



PATRIOT BATTERY METALS INC.

SHAAKICHUWAANAAN MINING PROJECT

INITIAL PROJECT DESCRIPTION SUMMARY

Eeyou Istchee James Bay, Nord-du-Québec, Québec

January 2025

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1. INTRODUCTION

As required by the Impact Assessment Agency of Canada (Schedule 1, paragraph 25 of the *Information and Management of Time Limits Regulations*) and outlined in the *Guide to Preparing an Initial Project Description and a Detailed Project Description* under the *Impact Assessment Act (IAA)* (SC 2019, c. 28), this document provides a summary of the Initial Project Description for the proposed Shaakichiuwaanaan Mining Project (the Project).

Briefly, the Shaakichiuwaanaan Project includes:

- ◆ the operation of a hybrid open-pit and underground mine for approximately 24 years;
- ◆ the establishment of an ore processing plant;
- ◆ the implementation of access roads and water management infrastructure;
- ◆ storage areas for waste rock and tailings generated by the processing plant;
- ◆ the implementation of related infrastructures (office buildings, garage, power supply, telecommunications, workers camp).

2. GENERAL INFORMATION

2.1. Project name, sector, and location

Project name	Shaakichiuwaanaan Mining Project
Type / Sector	Mining and minerals – Lithium
Projected location	Nord-du-Québec Territory of the Eeyou Istchee James Bay Regional Government

2.2. Information on the promoter

Developer	Patriot Battery Metals Inc. ("Patriot")
Street address	1801 McGill College Avenue, Suite 900, Montréal (Québec) H3A 1Z4
Principal representative	Cathryn Moffett Director of Environment
Contact	cmoffett@patriotbatterymetals.com 438-334-4968
Website	www.patriotbatterymetals.com



3. SUMMARY OF ENGAGEMENT WITH AUTHORITIES AND OTHER PARTIES

3.1. Identified stakeholders

An initial stakeholder list was developed based on publicly available information which focuses on stakeholders in the Eeyou Istchee James Bay Territory. Communications have taken place with representatives of the federal, provincial and municipal levels of government. The non-Indigenous stakeholders identified as part of the initial consultation activities are listed in Table 1 below.

Table 1: Preliminary stakeholder list

Federal Government	Canadian Impact Assessment Agency Department of Fisheries and Oceans Transport Canada Health Canada Natural Resources Canada
Provincial Government	Ministère des Ressources naturelles et des Forêts Ministère de l'Économie, de l'Innovation et de l'Énergie Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs Environmental and Social Impact Evaluation Committee and Environmental and Social Impact Review Committee (COMEVI/COMEX) Hydro-Québec Société du Plan Nord
Municipal Government	Eeyou Istchee James Bay Regional Government Locality of Radisson Town of Matagami
Local Economic Organizations	Centre d'entrepreneurship nordique de Matagami Centre d'études collégiales de Chibougamau Service aux entreprises et aux collectivités (SEC)
Citizen and Community Organizations	Sûreté du Québec Carrefour jeunesse-emploi de la Jamésie CLSC de Radisson
Tourism and Sport	Camping Radisson Mirage Aventure (outfitter) Owners of vacation leases and basic shelters Club de motoneige Radisson Tourisme de la Baie-James



In 2023 and 2024, Patriot prioritized building relationships with regulators and the Cree community, particularly the local tallyman’s family and the Cree Nation of Chisasibi. This initial engagement phase introduced the Project and gathered preliminary feedback ahead of the environmental and social impact assessment (ESIA) process, establishing key communication channels.

Different means of communication have been used to interact with authorities and stakeholders since 2023, which include the following:

- ◆ community newsletter
- ◆ website and informational videos
- ◆ site visits
- ◆ face-to-face meetings (public information sessions)
- ◆ virtual meetings
- ◆ radio broadcast
- ◆ stakeholder interviews

3.2. Engagement approach

Patriot’s engagement approach aligns with the UL 2723 ECOLOGO® Certification for Mineral Exploration Companies, a certification it obtained in September 2024. This certification confirms that Patriot meets industry standards for responsible social, environmental, and economic practices. The company’s consultation and engagement program is designed to promote transparency, foster effective communication with host communities and stakeholders, and support informed, accountable decision-making.

Central to Patriot’s approach are four key priorities:

1. Reducing Project impacts in collaboration with stakeholders,
2. Maximizing benefits,
3. Co-defining integration measures with the community, and
4. Addressing stakeholder concerns comprehensively.

Through these efforts, Patriot aims to build a lasting relationship of trust, ensuring that social acceptability and active community participation are embedded in the Project’s planning, design, and impact assessments.



3.3. Main concerns

The main comments and concerns expressed to date by non-Indigenous stakeholders are summarized in the table below. The following table details the key issues raised to date by theme and identifies Patriot’s approach to address them.

Table 2: Stakeholder comments and concerns

Themes	Comment / Concern	Approach to address the concern
Local and regional economy	<ul style="list-style-type: none"> – Radisson and Matagami would like to take advantage of the opportunities offered by the Project to benefit from local and regional economic spin-offs. – Risks associated with fluctuations in the value of lithium. – Project energy requirements. 	<ul style="list-style-type: none"> – Patriot values the economic success of local communities and is committed to ensuring that the Company’s activities and value chain provide sustainable, mutual benefits. The Company prioritizes business relationships with contractors that employ and source locally, specifically within the community of Chisasibi. A responsible procurement strategy is in place with a perspective of continuous improvement. – Patriot has initiated a power trade-off study to detail electrical needs and assess potential transmission line routes to confirm the best alternative.
Communication and consultation process	<ul style="list-style-type: none"> – Initiate dialogue with the people of Radisson with a presentation session on the Project. – Promoting an inclusive approach to achieve greater social acceptability. 	<ul style="list-style-type: none"> – Positive, mutually beneficial relationships with the communities in which Patriot operates are invaluable. Ensuring the Company’s activities provide meaningful benefits is paramount as is a continuous dialogue with Indigenous and non-Indigenous stakeholders. Patriot implements an engagement approach based on a culture of respect, communicating its values and expectations, and rewarding respectful behaviour.
Transport	<ul style="list-style-type: none"> – The various projects in the Eeyou Istchee James Bay region are increasing the pressure on the region’s only road access, the Billy-Diamond Highway. – The increase in traffic may lead to a rise in collisions on the Billy-Diamond Highway. 	<p>Patriot is committed to:</p> <ul style="list-style-type: none"> ▪ Identifying opportunities to reduce traffic impacts, ▪ Establishing noise and dust measurement stations, and ▪ Maximizing benefits to local communities from Project transportation and fleet requirements. <ul style="list-style-type: none"> – In 2023, the Company undertook a pre-feasibility transport study to determine potential transportation routes, if the infrastructure was available, the approximate equipment and workforce requirements. This study, combined with discussions with the town of Matagami, allowed the Company to confirm that Matagami is a suitable location for a transportation hub.
Health and quality of life	<ul style="list-style-type: none"> – How to maximize the positive spin-offs of the Project in order to attract new residents to Radisson. – Measures to reduce commuting (Fly-In / Fly-Out). – Forest fire measures and evacuation plan. 	<ul style="list-style-type: none"> – Patriot is committed to looking for opportunities to generate or enhance positive impacts such as contribution to the social and economic growth of our communities through the prioritization of local procurement and employment, and investment in sustainable community and educational initiatives. – Patriot has developed a Fire Response Manual and a Fire Watch Protocol for our work in the boreal forest.
Regulations	<ul style="list-style-type: none"> – Compliance with legislation and authorization processes at various levels of government, including municipal regulations. 	<ul style="list-style-type: none"> – All laws, regulations, guidelines, policies must be respected by Patriot employees and contractors, and applicable authorizations and permits must be obtained from relevant ministries.



3.4. Future engagement plan

Throughout the Project and the ESIA process, Patriot will engage government regulators and local stakeholders to address comments and concerns, optimizing the Project and its integration with the host environment. Following the formal start of the federal impact assessment, consultations will focus on key issues such as fish habitat, waste management, and water use.

Stakeholder engagement will align with Project milestones to ensure transparency, with regular updates via community briefs and fact sheets. Targeted interviews will also gather input on regional services, including health care, education, municipal services, and economic development.

4. ENGAGEMENT ACTIVITIES WITH INDIGENOUS GROUPS

Since 2022, Patriot has prioritized building a respectful relationship with the Cree Nation of Chisasibi, conducting over 240 communication activities and hiring a Community Liaison Coordinator based in Chisasibi. In August 2024, the company opened an office in the Chisasibi Commercial Center, further strengthening community ties. Patriot has also organized cultural events, such as Shaakichiuwaanaan Day, where both Cree community members and Patriot employees shared cultural traditions. The Project was formally named Shaakichiuwaanaan, reflecting the influence of Cree culture, with a logo designed collaboratively with the local Tallyman's family.

Patriot actively involves the Cree community in Project activities, with over 120 First Nations workers participating in 2024, supporting areas such as drilling, civil works, and road construction. Environmental baseline data collection has also engaged local Cree expertise through the Cree enterprise Niigaan. Patriot benefits from the guidance of Cree leaders experienced in managing the balance between mining activities and the Cree way of life, integrating insights from past and existing projects on Eeyou Istchee territory.

Patriot continues to consult Cree leadership and government representatives to ensure the Shaakichiuwaanaan Project respects Cree interests, particularly in areas like transportation, which is a key concern for the community. This engagement process seeks to align the Project's development with Cree perspectives and needs, informed by a comprehensive pre-consultation with Indigenous groups.

Indigenous groups and communities were identified and ranked in priority (primary, secondary, tertiary) according to their proximity and interest in the Project, as per Patriot's current understanding. The preliminary list of Indigenous communities and groups is presented in Table 3.



Table 3: Identified Indigenous groups

Category	Stakeholders
Indigenous communities	Cree Nation of Chisasibi (primary) Cree Nation of Wemindji (secondary) Cree Nation of Mistissini (secondary) Cree Nation of Eastmain (tertiary) Cree Nation of Waskaganish (tertiary) Cree Nation of Nemaska (tertiary) Cree Nation of Waswanipi (tertiary)
Regional organizations	Cree Nation Government
Local land users	Tallyman and family (trapline CH39) Tallyman (trapline M02A) Tallyman (trapline VC26) Cree Trappers Association
Chisasibi entrepreneurs, economic and community organizations	Chisasibi Business Development Group (CBDG) Chisasibi Business Service Centre Saskounan (construction company) Niigaan (environmental consultant) Chisasibi Eeyou Resource and Research Institute (CERRI) Cree Board of Health Cree School Board Youth council Chisasibi Cree Women Association Chisasibi Cree Men Association

Information sharing and engagement opportunities will be offered to all regional Indigenous communities interested in the Shaakichiuwaanaan Project. Traditional knowledge from Indigenous land users will help shape the Project's design and impact assessment.

Indigenous communities potentially interested in the Project within the area have been identified, and each community's engagement has been prioritized based on the expected impact on their lands and traplines.

The engagement activities have included the use of the engagement tools listed in section 3.1. In addition to these communication tools, Indigenous community members have also been engaged to participate directly in environmental baseline field work.

Since 2023, Patriot has held multiple meetings with the Chief and Council of Chisasibi, the tallyman of trapline CH39 and his extended family, as well as local businesspeople and community members. The main comments received throughout these meetings, and Patriot's approach to address these comments are provided in Table 4.



Table 4: Indigenous groups main comments and concerns

Theme	Comment / Concern	Approach to address the concern
<p>Water quality and fish habitat</p>	<ul style="list-style-type: none"> - Impact of mine effluent on the environment. - Management of surface water/runoff from the mine. - Water requirements to supply the mine. - Water protection and how water will be treated by the Company. - Cumulative impacts on fish habitat. 	<ul style="list-style-type: none"> - The planned water management approach as described in the Preliminary Economic Assessment was shared with the community in September 2024. - Additional details on water management measures will be discussed with the community, the family and the Collaborative Indigenous Environmental Committee once it is established. - With regards to fish habitat, Patriot is committed to: <ul style="list-style-type: none"> ▪ Characterize fish habitat, fish populations and fish tissue in potentially impacted waterways and waterbodies. ▪ Seek opportunities to reduce and minimize impacts on fish habitat; and ▪ Seek opportunities to invest in fish habitat improvement projects in the region. - With regards to water quality, Patriot is committed to: <ul style="list-style-type: none"> ▪ Understanding the existing water quality ▪ Modelling water quality of the Project effluent including an understanding of geochemistry and other impacts to water quality during mining/processing ▪ Designing water treatment systems to ensure water quality at discharge meets regulatory requirements
<p>Traditional use</p>	<ul style="list-style-type: none"> - Disruption of traditional activities (hunting, fishing, trapping, berry picking, etc.) throughout the mine's life cycle (construction, operation and closure); alteration of air, water and soil quality, as well as impacts on plants and animals. 	<ul style="list-style-type: none"> - Patriot is committed to: <ul style="list-style-type: none"> ▪ Identifying existing land use and sensitive receptors; ▪ Identifying special plants and wildlife of interest to local land users; and ▪ Investing in traditional and cultural enrichment opportunities.
<p>Cumulative impacts</p>	<ul style="list-style-type: none"> - To date, the cumulative impact of disturbances on the traplines has made the resource scarce. - The increase in activity on the Trans-Taiga is having an impact on the decline in the number of moose and caribou visiting the area. - Hydroelectric development tops the list of contributors to cumulative impacts. - Land users have mentioned that, as a result of the creation of the Hydro-Québec reservoirs, the quality of the fish has declined considerably. - The various projects in the Eeyou Istchee James Bay region are increasing the pressure on the region's only road access, the Billy-Diamond Highway. - There is pressure on health services from various development projects. 	<ul style="list-style-type: none"> - Patriot has developed a land user questionnaire and plans to schedule land use interviews in 2024 and 2025. - Interviews with the Cree Health Board will be scheduled for 2025. - A cumulative impact assessment is planned to be undertaken as part of the provincial and federal impact assessment.



Theme	Comment / Concern	Approach to address the concern
<p>Local and regional economy</p>	<ul style="list-style-type: none"> - The Indigenous communities do not only want to suffer the negative impacts of the Project, but also to benefit from the opportunities it offers. - Land users would be interested in partnering with the proponent in the various activities and work to be carried out in the area as the environmental and social assessment of the Project progresses. - Comments were made on the importance of addressing future training and employment/contract opportunities within the affected families and community. It was also made clear that the current spirit of collaboration in these early stages of the Project does not translate into acceptance or approval of the Project. - The stakeholders we met would like to know more about the economic situation of the lithium mining industry. - It is proposed to involve an Indigenous liaison officer to facilitate the participation of Cree community members (information sharing, jobs, contracts, etc.). - The importance of drawing up a list of training needs and the jobs that will be available was stressed. - Some issues relating to certain recruitment criteria considered to be too high, particularly regarding mastery of the French language were raised. - There is a desire for the establishment of education agreements. 	<ul style="list-style-type: none"> - Negotiation of an Impact Benefit Agreement is anticipated as part of the Project planning process. - Patriot has engaged Niigaan, a Chisasibi-based environmental consultant to provide environmental field technicians on baseline studies throughout the past several years. - An Economic Development Committee is contemplated for the future to further detail economic opportunities, including training, employment, and contracting opportunities. - Community news briefs with plain language information about the mining industry have been circulated throughout the past several months. - A full-time Community Liaison Coordinator was hired in January 2024 and office space in Chisasibi was leased in August 2024. - Patriot hired a Human Resources Director in October 2024. A list of mine workforce positions will be developed as part of the Feasibility Study including developing training requirements for the positions.
<p>Communication and consultation process</p>	<ul style="list-style-type: none"> - All the Eeyouch (James Bay Cree) we met felt it was important to establish a relationship of trust. - For consultation events, the Cree favour the use of the Conversation Café (also known as the World Café) method, which is said to be the most productive. - For the Crees, and particularly the main users of the area, the best communication tools for reaching communities would be local radio and social media. - It is important to reach out to the younger generation by broadening the means of communication, in particular via the web, social media, site visits or by directly inviting students to take part in information and consultation events. - The importance of translating documentation into Cree and communicating in Cree as much as possible was stressed. 	<ul style="list-style-type: none"> - Patriot has a Stakeholder Engagement Protocol that establishes guidelines to build and maintain a meaningful relationship with community stakeholders. This protocol is based on 6 key steps: <ul style="list-style-type: none"> ▪ Identifying the Project parameters and responsibilities to fulfill the duty to inform. ▪ Identifying stakeholders and learn about the social environment. ▪ Planning and contact with key stakeholders. ▪ Ongoing communication, feedback and follow-up. ▪ Reporting. ▪ Sharing information with employees and entrepreneurs. - Patriot is respecting these principles while interacting with Indigenous groups: <ul style="list-style-type: none"> ▪ Engage early enough to identify key concerns upstream in the Project. ▪ Notify stakeholders in advance of the consultation activities. ▪ Ensure all participants have sufficient time to express their opinion and concerns. ▪ Actions are adequately timed (e.g., considering other events or traditional activities) ▪ Present content meaningful to the stakeholder and in an understandable format



Theme	Comment / Concern	Approach to address the concern
		<ul style="list-style-type: none"> ▪ Conduct consultation or information session in local language (e.g., translator, accessible wording) ▪ Adopt two-way methods so that both sides can exchange views and information ▪ Include all potential interested parties (e.g., elders, youth, men, women, etc.) ▪ Keep track of who was consulted and key issues raised. ▪ Ongoing consultation and information activities as required during the life of the Project
Transport	<ul style="list-style-type: none"> – The risk of accidents/collisions caused by increased traffic. – Impact of increased traffic on large wildlife. 	<ul style="list-style-type: none"> – A transportation plan will be developed in collaboration with local and regional Indigenous communities.
Health and quality of life	<ul style="list-style-type: none"> – A number of social and quality of life concerns were raised: <ul style="list-style-type: none"> ▪ Equity in employment and career development ▪ Problems associated with systemic racism ▪ Cultural safety (lifestyle, language, spirituality, cultural sites, traditional food, etc.) ▪ Greater openness of the territory, with the risk of an increase in human trafficking (disappearance of Indigenous women) ▪ Risk to the health and safety of workers and land users ▪ Measures in place in the event of forest fires and an evacuation plan ▪ Difficulty reconciling work and family life (rotating shifts) ▪ Competition for local labour – Risks and failures linked to site operations (exceptional events) 	<ul style="list-style-type: none"> – Patriot is committed to: <ul style="list-style-type: none"> ▪ Providing diverse, inclusive, and culturally safe workplaces with a continuous improvement perspective.
Regulations	<ul style="list-style-type: none"> – The James Bay and Northern Quebec Agreement (JBNQA) sets out several questions that need to be answered in order to understand the authorization and consultation process and the environmental protection regime. 	<ul style="list-style-type: none"> – The JBNQA will be continually referenced and respected throughout the Project planning process

4.1. Future engagement plan

Patriot’s plan is based on mutual cooperation and collaboration with a view to maintaining a strong, ongoing link with the Indigenous groups potentially affected by the Project. It is flexible and will allow for adaptation according to the feedback received. Initially the engagement activities will aim at gathering concerns and interests, especially those related to environmental and social concerns with regards to the planned Project.

