Environmental & Social Assessment

Executive Summary – Environmental & Social Assessment Report

Lithium Guo AO: Moblan Lithium Project
Presented to: The Ministry of Environment & Climate Change Strategy (MECCS)

March 2019

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Moblan Lithium Project
Executive Summary

Environmental & Social Impact Assessment (ESIA)
3214-14-062

Presented to the:
Ministry of Environment & Climate Change Strategy (MECCS)
March 2019

LITHIUM GUO AO

Environmental and Social Impact Assessment (ESIA)
DIRECTIVE: 3214-14-062

EXECUTIVE SUMMARY

Presented to the Ministry of Environment & Climate Change Strategy (MECCS)

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Foreword

This document is the *Environmental and Social Impact Assessment* (ESIA, 3214-14-062) summary for the Moblan Lithium mining project of the proponent Lithium Guo AO. It contains all the elements of knowledge and analysis in accordance with COMEV guidelines and the expectations of the *Ministry of Environment & Climate Change Strategy* (MECCS). The guidelines received from COMEV for the project is included in Appendix I of the ESIA.

In accordance with these guidelines, the ESIA presents the description and justification of the project and all the following elements:

Context:

- Presentation of the proponent
- Project's insertion context, and
- Purpose of the project

Choice of location and technology variants:

- Location and layout variants, and
- Technological variants

Project description:

- Description of the deposit
- Mode of extraction
- Ore processing
- Tailings management
- Water management and treatment
- Water assessment
- Mining effluent
- Site planning and related projects:
  - Access infrastructure
  - Accommodation, and transportation logistics
- Storage sites for fuel or hazardous materials:
  - Borrow pits
  - Expedition of the concentrate
  - Energy supply
  - Jobs and training
  - GHG emissions

Description of the environment:

- Delimitation of the study area
- Description of the relevant components
- Biophysical environment
- Archeological and cultural potential, and
- Social environment

Analysis of the project's impacts:

- Impact identification and assessment, and
- Cumulative impacts

Mitigation measures, residual impacts and compensation:

- Impact mitigation, and
- Residual impacts and compensation measures

Risk management:

- Risk of technological accidents
- Security measures, and
- Preliminary emergency plans

Monitoring and follow-up programs:

- Monitoring program; and
- Environmental and social monitoring program

Following the descriptions and analysis presented in this document, you can refer to the environmental and social impact study (ESIA) of Lithium Guo AO's Moblan Lithium mining project or contact us, we will be pleased to guide you through the various ESIA volumes or answer any questions you may have.

The full impact assessment report submitted to MECCS is divided into 13 chapters, the respective contents of which are summarized below:

Chapter 1 presents GAL and the main principles of its environmental policy. It also introduces the main consultant and all the other consulting firms that collaborated in the design of the project and the complementary studies as part of this environmental and social impact assessment. Then, a table illustrates the concordance between the COMEV guidelines and the sections of the ESIA.

Chapter 2 describes the context and legal framework of the project and highlights the elements that justify the rationale for the Moblan Lithium project.

Chapter 3 presents LGA's consultation process and activities with the public since the summer of 2018. The concerns and interests of the stakeholders consulted are also presented in chapter 3.

Chapter 4 presents the project alternatives and provides information on the comparative analysis that led to the selection of the preferred project alternative. The alternatives that were considered include: the disposal of the mining waste, electricity supply alternatives, the shipment of the concentrate to the spodumen market and location alternatives for the primary processing plant in China. The approach used for the selection of the preferred alternative for the Moblan Lithium project is also presented.

Chapter 5 describes in detail the proposed Moblan Lithium project and its various components, as well as the measures taken to optimize the preferred alternative for the project. This chapter concludes on the project activities that may have an impact on the environment and social context.

Chapter 6 presents the regional study area and the local study area that were selected for the Moblan Lithium Project and describes the receiving environment prior to the construction and operation of the project. In addition, sensitive components of the physical, biological and human environments that could be affected by the project are identified and described.

Chapter 7 presents the apprehended impacts on the physical, biological and human environments. The impact assessment takes into account the mitigation and enhancement measures proposed for the project and is presented according to the project phases: construction, operation and closure. The impact assessment is presented at the end of this chapter, as are the selected mitigation measures.

Chapter 8 describes the cumulative impacts of the project on valued components in common with the other major projects planned simultaneously in the region.

Chapter 9 presents the methods adopted by the Moblan Lithium project to increase its resilience to the potential effects of climate change. This chapter also describes the planned greenhouse gas emissions for this project's activities.

Chapter 10 illustrates the project's compatibility with the Cree Nation's vision of sustainable development, as defined in its mining policy. It also highlights the concordance between, on the one hand, the principles of sustainable development as defined by the Quebec Sustainable Development Act (*Loi sur le développement durable du Québec)*, and on the other hand, with the Moblan Lithium Project and its ESIA.

Chapter 11 presents the sources of risks and the procedures adopted by the Moblan Lithium project for the management of risks and accidents including, among others, spills of hazardous materials, fires or explosions, with a view to having a major impact on the surrounding communities and the receiving environment in which the project is located. The effects on the project of environmental parameters, such as earthquakes, exceptional floods, extreme weather conditions and ground stability, are also discussed.

Chapter 12 presents the preliminary environmental and social monitoring and follow-up proposed program, including measures and means to protect the environment, response mechanisms and Lithium Guo AO's commitments.

Chapter 13 provides and formulates the conclusions of this environmental and social impact assessment of the Moblan Lithium Project.

In addition to the main report (Volume 1 - Chapters), the study includes a Volume 2 (Volume 2 - Maps) which includes all the maps and technical drawings referred to in the ESIA; the main report is also accompanied by a Volume 3 (Volume 3 - Appendices) in support to the assessment of impacts.

Legislation regulating the project

The conception of the proposed facilities and infrastructures for the Moblan Lithium Project, their implementation and operation procedures have been developed following Canadian and Quebec laws and related regulations. They have also been developed in accordance with the expectations of the Cree Nation Government.

Such laws and directives include in particular:

- James Bay and Northern Quebec Agreement (Quebec)
- Directive 019 pertaining to the mining industry
- Mining Act (c. M-13.1)
- Cree Nation Government directives
- Environmental Quality Act (c. Q-2)
- Act on the Conservation and Development of Wildlife (RQA, c. C-61.1)
- Threatened or Vulnerable Species Act (QRA, c. E-12.01)
- Act on Lands in the Domain of the State (R.S.Q., c. T-8.1)
- Water Regime Act (R.S.Q., c. R-13)
- Act on the Sustainable Development of Forest Land (R.S.Q., c. A-18.1)
- Explosives Act (R.S.Q., c. E-22)
- Building Act (R.S.Q., c. B-1.1)

- Cultural Heritage Act (R.S.Q., c. P-9.002)
- Act on Occupational Health and Safety (R.S.Q., c. S-2.1):
  - Road Safety Code (C-24.2)
  - Canadian Environmental Protection Act (S.C. 1999, c. 33)
  - Fisheries Act (R.S.C., 1985, c. F-14)
  - Species at Risk Act (S.C. 2002, c. 29)
  - Explosives Act (R.S.C. 1985, c. E-17)
- Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c. 34):
  - Hazardous Products Act (R.S.C. 1985, c. H-3)

Introduction

This report is the Environmental and Social Impact Assessment (ESIA) summary for Lithium Guo AO's (LGA) Moblan Lithium Project, which plans to develop a spodumene deposit on its Moblan Lake property.

The proponent Lithium Guo AO does not produce lithium yet and currently has no other active properties in Canada other than the Lake Moblan site. Registered in Quebec in December 2016, LGA is a Canadian mining company dedicated to the exploration and development of spodumene deposits for the supply of processing plants for the production of lithium carbonate.

Lithium Guo AO is a subsidiary of Shenzhen Guo AO Mining Investment Partnership, through Guo AO Lithium Investment International Ltd, registered in the Cayman Islands. The parent company, Shenzhen Guo AO Mining Investment Partnership, also owns the Chinese company Neotec Lithium Ltd based in Shanghai and planning to set up a lithium carbonate production plant in Taixing, China. GAL is actively involved in the implementation of its flagship project, the Moblan Lithium Project.

The project involves the operation of an open-pit mine over a 12-year period, which will extract tonnes of[CG1] ore per year. The project also includes the operation of a spodumene enrichment plant (or concentrator) with a daily ore feed capacity of 2,600 tonnes. This traditional process plant will process ore with an average grade of 1.4% Li_2O to enrich it to a grade of 6% of Li_2O.

The waste rock extracted from the mine pit and the process residues produced at the plant do not pose a high risk, are not radioactive, acidogenic or cyanide-containing. Waste rock and ore have the potential to leach copper in smaller quantities than the concentrations observed in groundwater in the area. The waste rock and process residues will be the project's residues and will be placed as a dry pile on a tailings pile equipped with a water collection, recovery and recirculation system. A complete camp to house the site's approximately 200 workers will be built on land adjacent to the mine site. The project infrastructure will be supplied with electricity from the Hydro-Québec grid through a new 25 kV power line built and operated by Lithium Guo AO.

Fundamental Principles

1. Integration of Sustainable Development Initiatives

All the principles of sustainable development, both in the province of Quebec and in the territory of Eeyou Istchee, guided the design of the Moblan Lithium Project and its environmental and social impact assessment (ESIA). Lithium Guo AO is committed to implementing its economic project in a responsible and safe manner, by actively contributing to the protection of the environment and the conservation of biodiversity, and living harmoniously with the communities surrounding the project. Compliance with the principles of sustainable development is therefore integrated into the project, according to the sequence avoid-minimize-compensate:

1) avoid potential impacts on the physical, biological and social environment,

2) minimize those that could not be avoided and

3) as much as possible, compensate those that could not be avoided or minimized.

The Sustainable Development Act (R.S.Q., chapter D-8.1.1), adopted by the Québec government in 2006, establishes a sustainable development reference framework for the province. The fundamental principle of this framework is to meet the needs of the present without compromising the ability of future generations to meet their own needs. This vision of development is articulated in three orientations:

- Maintain the integrity of the environment to ensure the health and safety of human communities and preserve the ecosystems that support life;
- Ensure social equity to enable the full development of all women and men, the development of communities and respect for diversity;
- Aim for economic efficiency to create an innovative and prosperous, environmentally and socially responsible economy.

For mining projects taking place on the territory, the Cree of Eeyou Istchee recognize the economic and social opportunities offered by the mining sector, while respecting their unique social and environmental regime. The vision of the Cree Nation Government, including the Cree Nation Mining Policy (2010) and its sustainable development directions, was considered. This policy highlights the importance of conducting mining in a sustainable manner, and as such the Moblan Lithium Project was based on the following principles:

- Recognition of the importance of the land use and occupation system by Cree families and the ongoing management by tallymen through close collaborations with concerned families and tallymen;
- Administration of natural resources for the needs of the Cree without compromising the needs of future generations through a mining development that aims to benefit the Cree community;
- Management of natural resources based on the Cree principle of respect for the land by exploiting a resource that is now critical to the development of less polluting means of transport;

Balance ecological, spiritual, traditional and production values to meet the cultural and economic needs of all peoples and communities in the territory of Eeyou Istchee through the implementation of local labor force training and local supply programmes, as well as an intercultural training plan;

Maintenance of the cultural and spiritual values and traditions that exist in the territory, including in specially designated sites by avoiding and protecting the region's archeological or historical sites;

Conservation of biological diversity, soils, water and watercourses, flora, fauna, landscape diversity and recreational values by developing water management, tailings, emergency response, mitigation measures, environmental and social monitoring and follow-up plans to protect the biophysical and social components of the receiving environment;

Application of the precautionary principle in all decision-making processes regarding natural resources by developing the project in close collaboration between the impact study team, the engineering team, the proponent and the stakeholders concerned in the area;

Rehabilitation of damaged ecosystems as proposed in a compensation plan and a closure plan to restore the site to an integrated state with the existing ecosystem and to improve the state of ecosystems in the region through compensation projects.

2. Climate Change Considerations

The project takes into account climate change by selecting equipment and an approach that minimizes greenhouse gas emissions. With the construction of a power supply line directly connected to the Hydro-Québec grid, the use of energy produced by burning diesel fuel has been replaced by a supply of green energy. The choice of equipment, such as hauling process residues to the waste dump by conveyor rather than by truck and drying the concentrate by electric dryer rather than combustion dryer, also reduces the project's GHG emissions. The opportunity to use the Chibougamau rail transhipment centre instead of the Matagami rail transhipment centre for shipping the product is also recommended to further reduce GHG emissions associated with the transportation of the concentrate.

The project further takes climate change into account when establishing the design criteria for its infrastructure. The mine site's water interception, collection and storage facilities were designed with the main risk to the region's future climate in mind: increased precipitation. The tailings is also designed to minimize wind exposure to fine tailings particles by placing sterile waste around the tailings pile.

3. Integration of Traditional Knowledge

Throughout the impact assessment, a particular attention was given to the integration and enhancement of the traditional knowledge of the communities concerned by the project, at several levels.

During the biological, geotechnical and hydro geological surveys realized in 2018, the integration of professionals from the Cree community was an asset because of their knowledge of the territory and the historical use of the resources of the Lake Moblan region. The studies were carried out in partnership with EnviroCree Ltd. (Photo 2-1) which is based in Mistissinni. An environmental student from the Mistissini community did an internship with the impact assessment team in the summer of 2018.

In addition, during meetings with stakeholders and during large wildlife inventories, the M40 and M39 tallymen of the Mistissini Cree Trappers' Association were consulted to integrate their knowledge. Their participation is an asset since they have a thorough knowledge of the study area, for example for the identification of wildlife occupation of the site or in the selection of the route for the power supply line.

Finally, and in order to promote and enhance the use of the Cree language, the Cree nomenclature was used, with the valuable contribution of the elders of Mistissini, to present the various chapters of the impact study and to identify the fauna and flora identified on the site. The traditional knowledge of elders was also integrated to assess the importance of natural components present on the site, which are either used as a traditional source of food or health care products.

Photo 3-1 : EnviroCree staff during herpetofauna inventories.

4. Consultations and communications

In the fall of 2018, the proponent Lithium Guo AO took steps to consult stakeholders, including with Cree and non-Cree communities in the region. For instance, the communities of Mistissini, Oujé-Bougoumou, Chibougamau and Chapais were met. The locations and dates are detailed in Table 3-1 and Table 3-2. As a matter of fact, consultation and collaboration with the host communities are an important part of Moblan Lithium project. The ongoing engagement of stakeholders is considered a priority, particularly in order to promote the proper dissemination of information, the management of community expectations and the acceptability of the project.

Table 4-1 Consultations in Cree communities

Group(s) met	Date	Number of participants	Methods used to reach participants
Grand Council of the Cree of Mistissini and members of the Band Council	September 5, 2018	11 members + 6 project representatives	Via the Community Liaison Officer
Families of M-39 and M-40 trappers, representatives of the Cree Nation of Mistissini, youth, elders and the local environmental administrator	October 9, 2018	7 members + 4 project representatives	Via the Community Liaison Officer
Grand Council of the Cree of Mistissini	October 11, 2018	3 members + 4 project representatives	Via the Community Liaison Officer
Family of the M-40 trapper and environmental representatives of the Cree Nation of Mistissini Band Council	October 11, 2018	3 members + 4 project representatives	Via the Community Liaison Officer
Community of Mistissini	October 23, 2018	About 25 members + project representatives	Radio, Facebook, via the Band Council and community notifications
M-39 Trapper Family	October 23, 2018	2 members + 4 project representatives	Via the Community Liaison Officer
Grand Council of the Cree of Mistissini	October 26, 2018	3 members + 4 project representatives	Via the Community Liaison Officer
Grand Council of the Cree of Ouje-Bougoumou	October 26, 2018	3 members + 5 project representatives	Via the Community Liaison Officer
Community of Mistissini	February 26, 2019	10 members + 8 project representatives	Via the Community Liaison Officer

Table 4-2 Consultations in non-indigenous communities

Group(s) met	Date	Number of participants	Methods used to reach participants
Développement Chibougamau	September 5, 2018	3 members + 6 project representatives	Via the consultant Hatch
Chibougamau City Council	October 10, 2018	4 members + 3 project representatives	Via the consultant Hatch
Community of Chibougamau	October 24, 2018	About 50 people + 6 project representatives	Local newspaper, radio, Facebook, invitations to local entrepreneurs
Community of Chapais	October 25, 2018	About 10 people + 6 project representatives	Radio, pamphlets, Facebook, invitations to local entrepreneurs
Chapais and Chibougamau Municipal Councils, Développement Chibougamau and the James Bay Regional Authority	February 26, 2019	6 people + 7 project representatives	Via the consultant Hatch
Community of Chapais	February 27, 2019	8 people + 7 project representatives	Via the consultant Hatch

All the consultations made it possible to reach a varied public. In the indigenous context, they brought together Cree Nation authorities, the families of trappers whose territory is affected by the project, members of the Cree Nation communities of Mistissini (Photo 9 1) and Oujé-Bougoumou, including businesses, youth, elders, etc.

In the non-indigenous context, members of the Chibougamau (Photo 9 2) and Chapais communities were met, representatives of regional and provincial authorities, Développement Chibougamau (the entity responsible for the economic development of Chibougamau), as well as the Société du Plan Nord.

Photo 4-1 : Consultation with the Mistissini Band Council

Photo 4-2 : Consultation of the Chibougamau City Council

The main key elements that emerged from the information sessions and comments made by participants include the following components:

1. Woodland caribou and their habitat: The presence of caribou in the study area was a concern and the impact of truck traffic on roads on this special status species was questioned. The presence of woodland caribou on the mine site itself is not reported, but their presence in the region dictated the selection of the product's trucking route to Matagami and the selection of the power line route.

2. Road traffic on the Route du Nord: Concerns were raised about the current condition of the Route du Nord, its significant use by heavy trucks and the impact of additional traffic caused by the project. A specific study of road traffic in the region and the project's impacts on it has been completed. This study shows that the capacity of road infrastructure is adequate to support the project's needs and that the project's impacts on road traffic will not be significant.
3. Socio-economic conditions: Although the conditions of employment, availability of services and housing, and labor force skills are somewhat different between indigenous and non-indigenous communities that will be influenced by the project, the common concern for economic and social development was expressed in all the groups met. This local benefits objective was concretized in the project by integrating into the project a local workforce training plan, a local procurement plan and a proponent's objective to recruit its workforce locally.
4. Communication process: The advice of the participants met during the various meetings made it possible to identify the best ways to approach members of the various communities to inform them about the project, gather their comments and answer their questions. These tips were used to develop the consultation plans put forward for the project.

Summary of the Impact Study

5. Project Location and Background Information

Lithium Guo AO (LGA) aims to exploit a spodumen deposit on the Moblan Lake property (50°44'2.54 "N; 74°54'9.95 "W). As shown in Figure 1-1, the site, as identified by a red star, is located south of the Route du Nord, at km 114 of this road, in the James Bay agreement territory. It is located in the Eeyou Istchee Baie-James region, in the traditional territory of the Cree Nation of Mistissini, approximately 180 km (by road) from the city of Mistissini and 130 km (by road) from the city of Chibougamau. The Lac Moblan site is located respectively 10 km and 20 km from the boundaries of the southern and northern portions of Assinica National Park (shown in green in Figure 1-1).

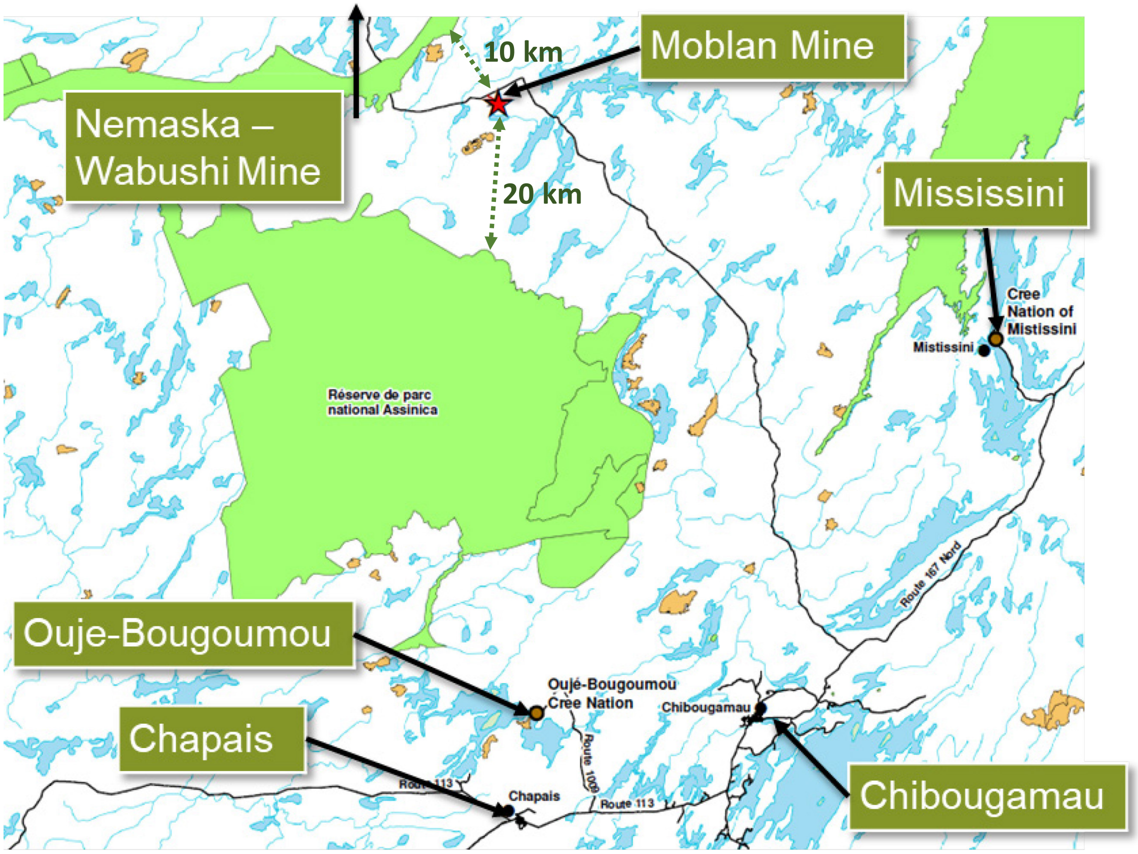


Figure 5-1 : Geographic location of the Lac Moblan site

The project involves the operation of an open-pit mine and an enrichment plant on the Lac Moblan site.

LGA holds exploration rights to 20 mining titles contiguous to the Moblan Lake site covering an area of 443 ha. The mining rights are currently held at 60% by Lithium Guo AO Ltée and 40% by Neotec Lithium. The land area delineated by the mining claims held by Lithium Guo AO and Neotec Lithium is insufficient to establish a tailings facility and overburden piles, a concentrator and all the necessary infrastructure for the project while respecting sensitive natural environment components such as lakes, rivers and wetlands. Mineral exploration rights on adjacent lands between the Lac Moblan claims and the Route du Nord are held by Osisko Mining Inc., which acquired them in 2018. LGA is currently in negotiations with Osisko to obtain approval to build infrastructure on these properties. Figure 1-2 illustrates the proposed layout of the infrastructure on the lands whose rights are held by LGA and on the adjacent lands (in green).

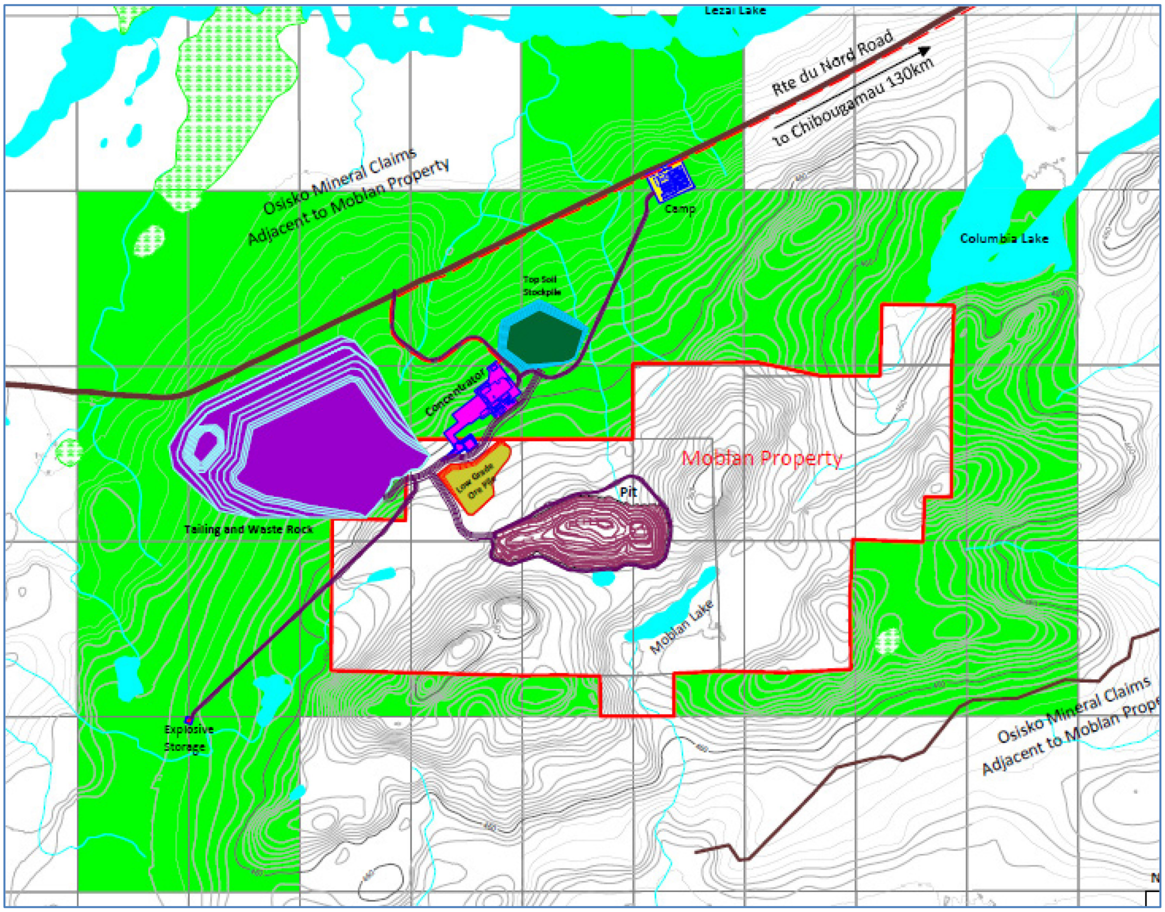


Figure 5-2 : Property boundary of mining titles held by Lithium Guo AO (in red) and adjacent properties of interest held by Osisko Mining (in green)

The geological Frotet sector (where the site is situated) is located within the Frotet-Evans greenstone belt. This area is composed of silt and dykes of ultramafic volcanic rocks and alkaline porphyritic rocks. These silts and dikes are present as a series of irregular rocky ridges that develop from northwest to southeast and north to south (Golder Associates, 2011).

