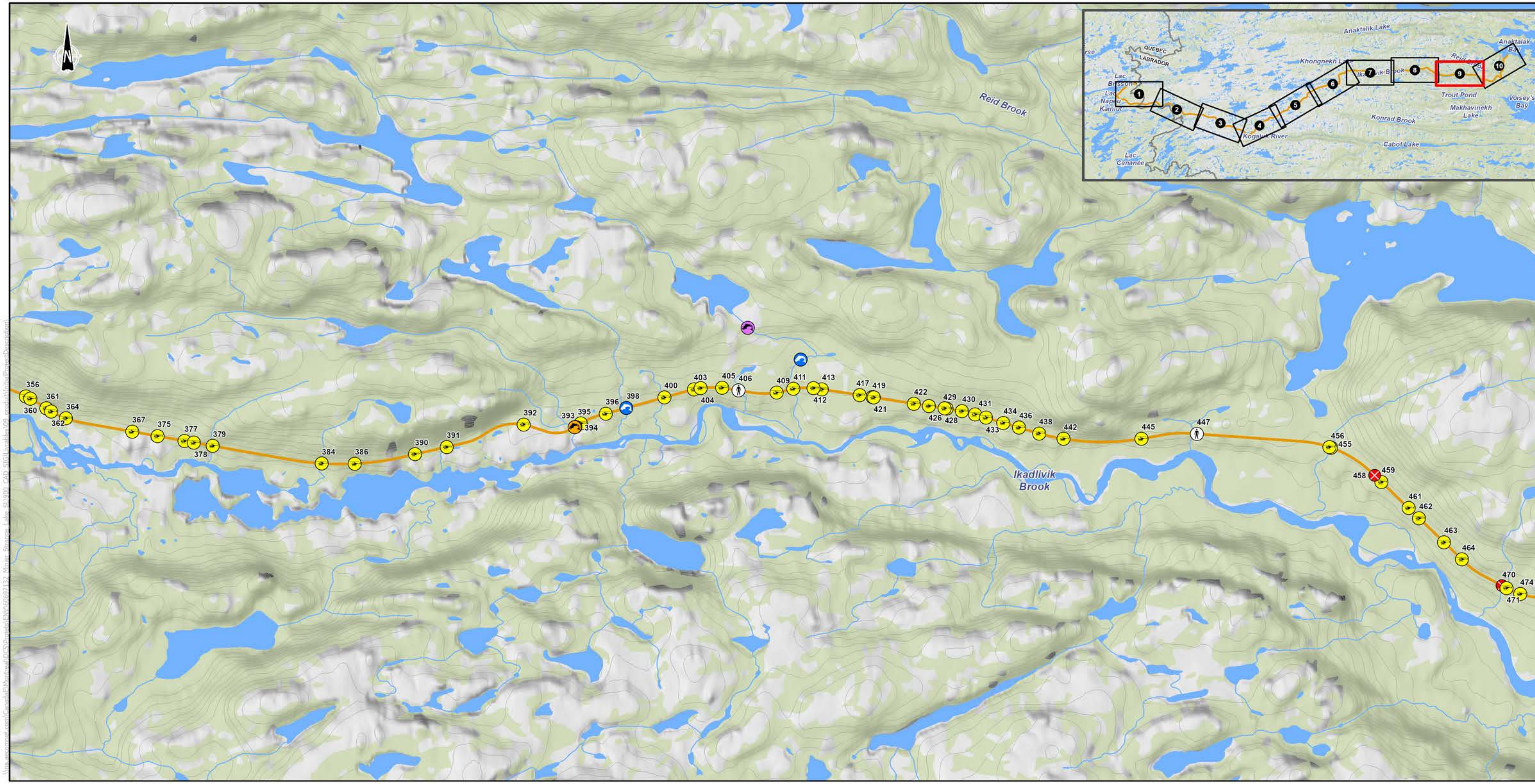
Appendix D
Sheet - 8
Water crossing along the seasonal access road

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Inventaire aquatique / Aquatic survey

- Habitat du saumon d'atlantique et/ou de l'omble chevalier / Atlantic salmon and/or Arctic char habitat
- Frayère à salmonidés confirmée / Confirmed Salmonid Spawning Ground
- Habitat du poisson mais aucun salmonidés / Fish habitat but no salmonids
- Habitat d'alevinage de l'omble de fontaine / Brook trout rearing habitat and nursery
- Habitat du poisson pour l'omble de fontaine / Fish habitat for brook trout
- Concentration de géniteurs d'omble chevalier / Aggregation of Arctic char spawners
- Aucun habitat du poisson / No fish habitat
- Inventaire au sol / Ground survey
- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000

0 500 1 000 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D

Feuillet - 9

Traversées de cours d'eau le long de la route d'accès saisonnière

Appendix D

Sheet - 9

Water crossing along the seasonal access road

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Inventaire aquatique / Aquatic survey

- Habitat du saumon d'atlantique et/ou de l'omble chevalier / Atlantic salmon and/or Arctic char habitat
- Frayère à salmonidés confirmée / Confirmed Salmonid Spawning Ground
- Habitat du poisson mais aucun salmonidés / Fish habitat but no salmonids
- Habitat d'alevinage de l'omble de fontaine / Brook trout rearing habitat and nursery
- Habitat du poisson pour l'omble de fontaine / Fish habitat for brook trout
- Concentration de géniteurs d'omble chevalier / Aggregation of Arctic char spawners
- Aucun habitat du poisson / No fish habitat
- Inventaire au sol / Ground survey
- Inventaire aérien / Aerial Survey
- Aucun inventaire / No survey
- Obstacle infranchissable / Impassable obstacle
- Tronçon à fort potentiel de fraie (survol héliporté) / Reach with high spawning potential (aerial survey)

1:40 000

0 500 1 000 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-08-31 17:29

PRÉLIMINAIRE / PRELIMINARY

Annexe D
Feuillet - 10
Traversées de cours d'eau le long de la route d'accès saisonnière

Appendix D
Sheet - 10
Water crossing along the seasonal access road

AECOM

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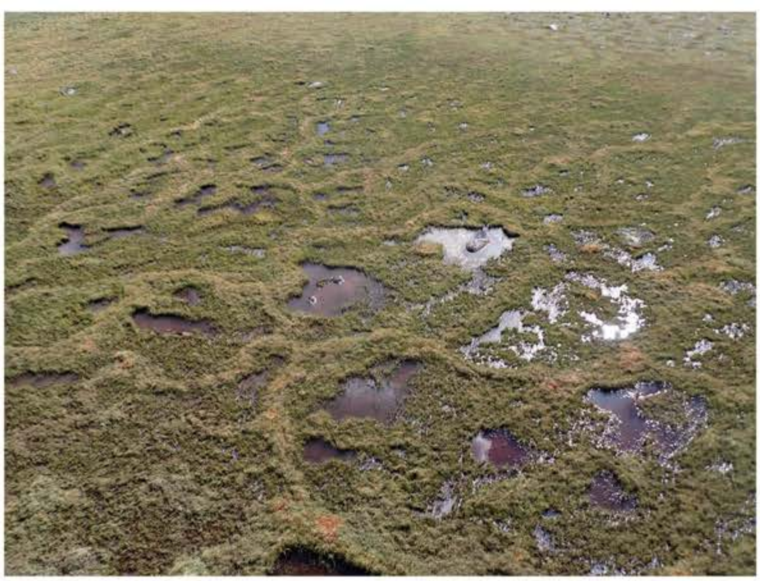


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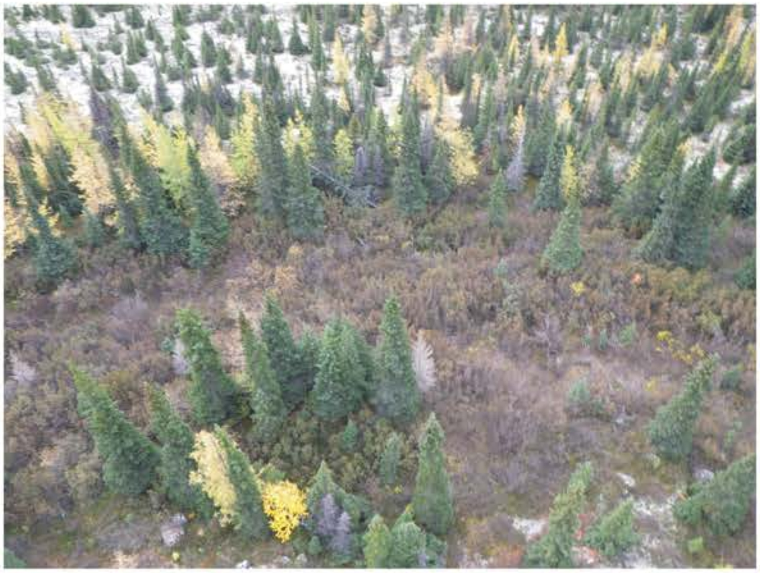
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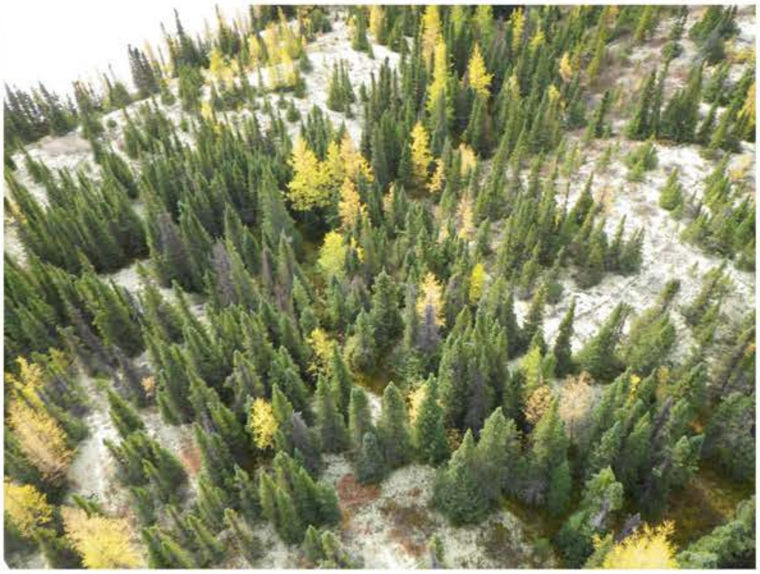
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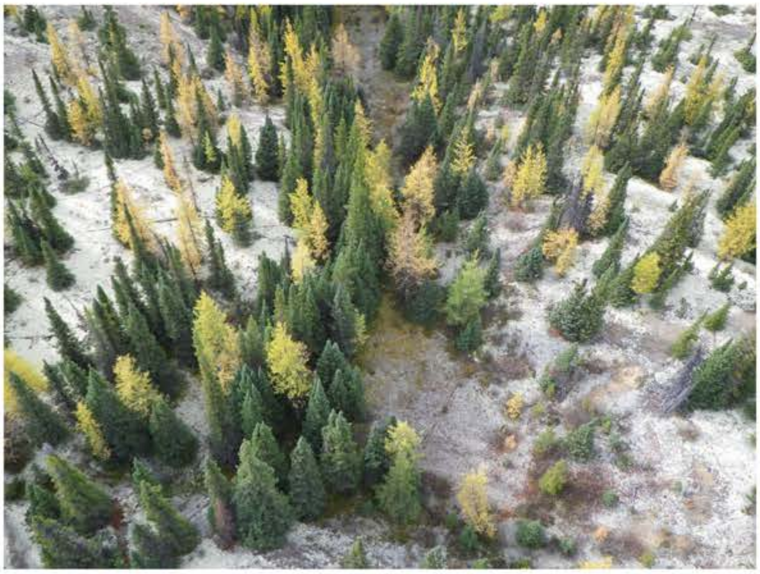
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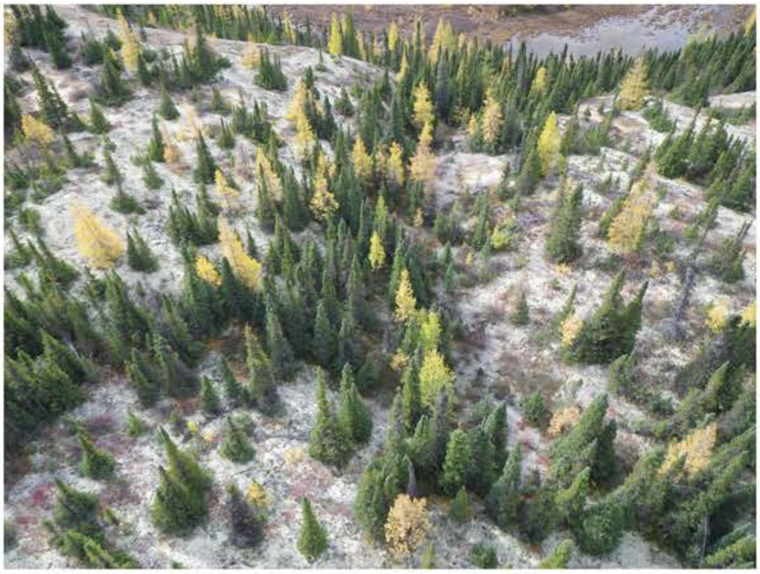
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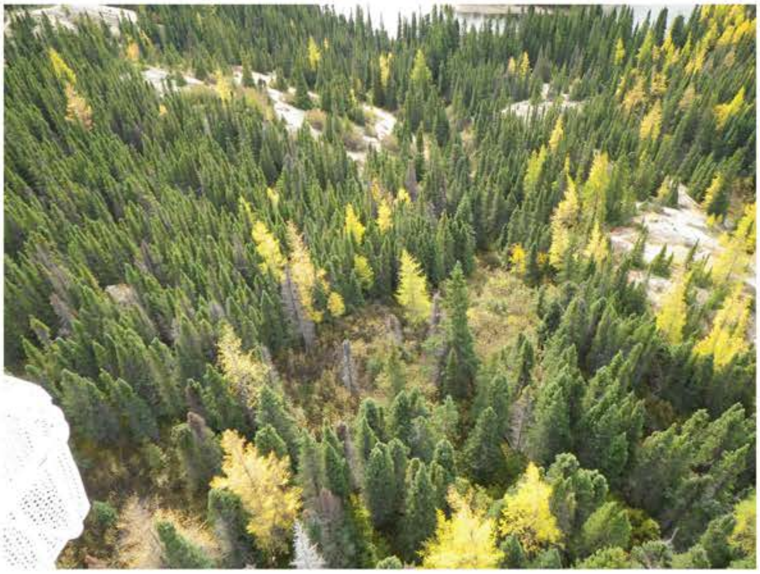

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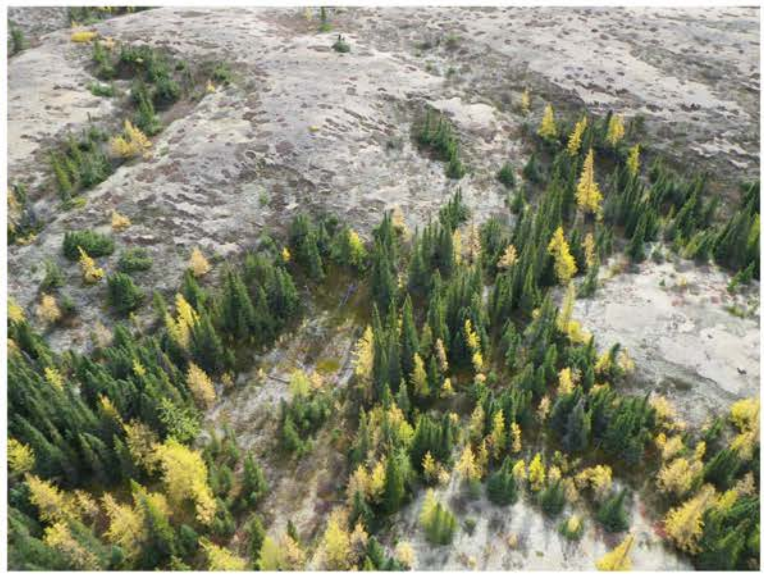

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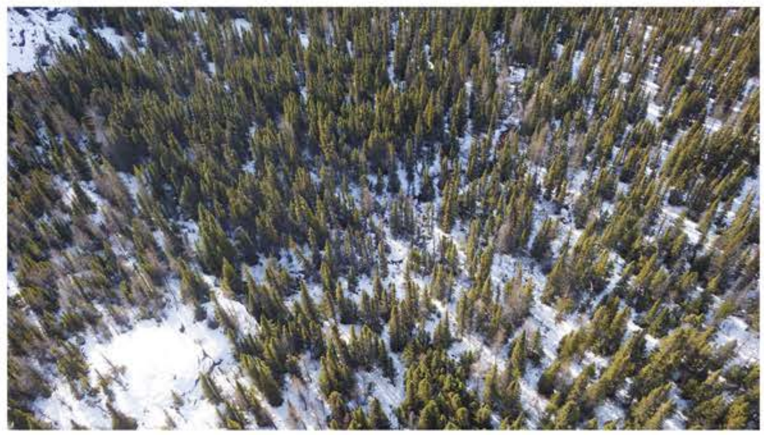
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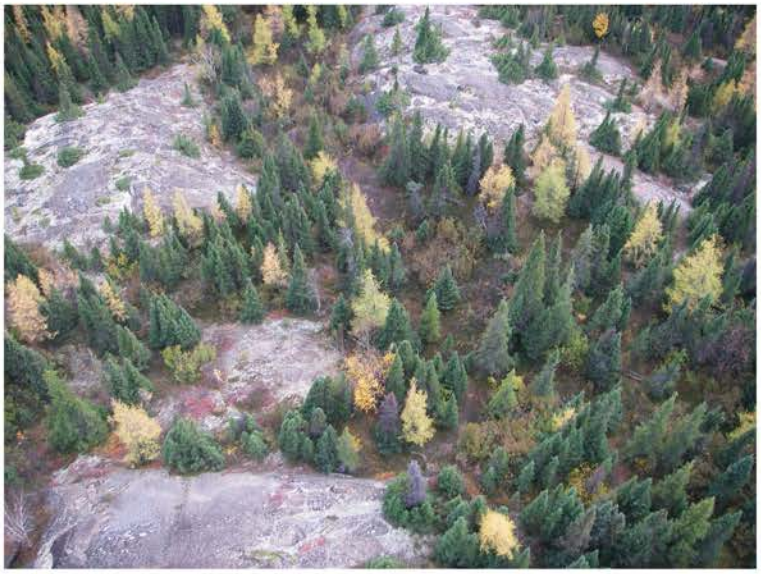

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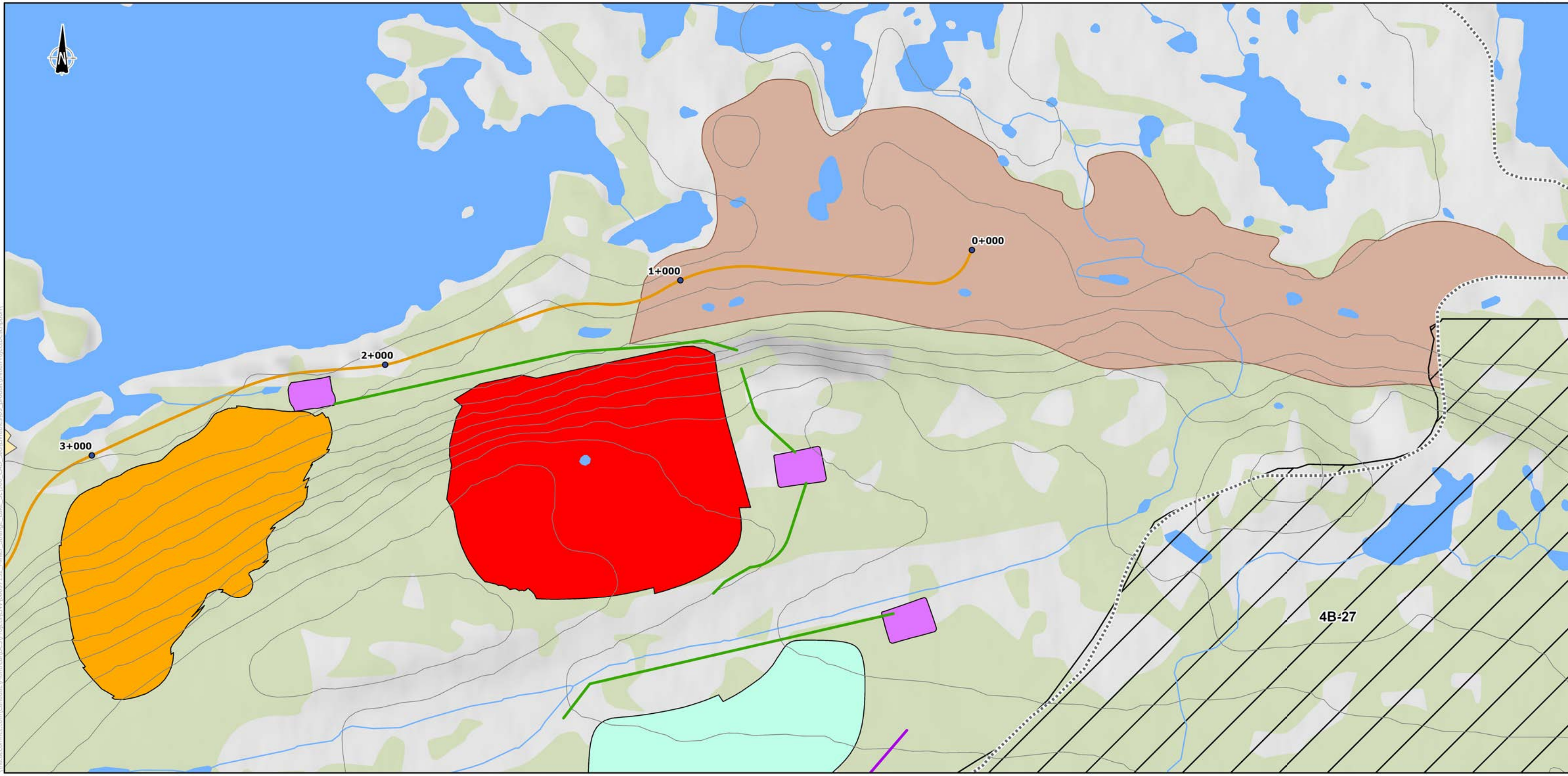
Appendix E
Project components (37 sheets at 1:12 500)

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

Annexe E

Feuillet - 1
Composantes du projet

Appendix E

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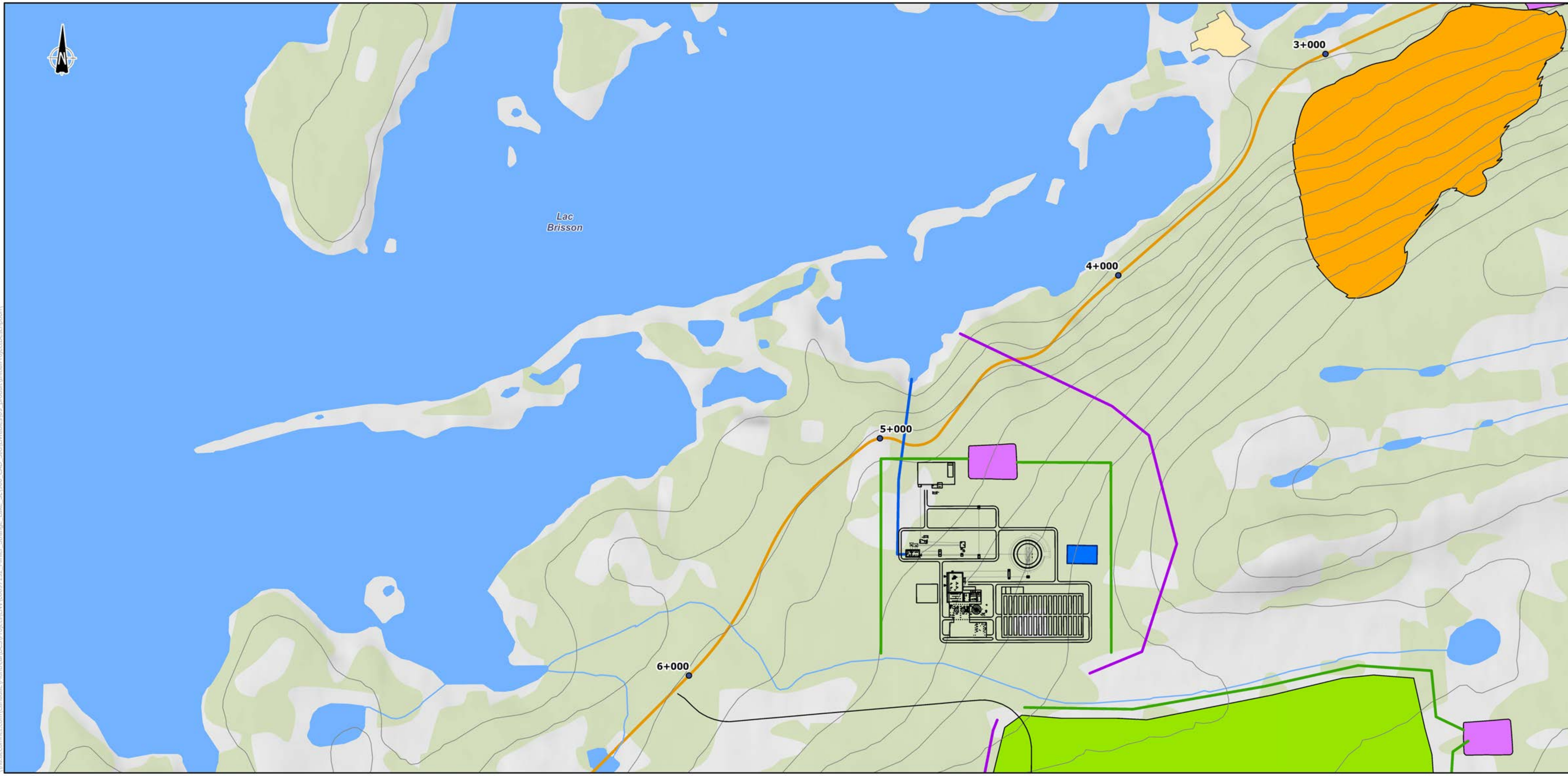
Project components

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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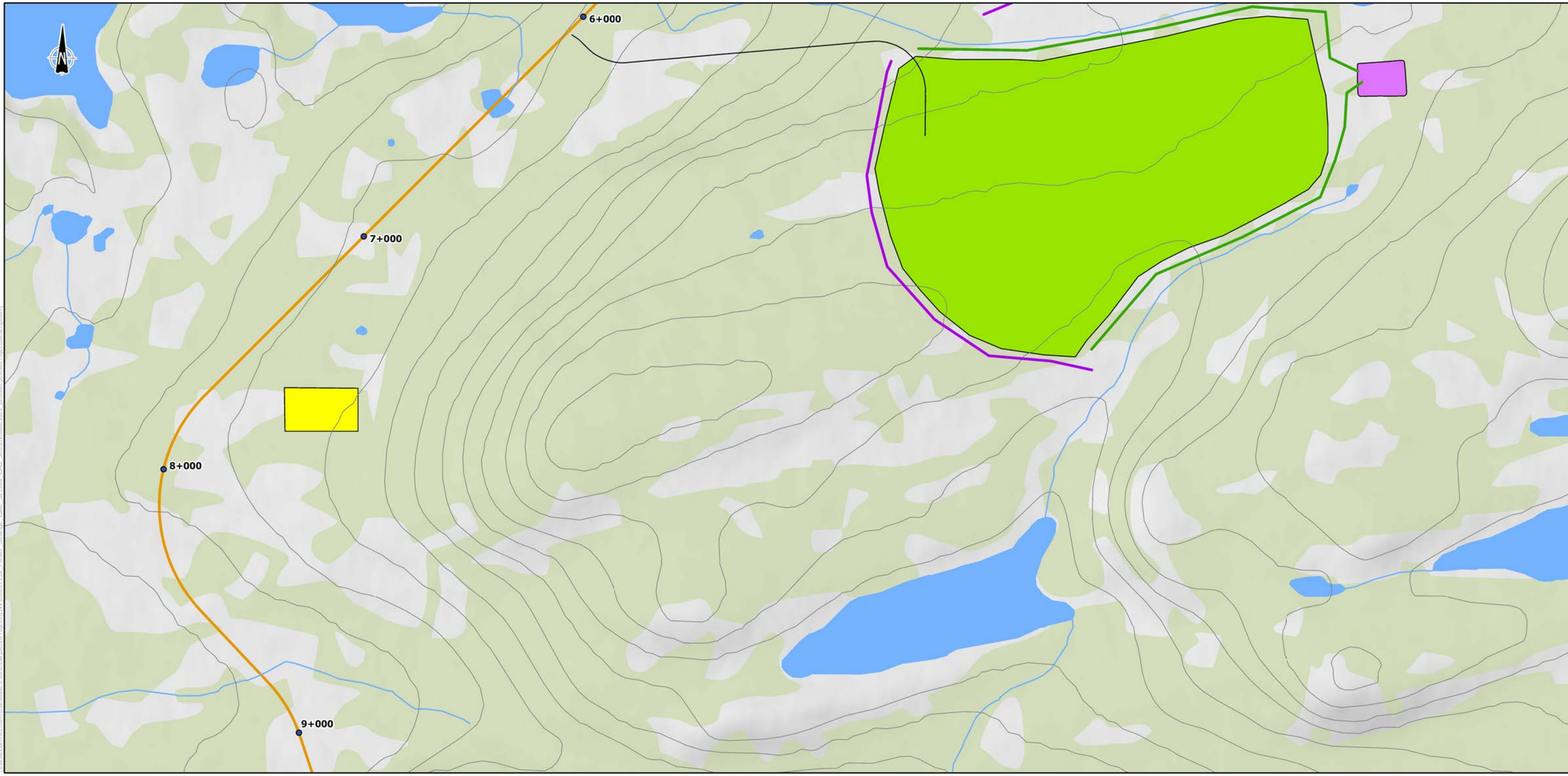
Project components

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
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- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
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- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