Key discussion topics are planned to be in the following categories:



Project design

- ◆ Project description
- ◆ Calendar / Schedule
- ◆ Evaluation of alternatives
- ◆ Closure planning

Social environment

- ◆ Traditional land use
- ◆ Archaeology
- ◆ Socioeconomics
- ◆ Traffic and transportation

Physical environment

- ◆ Air quality and noise
- ◆ GHGs and climate change
- ◆ Water quality
- ◆ Hydrology and hydrogeology
- ◆ Landscape and visual impacts

Biological environment

- ◆ Fish and habitat
- ◆ Wildlife and endangered species
- ◆ Wetlands

Two committees will be established to support focused discussions on environmental and economic issues with the primary Indigenous community. Each committee will include a representative from Patriot, a member of the Chisasibi community, and a representative from the Cree Nation Government. The committees will meet monthly or as needed based on mutual agreement.

5. STUDIES, PLANS, OR ASSESSMENTS

A Preliminary Economic Assessment (PEA) conducted in accordance with the NI 43-101 standard was published on September 12, 2024.

Based on the available information consulted, no regional assessment in relation to the Project has been conducted pursuant to sections 92 and 93 of the IAA (SC 2019, c. 28, s. 1), or by or on behalf of any other jurisdiction, including an Indigenous governing body.



6. STRATEGIC ASSESSMENT

A report prepared by Environment and Climate Change Canada has been published on the Strategic Climate Change Assessment (SCCA) which has been recognized as a strategic assessment (Section 95 of the EIA) and applies to projects designated under the Act. This document provides guidance to proponents on how federal impact assessments consider greenhouse gas emissions and a project's ability to withstand climate change. It is intended to ensure consistent, predictable, efficient and transparent consideration of climate change issues at each stage of the impact assessment process.

7. PURPOSE OF AND NEED FOR THE PROJECT

The purpose of the Project is to mine a spodumene-bearing pegmatite deposit in Eeyou Istchee James Bay and sell its concentrate to one or more customers as a component used in the production of lithium batteries.

As the world shifts towards a greener future, lithium-ion batteries—critical for energy storage, distribution, and electric vehicles—are driving strong growth in the lithium sector. Recognizing this, Québec and Canada have developed strategies to support the critical minerals and battery industries.

The Project's goal is to help meet global lithium demand, aligning with these strategies by developing North America's next lithium district at the Shaakichiuwaanaan property.

This site contains substantial lithium and tantalum resources, with a recent estimate showing 78.6 Mt at 1.43% Li_2O and 162 ppm Ta_2O_5 in the indicated category. Patriot's goal is to generate lasting value for communities, shareholders, and employees through sustainable project development.

In October 2020, Québec launched its Critical and Strategic Minerals Plan to support regional prosperity and a low-carbon economy. In 2021, Canada also identified 31 critical minerals, essential for economic stability and secure supply chains, including lithium. Both strategies recognize lithium as vital for low-emission technologies.



8. APPLICABLE PROVISIONS

The provisions of the Schedule to the *Physical Activities Regulations* (SOR/2019-285) describing the Project in whole or in part are as follows:

- ◆ 18(c): The construction, operation, decommissioning and closure of a new metalliferous mine, other than a rare earth elements mine, placer or uranium mine, with an ore production capacity of 5 000 tonnes or more per day.
- ◆ 18(d): The construction of a new metallurgical plant, other than a uranium mill, with an ore intake capacity of 5 000 tonnes or more per day.

The Project includes a new hybrid lithium mine and metallurgical plant with an average underground capacity of 5 500 tonnes per day (tpd), an open-pit capacity of 44 000 tpd and a maximum processing plant intake of 10 000 tpd.

The Project has the potential to affect the following components that fall under federal jurisdiction as referred to in section 2(1) of the IAA, namely:

- ◆ fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act*;
- ◆ aquatic species within the meaning of subsection 2(1) of the *Species at Risk Act*;
- ◆ migratory birds within the meaning of section 2(1) of the *Migratory Birds Convention Act 1994*;
- ◆ the Indigenous peoples of Canada, resulting from any change to
 - physical and cultural heritage,
 - the current use of lands and resources for traditional purposes, or
 - any structure, site or thing that is of historical, archaeological, paleontological or architectural significance;
- ◆ the health, social, or economic conditions of the Indigenous peoples of Canada.

The Project is not a component of a larger project that is not listed in the Project List.

It should also be noted that the Project involves the deposition of tailings and waste rock in fish habitat and as such, a modification of Schedule 2 of the *Metal Mining and Diamond Mining Effluent Regulations* (MMDMER) will likely be required for the Project.



9. ACTIVITIES, INFRASTRUCTURE, AND PHYSICAL WORKS

In September 2024, Patriot published a NI 43-101 Preliminary Economic Assessment (PEA) for the Shaakichiuwaanaan Project (Patriot, 2024). The mineral resource estimate for CV5 is 78.6 Mt at 1.43% lithium oxide (Li_2O) and 162 ppm tantalum oxide (Ta_2O_5) in the indicated category and 43.3 Mt at 1.25% Li_2O and 161 ppm Ta_2O_5 in the inferred category (at a cut-off of 0.40% Li_2O). This resource makes the CV5 spodumene pegmatite one of the ten largest lithium pegmatites in the world, as well as one of the largest tantalum pegmatites in the world.

The Project will include various infrastructures such as:

- ◆ an access road to the mine site from the Trans-Taiga Road;
- ◆ on site roads and culverts;
- ◆ a camp for workers during the construction and operation of the mine;
- ◆ a hybrid mine for mining the CV5 deposit¹ (an open pit and an underground mine);
- ◆ management areas for waste rock and mine tailings;
- ◆ an ore storage area;
- ◆ a dam to isolate the open pit from Lake 001, which partly covers it;
- ◆ a diversion channel;
- ◆ a power transmission line, electrical substation, and on-site distribution network;
- ◆ crushing area and ore processing plant;
- ◆ a paste backfill plant;
- ◆ a water treatment plant;
- ◆ an explosive emulsion plant and magazine storages (2);
- ◆ a garage and other ancillary buildings;
- ◆ a fuel storage area and refuelling station.

Exploration infrastructure was developed prior to the works and activities described in this document. This infrastructure and its construction were subject to prior authorization and are not included in the scope of the environmental impact assessment. Existing infrastructure at the exploration site includes the construction and operations of an exploration camp at kilometre 270 of the Trans-Taiga Road and the construction of a four-season access road from the Trans-Taiga Road to the exploration site.

The Project will be developed in a series of phases, including site preparation, construction, operations and closure.

¹ Other groups of spodumene-bearing pegmatite offer the potential for additional resources, notably CV13 and CV9 to the west and east of CV5 respectively.



The total workforce required for the Project will vary throughout its life cycle, ranging from approximately 500 workers during the construction phase to around 50 workers as operations wind down towards the end of the mine's life.

The construction phase is expected to employ a maximum of 500 workers. During the operation phase, the workforce will consist of approximately 230 workers. This number will begin to decrease starting in Year 17, reflecting the mine's transition towards the closure phase.

The following table presents the roles that will be required to support operations across key departments.

Table 5: Key roles supporting operations

Mine Operations		
◆ Mining Operation Superintendent	◆ Loader Operator	◆ Driller
◆ Pit Foreman	◆ Grader/Dozer Operator	◆ Drill Helper
◆ Shovel Operator	◆ Water Truck/Excavator Operator	◆ Blaster
◆ Truck Operator	◆ Labourer (Lower-level)	◆ Blaster Helper
Mine Maintenance		
◆ Maintenance Superintendent	◆ Maintenance Foreman	◆ Maintenance Planner
		◆ Mechanic
Technical Services		
◆ Technical Services Superintendent	◆ Project Engineer	◆ Sampler
◆ Mining Engineer	◆ Geologist	◆ Surveyor
Tailings Operations		
◆ Tailings Foremen	◆ Tailings Loader Operator	◆ Tailings Excavator Operator
◆ Tailings Planner	◆ Tailings Dozer Operator	◆ Tailings Articulated Truck Operator



9.1. Site preparation and construction phase

The first phase of the Project will be to prepare the site to receive the equipment and allow for the construction of the infrastructure, structures, and works. Site preparation activities that will be carried out with the help of subcontractors and their machinery is planned to include:

- ◆ tree clearing;
- ◆ access road construction;
- ◆ installation of construction trailers and temporary sanitary infrastructures;
- ◆ development of temporary water management infrastructure;
- ◆ erection of equipment and material storage areas;
- ◆ transportation of machinery to site; and
- ◆ clearing and grading of areas for future infrastructure and works.

In the area of the pit and underground mine, this work will be aimed at exposing the rock in preparation for the blasting work that will be required for the start of operations.

During this work, the topsoil and overburden will be stored in a temporary storage area so that it can be reused for future needs or restoration work.

Site preparation and construction will rely primarily on subcontractors and will include the following major tasks:

- ◆ construction of the workers camp;
- ◆ civil and earthworks contractor for bulk site clearing and grading;
- ◆ electrical contractor for installation of primary power and substation;
- ◆ mechanical contractor for infrastructure equipment installation (sewage and water treatment plants, facilities such as trailers, fuel farm, etc.).

The site preparation and construction phase is planned to begin in Q1 2028 and last for 12 months.

9.2. Operations phase

The key activities planned for the operations phase include ore extraction, ore processing, waste rock and tailings storage, concentrate transport, and water management.

9.2.1. Ore extraction

The Project will be mined using a hybrid open pit and underground mining method.



Open pit

The open pit will be mined using a traditional drill and blast, truck and shovel mining method. The open-pit mine will begin with a year of construction, followed by 18 years of operation. The temporarily stockpiled materials will then be reprocessed in years 19 and 20.

At peak production, 16 Mt of material will be mined from the pit annually. To achieve this target, large 200-ton class trucks were selected to haul the waste. At peak production, nine haul trucks will be required to transport all the waste material. To load the large haul trucks, a large hydraulic front shovel with a 19 m³ size bucket was selected.

The shovel will be able to load the trucks in five passes, which is in the industry's standard. One front-end loader will support the large shovel for loading the trucks while it is on maintenance.

The open pit will be developed using a phased approach. The first phase of the pit was designed to be mined without having to drain any part of Lake 001, enabling mining operations to begin as soon as possible on dry land. The pit boundaries of the first phase are at least 100 m away from any large body of water.

Underground mine

Initial development and construction of the underground mine will begin in year one and continue for the first four years until full production is reached in year five. The life of the underground mine will be 24 years. The proposed underground mine includes two longhole mining methods. Transverse is used for the wider part of the body and longitudinal for the narrower dykes.

The mining steps are the same for both mining methods and are divided as follows:

1. Stope preparation
 - 1.1. Cable drilling and installation
 - 1.2. Slot raise drilling
 - 1.3. Production drilling
 - 1.4. Loading and blasting
2. Mucking
3. Backfilling
 - 3.1. Fence
 - 3.2. Plug pouring and cure
 - 3.3. Residual pouring and cure

The ventilation system envisioned for these mineral deposits will be a pull-type system, i.e., the fresh heated air will be pulled through the mine by using large primary surface exhaust fans. Propane mine air heaters will be located at each main fresh air intakes and used seasonally when required.



The primary system of the main mineral deposit will be designed and staged in such a manner that will allow for the re-use and movement of primary exhaust fans as the mineral deposit migrates further away from the portals. This will save on capital costs when the final system is built. This is illustrated and described in the “Ventilation Stages” section of the ventilation report.

The primary design of the south mineral deposit will also be a pull-type system, receiving air from the main mineral deposit, surface intake raises, and a small unheated quantity from the open pit. Level ventilation will be accomplished using auxiliary fans equipped ducted systems, with fans located at the level entries, pushing air to the extremities of the mineral deposit, and allowing the air to flow back into the main haulage and exhaust systems. The longer runs will require multiple inline fan installations in the duct.

9.2.2. Ore processing

Spodumene will be concentrated at the mine site, where an ore processing plant will be built to the north of the open pit and to the west of the underground mine. This plant will be fed by the ore extracted from both mines. The main treatment processes are as follows:

- ◆ crushing circuit (primary, secondary and tertiary crushing);
- ◆ storage in piles for the supply of crushed materials;
- ◆ separation in dense media (coarse, fine and recrushed);
- ◆ magnetic separation and handling of the final product;
- ◆ diversion of fines, dewatering of intermediates and handling;
- ◆ handling of final waste (mine tailings).

The ore from the open pit will be fed into the primary crushing circuit, which is equipped with a jaw crusher. The crushed ore is then sent to a screen for screening. At this stage, the coarse ore will be sent to the secondary crusher, while the finer ore will be sent directly to the tertiary crusher circuit, which will be closed and equipped with a screen and crusher. The product from the tertiary crushing circuit will be sent to a storage pile.

Material from the crushing circuit will be conveyed by conveyor to the top of a storage pile for crusher feed, acting as a buffer zone between the crushing circuit and the processing plant. Three vibrating feeders located in a tunnel under the storage pile will transport the crushed material via a conveyor to the ore processing plant.

At this stage of separation, there are three dense medium separation circuits: the dense medium coarse separation circuit (MDG); the Dense Fine Media (DFM) separation circuit; and the dense media reconciliation (MDR) circuit.

PATRIOT BATTERY METALS INC.