The Moblan Lake deposit is located on Category III lands in a logging area. The site has been explored by several companies since the 1960s, as shown in the summary of the exploration history of the Lac Moblan site in Figure 1-3.

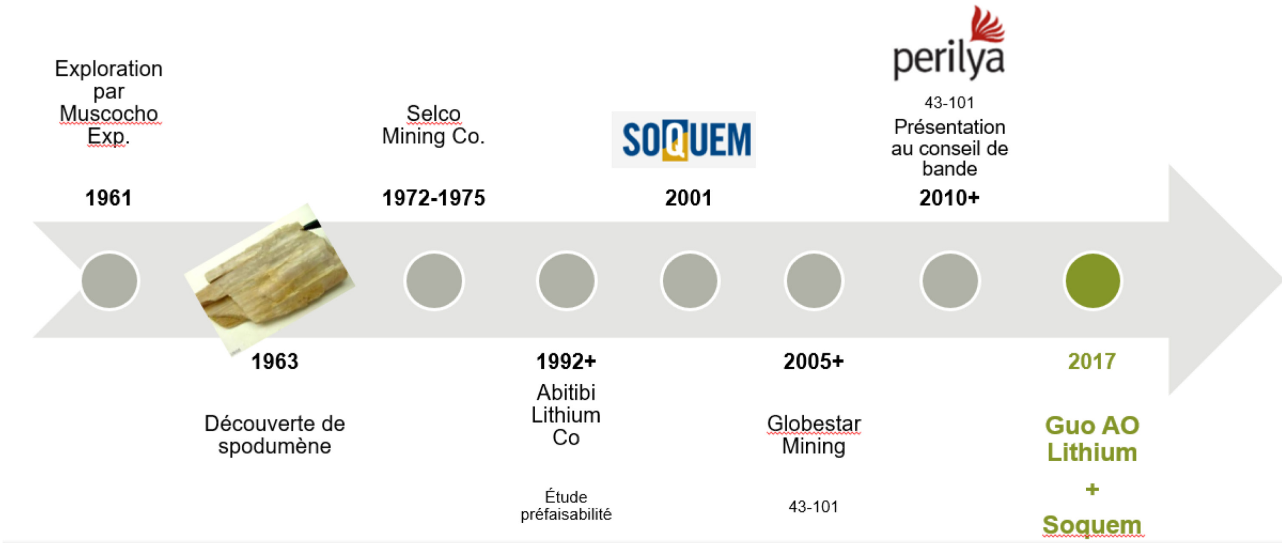


Figure 5-3 : Exploration history of the Lac Moblan site

A feasibility study was recently conducted by DRA-MetChem, in partnership with EXP and EnviroCree, and is expected to be published by the end of March 2019. The project definition, presented and discussed in this ESIA, is consistent with the one developed by DRA as part of the feasibility study. The project definition was actually developed in collaboration between the DRA engineering team and the Hatch environment team to implement directly into the project measures to avoid impacts, for example on wetlands and fish habitat.

6. Purpose of the project

Lithium is widely used in the production of batteries, ceramics, glass, lubricants, refrigerants, as well as in the nuclear industry and optical electronics. With the continued increase in the development of electronic products such as computers, digital cameras, cellular phones, mobile power supply equipment, etc., the battery industry, as shown in Figure 2-1, has become the main consumer market for Li carbonate, with a consumption of nearly 45% of global lithium consumption. In addition, Li carbonate is an effective material in the ceramics industry to reduce energy consumption and better protect the environment.

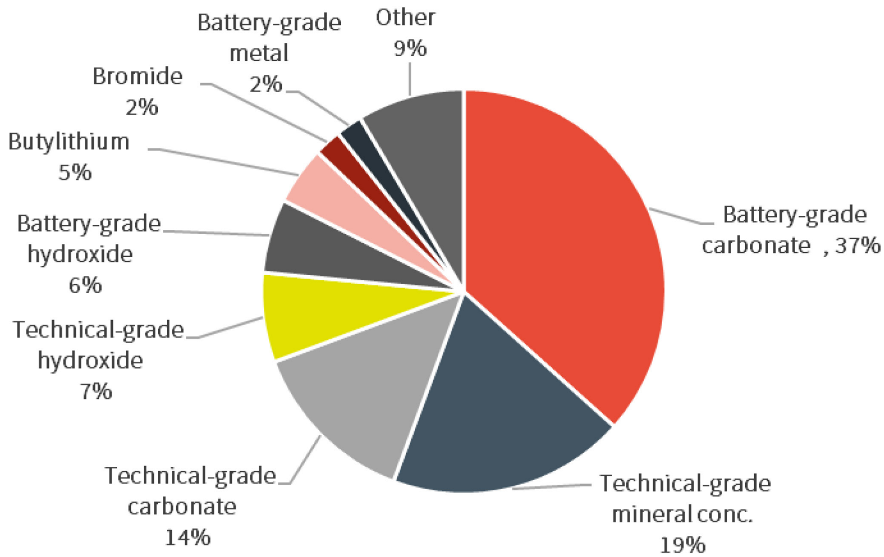


Figure 6-1 : Lithium use (Roskill, 2018)

Currently, the largest demand for Li on the international market is for Li batteries for the production of electric vehicles, specifically the use of lithium for storing energy in batteries. The Li carbonate market is mainly influenced by the development of renewable energy vehicles.

At this time, China is the largest consumer of Li, with two (2) of the five (5) largest producers of Li-ion batteries being Chinese producers (Ganfeng and Tianqi). As shown in Figure 2-2, Chinese demand accounts for 1/3 of the world demand for Li, with its largest production of capacitors, batteries, glass, lubricants, air conditioning units and synthetic rubber.

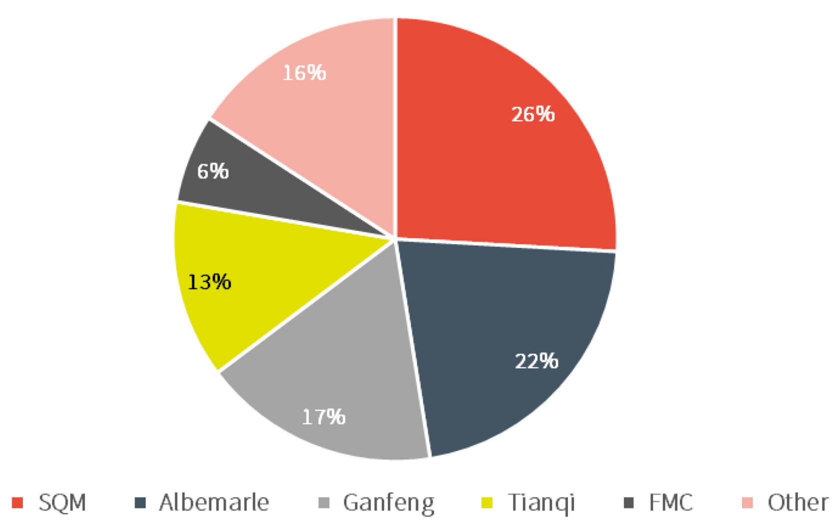


Figure 6-2 : Worldwide sales of battery grade lithium carbonate between 2010 and 2016 (Roskill, 2018)

China will have the strongest annual growth in Li consumption over the next 5 to 10 years with its production forecast of three times more rechargeable batteries than at present. As a result, China expects production and sales of electric vehicles to exceed 5 million by 2020. It is estimated that the annual net value of 5 million electric vehicles will total more than 100 million yuan (RMB) and that the marketing of 2 million electric vehicles will consume approximately 140,000 tonnes of lithium carbonate for batteries.

Assuming a battery consumption of around 65 kWh per electric vehicle, the current lithium carbonate production capacity is clearly insufficient to meet Chinese demand, while demand for spodumen concentrate will reach several million tonnes.

Table 6-1: Chinese domestic market forecasts for Li carbonate (tonnes) (DRA, 2018)

Year	2018	2019	2020
Supply	82,800	99,300	119,100
Demand	109,300	126,800	147,000
Li Batteries			110,000 (supply)
Li alloys			00 (supply)

The Moblan Lake deposit contains high-grade, high-purity lithium (about 1.5% Li_2O) that facilitates subsequent processing and improves the profitability of industrial production of battery grade Li carbonate, while reducing the ecological footprint of the Li life cycle.

7. Analysis of project alternatives

The environmental assessment process for a project includes the study of alternatives and scenarios for carrying out the project. This step justifies the elements of the project that have been selected or rejected, in order to present an optimal project scenario.

7.1 Methodology for evaluating alternatives

For each aspect of the project that was the subject of an alternative analysis, technical, economic, environmental and social criteria were assigned and compared to each other in order to determine the optimal alternative proposed. The criteria used for the analysis of alternatives are specific to each aspect of the project under study and include: health and safety of people, maintenance of the integrity of the natural and social environment, social impacts sensitive to indigenous and non-indigenous stakeholders, technical issues (equipment, tools and infrastructure), management and operational effectiveness and economic feasibility.

The variants of the Moblan Lithium project that were analysed and compared in order to select the most appropriate variant to meet the criteria mentioned above; these variants are summarized in the following sections.

7.2 Variant "without project"

In the absence of the Moblan Lithium project, there would be no construction or operation of a new lithium mine, its concentrator, in the Eeyou-Istchee – James Bay region. Thus, the consequences of not carrying out the project would be negative for the economy and the social environment, but positive for the natural environment at the proposed mining facility site and for public safety in the region.

7.3 Base Case

The base case represents the scenario initially proposed for the project and for which an analysis of alternatives for various aspects has been carried out. This analysis makes it possible to propose a project that is optimized in terms of costs and environmental footprint.

The base case of the Moblan Lithium Project had planned for the following components:

Power supply to the site through diesel generators;

Disposition of concentrator tailings as conventional pulp (in sludge) in a dammed tailings facility (TSF);

Location of the lithium carbonate production plant in Taixing, China.

Transporting spodumen by truck to the Matagami transshipment dock, then by train to the Port of Montreal for shipment by boat to Taixing, China once every two (2) months; and

Disposal of waste rock in a dedicated waste disposal area southwest of the site.

7.4 Location and alignment variants

Different variants of infrastructure locations and alignments have been assessed and include:

- Optimal layout of infrastructures;
- Location of the lithium carbonate production plant;
- Logistics of the transport of the spodumene concentrate;
- Potential expansion of on-site operations.

7.4.1 Optimal layout of mining infrastructure

Infrastructure design was planned at the beginning of the project's feasibility definition by applying the principles of the "AVOID-MINIMIZE-COMPENSATE" mitigation sequence, particularly to avoid and minimize encroachments into sensitive environments. Initially, as shown in the diagram on the left below, the path to the explosives storage and the tailings pile passed through and destroyed pond #6, stream #5 and a wetland near the pond. The concentrator was located directly on a stream and the overburden, waste rock and tailings piles extended to streams and wetlands west of the site. The position of wetlands and water bodies, the location of fish habitats and their 60 m buffer clearances on either side of streams, ponds, lakes and streams were communicated to engineers. With this information, the layout of the mine site infrastructure was revised to submit the layout of the right-hand diagram, avoiding fish habitats and, as much as possible, wetlands and streams.

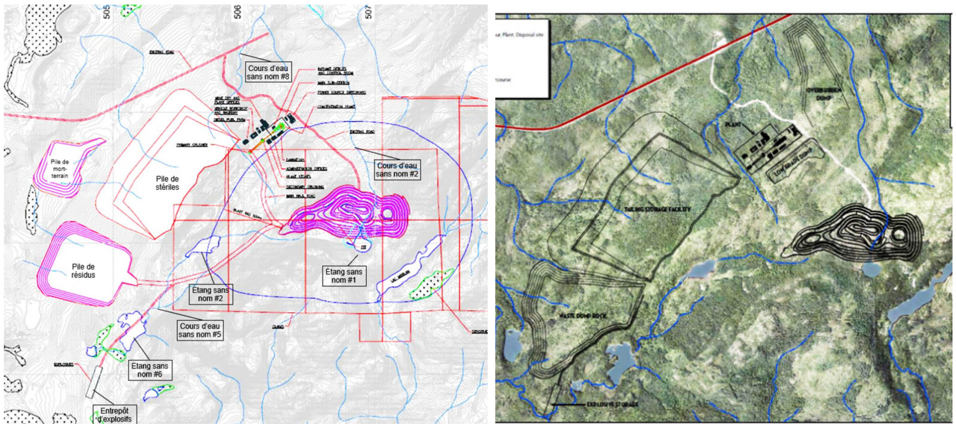


Figure 7-1 : Optimal layout

7.4.2 Alternatives for the location of the lithium carbonate production plant

As the commercial objective of the Lithium Guo AO promotor is to supply the Chinese market with lithium carbonate (Li_2CO_3) of a grade sufficient for the manufacture of electric car batteries, the base case initially proposed for the project was the lithium carbonate production plant in China. The establishment of this plant is planned by another company of the Shenzhen Guo AO group, Neotec Lithium (Taixing). This plant is therefore not part of the Moblan Lithium project.

As this scenario has raised concerns in local communities about the loss of employment opportunities and other social and economic benefits, the alternative of setting up the lithium carbonate production plant in Chibougamau was analysed using the following parameters:

- By-product management (sodium sulphate)
- Transport between the mine and China
- Energy supply to the lithium carbonate production plant
- Fresh water supply and wastewater management
- Natural gas supply
- Greenhouse gas emissions
- Emissions of air pollutants
- Residual materials management
- Impact on biodiversity
- Accessibility to an industrial zoning lot
- Availability of manpower
- Relative investment and operating costs

The comparison of the two (2) alternatives is presented in Table 7-1.

Table 7-1 : Advantages and disadvantages of the location of the lithium carbonate production plant

Location of the plant	Advantages	Disadvantages
Taixing, China	Lower CAPEX and OPEX Justifiable financial viability considering a longer life span than the mine, by alternatively supplying the plant via other Shenzhen Guo AO properties located in the Orient Availability of a natural gas supply network Water and hazardous materials treatment infrastructure available Valuation of the residue by other local industries Local and qualified manpower available	Regional air quality (Shanghai) already reduced by existing human activities Significant GHG emissions by transporting spodumene over a distance > 20,000 km between Quebec and Taixing (road, rail and marine) Use of a non-renewable energy source (coal) Option that does not meet the Quebec mining policy to encourage first processing in Quebec.
Chibougamau, Canada	Reduction in power supply costs (accessible and inexpensive hydroelectric power) Use of a renewable energy source (hydroelectricity) Proximity to the concentrator Reduction of transportation costs and GHG emissions Available space (territory)	Higher CAPEX and OPEX Financial viability of the project not justifiable for a lifetime of the plant of less than 20 years. No existing natural gas and industrial water supply Difficulty in recruiting qualified labor given the region's unemployment rate Negotiations with the Cree Nations for activities in traditional territory

First and foremost, the financial viability of a processing plant project will be affected by the life of the project. A lifetime of more than 20 years would typically be required to justify the investment. In the context of a mining project such as Lac Moblan, which has a lifespan of only 12 to 15 years, the economic justification for establishing the processing plant in Chibougamau is difficult to demonstrate.

Although GHG emissions are lower and the use of hydroelectricity is an advantage for the protection of air quality in Quebec compared to Taixing, the general conclusion of the comparison of the two options is that the establishment of a lithium carbonate processing plant in Chibougamau would hardly be viable for the following main reasons:

- Financial sustainability: The lack of a natural gas supply system, wastewater treatment and process water supply infrastructure, and an efficient rail service network in Chibougamau add to the expected capital and operating costs. The capital cost required to build the plant and related infrastructure in Chibougamau is not profitable for an operation planned for only 12 years.
- Less favorable environment in Quebec: Climatic conditions, a longer and more costly construction period, a shortage of skilled labor and a more expensive workforce, a lack of alternatives for the reuse of production by-products and residues, and the cost of managing residual materials are disadvantages of the plant option in Chibougamau compared to China.

7.4.3 Spodumen transport logistics

The transport logistics chosen for the project, i.e. the modes of transport as well as the route for the shipment of spodumene from the Moblan Lake site to the lithium carbonate production plant in Taixing (Jiangsu, China), is a critical element of the project, both for the promoter (reduction of costs and GHG emissions) and for local communities (pressure on road infrastructure and public safety).

Figure 7-2 : Road transport alternatives between the mine and the Matagami railway dock

The analysis of the various alternatives will make it possible to select the following elements:

- The route used to transport spodumene: from the north via the James Bay Highway or from the south via Highway 133;
- The location of the transhipment dock: Matagami, Barrette à Chapais and the future site of Chibougamau; and
- The selection of port facilities: Saguenay, Trois-Rivières, Bécancour or Montreal.

Of all the scenarios analyzed, bulk transportation by truck from the mine to the Matagami transfer dock, then by trains operated by CN to the Port of Montreal to be shipped to China, is the preferred scenario.

However, the use of the new transhipment dock in Chibougamau represents an opportunity for significant improvement of the project. It will be used as soon as available.

7.5 Technological variants

Various technological alternatives were evaluated as part of the project:

- Power supply mode;
- Method of disposal of mine tailings; and
- Product drying technology.

7.5.1 Electric Power Supply

The project is located on a remote site where access to electricity is not currently available. The electricity required for the operation of the plant and the mining camp could be generated on site, such as from a power plant using diesel or liquefied natural gas (LNG) generators, or could come from the Hydro-Québec grid, if the site can be connected. Energy could also be leased to an external third party (diesel). Thus, four (4) scenarios were studied according to different supply modes and based on economic and environmental criteria.

The scenario analysis indicates that the use of electricity via a connection to the Hydro-Québec grid where Lithium Guo AO would own 42 km of line connecting the existing grid to the Moban Lake mine site is the most advantageous alternative according to the criteria studied, see Figure 2-3 illustrating the three options analyzed.

Three (3) alignments were considered and studied for the corridor of this 25 kV power line and are shown on Figure 5 3. The central alignment, shown in yellow on the figure, was chosen as the one that has the least impact on woodland caribou use areas, identified grey bat habitats and traditional hunting, fishing and trapping activities. The alternative route allows for the avoidance and minimization of the impacts on wetlands and water bodies on an area of 3029 m² compared to 10294 m² and 25526 m² for the other options analyzed.

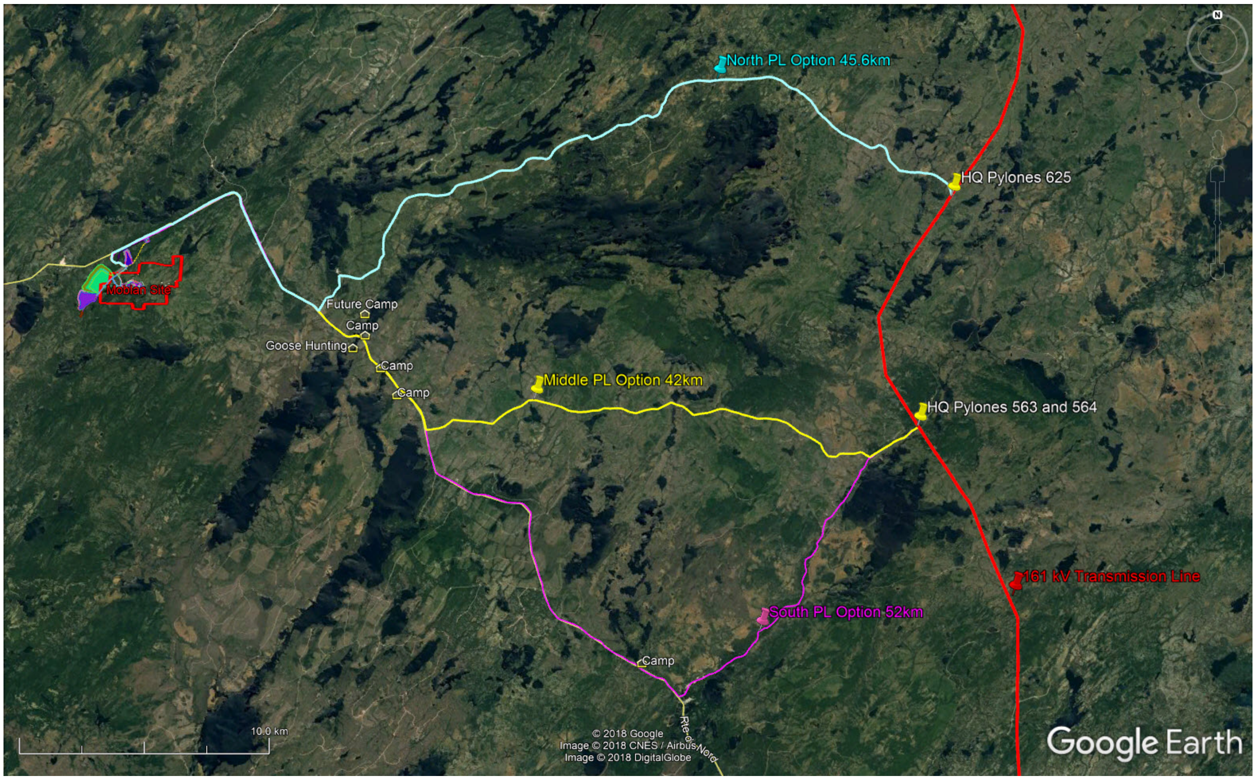


Figure 7-3 : Options analyzed for the 25 kV power supply line (Yellow and purple lines proposed by Hydro-Québec and blue by tallyman M40)

7.5.2 Concentrate drying technology

The supply of electricity to the mine site connected to the Hydro-Québec grid allows a diesel combustion dryer to be replaced by an electric dryer, which will produce significantly less greenhouse gases and air emissions.

7.5.3 Waste disposal alternatives

The chemical and mineralogical characteristics of the tailings and waste rock to be generated by the Moblan Lithium project are: copper (Cu) leaching potential, non-acidogenic, non-radioactive; and not considered "high risk".

Three (3) scenarios were evaluated for their disposition: tailings facility disposed as submerged sludge (conventional pulp), filtered tailings pile ("filtered cakes") and co-disposition of filtered tailings and waste rock. It is technically simpler to pump residues in the form of pulp than to set up a filtration process and a hauling road for disposal in the form of filtered cakes. However, the environmental benefits (reduced footprint, simplified water management, progressive restoration, etc.), the absence of dammed RAPs and the reduction of environmental risks make stacking filtered tailings co-disposed with waste rock the best option for the project.

8. Project description

8.1 Desposit description

The Moblan Lithium project involves the development of a pegmatite deposit located on the shores of Lac Moblan. Two (2) types of rocks mainly constitute the deposit (i.e. pegmatite and gabbro), as shown in Figure 6-1. Spodumen is the main lithium mineral that characterizes the deposit.

The most recent exploration program was carried out in 2016 on the Moblan Lake property. During this campaign, 10 NQ calibre holes were drilled for a total of 1,401 meters, including overburden. Four hundred and twenty-seven (427) samples, including quality controls, were sent to ALS Chemex for analysis, mainly for lithium, but also for a multitude of other secondary elements. All but one of the holes traversed major spodumen-bearing pegmatite dykes and returned economically valuable lithium.