Appendix E

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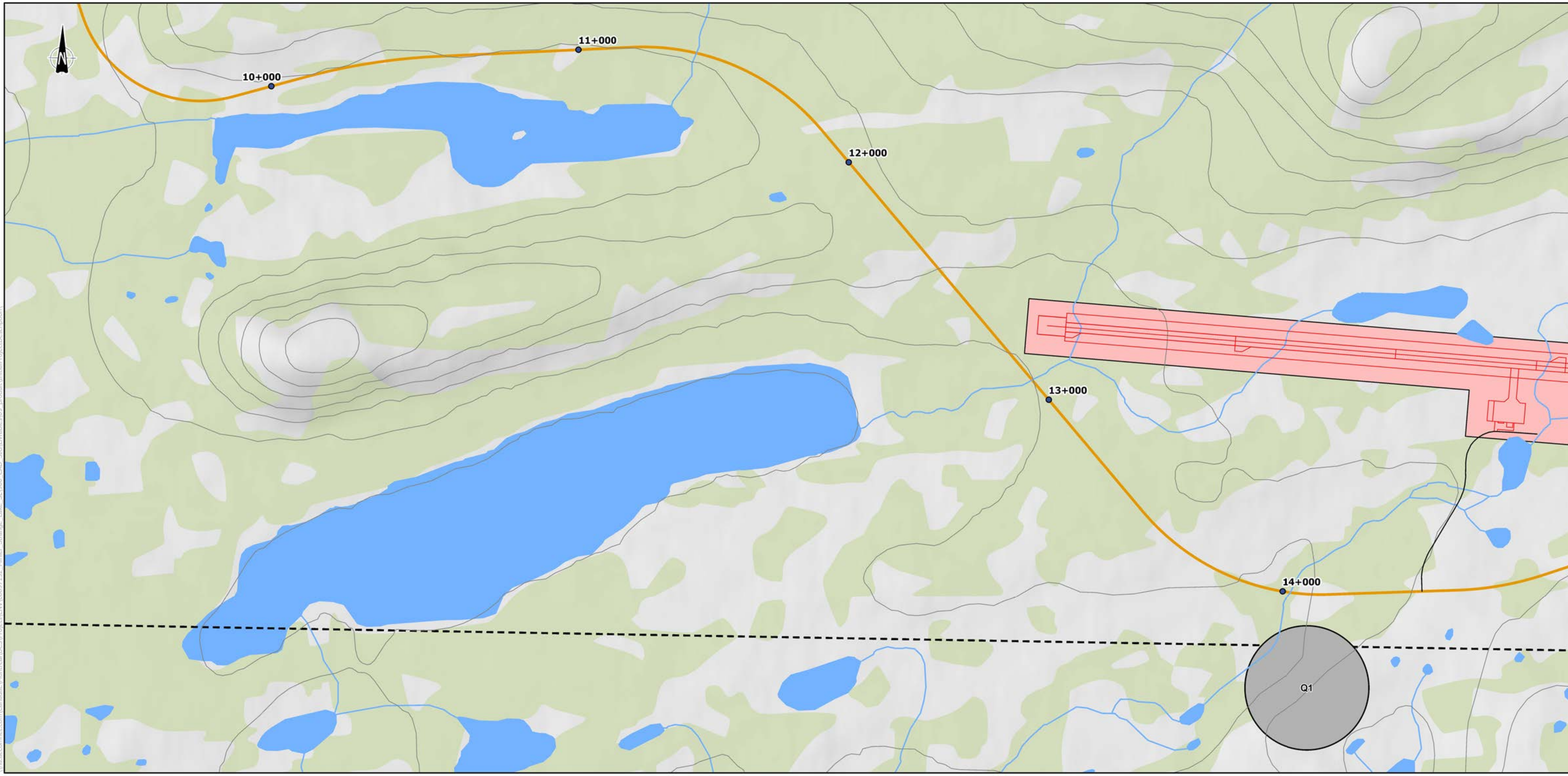
Project components

AECOM

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and hendling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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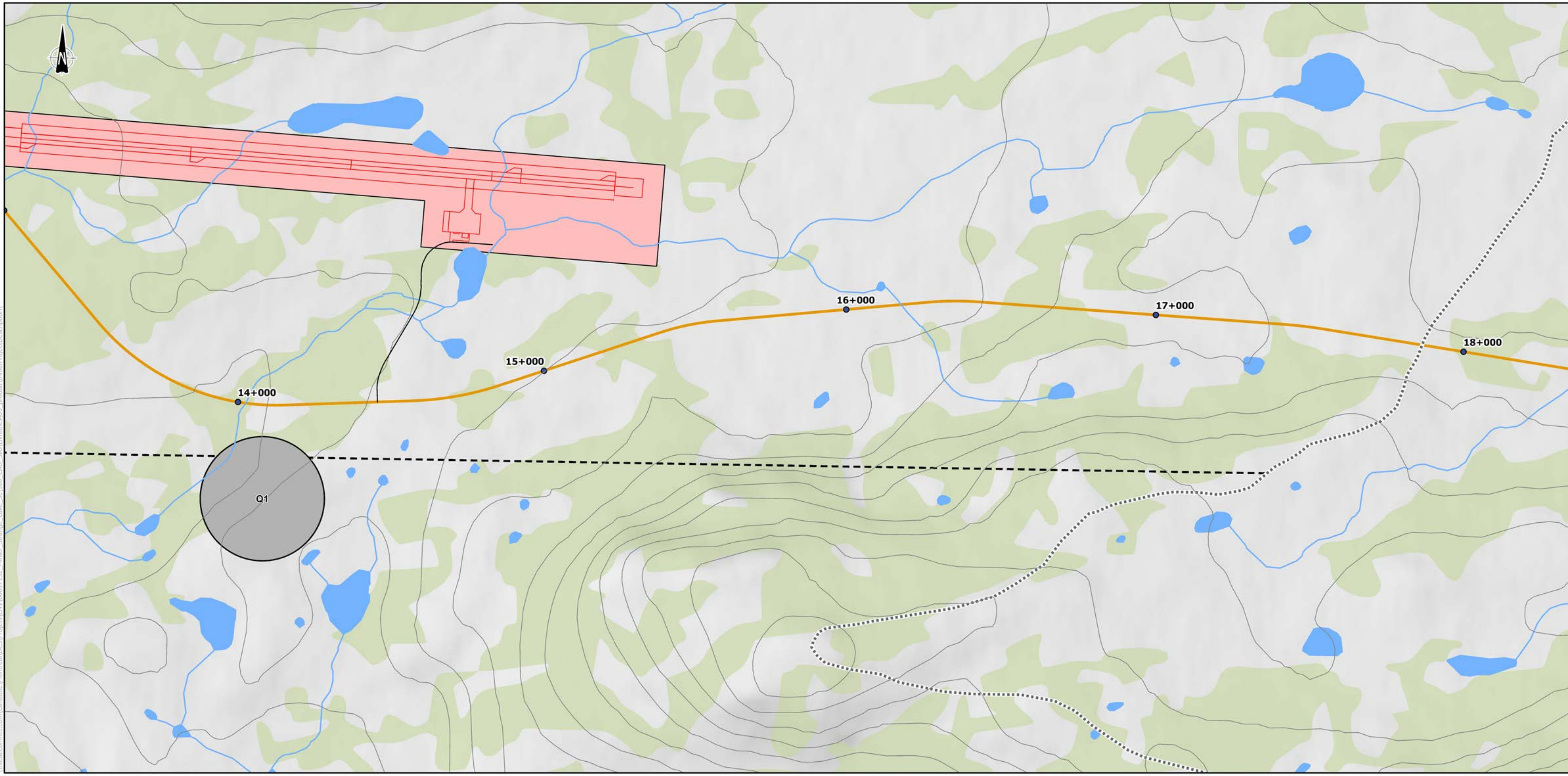
Composantes du projet

Appendix E

Sheet - 4
Project components

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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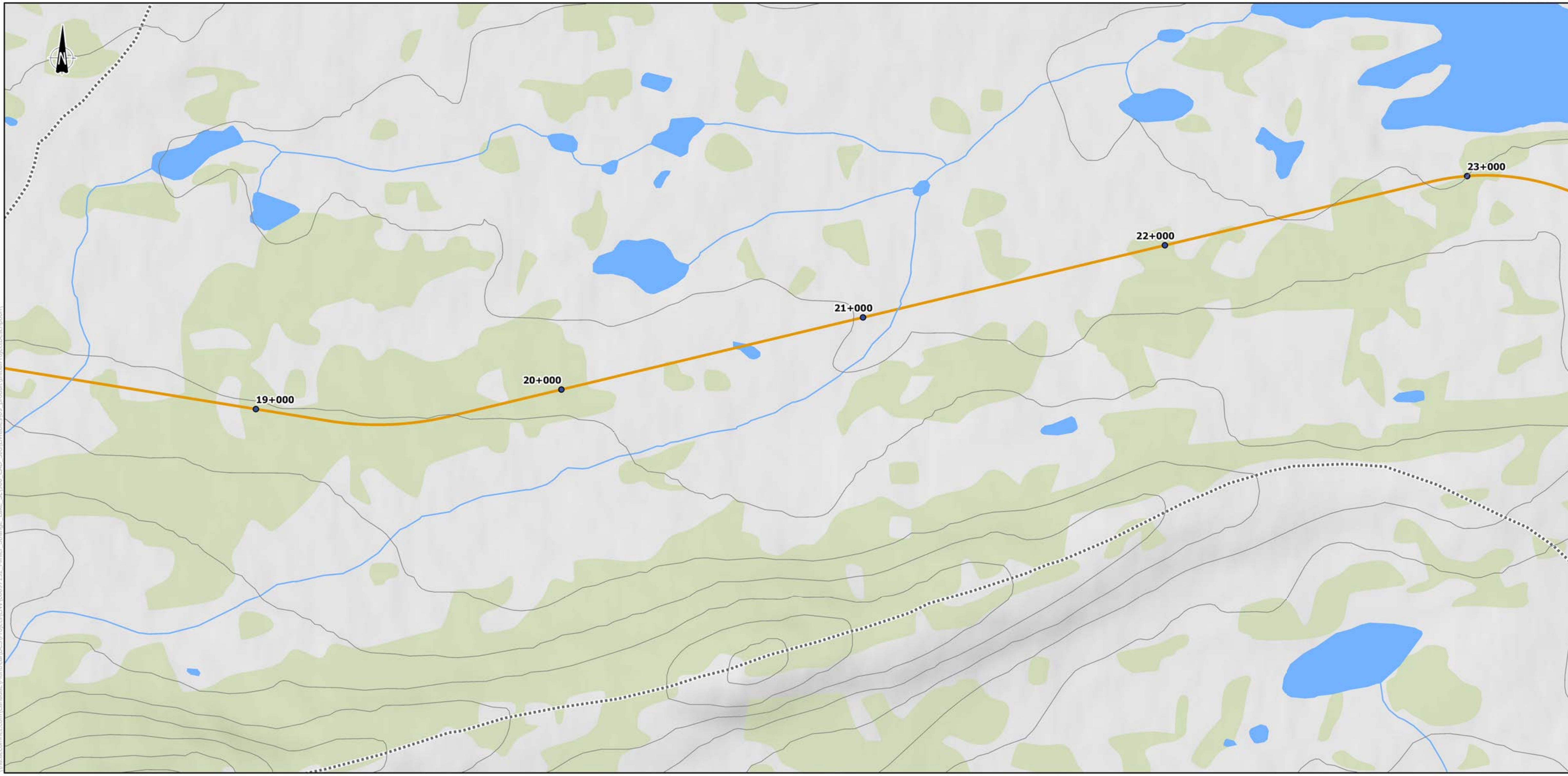
Project components

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
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- Piste potentielle / Potential airstrip
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- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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Composantes du projet

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Project components

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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Project components

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
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- Camp d'exploration existant / Existing Exploration Camp
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- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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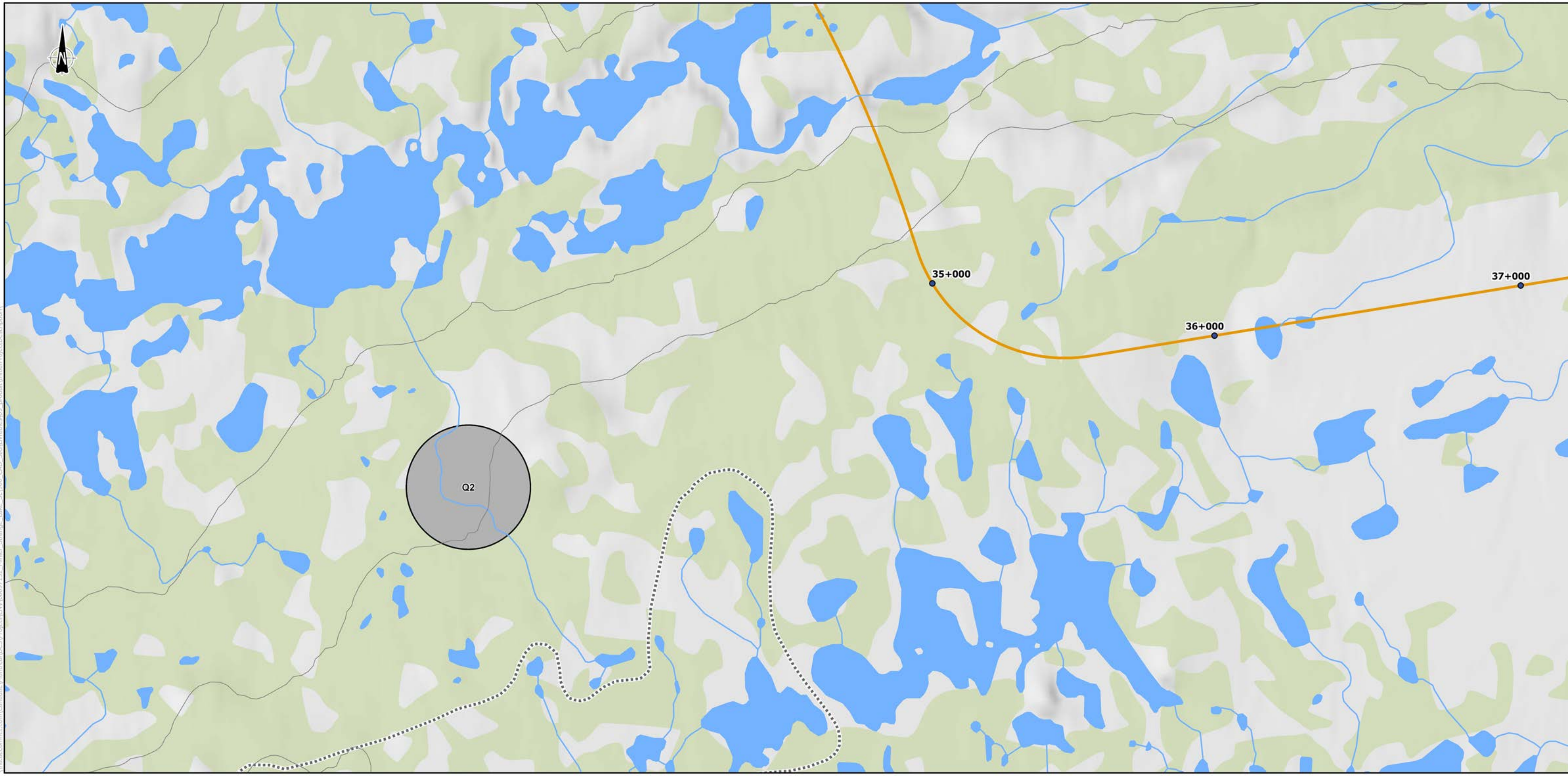
Project components

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
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- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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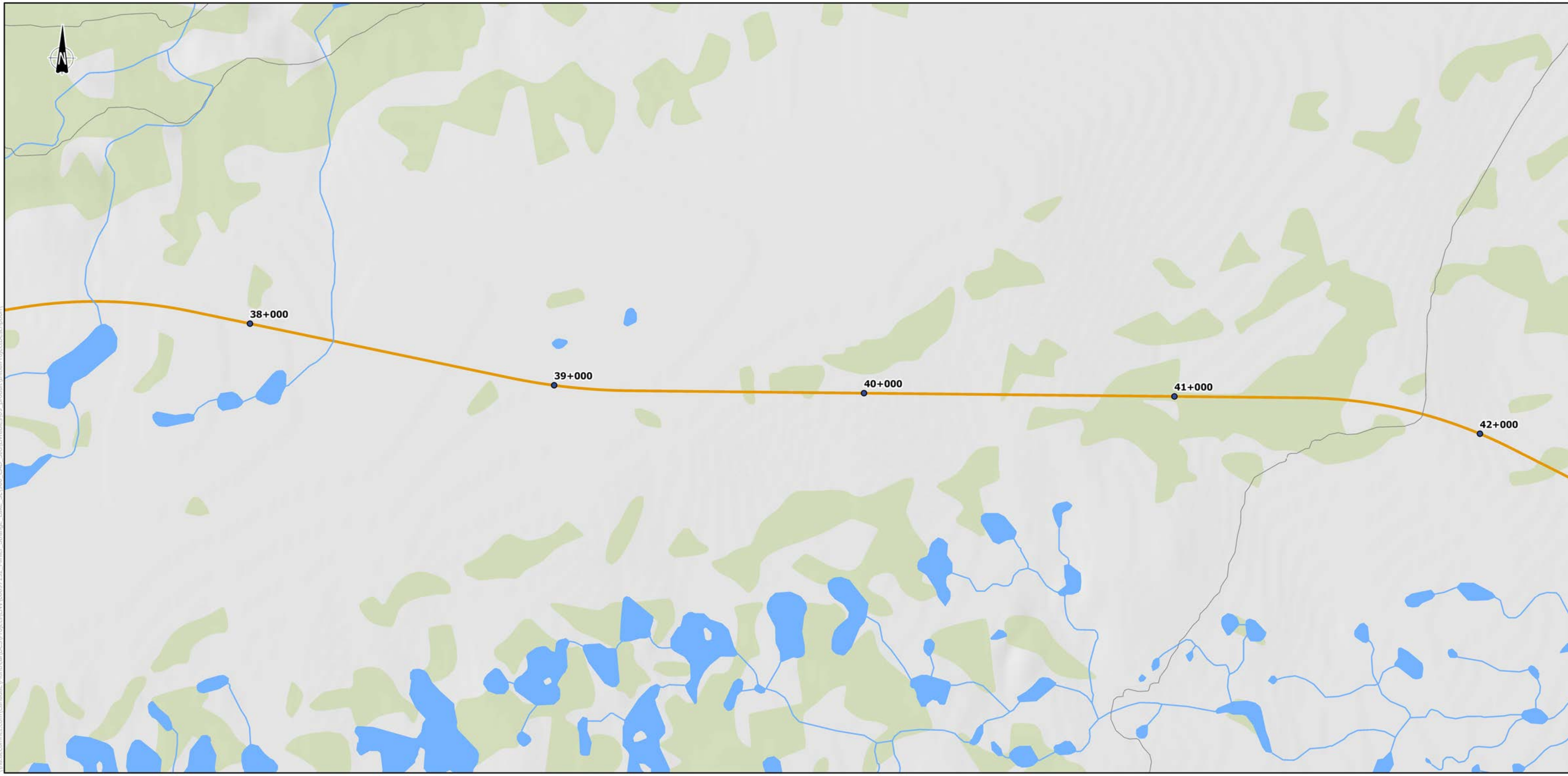
Project components

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
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- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
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- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

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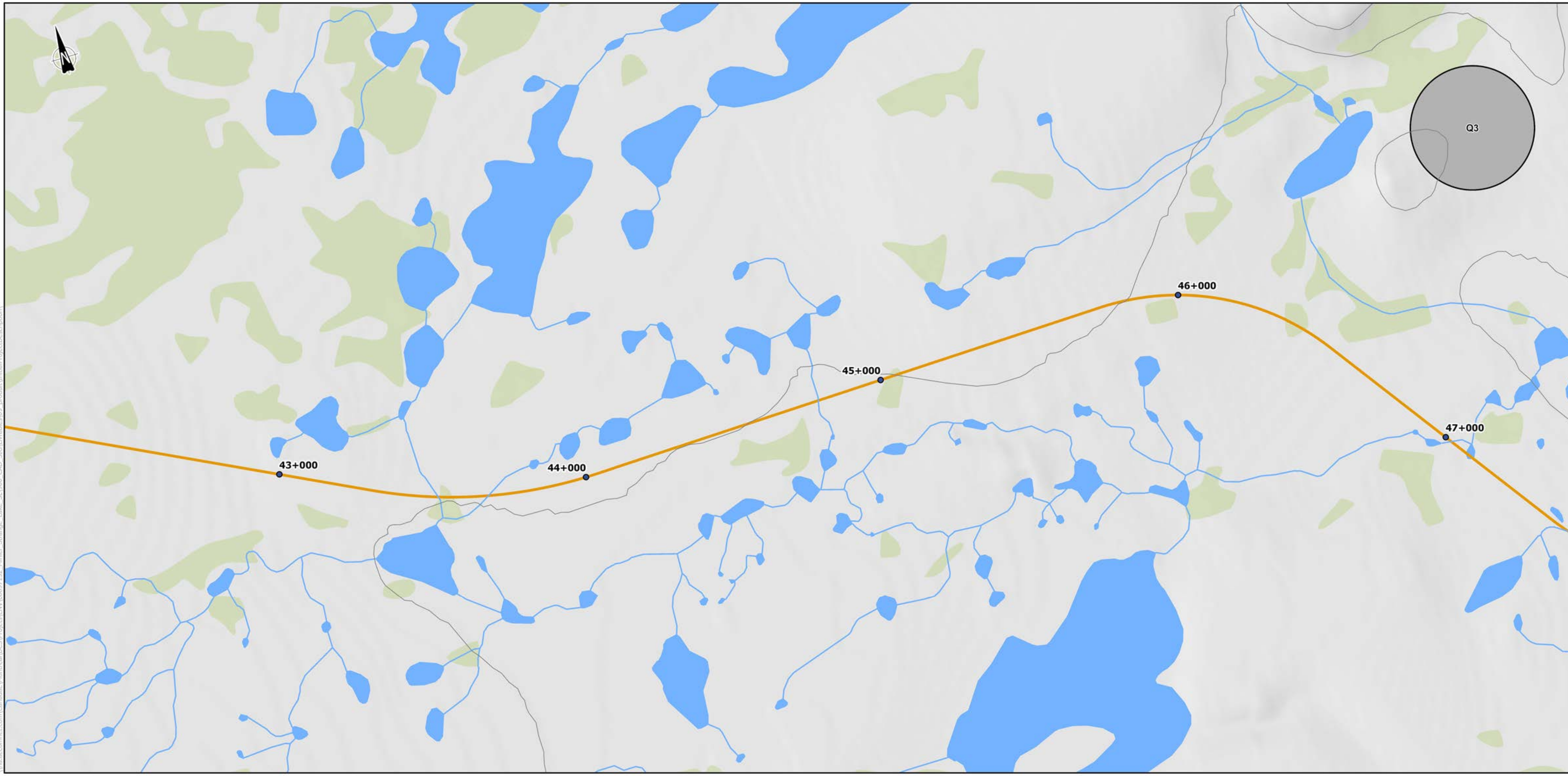
Project components

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
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- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Composantes du projet

Appendix E

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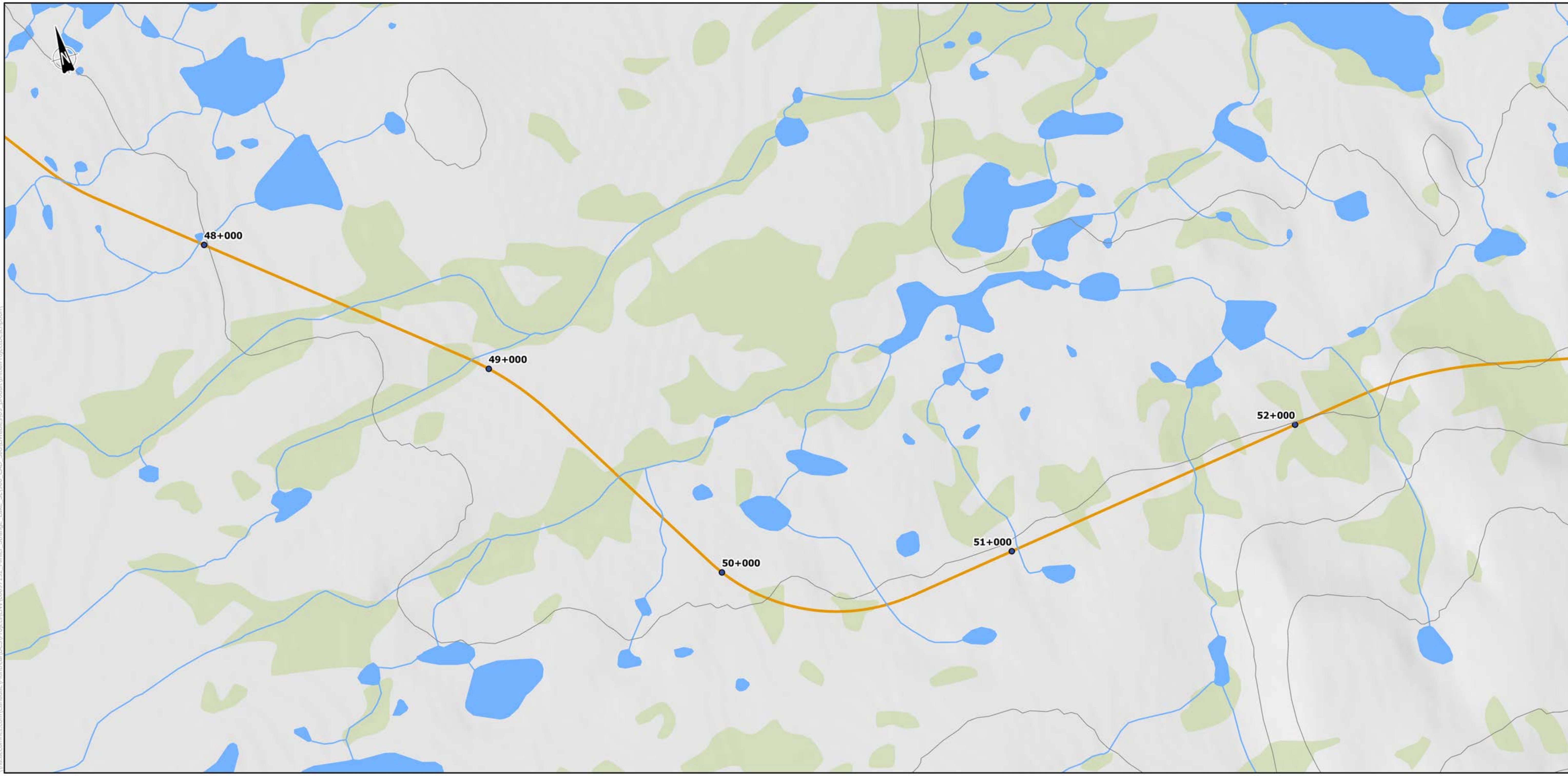
Project components

AECOM

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
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- Piste potentielle / Potential airstrip
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- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

Annexe E

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Composantes du projet

Appendix E

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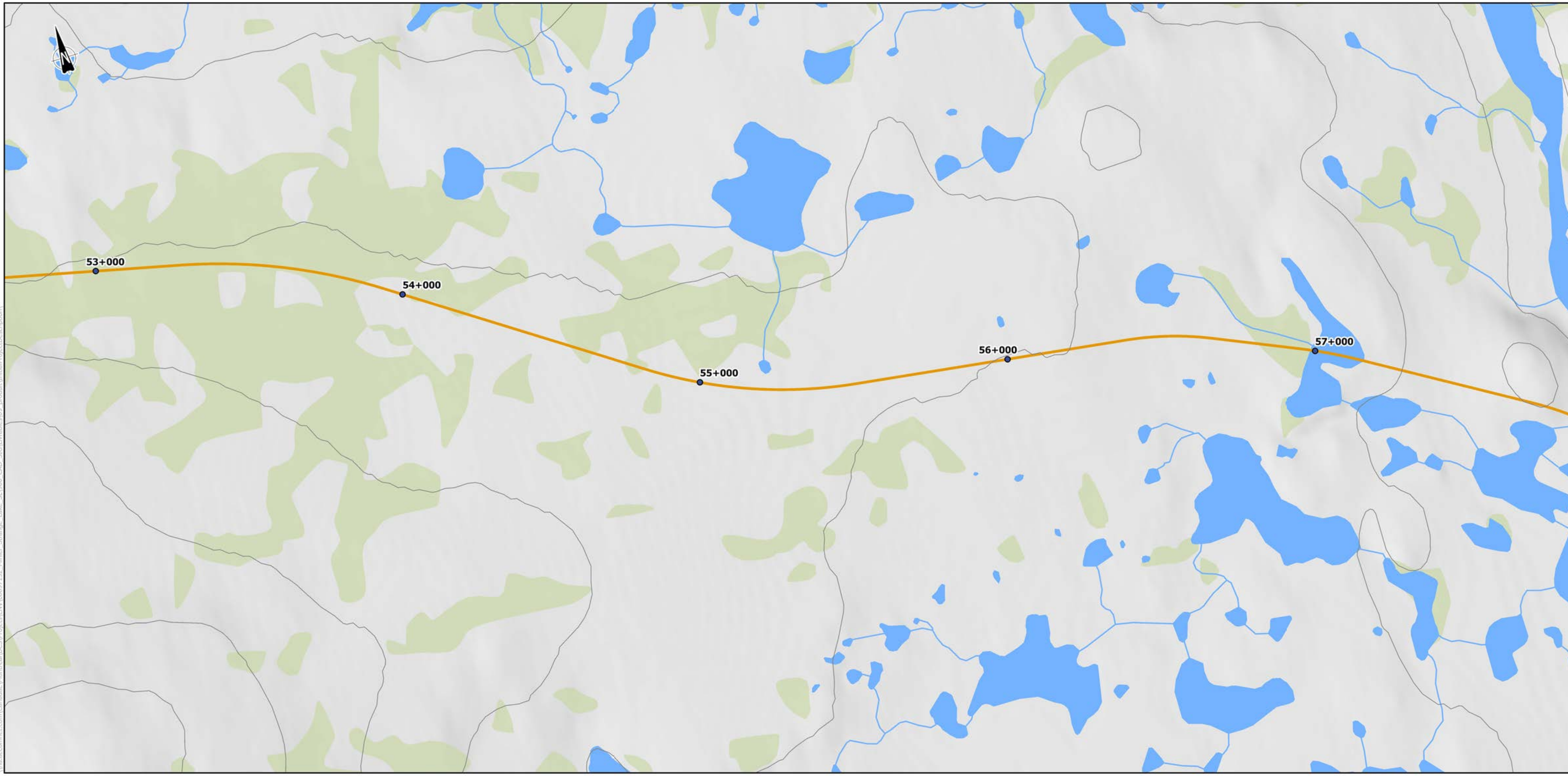
Project components