Shaakichiuwaanaan Mining Project
Initial Project Description Summary

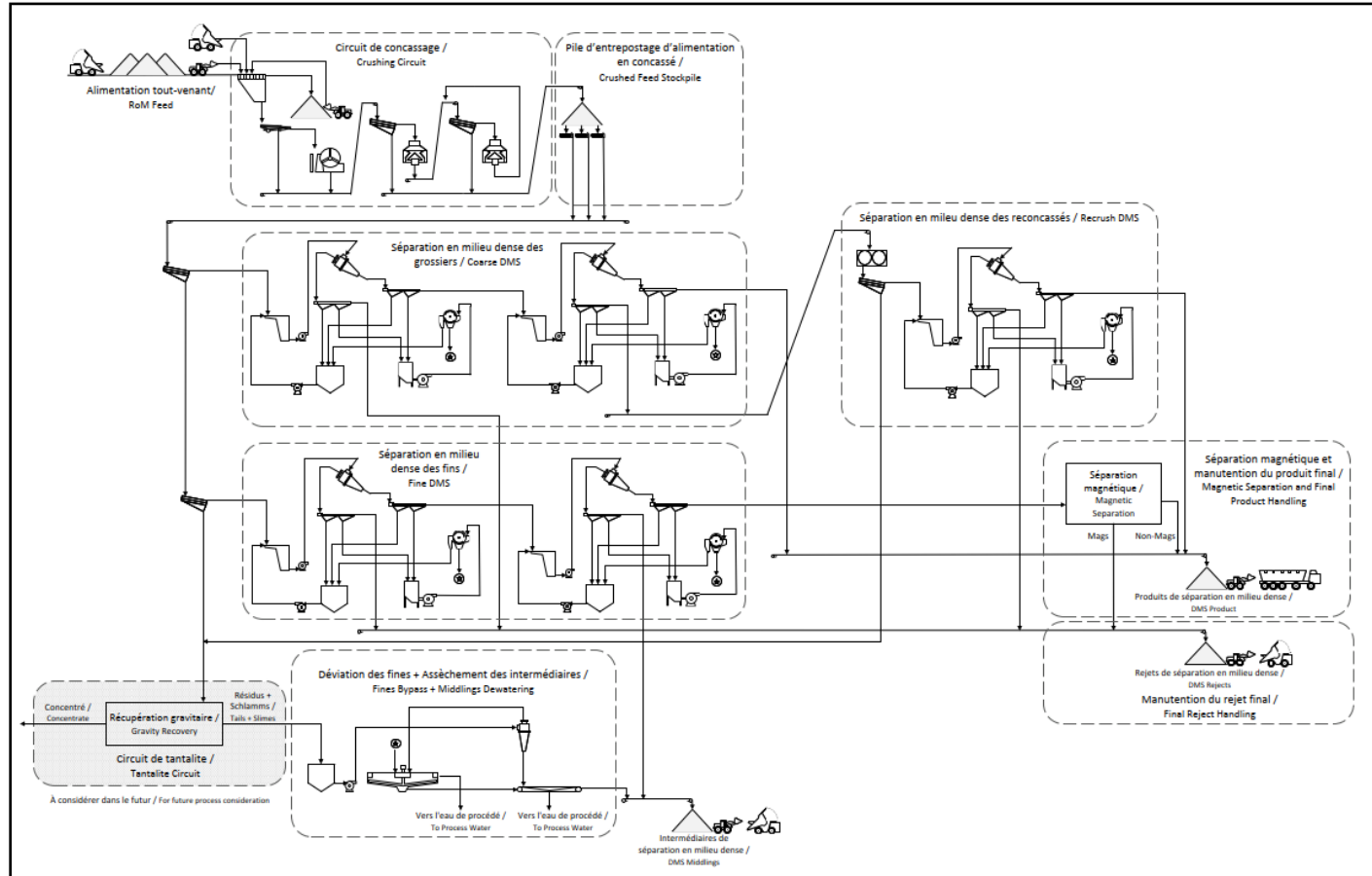


Figure 1: Simplified ore treatment process diagram



Following the dense media separation circuits, the magnetic separation circuit will be fed with a fraction of the products from the MDF separation circuit and part of the products from the MDR separation circuit. These materials will be exposed to a strong magnetic field, which will separate from the concentrate (final product) those materials whose mineral composition contains higher proportions of iron.

This magnetic circuit ensures that the final characteristics do not exceed the final iron impurity value. The magnetic fraction will be sent to the tailings of the processing plant. The non-magnetic fraction will be combined with some of the products of the MDG separation circuit to obtain a final concentrate, which will be loaded by a front-end loader into the spodumene concentrate transport trucks.

The residues will be directed to the fines diversion and intermediate dewatering circuit, where they will be routed to hydrocyclones². The overflow from the hydrocyclones will be directed to a thickener. The overflow from the thickener will be directed to the process water. The remaining material from both the hydrocyclones and the thickener will be transported by conveyor to the storage pile for dense medium separation intermediates. This product will then be transported by a wheel loader to a mining truck for storage in a designated area. This product will contain sufficient lithium and tantalum to be processed at a later date if the Project develops further and a flotation and gravity recovery circuit is installed in the future.

Final process waste (tailings) comes from the MDG, MDF and MDR separation circuits and the magnetic separation circuit. These rejects are accumulated on a temporary storage pile and then moved by truck to stockpile 002.

9.2.3. Waste rock and tailings storage areas

The Project will produce approximately 179 Mt of waste rock and two types of tailings, totalling 75 Mt. These waste streams will be managed separately depending on their characteristics. Two permanent waste rock and tailings stockpiles (stockpile 001 and 002) are planned to be constructed north of the open pit, and two temporary overburden stockpiles (stockpile 004 and 005) are planned to be constructed south of the open pit.

Stockpile 001 will hold middlings, material with mineral content that could potentially be recovered in the future. The total production of middlings is expected to be 49.3 Mt. This material is suitable for use as paste backfill, and 27 Mt is planned to feed the paste backfill plant and be pumped underground to backfill the stopes. The remaining 22 Mt will remain on Stockpile 001. Stockpile 002 will be built to store all the non-economic waste rock coming from the pit, the underground mine and the DMS tailings.

The 100-ton trucks will be used mostly to transport consolidated fines and middlings from the processing plant to the stockpile. Articulated trucks will also be used to fill gaps when all 100-ton trucks are occupied in the pit, or when trucks are undergoing maintenance. The articulated truck will also be used for various tasks around the mine or when site conditions are not favourable for a 100-ton class truck. A wheel loader will be used to load the DMS tailings into the trucks.

² The simplified process diagram (Figure 1) shows a tantalite circuit that exceeds the current scope of the Project. This circuit could be added to the Project in the future if its economic and technical feasibility is demonstrated.



Geochemical characterization of the tailings and waste rock is currently underway and will identify the potential risks of leaching and acid generation. Based on geochemical results, the design of the foundation for the stockpiles will take into account the sealing measures to be applied to protect groundwater, as set out in Mining Industry Directive 019 (DIR019; MDDEP, 2012).

9.2.4. Ore management

The ore extracted from the open pit and underground mine will be temporarily stored adjacent to the ore processing plant. This planned storage area has a capacity of 6 Mt; it is a temporary space where the ore is deposited before being sent to be processed.

9.2.5. Concentrate transport

The Project will produce an average of 800 000 tonnes of spodumene concentrate per year. The Company plans to work closely with the Crees, the non-Indigenous people of the James Bay Region, and the Québec government to develop a transportation plan for the Project. A fleet of trucks will transport the concentrate from the mine site to the Matagami transfer yard.

The first section of the route, approximately 270 km long (one way), runs from the Project site to the intersection of the Trans-Taiga Road and the Billy-Diamond Highway. The second section of the route, approximately 544 km long, runs from the intersection along the Billy-Diamond Highway to the Matagami transshipment yard. When the trucks arrive in Matagami, the concentrate will be handled by the transshipment yard personnel and loaded into railcars for transport by train to processing sites.

The City of Matagami, the owner and operator of the transshipment facilities, has begun studies to assess the costs associated with adding the necessary rail tracks to accommodate a volume of 800,000 tpa of concentrate. It already holds the required permits for this type of development work. The City has also initiated discussions with CN to evaluate its capacity to transport the material south and the investments needed to upgrade the railway. The ongoing feasibility study will determine the types of services, equipment, and infrastructure required at the Matagami facilities. An agreement between the parties must be reached before proceeding with the investments.

9.2.6. Water management

All runoff water from projected infrastructure including roads, stockpiles, and the open pit will be collected through ditches and retention basins. Water meeting discharge criteria will be directly released to the environment, in the vicinity of the collection basin. Provisions will be made at each of the water collection basins to pump water to the water treatment plant if required.

Water requiring treatment prior to discharge to the environment will include both mine water and domestic wastewater. At this stage of the Project, it is assumed that each of these two types of wastewaters will generate a separate effluent and separate discharge to the environment.

Domestic wastewater will be produced by the sanitary infrastructure (toilets, showers, taps, etc.) of the workers' camp and other buildings on the mine site. This water will be directed to a domestic water treatment unit before being discharged into the environment in compliance with applicable standards and criteria.



Mine water will include mine water and surface water in contact with infrastructure, including mine waste storage areas (tailings and waste rock), overburden storage areas where applicable, and runoff from the ore storage area and the processing plant area.

A significant water management effort will also be required to keep the open pit dry. A dike will be constructed to isolate the open pit from Lake 001, into which it encroaches, and will limit the inflow of surface water into the open pit. The water from the lake will be diverted to the north of the open pit; the water diverted in this way will flow through the same original catchment area, ultimately joining Lake 027 to the west of the camp.

Mine and process water treatment will likely be required to ensure that mine effluent discharge complies with the Québec requirements of *Mining Industry Directive 019* (DIR019; MDDEP, 2012), and the federal standards of the *Metal and Diamond Mining Effluent Regulations* (SOR/2002-222).

Additional Environmental Discharge Objectives (EDOs) may be added to the above requirements. These EDOs will be defined as required by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) during the authorization process. Geochemical characterization and modelling will identify contaminants of potential concern and determine the type of mine water treatment that will need to be put in place to ensure effluent compliance.

Fish and fish habitat

The fish relocation plan will allocate a biologist to undertake the work and provide details regarding water discharge, fish capture methods, capture and relocation work areas, and reporting requirements, as summarized below:

- a. This plan will incorporate provincial and federal guidance relating to the capture and relocation of fish, as applicable.
- b. Procedures for decontamination of any equipment used in the capture and relocation of fish will be identified.
- c. Prior to the implementation of capture and relocation activities, relocation (or release) sites will be identified, based on proximity, access, habitat suitability, and potential to be affected by construction-related disturbance.
- d. Fish relocation will be led by a Professional Biologist with knowledge and experience in fish biology and ecology; fish/habitat relationships; biological monitoring; handling, collecting, and relocating fish; or other relevant experience.
- e. Residual surface water associated with the diverted or dewatered habitat will be monitored and/or sampled for the presence of fish as soon as the waters are isolated.
- f. The number of individuals observed in the affected area, the number of individuals relocated, the approximate size of individuals, the location of capture and release, any instances of injury or mortality, and the date and time of the collection and relocation will be noted and reported to regulatory authorities.



9.3. Closure phase

As detailed in the 2024 Preliminary Economic Assessment (PEA) for the Project, the main activities planned for the closure phase include:

- ◆ Carrying out a breach in the main dam, which will transform the pit into a body of water.
- ◆ Building a raised trench to prevent access to the pit.
- ◆ Revegetation of the waste rock and tailings storage sites by spreading a layer of overburden and then covering it with topsoil before hydroseeding and tree planting.
- ◆ Demolishing and removing all buildings and other surface infrastructure, including power lines, water conduits, etc.
- ◆ Levelling the process plant and camp areas, followed by spreading a layer of overburden, hydroseeding, and tree planting.
- ◆ Scarifying the roads built by Patriot as part of the mining activities, restoring the natural drainage and hydroseeding.
- ◆ Dismantling the industrial wastewater treatment installations when they are deemed no longer necessary.
- ◆ Carrying out a breach in ponds, levelling the dams, covering the surface with topsoil before hydroseeding, and tree planting.

Some of the restoration works will be carried out during the mining operations, while the remainder will be done at the end of the mine's life. Lastly, the implementation of the proposed environmental monitoring program will demonstrate that the restoration works have achieved their goals.



10. MAXIMUM PRODUCTION CAPACITY AND PRODUCTION PROCESS

The provisions of the Schedule to the *Physical Activities Regulations (SOR/2019-285)* describing the Project in whole or in part are as follows:

- ◆ 18(c): The construction, operation, decommissioning, and closure of a new metalliferous mine, other than a rare earth elements mine, placer or uranium mine, with an ore production capacity of 5 000 tonnes or more per day.
- ◆ 18(d): The construction of a new metallurgical plant, other than a uranium mill, with an ore intake capacity of 5 000 tonnes or more per day.

The mine's maximum production capacity is 50 Mt of material moved per year. This includes a maximum of 5 Mt of mineral resources to feed the processing plant, or approximately 10 000 t per day. The objective is to produce 800 kt of spodumene concentrate per year, or around 2 000 t per day at a grade of 5.5% Li₂O.

Table 6: Regulatory triggers

Regulation ¹	Production trigger	Proposed Shaakichiuwaanaan Project
18(c)	New mine, ore production capacity of 5 000 tpd or more	Hybrid spodumene mine with planned underground mining capacity of 5 500 tpd and open pit capacity of 44 000 tpd.
18(d)	New processing plant, ore intake capacity of 5 000 tpd or more	DMS processing plant with 10 000 tpd maximum intake

¹ Schedule of the *Physical Activities Regulations*.

11. PROJECT SCHEDULE

The key milestones in the Project schedule are provided in Table 7.

Table 7: Main stages of the Project

Period	Completion stage
Second quarter (Q2) 2025	Feasibility study
Third quarter (Q3) 2025	Environmental impact assessment
First quarter (Q1) 2028 to fourth quarter (Q4) 2028	Construction
Fourth quarter (Q4) 2028	Start of commissioning
2052	Mine closure
2052-2055	Restoration and rehabilitation of the site



12. POTENTIAL ALTERNATIVES

12.1. Alternatives to carrying out the Project

An assessment of Project alternatives and scenarios was undertaken primarily by the Preliminary Economic Assessment design team, resulting in a base case presented in the September 2024 report. The base case and associated activities are described in Section 9 of this Initial Project Description.

The environmental assessment process will include a further detailed assessment of alternatives based on the Federal guidelines for the assessment of alternatives for mine waste disposal. A prescreening assessment has taken place to identify potential waste rock deposition locations, which considered the following:

- ◆ Would the potential waste rock deposition locations sterilize a potential resource?
- ◆ Are the potential waste rock deposition locations situated on a claim or lease belonging to an external party?
- ◆ Are the potential waste rock deposition locations in a special-use area identified by the tallyman or his family?
- ◆ Are the potential waste rock deposition locations in a potentially significant environmental setting that may require protection/offsets?
- ◆ Are the potential waste rock deposition locations setting challenging topographically?
- ◆ Would access to the potential waste rock deposition locations require significant water course crossings?
- ◆ Are the potential waste rock deposition locations encroaching in the De Pontois River watershed?
- ◆ Do the potential waste rock deposition locations exceed an economically viable distance from the Project site?
- ◆ Are the potential waste rock deposition locations too small for the waste type?
- ◆ Would the potential waste rock deposition locations require a unique water management system (separate from mill)?

Four potential waste rock deposition scenarios have been identified in addition to the base case identified in the PEA, and will be brought forward for further assessment. This includes a scenario that reduces haulage costs, a scenario that avoids water completely, and two additional scenarios that passed the prescreening assessment.

A detailed assessment of power alternatives, including an evaluation of alternatives for electrical power generation, heating of on-site buildings and underground mine, and the electrification of mining equipment, will be undertaken.



A Feasibility Study is currently underway which will include further analysis of the possible Project alternatives, as well as trade-off studies that consider the economic, technical, social and environmental advantages and disadvantages of potential scenarios for:

- ◆ the location of mining infrastructure (ore processing plant and other buildings);
- ◆ the location of on-site roads;
- ◆ technologies and locations for managing mine waste (tailings and waste rock), including co-disposal;
- ◆ the extraction technology (i.e., open pit or underground extraction, or both);
- ◆ technology for transporting ore;
- ◆ the metallurgical process (flotation and tantalite circuit);
- ◆ the method for diverting water from Lake 001; and
- ◆ the transporting the concentrate.

12.2. Alternatives to the Project

Since the Project consists of mining a spodumene pegmatite deposit, there is no alternative to the Project. The only way to carry out the Project is to build a mine to extract the ore.

13. PROPOSED LOCATION

13.1. Geographical coordinates

Map 1 shows the location of the Project study area.