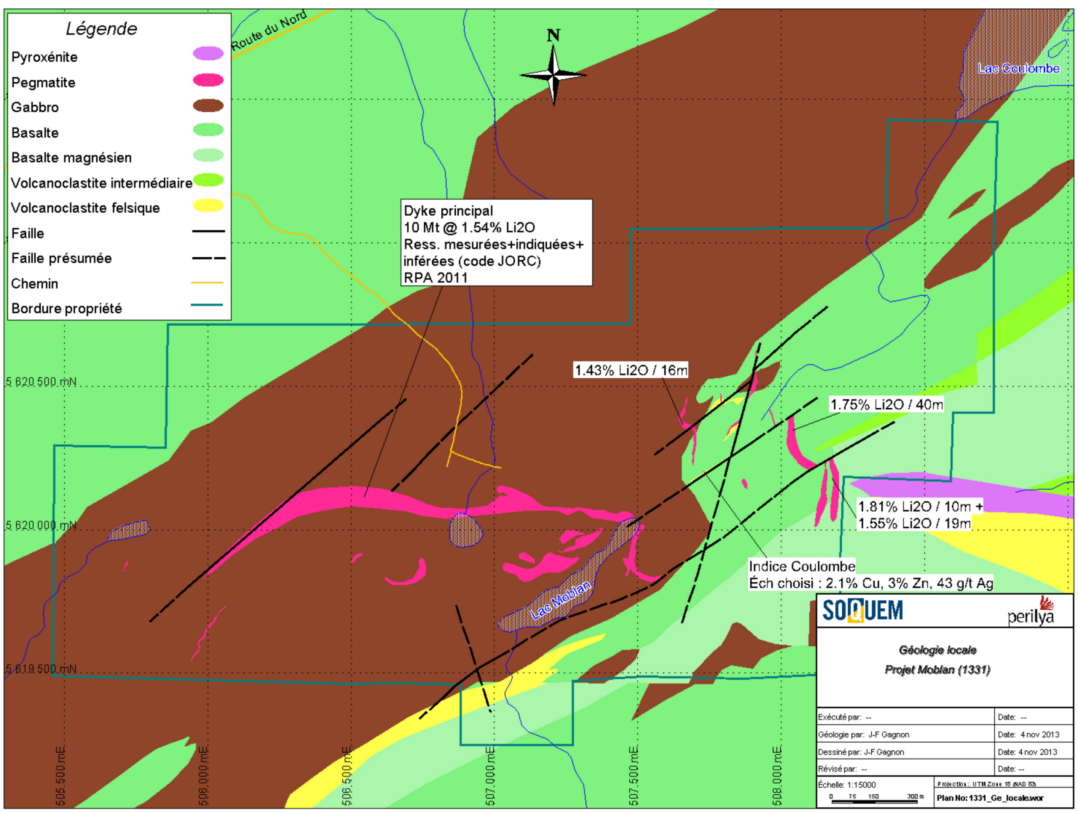


Figure 8-1 : Location of spodumen deposits in the Lac Moblan area (SOQUEM, 2016)

The deposit modelled during the feasibility study (DRA, 2019) and planned to be developed by the Moblan Lithium project is shown in Figure 6-2. From this outcrop, the deposit plunges at an angle below the ground as shown in Figure 6-2.

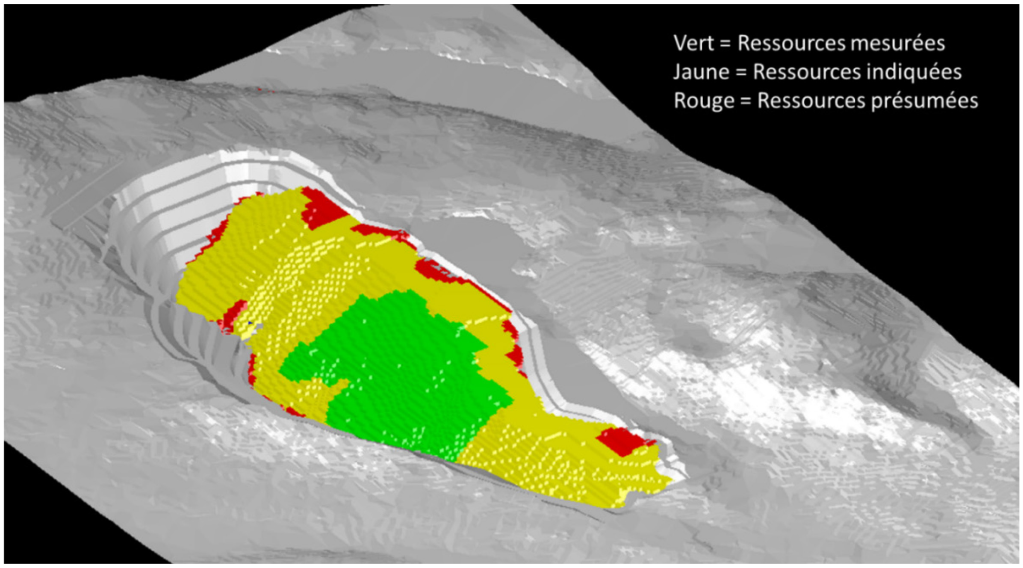


Figure 8-2 : Illustration of the Moblan Lithium deposit as modelled by the recent study (obtained from DRA, 2018)

The Moblan Lithium project analyzed in this impact study is based on the exploitation of the resources indicated in Table 6-1 for the Lac Moblan deposit reserves. Nearly two (2) million tonnes of overburden and 28.5 million tonnes of waste rock will have to be moved in order to access the deposit. A cut-off grade of 0.48% Li_2O was used to distinguish the ore from the waste rock. Based on the most recent data available on the Lac Moblan deposit and the geological model, the mine life is estimated at twelve (12) years.

Table 8-1 : Summary of Mineral Resources (at a Cut-off Grade of 0.3% Li_2O) (DRA, 2019)

Resource category[1] [2] [3]	Quantity (Mt)	Content (% Li2O)
Measured	4.76	1.59
Indicated	7.27	1.27
Sub-total	12.03	1.4
Inferred[4]	4.06	1.33

8.2 Description of the facilities

Figure 6-3 shows the location of the pit, storage area, overburden and tailings piles, concentrator and mine workers' camp. The following sections describe in detail the main components of the project.

[1] Mineral resources exclude reserves
[2] Mineral resources should not be confused with reserves and do not have demonstrated economic viability. There is no certainty that the resources will be converted in whole or in part to mineral reserves. The estimation of mineral resources could be affected by the environment, permits, laws and regulations, mining titles, taxes, socio-political considerations, marketing or any other relevant factors.
[3] ICM definitions have been used in mineral resource classifications
[4] The quantities and grades of inferred resources reported in this estimate are uncertain in nature and exploration work to date is insufficient to determine whether these resources could be characterized as measured or indicated. However, it is reasonable to believe that a portion of these inferred mineral resources could be characterized as measured or indicated resources following additional exploration work.

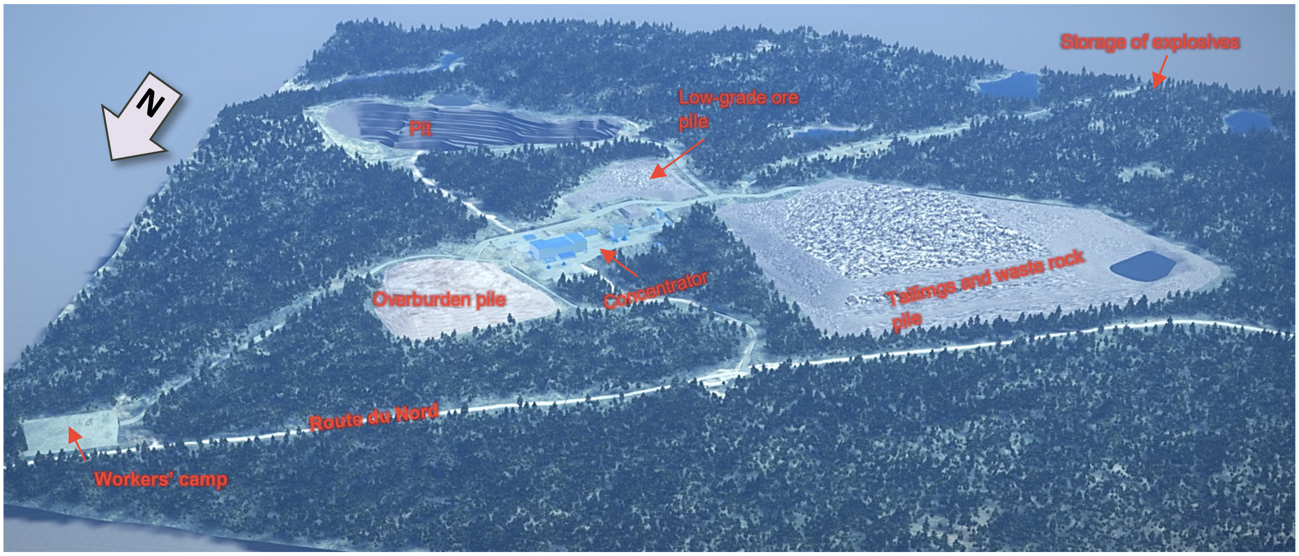


Figure 8-3 : General layout sketch of the mine site

8.2.1 Storage of explosives

The storage of explosives is planned in a powder magazine, which is located about 500 m southwest of the pit. The powder magazine will consist of four buildings, each dedicated to the storage of an explosive raw material (see Figure 6-4 for a photo of a typical powder magazine). The layout will comply with laws and regulations and standard requirements for explosive storage facilities.

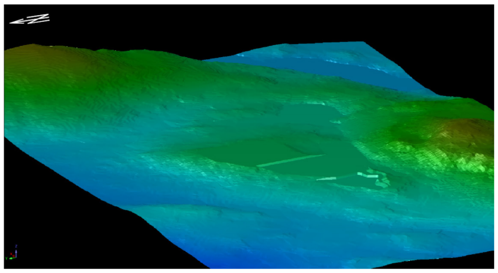
Delivery of explosives to the site will be made with the use of a specialized truck directly from the explosives supplier. Mine personnel will use a van with a specialized box to transport explosive materials from the depot to the mine firing site.

Figure 8-4 : Typical container for the safe storage of explosives

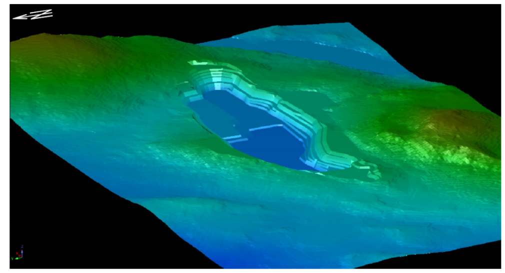
8.3 Ore extraction

The Lac Moblan mine will include the typical elements of an open-pit mine (pit). Access to the ore will begin by stripping the pit and removing the overburden. The overburden will be piled up for later reuse during the restoration of the site. These stripping activities will be carried out gradually during the pre-production years and years one (1) to six (6) of operation, in accordance with the mining plan.

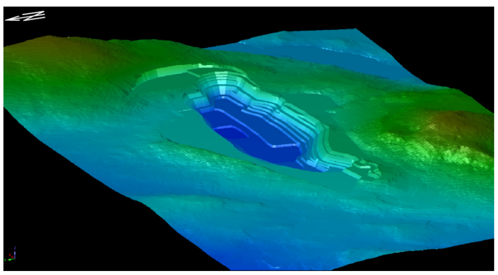
At the beginning of mining operations, it is expected that resources will be extracted where they are already exposed to the surface, which will not require an access ramp. As mining operations progress below surface level, the temporary ramps will develop into permanent ramps. Figure 6-5 illustrates the evolution of the mining pit.



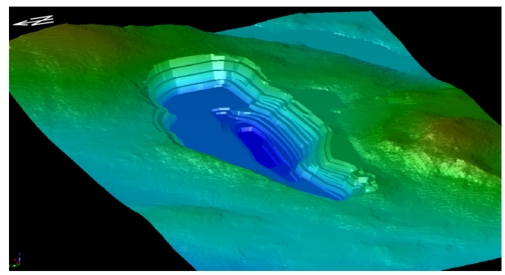
Mining pit in pre-production



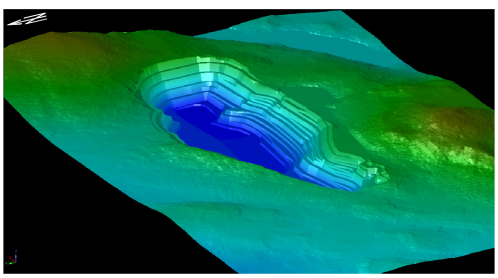
Mining pit in the 4th year of operation



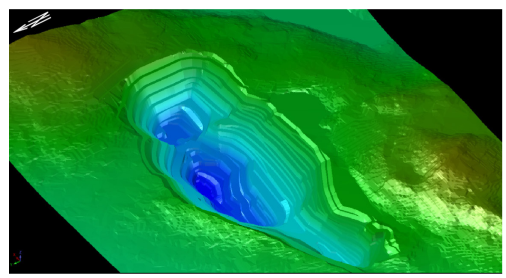
Mining pit in the 5th year of operation



Mining pit in the 8th year of operation



Mining pit in the 9th year of operation



Mining pit in the 12th year of operation

Figure 8-5 : Evolution of the mining pit (obtained from Lithium Guo AO, 2019)

Ore extraction will be carried out by drilling and blasting. The drilling will be carried out with a diesel drill. The drill holes will have a diameter of 140 mm and a depth of six (6) meters. It is planned to drill 38 holes for blasting with an area equivalent to 688m² in the mineralized zones. The mine will use explosives in the form of packaged emulsions with a powder factor of 0.30 kg of explosives per tonne of rock. Blasting is planned three (3) times a week to remove 19,000 to 52,000 tonnes of rock. Each blast will use about 7,300 kg of explosives.

The ore will be transported by truck to the concentrator for feeding to the crushing circuit. Ore blocks could also be temporarily stored on an emergency pile. This 120 m x 30 m pile will be located south of the concentrator, along the developed road. A storage area is also provided for the stacking and storage of low-grade ore. This pile has been designed to accommodate the entire resource containing between 0.3 and 0.48% Li_2O. In order to transport the mined rock, 55-tonne off-road trucks will be used.

After twelve (12) years of mining, the Lac Moblan pit will cover an area of approximately 26 hectares and its floor will be 145 m deep. The following Table 6 2 presents the quantities of materials to be extracted and transported throughout the life of the mine.

Table 8-2 : Materials extracted from the pit during the mine operation

Year of operation	Ore (kilotonnes)	Sterile (kilotonnes)	Low-grade rock (kilotonnes)	Overburden (kilotonnes)	Total (kilotonnes)
0	26	532	31	480	1 069
1	685	1 426	72	611	2 794
2	951	1 788	172	194	3 106
3	966	1 953	44	113	3 076
4	970	2 135	21	0	3 126
5	978	2 992	28	430	4 428
6	968	3 570	49	275	4 862
7	952	3 943	65	0	4 959
8	965	3 446	50	0	4 461
9	987	4 225	103	0	5 315
10	983	1 873	65	0	2 921
11	945	576	40	0	1 561
12	355	53	1	0	409
Total	10 731	28 512	741	2 103	42 087

8.4 Ore treatment

The ore will be processed at the mine site in a mill located near the pit. The spodumen concentrate ore enrichment plant, or concentrator, will process ore containing an average of 1.4% Li_2O to enrich it with spodumen concentrate containing an average of 6% Li_2O. The plant is designed to treat, on average, 2 600 tonnes per day for a maximum of 2 860 tonnes per day. Annually, between 949,000 and 987,000 tonnes of ore will be extracted from the mine pit to produce 186,815 to 210,000 tonnes of concentrate at 6.02 and 6.2 percent of Li_2O. The production of waste will be in the order of 762,485 to 845,000 annually. The enrichment plant is expected to operate 24 hours a day, 7 days a week with a utilization rate of 8,059 hours per year.

The ore will be processed following a conventional flotation extraction process including these steps: ore crushing, sorting, sludge settling and separation by dense media, grinding, magnetic separation, mica flotation, spodumen roughing and cleaning flotation, filtration thickening and drying of the concentrate, and finally, thickening and filtration of the residues. The two following figures illustrate the different layouts of both the facilities and the enrichment plant.

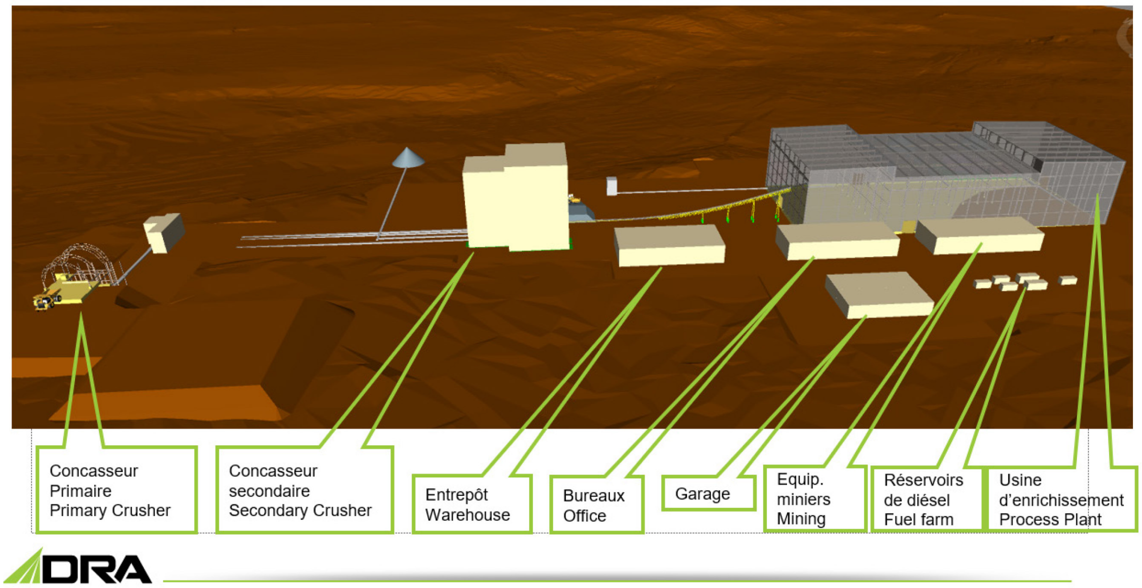


Figure 8-6 : Proposed layout of the enrichment plant (obtained from DRA, 2019)

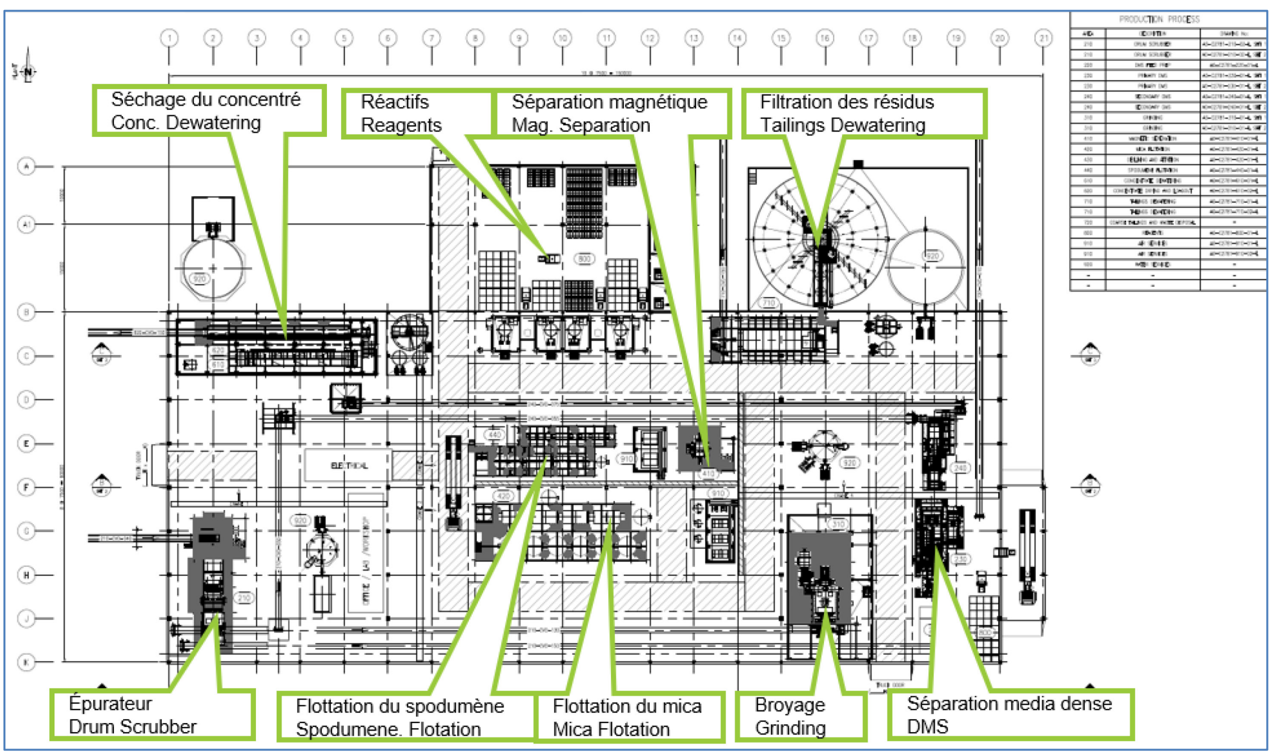


Figure 8-7 : Preliminary general layout of the enrichment plant (obtained from DRA, 2019)

8.5 Tailings and Waste Rock Management

The handling, storage and disposal of mineral materials will be the project's main sources of tailings and waste rock emissions into the mine site. Storage and accumulation areas are planned at the project site for ore, waste rock, overburden and tailings.

The mineralogical and physico-chemical characteristics of the ore, waste rock, sterile waste and process residues were analyzed according to the requirements of 019 Guideline (Directive 019). The mining materials (waste rock, ore and tailings) can be characterized, according to the 019 Guideline (Directive 019), as follows:

- The ore and waste rock are considered potentially leachable for copper (Cu);
- The mining materials are not acid generators
- The mining materials are not radioactive
- Process residues (flotation and "DMS") are low risk; and
- Mining materials are not high-risk.

8.5.1 Tailings pile

The similar chemical composition of both the tailings and waste rock will allow for its disposal into a single co-disposal pile. As such, the tailings pile will minimize the footprint and avoid the encroachment of several watercourses. The tailings pile, covering a surface area of 90 hectares, will be located parallel to the Route du Nord, 70 m from it. The location of the pile is shown in Figure 6-8 (indicated as «*Halde de résidus miniers*»).

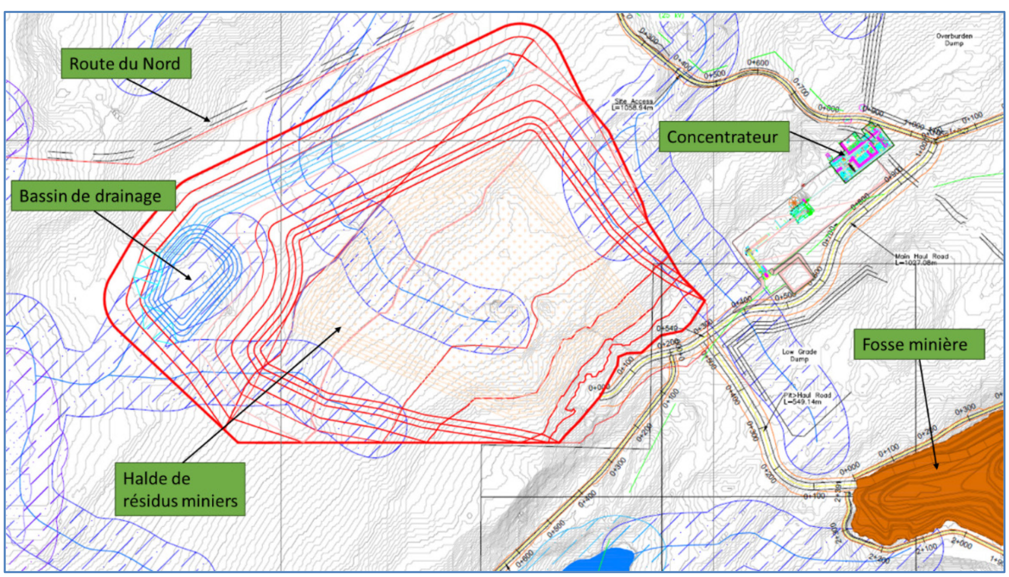


Figure 8-8 : Extract from the general layout of the site showing the tailings pile
(Extract from layout drawing DRA A1-C2781-0001-L, vol.2 of the ESIA)

The piles and their layout will comply with the requirements of the 019 Guideline (Directive 019). They will be located away from environmentally sensitive areas and at least 60 m from all water bodies. As shown by the blue lines in Figure 6-8, only a few intermittent streams will be affected in the sub-basins of the Lezai Lake area.

Before the materials are placed in the pile, trees will be cut and organic materials removed in order to improve the stability of the disposal site. These materials will be stacked in the overburden dump. A system for recovering drainage water and exfiltration from the pile will be installed at the base of the tailings pile. This system will direct the percolation water to a catchment ditch located north of the tailings pond.

8.5.2 Overburden Dump

The overburden is mainly composed of sand, till, gravel and peat from the stripping of the organic surface layers of the various sites, namely: the mining pit, roads, tailings pond, etc. The pile will be located northeast of the pit. The total area of the overburden pile base will ultimately cover an area of 12 hectares, as shown in Figure 6 9 (indicated as «Halde de mort-terrain).