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Project components

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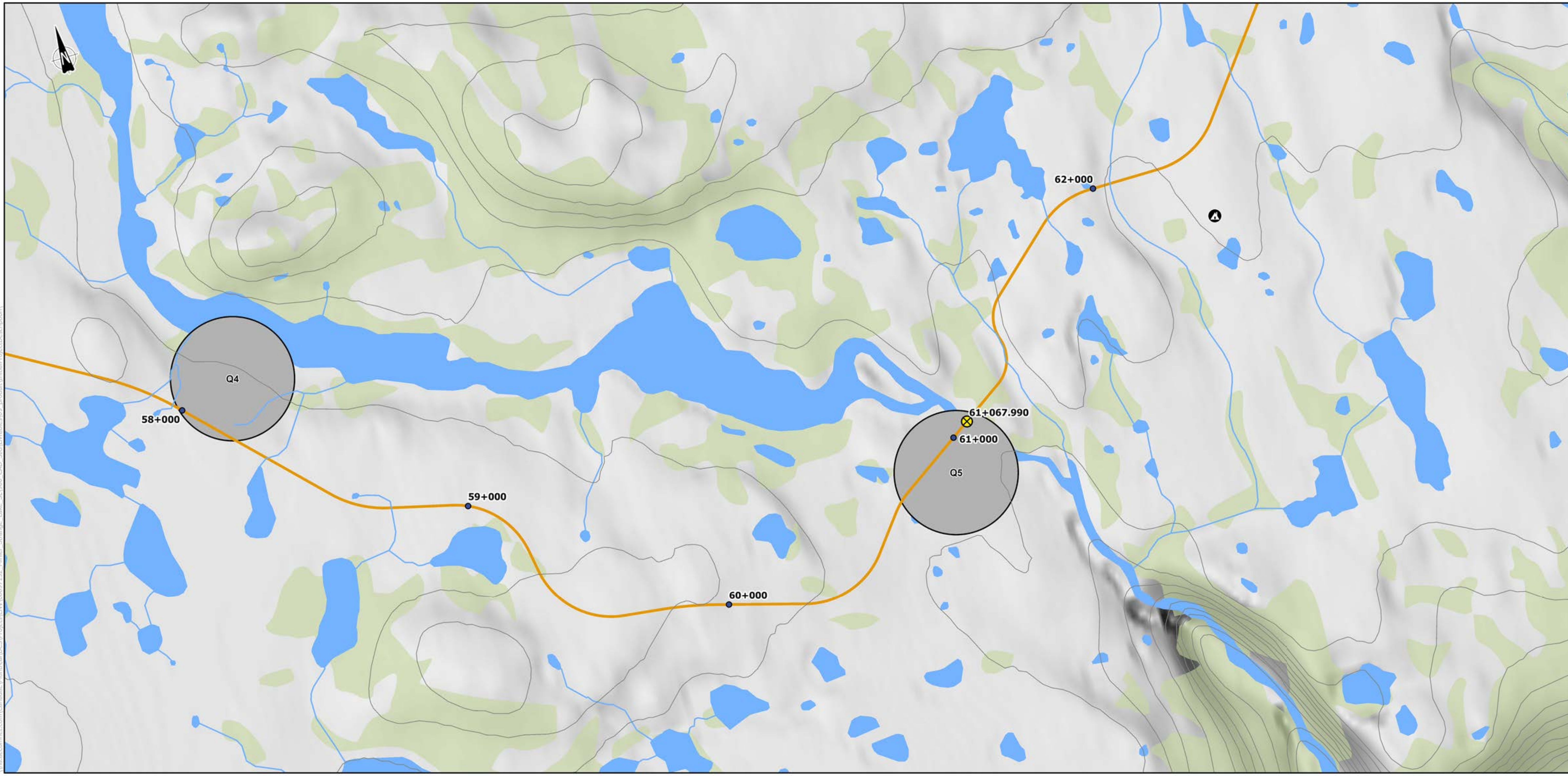
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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Project components

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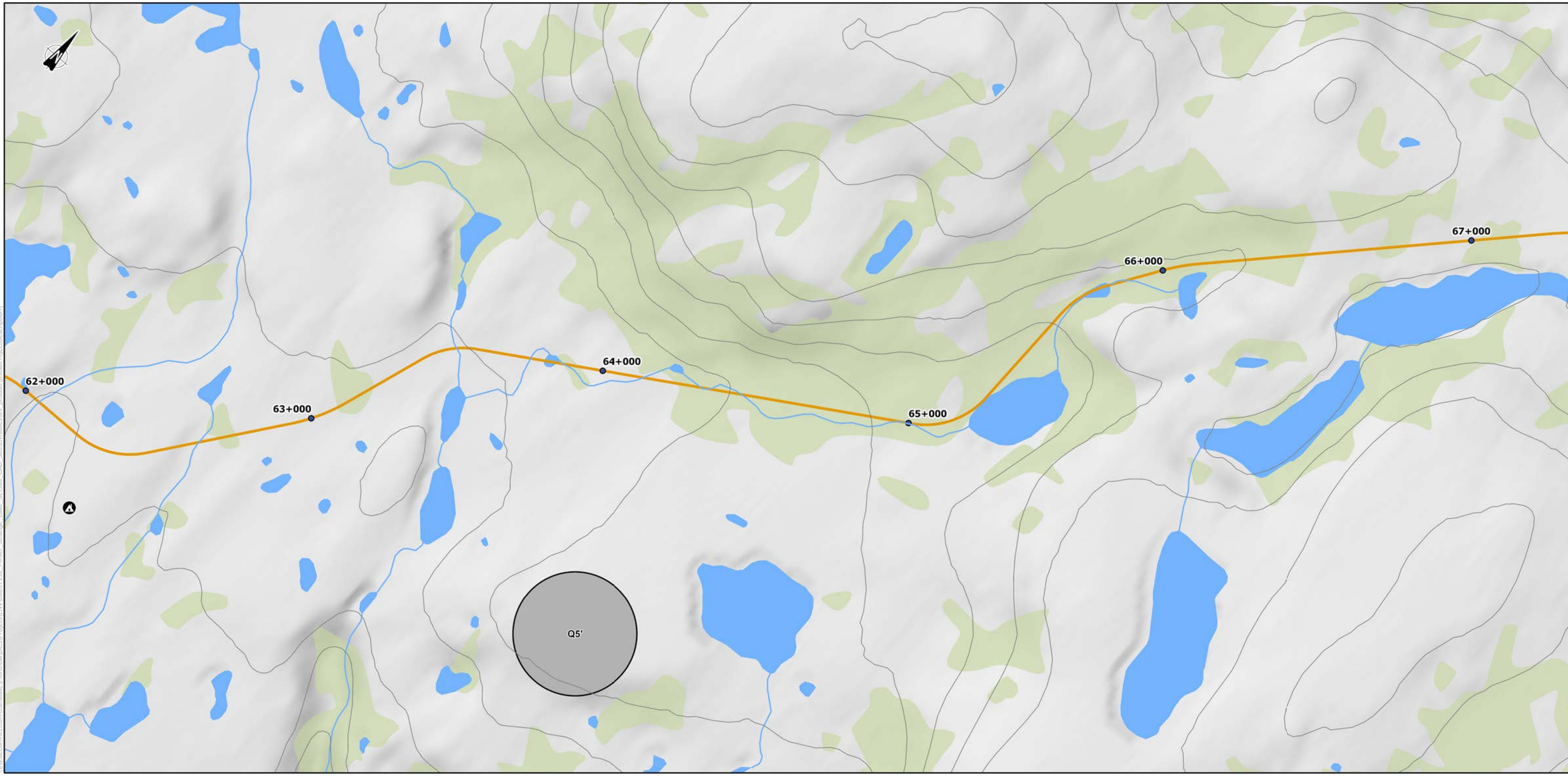
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



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- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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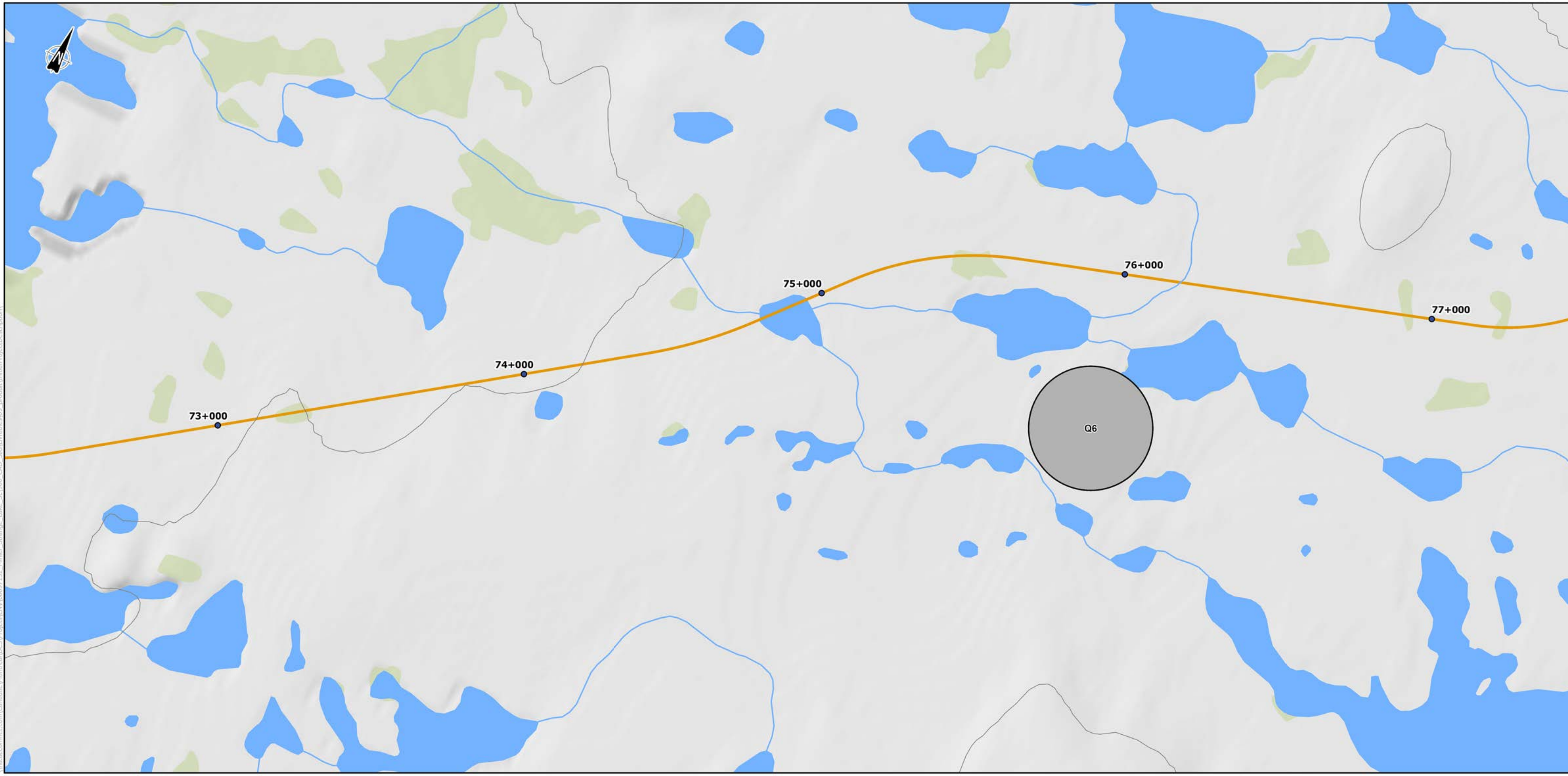
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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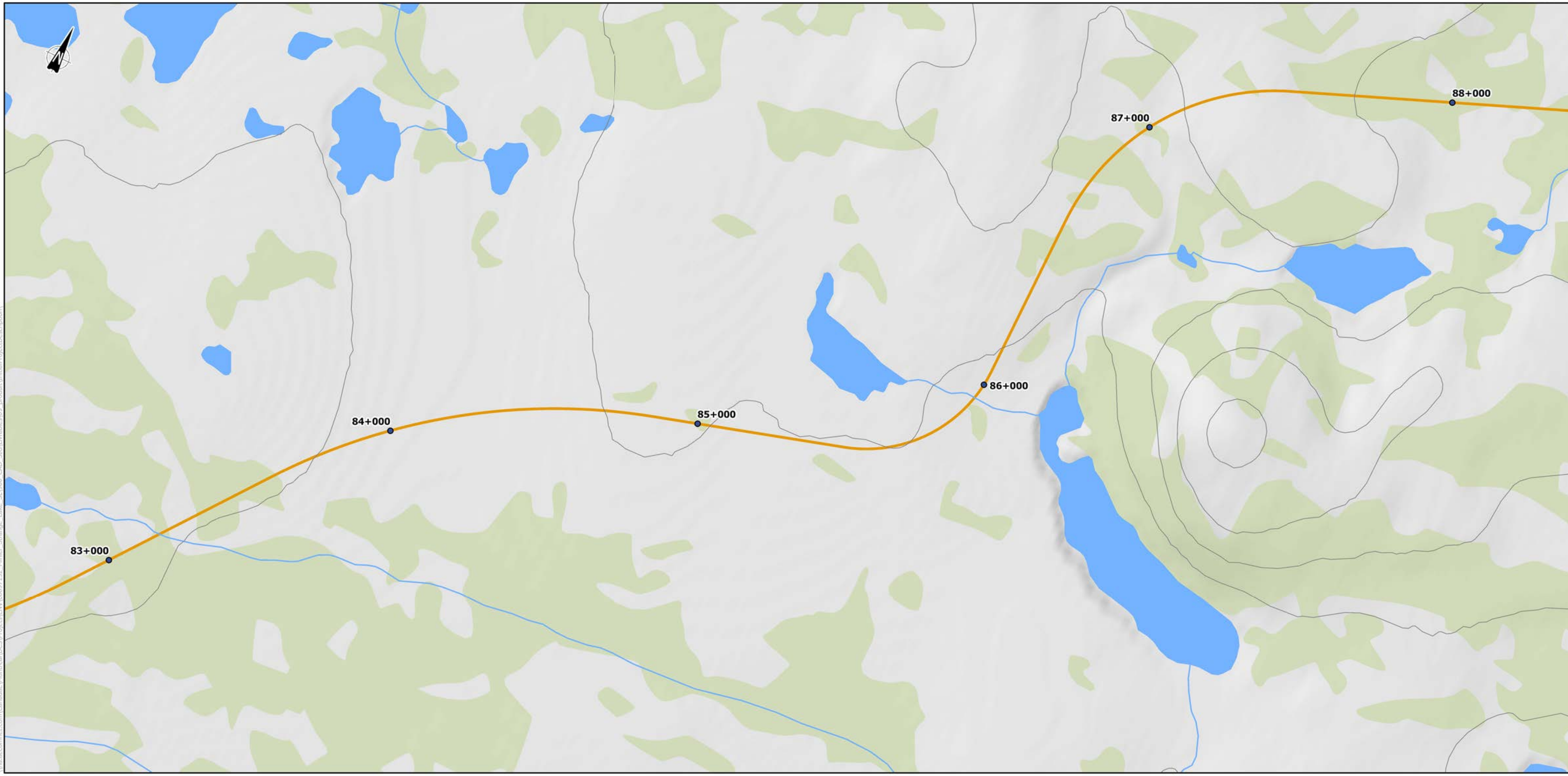
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

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Autre / Other

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- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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Project components

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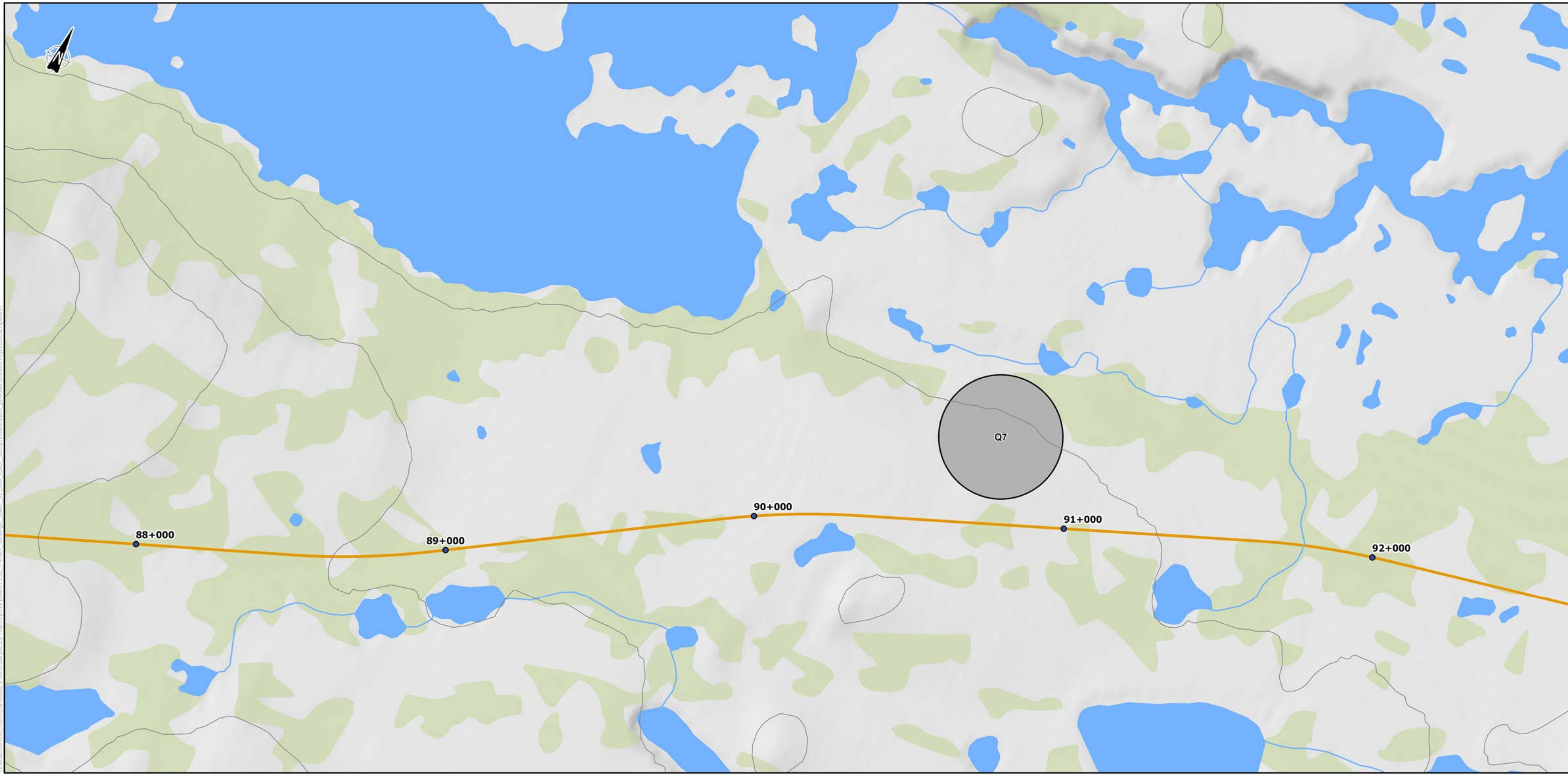
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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MÉTAUX **TORNGAT** METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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Project components

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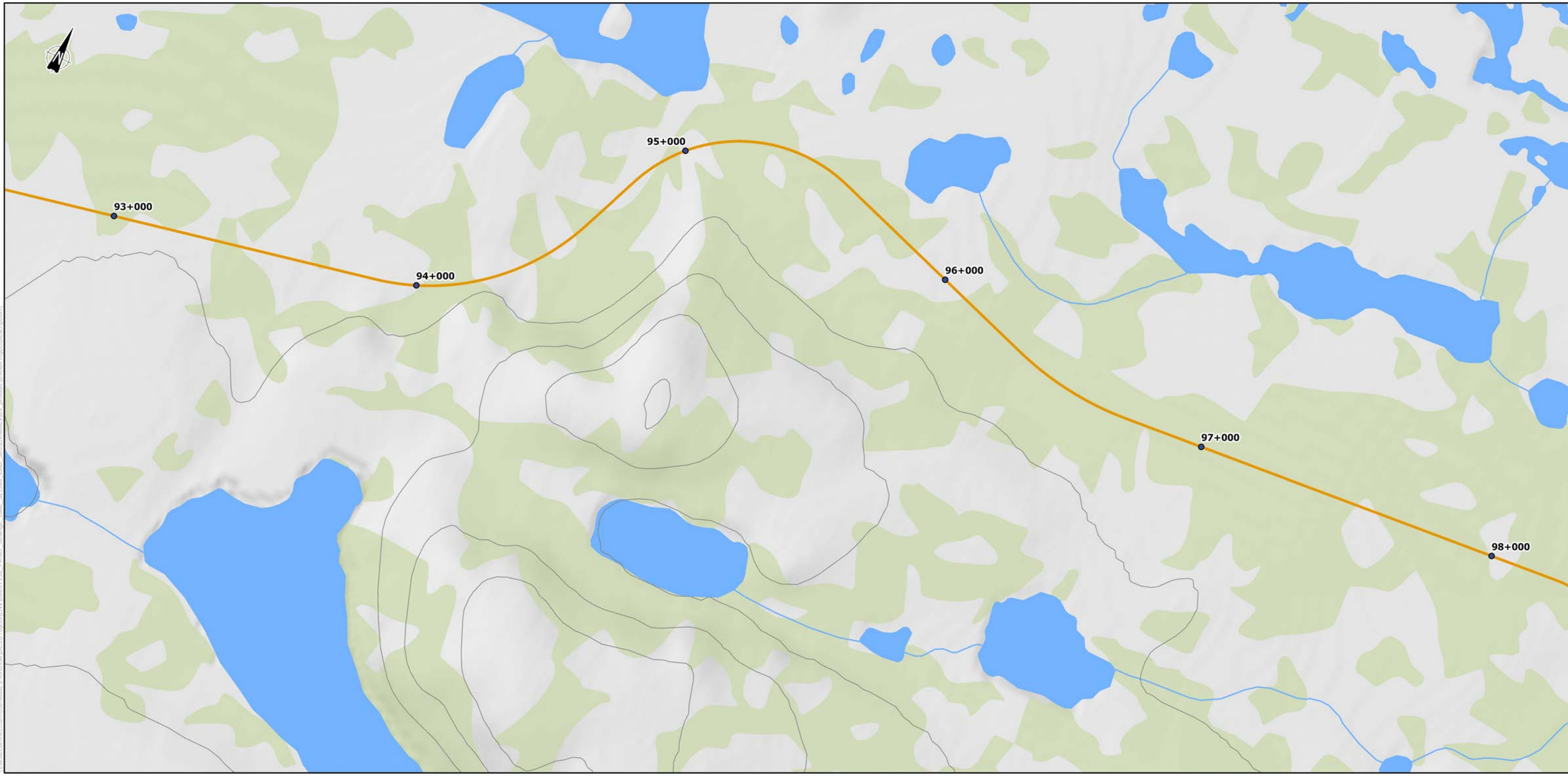
MÉTAUX **TORNGAT** METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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Composantes du projet

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Project components

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MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT

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Autre / Other

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1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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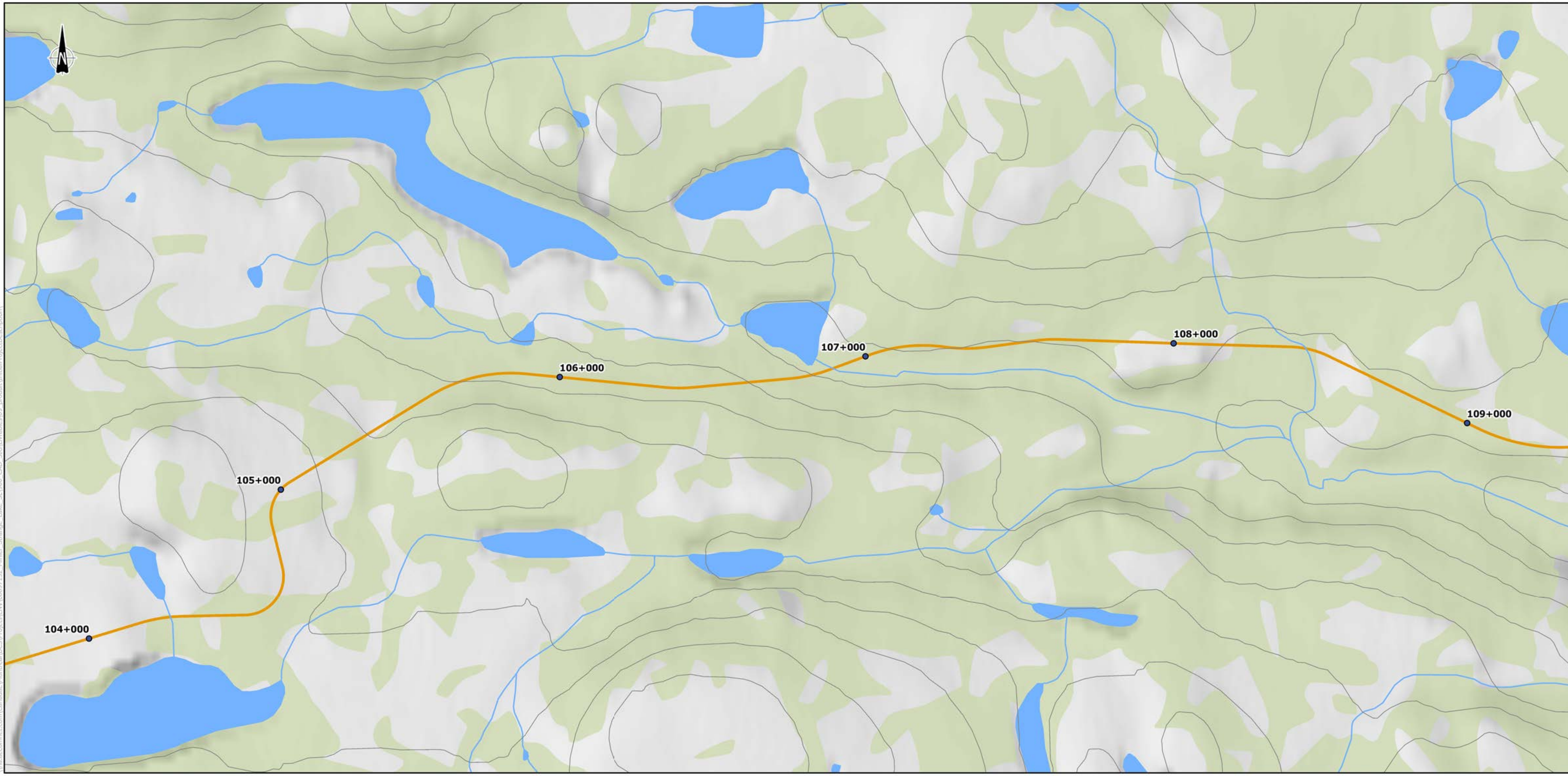
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



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- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT

Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
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Autre / Other

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- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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Project components

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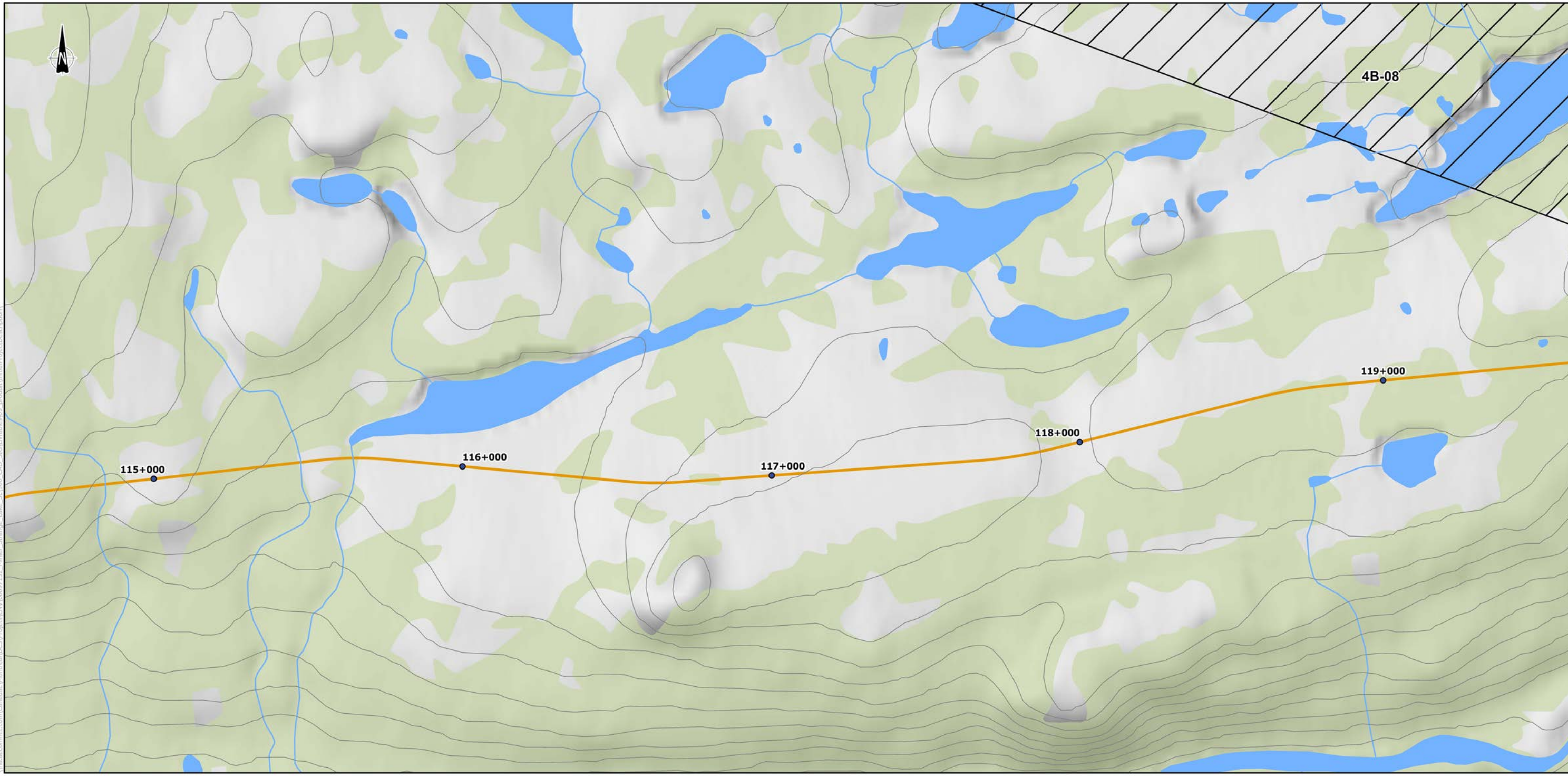
METAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
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Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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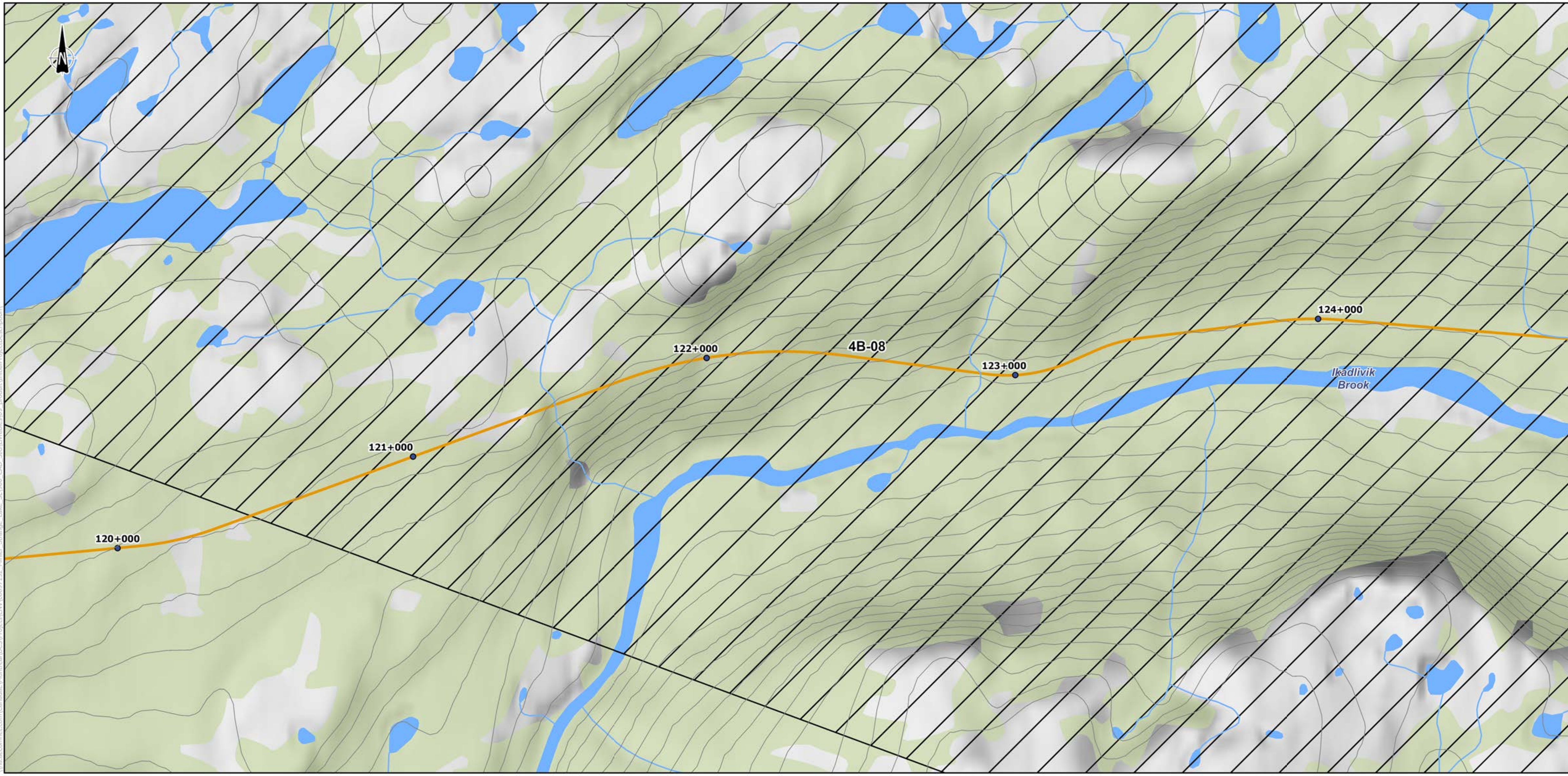
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
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Autre / Other