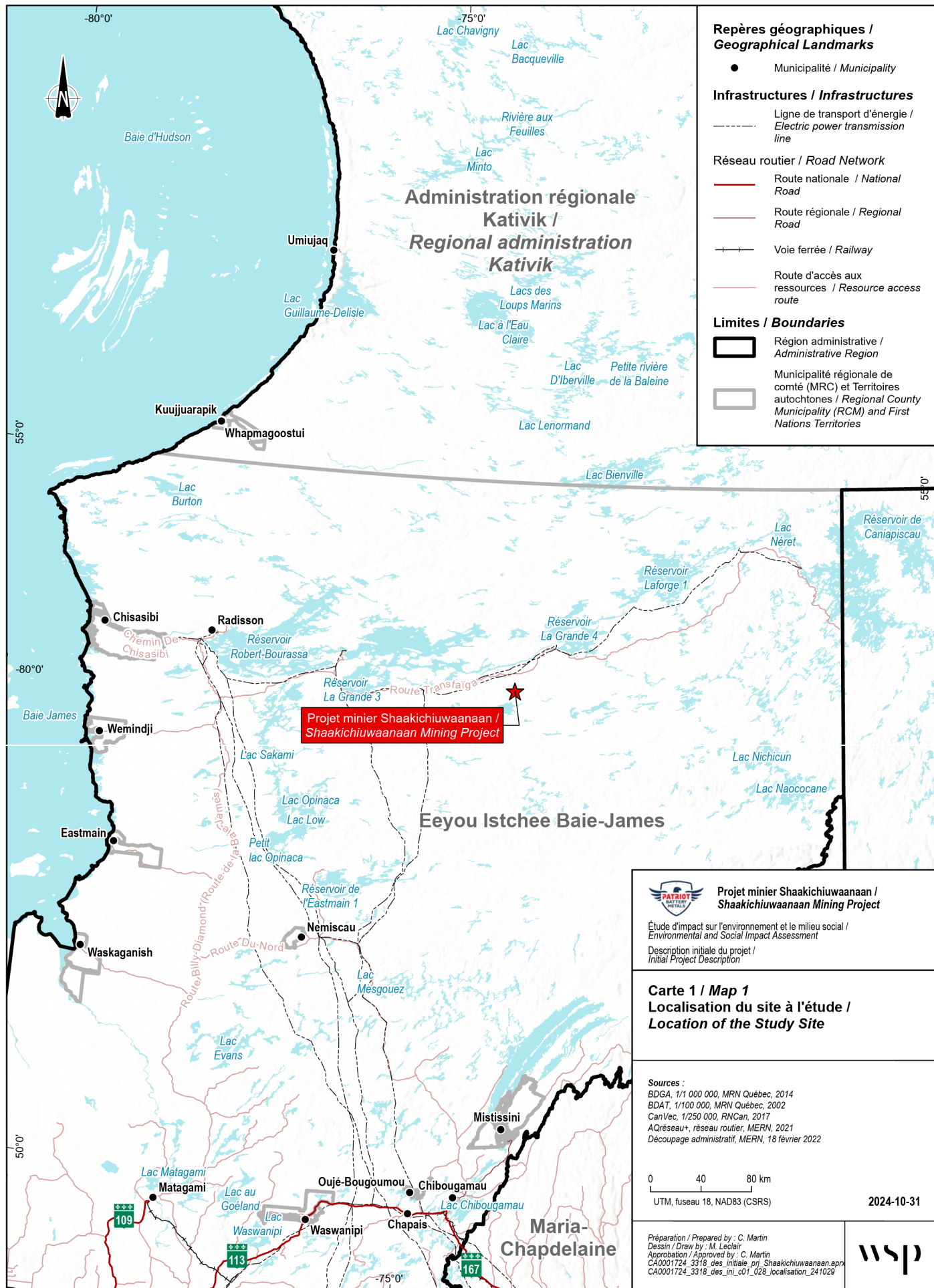
The geographical coordinates of the deposit to be mined by the Project are 53.52236°N; 73.93131°W (latitude/longitude, NTS sheet 33H/12). The main planned mining infrastructures are concentrated within NTS sheet 33H/12.

The geographical scope of the environmental assessment will be tailored to each natural and human environmental aspect. Study areas will be defined based on the specific spatial boundaries relevant to each environmental component, ensuring an accurate assessment of the components affected by the Project and its potential environmental impacts.

13.2. Site map

Map 2 shows the planned Project infrastructure. This plan shows the location of the main surface infrastructure, i.e., the open pit and storage areas for ore, waste rock and tailings, the building siting areas (including the ore processing plant), access and traffic routes, main water management facilities, and existing surrounding infrastructure.

Map 1: Location of the study site



Repères géographiques / Geographical Landmarks

- Municipalité / Municipality

Infrastructures / Infrastructures

- Ligne de transport d'énergie / Electric power transmission line

Réseau routier / Road Network

- Route nationale / National Road
- Route régionale / Regional Road
- Voie ferrée / Railway
- Route d'accès aux ressources / Resource access route

Limites / Boundaries

- ▭ Région administrative / Administrative Region
- ▭ Municipalité régionale de comté (MRC) et Territoires autochtones / Regional County Municipality (RCM) and First Nations Territories

Projet minier Shaakichiwaanaan / Shaakichiwaanaan Mining Project

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

Description initiale du projet / Initial Project Description

Carte 1 / Map 1

Localisation du site à l'étude / Location of the Study Site

Sources :

- BDGA, 1/1 000 000, MRN Québec, 2014
- BDAT, 1/100 000, MRN Québec, 2002
- CanVec, 1/250 000, RNCAN, 2017
- AQréseau+, réseau routier, MERN, 2021
- Découpage administratif, MERN, 18 février 2022

0 40 80 km

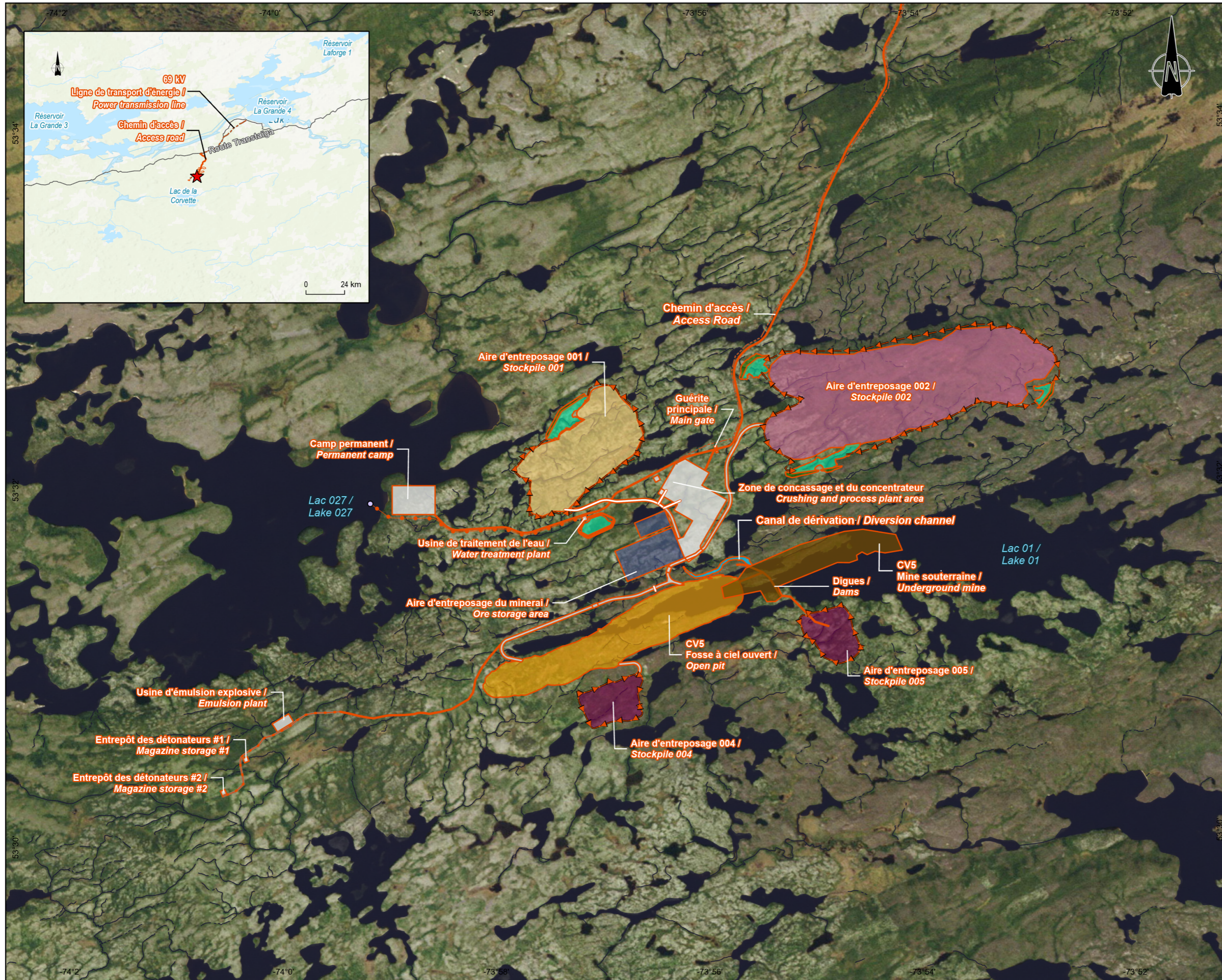
UTM, fuseau 18, NAD83 (CSRS)

2024-10-31

Préparation / Prepared by : C. Martin
 Dessin / Draw by : M. Leclair
 Approbation / Approved by : C. Martin
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La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre.

Map 2: Planned Project infrastructures



Composantes du projet projetées / Projected Project Components

- Ligne de transport d'énergie / Power transmission line
- Conduite (effluent) / Pipeline (effluent)
- Fossé / Ditch
- Chemin d'accès / Access road
- Chemin secondaire / Secondary road
- Chemin de halage / Hauling road
- Autre / Other
- Bassin / Basin
- Digue / Dam
- Aire d'entreposage du minerai / Ore storage area
- Aire d'entreposage (co-disposition stériles et résidus grossiers) / Co-disposal stockpile (waste rock and tailings)
- Halde à mort-terrain / Overburden dump
- Aire d'entreposage (résidus fins) / Stockpile (middlings)
- Canal de dérivation / Diversion channel
- Fosse à ciel ouvert / Open-pit mine
- Mine souterraine / Underground mine

Composantes de l'écosystème / Ecosystem Components

- Plan d'eau / Waterbody
- Cours d'eau / Watercourse
- Intermittent / Intermittent
 - Permanent / Permanent
 - Permanent partiellement souterrain / Partially underground permanent
 - Permanent souterrain / Underground permanent

Projet minier Shaakichiuwaanaan / Shaakichiuwaanaan Mining Project

Étude d'impact sur l'environnement et le milieu social / Environmental and Social Impact Assessment
Description initiale du projet / Initial Project Description

**Carte 2 / Map 2
Installations minières planifiées / Planned Project Infrastructures**

Sources / Sources
AQRéseaux+, réseau routier, MERN, 2016
BDGA, 1M, MERN, 2014
Projet, 7535006-000000-D20-0002.dwg, BBA, 11 septembre 2024

0 400 800 m
UTM, fuseau 18, NAD83 (CSRS) 2024-10-31

Préparation / Prepared by : C. Martin
Dessin / Draw by : M. Leclair
Approbation / Approved by : C. Martin
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13.3. Official description of the site

The Project site is located within the territory of the Eeyou Istchee James Bay Regional Government, on Category III lands under the James Bay and Northern Quebec Agreement (JBNQA). These are public lands forming part of the domain of the State where Indigenous peoples have hunting, fishing, and trapping rights, in accordance with Section 24 of the JBNQA.

The Project site is located in a remote and isolated area. An all-weather road of approximately 20 km has been built on the site to link the deposit to the Trans-Taiga Road to facilitate exploration.

13.4. Proximity to local communities

Radisson is the closest non-Indigenous community, located more than 250 km west of the Project.

There are no permanently, temporarily, or seasonally inhabited buildings or non-Indigenous hunting camps within 10 km of the Project study area. The closest inhabited non-Indigenous infrastructures are the Centrale La Grande-4 complex (including the worker's camp), located 31 km northeast from the Project study area, as well as the Mirage Aventure hunting and fishing outfitter, located 75 km northeast from the Project study area. Moreover, the La Grande-4 airport is located 18.6 km northeast from the Project study area.

A survey on land use and occupation will be carried out as part of the environmental impact study to have an exhaustive census of inhabited infrastructures.

13.5. Proximity to Indigenous communities

The largest Cree community in Eeyou Istchee, Chisasibi, is located approximately 330 km west of the Shaakichiuwaanaan Mine Project (Table 8). The infrastructures planned for the Project are also located entirely on the trapline of a member of the community of Chisasibi. Because of ancestral territories and the presence of traplines near the Project, two other Cree communities, Wemindji (330 km to the southwest) and Mistissini (350 km to the south), will also be included in the environmental assessment of the Project.



Table 8: Proximity of communities to Project

First Nations/ Locality	Land status	Name of reserve/village	Affiliated Council/Government	Approximate distance from the Project
Native communities				
Cree Nation of Chisasibi	Land of the JBNQA	Chisasibi	Grand Council of the Crees/Cree Nation Government	330 km to the west
Wemindji Cree Nation	Land of the JBNQA	Wemindji	Grand Council of the Crees/Cree Nation Government	330 km to the southwest
Cree Nation of Mistissini	Land of the JBNQA	Mistissini	Grand Council of the Crees/Cree Nation Government	350 km to the south
Jamésie				
Locality of Radisson	Land of the JBNQA	n/a	n/a	250 km to the west

There is one permanently, temporarily, or seasonally inhabited Indigenous camp within 10 km of the Project study area. This camp was recently set up 8 km west of the Project study area (about 10 km northwest of the planned mining site), in an area used by the Chisasibi community for traditional activities (trapline CH39). The other Indigenous camps found closest to the Project study area are located at kilometres 258 and 283 of the Trans-Taiga Road, respectively at 11 and 12.7 km of the Project study area.

A survey on land use and occupation will be carried out as part of the environmental impact study to have an exhaustive census of inhabited infrastructures.

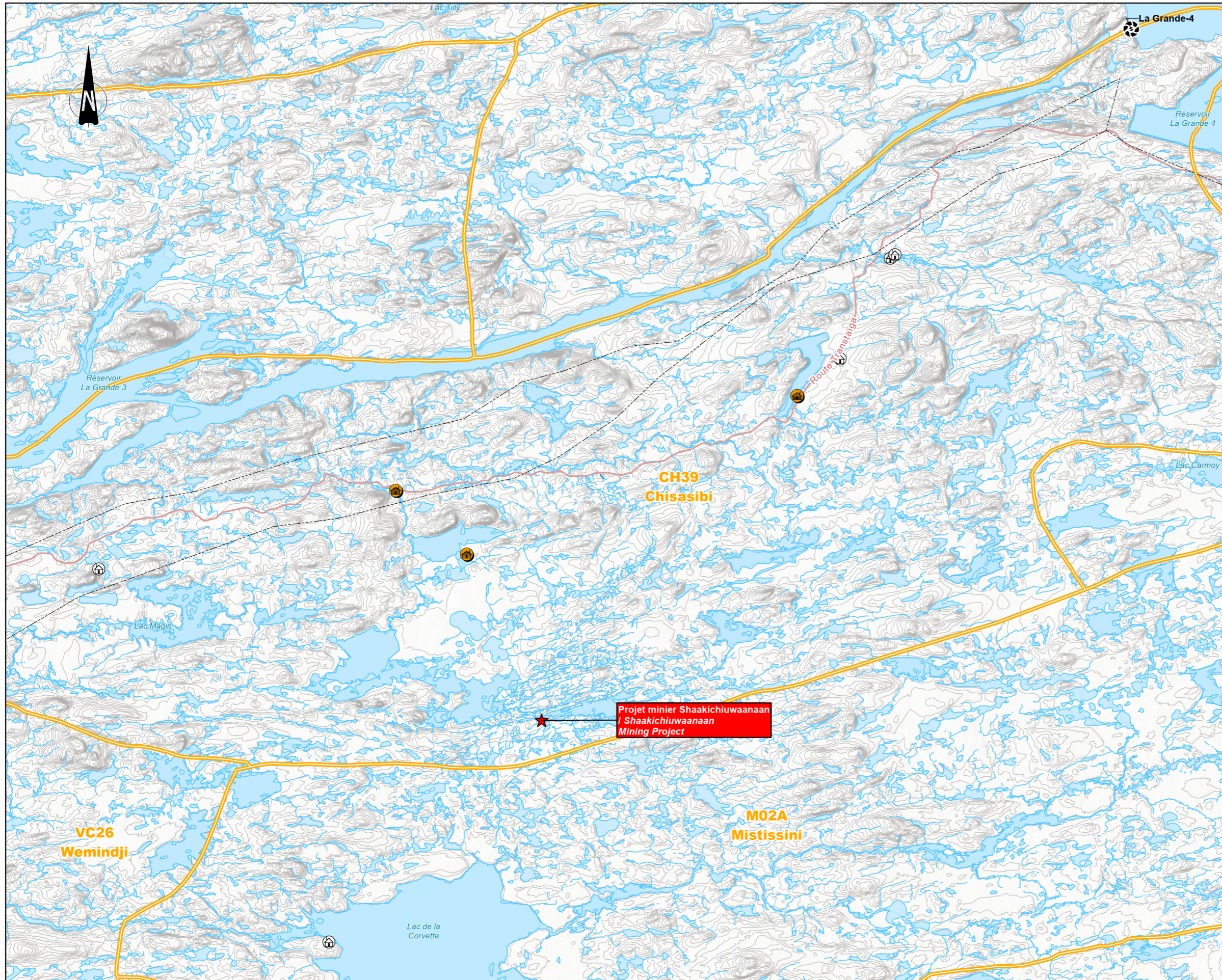
13.6. Proximity to federal lands

No federal lands are located in the area of the Shaakichiuwaanaan mining Project. No federal land will be used for the Project.

14. BIOLOGICAL AND PHYSICAL ENVIRONMENT DESCRIPTION

This section summarizes regional environmental data and baseline field studies conducted within the Project study area. Environmental studies of the physical and biological environment began in 2022 and will continue through spring 2025. The initial study area, defined in 2022, was refined in 2024 based on the Preliminary Economic Assessment. Additionally, for federally significant wildlife, especially species at risk, a broader regional study within a 50 km radius of the Project site will be included to identify potential habitats.