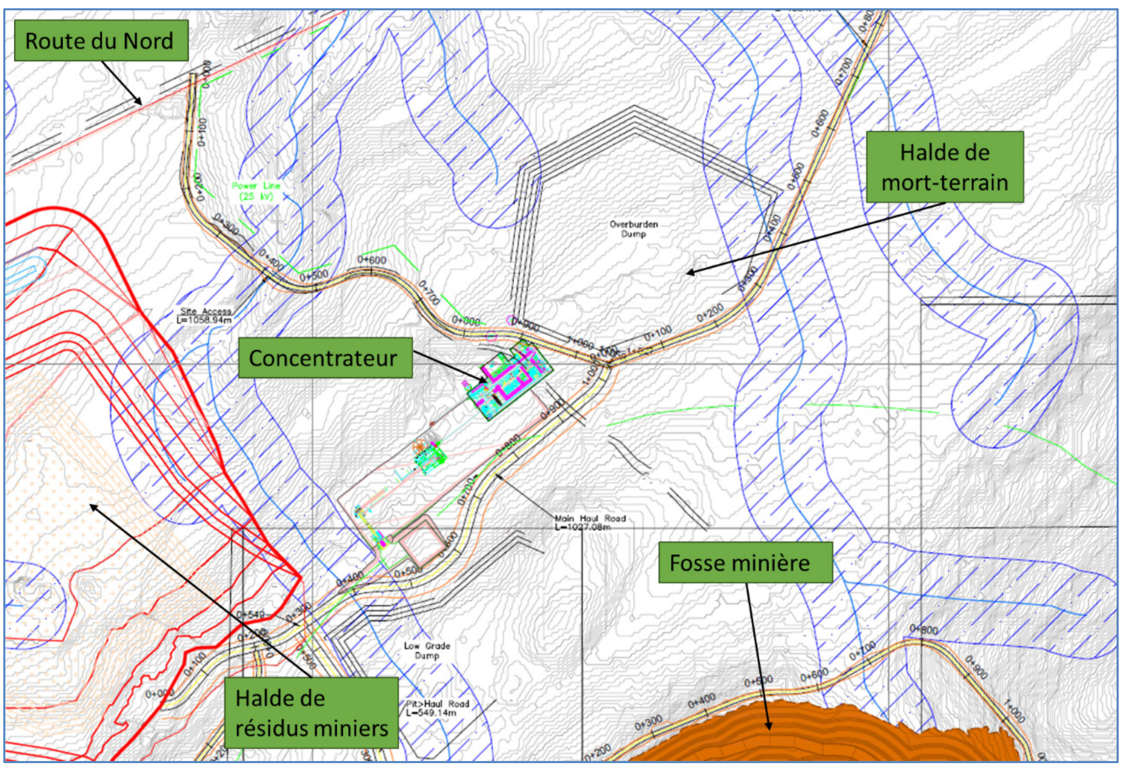


Figure 8-9 : Location of the overburden dump (Extract from layout drawing DRA A1-C2781-0001-L, vol.2 of the ESIA)

8.6 Water management

The Moblan Lithium site water management plan takes into consideration the management of four (4) types of water:

Runoff water from melting snow and rainfall without contact with mining materials;

Runoff, seepage or mine water from melting snow and rain that will flow over storage piles, the tailings co-disposal pile, ore handling areas, roads and mobile equipment circulation areas with contact with mining materials and the mine pit;

Process water from the enrichment plant; and

Domestic water use

8.6.1 On-site Water Balance

The quantities of contact runoff water that will be collected at the mine and concentrator site have been calculated by the water balance considering the following components:

Water quantity = Precipitation (rain and snowmelt) + Surface runoff entering the watershed from a tributary (creek or stream) - Evapotranspiration - Infiltration to groundwater table - Accumulation of water in a natural basin (pond or lake) or artificial basin (catchment basin or ditch) - Runoff from the watershed by an outlet (natural stream or artificial outlet)

All contact water from the mine site will be directed by two collectors to the tailings pond catchment ditch. This ditch will be discharged into a water recovery basin with a settling time of more than 30 days: the water in the catchment basin will reach suspended matter concentrations low enough to be recycled at the plant as a backup water source. The excess water, especially during periods of heavier precipitation, will be returned to the environment via stream #10.

Considering annual precipitation, snowmelt, evaporation, tailings pile moisture, process surpluses, pumping of the mine pit catchment water, plant process water requirements with infrastructure, and halves totaling approximately one hundred (100) hectares, the annual average discharge of the recovery basin is 1,756 m^3 per day. Details of the calculations are presented in Table 6-3.

Table 8-3 : Water balance around the tailings facility (Annexe XII - EXP, 2019)

Month	#days	Précipitation			Snowmelt	Evaporation	Tailing	Process	Pit	Process	Discharge		
		Avg.	Wet	Dry			moisture	surplus	dewatering	make-up	Avg.	Wet	Dry
		(mm)	(mm)	(mm)	(mm)	(mm)	(m^3/d)	(m^3/d)	(m^3/d)	(m^3/d)	(m^3/d)	(m^3/d)	(m^3/d)
January	31	56.0	85.4	33.8		3.5	336	223	See Table 5-1a	-444	1810	2757	1093
February	28	39.3	68.8	8.6		3.5	336	223		-444	1395	2447	297
March	31	52.3	94.6	13.2		7.0	336	223		-444	1578	2941	315
April	30	55.5	96.2	15.6	36.6	15.8	336	223		-444	2659	4017	1330
May	31	72.2	130.3	19.1		33.3	336	223		-444	1373	3246	-342
June	30	94.0	162.6	33.4		52.5	336	223		-444	1500	3785	-522
July	31	104.5	162.0	44.9		64.8	336	223		-444	1398	3252	-525
August	31	107.0	201.2	45.6		63.0	336	223		-444	1536	4574	-446
September	30	116.2	257.5	40.2		47.3	336	223		-444	2413	7124	-120
October	31	100.0	175.2	49.0		33.3	336	223		-444	2268	4695	623
November	30	76.4	128.5	7.1		19.3	336	223		-444	2021	3757	-290
December	31	69.2	136.2	16.2		7.0	336	223		-444	2121	4283	412
Annual	365	949	1192	725		350	336	223	45 to 1186	-444	1756	2423	1144
Basin area													
- TSF	59.5	ha											
- Mine Pit	30.9	ha											
- Process plant	9.6	ha											
- Total	100	ha											

8.6.2 Process Overview

Based on these estimates, the process will use 10,805 m^3/d of process water. Of this amount, 96% (or 10,361 m^3/d) will be recycled directly to the plant via the overflow of the concentrate and tailings settling tanks. The overall water balance, using water continuously, is summarized in the diagram in the Figure below.

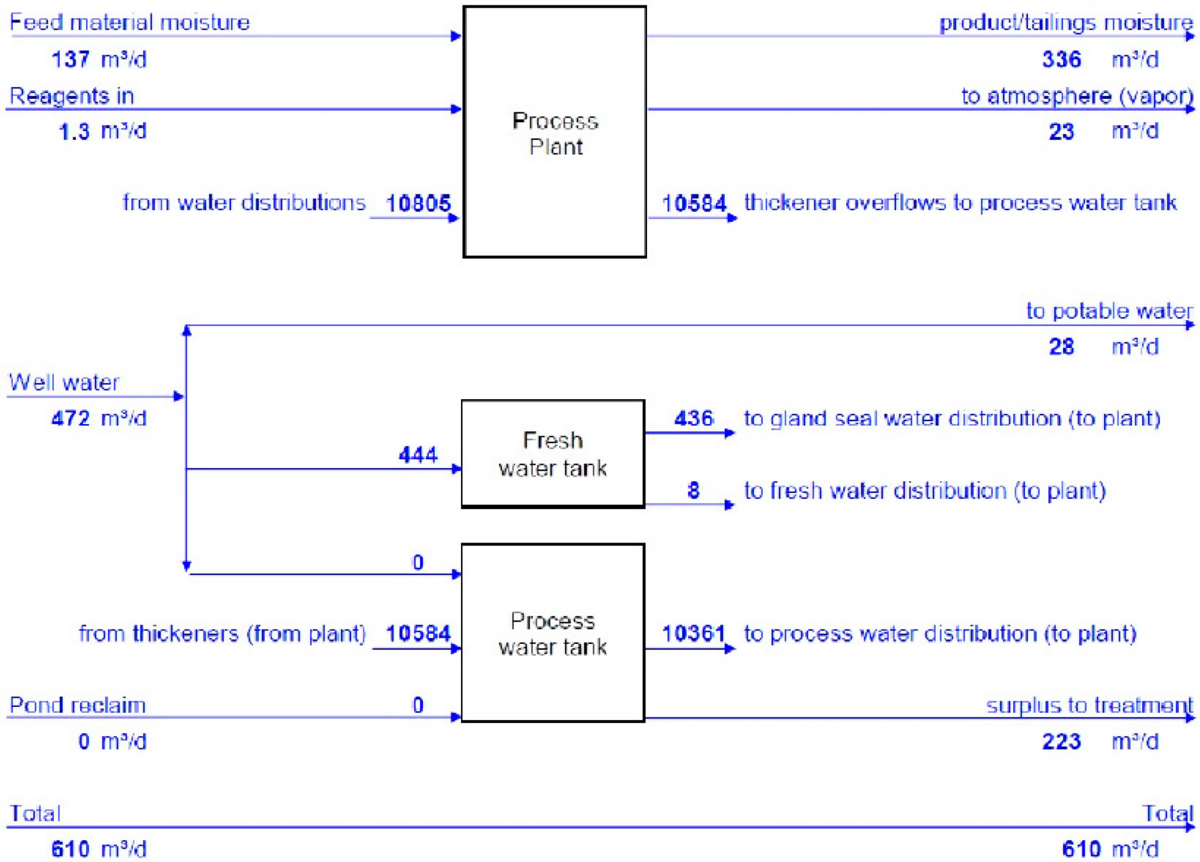


Figure 8-10 : Process water balance (DRA, 2019)

In addition to the process plant, which will require a 444 m³/d fresh water back-up to supply clean water to the sealing water circuit and the cleaning, a volume of 5,000 m³ of water will also be required for the initial filling of the process circuits. Moreover, a reserve of approximately 1,000 m³ of water will be required for fire protection.

8.6.3 On-site Water Management Strategy

A preliminary water management plan, shown in the Figure below, demonstrates the proposed water management infrastructure for the Moblan Lithium site.

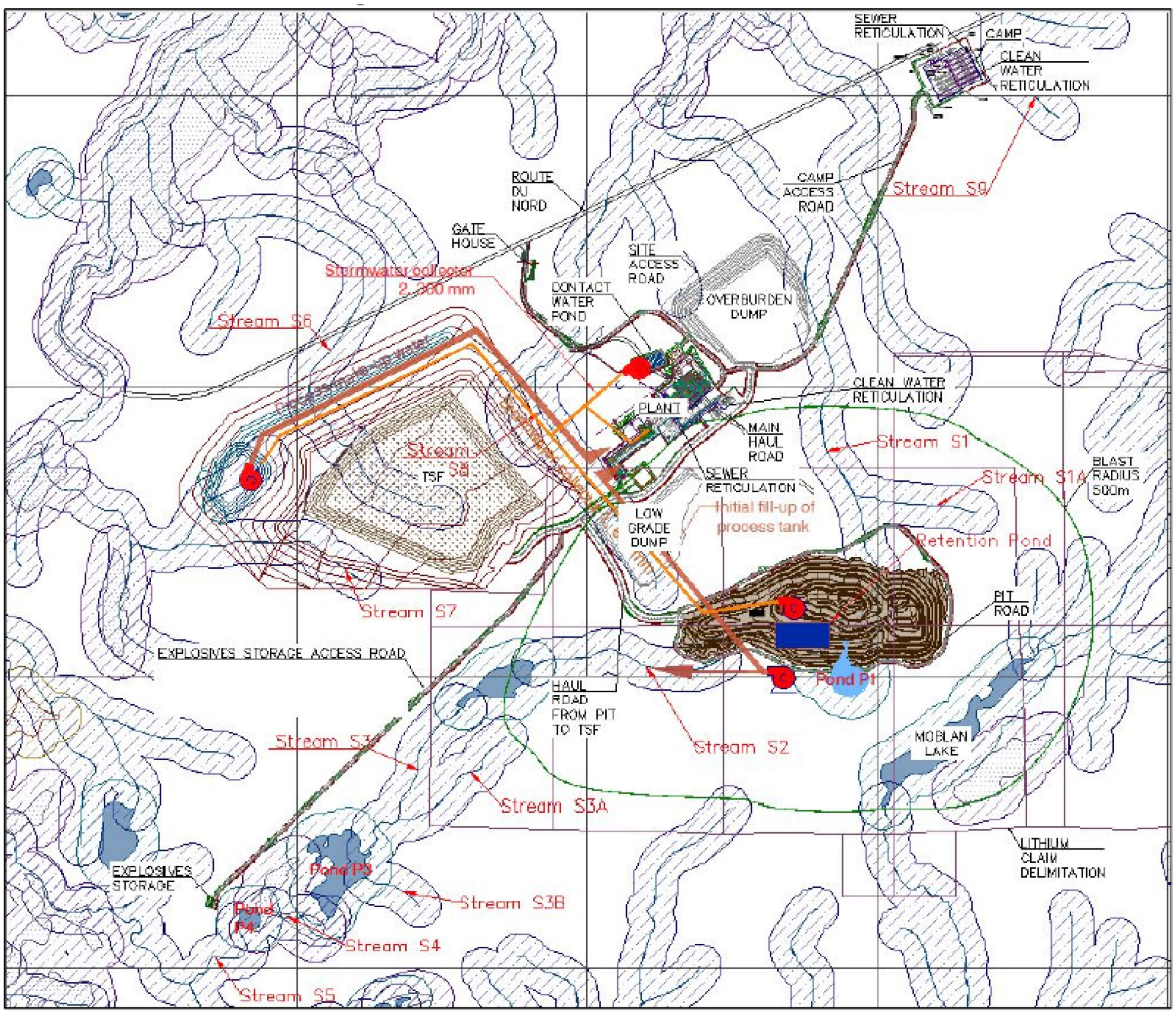


Figure 8-11 : Water management infrastructure at the Moblan Lithium site (Annexe XII - EXP, 2019)

The site's water management infrastructure will include the following elements:

- The water recovery pond (at the tailings facility) of 182,184 m³ at the beginning (with a berm at 410 m of elevation, then 264,695 m³ with a berm at 415 m of elevation);
- A catchment basin in the plant area of 18,000 m3;
- A collector (#2) of 300 mm in diameter and approximately 300 m long, fed by the sump pump in the plant area to direct water to the tailings facility collection pond;

- A water catchment basin at the bottom of the mining pit, which will be of approximately 57,000 m³ and will be equipped with a lifting pump supplying collector #1
- A gravity collector (#1) of 600 mm in diameter and 2,000 m long from the mine pit directing mine water to the tailings facility catchment area.

8.6.4 *On-Site Effluents*

The proposed water management plan will have only one mine effluent, the RAP recovery pond discharge, which will constitute the final effluent from the site. This effluent will be discharged to the receiving environment via a riprap to the existing intermittent stream #10. Before being released into the environment, the discharge from the basin will be sampled and controlled in accordance with the discharge standards established by the 019 Guideline (Directive 019).

The average final effluent flow rate is expected to range between 1,756 m³/d (annual average over 12 years of operation) and 2,423 m³/d (annual average of the worst expected year). The maximum effluent flow during flood periods (worst month of the worst year) is currently estimated at 7 124 m³/d. It is also expected that the discharge will be null in dry weather during the summer months.

8.7 Layout of the Site and Related Projects¸

The Lac Moblan mine site will also include various related developments necessary for the operation of the mine and concentrator. These arrangements include:

- Access roads: The existing access road to the site via the Route du Nord, which was built for exploration work, will be reused for site operations after redevelopment. A road linking the plant to the workers' camp, a road linking the mining pit to the overburden dump, the tailings dump and the plant and a road linking the plant to the explosives dump will also be built on the site
- Parking lots: one for heavy vehicles and one for cars and light vehicles.
- Warehouse: a waterproof canvas warehouse on a metal structure for material storage.
- Tank farm: Two (2) diesel tanks with a capacity of 50,000 L per tank and a total capacity of 100,000 L will be installed at the mine site. The diesel tanks will be of standardized design and have a double-walled design,. They will be surrounded by low walls to protect them from collisions with trucks and mining equipment. The maximum daily consumption is estimated at about 19,000 L. Diesel supply will be provided by tank trucks as required, an average of two (2) to three (3) times per week.
- Mining equipment fleet:

- Ore extraction equipment, consisting of 60t mining trucks (HD-465-7), hydraulic excavator (PC-1250-8R), loader (WA500-A) and drills (D25KS).
- Equipments of composite supports, chain tractors (D-8), graders (GD-675-5), excavators (CAT 349K), water tankers (5,000 gal) and lighting towers (10.5 hp).
- Composite service equipment, fuel/lubricant tank truck, mechanical service truck, service loader/tire handling - (WA-470), truck crane and drain pump and pickup trucks

8.7.1 Workers' accomodation infrastructure

The new workers' camp, shown in Figure 6-13, will be located along the Route du Nord, northeast of the mine site, which is situated more than 2 km away from the pit. It will be built at the very beginning of the site's preparation activities in order to be used, at first, for workers' accommodation during the construction phase. During the operation phase, the workers' camp will be used for mine and mill workers. The permanent camp will provide accommodation for approximately 205 workers housed in 5 buildings with 45 rooms each.

During the construction phase of the site, the workers' camp will further include 4 temporary buildings with 45 rooms each for staff accommodation (225 permanent and 180 temporary). In addition to the rooms, there will be a kitchen, dining room, a recreation, leisure and training rooms, as well as an infirmary or care centre.

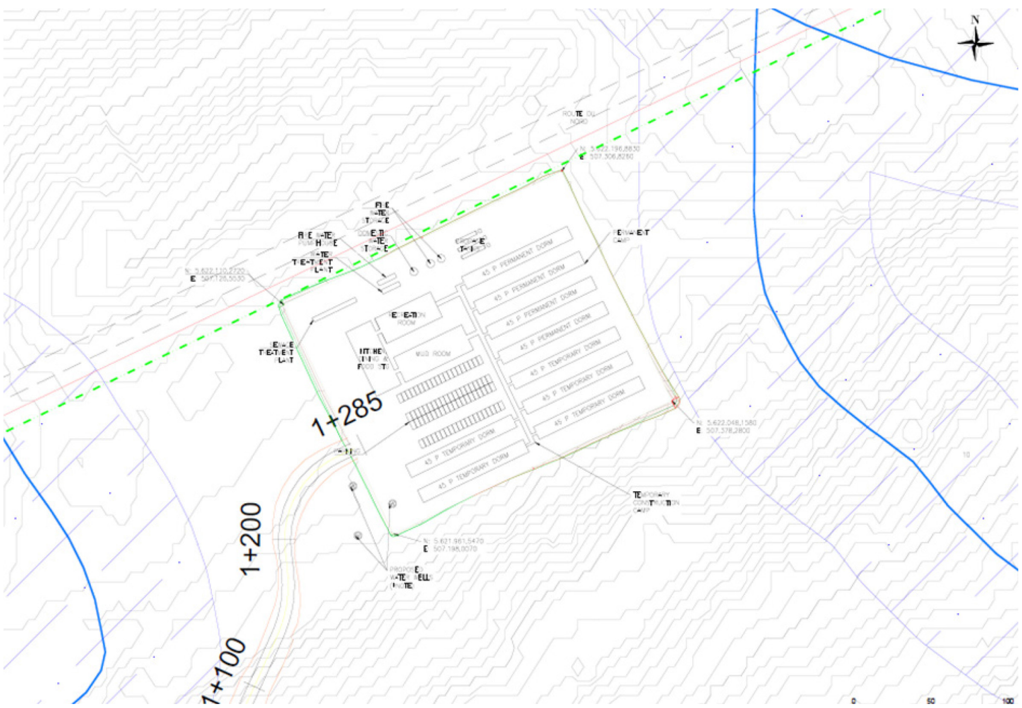


Figure 8-12 : Facilities planned for the workers' camp (Extract from layout drawing DRA A1-C2781-0001-L, vol.2 of the Fueling of vehicles and mobile equipment

8.7.2 Borrow pits

A preliminary identification of potential borrow pits in the Moblan Lake area was carried out by EXP through photo-interpretation and analysis of geomorphological photos. The general location of the borrow pits, shown in Figure 6-14, is mainly southwest of the Moblan Lake site, about 1 to 10 km away. Some borrow pits are accessible by existing roads, while additional roads will need to be built in order to access other roads. The final selection of borrow pits to be used for the construction of mining infrastructure will be made during the detailed construction planning.

Figure 8-13 :General location of preliminary borrow pits (EXP, 2019)

8.7.3 Transportation of the concentrate

The filtered and dried concentrate will be shipped from the mine to the Matagami train transfer station by automatic trucks, with a trailer containing between 27 and 35 tonnes. The moisture content of the concentrate will be kept below 7% in summer and below 4% in winter to avoid freezing of the concentrate during shipment. A total of 22 trucks per day are planned for the round trip between the mine and Matagami, 24 hours a day, 7 days a week. The selected route that involves the least risk to wildlife and the population (more specifically Chapais) is the use of the Route du Nord and the James Bay Road with trucks loaded with concentrate, then Route 100 and 1005 to Route 133, Route 167 and the Route du Nord for the return to the mine site, using the Chibougamau bypass road to avoid the downtown area.

From Matagami, the concentrate will be stored and transported by rail to the Port of Montreal. The concentrate unloaded from the trucks will be stored in a hangar (dome) built for Moblan Lithium operations. It will be loaded in bulk into train cars from the dome, either by conveyor or front loader. Two convoys of 100 wagons each are planned every month for transport by train. The trains will be operated by CN.

From Montreal, the concentrate will be loaded in bulk onto 35,000-ton ships, which will transport the spodumen concentrate to the port of Taixing in China. A total of 6 boats per year, or one boat every 2 months, will be required.

The route selected for shipping the concentrate to the processing plant is shown in green in Figure 6-15.

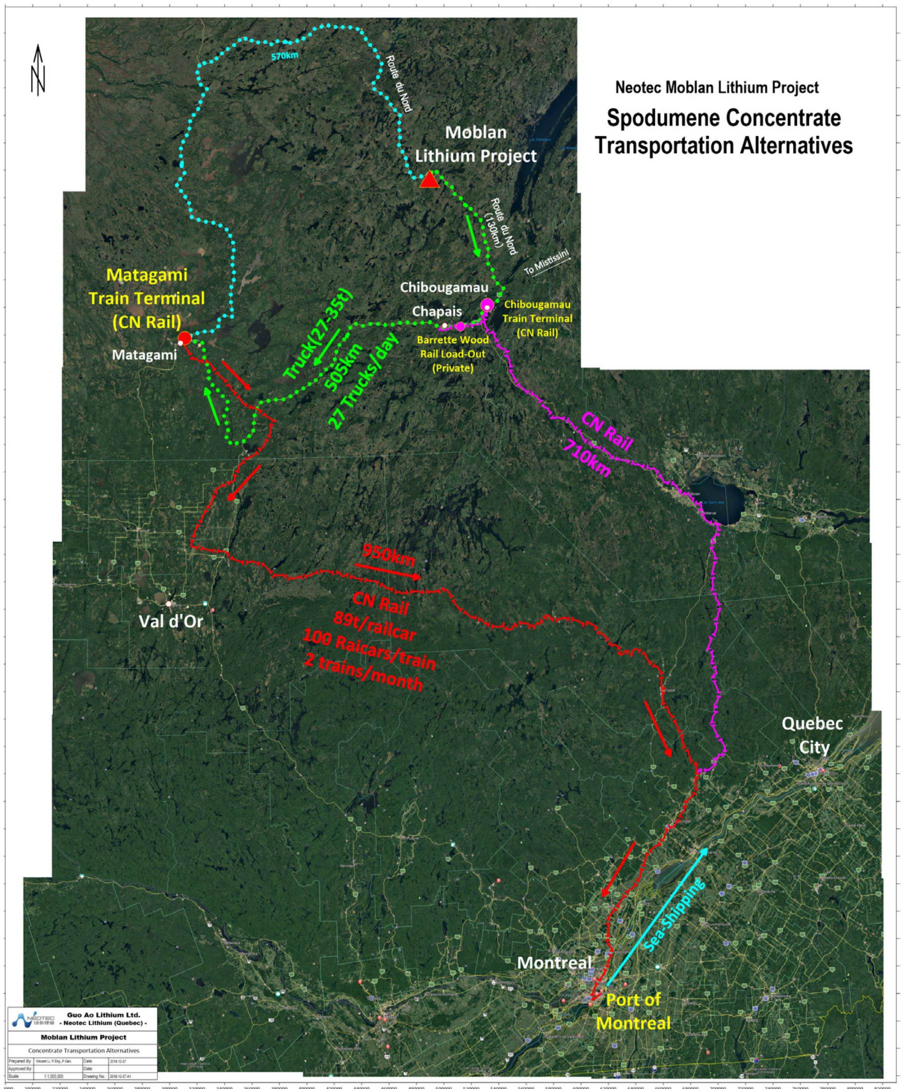


Figure 8-14 : Shipping route for spodumen concentrate

8.7.4 Energy supply

The project is located on a remote site where electricity is currently not available. The installations planned at the Moblan Lithium project site are expected to consume a maximum of 9 MW during the winter months, assuming the electrical heating of the plant and workers' camp buildings, as well as the electrical drying of the concentrate produced.