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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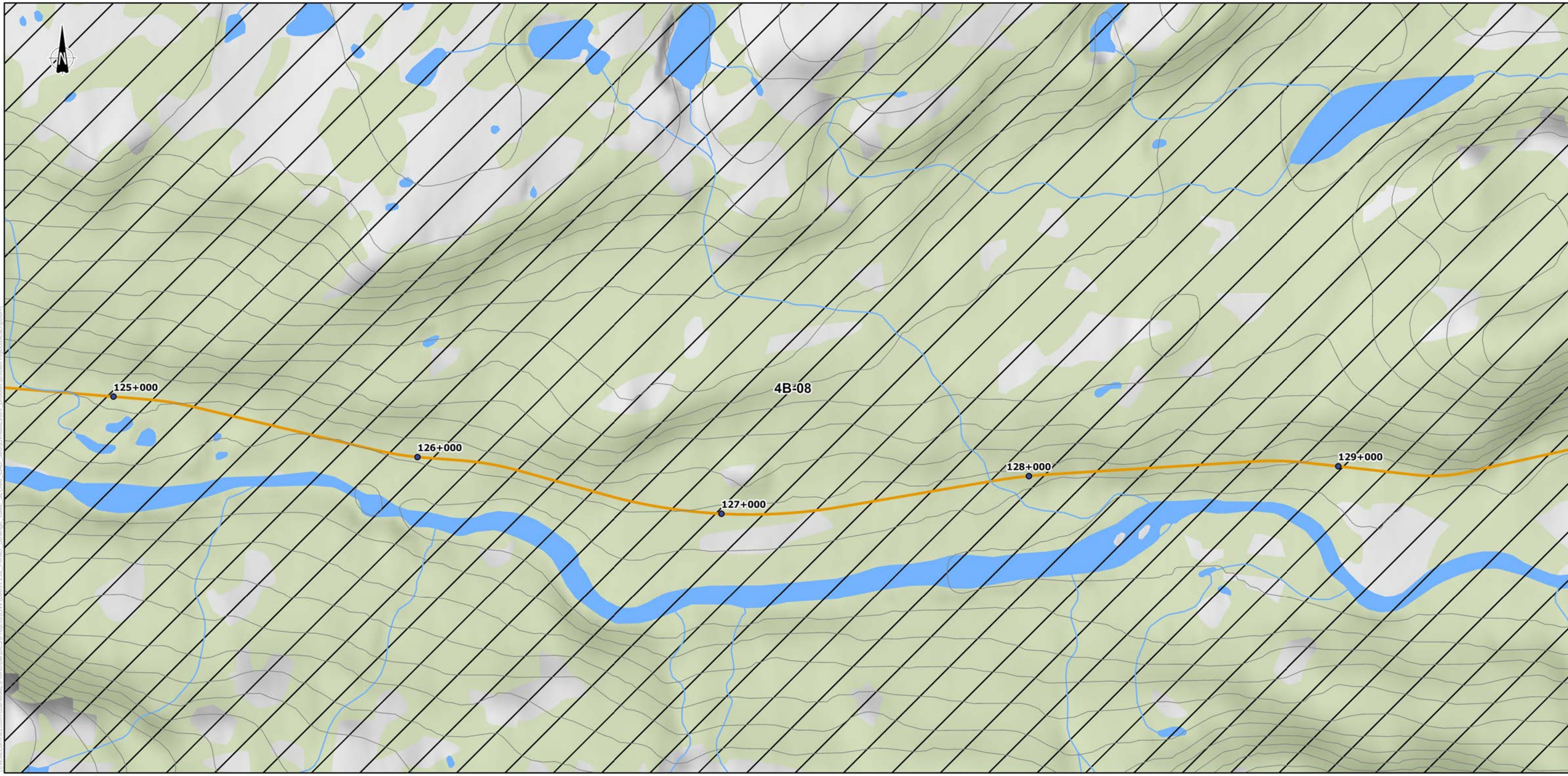
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

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Autre / Other

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- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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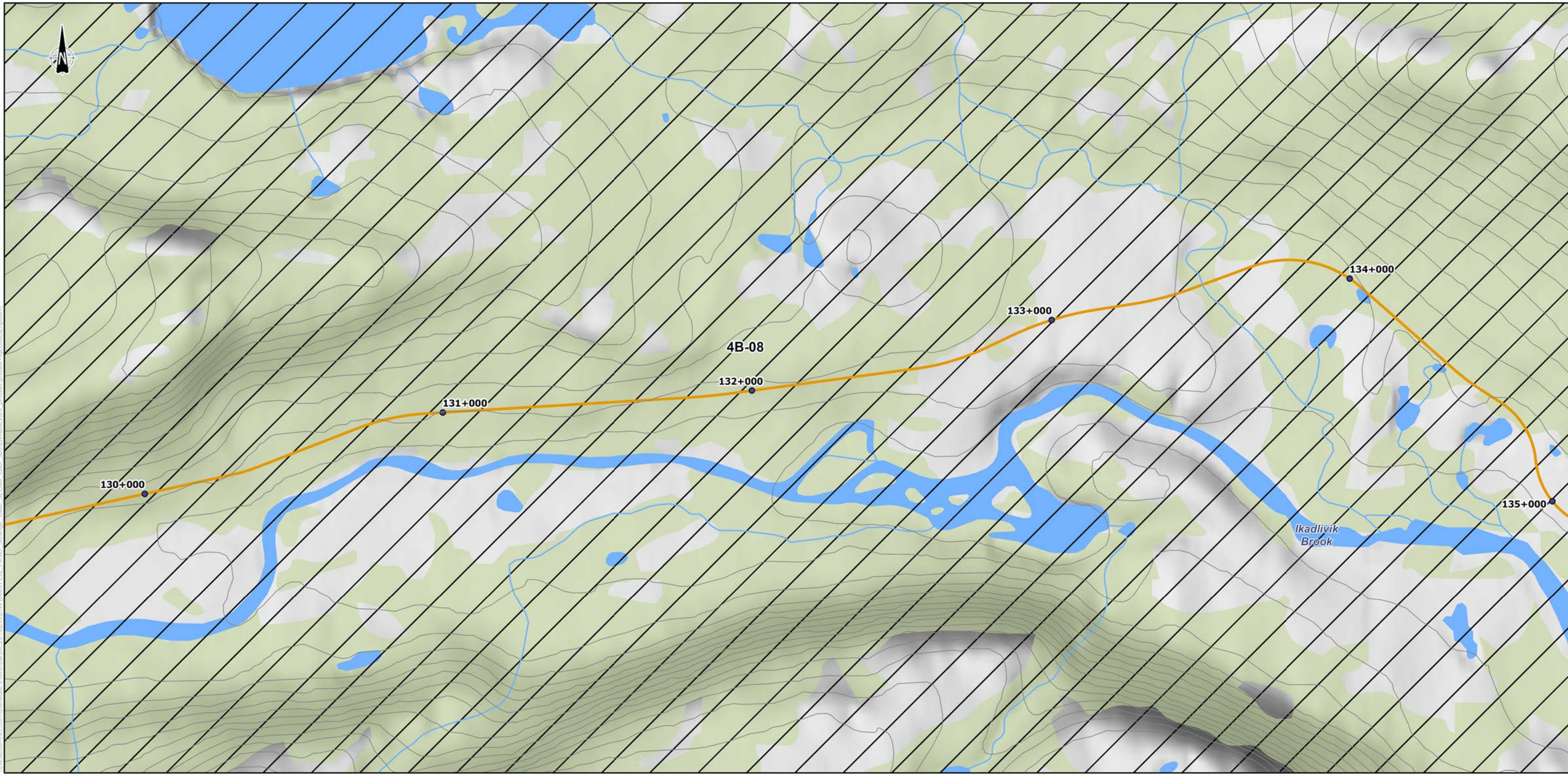
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
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Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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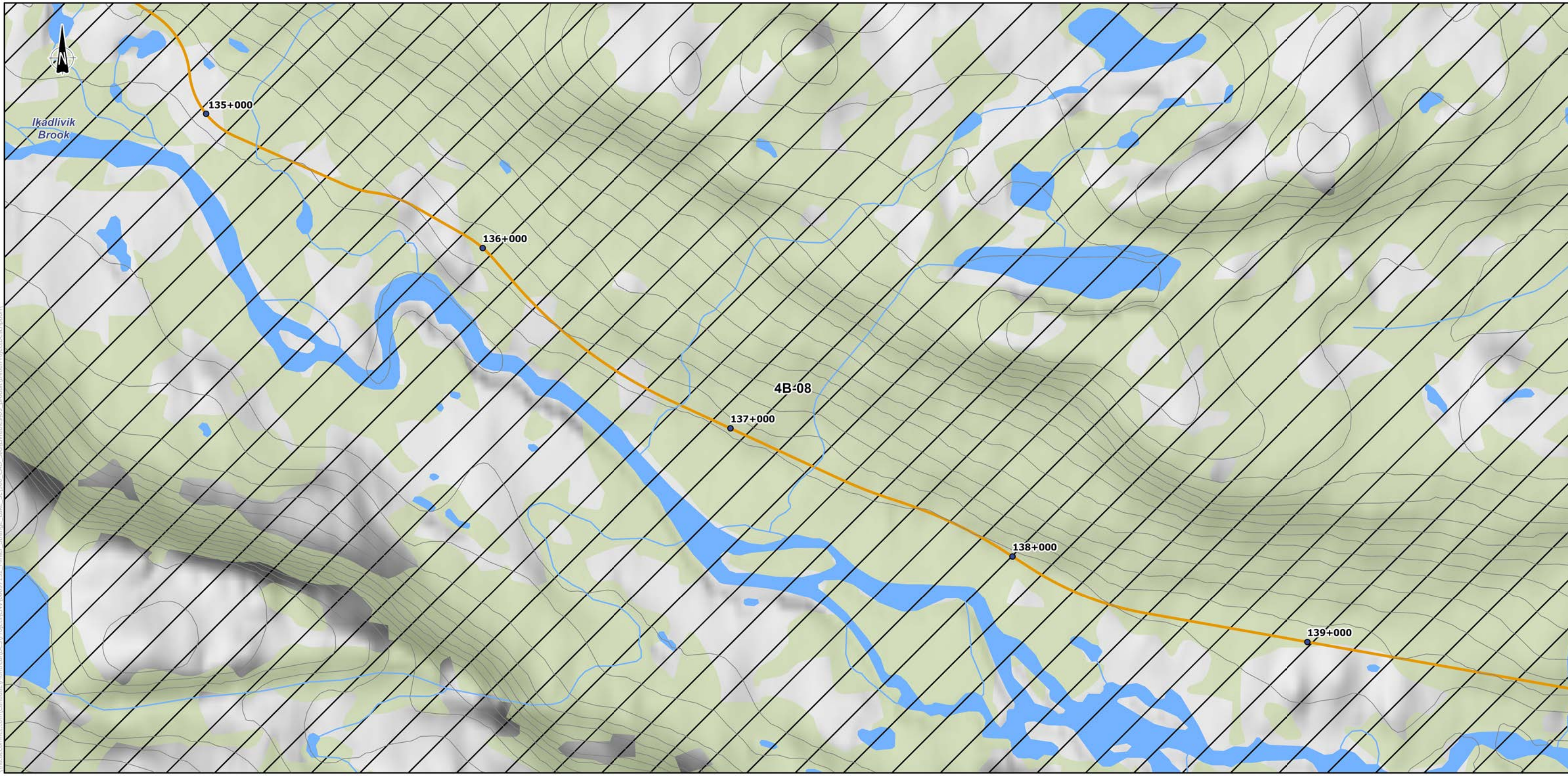

Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
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Route d'accès / Access road

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- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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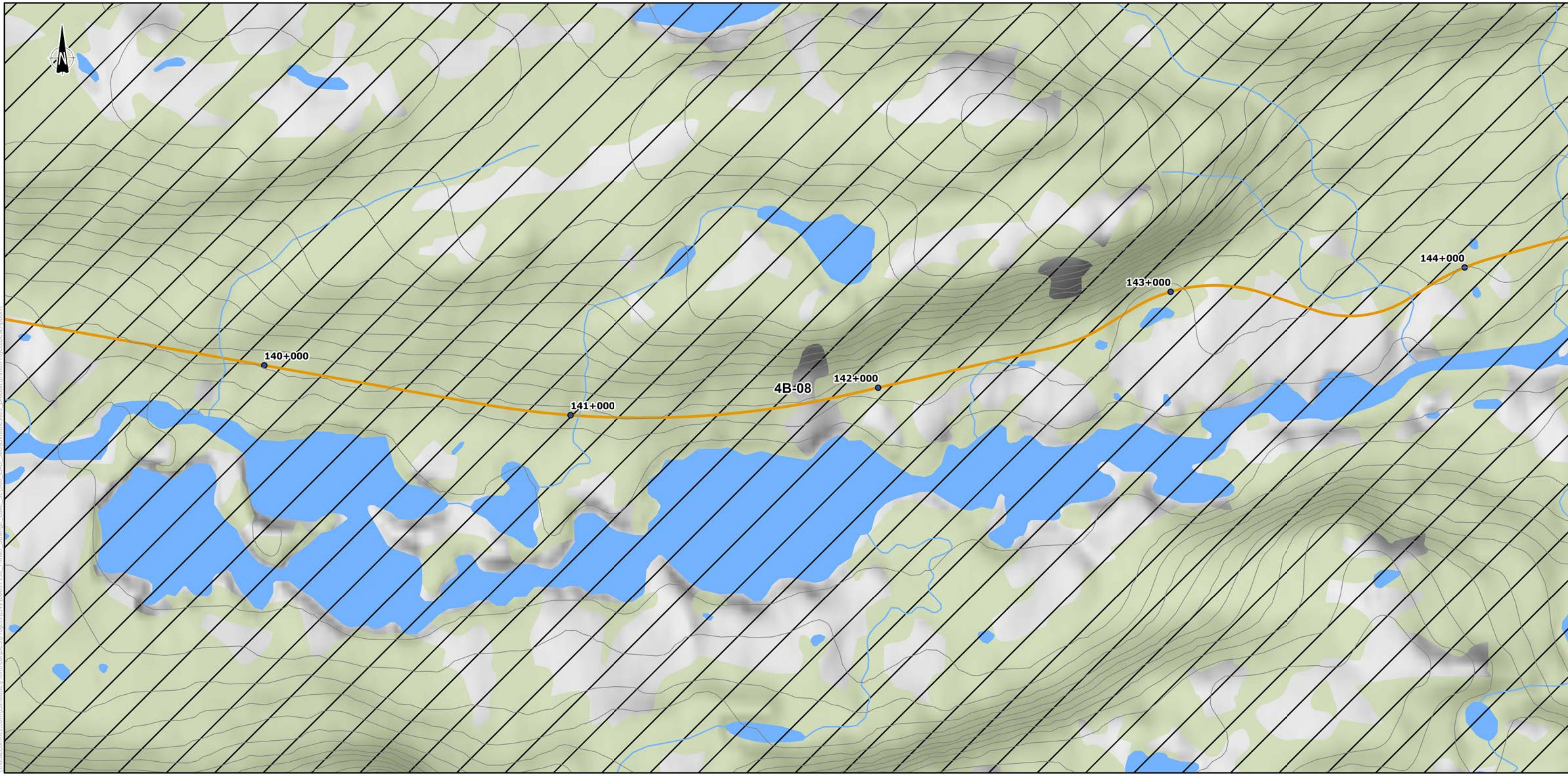
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
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Route d'accès / Access road

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Autre / Other

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1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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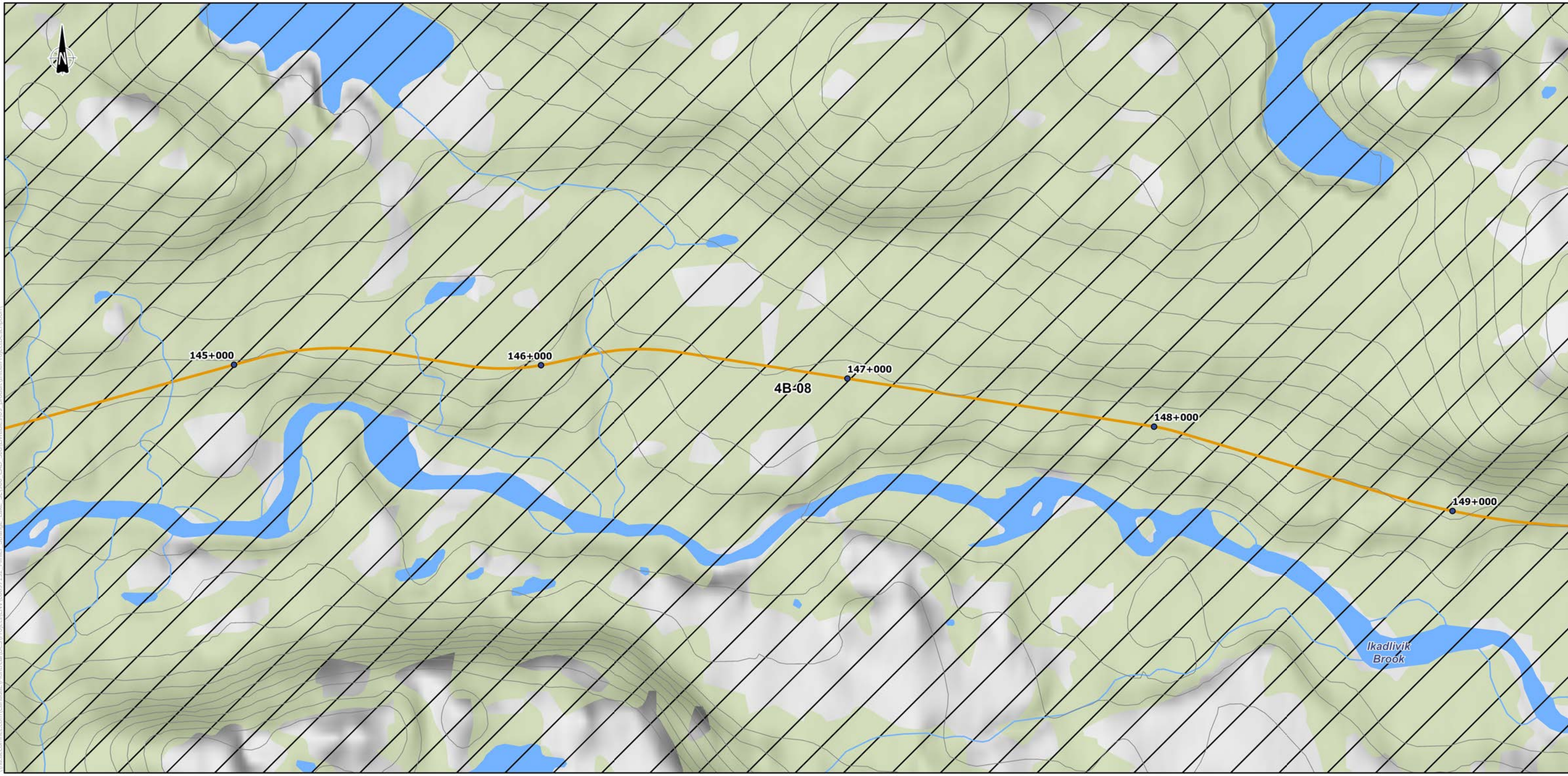
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE
STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
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1:12 500
0 100 200 m
NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

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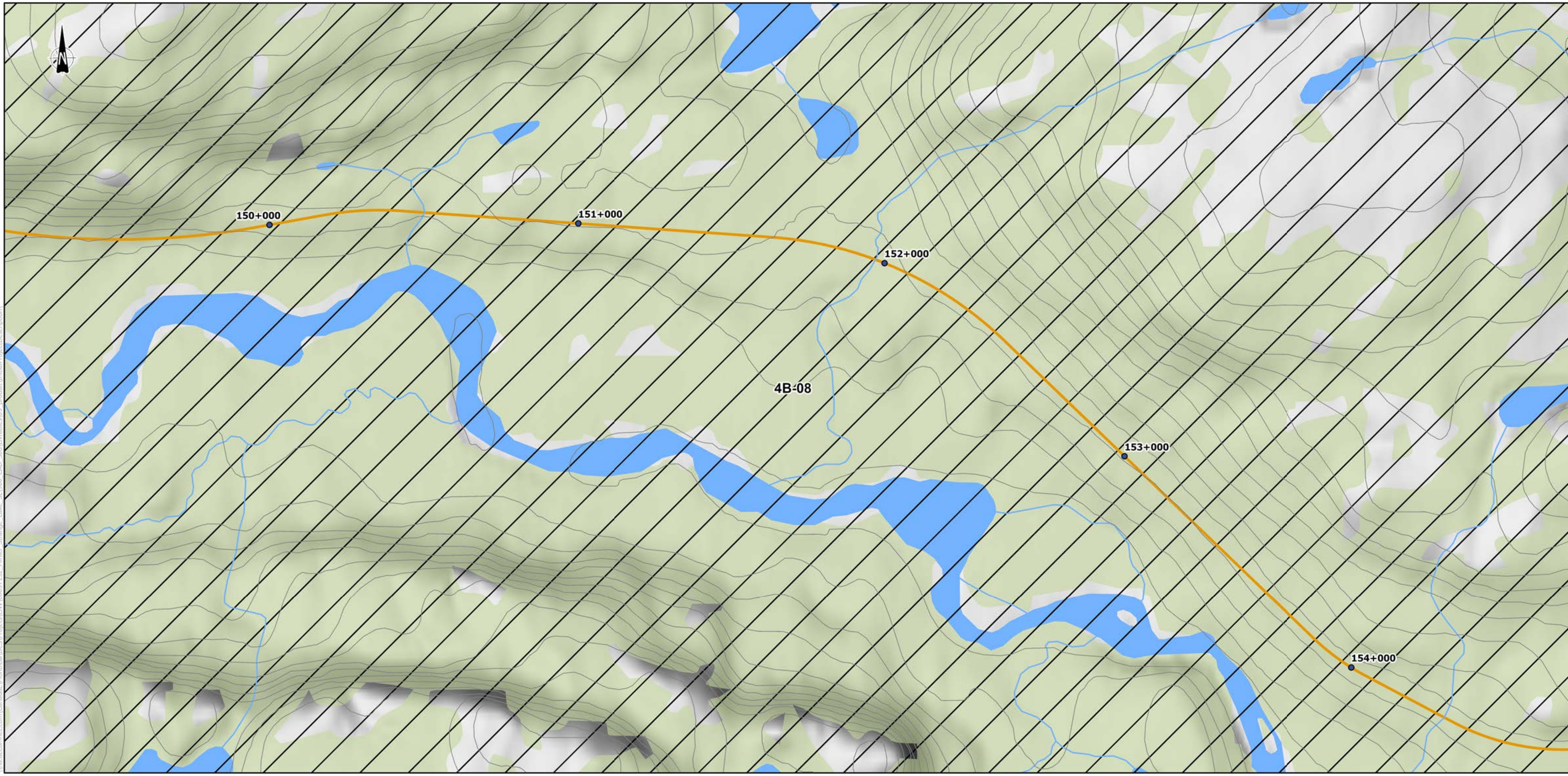
MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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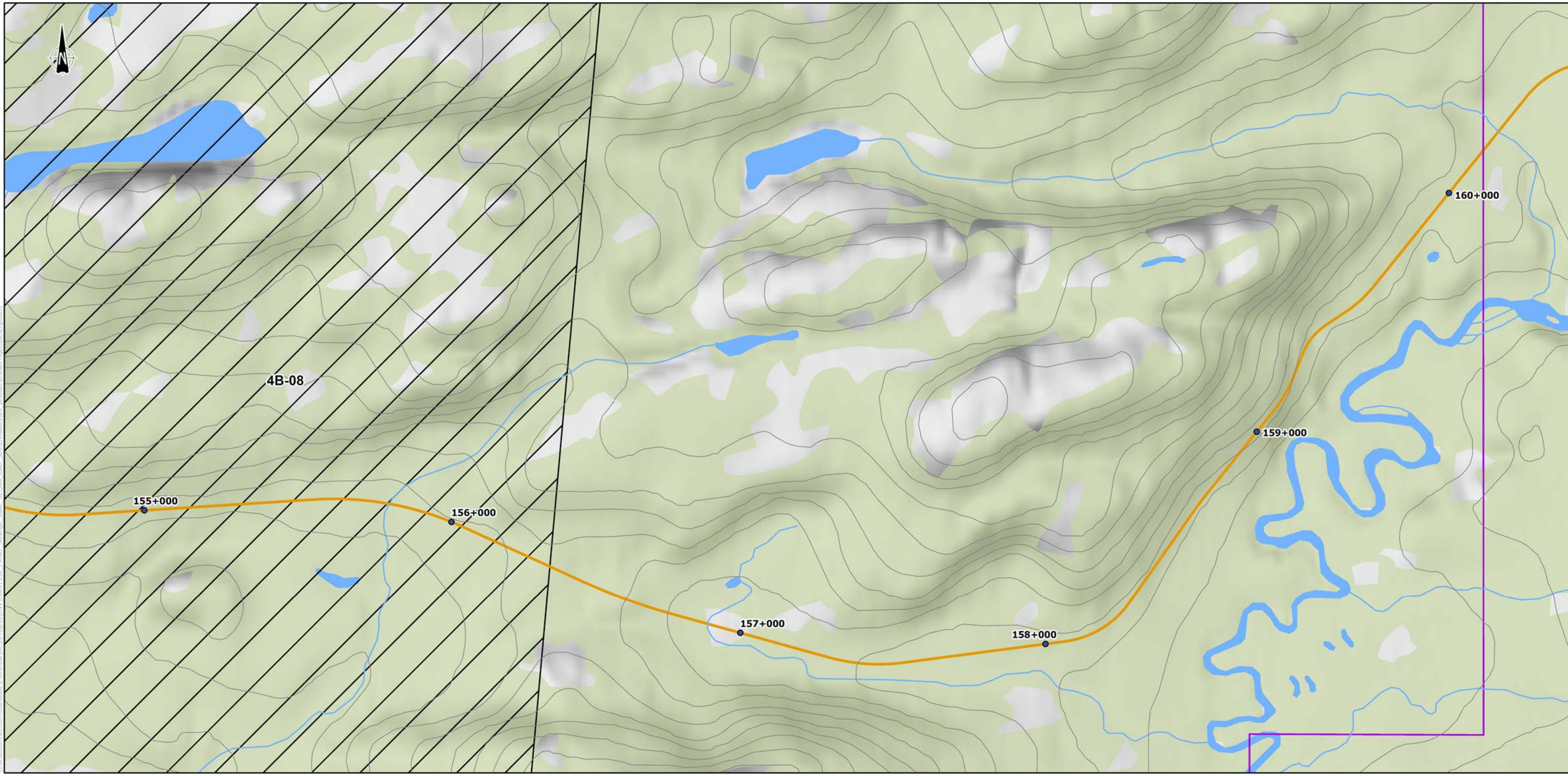
MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

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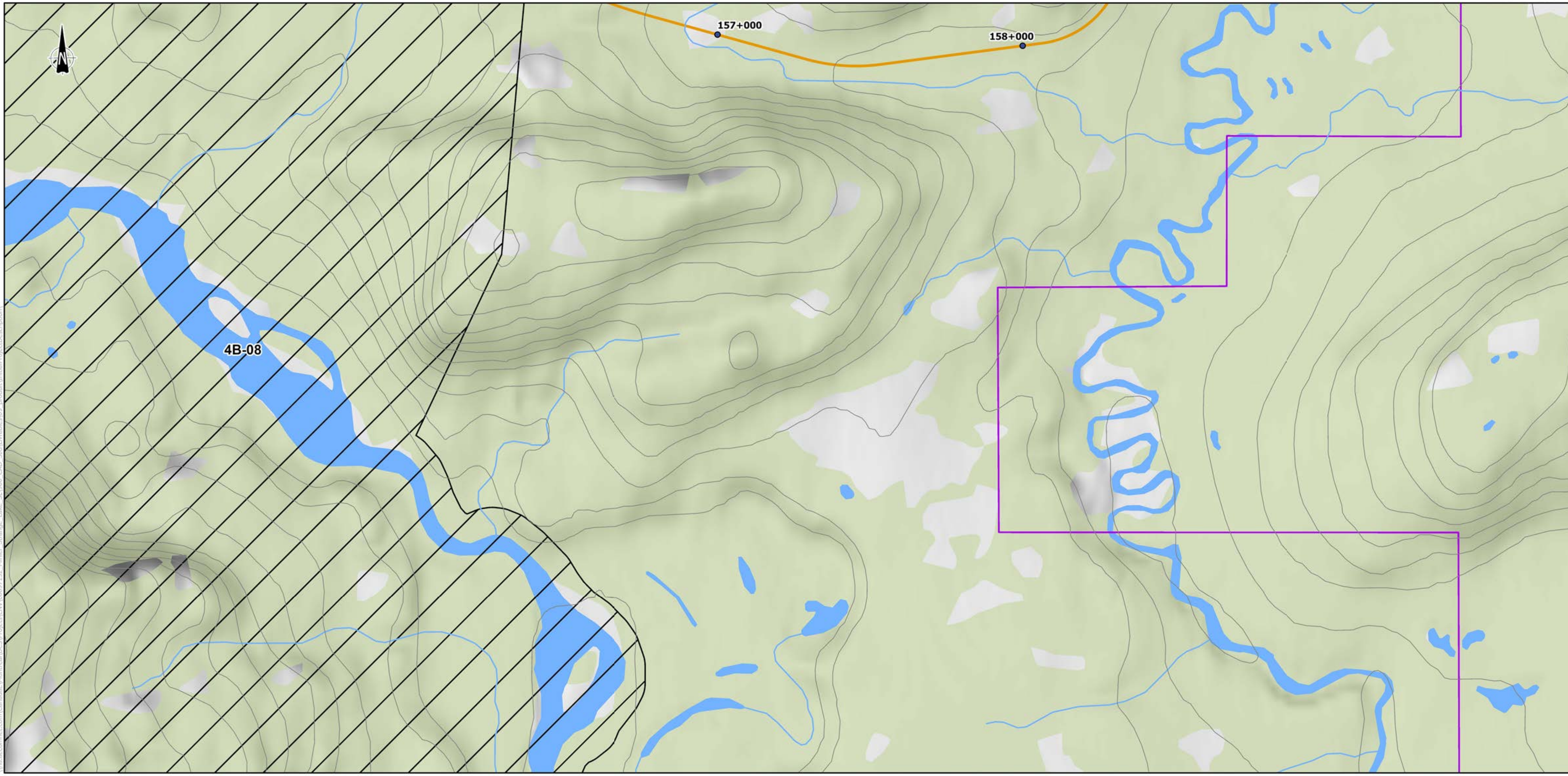
MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