Map 3: Regional setting of the Project



- Projet / Project**
- ★ Projet minier Shaakichiuwaanaan / Shaakichiuwaanaan Mining Project
- Utilisation du territoire / Land Use**
- 🏠 Pourvoirie / Outfitter
 - 🏠 Bail de villégiature / Lease
 - 🏠 Camp autochtone / Indigenous camp
 - 🟡 Aire de trappage / Trapline area
- Titre minier/ Mining title**
- 🟪 Claim de Patriot Battery Metal inc. / Patriot Battery Metal inc. claim
- Infrastructures / Infrastructures**
- ⚡ Centrale / Power plant
 - Ligne de transport d'énergie / Electric power transmission line
- Réseau routier / Road Network**
- 🛣️ Route d'accès aux ressources / Resource access route

PATRIOT BATTERY METALS **Projet minier Shaakichiuwaanaan / Shaakichiuwaanaan Mining Project**

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

Description initiale du projet / Initial Project Description

Carte 3 / Map 3
Localisation régionale du projet / Regional Setting of the Project

Sources / Sources

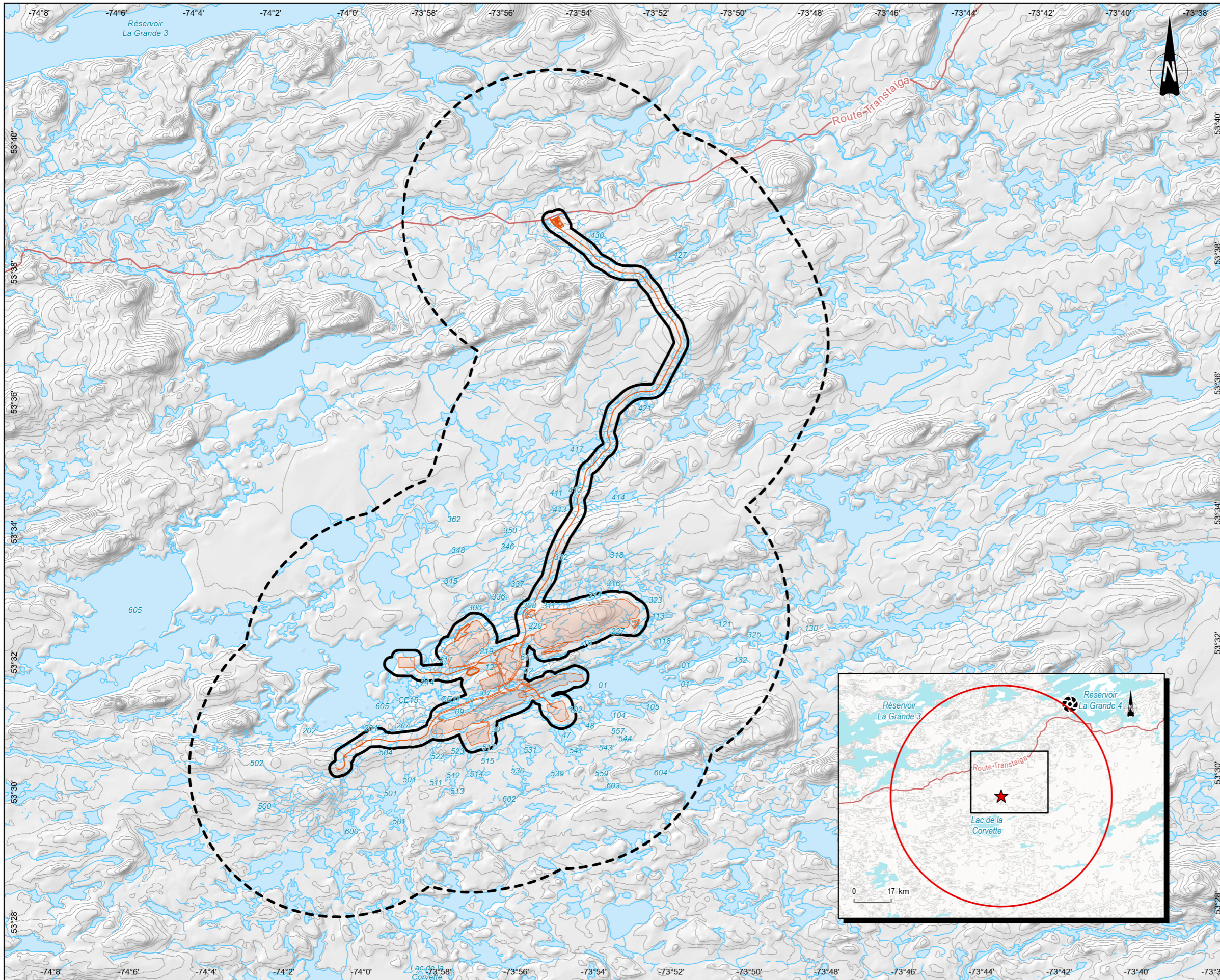
AQréseau+, réseau routier, MERN, 2016
 BDGA, 1M, MERN, 2014
 Contraintes et exclusions, GESTIM, 20 septembre 2023
 Gestion des titres miniers, GESTIM, 20 septembre 2023
 Terrains de trappe, Association des trappeurs cris
 Traités modernes autochtones, RNCan, 2022
 Bail de villégiature, MERN, mars 2021.txt

0 2,2 4,4 km
 UTM, fuseau 18, NAD83 (CSRS) 2024-12-06

Préparation / Prepared by : C. Martin
 Dessin / Draw by : M. Leclair
 Approbation / Approved by : C. Martin
 CA0001724_3318_des_initiale_prj_Shaakichiuwaanaan.aprx
 CA0001724_3318_des_ini_c03_030_loc_reg_241029



Map 4: Preliminary study areas of the physical and biological environments



- Zones d'étude / Study Areas**
- Projet / Project
 - Locale / Local
 - Régionale / Regional
- Composante du projet / Projected Project**
- Projetées / Projected**
- Contour des composantes / Components contours
- Composantes de l'écosystème / Ecosystem Components**
- Plan d'eau / Waterbody
- Cours d'eau / Watercourse**
- Intermittent / Intermittent
 - Permanent / Permanent
- Réseau routier**
- Route d'accès aux ressources / Resource access route

Projet minier Shaakichiwaanaan / Shaakichiwaanaan Mining Project

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

Description initiale du projet /
Initial Project Description

Carte 4 / Map 4
Zones d'étude préliminaire des milieux physiques et biologiques / Preliminary Study Areas of the Physical and Biological Environments

Sources / Sources
AOréseau+, réseau routier, MERN, 2016
BDGA, 1M, MERN, 2014
Projet, 7535006-000000-D20-0002.dwg, BBA, 9 septembre 2024

0 1,1 2,2 km
UTM, fuseau 18, NAD83 (CSRS)

2024-12-06

Préparation / Prepared by : M. Benoit
Dessin / Drawn by : M. Leclair
Approbation / Approved by : C. Martin
CA0001724_3318_des_initiale_prj_Shaakichiwaanaan.aprx
CA0001724_3318_des_ini_c04_031_zetude_241029





14.1. Physical environment

The Project study area is situated within the Grande Rivière Hills natural province, known for its low, undulating plains that transition inland to low hills. The bedrock of the area primarily consists of amphibolite, metasediments, and various rocks from the La Grande greenstone belt, with regional tonalite and gneiss. Thin glacial deposits cover the terrain. The Project study area sits at an elevation of 260 to 350 m above sea level.

The CV5 pegmatite, part of the Lac Guyer greenstone belt within the Grande Rivière belt, is mainly composed of volcanic and sedimentary rocks metamorphosed to amphibolite facies. CV5 itself is a spodumene-quartz-feldspar pegmatite with muscovite, smoky quartz, and occasional tourmaline, featuring a primary dyke 8 to 130 m wide, plus several smaller dykes. Drilling has traced the CV5 mineralized zone over 4.35 km, with further expansion potential.

The Grande Rivière Hills climate is marked by cool summers and very cold winters, with an average annual temperature of -4°C. Summer averages 8.5°C, while winter averages -16.5°C. Annual precipitation ranges from less than 600 to 800 mm.

The Project site is located within the James Bay–Hudson Bay hydrographic region (region 09), specifically at the heart of the Grande Rivière watershed. This watershed spans over 800 km, flowing east to west from its source on the Québec-Labrador border to its mouth in James Bay. Originally covering an area of 97,643 km², the watershed has been significantly expanded by the La Grande hydroelectric complex, now encompassing over 200,000 km².

South of the proposed Project lies the De Pontois River watershed, which drains an area of 19,142 km² to the west and eventually joins the Grande Rivière watershed approximately 50 km from the Project site. The boundary between these two watersheds is located roughly 1 km south of the Project site.

Overburden over the study area is discontinuous and varies in thickness from 0 m to 20 m. It is composed of undifferentiated till and melt-out, or ablation till (glacial diamicton whose exact formation processes could not be determined). Lacustrine sediments are typically found at the bottom of waterbodies.

Bedrock is primarily composed of Amphibolite derived from basalt of Mesoarchean age and porphyritic granodiorites with potash feldspar phenocrysts of Neoproterozoic age. Bedrock unit is exposed at the surface at several locations over the study area. Groundwater levels measured in the rock aquifer vary between 0.1 m and 4 m deep from the ground surface. Water levels depths ranging between 6 m and 8 m were also observed in observation wells installed on high elevations. The permeability values obtained following the slug test done in boreholes vary between 1x10⁻⁶ and 1x10⁻⁹ m/s. The single and double packer tests, hydraulic testing using pneumatic shut-off valves, resulted in hydraulic conductivity values between 1x10⁻⁶ and 1x10⁻⁷ for the first 100 m of the bedrock and lower than 10⁻⁸ m/s for lower horizons.



Geochemistry

Static testing has been carried out on 74 waste rock samples, eight mineralized material samples and two DMS tailings samples (84 samples total).

Regarding Acid Rock Drainage (“ARD”), 20 waste rock samples (27%) showed ARD potential as per the *Guidelines on characterization of ore and mining residues* (MELCCFP, 2023) (previously MELCC, 2020). Twenty-eight waste rock samples (37.8%) were deemed leachable for arsenic according to the CTEU-9 leaching test. However, only four samples (5.4%) were classified as leachable according to the SPLP (Synthetic Precipitation Leaching Procedure) leaching test. Nineteen waste rock samples (25.7%) were classified as leachable for copper according to the CTEU-9 procedure. However, only nine samples (12.2%) were classified as leaching following the SPLP test. Inversely, eight waste rock samples (10.8%) were classified as leachable for zinc according to the SPLP procedure and only two samples (2.7%) were classified as leaching following the CTEU-9 test.

Moreover, the majority of waste rock samples and mineralized material samples were deemed leachable for aluminum according to both CTEU-9 and SPLP leaching tests. Two ultramafic samples were also classified as high risk according to the TCLP (Toxicity Characteristic Leaching Procedure) leaching test (arsenic concentration).

Modelling was done using pile characteristics, hydrological and hydrogeological data, as well as geochemical data. Modelling has shown that storage of all types of waste rock in the same stockpiles could result in arsenic concentrations in percolation water exceeding the MELCCFP resurgence in surface water criteria. Segregation of ultramafic waste rocks is therefore recommended.

14.2. Biological environment

14.2.1. Vegetation and wetlands

The Project study area is located in the boreal vegetation zone, more specifically in the open boreal forest subzone, between latitudes 52° N and 55° N (Gouvernement du Québec, 2022a). This sub-zone is characterized by low-density forests of black spruce with lichen beds. This sector is also located in the lichen spruce bioclimatic domain, the Western Subdomain, which is characterized by a dry continental climate, where fire is more frequent and relief is less pronounced.

The Project study area is in the ecological region of the Eastmain and Sakami rivers (No. 7d). The regional landscape unit is Corvette Lake (No. 720), and the ecological district is Basses collines du lac Nochet (No. 720008). According to the ecoforestry map available online (Government of Québec, 2023b), the vegetation in the study area generally consists of lichen and moss spruce stands, with areas of lichen barrens. In addition, since fires have been burning in the area for the past 20 years, several burned areas are present. Wetlands are mainly represented by minerotrophic and ombrotrophic peat bogs.



14.2.2. Fish and fish habitat

Fish populations in the James Bay region are generally slow-growing, long-lived and have low densities associated with low ecosystem productivity. According to the Mirage Aventure outfitter website (2023), located about 75 km from the study area, the fish generally caught are northern pike (*Esox lucius*), brook trout (*Salvelinus fontinalis*), lake trout (*Salvelinus namaycus*) and walleye (*Sander sp.*).

Fishing activities were undertaken in the Project study area in 2022, 2023, and 2024. Efforts focused on habitat characterization, fish sampling, and water sampling for eDNA analysis to validate the presence of fish in water bodies where no fish were caught.

A total of ten species were caught or detected throughout the fish baseline study: northern pike, burbot (*Lota lota*), lake chub (*Couesius plumbus*), round whitefish (*Prosopium cylindraceum*), white sucker (*Catostomus commersonii*), longnose sucker (*Castostomus Catostomus*), pearl mullet (*Margariscus margarita*), eastern blacknose dace (*Rhinichthys atrtolutus*), brook trout, and lake trout. None of these species has special status.

14.2.3. Herpetofauna

Herpetofauna inventories were undertaken as opportunistic surveys carried out during bird inventories at the same stations, in addition to active research in suitable habitats. According to the literature consulted, the study area is likely to be frequented by ten species of herpetofauna (six anurans, three urodeles, and one squamate).

14.2.4. Bird studies

Several bird inventories have taken place in the study area since 2023. A winter inventory was carried out in February 2023, where 12 species were inventoried, none of which had any special status. Acoustic recording stations were installed in 2023 and 2024, and a comprehensive ornithological survey took place in summer 2024.

As far as special-status species are concerned, 12 species could potentially frequent the study area on an annual basis. These are golden eagle (*Aquila chrysaetos*), harlequin duck (*Histrionicus histrionicus*), crossbill (*Loxia curvirostra percna*), common nighthawk (*Chordeiles minor*), peregrine falcon (*Falco peregrinus*), Barrow's goldeneye (*Bucephala islandica*), short-eared owl (*Asio flammeus*), bank swallow (*Riparia riparia*), olive-sided flycatcher (*Contopus cooperi*), bald eagle (*Haliaeetus leucocephalus*), rusty blackbird (*Euphagus carolinus*), and yellow rail (*Coturnicops noveboracensis*).

14.2.5. Micromammals

Based on their ranges, the study area is likely to be frequented by 15 species of small mammals. These include two special-status species, the rock vole (*Microtus chrotorrhinus*) and Cooper's lemming vole (*Synaptomys cooperi*). The latter are on the list of species likely to be designated as threatened or vulnerable (Gouvernement du Québec, 2023c).



14.2.6. Small wildlife and fur-bearing animals

According to the *Commission sur les ressources naturelles et le territoire de la Baie-James* (CRNTBJ, 2010), 25 species of small wildlife and furbearers are thought to frequent the Project area. During inventories conducted in 2023, the presence of ten species was confirmed. These were red squirrel (*Tamiasciurus hudsonicus*), northern flying squirrel (*Glaucomys sabrinus*), snowshoe hare (*Lepus americanus*), river otter (*Lontra canadensis*), Canada lynx (*Lynx canadensis*), American marten (*Martes americana*), black bear (*Ursus americanus*), porcupine (*Erethizon dorsatum*), red fox (*Vulpes vulpes*), and American mink (*Neovison vison*). Tracks of weasel and mustelid have also been observed. To date, no species of small wildlife or furbearers with special status or evidence of the presence of such a species have been observed in the study area.

14.2.7. Large fauna

The Project study area is likely to be frequented by moose (*Alces alces*), as well as two caribou ecotypes: migratory caribou (*Rangifer tarandus*) and woodland caribou (*Rangifer tarandus caribou*). To validate the presence of these species, a literature review and aerial inventory were carried out. No caribou were observed during the field survey.

During an aerial survey conducted by the Ministère de la Faune, des Forêts et des Parcs (MFFP) in 2020, covering the study area, no migratory caribou or woodland caribou were observed, and no telemetry locations were recorded.

A total of 27 moose in 14 groups were counted during the January 2023 survey. Females accounted for 37% of the total, calves for 22%, and males for 41%.

14.2.8. Chiropterans

According to known bat ranges and past inventories in the Project area, the chiropteran species potentially present in the study area are the big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), northern bat (*Myotis septentrionalis*), hoary bat (*Lasiurus cinereus*), and red bat (*Lasiurus borealis*) (CRNTBJ, 2010). Of these species, only the big brown bat has no special status. The wooded environments in the study area may be used by certain species as maternity nests. Wetlands and wet environments may be used for feeding and hydration. For chiropteran habitat validation, acoustic surveys were conducted, along with searches for maternity roosts and hibernacula.