For the duration of the Moblan Lithium project (12 years), it is planned for the site to be connected to Hydro-Québec's existing grid. A 25 kV power supply line served by a maintenance access road (forest road type) will be built and operated by Lithium Guo AO.

The selected route option, as shown by Figure 8-15 below, will be connected to the Hydro-Québec grid on the 161 kV No. 1625 line (Obalski/Troilus), as shown by Figure 6-16. The connection will be made from a 161/25 kV transformer substation installed by Hydro-Québec.

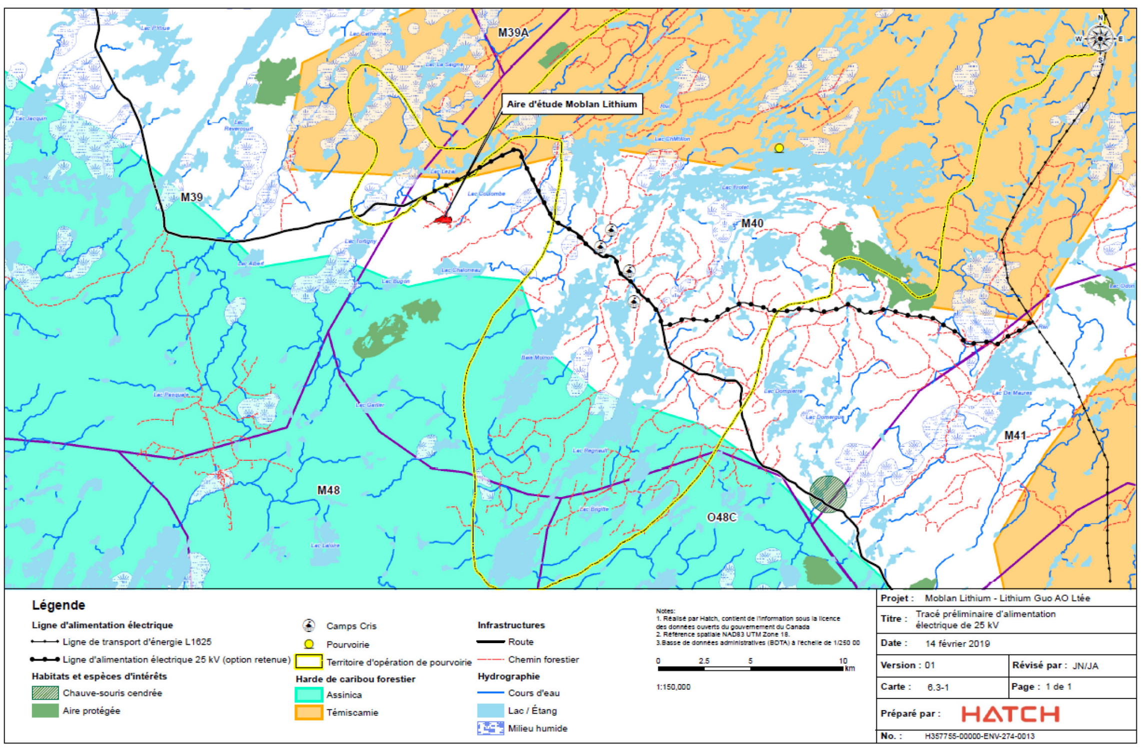


Figure 8-15 : Route chosen for the power line corridor

8.7.5 Employment and training

Lithium Guo AO's policy is to maximize the local hiring of plant and mine workers while promoting equity, and providing equal opportunities and working conditions for women and men. Regional and Cree hiring targets in particular have not yet been defined, but Lithium Guo AO has initiated discussions regarding the negotiation of an Impacts and Benefits Agreement (with the Cree) and a partnership agreement with the cities of Chapais/Chibougamau, which will establish specific regional hiring targets.

An intercultural training program will also be set up to promote the harmonious integration of the different cultures represented in the project: Cree, Quebec and Chinese cultures.

Measures to promote access and retention of workers in the region currently under consideration for the project include:

- Transportation of workers, weekly, by bus between Chibougamau, Mistissini and the mine site;
- A 14-day rotation schedule to accommodate the family needs of members of the Cree community; this measure will also allow for the recruitment of staff from outside the region in the event of a shortage of local labor;
- The integration of the "Goose Break" into the site's operating schedule;
- The development of a specific training program with the regional training centres, in Chibougamau and Mistissini, to train the local workforce in order to meet the specific needs of the project.

During the construction phase, labor requirements will be of 290 workers and will decrease to 204 workers during the operation phase. A diversity of competencies will be required, including: management (superintendent or mining engineer), finance and equipment management, human resources, health and safety, environment, engineer, geologist, mining technician, driller, heavy equipment operator, etc.

8.7.6 Greenhouse gas emissions

Greenhouse gas emissions (GHG) that could result from major operating activities are presented in Table 6-4, which will for the most part related to the use of machinery, mobile equipment and trucking.

Table 8-4 : Estimated GHG air emissions during the operation phase

Source of GHG emissions	Units	Operation (period = 1 year)
Direct emissions from project		
Fixed sources	t CO_2 eq / period	-
CO_2	t CO_2/ period	-
CH_4	t CH_4/ period	-
N_2O	t N_2O/ period	-

Source of GHG emissions	Units	Operation (period = 1 year)
Mobile sources	t CO_2 eq / period	10 380
CO_2	t CO_2/ period	10 348
CH_4	t CH_4/ period	0,28
N_2O	t N_2O/ period	0,08
Explosives	t CO_2 eq / period	234
CO_2	t CO_2/ period	234
CH_4	t CH_4/ period	-
N_2O	t N_2O/ period	-
TOTAL per period	t CO_2 eq / period	10 614
TOTAL from project (15 months | 12 years)	t CO_2 eq	100 553
Indirect emissions from project		
Rail transport	t CO_2 eq / period	1 846
CO_2	t CO_2/ period	1 653
CH_4	t CH_4/ period	0,09
N_2O	t N_2O/ period	0,62
Maritime transport	t CO_2 eq / period	15 635
CO_2	t CO_2/ period	15 476
CH_4	t CH_4/ period	1,4
N_2O	t N_2O/ period	0,4
Electricity generation	t CO_2 eq / period	136
TOTAL per period	t CO_2 eq / period	17 617
TOTAL from project (15 months | 12 years)	t CO_2 eq	211 408

9. Host Environment Description

The description of the environment is essential to the impacts assessment. In order to understand the environmental and social issues, teams of professionals from various disciplines were used to conduct studies on the project site and consulted the information already available to describe in detail the receiving environment.

9.1 Study area delineation

This impact study includes five (5) study areas, delineated to characterize the biophysical and human environments in which the project is located.

The study areas that were selected for the project therefore include:

- One (1) regional study area for social and human components;

- One (1) restricted and one (1) expanded study area for the biological and physical components of the mine site;
- One (1) restricted study area for the biological and physical components of the power corridor;
- One (1) transport corridor along the concentrate shipping route.

9.1.1 Regional study area

The regional context is taken into consideration in a so-called extended study area, in order to reflect the interrelationships between the project and the surrounding social environment. This study area is entirely included in the greater Eeyou Istchee James Bay region and corresponds to the territory bounded by the territorial boundaries of the Cree First Nations of Mistissini, Oujé-Bougoumou, Waswapini and Nemaska within a radius of approximately 200 km around the mine site.

9.1.2 Core study area

A core study area has been delineated to establish a biophysical portrait of the receiving environment that will be directly affected by the project. The restricted study area was defined according to the territory and users whose land use could potentially be affected by the project. It is limited to the project infrastructure right-of-way (pit, concentrator, storage areas, access roads, tailings facility, etc.) and their immediate vicinity, over a total area of approximately 12 km^2.

This study area is bounded by the Route du Nord (to the north), extends up to 1 km south of the future mining pit and extends from east to west to cover ponds #1, #2 and #6, Moblan Lake and wetlands that could be impacted by the project. It extends to the entrance of Lac Coulombe (northwest) in order to fully understand the drainage system through the mine site.

9.1.3 Power line corridor

A corridor 20 m wide and approximately 42 km long has been defined along the proposed route of the mine site power line. The sensitive components characteristics of the biophysical environment that could be affected by the installation of this power line were analyzed within this core study area.

9.1.4 Transportation corridor study area

The approximately 510 km road corridor area will be used by truckers to transport concentrate from the mine site to the Matagami rail transfer centre.

This study area was delineated to document only the environmental aspects related to the transportation of ore, workers and service providers, as the existing infrastructure was not modified by the project.

9.2 Description of relevant components

The physical environment of the Moblan Lake site is characterized by a surface water system that drains into the Broadback River watershed. This element of the environment is of interest to local communities, including the Cree Nation, who value the Broadback River and its richness.

The biological environment on the Moblan Lake site is characterized by a highly developed water network, the presence of wetlands and ponds and a moss spruce ecosystem. The site is particularly frequented by large fauna (bears, moose and lynx) and smaller fauna (beaver and otters). This natural environment is mainly a bear and moose hunting area for the tallyman in the area.

The territory's cultural and archeological heritage has been analyzed in order to identify the areas most likely to contain human remains. The study reveals that the shores of Coulombe and Moblan lakes, inserted into a valley enclosed between two chains of hills, could have been used as a transit route to cross this territory and the shores of the two lakes could have constituted bases for the exploitation of wildlife resources dispersed in the network of small rivers and ponds. No archeological sites are currently known and there will be no buildings or other project activities currently being considered for these areas.

The human environment is characterized by the presence of indigenous and non-indigenous communities that differ at several levels, but also face similar challenges, including unemployment, housing shortages, and a significant proportion of the population without training and/or diplomas.

9.3 Physical environment

9.3.1 Air quality and climate

The Moblan Lake site is located near the Route du Nord in a zone away from industrial areas and urban centres: it is located approximately 110 km from Chibougamau as the crow flies. As a result, the main air emissions contributing to the initial concentrations of pollutants in ambient air come from vehicles traveling on the Route du Nord, an unpaved road located less than one kilometre from the future facilities planned for the project. The nearest air quality measurement station to the site is located approximately 250 km in Ashuapmushuan Pemonca Wildlife Reserve near Route 167. The concentration of particles with a diameter of 2.5 microns ($PM_{2.5}$) or less measured in the region, which is used as a reference base for the initial concentration in the region's air, ranged from 3.8 to 5.1 µg/m^3 in 2005.

24-hour spot sampling over 7 days in June and July 2012 was also conducted with portable PQ-100 (PM_{10}) air analyzers at two (2) sites at the Whabouchi mine site located approximately 125 km northwest of the project. The results are presented in Table 9-1.

Table 9-1 Particulate matter concentrations obtained from the 2012 sampling at the Whabouchi[1] mine site (Nemaska Lithium, 2013)

Parameters	Concentrations
Total suspended particulate matter (24 hours)	30,2 µg/m^3
Suspended particles of less than 10 microns (PM_{10}) (24 hours)	15,1 µg/m^3
Suspended particles less than 2.5 microns ($PM_{2,5}$) (24 hrs)	7,6 µg/m^3

[1] Total suspended particulate matter and $PM_{2.5}$ concentrations were approximated from the measured PM_{10} concentration.

The region's climate is subarctic in nature. It is characterized by a long and cold winter, a short and cool summer and sparse precipitation (Gouvernement du Québec, s.d.). The meteorological station that was recently in operation closest to the site, Chapais 2 (100 km south of the study site), was consulted to determine the average temperature and precipitation.

The average temperature in January is -18.8°C with a recorded extreme minimum of -43.3°C. (Environnement Canada, 2018). The average temperature in summer varies between 8°C and 22°C with an extreme maximum recorded of 35°C..

The average total annual rainfall is 996 mm. This value was used for the impact study. More specifically, an average of 313 cm of snow and 685 mm of rain fall there each year.

The wind analysis revealed some seasonal features :

- In winter and spring, winds are stronger (3.4 m/s) and dominant from the northwest.
- In summer, winds are less strong (2.7 m/s) and dominate from west to south-southwest.
- In autumn, winds remain light and the direction is variable.

9.3.2 Sound environment

No ambient noise characterization campaign was carried out on the study site. Instead, the sound environment prior to the implementation of the project was approximated using the results of the ambient noise characterization campaigns conducted by Nemaska Lithium Whabouchi (Nemaska Lithium, 2013) and Rose Lithium-Tantale (WSP Canada Inc., 2017) as part of their respective environmental impact studies. The results obtained for Nemaska Lithium and Rose Lithium were on average less than 40 dBA after recording road and air traffic. In summary, the noise at the study site can be estimated to be less than 40 dBA, which corresponds to the noise level typically observed in a natural environment.

9.3.3 Geology

The site is located in the Upper Province of the Canadian Shield, a Precambrian age formation (2.5 billion years old) that is predominant in northern Quebec. More locally, the Frotet sector (where the site is located) is located within the Frotet-Evans greenstone belt.

The Frotet Anticline divides the area into two volcanic domains, each with its own structure. The northeastern portion characterized by a predominant regional schistosity from northeast to northeast to northeast truncated by inverse longitudinal faults from southeast and decreasing faults from east-northeast to east-west. In the southern part, these geological features are oriented from east-southeast to southeast, where regional-scale reverse faults intersect large synclines. The regional geology is shown in the following Figure 9-1.

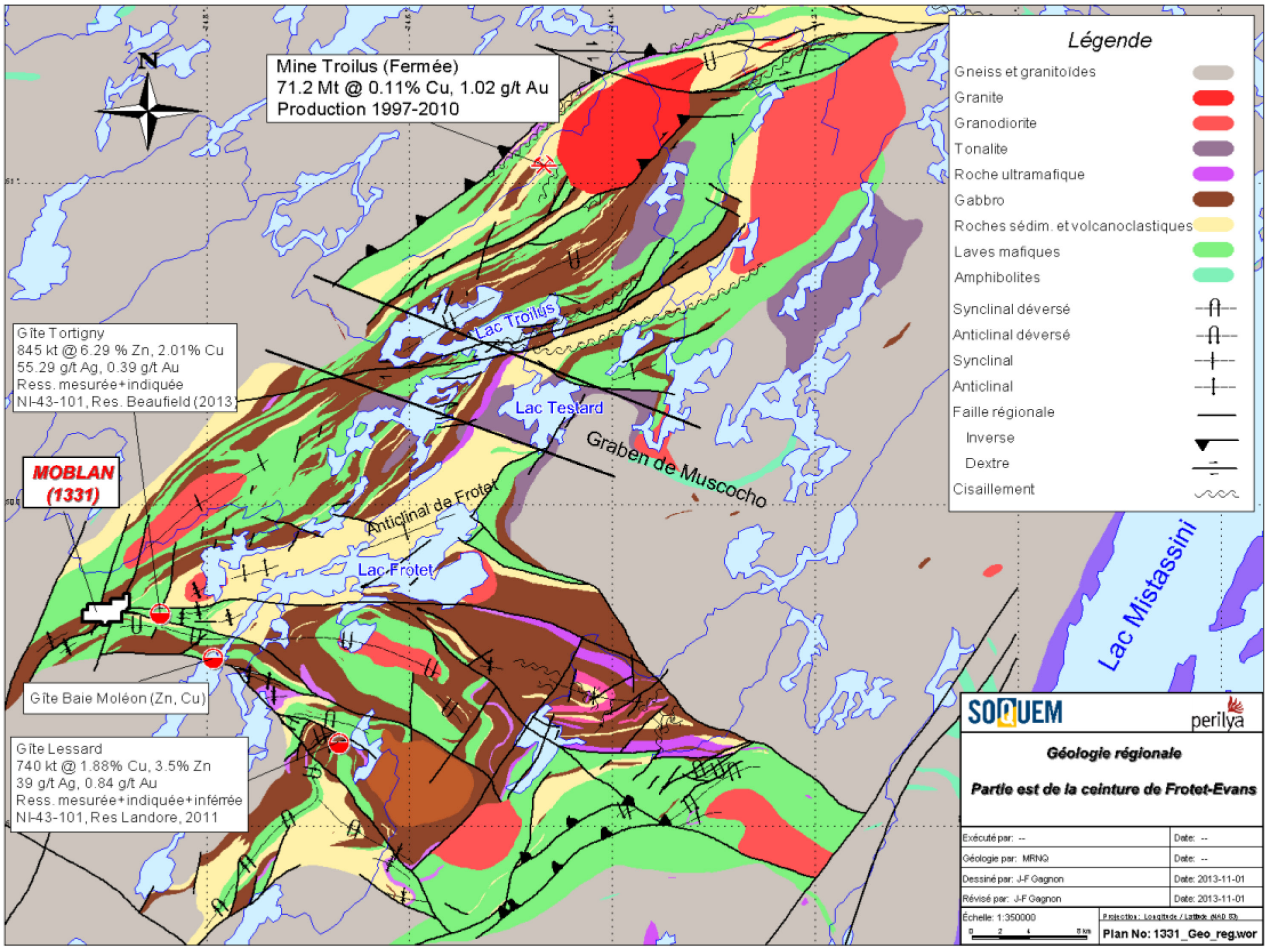


Figure 9-1 : Regional geology (SOQUEM, 2016)

Locally, the pegmatite west of the Lac Moblan site is located in the nose of the fold formed by the Frotet anticline, which is a suitable location for rare element mineralization. This is due to tectonic pressure confined within an incompetent host rock. Under the constraint of basic and mafic volcanic rocks, volatile rare elements are trapped and crystallize.

Smaller, north-south oriented pegmatite dykes are also present east of Lake Moblan. These are about 150 m long and 10 m wide and are often mineralized. The Moléon-Lithium showing, located at the eastern end of the property, is one of these dykes containing spodumen.

The local geology within the study area is shown in Figure-9-2.

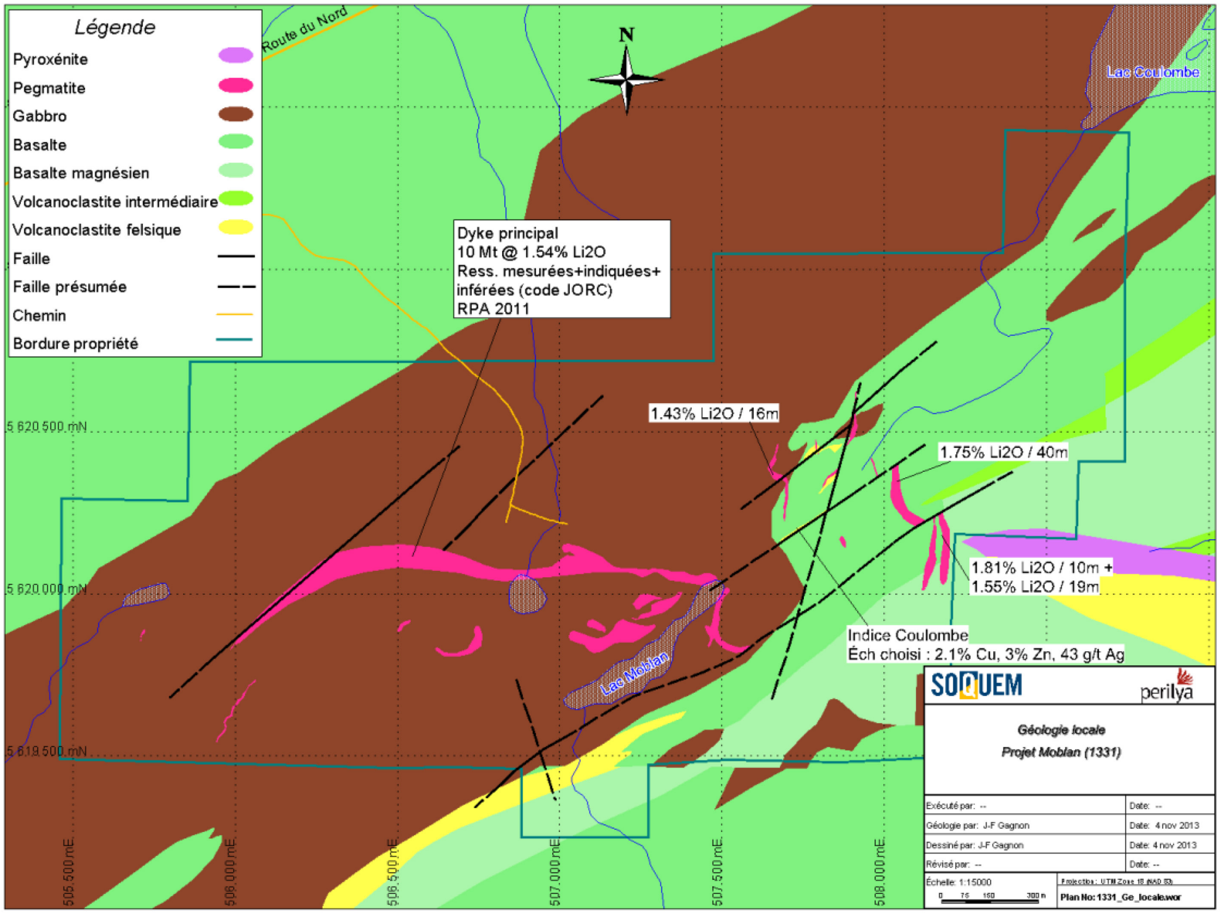


Figure-9-2 : Local geology (SOQUEM, 2016)

9.3.4 Geomorphology

The site under study is located in the Mistissini Highlands region. Overall, this region is characterized as a plateau dotted with hills. The average altitude is between 300 m and 450 m above sea level, with peaks exceeding 500 m asl. (Golder Associates, 2011).

The local topography of the area has a relatively high relief (see Figure 9-3 below). The site elevation is less than 380 m at the lowest point near the Route du Nord and 564 m at the highest point, which is located on a hill west of Lac Moblan.

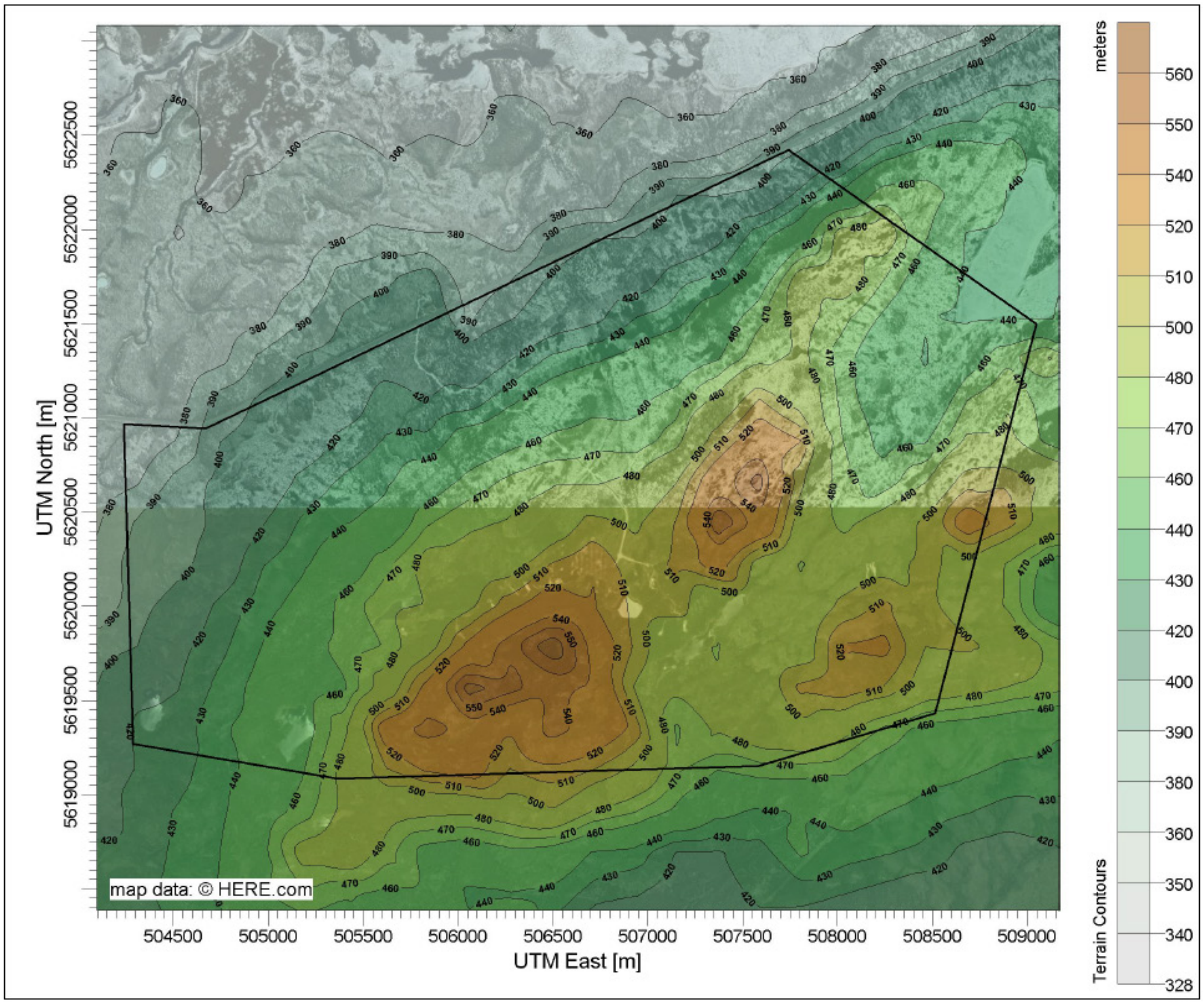


Figure 9-3 : Local topography of the Moblan Lake site (Annexe XIII - Hatch, 2019)

9.3.5 Hydrogeology and groundwater flow

The Moblan Lake area is characterized by low permeability of the precambrian bedrock found there, typical of the Canadian Shield. The substrate is covered with a thin layer of glacial deposits. Rainfall is abundant in the region and the terrain is moderately hilly. Groundwater tables are generally shallow. Groundwater flow in is variable and influenced by local topography and the nature of the substrate.