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- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

Route d'accès / Access road

- Point kilométrique de la route d'accès / Access road kilometer point
- Route d'accès saisonnière proposée / Proposed seasonal access road
- Traversée majeure (Pont) / Major crossing (Bridge)
- Camp mobile / Mobile camp
- Carrière / Quarry (Qx)
- Aire d'entreposage et de manutention des conteneurs au Port de VALE / Container storage and handling facilities at Vale's Port

Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

Annexe E

Feuillet - 35
Composantes du projet

Appendix E

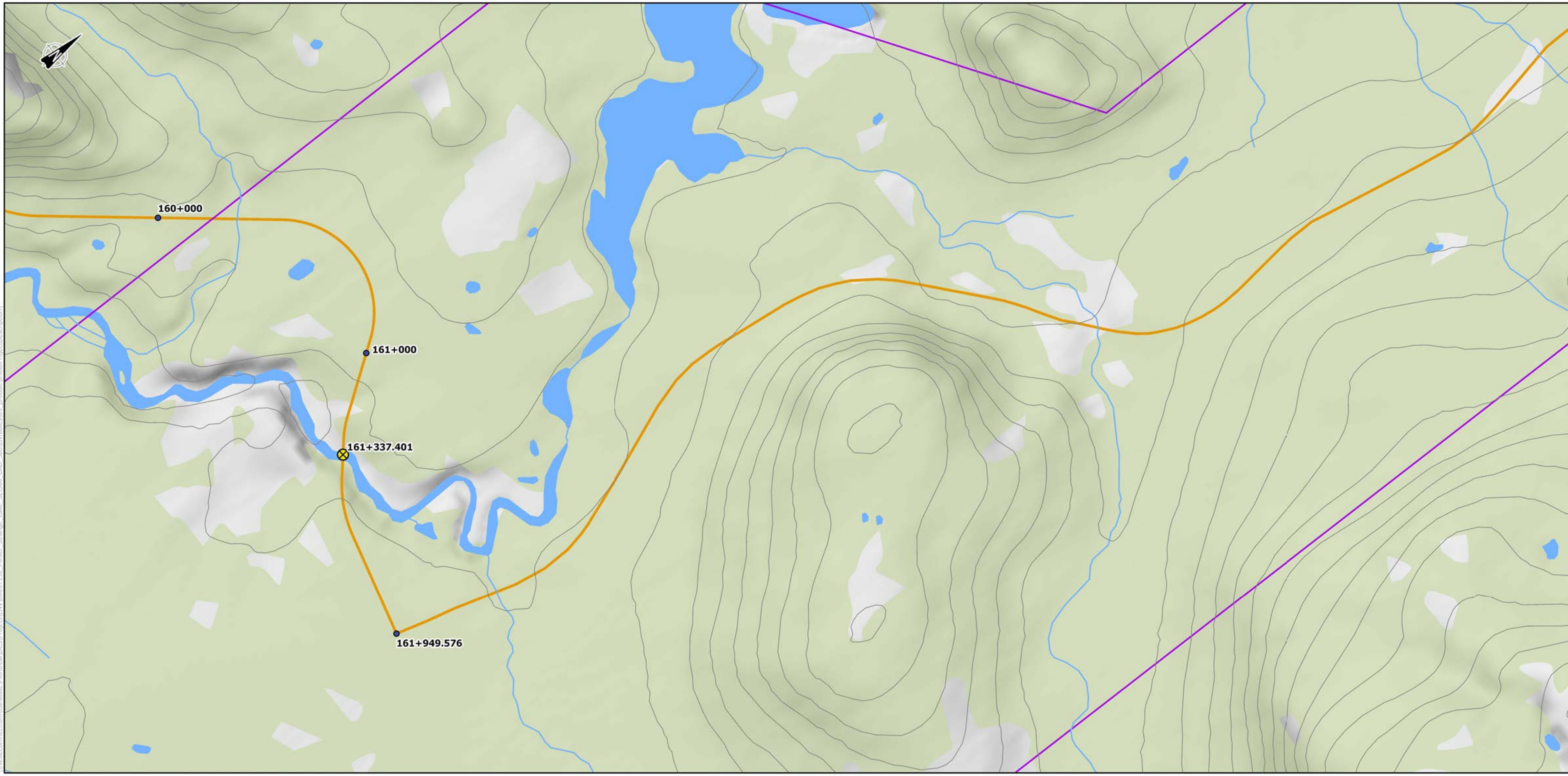
Sheet - 35
Project components

AECOM

MÉTAUX TORNGAT METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
- Fossé d'eau de contact / Contact water ditch
- Fossé d'eau sans contact / Non contact water ditch
- Prise d'eau / Water intake piping
- Piste potentielle / Potential airstrip
- Aire d'accumulation des résidus miniers / Mine Residue Stockpile Area
- B-Zone minéralisée (30 ans) / B-Zone Mineral Deposit (30 years)
- Banc d'emprunt (sablière et gravière) / Borrow Pits (Sand and gravel pit)
- Bassin proposé / Proposed Pond
- Camp d'exploration existant / Existing Exploration Camp
- Halde de stérile / Waste Rock Stockpile Area
- Minérai à basse teneur / Lower Grade Ore
- Piste d'atterrissage / Air strip
- Site d'enfouissement / Landfill Site
- Usine de traitement des effluents / Effluent treatment plant
- Camp et aire de traitement principaux / Main Camp and Ore Processing Area

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Autre / Other

- Bail de surface de Vale Inco / Vale Inco Surface Lease
- Frontière Québec et Labrador / Quebec and Labrador border
- Terres des Inuit du Labrador / Labrador Inuit Lands (LIL)

1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

Annexe E

Feuillet - 36
Composantes du projet

Appendix E

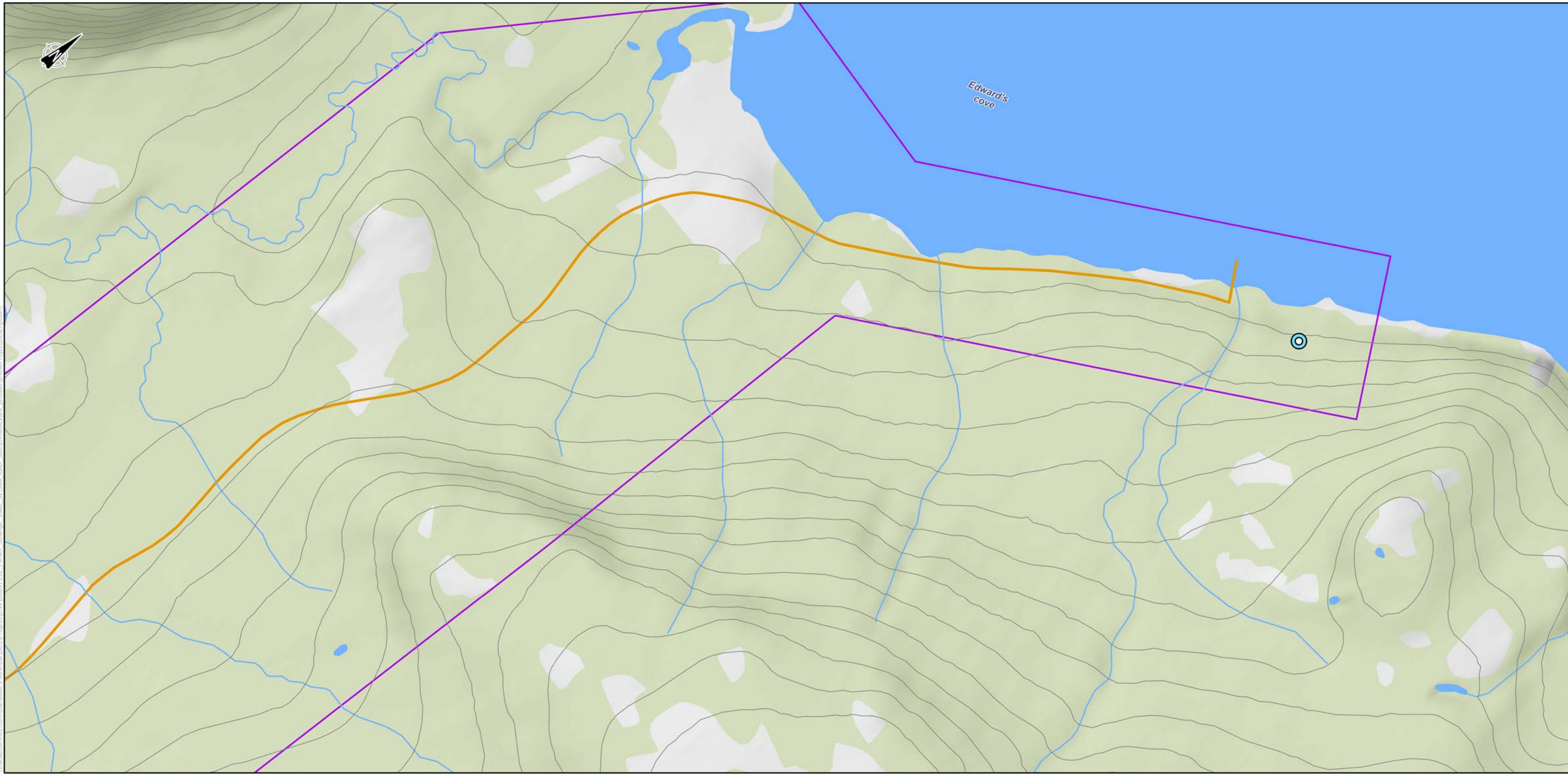
Sheet - 36
Project components

AECOM

MÉTAUX
TORNGAT
METALS

PROJET MINIER DE TERRES RARES DU LAC STRANGE

STRANGE LAKE RARE EARTH MINING PROJECT



Composante du site de la mine / Mine site component

- Limite de propriété / Property limit
- Chemin d'accès des composantes de la mine / Mine site component access road
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1:12 500

0 100 200 m

NAD 1983 UTM Zone 20N

Source:
Données topographiques / Topographic data: RNCan (2022)

Date : 2023-09-25 13:38

Annexe E

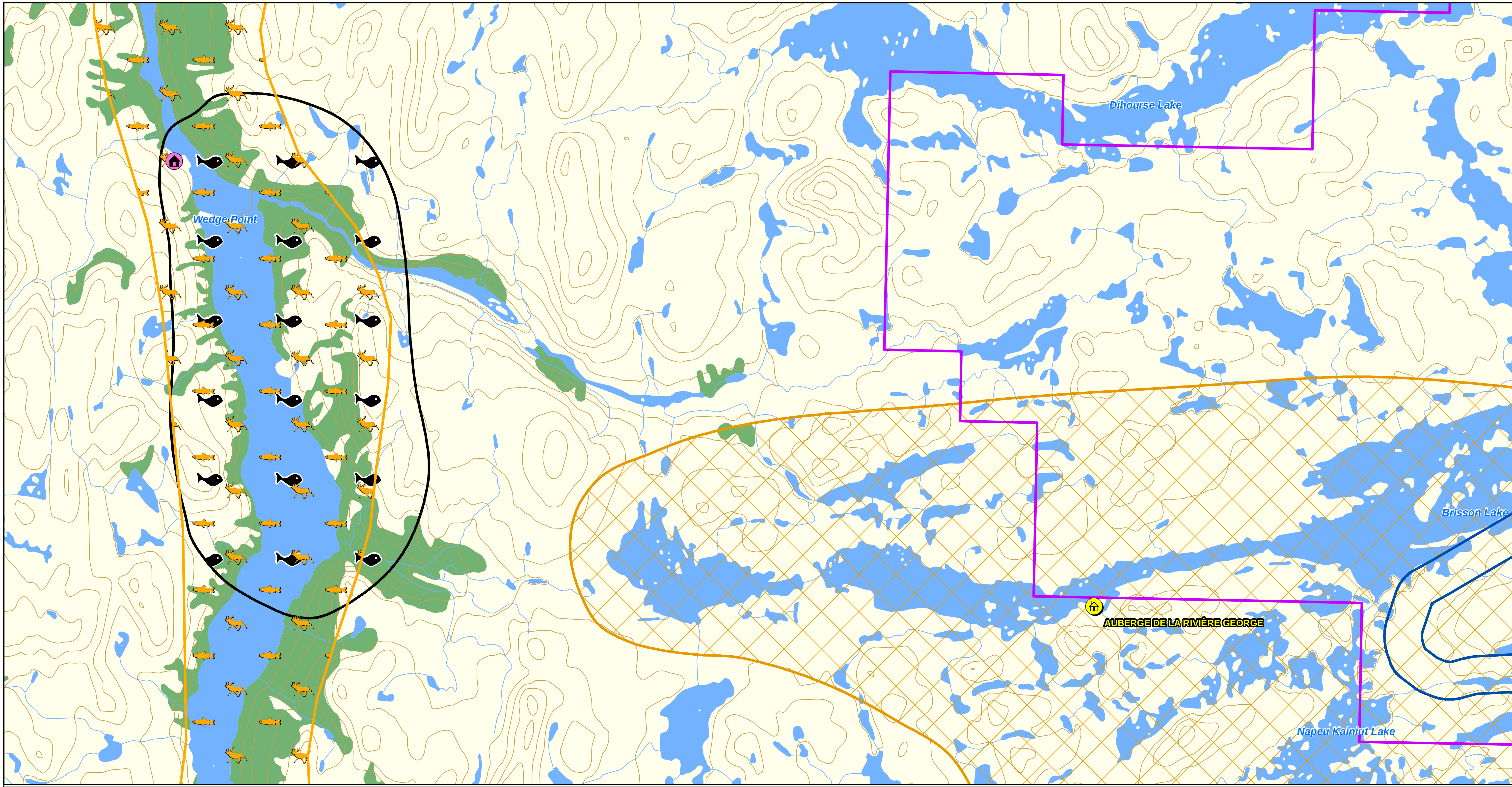
Feuillet - 37
Composantes du projet

Appendix E

Sheet - 37
Project components

AECOM

Appendix F
Maps of Indigenous land use from the 2012-2013 AECOM study



Utilisation des terres / *Land Use*

- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
- Aire secondaire de chasse au Caribou / *Secondary Caribou Hunting Area* (Makkovik, 1960-1970)
- Aire occasionnelle de chasse au Caribou / *Occasional Caribou Hunting Area* (Killiniq People, 1960)
  Aire de pêche et de chasse au Caribou / *Fishing and Caribou Hunting Area* (May Familly, Kuujjuaq, 1960-1970)
- Piégeage occasionnel / *Occasional Trapping* (1960-1970)
- Pêche sur glace occasionnelle / *Occasional Ice Fishing (1960-1970)*
- Chasse à l'oie / *Goose Hunting* (2009)
- Site archéologique / *Archaeological Sites*
- Site de camp / *Camp Site (Killiniq People, 1960's)*
- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernment, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik /
Land Use and Occupancy - Nunavik Inuit

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 1A / *Sheet 1A*

Utilisation des terres / *Land Use*

- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
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- Aire occasionnelle de chasse au Caribou / *Occasional Caribou Hunting Area* (Killiniq People, 1960)
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- Pêche sur glace occasionnelle / *Occasional Ice Fishing (1960-1970)*
- Chasse à l'oie / *Goose Hunting* (2009)

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- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernment, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik /
Land Use and Occupancy - Nunavik Inuit

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 1B / *Sheet 1B*

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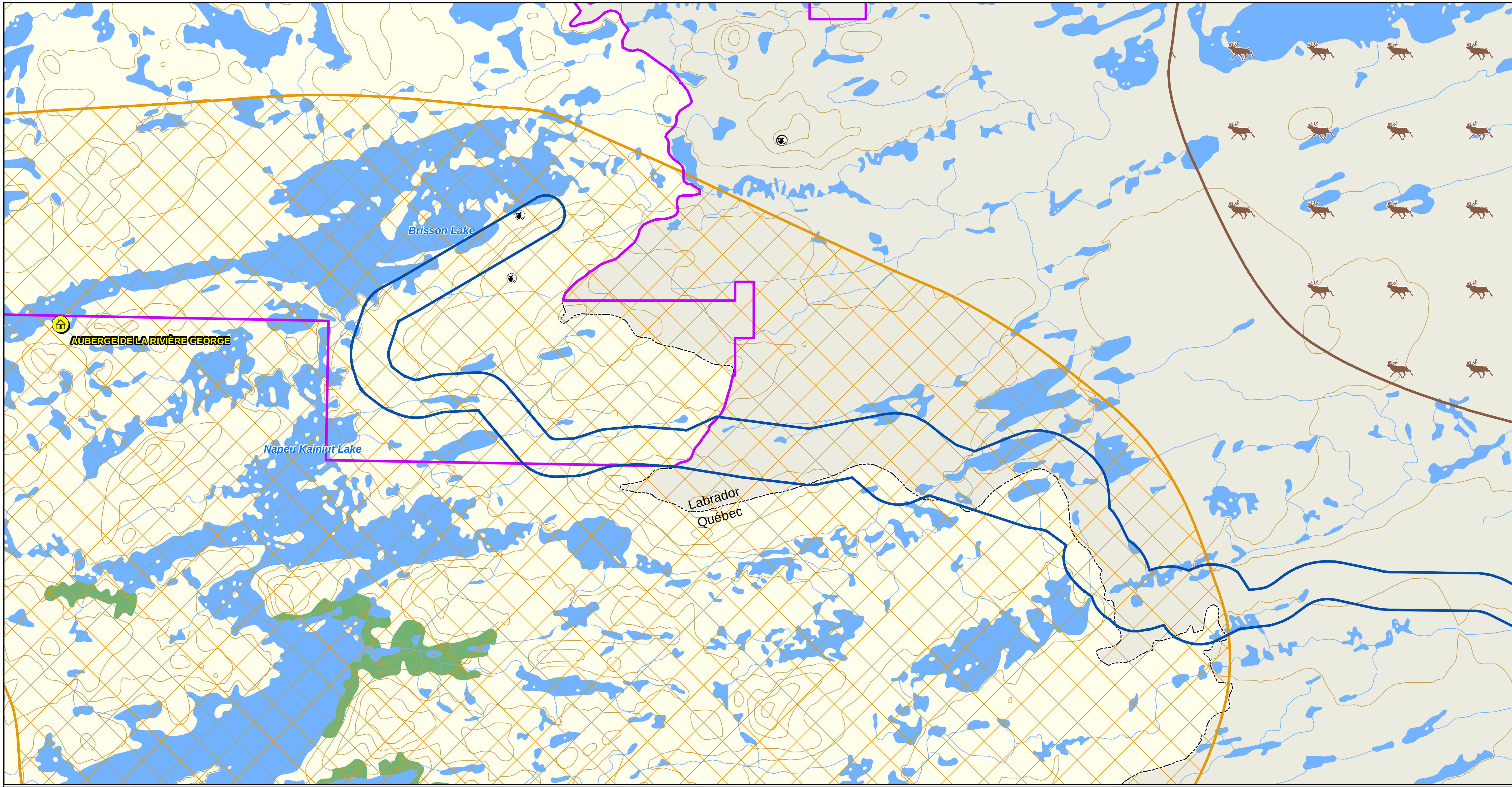

Utilisation des terres / *Land Use*

- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
- Aire secondaire de chasse au Caribou / *Secondary Caribou Hunting Area* (Makkovik, 1960-1970)
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- Pêche sur glace occasionnelle / *Occasional Ice Fishing (1960-1970)*
- Chasse à l'oie / *Goose Hunting* (2009)

- Site archéologique / *Archaeological Sites*
- Site de camp / *Camp Site (Killiniq People, 1960's)*
- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernement, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

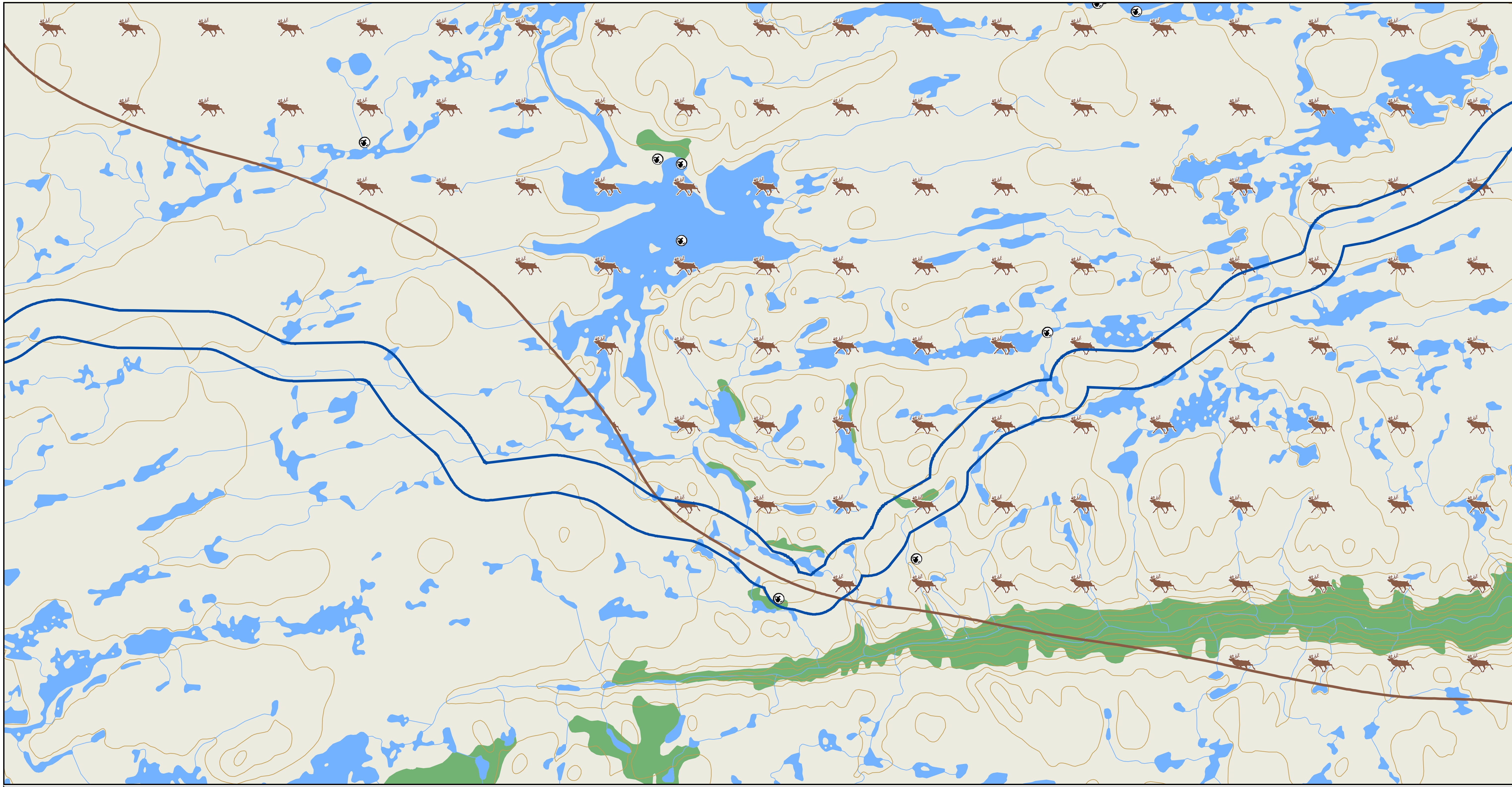
QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik / *Land Use and Occupancy - Nunavik Inuit*

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 1 / *Sheet 1*

AECOM



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- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
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- Site de camp / *Camp Site (Killiniq People, 1960's)*
- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernment, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik / *Land Use and Occupancy - Nunavik Inuit*

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 2 / *Sheet 2*

AECOM

Utilisation des terres / *Land Use*

- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
- Aire secondaire de chasse au Caribou / *Secondary Caribou Hunting Area* (Makkovik, 1960-1970)
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- Pêche sur glace occasionnelle / *Occasional Ice Fishing (1960-1970)*
- Chasse à l'oie / *Goose Hunting* (2009)

- Site archéologique / *Archaeological Sites*
- Site de camp / *Camp Site (Killiniq People, 1960's)*
- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernment, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

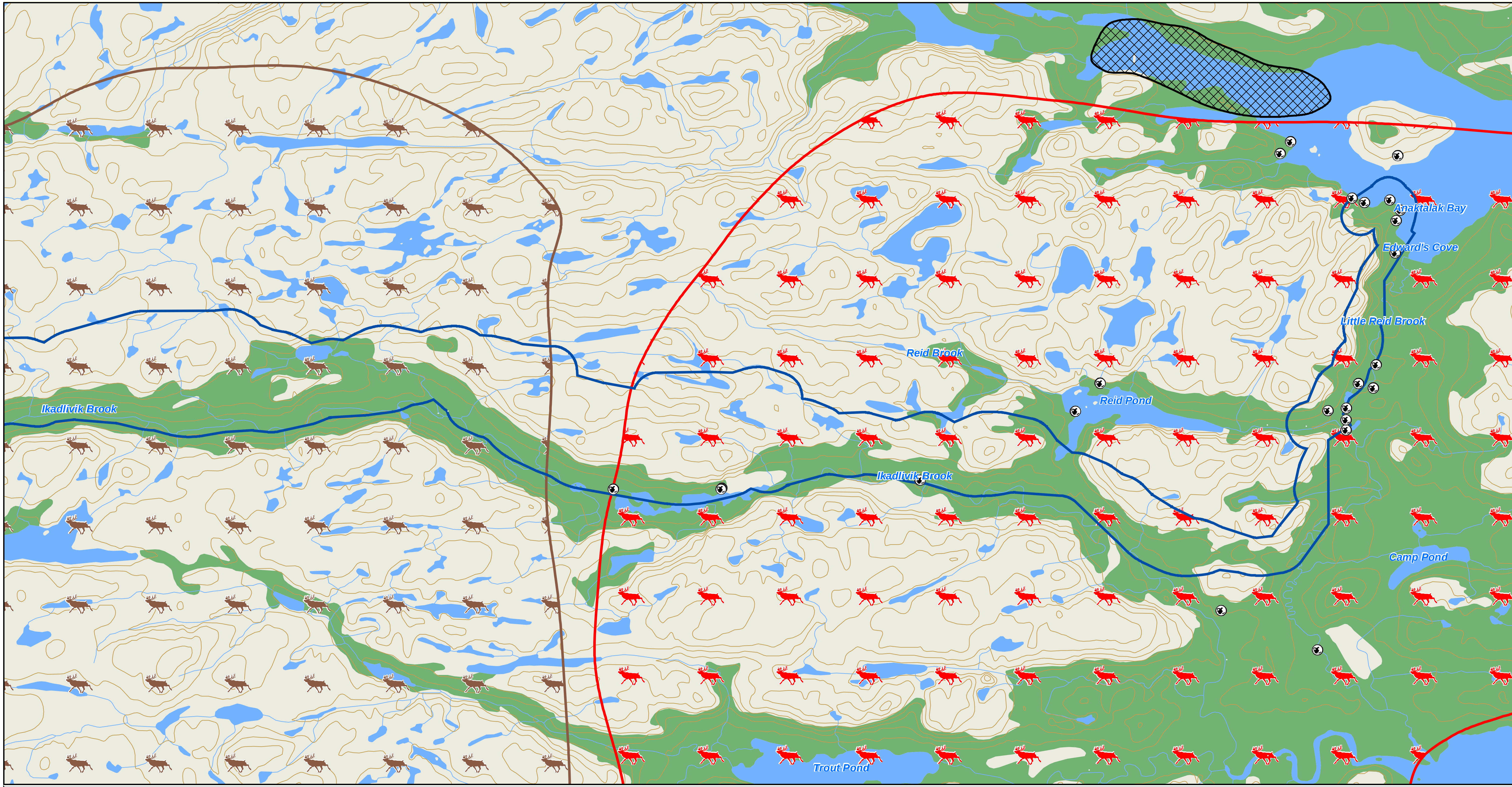
QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik / *Land Use and Occupancy - Nunavik Inuit*

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 3 / *Sheet 3*

AECOM



Utilisation des terres / *Land Use*

- Aire primaire de chasse au Caribou / *Primary Caribou Hunting Area* (Makkovik, 1960-1970)
- Aire secondaire de chasse au Caribou / *Secondary Caribou Hunting Area* (Makkovik, 1960-1970)
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- Chasse à l'oie / *Goose Hunting* (2009)
- Site archéologique / *Archaeological Sites*
- Site de camp / *Camp Site (Killiniq People, 1960's)*
- Pourvoirie / *Outfitter*
- Bail minier de Quest / *Quest RM Property*
- Corridor potentiel de Quest / *Potential Quest Corridor*

N

1:100 000

0 0.75 1.5 2.25 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCES :

Kativik Regional Gouvernment, 2006.
Regional Trails, Kangiqsualujjuaq, Nunavik.
Renewable Resources Department.