14.3. Species at risk

Several special-status species are likely to frequent the study area. Wildlife species and their status in Canada, as defined by the *Species at Risk Act* (SARA), and in Québec, as defined by the *Act respecting threatened or vulnerable species*, are presented in Table 9. According to the database of the Centre de données sur le patrimoine naturel du Québec (CDPNQ), available via the interactive online map, no mention of fauna or flora is present within a 15 km radius of the Project (CDPNQ, 2023).

With regard to special-status plant species, the "Potentiel" tool (Gouvernement du Québec, 2023d) was used to draw up a preliminary list of plant species in a precarious situation that could potentially be present in the Nord-du-Québec administrative region. Thus, 55 vascular plants are potentially present. With regard to fish, there are no potential or identified fish species at risk in the study area. The nearest aquatic species of special status, the yellow sturgeon, is found in the Grande Rivière, outside the study area.

This list will be refined according to the habitats present in the study area. No special-status plant species were observed during the surveys carried out in 2023 and 2024.

Table 9: Special-status species potentially present in the Project area

Group	English name	Scientific name	Status ¹		
			ARTVSQ ²	COSEWIC ³	SARA ⁴
Birds	Golden eagle	<i>Aquila chrysaetos</i>	V	–	–
	Harlequin duck	<i>Histrionicus histrionicus</i>	V	SC	SC
	Lesser yellowlegs	<i>Tringa flavipes</i>	–	T	T
	Common Nighthawk	<i>Chordeiles minor</i>	LDTV	SC	SC
	Peregrine falcon <i>anatum/tundrius</i>	<i>Falco peregrinus</i>	V	–	–
	Barrow's goldeneye, Eastern pop.	<i>Bucephala islandica</i>	V	SC	SC
	Short-eared owl	<i>Asio flammeus</i>	LDTV	T	–
	Bank swallow	<i>Riparia riparia</i>	–	T	T
	Olive-sided Flycatcher	<i>Contopus cooperi</i>	V	SC	SC
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	V	–	–
	Rusty Blackbird	<i>Euphagus carolinus</i>	LDTV	SC	–
	Yellow rail	<i>Coturnicops noveboracensis</i>	T	SC	SC



Group	English name	Scientific name	Status ¹		
			ARTVSQ ²	COSEWIC ³	SARA ⁴
Bats	Little brown bat	<i>Myotis lucifugus</i>	T	END	END
	Northern bat	<i>Myotis septentrionalis</i>	T	END	END
	Hoary bat	<i>Lasiurus cinereus</i>	LDTV	END	–
	Eastern red bat	<i>Lasiurus borealis</i>	V	END	–
Micromammals	Rock vole	<i>Microtus chrotorrhinus</i>	LDTV	–	–
	Cooper's vole-lemming	<i>Synaptomys cooperi</i>	LDTV	–	–
Small wildlife, fur-bearing animals and/or large wildlife	Least weasel	<i>Mustela nivalis</i>	LDTV	–	–
	Wolverine	<i>Gulo gulo</i>	T	SC	SC
Large fauna	Woodland caribou	<i>Rangifer tarandus caribou</i>	T	T	T
	Migratory caribou	<i>Rangifer tarandus</i>	–	END	END

1: END: Endangered; LDTV: Species likely to be designated threatened or vulnerable; SC: Special concern; T: Threatened; V: vulnerable

2: ARTVSQ: Act respecting threatened or vulnerable species in Québec (Government of Québec, 2023c)

3: COSEWIC: Committee on the Status of Endangered Wildlife in Canada (COSEWIC, 2023)

4: SARA: Species at Risk Act (Government of Canada, 2023)

15. HEALTH, SOCIAL, AND ECONOMIC CONTEXT

15.1. Administrative context

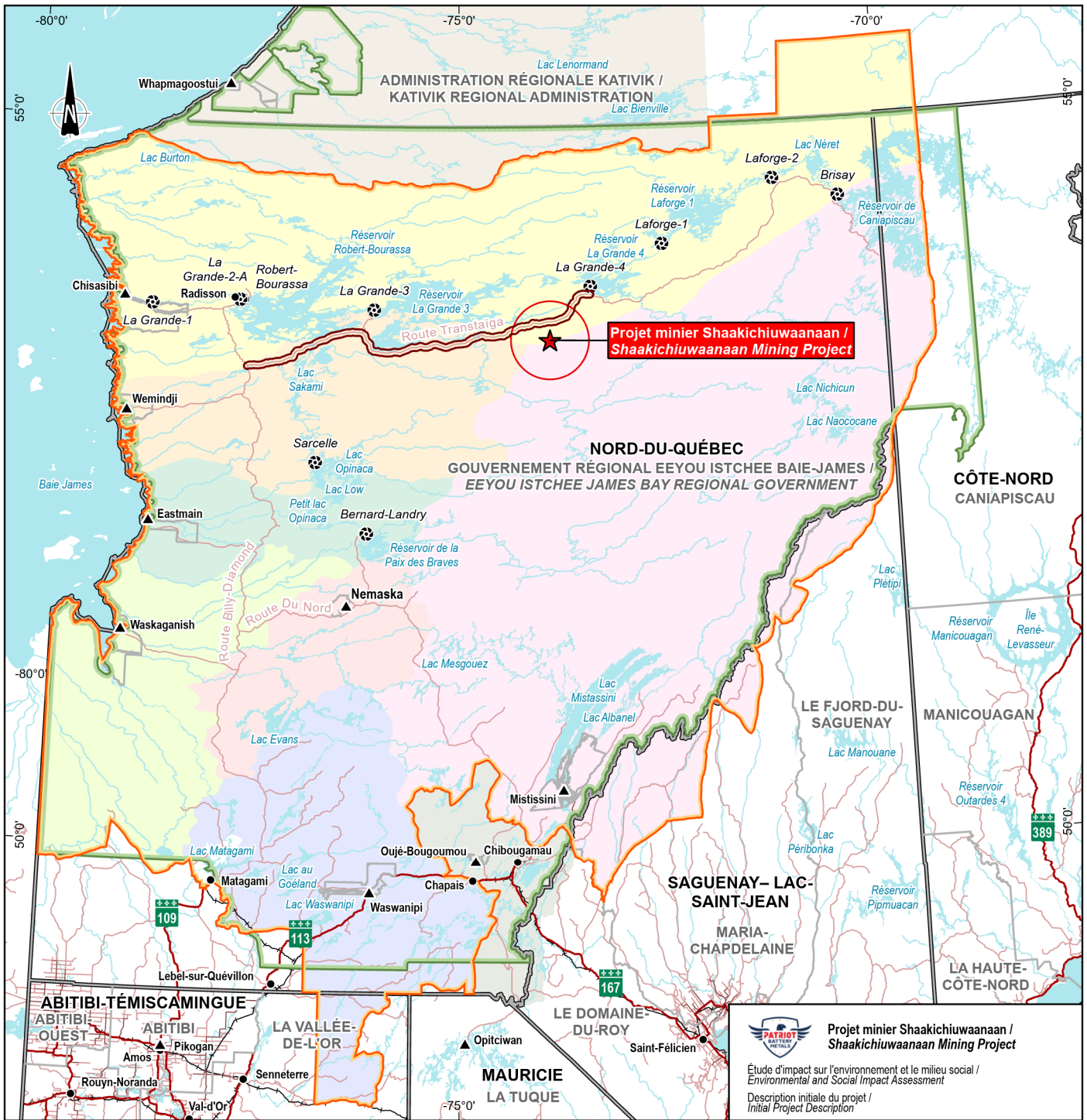
The Project is located in the Nord-du-Québec administrative region (number 10), which is divided into two territories: Eeyou Istchee James Bay and Nunavik (Kativik Regional Government) (Map 5). Located north of the 49th parallel, entirely on the Canadian Shield, the region covers just over half of Québec's total area and is the province's largest administrative region, covering 860,553 km² (MAMH, 2023).

The Project lies within the territory of the Eeyou Istchee James Bay Regional Government (EIJBRG), which since 2014 has replaced the Municipality of Baie-James. Nord-du-Québec is governed by the JBNQA and the *Agreement Concerning a New Relationship Between the Government of Quebec and the Crees of Quebec*, also known as the "Paix des Braves". The territorial regime introduced by the JBNQA is an important element of land use. It divides the territory into Category I, II and III lands.

The study area is located on Category III lands, which are provincial public lands. On these lands, the Cree Nation holds particular rights, including exclusive rights to trap fur-bearing animals, fish for certain aquatic species, and benefit from outfitting privileges. While these rights are exclusive to the Cree, the lands themselves are not under their full ownership or control; they remain accessible to other users in accordance with provincial regulations.

Additionally, both Indigenous and non-Indigenous people may hunt and fish on Category III lands, subject to regulatory requirements.

Map 5: Preliminary study areas of the social environment



Projet minier Shaakichiwaanaan /
Shaakichiwaanaan Mining Project

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

Description initiale du projet /
Initial Project Description

Zones d'étude / Study Areas

Locales / Locals

- 30 km autour du site minier / 30 km around the mine Site
- 2,5 km de chaque côté de la route Transtaiga / 2.5 km on each side of the Transtaiga road

Régionale / Regional

- Zone d'étude régionale / Regional study area

Repères géographiques / Geographical Landmarks

- ▲ Communauté crie / Cree community
- Municipalité / Municipality
- ⊗ Centrale hydroélectrique / Hydroelectric generating station

Limites / Boundaries

- Région administrative / Administrative region
- Municipalité régionale de comté (MRC) et territoires autochtones / Regional County Municipality (RCM) and First Nations Territories
- Territoire d'application du régime de protection de l'environnement et du milieu social (chap. 22, CBJNQ) / Territory covered by the environmental and social protection regime (chap. 22, JBNQA)

Terrains de piégeage des communautés cries / Cree Communities Traplines

- | | |
|--|---|
| Chisasibi | Waskaganish |
| Eastmain | Waswanipi |
| Mistissini | Wemindji |
| Nemaska | Whapmagoostui |
| Oujé-Bougoumou | |

Carte 5 / Map 5

Zones d'étude locales et régionale du milieu humain / Preliminary Study Areas of the Social Environment

Sources :
BDGA, 1/1 000 000, MRN Québec, 2014
BDAT, 1/100 000, MRN Québec, 2002
CanVec, 1/250 000, RNCAN, 2017
AQRéseau+, réseau routier, MERN, 2021
Découpage administratif, MERN, 18 février 2022

0 40 80 km
UTM, fuseau 18, NAD83 (CSRS)

2024-12-06

Préparation / Prepared by : C. Martin
Dessin / Draw by : M. LeBlanc
Approuvé / Approved by : C. Martin
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La précision des limites et les mesures montrées sur ce document ne doivent pas servir à des fins d'ingénierie ou de délimitation foncière. Aucune analyse foncière n'a été effectuée par un arpenteur-géomètre.



15.2. Population, living conditions, and socioeconomic context

Cree communities

Located on Category III lands according to the JBNQA, the site of the Shaakichiuwaanaan Project does not contain any Indigenous land constituted as reserves, but it is divided into traplines occupied by Cree families. The closest three Cree communities to the Project are the Cree Nation of Chisasibi, 330 km to the west, the Cree Nation of Wemindji, 330 km to the southwest, and the Cree Nation of Mistissini, 350 km to the south (Map 5).

Cree Nation of Chisasibi

Chisasibi is the second most northerly Cree community in Eeyou Istchee and the largest Cree community, with a population of over 5 000 (CNG, 2022b). The near-majority of the population speaks Cree, while English is the second language. The Project is located entirely within the traditional territory of the Cree Nation of Chisasibi.

Chisasibi's commercial and administrative infrastructure, regional hospital, and educational facilities make it a leading community in Northern Québec. The community also boasts an airport with daily flights (Cree Nation of Chisasibi, 2023a).

The Cree School Board operates two schools in the community of Chisasibi. The community has three daycares for pre-school aged children. In terms of education achievement, in 2021, for the population aged 15 and over in private households, 67.3% of men and 52.9% of women had no high school diploma or equivalency certificate in Chisasibi.

In 2020, the median total income of people aged 15 and over in Chisasibi was \$43,200 (\$37,200 for men and \$50,000 for women), while the average total income was \$48,800 (\$43,240 for men and \$54,100 for women) (Statistics Canada, 2023). We note that the income gap may be related to the higher level of education among women in the community.

Wemindji Cree Nation

The second Cree community located closest to the Project (330 km to the west) is Wemindji. The southern portion of the Company's mineral claims is adjacent to trapline VC26 of the Wemindji Cree Nation. Wemindji is located at the mouth of the Maquatua River and is the third most northerly community on the James Bay coast. Wemindji is a Cree word meaning "painted hills" or "red ochre mountain". Its population was 1 562 in 2021 (Statistics Canada, 2023). The first official language spoken is English, although the language most spoken at home is Cree (Statistics Canada, 2023).

Wemindji has an elementary school (Joy Ottereyes Rainbow Memorial) and a high school (Maquatua Eeyou). In terms of education, in 2021, for the population aged 15 and over in private households, 52.8% of men and 46% of women in Wemindji had no high school diploma or equivalency certificate, a proportion almost three times higher than in Québec (men 22.6% and women 18.6%) and Canada (men 19.6% and women 16.6%) (Statistics Canada, 2023).



In 2020, the median total income of people aged 15 and over in Wemindji was \$42,800 (\$37,200 for men and \$50,000 for women), while the average total income was \$46,000 (\$41,000 for men and \$50,600 for women) (Statistics Canada, 2023).

Cree Nation of Mistissini

Mistissini is one of the Cree communities located inland, about 350 km south of the Project on the shores of Lake Mistissini. The southern portion of the Company's mineral claims is adjacent to trapline M02A of the Mistissini Cree Nation.

Mistissini is a Cree word meaning "big rock". In 2021, the population of Mistissini was 3 190 (Statistics Canada, 2023). The first official language spoken is English, while the language most spoken at home is Cree (Statistics Canada, 2023).

École Voyageur Memorial is located in the centre of the Cree community of Mistissini, and comprises three buildings (a high school, an elementary school, and a preschool). There are also two adult education centres, known as sabtuans, located next to the high school and offering courses in Cree culture. With regard to schooling, in 2021, for the population aged 15 and over in private households, 59.7% of men and 57.4% of women in Mistissini had no high school diploma or equivalency certificate, a proportion almost three times higher than in Québec (men 22.6% and women 18.6%) and Canada (men 19.6% and women 16.6%) (Statistics Canada, 2023).

In 2020, the median total income of people aged 15 and over in Mistissini was \$43,200 (\$40,800 for men and \$46,000 for women), while the average total income was \$51,200 (\$49,900 for men and \$52,400 for women) (Statistics Canada, 2023).

James Bay Region

Locality of Radisson

The community of Radisson, in the James Bay territory of Eeyou Istchee, is one of the few non-Indigenous communities in Québec located beyond the 53rd parallel, at the northern end of the paved portion of the Billy-Diamond Highway (Map 5). In 2021, it had a population of just over 200 (Statistics Canada, 2023). The first official language spoken is French. The language most spoken at home is also French (Statistics Canada, 2023). The community of Radisson is located 250 km west of the Project.

Statistics on income in 2020 for the population aged 15 and over in private households in Radisson are not available and must remain confidential under the provisions of the Statistics Act, as only 150 people were counted.

Radisson's transportation infrastructure includes roads that connect the community to other urban centres in the region, such as Route 167, which leads to Chibougamau. In addition, Radisson has an airport that mainly serves air travel related to industrial projects. In terms of water supply and sanitation, the community has networks adapted to the needs of its population, although these are relatively modest compared to larger cities. Radisson is also a nerve centre for the hydroelectric industry, with the presence of the Radisson hydroelectric plant, which is part of the Baie-James hydroelectric complex. This energy infrastructure represents a key element of the local economy and is accompanied by various technical installations and an interconnected electrical network. The



commercial sector, although limited, includes essential services such as grocery stores, retail businesses and administrative services.

Due to the small size of the Radisson community, detailed economic data is not available. However, its region of belonging, the Nord-du-Québec region, is characterized by a \$5 billion gross domestic product (GDP) which represents 1.2% of the GDP of all Québec Province. Compared to the 2016 GDP (\$3.9 billion), the region's GDP grew by 27.2%, which is higher than the growth recorded for all of Québec (15.7%) for the same period (ISQ, 2021).

15.3. Sanitary conditions, human health, and well-being

This subsection provides preliminary information on sanitary conditions, human health, and well-being in the region. Due to limited local data, health context insights will be developed in collaboration with regional health organizations to capture specific environmental characteristics.

Cree communities

Cree Nation of Chisasibi

The Chisasibi Regional Hospital Centre provides primary and secondary care services to the population of Eeyou Istchee. The medical team includes 7 physicians and 27 registered nurses. The hospital has 29 beds, 17 of which are for acute care (5 pediatric), 9 for chronic care and 3 for respite care. The hemodialysis department has 9 treatment stations. A partial pre-dialysis program is offered 2 days a week.

The Chisasibi Regional Hospital has a modern laboratory, radiology, archives, liaison, physiotherapy, and nutrition services, as well as a dental clinic.