The study area determined for hydro geological modelling and the annual groundwater recharge capacity for this area are illustrated in Figure (Annexe XVII.02 - EXP, 2019). the numerical representation (from the hydrogeological model) of the current state of the hydrogeological regime and hydraulic conductivities representative of the Moblan Lake site is shown in Figure . A cross-sectional view of the groundwater level (white line) is also provided in Figure . The water contribution of aquifers to the hydrographic network in the study area was modelled to estimate the volumes of groundwater that feed streams and surface water bodies. The results of this modelling are illustrated in Figure .

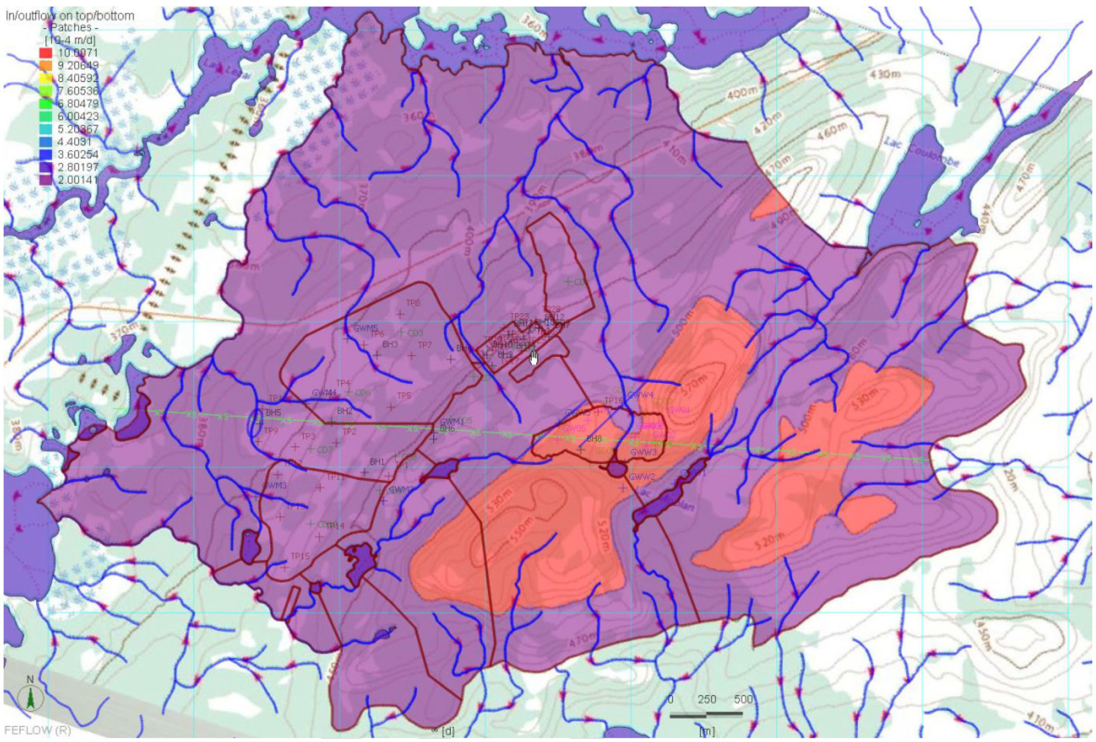


Figure 9-4 : Annual groundwater recharge capacity (in mm/year) (Annexe XVII.02 - EXP, 2019)

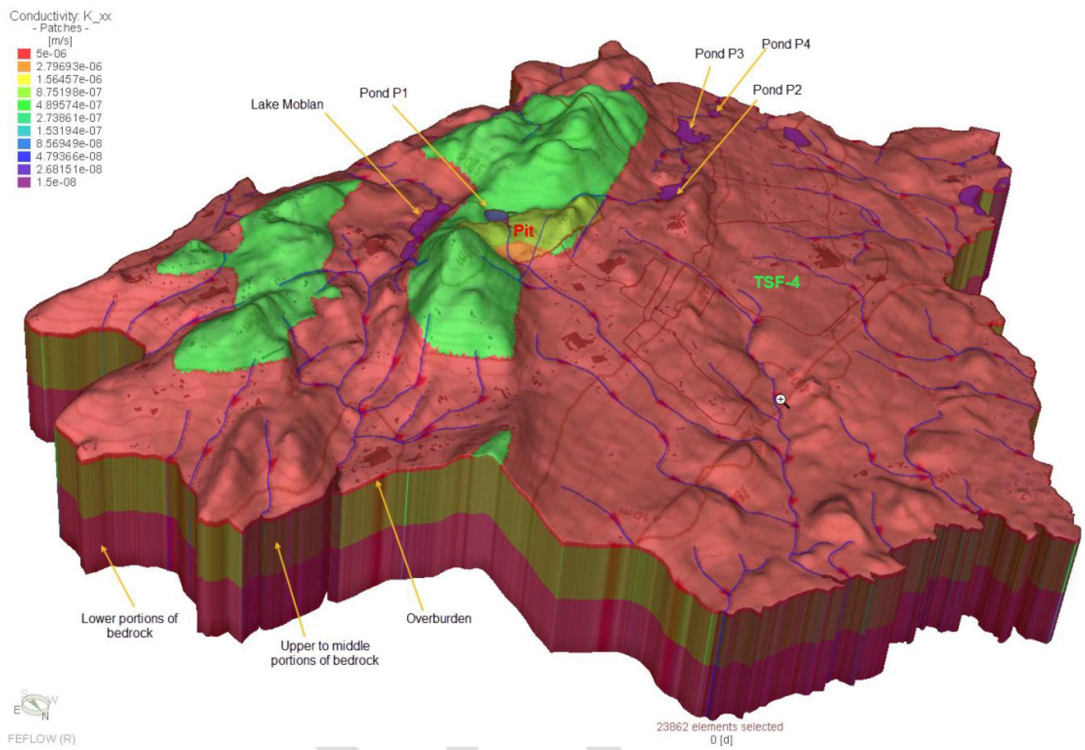


Figure 9-5 : Hydrogeological regime and hydraulic conductivities at the Moblan Lake site (Annexe XVII.02 - EXP, 2019)

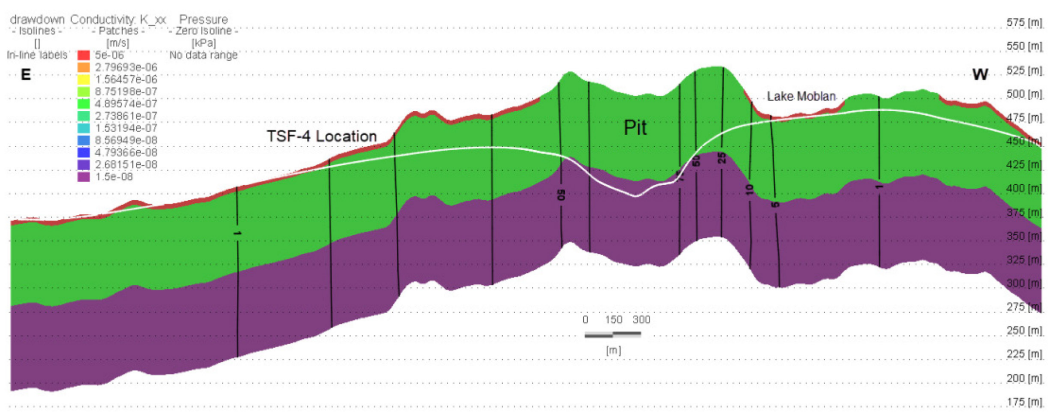


Figure 9-6 : Cross-section view of groundwater level at Moblan Lake site (Annexe XVII.02 - EXP, 2019)

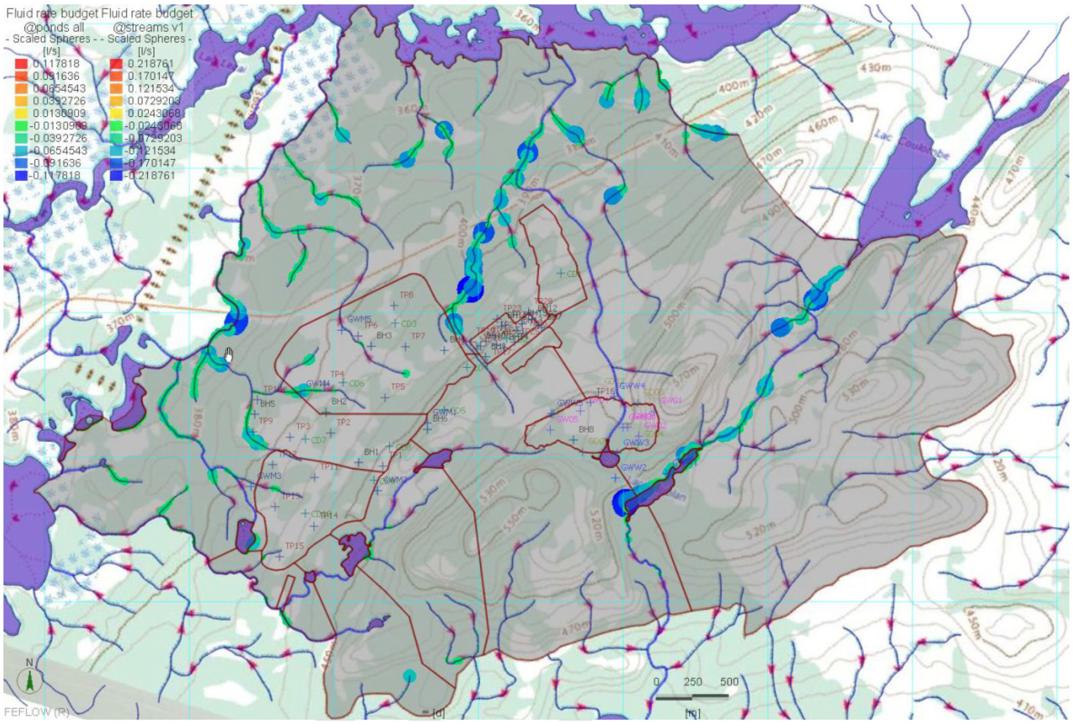


Figure 9-7 : Modelled groundwater resurgence in the surface drainage system at the Moblan Lake site (Annexe XVII.02 - EXP, 2019)

The groundwater found on the surface is separated into two (2) aquifers by a raised topographic zone that influences the direction of water flow and constitutes the recharge zone of the two (2) aquifers shown in Figure 9-8.

The groundwater apex crosses the site from southwest to northeast, diagonally passing through the centre of the mining pit. Please note that in Figure 9-8, the infrastructure shown and its location are outdated and an updated figure will be inserted when received from EXP.

9.3.5.1 Groundwater quality

The results obtained during the groundwater sampling campaign at the Moblan Lake site (EXP, 2019 available in Appendix XVII.1 of ESIA Vol. 3) showed a high natural metal content, particularly for aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), silver (Ag) and zinc (Zn). Metal levels are higher in deep groundwater (in rock) than in surface groundwater (overburden). Only one (1) deep groundwater (rock) sample demonstrated an exceedance of the resurgence criteria in surface water (for Zn) versus twelve (12) in groundwater flowing into overburden (for Cu, Pb, Ag and Zn).

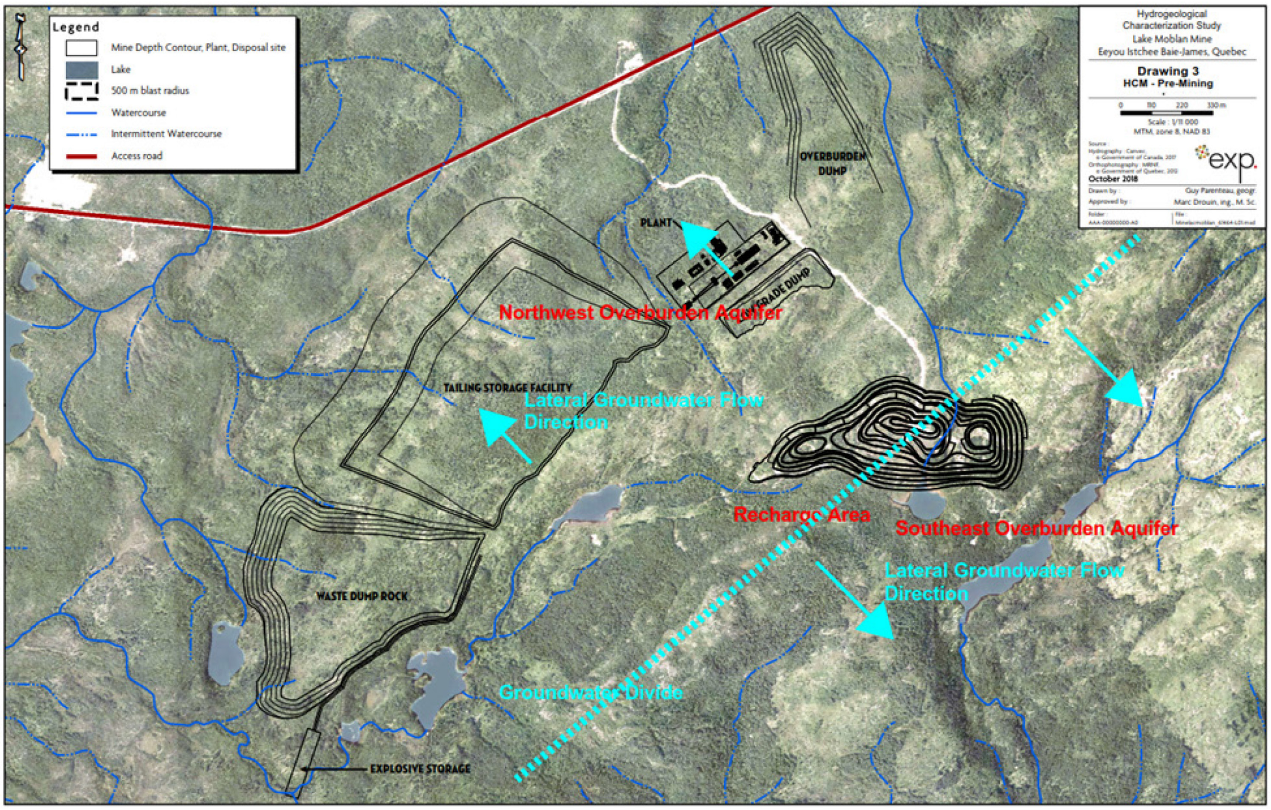


Figure 9-8 : Underground Hydrogeological Regime (Annexe XVII.01 - EXP, 2019)

9.3.6 Surface water, sediment and soil quality

Lakes and rivers were sampled to establish current surface water and sediment characteristics.

In areas of sufficient mineralization to generate economic interest in Quebec, it is common to observe natural concentrations of metals in surface waters and sediments that are above levels considered safe according to MECCS' quality criteria for the protection of aquatic life (MELCC, 2013) and the Canadian Council of Ministers of the Environment (CCME) water quality guidelines (CCME, 2001). Concentrations for aluminum and lead are higher in several water bodies.

The lakes and ponds sampled are well oxygenated at the surface with dissolved oxygen values ranging from 7.69 mg/L to 10.23 mg/L. However, dissolved oxygen levels drop significantly for deep measurements, reaching values as low as 0.80 mg/L. These results are characteristic of poor water circulation and are representative of stratified water bodies in eutrophication processes, where anaerobic respiration in sediments generates gases and makes aquatic life difficult.

The results of field measurements show that most of the pH values obtained, from 6.5 to 9, are within the acceptable range for the protection of aquatic life in MECCS (MELCC, 2013).

The alkalinity results obtained for the sampled water bodies all have values below 6.3 mg/L, except for Lac Coulombe, where alkalinity around 10 mg/L was observed. According to the MECCS Intervention Guide - Soil Protection and Remediation of Contaminated Sites (MELCC, 2016), an alkalinity value of less than 10 mg/L means that the water body has a high sensitivity to acidification, since a low base concentration is present to neutralize acids.

For sediments, the results for sulphur range from 0.058 to 0.42%g/g. By comparing these results with MECCS' soil quality criteria, all results exceed the level of contamination (MELCC, 2016).

The most abundant metals in the collected sediments are, in decreasing order: aluminum (3700 to 24000 mg/kg), iron (1600 to 19000 mg/kg), manganese (12 to 200 mg/kg) and zinc (8 to 95 mg/kg).

9.4 Biological environment

9.4.1 Vegetation

The Moblan Lake site is part of the bioclimatic domain of moss spruce forest. It is characterized by uniform landscapes, the clear dominance of black spruce in the shrub stratum and an undergrowth of moss and ericaceous trees. Balsam fir and some hardwoods (white birch, trembling aspen, balsam poplar) are also present. More than a third of the stands are in regeneration (young stands). About a quarter (23%) of the territory is composed of wetlands. Most of them are peat bogs, either ombrotrophic (bogs) or minerotrophic (fens).

9.4.2 Wetland, aquatic and riparian vegetation

Wetlands cover approximately 14.5 hectares of the restricted study area, or just over 1% of its total area. Wetland #1 is located in the encroachment of the future mining pit, it will disappear.

Photo 3-1 : Shrub swamp surrounding Unnamed Pond #1 (Wetland #1)

The swamp surrounding the unnamed pond #1 is characterized by a community of shrubs mainly composed of calcareous cassander (Cassandra calyculata) and balsam myriac (Myrica gale). The most common species in the herbaceous layer were sedge (Carex sp.), brown sphagnum moss (Sphagnum fuscum) and chicory (Rubus chamaemorus). Black spruce was dominant along the periphery of most of the wetland. The area of this swamp is 0.8 ha.

Source : Photo : from the Répertoire Québec Nature

Photo 3-2: Main plants found in wetland #1, upper left the calcareous cassander, right the balsam myriac and lower the chicory.

9.4.3 Ichtyofauna and habitat

In the mine area study zone, two (2) lakes and three (3) ponds were characterized, as well as six (6) streams flowing into the site's watersheds, one (1) unidentified pond at the western boundary of the study area was not visited.

Of the six (6) identified watercourses, all are permanent except for one (1) intermittent watercourse, Unnamed stream #2, which originates from Pond #1 towards Lezai Lake north of the study area. Unnamed stream #5 contains brook trout and Unnamed stream #6 contains pearl mule. The two (2) lakes in the study area were fished and represent fish habitats. These are Moblan Lake and Coulombe Lake. There are four (4) ponds in the study area, namely Unnamed ponds #1, #2, #6 and an unidentified pond located at the western boundary of the study area. Pond #6 and the unidentified pond were not fished.

The unnamed pond #1, which is in the mine's footprint and destined to disappear, does not appear to contain a fish community. The other ponds represent fish habitats.

Fishing efforts and observations have resulted in the identification of three (3) fish species in the territory of the mine area. These are brook trout (Salvelinus fontinalis), pearl mullet (Margariscus margarita) and northern pike (Esox lucius). The results of the inventories are presented in Figure 9-9.

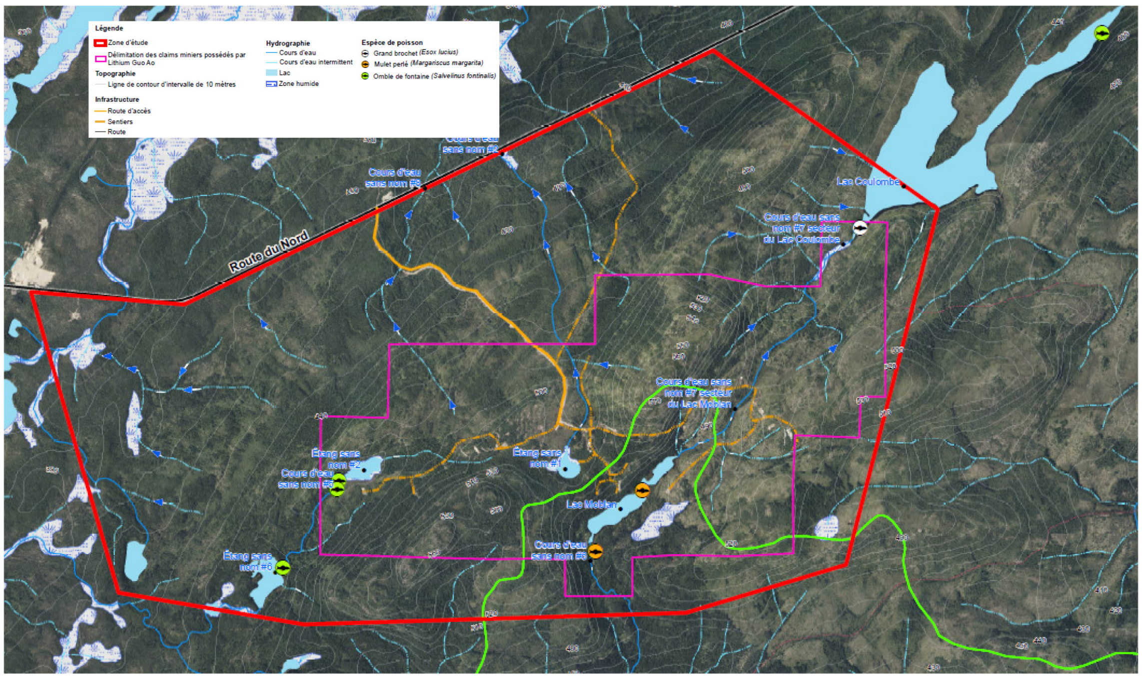


Figure 9-9 : Results of inventories of ichthyofauna in water bodies

Source: Hatch – omble de fontaine et mulet perlé, Actualité UQAM – grand brochet

Photo 3-3 : Fish caught and observed: above brook trout at Pond #2, centre left brook trout egg in Stream #5, centre right centre mule pearl at Moblan Lake and below northern pike at Coulombe Lake

9.4.4 Avifauna

Birds are considered to be probably the most diverse wildlife group in the James Bay Territory, with 238 species identified (CRRNTBJ, 2010).

The observations in the study area allowed identification of nineteen (19) bird species. None of the species identified in these inventories have a precarious status. However, inventories of large wildlife in April 2018 reported the observation of a bald eagle, at the western end of Moblan Lake, although no nests were found.

Several bird species of interest for sport and subsistence hunting are present in the region. The Canada goose (Branta canadensis) is hunted locally known as "Goose Break" in Cree communities. The traditional diet of the Cree includes several other bird species, including the ruffed grouse (Bonasa umbellus), spruce grouse (Falcipennis canadensis) (Photo 9-3) and willow ptarmigan (Lagopus lagopus) (Godin, 2004).

Photo 3-4 : Spruce grouse observed in the restricted study area

9.4.5 Mammals

The inventories confirmed the presence of moose and black bear. The presence of woodland caribou has not been confirmed despite the presence of three (3) herds located near the study area.

In general, to meet their needs, moose seek sites that provide food, shelter and protection. Their preferred habitats are mixed coniferous and deciduous forests, particularly fir stands with white or yellow birch. Black bears are opportunistic and use a wide range of habitats. It is therefore not associated with any particular terrestrial ecosystem and can travel long distances to feed. Woodland caribou preferences by habitat type in order of probability of occurrence are: wetlands, open coniferous forests, moist and open coniferous forests, dense mixed wood forests and open mixed wood forests. The dense coniferous forest that mainly characterizes the Moblan Lithium Mine site provides potential habitat for the late winter period.

Among the small wildlife in the study area, five (5) species have been identified: snowshoe hare (Lepus americanus), Canada lynx (Lynx canadensis), marten (Martes Americana), red squirrel (Sciurus vulgaris) and river otter (Lontra canadensis).

The study area also hosts several species of small mammals. A total of nine (9) species of small mammals have been identified. Two (2) shrew species accounted for 61% of the catch, i.e.: the ash shrew and the sooty shrew. Three (3) rock voles were captured. This species is likely to be designated as threatened or vulnerable under the Quebec VMS Act.

9.4.6 Herpetofauna

The James Bay region is not an ideal habitat for herpetofauna because of its low temperatures and short growing seasons (CRRNTBJ, 2010).

During field surveys conducted in July 2018, Hatch confirmed the presence of two (2) species of anurans in the study area, the wood frog (Lithobates sylvaticus) (Photo 9-4) and potentially the American toad (Anaxyrus americanus americanus americanus). No reptile species have been identified. Spotted salamander (*Ambystoma* maculatum) eggs were observed in a puddle of water.

Photo 3-5 : Wood frog observed in the study area

9.4.7 At risk wildlife species

Some of the wildlife species observed within the Assinica Wildlife Reserve and potentially present in the study area are at risk in Quebec, including bald eagles (Haliaeetus leucocephalus) and woodland caribou (Rangifer tarandus caribou) (two[2] species designated as vulnerable) and lake sturgeon (Acipenser fulvescens), the American Nightjar (Minor Owls), the Olive-sided Flycatcher (Contopus cooperi), the Rusty Blackbird (Euphagus carolinus), the Silver Bat (Lasionycteris noctivagans), the Common Bat (Lasiurus cinereus), the Northern Bat (Myotis septentrionalis) and the Red Bat (Lasiurus borealis) (species likely to be designated threatened or vulnerable). The Little Brown Bat (Forget-Me-Not lucifugus) is in the process of disappearing within the meaning of the Species at Risk Act.