Inventaire AECOM, 2012

QUEST RARE MINERALS LTD

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Inuit du Nunavik /
Land Use and Occupancy - Nunavik Inuit

Novembre 2013 / *November 2013* **CARTE 4 / *MAP 4*** Feuillet 4 / *Sheet 4*

AECOM

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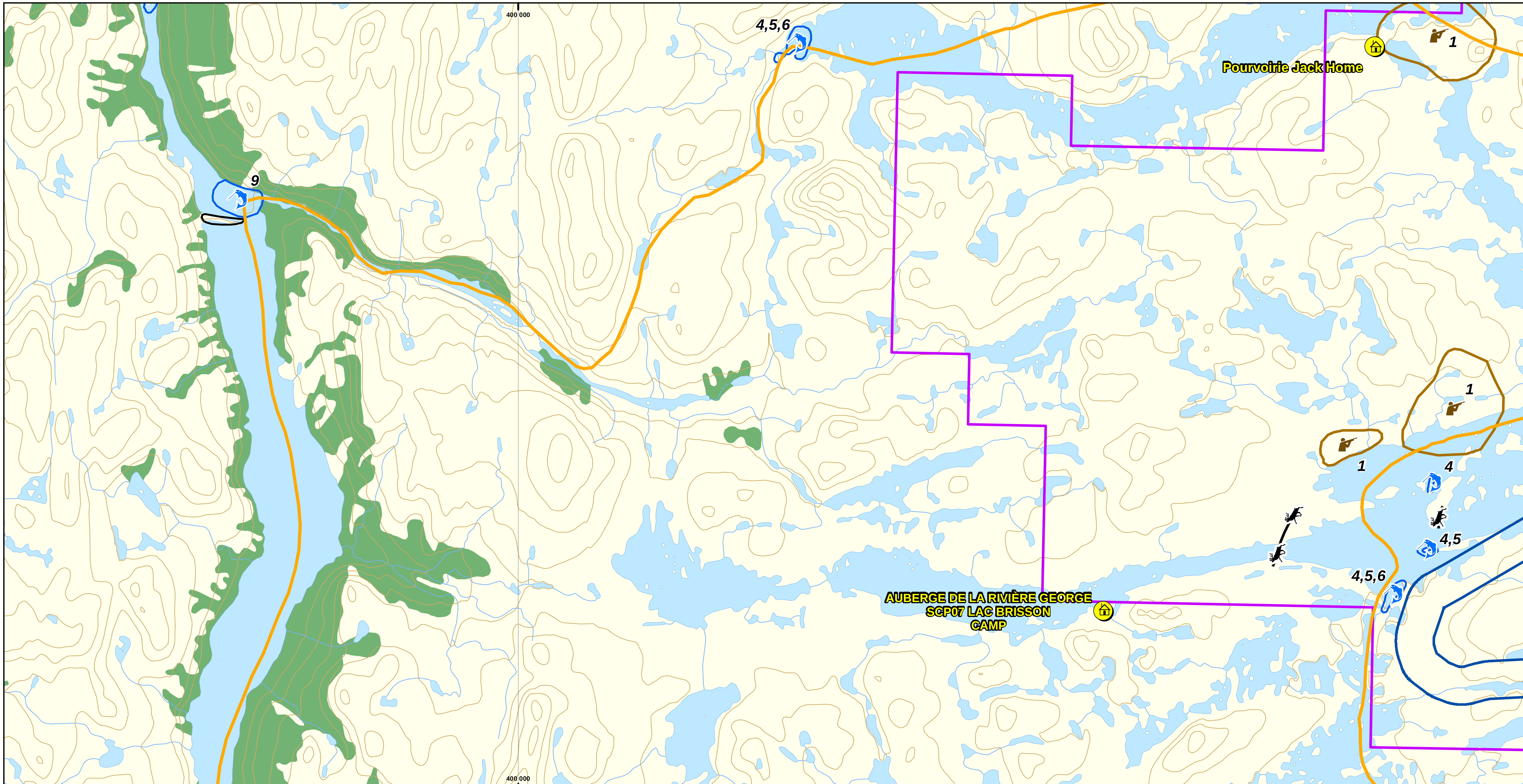
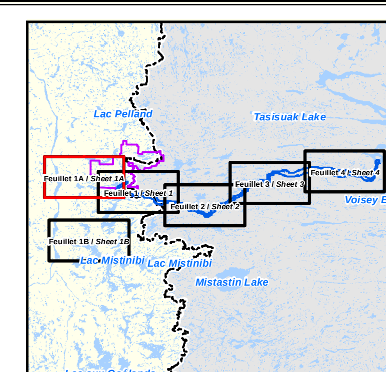


Légende / *Legend*

- Chasse / *Hunting*
- Pêche / *Fishing*
- Pourvoirie / *Outfitter*
- Camps de toile / *Tented Camp*
- Site archéologique / *Archaeological Site*
- Voyage de chasse au caribou 2009 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2009 (journey made by the Naskapis)*
- Voyage de chasse au caribou 2010 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2010 (journey made by the Naskapis)*
- Passage connu de caribous / *Known Caribou Crossing*
- Corridor potentiel de Quest / *Potential Quest Corridor*
- Bail minier de Quest / *Quest RM Property*

Espèce / *Species*

1 - Caribou
2 - Porc-Épic / *Porcupine*
3 - Lagopède / *Ptarmigan*
4 - Touladi / *Trout*
5 - Omble Chevalier / *Artic Char*
6 - Omble Fontaine / *Brook Trout*



0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

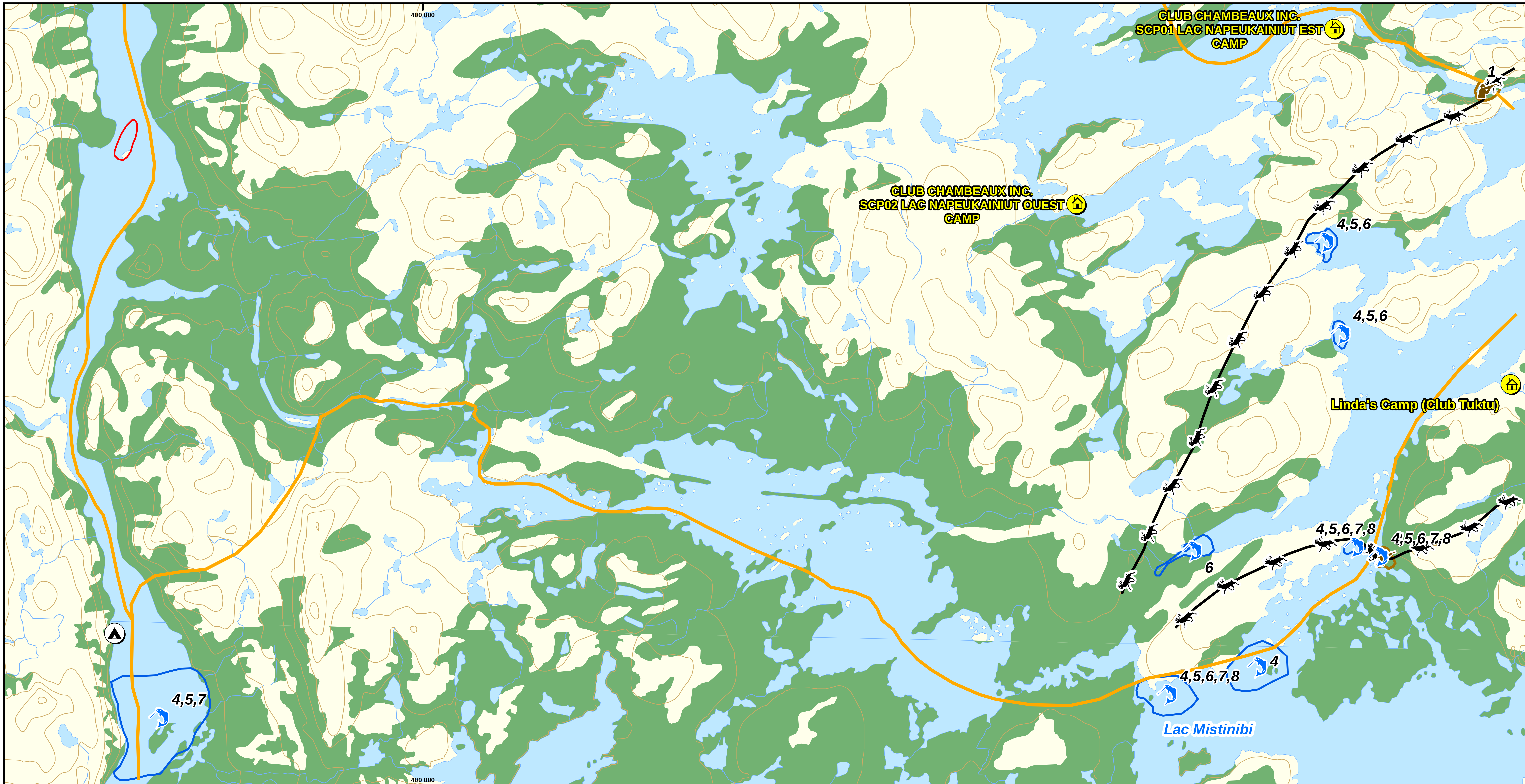
QUEST RARE MINERALS LTD

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach
Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 1A / *Sheet 1A*

AECOM



Légende / *Legend*

- Chasse / *Hunting*
- Pêche / *Fishing*
- Pourvoirie / *Outfitter*
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- Corridor potentiel de Quest / *Potential Quest Corridor*
- Bail minier de Quest / *Quest RM Property*

Espèce / *Species*

1 - Caribou
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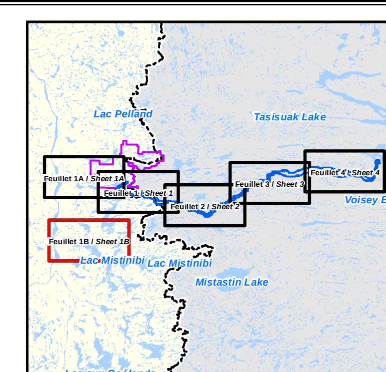
3 - Lagopède / *Ptarmigan*
4 - Touladi / *Trout*
5 - Omble Chevalier / *Artic Char*
6 - Omble Fontaine / *Brook Trout*



0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

QUEST RARE MINERALS LTD.

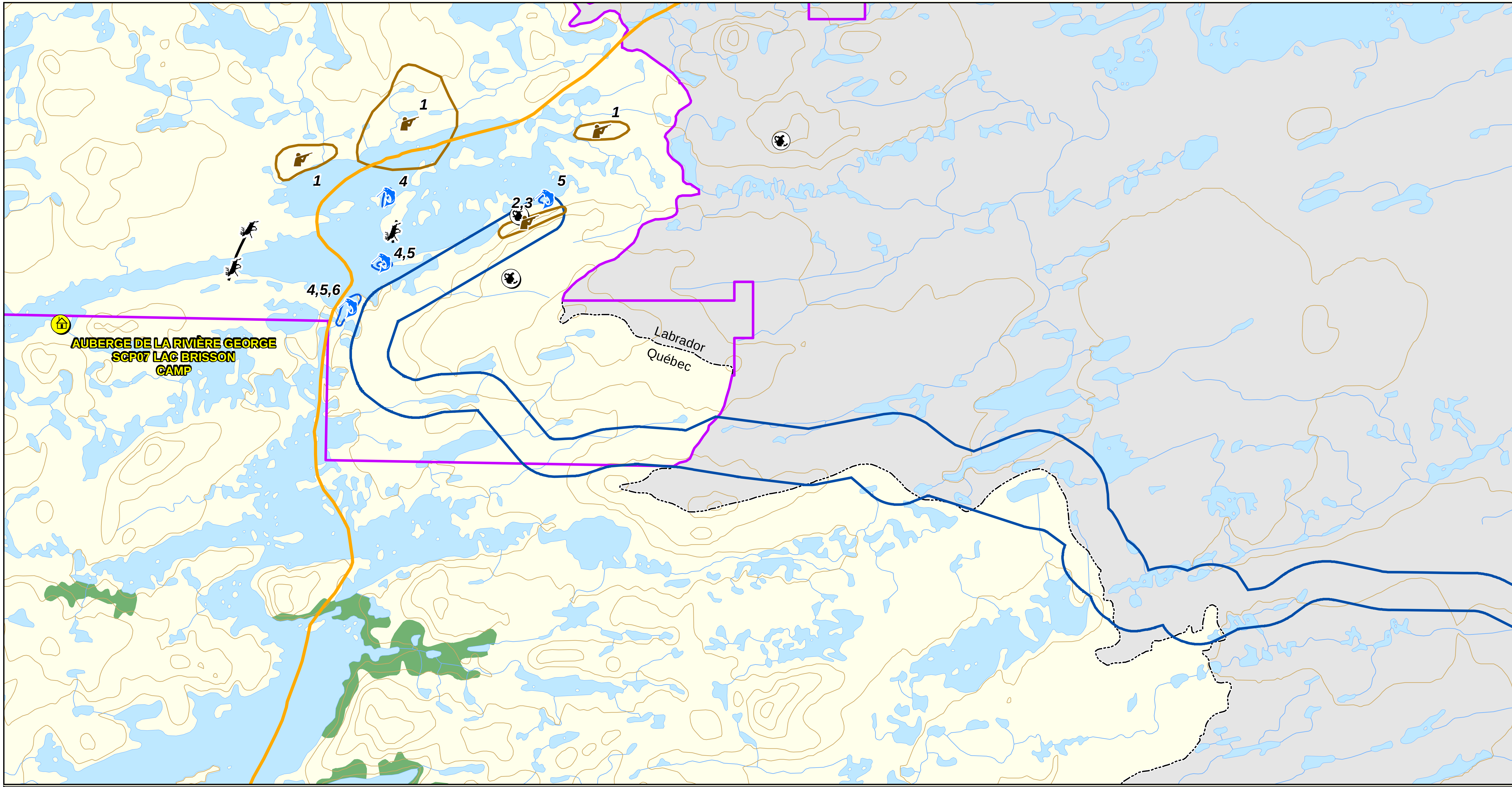
Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach

Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 1B / *Sheet 1B*

AECOM



Légende / *Legend*

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- Pêche / *Fishing*
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- Bail minier de Quest / *Quest RM Property*

Espèce / *Species*

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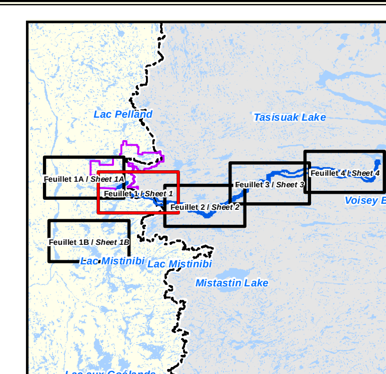


0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

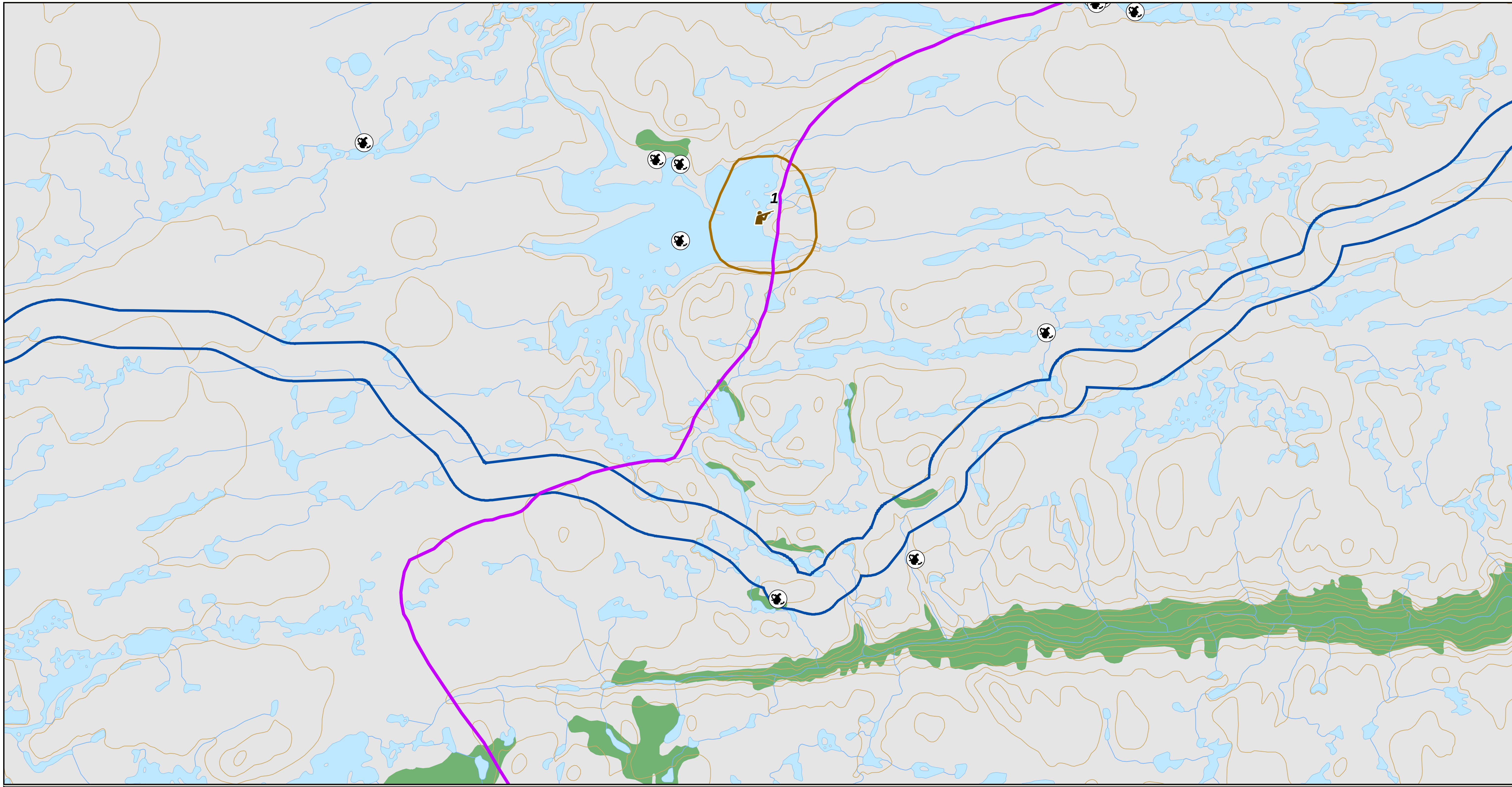
QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach
Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 1 / *Sheet 1*

AECOM



Légende / *Legend*

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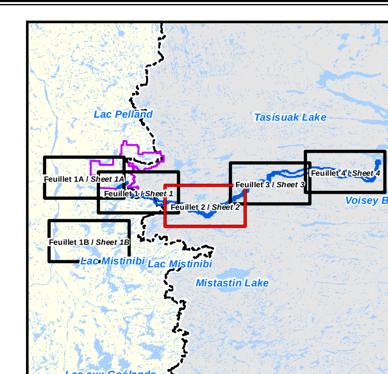


0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

QUEST RARE MINERALS LTD.

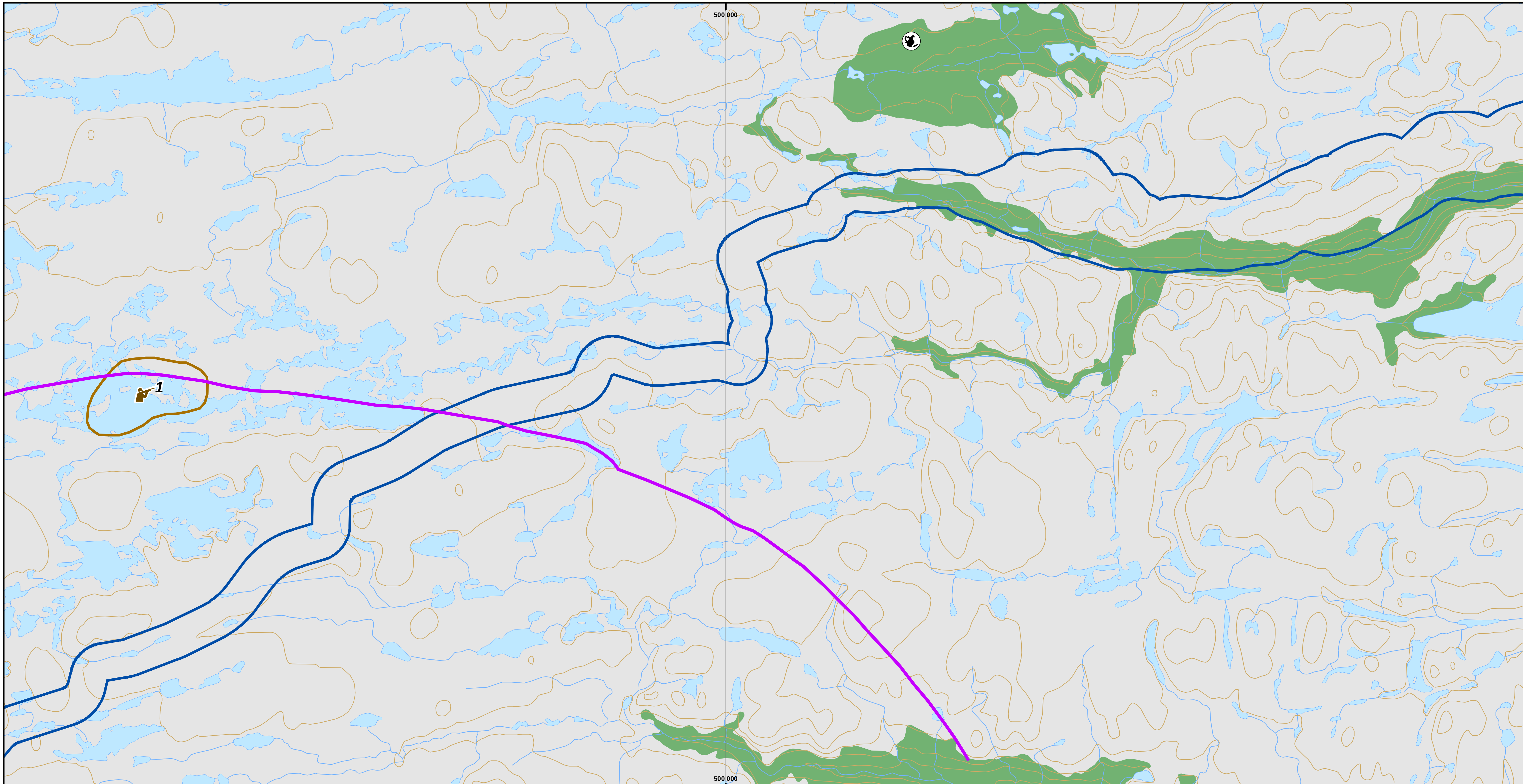
Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach

Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 2 / *Sheet 2*

AECOM



Légende / *Legend*

- Chasse / *Hunting*
- Pêche / *Fishing*
- Pourvoirie / *Outfitter*
- Camps de toile / *Tented Camp*
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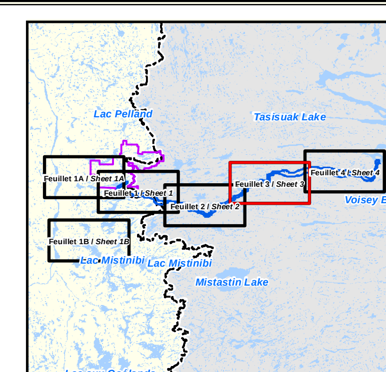
- Voyage de chasse au caribou 2009 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2009 (journey made by the Naskapis)*
- Voyage de chasse au caribou 2010 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2010 (journey made by the Naskapis)*
- Passage connu de caribous / *Known Caribou Crossing*
- Corridor potentiel de Quest / *Potential Quest Corridor*
- Bail minier de Quest / *Quest RM Property*

Espèce / *Species*

1 - Caribou
2 - Porc-Épic / *Porcupine*
3 - Lagopède / *Ptarmigan*
4 - Touladi / *Trout*
5 - Omble Chevalier / *Artic Char*
6 - Omble Fontaine / *Brook Trout*



0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

QUEST RARE MINERALS LTD.

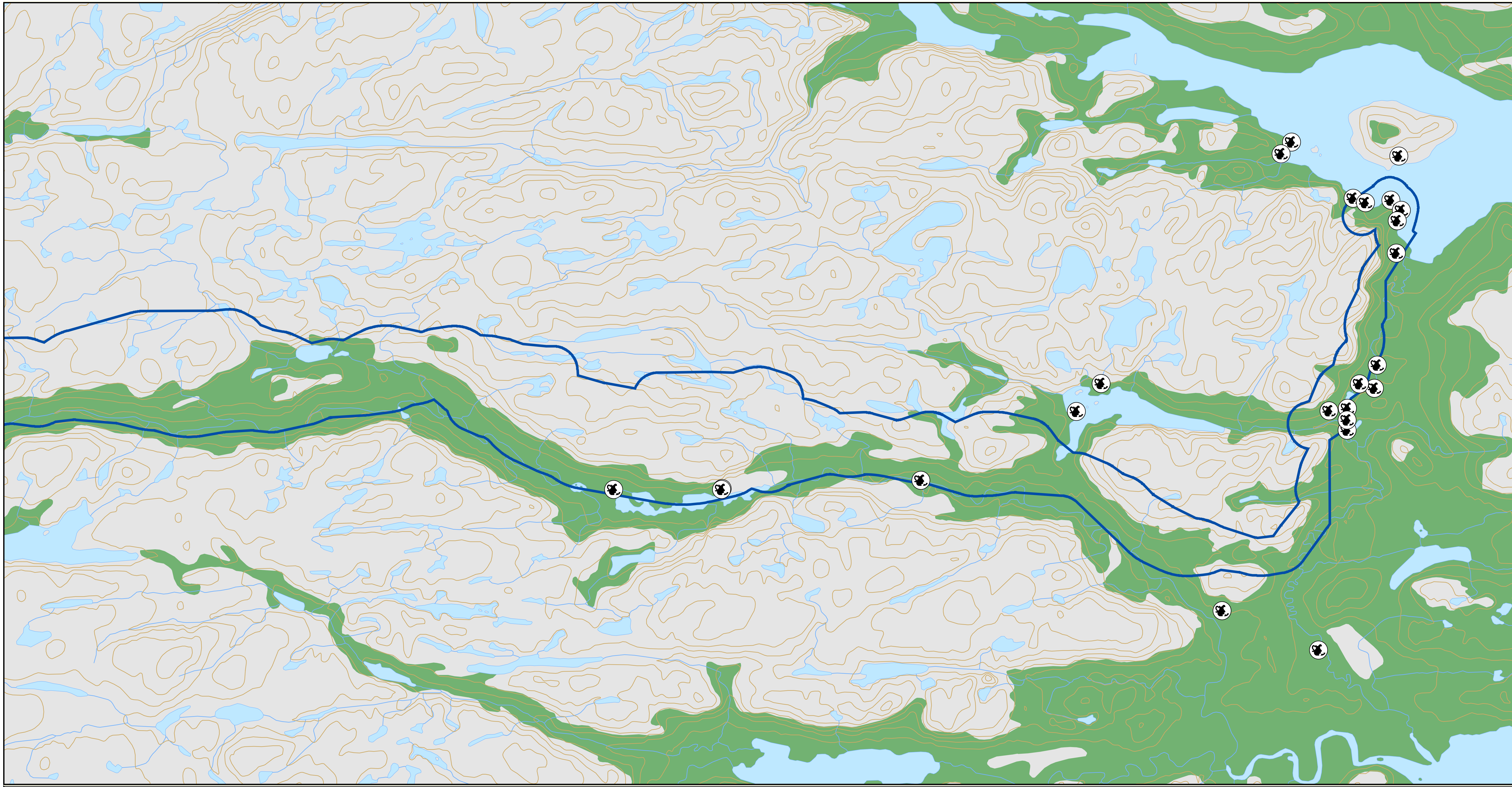
Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach

Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 3 / *Sheet 3*

AECOM



Légende / *Legend*

- Chasse / *Hunting*
- Pêche / *Fishing*
- Pourvoirie / *Outfitter*
- Camps de toile / *Tented Camp*
- Site archéologique / *Archaeological Site*
- Voyage de chasse au caribou 2009 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2009 (journey made by the Naskapis)*
- Voyage de chasse au caribou 2010 (trajets effectués par des Naskapis) / *Caribou Hunting Trip 2010 (journey made by the Naskapis)*
- Passage connu de caribous / *Known Caribou Crossing*
- Corridor potentiel de Quest / *Potential Quest Corridor*
- Bail minier de Quest / *Quest RM Property*

Espèce / *Species*

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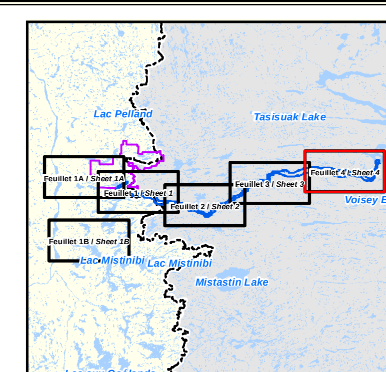
2 - Porc-Épic / *Porcupine*
3 - Lagopède / *Ptarmigan*
4 - Touladi / *Trout*
5 - Omble Chevalier / *Artic Char*
6 - Omble Fontaine / *Brook Trout*



0 1 2 3 4 km

Échelle / *Scale* = 1 : 100 000

Source : Inventaire AECOM, 2012.

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Naskapis de Kawawachikamach

Land Use and Occupancy - Naskapi Nation of Kawawachikamach

Novembre 2013 / *November 2013* **CARTE / *MAP 5*** Feuillet 4 / *Sheet 4*

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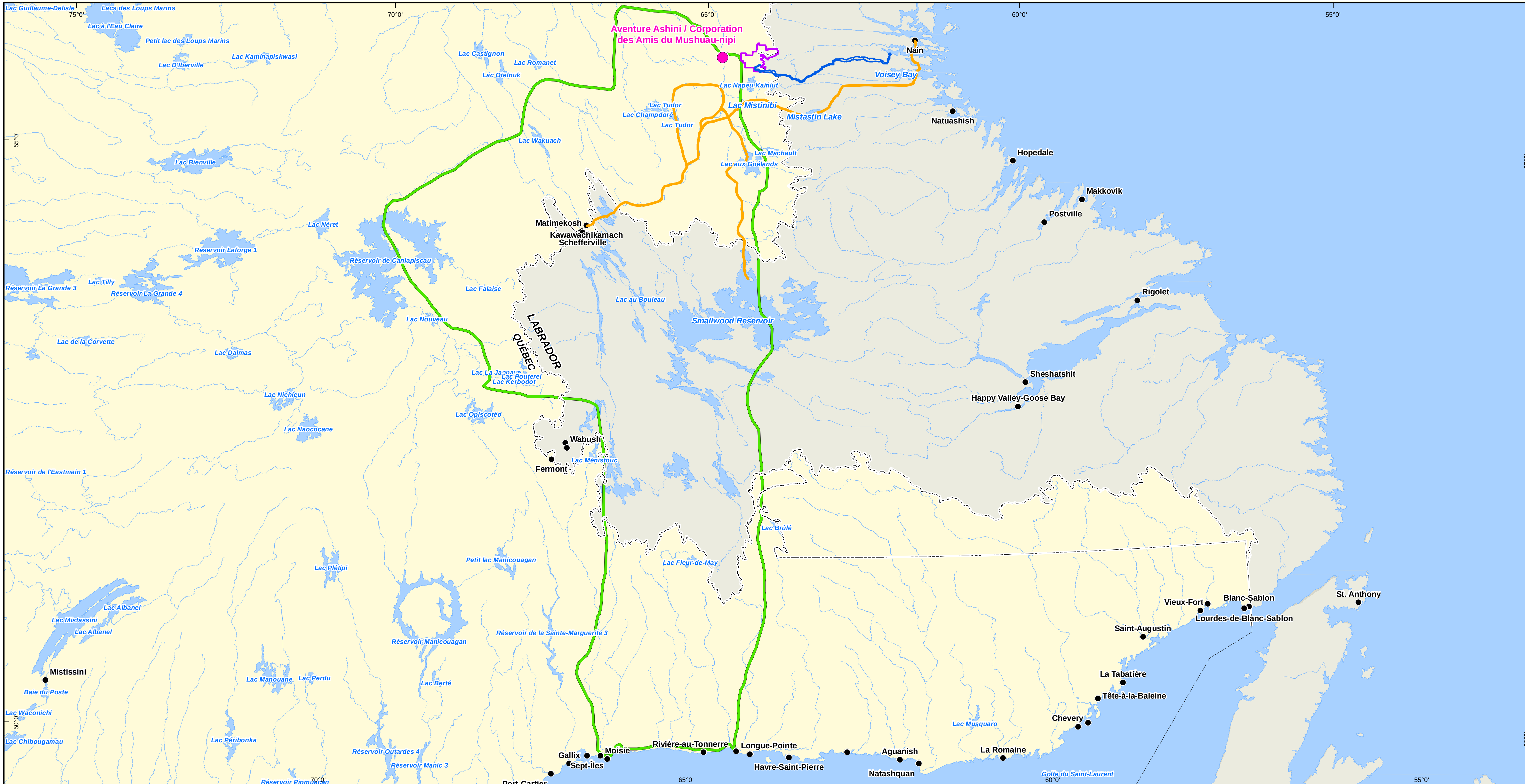


Légende / *Legend*

- Entreprise touristique Innu opérant à Wedge Point / *Innu Tourism Business operating at Wedge Point*
- Axes de circulation employés par la bande de Moisie (1900-1956) / *Circulation Road used by the Moisie Band (1900-1956)*
- Limite approximative du territoire de la bande de Moisie [1] / *Approximate Boundary of the Moisie's Band Territory*
- Corridor potentiel de Quest / *Potential Quest Corridor*
- Bail minier de Quest / *Quest RM Property*

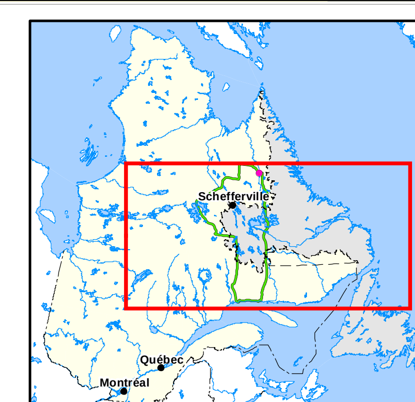
1 Conseil des Attikamekw et des Montagnais (CAM), 1983.