Specialist services are provided in partnership with the McGill Réseau Universitaire Intégré de Santé et Services Sociaux (RUISSS). Through this partnership, specialists from the McGill University Health Centre (MUHC), Jewish General Hospital, St. Mary's Hospital Centre, and Douglas Hospital visit the Chisasibi Regional Hospital Centre and provide telemedicine services in obstetrics, surgery, pediatrics, orthopedics, internal medicine, ophthalmology, otolaryngology, and psychiatry.

Wemindji Cree Nation

The Cree Nation of Wemindji is served by the Wemindji Miyupimaatisiun Community Center (MCC). The CMC provides front-line services and represents the community presence of the CCSSBJ. The Wemindji CMC includes a walk-in clinic as well as community health clinics for different age groups.

Wemindji CMC has five permanent employees and two additional staff for the Home and Community Care Program. The team for the Awash (children aged 0 to 9 and pregnant women) and Uschinîchisû (young people aged 10 to 29) age groups suffers from a staff shortage; two of the three Awash nurse positions remained vacant throughout the year in 2022, as did the school-based position.



Cree Nation of Mistissini

The Cree Nation of Mistissini is served by the Centre Miyupimaatisiun Communautaire (CMC) de Mistissini, which offers medical services (cancer screening, occupational therapy, speech therapy, physiotherapy, etc.) and other more specific services for children, young people, and adults. The centre also offers medical imaging (in partnership with the Chisasibi hospital), pharmacy, mental health, paratransit, and dental services. Services are offered in French, English, and Cree.

A multiservice day centre also serves the territory, providing a space for gathering, healing, and learning for people in isolation, seniors, adults with special needs, and people with mental health issues. It also offers youth services, home and community care, and paramedical services.

James Bay Region

Town of Radisson

Radisson is served primarily by the Centre régional de santé et de services sociaux de la Baie-James (CRSSSBJ), which provides health and social services to the population of the Nord-du-Québec region.

In Radisson, the Centre de santé Radisson (CLSC) primarily serves the population's health needs, but residents regularly consult a doctor at the Centre hospitalier régional de Chisasibi, for specialist visits, radiological examinations, clinical and medical observations.

15.4. Human receptors

The human receptors potentially affected by the Project are temporary or seasonal, including hunting camps, waterways, burial sites, and other areas for traditional or cultural activities.

There is one permanently, temporarily, or seasonally inhabited Indigenous camp within 10 km of the Project study area. This camp was recently set up 8 km west of the Project study area (about 10 km northwest of the planned mining site), in an area used by the Chisasibi community for traditional activities (trapline CH39). The other Indigenous camps found closest to the Project study area are located at kilometres 258 and 283 of the Trans-Taiga Road, respectively at 11 and 12.7 km of the Project study area.

Moreover, some seasonal human receptors, represented by vacation leases, are located nearby, the closest being about 18 km southwest of the Project on the western shore of de la Corvette Lake (Map 5).

The Mirage Aventure site, 75 km northeast, and the Sakami Lake campground, over 175 km west, are additional points of interest. All receptors will be verified through field surveys and community engagement, with potential impacts assessed and management measures developed as needed.

Permanent communities, such as the Cree communities of Chisasibi, Wemindji, Mistissini, and the community of Radisson, are all located over 250 km from the Project site.



15.5. Sectors of activity

The Nord-du-Québec economy is primarily based on the exploitation and processing of natural resources. In 2022, the share of the primary sector was nine times higher than in the rest of Québec (21.4% vs. 2.3%), while the tertiary sector appears to be less present (57.3% vs. 79.6%) (Table 10).

Table 10: Employment by sector in 2022

Territory	Primary sector	Secondary sector	Service sector	Total
Nord-du-Québec region	21.4%	21.3%	57.3%	100%
Province of Québec	2.3%	18.1%	79.6%	100%

Source: Statistics Canada, special compilation.

The Nord-du-Québec region's main economic sectors, according to gross domestic product (GDP) in 2020 are mining, quarrying, and oil and gas extraction (45.6%), construction (10.3%), public services (9.7%), public administration (8.4%), and health care and social assistance (7.1%).

15.6. Transportation infrastructure

Beginning at kilometre 544 of the Billy-Diamond Highway, the Trans-Taiga Road is a gravel road that stretches 666 km generally in an east-west orientation (Tourism Eeyou Istchee Baie-James, 2016). The Project is located approximately 20 km south of the Trans-Taiga Road at kilometre 270.

The region is also served by several airports. The La Grande 4 airport is located approximately 30 km northeast of the Project. This facility serves the La Grande 4 hydroelectric facilities and is owned by Hydro-Québec (operations gradually transferred to the Société de développement de la Baie-James). There is also the La Grande-Rivière regional airport, located in the community of Radisson. It is operated by the Société de développement de la Baie-James (SDBJ, 2009). Located in the Cree community of Chisasibi, the Robert Kanatewat airport handles Air Creebec flights and also provides medical transport services for the Cree Board of Health and Social Services of James Bay (CBHSSJB) (Cree Nation of Chisasibi, 2023b). Finally, an airstrip is available at Mirage Aventure Outfitter.

La Grande Alliance

Launched in February 2020, the "La Grande Alliance" (LGA) project concerns the sustainable development of infrastructure in the Eeyou Istchee James Bay region. The main objectives of LGA are the environmental protection of certain areas (protected zones) and improved access to Eeyou Istchee for the Crees. The transportation infrastructures examined as part of LGA feasibility studies are designed to meet specific needs or seize privileged opportunities, with the aim of fully integrating the economy of the Eeyou Istchee James Bay region, and Cree communities in particular, with a view to sustainable resource development.



The main infrastructures studied by LGA involve (LGA, 2023):

- ◆ rehabilitation and paving of access roads to the communities of Waskaganish, Eastmain, Wemindji, Nemaska, and Mistissini;
- ◆ resurfacing and asphaltting of Route du Nord;
- ◆ rail link between Matagami and the Rupert River;
- ◆ the reopening of the Grevet-Chapais railroad line;
- ◆ the rail link between the rivers Rupert and Grande Rivière;
- ◆ extending the road to Whapmagoostui;
- ◆ rehabilitation and extension of route 167;
- ◆ rail link between Grande Rivière and Whapmagoostui;
- ◆ development of a seasonal port at Whapmagoostui.

Patriot plans to truck the spodumene concentrate to Matagami via the existing Billy-Diamond Highway. In the context of LGA, Patriot will examine and investigate all alternative transportation solutions, including existing or future transportation infrastructure that would provide alternative means of transporting the concentrate. For example, the proposal by LGA to eventually extend Route 167 to the Trans-Taiga Road, creating a second north-south transportation corridor to serve the eastern part of the territory, could be a beneficial alternative transportation corridor.

This extension would significantly reduce travel time between Mistissini/Chibougamau and Chisasibi, and would link the two most populous regions in the area, facilitating inter-regional connectivity and providing access to currently isolated areas (LGA, 2023). In addition, the proposed railroad and port would help move products, supplies, and people to and from the Project site.

15.7. Hunting, fishing, and trapping

The Project site is located in hunting zone number 22 north and overlaps fur management units (FMU) numbers 91 and 94 (Gouvernement du Québec, 2022b, 2022c). Lake trout and walleye fishing are also of great interest.

As mentioned, the Project is located on Category III lands. These lands are accessible to all communities, but the Cree population retains exclusive rights to hunt and trap fur-bearing species, as well as to fish for certain aquatic species (notably lake whitefish, lake sturgeon, burbot, and suckers).

In parallel with modern life, Cree communities continue to hunt, trap, and fish as part of their traditional activities. The territory of Eeyou Istchee James Bay is divided into family traplines. These traplines are used year-round by Cree families for traditional activities (Cree-Québec Forestry Board, 2018). Species trapped in the area mainly include beaver, marten, muskrat, otter, red fox, lynx, and mink (CTA, 2021).

The Project site is located on trapline CH39 of the Cree Nation of Chisasibi (Cree Geoportal, 2023). The southern portion of the Company's mineral claims straddles trapline M02A of the Mistissini Cree Nation and trapline VC26 of the Wemindji Cree Nation. Note that all the proposed infrastructure for the Project (with the exception of the existing roads) is contained within the traditional territory of the Cree Nation of Chisasibi on trapline CH39.



Goose and moose hunting are also important traditional activities for members of the Cree communities. The Goose Break is an age-old tradition practised by the Cree in the Nord-du-Québec region, and takes place in spring. Businesses and schools are closed for a few weeks to allow community members to take part in this traditional goose hunt (Air Tunilik, 2023). In addition to geese, other species such as caribou, bear, lynx, red fox, ruffed grouse, and ptarmigan are also hunted by Cree throughout the year (CTA, 2022).

15.8. Heritage and archaeology

The Project study area includes 114 zones with Indigenous archaeological potential: 111 zones with medium potential (covering 0.479 km²) and 3 zones with high potential (0.004 km²). Non-Indigenous archaeological potential is considered low, due to a lack of historic non-Indigenous settlements, though remnants of explorer, surveyor, or prospector camps may still exist. A 2024 flyover found that approximately 0.179 km² of planned infrastructure overlaps with areas of medium or high archaeological potential.

Efforts will be made to avoid disturbing these sensitive areas. If avoidance is not possible, mitigation measures will be implemented, including continued consultation with Indigenous land users to confirm that there are no cultural sites in the area. Additionally, a field survey is scheduled for 2025 to search for any archaeological or cultural artefacts in the infrastructure area. It will include test pits at 10-meter intervals and visual inspections.

In the event of accidental discoveries, surveyors will inform the responsible authority. For any findings related to First Nations heritage, the appropriate First Nations councils and the Cree Nation Government will also be notified. If necessary, work in the vicinity of the discovery may be temporarily halted. An action plan for handling accidental discoveries has been developed.

16. FINANCIAL SUPPORT

Patriot evaluates all forms and sources of funding for the Project, including the participation of a federal or provincial authority. Potential funding opportunities are available through the Government of Canada's Critical Minerals Strategy, which aims to position Canada as a global leader in the critical minerals sector. As part of this initiative, Budget 2022 allocated \$1.5 billion in targeted funding through the Strategic Innovation Fund (SIF) to support critical minerals projects. This funding prioritizes innovative projects focused on manufacturing, processing, and recycling applications.

Funding opportunities for Patriot under programs aligned with clean technologies and advanced manufacturing include:

- ◆ **Clean Technologies Program:** This program supports the exploitation of critical minerals and materials required to produce clean technologies such as zero-emission vehicles (ZEVs), energy storage solutions, and other innovations aimed at reducing environmental impacts through efficiency and sustainable resource use.
- ◆ **Advanced Manufacturing Program:** This initiative promotes the production of new materials, advanced alloys, and other critical mineral inputs to enhance Canada's strategic manufacturing capacity. It supports industrial productivity, product innovation, and mineral circularity through recycling, reusing, and recapturing minerals.



17. STATE-OWNED TERRITORIES

No federal lands are located in the area of the Project. No federal land will be used for the Project.

18. BODIES WITH POWERS TO ASSESS ENVIRONMENTAL EFFECTS

18.1. Government of Canada

At the end of the impact assessment process of the EIA, Patriot will apply for permits for the construction and operations of the Project. A preliminary, non-exhaustive list of applications to be submitted to the federal government is presented below:

- ◆ a licence to manufacture and store explosives (*Explosives Act*);
- ◆ a permit to transport explosives (*Explosives Act*);
- ◆ a Transport Canada permit for the transport of dangerous goods (*Transportation of Dangerous Goods regulations*);
- ◆ a permit for the storage of chemical products (*Canadian Environmental Protection Act*);
- ◆ a declaration to the National Pollutant Release Inventory;
- ◆ a notice and an emergency plan (*Regulation respecting environmental emergencies*);
- ◆ an authorization to cause negative impacts on fish (*Fisheries Act*);
- ◆ an authorization for mining effluent (*Metal and Diamond Mining Effluent Regulations*);
- ◆ an approval for the installation of a work in navigable waters (*Canadian Navigable Waters Act*).

18.2. Provincial Government

Schedule 1 of Section 22 of the James Bay and Northern Quebec Agreement (JBNQA) contains a list of projects that must undergo the environmental and social impact assessment and review procedure described in Division III of Chapter II of Title II of the *Environment Quality Act* (EQA; c. Q-2). The Shaakichiuwaanaan Project, as a mining project on the territory of the James Bay and Northern Quebec Agreement (JBNQA), is designated by paragraph a) of Schedule A of the EQA.

The Comité d'évaluation des répercussions sur l'environnement et le milieu social (Evaluation Committee or COMEV) is an advisory body made up of members appointed by the governments of Québec, Canada, and the Cree Nation. COMEV recommended the Project be subject to the environmental and social impact assessment and review procedure, and drew up a directive on the scope of the impact assessment to be carried, which was published in April 2024.



At the end of the environmental and social impact assessment and review process, Patriot will apply for authorizations to build and operate the Project. A preliminary, non-exhaustive list of the provincial applications required is presented below:

- ◆ a specific authorization to erect or modify a building, undertake the operation of an industry, carry out an activity, or use an industrial process that could alter the quality of the environment (EQA).
- ◆ an authorization to establish a water supply intake (LQE).
- ◆ a specific authorization to erect or modify a construction, undertake the operation of an industry, carry out an activity, or use an industrial process that could affect a watercourse, lake or wetland (EQA).
- ◆ a compensation plan (*Loi concernant la conservation des milieux humides et hydriques*).
- ◆ an authorization for devices or equipment designed to prevent, reduce, or halt the release of contaminants into the atmosphere (EQA).
- ◆ an industrial sanitation certificate (LQE).
- ◆ an authorization for any activity involving the abstraction of groundwater or surface water (dewatering, keeping dry, water supply, etc.) (EQA).
- ◆ authorization to carry out an activity likely to modify a wildlife habitat (*Act respecting the conservation and development of wildlife*).
- ◆ an intervention permit to cut timber for certain mining activities (*Sustainable Forest Development Act*).
- ◆ an operating permit for high-risk petroleum equipment (Safety Code and Building Code. These codes are governed by the *Building Act*).
- ◆ an approval of the site intended to receive mine tailings (waste rock and tailings facility) and the site of the processing plant (*Mining Act*).
- ◆ an approval of the rehabilitation and restoration plan (*Mining Act*).
- ◆ an authorization to use public land (*Loi sur les terres du domaine de l'État*).
- ◆ a license to use explosives (*Explosives Act*).
- ◆ a permit from the Sûreté du Québec (*Explosives Act*).



19. POTENTIAL EFFECTS OF THE PROJECT

This section outlines the main potential effects of each phase of the Project. Since the Project is still in early development with a preliminary technical design, detailed mitigation measures and precise identification of significant effects are not yet available. Instead, only the primary anticipated effects are presented at a high level, based on identified sources of potential impacts listed in Table 11.

Table 11: Source of potential effects from the Project

Project phase	Sources of potential effects
Construction	<ul style="list-style-type: none"> - Hiring and training of construction workforce - Clearing and grading of areas for future infrastructure and works - Access road construction - Establishment of construction trailers and temporary sanitary infrastructures - Development of temporary water management infrastructure - Erection of equipment and material storage areas - Construction of the process plant and workers camp - Construction of primary power line and substation - Purchase of goods, services and materials - Transportation of goods, materials and machinery to site - Use and maintenance of heavy equipment - Construction of dikes and diversion of water from Lake 001 - Pit dewatering and fish relocation - Construction waste management - Management of domestic waste and hazardous materials
Operations	<ul style="list-style-type: none"> - Hiring and training of operations workforce - Ore extraction including drilling and blasting of open pit and underground mine - Operation of heavy equipment including shovels and haul trucks - Ore processing including crushing, separation and storage of ore - Waste rock and tailings storage - Concentrate transport - Operation of water management systems, including effluent discharge - Use and maintenance of heavy equipment - Purchase of goods, services and materials - Management of domestic waste and hazardous materials
Closure	<ul style="list-style-type: none"> - Reduction of operations workforce - Breaching of Lake 001 dike and flooding of the open pit - Backfilling of the underground mine - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site - Closure of domestic wastewater and industrial effluent discharge sites



Table 12 presents the changes that are likely to be caused to environmental components throughout the Project phases. Potential changes may be caused by one or more sources of potential effects.

The Project has the potential to affect the following components that fall under federal jurisdiction as referred to in section 2(1) of the IAA, namely:

- ◆ fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act*;
- ◆ aquatic species within the meaning of subsection 2(1) of the *Species at Risk Act*;
- ◆ migratory birds within the meaning of section 2(1) of the *Migratory Birds Convention Act 1994*.