Two species of small mammals are potentially present on the power line territory, the rock vole (Microtus chrotorrhinus) and the Cooper-lemming vole (Synaptomys cooperi). Their preferred habitats are respectively coniferous or mixed forests and peatlands or mixed and humid forests.

The presence of grey bats has been confirmed south of the power line route at about ten (10) kilometers, which means that the area could potentially provide suitable habitat for this species (CDPNQ, 2019).

The preliminary route of the power line does not cross any protected area or territory occupied by the woodland caribou herds identified in the Rudolph, Drapeau, St-Laurent, & Imbeau study in 2012. However, the route passes only about 100 meters south of a biological refuge project (reference number 02661R034) excluded from forest production about six (6) kilometers from the Obalski/Troïlus line.

Two (2) status species were identified in the mine study area: bald eagle (Haliaeetus leucocephalus) and rock vole (Microtus chrotorrhinus).

Source: Barbour, Roger W., Smithsonian *Source : Lapointe, D., Initiation aux oiseaux par la couleur*

Photo 3-6 : Status species recorded in the study area: bald eagle and rock vole

Source: Bureau du forestier en chef via Radio-Canada *Source: Bat Conservation International, Michael Durham, BCI*

Photo 3-7: Status species potentially present in the study area: woodland caribou and grey bats

9.5 Cultural and archeological heritage

The study area was cleared of ice around 7,800-7,900 BP, while the glacier front continued to retreat towards the central part of the Quebec-Labrador Peninsula, where the fusion will be almost completed around 6,000 BP. The reconstructions of the vegetation cover also show that the landscape of the region was beginning to resemble the current landscape, which is closed spruce forests with a less developed wetland environment at least 6,000 years ago. Biome reconstructions show that the study area is located in a transition band between the forest tundra and the boreal forest, around 7,000 BP. From these data, it can be concluded that the territory could have supported human populations somewhere around 7,500 BP, in a tundra environment that is gradually becoming forested.

The areas most likely to contain human remains have been identified: six areas with archeological potential, over an area of approximately 12 km², have been selected. They are all located on the shores of Coulombe and Moblan lakes, which are located in a valley surrounded by two chains of hills. Within these areas, no archeological sites are currently known and there will be no buildings or other project activities currently being considered for these areas.

9.6 Human Environment

The extended study area is located in Northern Quebec, which is the largest administrative region in the province with 718,229 km^2. This region is divided into two (2) administrative territories located on either side of the 55th parallel, namely the territory of the Kativik Regional Government to the north and the territory of the Eeyou Istchee Baie-James Regional Government (GREIBJ) to the south[5].

These territories are defined by the 1975 James Bay and Northern Quebec Agreement (JBNQA), which is a land claim settlement area for the Cree and Inuit of Northern Quebec (the Naskapi of Quebec joined later). The territorial regime established by the JBNQA divides these lands into three (3) categories. Category I lands are lands for the exclusive use and benefit of indigenous peoples. Category II lands are provincial Crown lands on which indigenous people have exclusive hunting, fishing and trapping rights. Finally, Category III lands are provincial Crown lands on which indigenous people have hunting, fishing and trapping rights, without permits, without catch limits and at all times, subject to the principle of conservation and development of the territory (COMEX, 2018).

The project site is located on Category III lands in the Eeyou Istchee James Bay Territory under the jurisdiction of GREIBJ.

[5] Eeyou Istchee Baie-James is an administrative territory created in 2012 by the merger of the territory of Eeyou Istchee and the MRC géographique de Jamésie. However, the administrative categories of Eeyou Istchee and James Bay are still used in some sources, particularly because of the transition and toponymic update period of the various public services in Quebec. In this report, the terms Eeyou Istchee Baie-James, Eeyou Istchee and James Bay are used according to the context and statistical sources available.

9.6.1 Population and demographics

The project site is located on Category III lands in the Eeyou Istchee James Bay Territory under the jurisdiction of GREIBJ. More specifically, the project site is located on trapping grounds associated with users from the Cree community of Mistissini (Photo 9-8). The latter is the community in the extended study area that is closest to the project site (approximately 80 km to the east-southeast).

The other indigenous communities in the vicinity of the project are also Cree communities. It is about:

- Oujé-Bougoumou 90 km south (Photo);
- Waswanipi140 km southwest (Photo); et
- Nemaska 140 km northwest (Photo).

In addition to these four (4) Cree communities, there are two (2) non-native communities in the extended study area, also under the GREIBJ :

- Chibougamau approximatly 100 km south (Photo); and
- Chapais 105 km south (Photo).

Source : mistissini.ca

Photo 9-8 : Mistissini Community

Source : ouje.ca

Photo 9-9: Oujé-Bougoumou Community

Source : pinterest, 2018.

Photo 9-10: Waswanipi Community

Source : creehealth.org

Photo 9-11 : Nemaska Community

Source : ville.chibougamau.qc.ca

Photo 9-12 : Chibougamau Community

Source : villedechapais.com

Photo 9-13 : Chapais Community

In 2017, the population of the Nord-du-Québec region was 45,367 inhabitants, for a population density of 0.1 inhabitants/km². The Eeyou Istchee municipality is the most populated territory in Northern Quebec, with 17,934 people living there in 2017, representing 39% of the regional population. The James Bay population was 13,810, or 31% of the regional population (the Kativik Regional Government population was 13,623, or 30%) (Figure).

In terms of demographic perspective, it is estimated that if current trends continue, James Bay could lose 6.1% of its population by 2036, while Eeyou Istchee would experience a 41.1% increase over the same period.

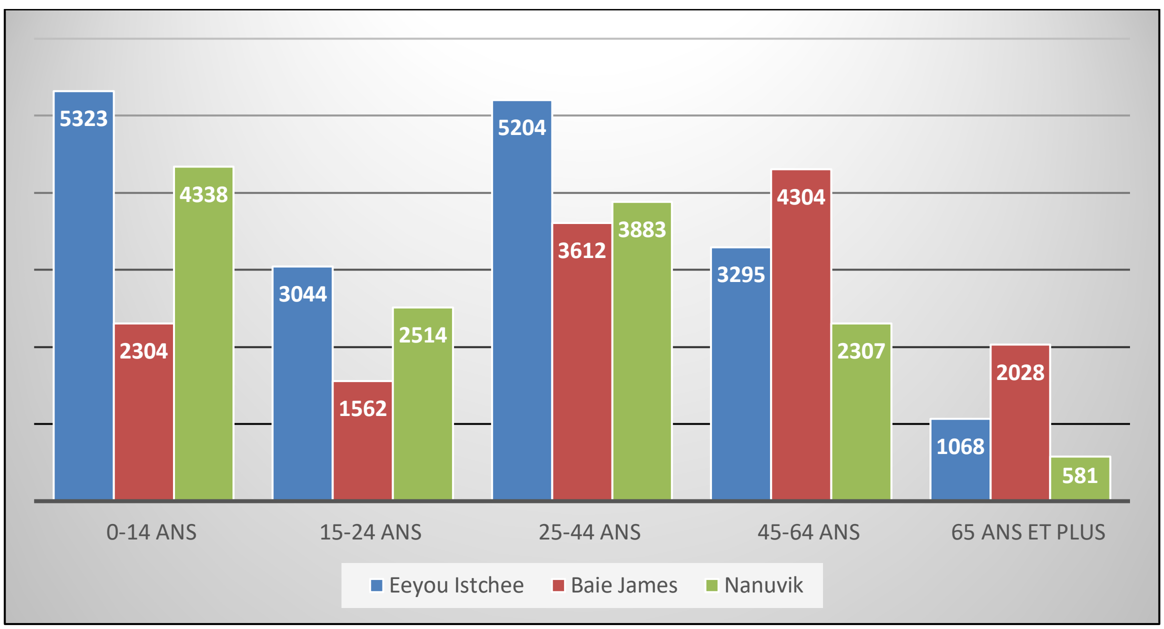


Figure 9-10 : Demographic profile of the Nord-du-Québec region (ISQ, 2018)

In the extended study area, in 2016 there were a total population of 14,305 inhabitants and a population density of 27 inhabitants/km². This population is divided into six (6) communities with various population profiles. Their size varies from 760 to 6,862 people (Figure).

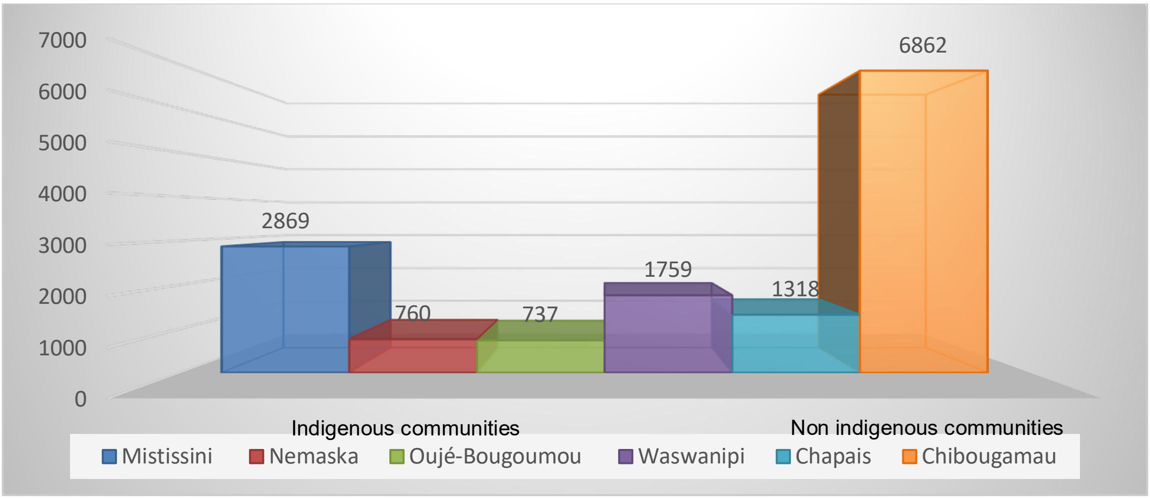


Figure 9-11 : Population of the extended study area (Statistique Canada, 2016)

The age characteristic of the population of Nord-du-Québec is a young population, with an average age of 32.4 years, compared to 41.9 years for Quebec as a whole (ISQ, 2018).

In the study area (Figure), the proportion of young people in the population is also high, with 23.4% of people under 14 years old for all communities, while for the province this proportion is 16%. This proportion of youth in the study area is significantly higher in indigenous communities than in non-indigenous communities.

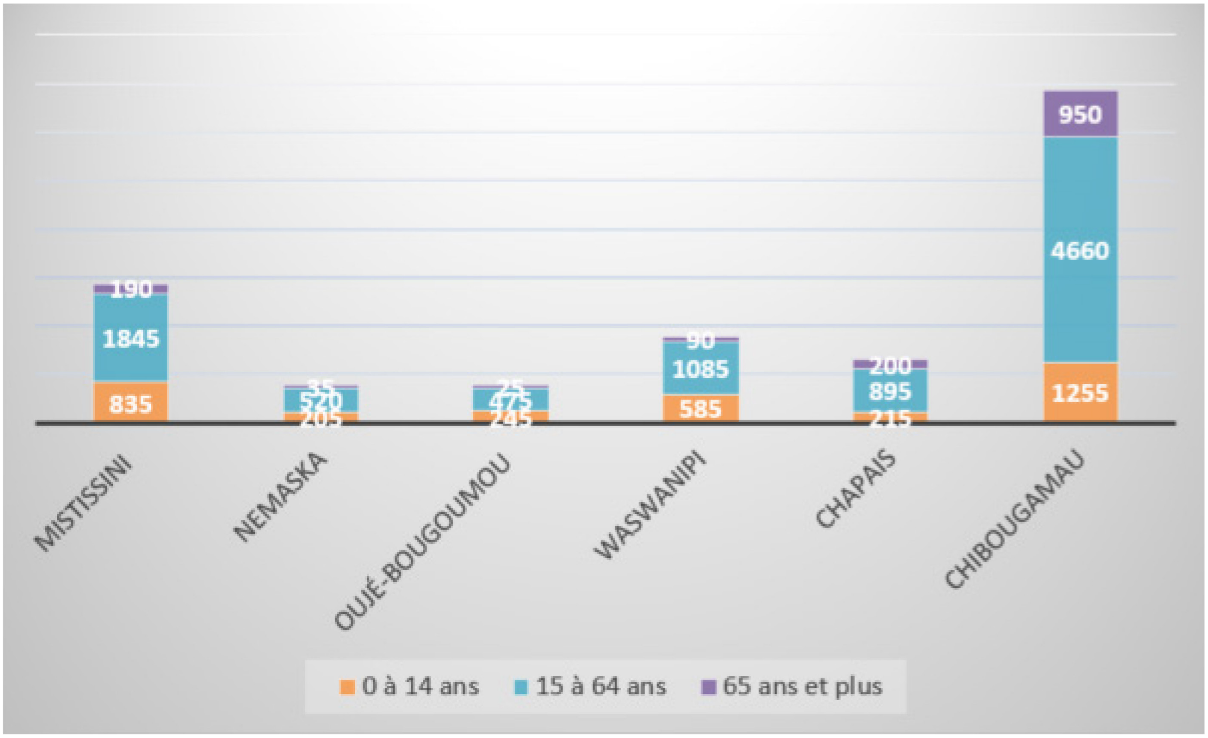


Figure 9-12 : Age characteristics in the extended study area (Statistique Canada, 2016)

In terms of gender, men outnumber women slightly more in the Nord-du-Québec region and in the study area, on average 51.2% male and 48.8% female. In Quebec as a whole, the opposite is true. Indeed, except in Mistissini, there are more men than women in all communities in the study area, while in the province as a whole there are 49.7% men and 50.3% women (ISQ, 2018).

9.6.2 Socio-economic conditions

The economic structure of Nord-du-Québec is largely based on the primary sector, with the extraction of natural resources such as wood and minerals, and on the public service sector. In 2017, the primary sector accounted for five (5) times more jobs than its equivalent in Quebec as a whole (10.0% compared to 2.2%). The following Tableau 6-1 details the number of jobs generated by sector of activity in each of the study area's communities.

Table 4-2 Main economic activities and jobs generated in the extended influence area (Statistique Canada, 2016)

Main industries	Mistissini	Nemaska	Oujé-Bougoumou	Waswanipi	Chapais	Chibougamau	Total
All categories	1,245	405	360	685	700	3,945	6,095
Agriculture, forestry, fishing and hunting	30	25	20	60	40	145	320
Extractive industries	100	0	10	10	75	205	400
Public services	10	10	0	0	35	65	120
Construction	90	30	20	40	20	165	365
Manufacturing	10	0	0	0	110	570	690
Wholesale trade	0	10	0	0	10	50	70
Retail trade	75	35	10	35	60	545	760
Transport and storage	25	0	10	10	35	135	215
Information and cultural industries	15	10	10	0	0	25	60
Finance and insurance	10	0	0	10	0	65	85
Real estate and rental and leasing services	15	0	0	0	0	20	35
Professional, scientific and technical services	10	0	0	10	10	100	130
Administrative and support services, waste management and remediation services	40	0	10	10	60	100	220
Educational services	220	35	50	120	50	285	760
Health care and social assistance	280	90	60	150	70	740	1,390
Arts, entertainment and recreation	30	15	25	20	0	50	140
Accommodation and food services	90	25	15	15	60	230	435
Other services (except public administration)	25	10	20	15	10	175	255
Public administration	185	105	105	180	50	275	900

In the extended area of influence, there was a total labour force of 6,190 people in 2016 (Figure). The activity rate varies according to the community, with, for example, a rate of 64.0% in Mistissini and 72.2% in Chibougamau. The unemployment rate also varies by community, particularly between indigenous and non-indigenous communities. Chapais and Chibougamau have relatively low unemployment rates (5.0% and 6.9% respectively) compared to Mistissini (16.6%) and Waswanipi (19.6%). Compared to these rates, the province as a whole has an activity rate of 64.8% and an unemployment rate of 7.6% (MTESS, 2017).

The unemployment and labour force participation rates in the area, and generally in Northern Quebec, should be considered with some nuance, given that many jobs are held by migrant and seasonal workers from other regions of Quebec.

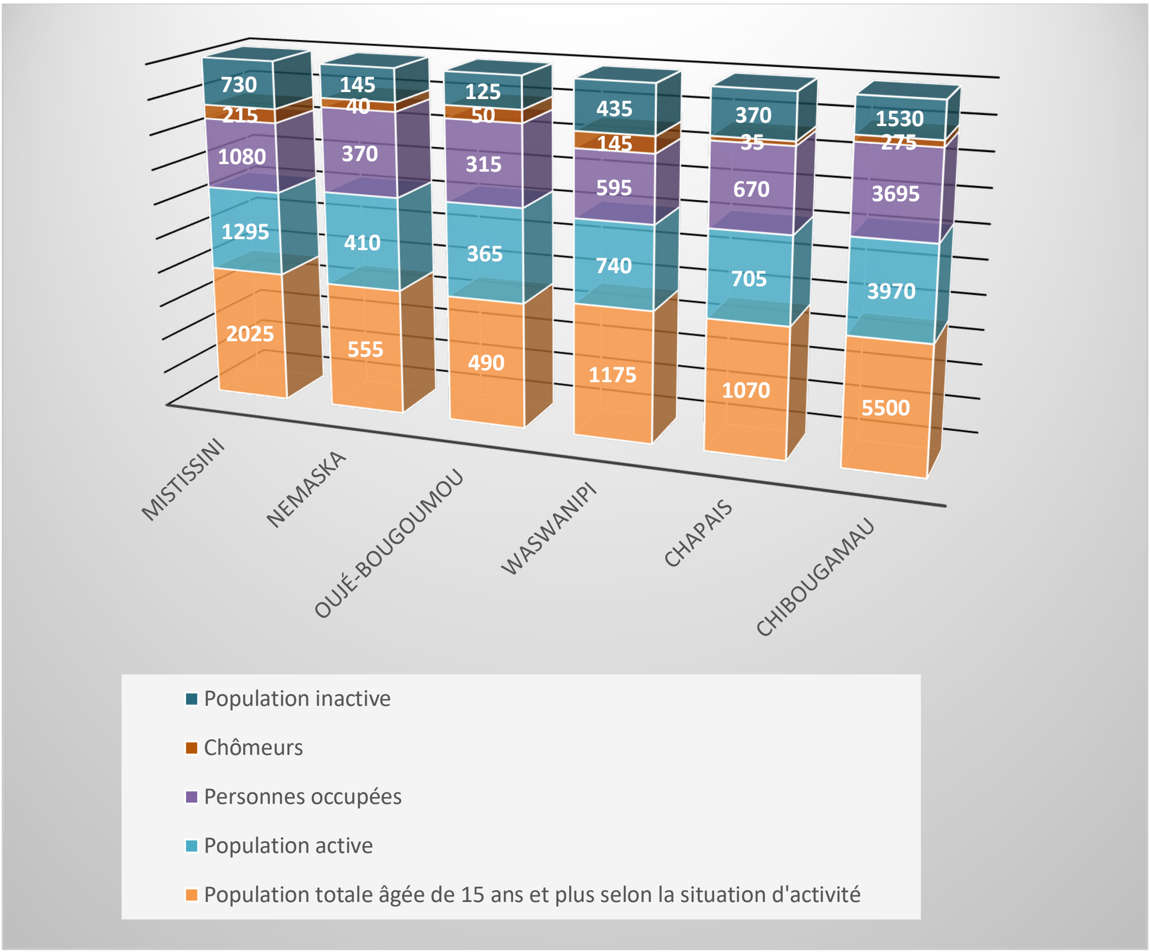


Figure 9-13 : Situation of activity in the extended area of influence in 2016 (Statistique Canada, 2016)

The median household income (in 2015) in the study area was $66,048 for Chapais and $70,144 for Chibougamau, both non-indigenous communities. However, the situation is the opposite for indigenous communities, such as Mistissini which has a median income of $96,448.

9.6.2.1 Labour requirements of the mining sector

The report Comité sectoriel de main-d'œuvre de l'industrie des mines, Estimation des besoins de main-d'œuvre du secteur minier au Québec 2017-2021 et tendances 2027 (TJCM, 2018), illustrates that more than half of the jobs in the mining sector are located in Nord-du-Québec.

Half of the mining jobs to be filled in Quebec by 2021, or 3,331, will be located in the Nord-du-Québec region. This trend is partly explained by a high turnover rate for the mining sector in this region.

The strongest job applications for the 2017-2021 period will be for specialized heavy equipment operators and represent more than three-quarters of the applications requiring a vocational diploma. Employment applications by graduation is illustrated in Figure for the 2017-2021 period.

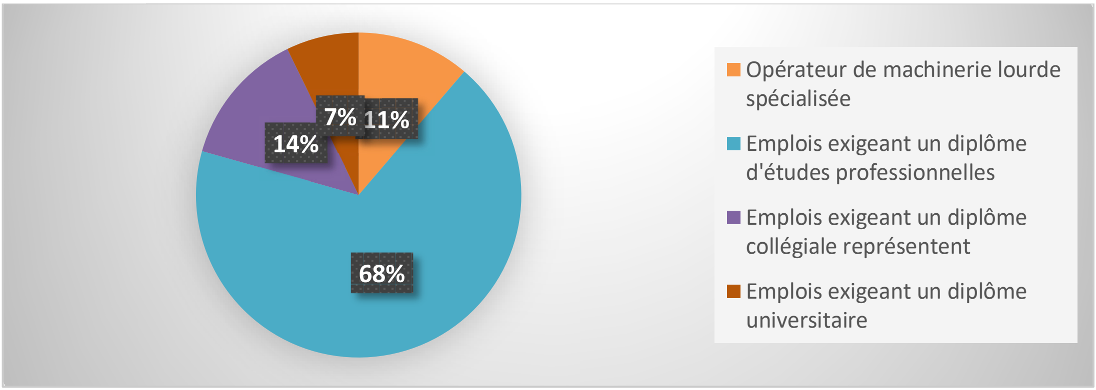


Figure 9-14 : Labour requirements in the mining sector (TJCM, 2018)

9.6.3 Community Quality of Life, Health and Well-Being

The available data on the communities' health in the study area are limited. However, cross-checking the data available for the region provides a summarized portrait of the situation. According to the Centre Régional de Santé et des Services sociaux (CRSS) de la Baie-James, which serves the Nord-du-Québec region, "the health and well-being of the population is favourable, but still vulnerable" (CRSSS, 2018).

The main concerns regarding health according to immigrant communities are:

- Excessive alcohol and drug use;
- An increase in cancer;
- People with overweight and;
- A higher prevalence of work-related musculoskeletal disorders.
- The main concerns regarding health according to the Cree communities are :
- A prevalence of sexually transmitted infections (STIs) among young people and young adults;
- A rate of hospitalizations whose main causes were respiratory system diseases, digestive system diseases and injuries (often self-inflicted) and;
- More than one (1) Cree adult in five (5) suffers from diabetes;

The Cree communities have their own regional police force, known as the Eeyou-Eenou Police Force (EEPF) (EEPF, s.d.). Public safety in Chapais and Chibougamau is ensured by the Chapais-Chibougamau substation of the Sûreté du Québec. The main crimes in the communities would be related to:

- Armed assaults and possession of weapons;
- Problems related to drug and alcohol abuse;

- Offences on the road (impaired driving);
- Domestic violence;
- Sexual assaults; and
- Delinquency among young people.

In terms of housing characteristics, by 2016, all communities except Chapais had more private housing than private households. A particular feature of Cree communities is the fact that Band Councils are the administrators of a significant portion of the available housing. It is also in Cree communities that there are the most accommodation of insufficient size (in relation to the size of the household).

9.6.4 Education and training

There is a high proportion of people with no certificate, diploma or degree in the study area, compared to a 20% ratio in Quebec (Statistique Canada, 2016). Figure 9-9-4 illustrates the different academic levels achieved by the population in the study area.