N

Échelle / *Scale* = 1 : 3,700,000

0 30 60 90 120 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83



QUEST RARE MINERALS LTD.

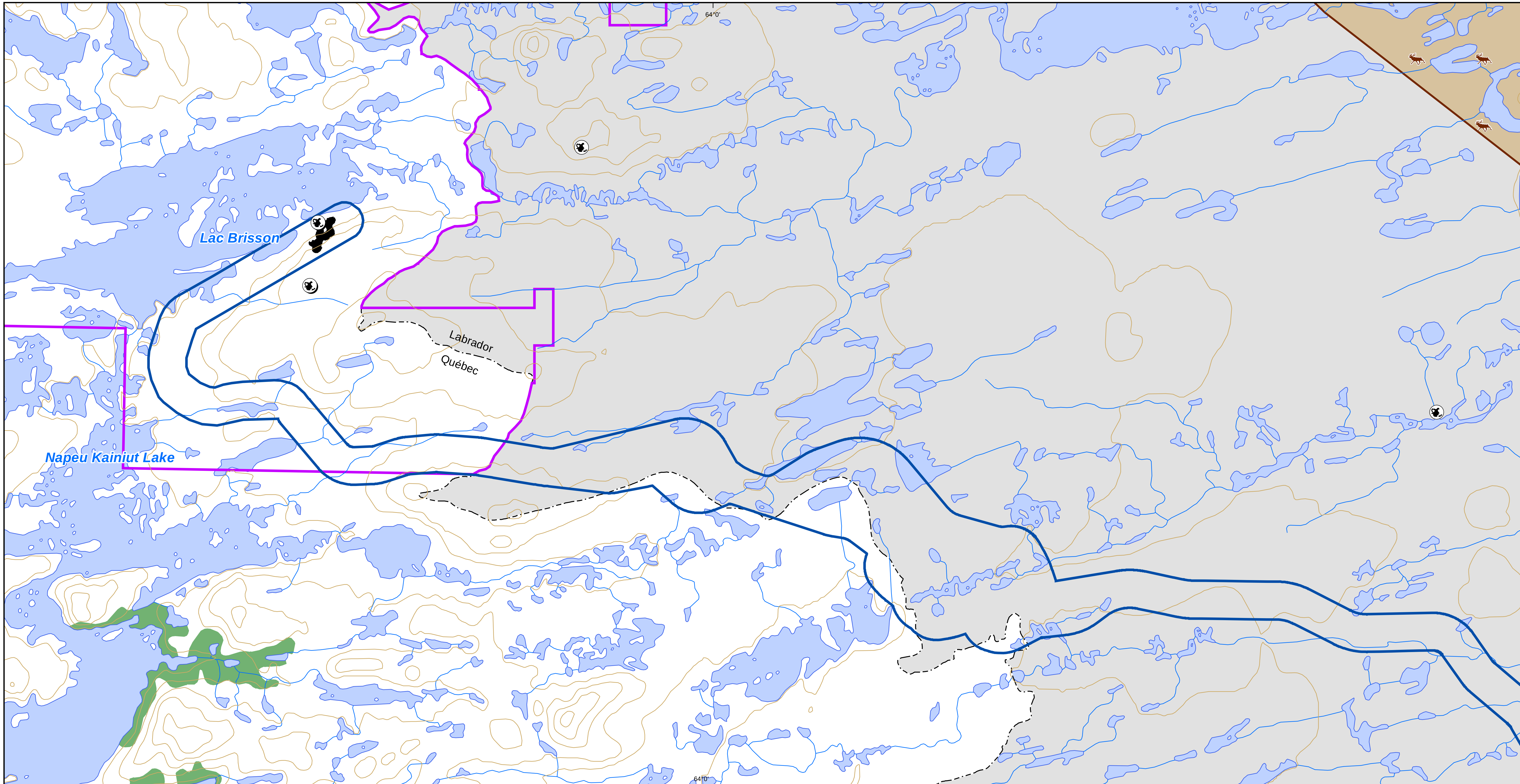
Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Innus du Québec / *Land Use and Occupancy - Quebec Innus*

Novembre 2013 / *November 2013*

CARTE 6 / *MAP 6*

AECOM



Éléments principaux du milieu humain / *Human Environmental Key Features*

- Site archéologique / *Archaeological Site*
- Camp / *Cabin* [1]
- Piste de motoneige / *Snowmobile Trail* [1]
- Hutte de castor / *Beaver house*
- Observation de béluga / *Beluga sighting*
- Tanière de renard / *Fox den*
- Aigle royal / *Golden Eagle*
- Phoque / *Harbour Seal*
- Canard arlequin / *Harlequin Duck*
- Observation d'orignal / *Moose sighting*
- Chouette épervière / *Northern Hawk Owl*
- Balbuzard / *Osprey*
- Faucon pélerin / *Peregrine Falcon*
- Trou de respiration de phoque / *Seal breathing hole*
- Oie des neiges / *Snow Goose*
- Carcajou / *Wolverine*

Activités automne - hiver / *Autumn - Winter Activities*

- Aire de cueillette de baies / *Berry Picking Area*
- Chasse du caribou / *Hunting Caribou*
- Pêche sur la glace / *Ice fishing*
- Aire de trappage / *Trapping area*
- Aire de chasse en bateau de la sauvagine et du phoque / *Hunting Area - Waterfowl and Seal by boat*
- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

- Aire de collecte d'oeufs / *Egg Collecting Areas*
- Pêche sur la glace / *Ice fishing*
- Chasse au phoque sur la glace / *Otok hunting (basking seal on ice)*

- Région de la Baie de Voisey (exclue de LISA) / *Voisey's Bay Area (excluded from LISA)*

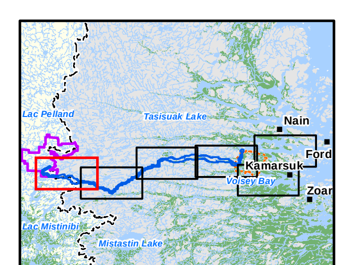
Pêche commerciale / *Commercial Fishing Locations*

- Omble chevalier / *Arctic Char* (1975-1993)
- Frayère de l'omble chevalier / *Arctic Char Spawning River*
- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*

1 Rough Approximation based on a single snowmobile user - to be confirmed during baseline. No outfitter camp registered in NL within road corridor.



1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 1 / Sheet 1**

AECOM

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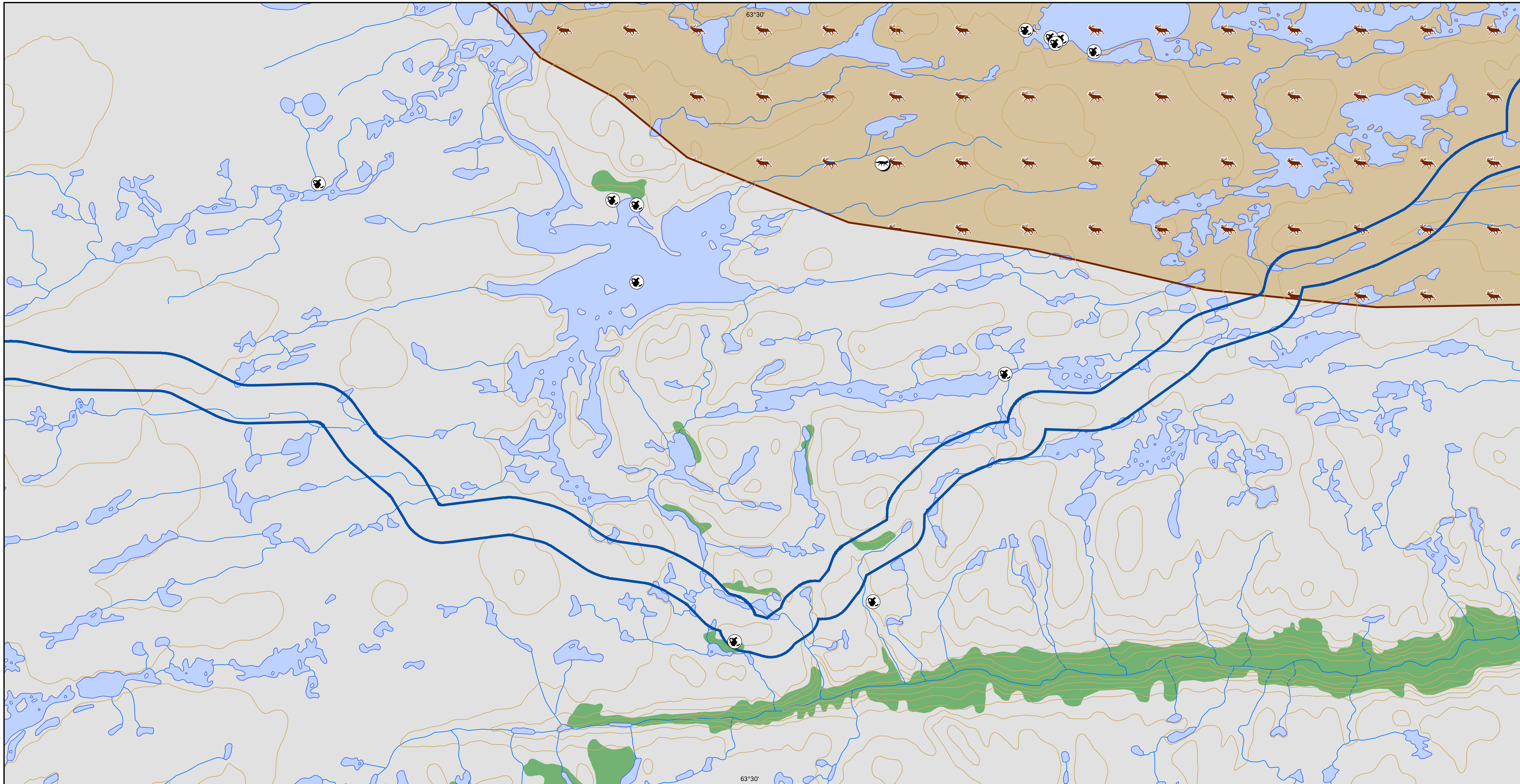


Éléments principaux du milieu humain / *Human Environmental Key Features*

- Site archéologique / *Archaeological Site*
- Camp / *Cabin* [1]
- Piste de motoneige / *Snowmobile Trail* [1]
- Hutte de castor / *Beaver house*
- Observation de béluga / *Beluga sighting*
- Tanière de renard / *Fox den*
- Aigle royal / *Golden Eagle*
- Phoque / *Harbour Seal*
- Canard arlequin / *Harlequin Duck*
- Observation d'orignal / *Moose sighting*
- Chouette épervière / *Northern Hawk Owl*
- Balbuzard / *Osprey*
- Faucon pèlerin / *Peregrine Falcon*
- Trou de respiration de phoque / *Seal breathing hole*
- Oie des neiges / *Snow Goose*
- Carcajou / *Wolverine*

Activités automne - hiver / *Autumn - Winter Activities*

- Aire de cueillette de baies / *Berry Picking Area*
- Chasse du caribou / *Hunting Caribou*
- Pêche sur la glace / *Ice fishing*
- Aire de trappage / *Trapping area*
- Aire de chasse en bateau de la sauvagine et du phoque / *Hunting Area - Waterfowl and Seal by boat*
- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

- Aire de collecte d'oeufs / *Egg Collecting Areas*
- Pêche sur la glace / *Ice fishing*
- Chasse au phoque sur la glace / *Otok hunting (basking seal on ice)*

Région de la Baie de Voisey (exclue de LISA) / *Voisey's Bay Area (excluded from LISA)*

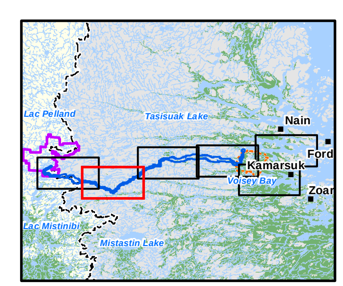
Pêche commerciale / *Commercial Fishing Locations*

- Omble chevalier / *Arctic Char* (1975-1993)
- Frayère de l'omble chevalier / *Arctic Char Spawning River*
- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*

1 *Rough Approximation based on a single snowmobile user - to be confirmed during baseline. No outfitter camp registered in NL within road corridor.*



1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 2 / Sheet 2**

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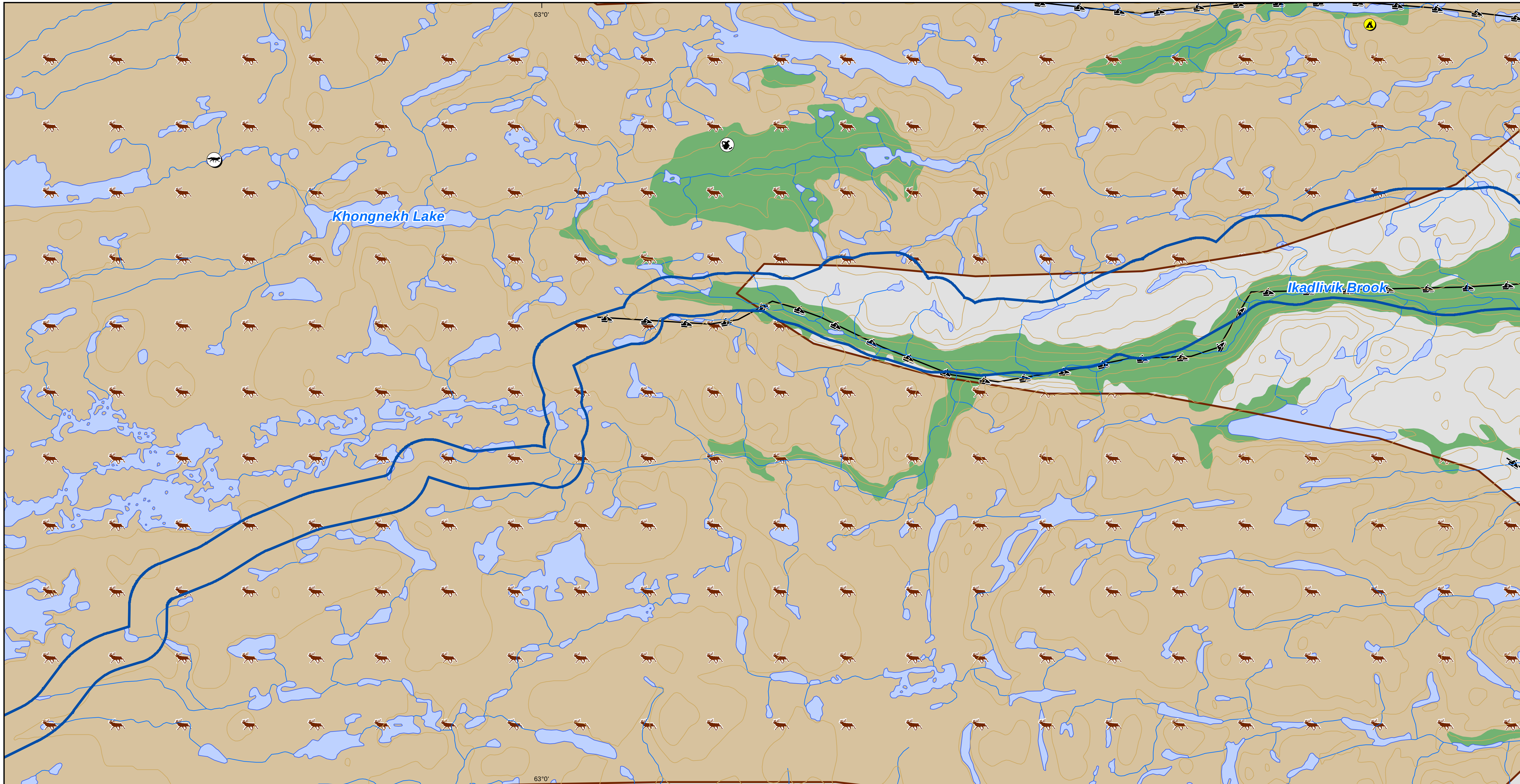

Éléments principaux du milieu humain / *Human Environmental Key Features*

- Site archéologique / *Archaeological Site*
- Camp / *Cabin* [1]
- Piste de motoneige / *Snowmobile Trail* [1]
- Hutte de castor / *Beaver house*
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- Aigle royal / *Golden Eagle*
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- Canard arlequin / *Harlequin Duck*
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- Chouette épervière / *Northern Hawk Owl*
- Balbuzard / *Osprey*
- Faucon pélerin / *Peregrine Falcon*
- Trou de respiration de phoque / *Seal breathing hole*
- Oie des neiges / *Snow Goose*
- Carcajou / *Wolverine*

Activités automne - hiver / *Autumn - Winter Activities*

- Aire de cueillette de baies / *Berry Picking Area*
- Chasse du caribou / *Hunting Caribou*
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- Aire de trappage / *Trapping area*
- Aire de chasse en bateau de la sauvagine et du phoque / *Hunting Area - Waterfowl and Seal by boat*
- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

- Aire de collecte d'oeufs / *Egg Collecting Areas*
- Pêche sur la glace / *Ice fishing*
- Chasse au phoque sur la glace / *Otok hunting (basking seal on ice)*

Région de la Baie de Voisey (exclue de LISA) / *Voisey's Bay Area (excluded from LISA)*

Pêche commerciale / *Commercial Fishing Locations*

- Omble chevalier / *Arctic Char* (1975-1993)
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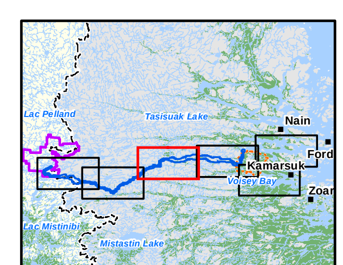
- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*

1 *Rough Approximation based on a single snowmobile user - to be confirmed during baseline. No outfitter camp registered in NL within road corridor.*



1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 3 / Sheet 3**

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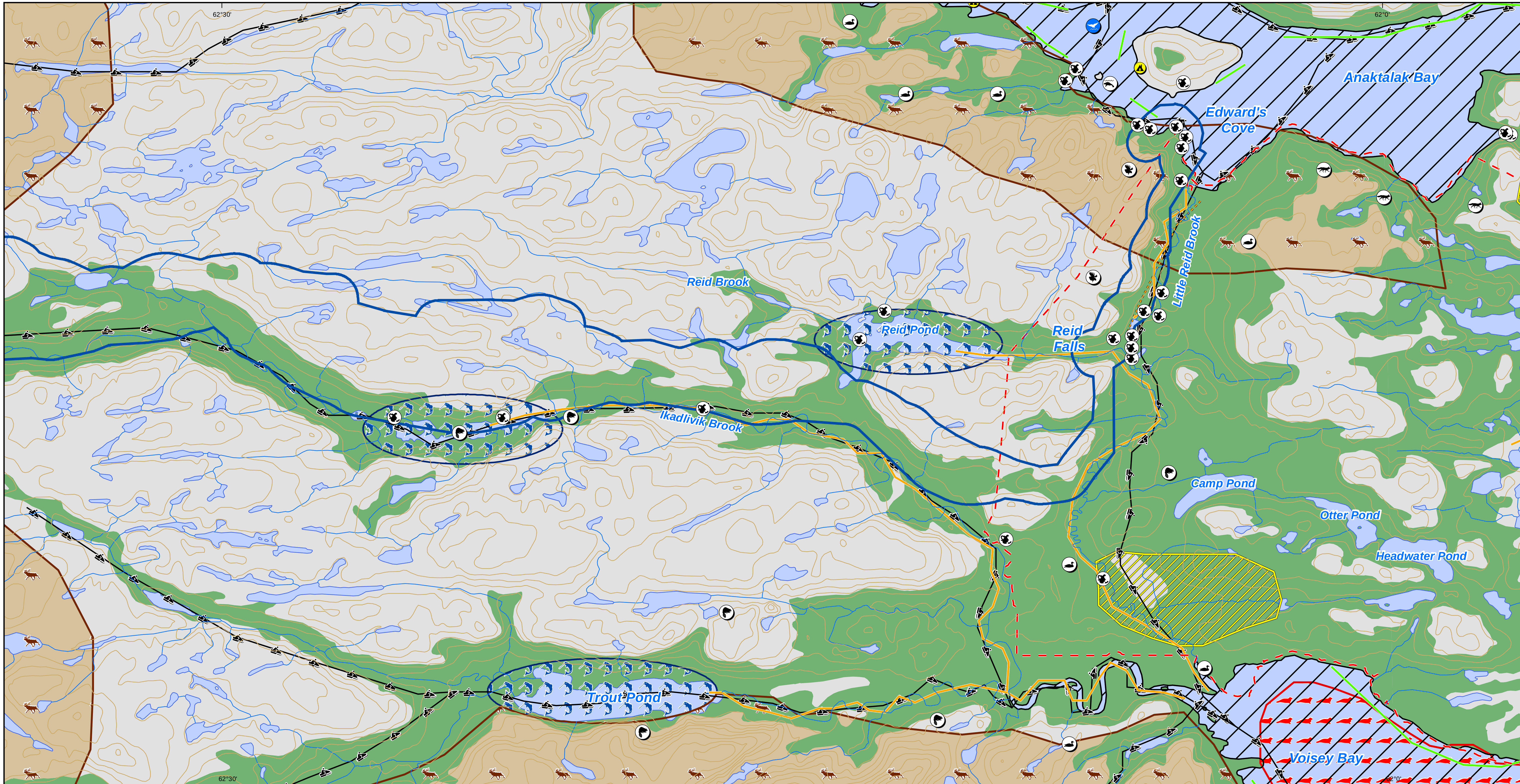

Éléments principaux du milieu humain / *Human Environmental Key Features*

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Activités automne - hiver / *Autumn - Winter Activities*

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- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

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- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*

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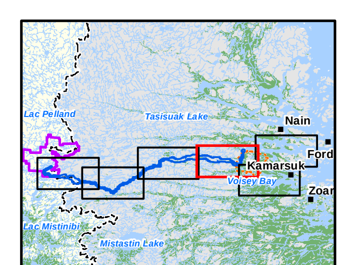

1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 4 / Sheet 4**

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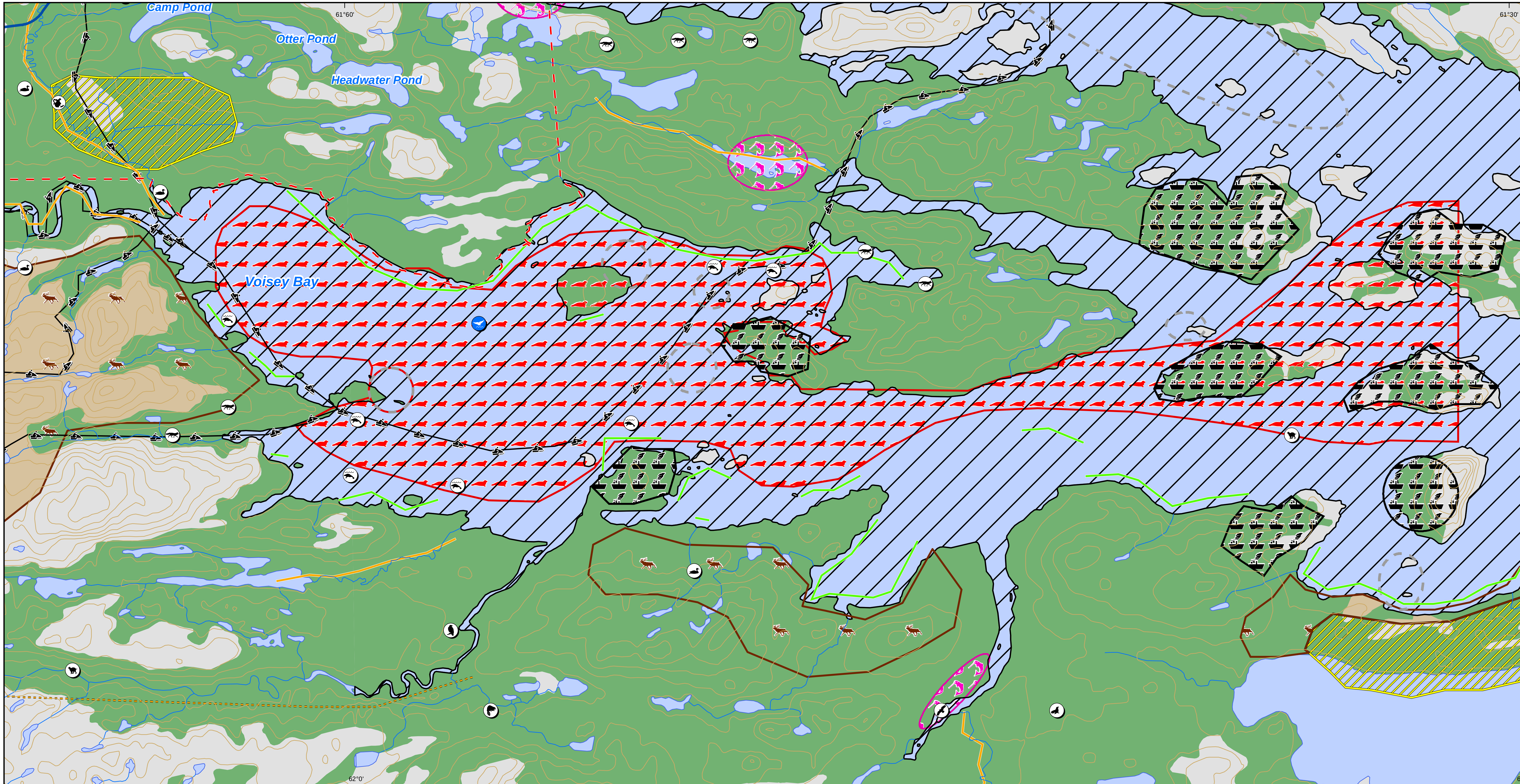

Éléments principaux du milieu humain /
Human Environmental Key Features

- Site archéologique / *Archaeological Site*
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- Piste de motoneige / *Snowmobile Trail*[1]
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- Phoque / *Harbour Seal*
- Canard arlequin / *Harlequin Duck*
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- Faucon pélerin / *Peregrine Falcon*
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- Oie des neiges / *Snow Goose*
- Carcajou / *Wolverine*

Activités automne - hiver / *Autumn - Winter Activities*

- Aire de cueillette de baies / *Berry Picking Area*
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- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

- Aire de collecte d'oeufs / *Egg Collecting Areas*
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Région de la Baie de Voisey (exclue de LISA) / *Voisey's Bay Area (excluded from LISA)*

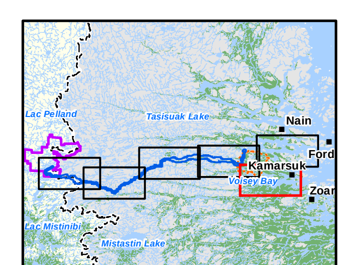
Pêche commerciale / *Commercial Fishing Locations*

- Omble chevalier / *Arctic Char* (1975-1993)
- Frayère de l'omble chevalier / *Arctic Char Spawning River*
- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*

1 Rough Approximation based on a single snowmobile user - to be confirmed during baseline. No outfitter camp registered in NL within road corridor.