Table 12: Potential effects for environmental components

Components of the environment	Project phase	Source of potential effect	Potential effects
Fish and fish habitat Aquatic species at risk ¹	Construction	<ul style="list-style-type: none"> – Development of temporary water management infrastructure – Construction of dikes and diversion of water from Lake 001 – Pit dewatering and fish relocation 	<ul style="list-style-type: none"> – Loss of fish habitat – Disturbance of fish populations due to relocation – Degradation of fish habitat quality from adjacent activities – Potential mortality of fish during relocation activities
	Operations	<ul style="list-style-type: none"> – Ore extraction including drilling and blasting of open pit and underground mine – Waste rock and tailings storage – Operation of water management systems, including effluent discharge 	<ul style="list-style-type: none"> – Disturbance of fish populations from vibrations and fly rock – Loss of fish habitat from waste rock and tailings deposition – Disturbance of fish populations from industrial discharge – Potential mortality of fish due to waste rock deposition, fly rock, and vibrations
	Closure	<ul style="list-style-type: none"> – Breaching of Lake 001 dike and flooding of the open pit – Restoration of natural drainage patterns – Closure of domestic wastewater and industrial water discharge 	<ul style="list-style-type: none"> – Increased fish habitat – Improvement in water quality
Migratory birds	Construction	<ul style="list-style-type: none"> – Clearing and grading of areas for future infrastructure and works – Access road construction – Establishment of construction trailers and temporary sanitary infrastructures – Erection of equipment and material storage areas – Construction of the workers camp – Construction of primary power line and substation – Transportation of goods, materials and machinery to site – Use and maintenance of heavy equipment 	<ul style="list-style-type: none"> – Loss and fragmentation of habitat – Change in habitat quality – Disturbance of populations – Increased noise – Changes in air quality – Increased risk of collision or death from on-site traffic and transport of materials to site



Components of the environment	Project phase	Source of potential effect	Potential effects
	Operations	<ul style="list-style-type: none"> - Ore extraction including drilling and blasting of open pit and underground mine - Operation of heavy equipment, including shovels and haul trucks - Ore processing including crushing, separation and storage of ore - Waste rock and tailings storage - Concentrate transport - Use and maintenance of heavy equipment 	<ul style="list-style-type: none"> - Loss and fragmentation of habitat - Change in habitat quality - Disturbance of populations - Increased noise - Changes in air quality - Increased risk of collision or death from on-site traffic and concentrate transport off site
	Closure	<ul style="list-style-type: none"> - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - Improvement in habitat quality following completion of restoration work

1: To date, no aquatic species at risk have been inventoried in the project area.

20. ENVIRONMENTAL CHANGES ON FEDERAL LANDS IN ANOTHER PROVINCE OR OUTSIDE CANADA

The Project is not expected to have any impact on federal lands, or on lands outside the province of Québec or outside Canada.

21. IMPACT ON INDIGENOUS PEOPLES

Patriot recognizes the importance of fostering positive local benefits in host communities. To support this objective, the company has implemented a Responsible Procurement Policy, which aims to promote economic development through local purchasing initiatives. The key objectives of this policy include:

- ◆ Facilitating access by local contractors or suppliers to opportunities arising from our activities and supply chain and minimizing barriers that prevent their participation.
- ◆ Encouraging the development of local businesses to meet our needs and requirements, especially businesses owned by or employing Indigenous peoples, women, or other underrepresented groups.

Table 13 presents the impacts that, because of the Project and changes to the environment, could occur and affect the natural and cultural heritage, the current use of lands and resources for traditional purposes or any construction, site or thing of historical, archaeological, palaeontological, or architectural importance, based on the information available to date. This list will be updated in the light of consultations with Indigenous peoples.



The Project has the potential to affect the following components that fall under federal jurisdiction as referred to in section 2(1) of the IAA, namely:

- ◆ the Indigenous peoples of Canada, resulting from any change to:
 - physical and cultural heritage;
 - the current use of lands and resources for traditional purposes; or
 - any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

Table 13: Potential effects on Indigenous peoples

Component	Project phase	Source of potential change	Potential effect
Physical and cultural heritage	Construction	<ul style="list-style-type: none"> – Clearing and grading of areas for future infrastructure and works – Access road construction – Establishment of construction trailers and temporary sanitary infrastructures – Development of temporary water management infrastructure – Erection of equipment and material storage areas – Construction of the workers camp – Construction of primary power line and substation – Use and maintenance of heavy equipment – Construction of dikes and diversion of water from Lake 001 – Pit dewatering and fish relocation 	<ul style="list-style-type: none"> – Possible loss of physical heritage due to direct impacts to land and water – Possible disruption of cultural heritage practices in the vicinity of the Project site due to restricted access
	Operations	<ul style="list-style-type: none"> – Ore extraction including drilling and blasting of open pit and underground mine – Use and maintenance of heavy equipment, including shovels and haul trucks – Ore processing including crushing, separation and storage of ore – Waste rock and tailings storage – Operation of water management systems, including effluent discharge 	<ul style="list-style-type: none"> – Possible disruption of cultural heritage practices in the vicinity of the Project site due to restricted access – Potential change to valued viewsheds



Component	Project phase	Source of potential change	Potential effect
	Closure	<ul style="list-style-type: none"> - Breaching of Lake 001 dike and flooding of the open pit - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - Possible change of long-term land use - Possible change to valued viewsheds
Current use of land and resources for traditional purposes	Construction	<ul style="list-style-type: none"> - Clearing and grading of areas for future infrastructure and works - Access road construction - Establishment of construction trailers and temporary sanitary infrastructures - Development of temporary water management infrastructure - Erection of equipment and material storage areas - Construction of the workers camp - Construction of primary power line and substation - Purchase of goods, services, and materials - Transportation of goods, materials, and machinery to site - Use and maintenance of heavy equipment - Construction of dikes and diversion of water from Lake 001 - Pit dewatering and fish relocation - Construction waste management - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Possible loss of places to practise traditional activities due to restricted access - Potential loss of natural resources including timber, medicinal plants, fish and wildlife due to direct disturbance of land and water - Possible disruption of traditional activities in the vicinity of the Project site due to increased noise and changes in air quality

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Component	Project phase	Source of potential change	Potential effect
	Operations	<ul style="list-style-type: none"> - Hiring and training of operations workforce - Ore extraction including drilling and blasting of open pit and underground mine - Use and maintenance of heavy equipment, including shovels and haul trucks - Ore processing including crushing, separation, and storage of ore - Waste rock and tailings storage - Concentrate transport - Operation of water management systems, including effluent discharge - Purchase of goods, services, and materials - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Potential loss of natural resources including timber, medicinal plants, fish and wildlife due to direct disturbance of land and water - Disruption of traditional activities in the vicinity of the project site due to restricted access - Possible disruption of traditional activities in the vicinity of the project site due to increased noise and changes in air quality
	Closure	<ul style="list-style-type: none"> - Reduction of operations workforce - Breaching of Lake 001 dike and flooding of the open pit - Backfilling of the underground mine - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - Disruption of traditional activities in the vicinity of the project site due to restricted access - Potential long-term changes to land use and landscape



Component	Project phase	Source of potential change	Potential effect
<p>Structure, site or thing that is of historical, archaeological, paleontological or architectural significance</p>	<p>Construction</p>	<ul style="list-style-type: none"> - Hiring and training of construction workforce - Clearing and grading of areas for future infrastructure and works - Access road construction - Establishment of construction trailers and temporary sanitary infrastructures - Development of temporary water management infrastructure - Erection of equipment and material storage areas - Construction of the workers camp - Construction of primary power line and substation - Purchase of goods, services, and materials - Transportation of goods, materials, and machinery to site - Use and maintenance of heavy equipment - Construction of dikes and diversion of water from Lake 001 - Pit dewatering and fish relocation - Construction waste management - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Possible loss of archaeological sites or artefacts due to direct impacts to land
	<p>Operations</p>	<ul style="list-style-type: none"> - Hiring and training of operations workforce - Ore extraction including drilling and blasting of open pit and underground mine - Use and maintenance of heavy equipment, including shovels and haul trucks - Ore processing including crushing, separation and storage of ore - Waste rock and tailings storage - Concentrate transport - Operation of water management systems, including effluent discharge - Use and maintenance of heavy equipment - Purchase of goods, services, and materials - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Possible loss of archaeological sites or artefacts due to direct impacts to land



Component	Project phase	Source of potential change	Potential effect
	Closure	<ul style="list-style-type: none"> - Reduction of operations workforce - Breaching of Lake 001 dike and flooding of the open pit - Backfilling of the underground mine - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - No impacts are anticipated to this component during closure activities

22. CHANGES TO THE HEALTH, SOCIAL, OR ECONOMIC CONDITIONS OF INDIGENOUS PEOPLES

The Table 14 presents the changes that could occur as a result of the Project and affect the health, social, or economic conditions of Indigenous peoples, based on the information available to date. This list will be updated as consultations with Indigenous peoples continue.

The Project has the potential to affect the following components that fall under federal jurisdiction as referred to in section 2(1) of the IAA, namely:

- ◆ the health, social or economic conditions of the Indigenous peoples of Canada.



Table 14: Potential changes to the health, social, and economic conditions of Indigenous peoples

Components	Project phase	Source of potential effect	Potential effect
Health	Construction	<ul style="list-style-type: none"> - Hiring and training of construction workforce - Clearing and grading of areas for future infrastructure and works - Access road construction - Establishment of construction trailers and temporary sanitary infrastructures - Development of temporary water management infrastructure - Erection of equipment and material storage areas - Construction of the workers camp - Construction of primary power line and substation - Purchase of goods, services and materials - Transportation of goods, materials and machinery to site - Use and maintenance of heavy equipment - Construction of dikes and diversion of water from Lake 001 - Pit dewatering and fish relocation - Construction waste management - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Potential increase in stress levels due to changing land use - Potential change in family structures due to remote work schedule - Potential change to quality and availability of wild-caught foods including traditional plants, fish and wildlife
	Operations	<ul style="list-style-type: none"> - Hiring and training of operations workforce - Ore extraction including drilling and blasting of open pit and underground mine - Operation of heavy equipment including shovels and haul trucks - Ore processing including crushing, separation and storage of ore - Waste rock and tailings storage - Concentrate transport - Operation of water management systems, including effluent discharge - Use and maintenance of heavy equipment - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Potential increase in stress levels due to changing land use - Potential increase in stress levels due to increased noise levels - Potential change in family structures due to remote work schedule - Potential change to quality and availability of wild-caught foods including traditional plants, fish and wildlife - Potential impacts to respiratory health due to changes in air quality



Components	Project phase	Source of potential effect	Potential effect
	Closure	<ul style="list-style-type: none"> - Reduction of operations workforce - Breaching of Lake 001 dike and flooding of the open pit - Backfilling of the underground mine - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - No potential impacts to health are anticipated due to closure activities
Social and economic conditions	Construction	<ul style="list-style-type: none"> - Hiring and training of construction workforce - Clearing and grading of areas for future infrastructure and works - Access road construction - Establishment of construction trailers and temporary sanitary infrastructures - Development of temporary water management infrastructure - Erection of equipment and material storage areas - Construction of the workers camp - Construction of primary power line and substation - Purchase of goods, services and materials - Transportation of goods, materials and machinery to site - Use and maintenance of heavy equipment - Construction of dikes and diversion of water from Lake 001 - Pit dewatering and fish relocation - Construction waste management - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Increase in skills and trades within the population - Increase in jobs and training opportunities - Increase in business opportunities - Potential increase in local population - Potential increase in demands on regional services - Potential increased demand for housing - Potential change to population demographics due to the influx of non-local workers - Increase in traffic and associated increased risk of collisions



Components	Project phase	Source of potential effect	Potential effect
	Operations	<ul style="list-style-type: none"> - Hiring and training of operations workforce - Ore extraction including drilling and blasting of open pit and underground mine - Operation of heavy equipment including shovels and haul trucks - Ore processing including crushing, separation and storage of ore - Waste rock and tailings storage - Concentrate transport - Operation of water management systems, including effluent discharge - Use and maintenance of heavy equipment - Purchase of goods, services and materials - Management of domestic waste and hazardous materials 	<ul style="list-style-type: none"> - Increase in skills and trades within the population - Increase in jobs and training opportunities - Increase in business opportunities - Increase in skills and trades within the population - Potential increase in local population - Potential increase in demands on regional services - Potential increased demand for housing - Potential change to population demographics due to the influx of non-local workers - Increase in traffic and associated increased risk of collisions
	Closure	<ul style="list-style-type: none"> - Reduction of operations workforce - Breaching of Lake 001 dike and flooding of the open pit - Backfilling of the underground mine - Restoration of natural drainage patterns - Revegetation of waste rock and tailings storage sites - Dismantling of infrastructure and buildings - Levelling of the process plant and workers camp - Scarifying the on-site roads and access road - Hydroseeding and tree planting throughout the site 	<ul style="list-style-type: none"> - Loss of business and employment opportunities - Potential population decrease due to reduced local employment opportunities



23. GREENHOUSE GAS EMISSIONS

The Project's greenhouse gas emissions have been estimated based on the preliminary engineering data available, for the construction and operation phases only.

Total emissions associated with construction are estimated at 95 kt of CO₂ eq, mainly due to site deforestation. Emissions during this phase of the Project can be broken down as follows:

- ◆ diesel consumption by machinery: 4 439 t CO₂ eq
- ◆ deforestation: 88 kt of CO₂ eq
- ◆ diesel consumption in logistics transport: 2.1 kt CO₂ eq

Annual emissions associated with operations are estimated at 101 kt CO₂ eq. Machinery accounts for 59% of these emissions, with logistics transport and explosives accounting for 38% and 3% respectively. It should be noted that these emissions are annual and vary from year to year during the operating phase. On an average basis during the operating phase, emissions break down as follows:

- ◆ diesel consumption (mobile sources): 60 kt CO₂ eq per year
- ◆ use of explosives: 3 kt CO₂ eq per year
- ◆ logistics transport (truck): 25 kt CO₂ eq per year
- ◆ logistics transport (train): 13.6 kt CO₂ eq per year

24. WASTE AND EMISSIONS

24.1. Waste management

The management of residual materials will promote the implementation of practices based on the 3RV, i.e., favouring the reduction, reuse, recycling, and recovery of residual materials. Residual materials will be managed in accordance with the laws and regulations in force. A management plan will be drawn up at a later stage of the Project.

The management of hazardous waste is regulated, and the disposal of these products will be carried out in accordance with the laws and regulations in force. A management plan will be drawn up at a later stage of the Project.

If any other category of waste is generated by the Project, Patriot would manage them in accordance with the laws and regulations in force.

A summary of the residual material that will potentially be present on the Project site is listed in the table below.



Table 15: Summary of the residual material

Category	Description (non-exhaustive)	Disposal location or collection company
Reusable Materials	– New residual materials, uncontaminated packaging	Reuse on-site
Recyclable Materials	– Paper, glass, plastic, cans, uncontaminated metal, tires	Metal recovery site
Compostable Materials	– Cafeteria food waste, expired food	Overburden pile
	– Brown cardboard (recycled cardboard mixed with compostable materials)	Overburden pile
Hazardous Residual Materials (HRM) – Liquids	– Liquids from mechanical workshops or spill cleanups	Specialized waste management company
	– Used oil, grease, sludge from wash bays, oily water, contaminated snow	Specialized waste management company
	– Wash water from mechanical workshops (without intermediate effluent)	Specialized waste management company
HRM – Industrial and Household Solids	– Antifreeze, solvents, aerosols, paint, fluorescent bulbs, lamps, batteries, smoke detectors, oil filters, rags, packaging, contaminated containers, halocarbons, used absorbents, electronic waste, laboratory products	Specialized waste management company
Contaminated Soils	– Spill cleanups (managed with HRM)	Specialized waste management company
Construction, Renovation, and Demolition Debris	– Wood, aggregates, drywall, uncontaminated dry materials	Trench landfill
Residual Waste for Disposal	– Bulky waste, litter bags, polystyrene foam, packaging, sanitary fabrics, composite objects, contaminated objects, non-recyclable plastic, rubber, ashes, plastic bags, plastic bottles, process waste, various empty containers	Trench landfill
Sanitary Sludge	– Sludge from the bioreactor	Specialized waste management company
Biomedical Waste	– From the infirmary; managed according to RLRQ, Q-2, r.12	Specialized waste management company
Tires	– Used tires	Specialized company / Recyc-Québec
Batteries	– Used batteries of all types (AA, etc.)	Specialized waste management company
Electronic Products	– Computer screens, computers, small electrical appliances, etc.	Specialized waste management company



24.2. Atmospheric emissions

During its construction and operation phases, the Project will result in the emission of certain substances into the atmosphere:

- ◆ particles (dust) of different sizes (fine particles [PM_{2,5}], respirable particles [PM₁₀], and total particles [PM_{tot}]), including the natural elements associated with these particles (for example, certain metals);
- ◆ greenhouse gases (GHG), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), and/or other compounds from the machinery and equipment used.

Atmospheric emissions from the Project must comply with the *Règlement sur l'assainissement de l'atmosphère* (RLRQ; Q-2, r. 4.1). An air quality and dust control management plan will be drawn up at a later stage of the Project.

24.3. Liquid waste

Water management including discharge to environment is detailed in Section 9.2.6.

24.4. Management of contaminated soil

Appropriate work practices and an emergency response plan will be put in place to prevent accidental spills, and in the event of such a spill, contaminated soil will be recovered and managed in accordance with current regulations.



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