1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire - Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 5 / Sheet 5**

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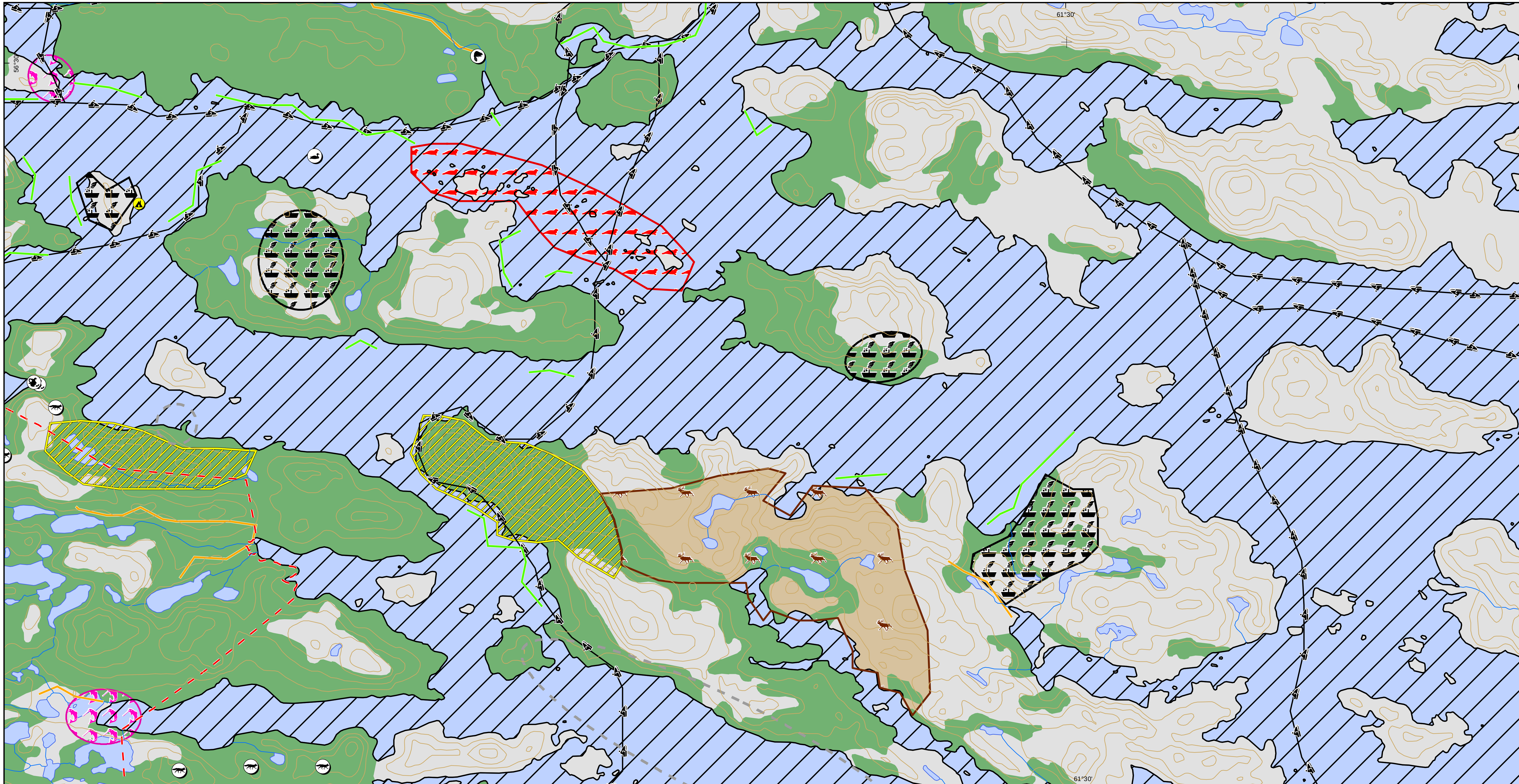

Éléments principaux du milieu humain / *Human Environmental Key Features*

- Site archéologique / *Archaeological Site*
- Camp / *Cabin* [1]
- Piste de motoneige / *Snowmobile Trail* [1]
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- Chouette épervière / *Northern Hawk Owl*
- Balbuzard / *Osprey*
- Faucon pélerin / *Peregrine Falcon*
- Trou de respiration de phoque / *Seal breathing hole*
- Oie des neiges / *Snow Goose*
- Carcajou / *Wolverine*

Activités automne - hiver / *Autumn - Winter Activities*

- Aire de cueillette de baies / *Berry Picking Area*
- Chasse du caribou / *Hunting Caribou*
- Pêche sur la glace / *Ice fishing*
- Aire de trappage / *Trapping area*
- Aire de chasse en bateau de la sauvagine et du phoque / *Hunting Area - Waterfowl and Seal by boat*
- Ligne de piégeage / *Trap Line*

Activités printemps - été / *Spring - Summer Activities*

- Aire de collecte d'oeufs / *Egg Collecting Areas*
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- Chasse au phoque sur la glace / *Otok hunting (basking seal on ice)*

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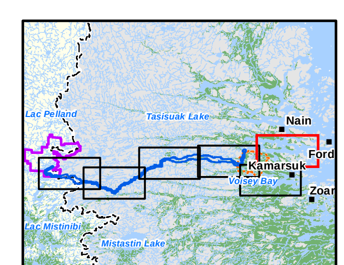
- Frayère de l'omble chevalier / *Arctic Char Spawning River*
- Saumon / *Salmon* (1975-1993)

Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*



1:100 000

0 1 2 3 km

Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

SOURCE:
Williamson 1997, Armitage 1989, Contemporary Innu Land Use and Occupancy, Innu Nation, Appendix 11.

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Inuit du Labrador /
Land Use and Occupancy - Labrador Inuit

Novembre 2013 / *November 2013* CARTE / *MAP* 7 - **Feuillet 6 / Sheet 6**

AECOM

1 Rough Approximation based on a single snowmobile user - to be confirmed during baseline. No outfitter camp registered in NL within road corridor.

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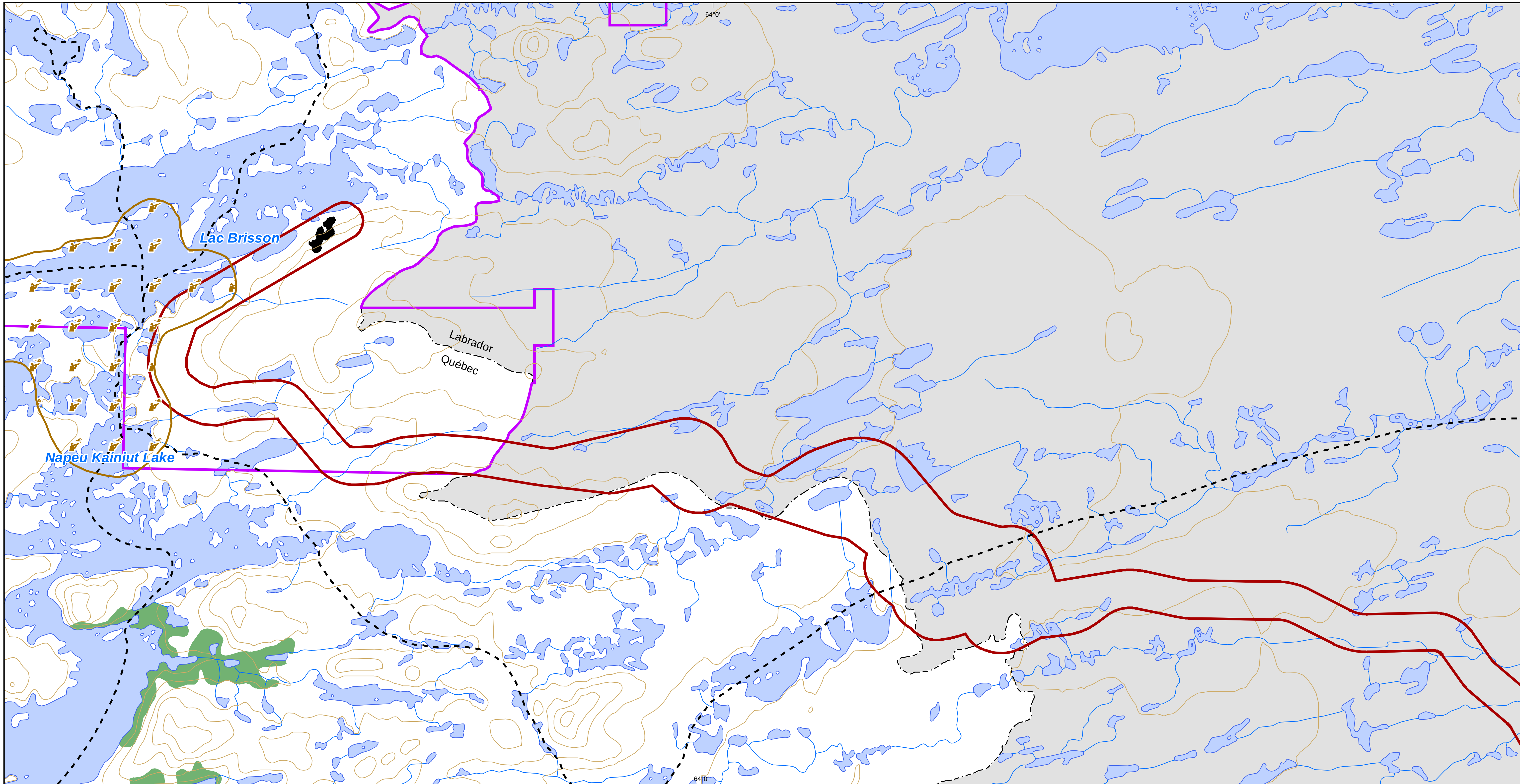

Légende / *Legend*

- Potentiel ou site archéologique / *Archaeological potential or site*
- Pêche de l'omble chevalier / *Artic char fishing*
- Aire de cueillette de baies / *Berry Picking Area*
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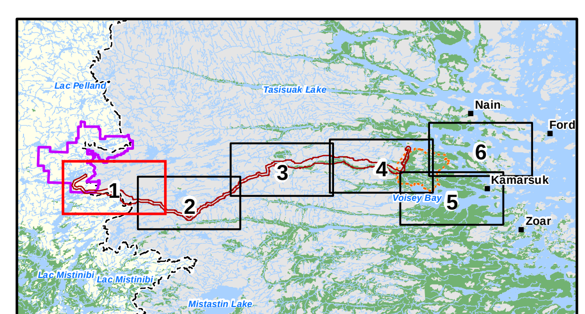
Composantes du projet / *Project Components*

- Corridor potentiel de Quest / *Potential Quest Corridor*
- B-Zone minéralisée / *B-Zone Mineral Deposit*
- Bail minier de Quest / *Quest RM Property*



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Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

QUEST RARE MINERALS LTD.

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Innus du Labrador (1998-2013) /
Land Use and Occupancy - Labrador Innus (1998-2013)

Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 1 / Sheet 1**

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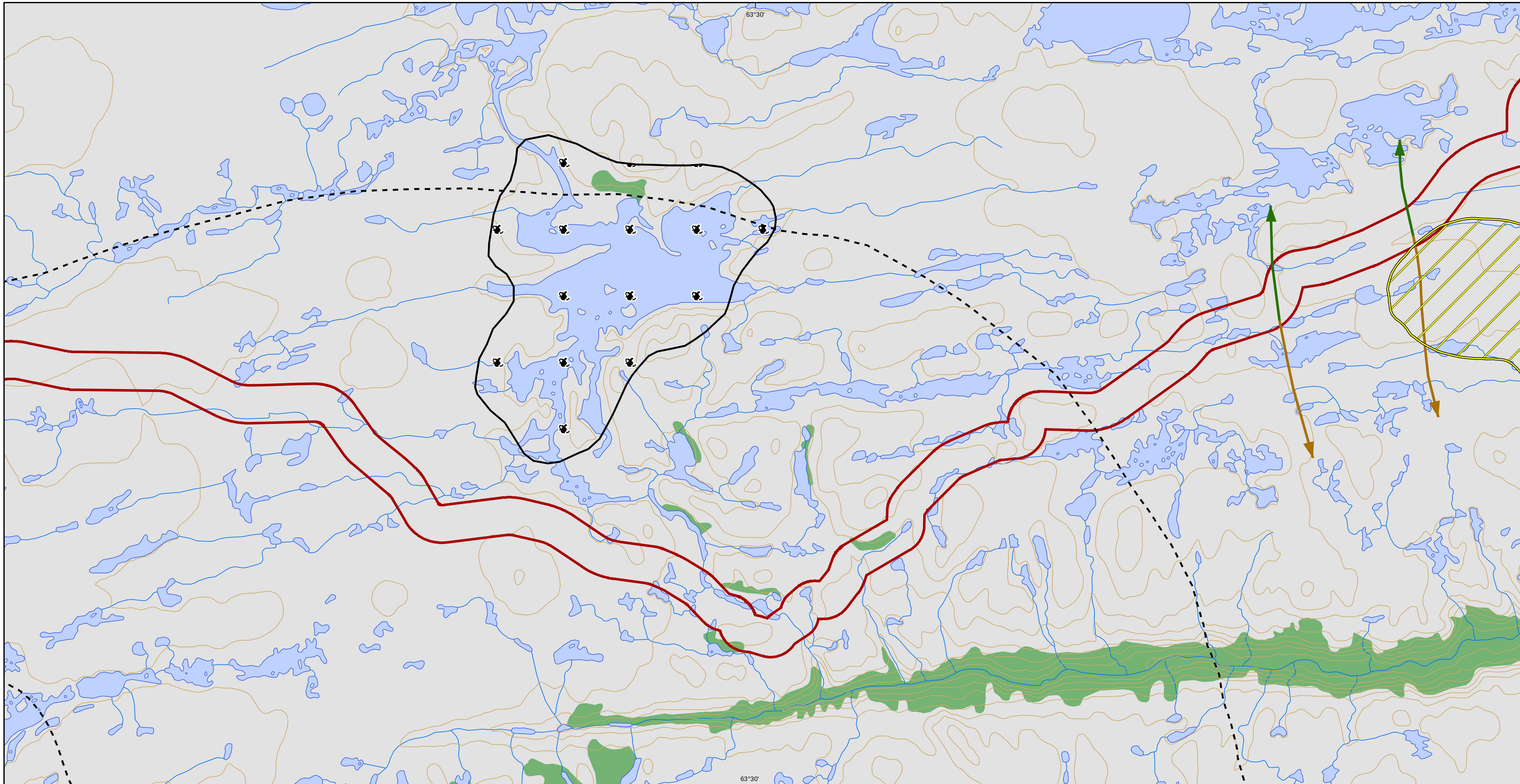

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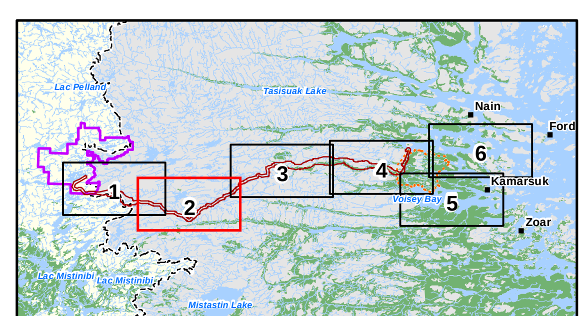

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Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Innus du Labrador (1998-2013) /
Land Use and Occupancy - Labrador Innus (1998-2013)

Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 2 / Sheet 2**

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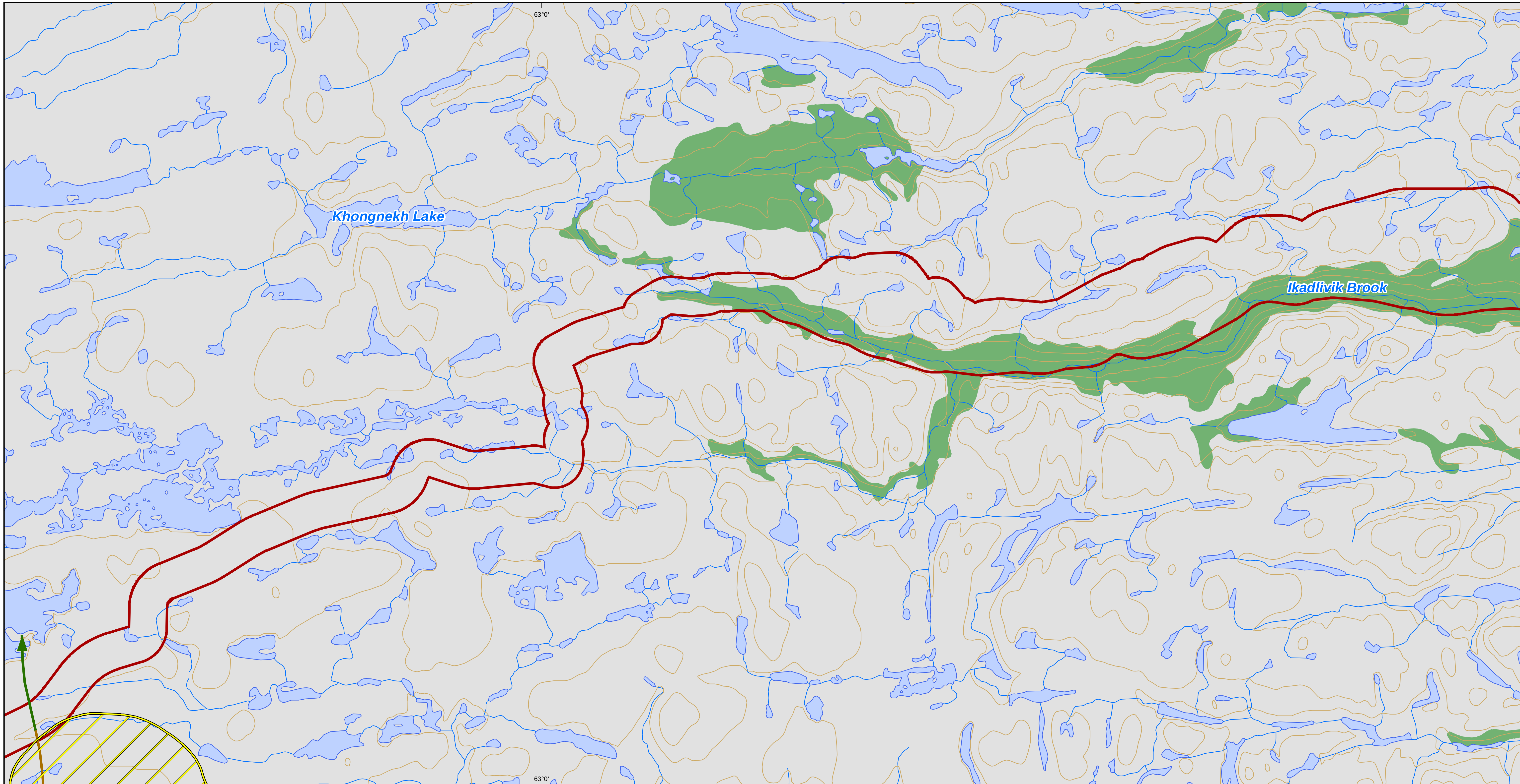

Légende / *Legend*

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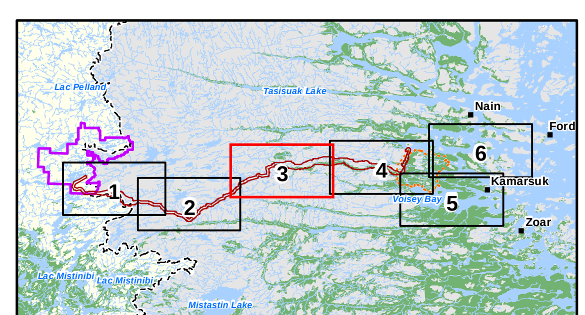

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Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Innus du Labrador (1998-2013) /
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Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 3 / Sheet 3**

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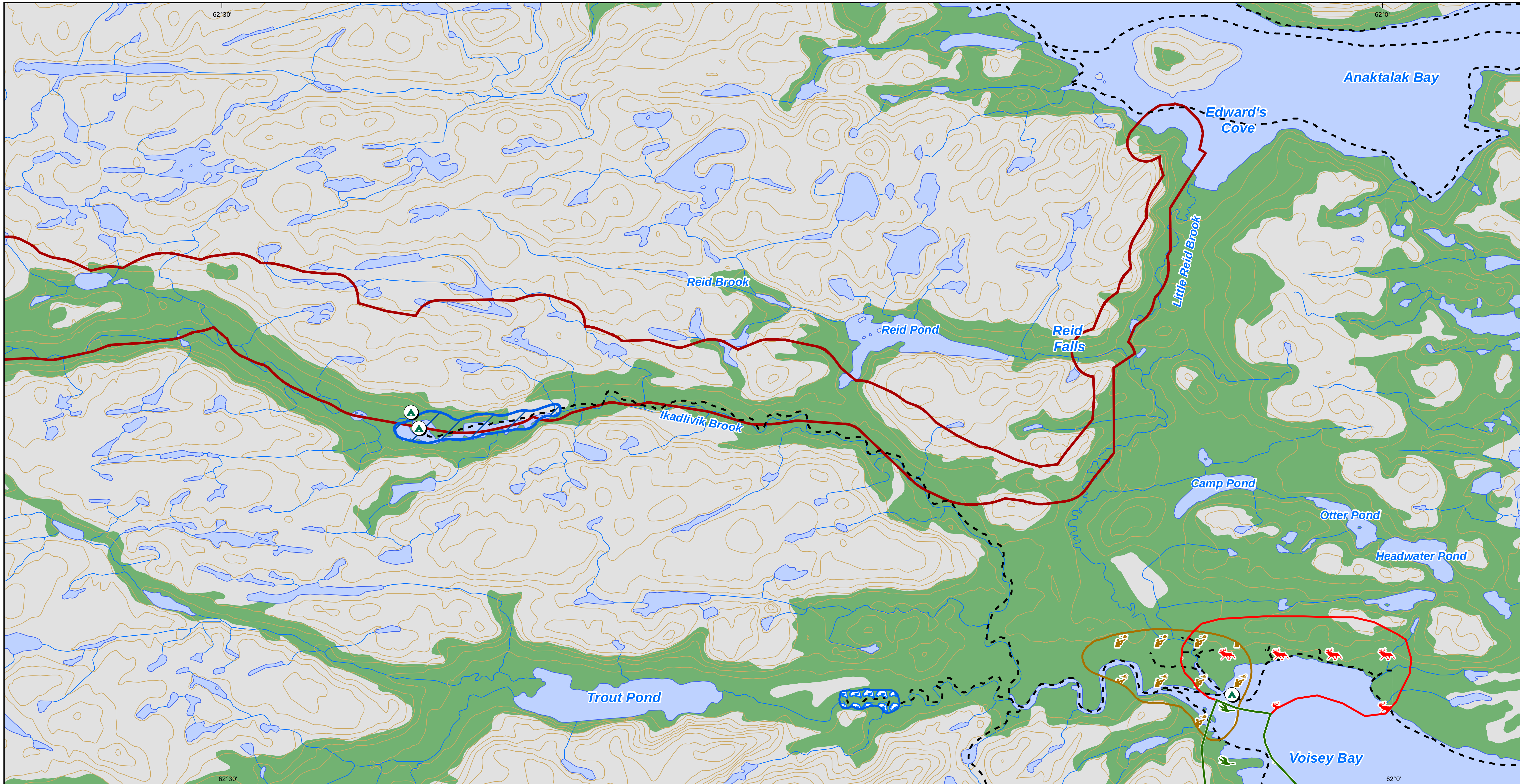

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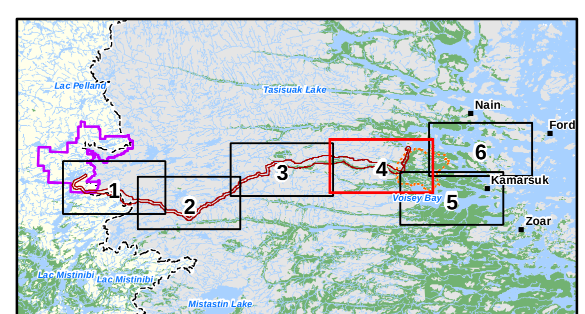

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Projection: Universal Transverse Mercator, zone 20
Datum : NAD83

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Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
Nation des Innus du Labrador (1998-2013) /
Land Use and Occupancy - Labrador Innus (1998-2013)

Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 4 / Sheet 4**

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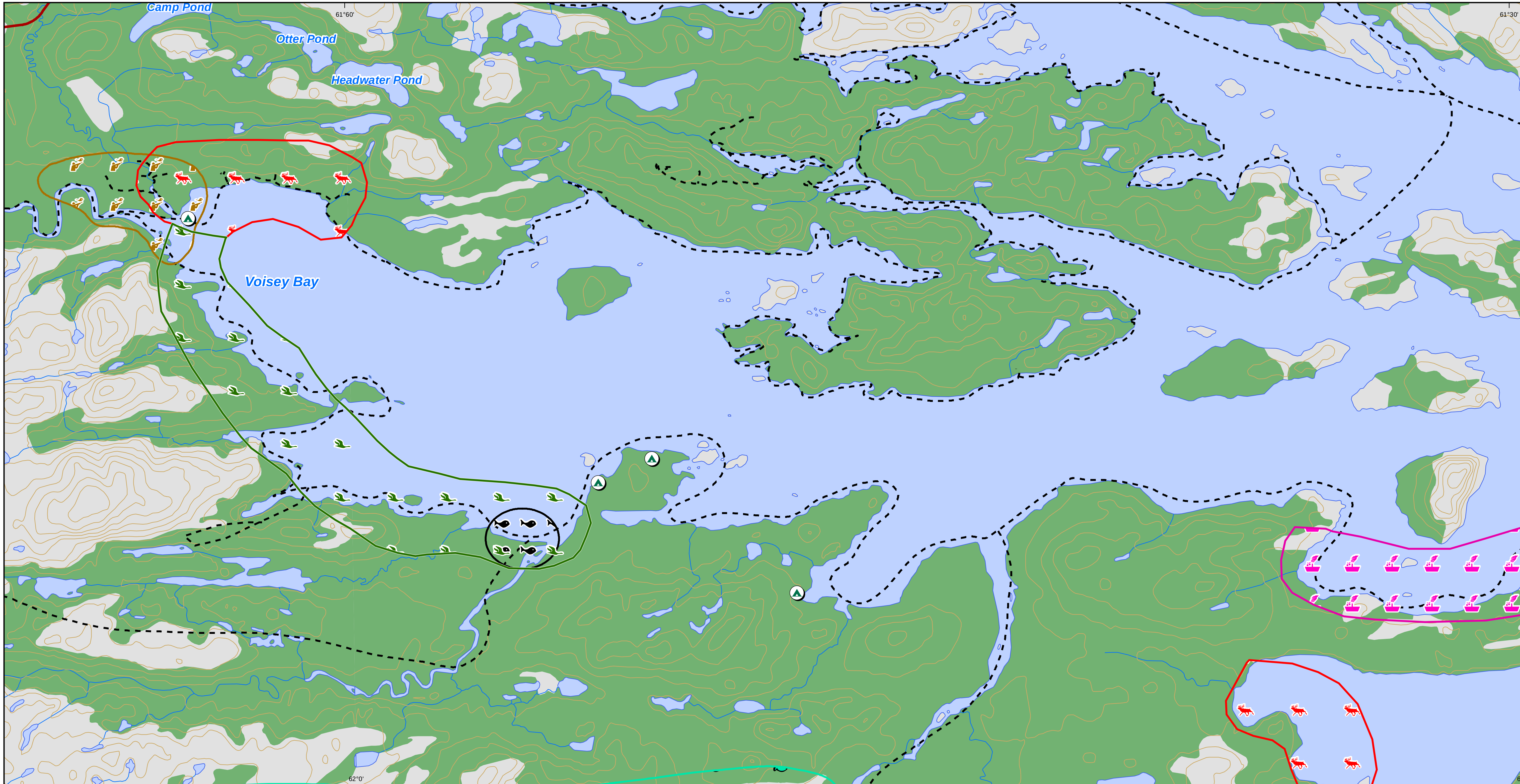

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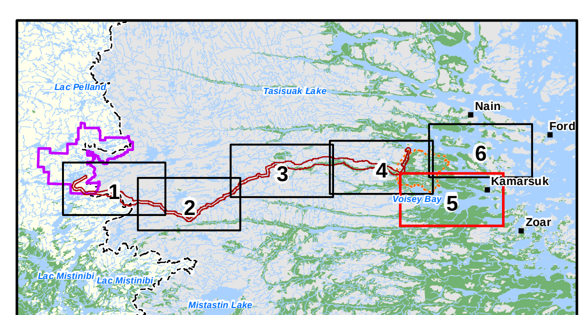

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Projection: Universal Transverse Mercator, zone 20
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Strange Lake B-Zone and Road Corridor

Utilisation et occupation du territoire -
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Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 5 / Sheet 5**

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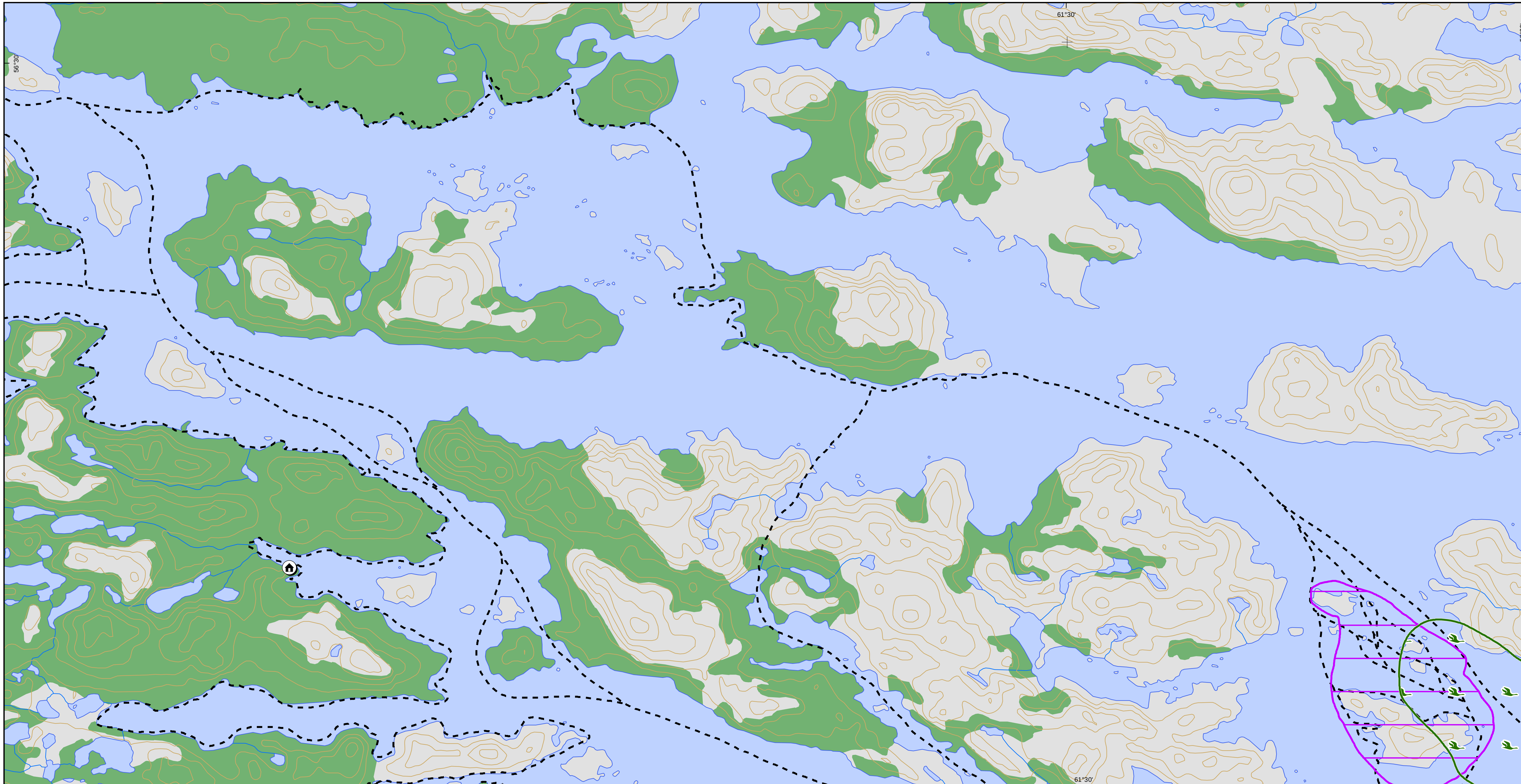

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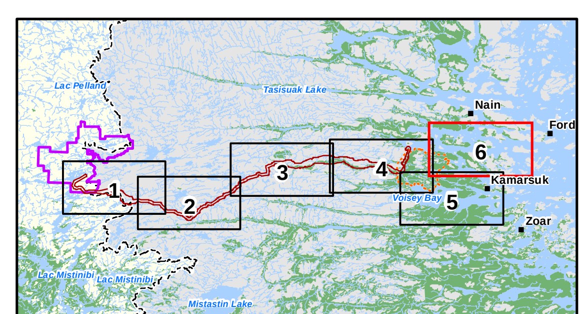

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Strange Lake B-Zone and Road Corridor

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Novembre 2013 / *November 2013* CARTE / *MAP* 8 - **Feuillet 6 / Sheet 6**

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About **AECOM**

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Our teams are driven by a common purpose to deliver a better world through our unrivaled technical and digital expertise, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of US$13.1 billion in fiscal year 2022. See how we are delivering sustainable legacies for generations to come at aecom.com and @AECOM.

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