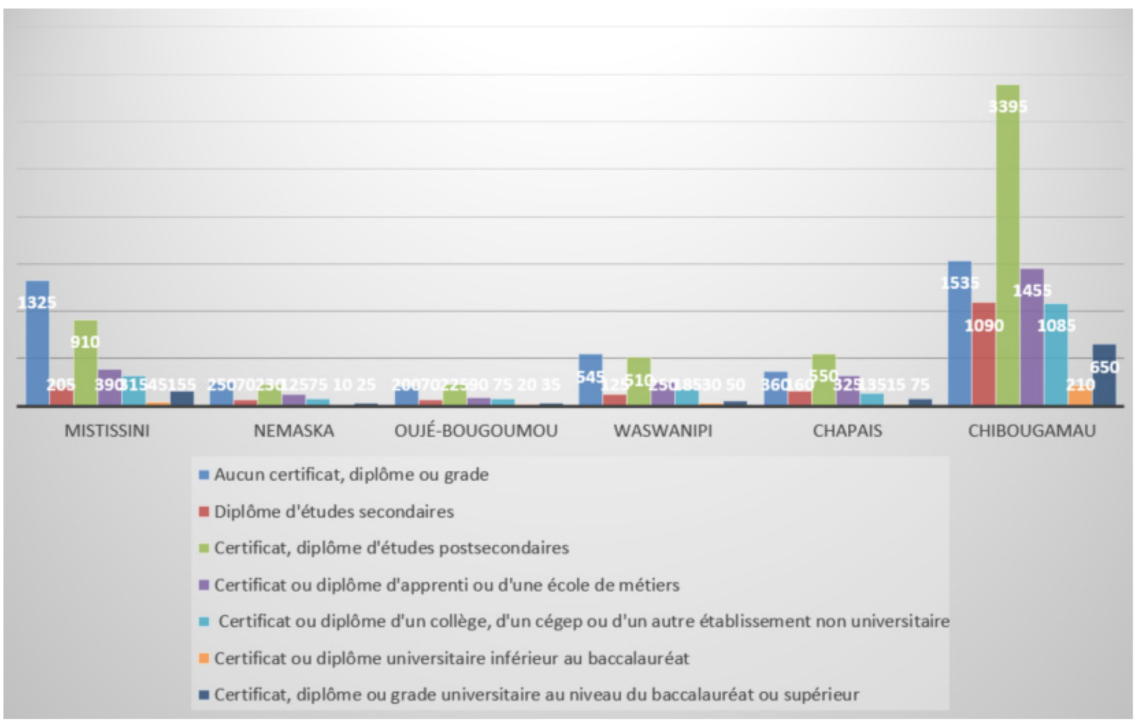


Figure 9-15 : Highest certificate, diploma or degree for the population of the study area (Statistique Canada, 2016)

9.6.5 Land use in the Cree context (traditional practices and lifestyle)

Cree land use is characterized by a set of ancestral practices and knowledge that maintain Cree identity and a strong sense of community. The main forms of land use in Eeyou Istchee are hunting, trapping, harvesting and fishing. These activities contribute to the food security of communities, but also to the physical and psychosocial well-being of individuals and the intergenerational transmission of knowledge (Photo 9-5).

Source : creetrappers.ca

Photo 3-14 : Cree intergenerational family on a trapping ground

Mistissini has the largest number of trapping grounds and it is also the community whose trapping grounds are affected by the project facilities under study. More specifically, two properties are close to or in the project footprint:

M39, in the immediate vicinity of the project; and

M40, which houses the facilities proposed by the project, and where the route of the power line is planned

Consultations with tallymen on these lands determined that:

At trapline 39, hunting and fishing are practiced, particularly near Tortigny Lake. The tallyman's family's permanent camp is located on the Broadback River (about 16 km from the project site), and several seasonal temporary camps are also in the area.

At trapline 40, hunting camps are located in several locations on the site, including 3 winter hunting camps with 3 to 4 cabins each. Among the activities carried out in the field, the tallyman points out:

- Hunting rabbits, beavers, lynxes, caribou, bears, and geese;

- Fishing; and
- Berry harvest.

9.6.6 Land use in a non-indigenous context (vacationing, hunting and trapping activities)

The Eeyou Istchee Baie-James territory is a popular territory for hunting, fishing and vacationing activities. The Pavillon Square-Tail-Lodge fishing outfitter, located about 30 kilometers from the mine, offers stays from June to September for up to twelve (12) people near Troilus Lake.

However, some activities on the territory are reserved exclusively for JBNQA beneficiaries, and this is the case in the study area. The study area is located in Hunting Zone 22 and Assinica Wildlife Reserve. The latter is an area where hunting is reserved for indigenous people, as well as fishing for certain fish species such as whitefish and sturgeon.

9.6.7 Other land uses

Other uses of the study area include mining, forestry and hydroelectric production activities.

Mines are an economic hub for the Nord-du-Quebec region and for the province as a whole. In 2015, the region accounted for 17% of the active operating titles and 63% of the active exploration titles for the entire Québec Territory (MERN, 2016).

As for the hydroelectricity sector, the Nord-du-Québec is one of Hydro-Québec's main water sources, operating 9 generating stations.

The forest industry is important in the region, with the Nord-du-Québec having an allowable cut of nearly 4 million cubic meters per year, corresponding to 17% of Quebec's allowable cut.

In the study area, we find:

- Mineral claims, on lands adjacent to the Moblan Lithium project site, held by Beaufield Resources Inc/Osisko. These mining exploration titles are not currently being developed;
- Hydro-Québec's electrical power transmission lines outside the restricted zone of influence and trapping area M40. The nearest lines are located west of the project site, within the M-39 trapline;
- Forest land, with plantations and forest roads, particularly in the route of the power line provided for in the project; and
- Three sawmills benefiting from guaranteed supplies in Chibougamau and Chapais, and a company holding a timber harvesting permit in Mistissini.

9.6.8 Road traffic

An analysis of road traffic in the study area was carried out by Intervia in February 2019 and is presented in Appendix XXVI of the volume 3 of the ESIA.

Traffic volumes in the study area are not high. The proportion of heavy vehicles is relatively high, ranging from 11% to 33%, which is consistent with the nature of the region's activities (mining, forestry, etc.), see Figure 9-9-5. The highest traffic on the project route is in the municipality of Chibougamau, which has a bypass road providing an alternative for transit traffic.

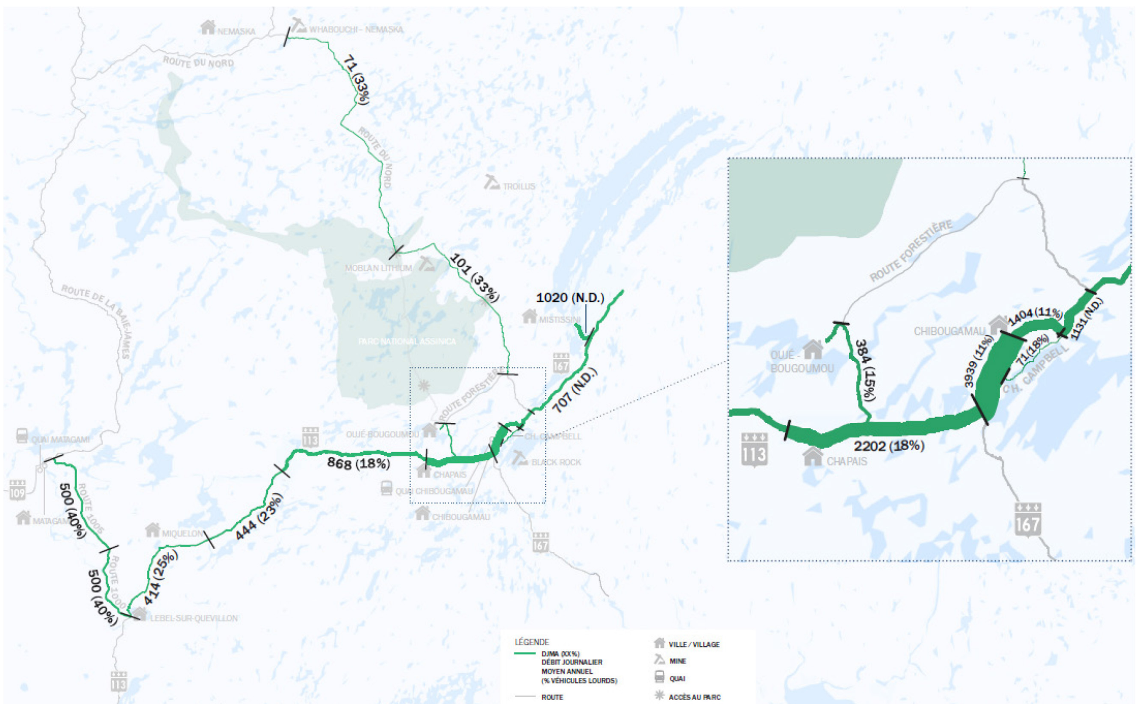


Figure 9-16 : Current annual average daily traffic

10. Analysis of the project's impacts

The impact analysis of the building and operation of the Moblan Lake spodumen deposit project assesses the impacts and effects on the natural and social environment in the defined core and extended study areas. Only the relevant components will be discussed in this document, i.e. the components with the most significant impacts. All components are discussed in detail in Chapter 7 of the Volume 1 of the ESIA.

10.1 Identification and assessment of impacts

The chosen methodological approach meets the provincial requirements for conducting impact studies and specifically the general guideline on environmental and strategic assessment for projects located south of the 55th parallel of the territory governed by the James Bay and Northern Quebec Agreement (JBNQA). It is essentially based on an assessment of the value of the environmental components, as well as the intensity, extent and duration of the expected impacts (positive or negative) on each of these components. These three characteristics are aggregated into a summary indicator, which represents the significance of the potential impact, and which makes it possible to make a judgment on all the foreseeable impacts of the project on a given component of the receiving environment.

The impact analysis method used can be divided into four (4) main steps:

- Identification of potential impacts on the natural and social environment's components;
- Assessing the significance of potential impacts;
- impact assessment and identification of mitigation measures; and
- Selection of mitigation and compensation measures.

10.1.1 Assessment of the significance of potential impacts

The purpose of impact assessment is to determine, in the most objective and rational manner possible, the significance of the impacts of any nature caused by the project on sensitive elements of the physical, biological and human environments. Figure -10-1 describes the general pathway used to assess impacts on the natural and human environment.

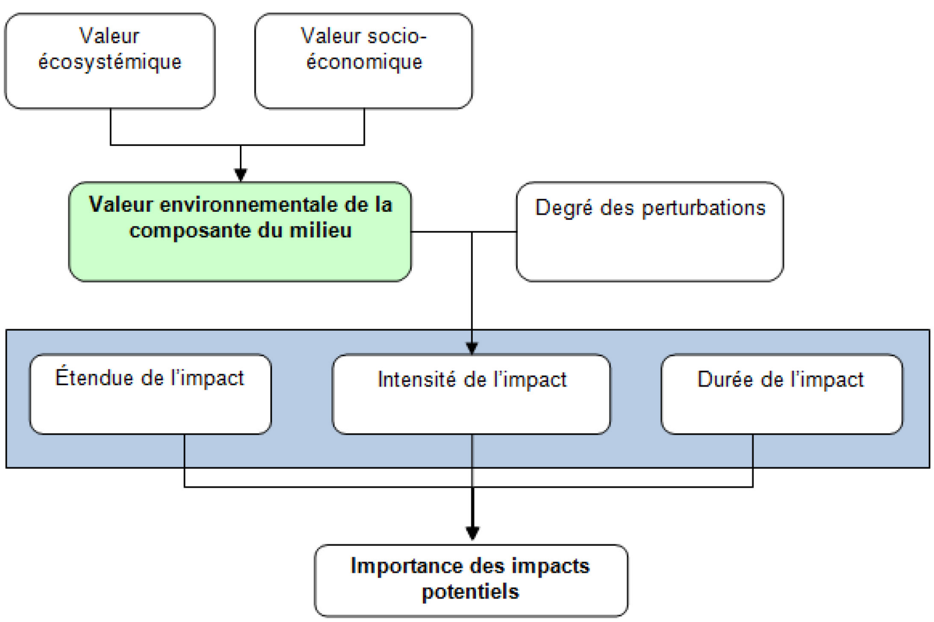


Figure -10-1 : Significance assessment of potential impact

The **ecosystemic value** expresses the relative importance of the component, taking into account its role and function in the ecosystem. It also integrates concepts such as representativeness, attendance, diversity, rarity or uniqueness of the component.

The **socio-economic value** expresses the relative importance assigned to it by the public, government agencies or any other legislative or regulatory authority. It reflects the willingness of local or regional stakeholders and public authorities to preserve the integrity or originality of this component, as well as the legal protection it is granted.

The **degree of disruption** refers to the extent to which a component is likely to undergo structural and functional changes. It depends on the sensitivity of the component to the proposed interventions. The degree is considered **High**, when the expected effect challenges the integrity of the component or significantly and irreversibly modifies the component or its use. The degree is considered **Medium**, when the effect results in a reduction or increase in the quality or use of the component, without compromising its integrity. The degree is considered **Low**, when the effect only slightly affects the quality, use or integrity of the component. The degree may be considered **Indeterminate**, when it is impossible to predict how or to what degree the component will be affected.

The **intensity of the impact** is the result of the combination of the perceived degree of disruption and the value of the affected component. It varies from high to low depending on the three (3) degrees of disturbance and the three (3) value classes of the component.

The **extent of the impact** reflects the spatial scope or range of the impacts of an intervention on the environment. Three (3) levels of scope that have been defined and considered in this analysis are: regional, local and intermittent.

The **duration of the impact** is the period of time during which changes in a component will be felt. Three (3) terms were defined and considered in this analysis: long (> 15 years), medium (between 3 and 15 years) and short (< 2 years).

The combination of the intensity, scope and duration of an impact qualifies the **significance of the impact** on a component affected by the project.

10.2 Physical environment impacts

10.2.1 Air quality and climate

The results of the analyses indicate a frequency of exceeding the crystalline silica standard in the air by 0.04% around the workers' camp due to the entrainment of fine particles in the air. Emission sources, obtained by dispersion modelling, come from the use of motor vehicles, trucks and mobile equipment on site, in addition to mining activities and ore processing (concentrator). The main sources of airborne dust emissions are road traffic and wind erosion.

Mitigation measures such as watering roads and the tailings pond, as well as traffic speed limits on the site, will promote good management of air emissions during the periods that are most likely to exceed them (dry weather and high winds).

Deforestation and the use of equipment (pumps, generators, etc.) and motor vehicles will emit greenhouse gases (GHGs) during their operation and transportation. A total of 100,553 t CO_2 eq. will be emitted into the atmosphere over the operating life of the mine and concentrator (12 years). GHG emissions from the transport of the concentrate (trucks, rail and marine) are estimated at 17,617 t CO_2 eq. /year, or 211,408 t CO_2 eq., for the duration of the project's operation. These emissions represent less than 0.05% of the total estimated greenhouse gas emissions in Quebec.

To minimize emissions, the use of hydropower instead of diesel was chosen to supply energy to the mine's equipment. In addition, a vehicle maintenance program will be implemented to meet environmental standards.

10.2.2 Hydrogeology and groundwater flow

Groundwater flow could be impacted by changes in ground level, such as gradual vegetation loss, reduced thickness of unconsolidated deposits and changes in compaction. The infiltration rate of precipitation water will be modified (more or less infiltration in places) and will modify the groundwater flow regime, particularly following the construction of drainage systems and the construction of a tailings pond and a retention basin.

Dewatering the pit is the project activity that, based on data obtained to date and the hydro geological study conducted, could have the greatest impact on hydrogeology. A drawdown of the groundwater table is indeed feared and will have an impact on the groundwater flow regime, on the recharge capacity of groundwater tables and possibly on the surface hydrographic network. The degree of disturbance to the flow regime could affect the integrity of the hydrogeological (and hydrological) network of the Moblan Lake sub-watershed and its tributaries.

The identification of specific mitigation measures for impacts on the groundwater flow regime is underway. A more detailed modelling study will be carried out to establish a strategy to minimize the impacts of groundwater drawdown on the hydrogeology and hydrography of the site and to more precisely define the residual impact. At this point in the analysis, the residual impact is therefore considered undetermined.

10.3 Impacts on the biological environment

10.3.1 Wetlands, aquatic and riparian vegetation

The main impact of the construction phase on this component will be the dewatering of unnamed Pond #1 (1.4 ha) and the loss of wetland #1 (0.8 ha) (shrub swamp) surrounding it, both located in the footprint of the pit. The main impact of mining activities on wetlands and water bodies will be caused by the discharge of the final effluent into Stream #10 and possibly also by the effects of groundwater drawdown generated by the dewatering of the pit.

The loss of the pond and wetland will be compensated; a compensation approach has been developed and is presented in Volume 3 of the ESIA.

Dust emissions at the site could also reduce the quality of some nearby watercourses, increasing suspended particulate matter and causing sediment transport. This could affect the wetlands into which these watercourses flow. Mitigation measures such as watering roads and the tailings pond, as well as limiting the speed of traffic on the site, will promote good dust emission control.

10.3.2 *Fish fauna and habitat*

All fish habitats inventoried on the site have been avoided by the layout of the infrastructure. A few intermittent streams that will be encroached upon by the development of the tailings pond have not been inventoried and the presence of fish, although not suspected, will be checked during the next season to confirm the impact of the construction of the structures on fish habitat.

The most significant impact of mining activities on fish fauna and its habitat could be caused by the effects of the lowering of the groundwater level generated by the dewatering of the pit. According to currently available hydro geological studies, the dewatering of the pit will lower groundwater levels and this impact will eventually reach (in the 7th year of operation) the subsoil of Lake Moblan. The interconnection between the surface waters of Lake Moblan and its tributaries with the deep water table is currently undetermined. Additional hydro geological studies will be initiated to determine the anticipated impact of the dewatering on Moblan Lake. Based on the findings of these studies, measures will be developed to avoid potential losses of fish habitat. A hydrogeological monitoring plan will also be implemented quickly to more accurately characterize this element and monitor the long-term impact of project activities.

10.3.3 *Wildlife species at risk*

Two (2) species at risk were identified in the study area: the bald eagle and the rock vole. Since no chiropteran inventory has been carried out, they will be considered as species potentially present on the site as a precautionary principle. In addition, although the mine site is not suitable habitat for woodland caribou, the extended study area contains three (3) caribou herds.

The impacts caused will be mainly related to the disturbance generated by mining activities. Habitats that were not destroyed during construction will still experience a decline in quality due to noise and vibration caused by activities. Some specimens such as bald eagles and potential caribou will be able to move to more favorable habitats nearby. For smaller organisms such as the rock vole, the inability to move could lead to long-term stress in the disturbed environment. The loss of wetlands will have an impact on chiropteran prey, while wetlands essential for the reproduction of missing or lower quality insects will provide less food for bats.

Truck and mobile equipment traffic on the northern highway could cause injury and death from collision or crushing among woodland caribou that could end up on the roads when transporting the ore.

Measures will be put in place to reduce the risk of collisions or crashes along the product transport route to Matagami, including the imposition of speed limits in high-risk areas.

10.4 Impacts on the social and human environment

10.4.1 Population and demographics

The mobilization of an average of 245 workers at the start of the project and a little less (about 40 fewer jobs) during mine operations could help recruit and therefore retain a portion of the local labour force, particularly in indigenous communities where the unemployment rate is relatively high. In Chapais and Chibougamau, in addition to encouraging the retention of local workers, the project could contribute to local demographics by helping to attract migrant workers. Although at the end of operations (12 years) employment will gradually decrease, it is assumed that a number of former local workers could be hired in other mining projects in the area due to their experience with the project. Measures will be put in place to encourage and support workers in their relocation to the region.

10.4.2 Socio-economic conditions

The project's impact on the regional and provincial economy was analyzed by the Institut de la Statistique du Québec (ISQ). The project should contribute to:

- The creation of 1700 jobs, including 320 direct jobs;
- An increase in Quebec's gross value added of $200 million, 59% of which in the construction industry, 28% in the service industry and 10.5% in the manufacturing industry;
- Additional income in the form of taxes of $19 million in Quebec and $2.5 million in Canada.

Mining activity plays an important role in the economy of Nord-du-Québec in general and the study area in particular. The project's mine construction activities will support local economic structures at several levels. They will stimulate employment and income in the region, with the mobilization of temporary and permanent workers. Workers will support the demand for goods and services in the communities in the study area. The mine's requirements for the supply of goods, materials and services will also contribute directly and indirectly to the economy through the various local suppliers to the industry.

The closure of the mine could potentially lead to a slowdown and decline in socio-economic conditions in the communities in the study area. Measures will be put in place to encourage and support stakeholders, particularly through the Community Advisory Committee, to consider their concerns and expectations regarding the socio-economic effects of the closure. More locally, the Mistissini community will be consulted, and in particular the tallyman of land M-40, on the selection of site restoration measures and on the potential transfer of the mining camp to the community.

10.5 Summary of assessed impacts

The results of the analysis of the project's impacts on the physical, biological and human environments are summarized in Figure 5.2 The significance of the majority of the residual impacts on the sensitive components of the environment was assessed as very low, low and medium, given the limited scope of the project: low production rate, small footprint, limited number of employees, etc.

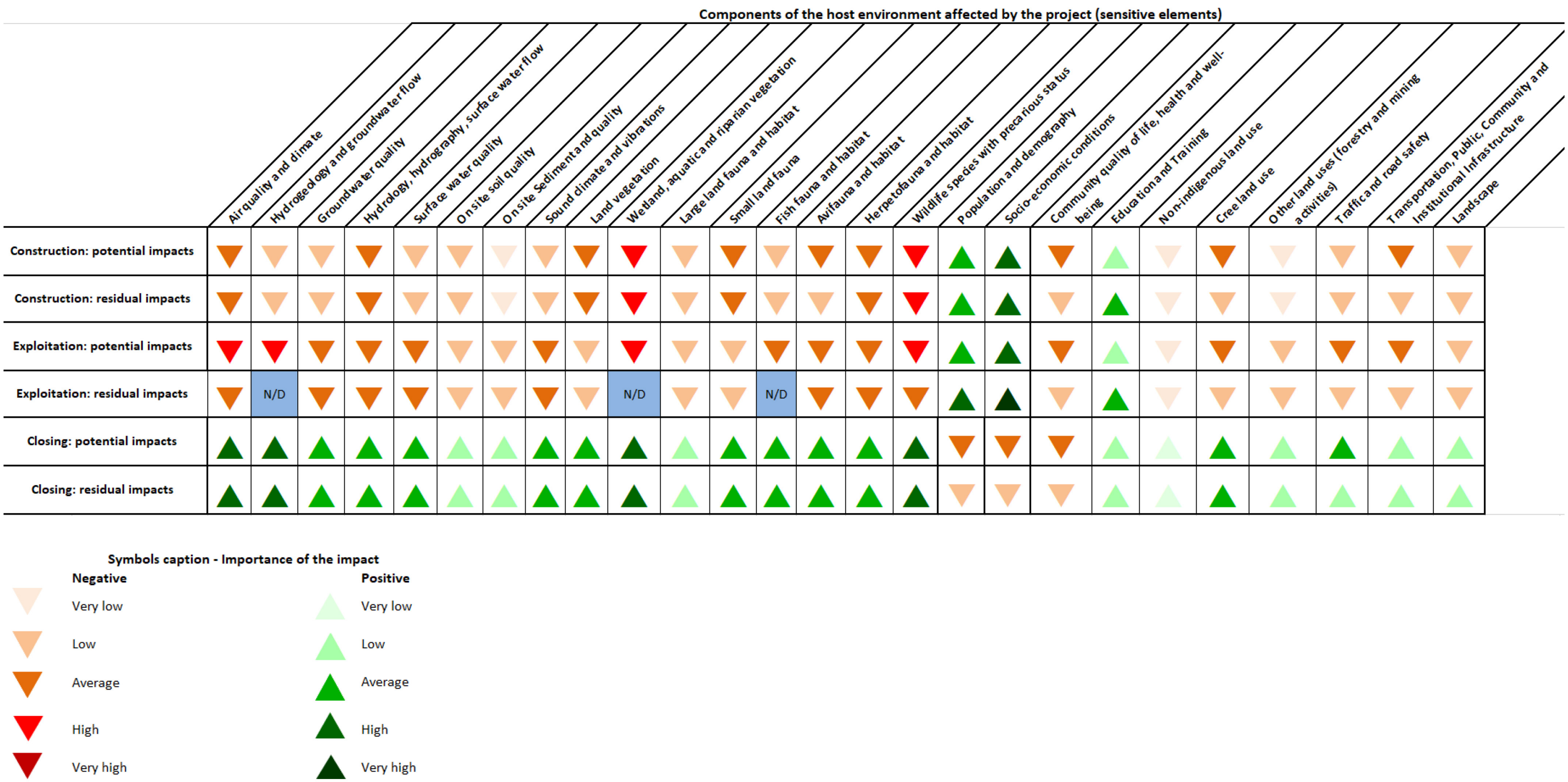


Figure 10-2 : Residual impact analysis of the mine area on physical, biological and human environments

11. Cumulative Impacts

Consideration of cumulative environmental effects in the impact analysis involves examining the impacts associated with the main project, the Moblan Lithium Project, in combination with the ongoing or anticipated effects of other projects in the extended study area (at the regional scale).

The Moblan Lithium project will contribute to the development of the Eeyou-Itschee James Bay region and will affect its natural and social environment, as will other projects planned in the region during the same period. The main projects currently planned to have been identified in the immediate area of the cities of Chibougamau, Mistissini, Oujé-Bougoumou and Chapais, as well as in the vicinity of the mine site (e. g. Nemaska Lithium projects and the development of the future Assinica National Park).

The effects of past projects were not considered since their effects are considered to be already being felt by the biophysical and social communities.

11.1 Related Projects Considered in the Cumulative Effects Analysis

Various industrial development or infrastructure projects are currently under study or under development in the region. The most important of these, which were selected for the cumulative effects analysis, are:

- BlackRock mine project to develop an iron-vanadium ore deposit 30 km southeast of Chibougamau.
- Resumption of the Troilus Mine. The Troilus deposit is located 130 km north of Chibougamau, northeast of Assinica Wildlife Reserve, 60 km west of Lake Mistassini and 80 km northwest of the Mistissini community.
- The Whabouchi project, a Nemaska Lithium mine, is located 30 km east of the Cree community of Nemaska and 280 km north of Chibougamau.
- Assinica National Park. The project, currently under study, aims at the permanent conservation of the 3,193 km² territory, contributing to the preservation of sites of natural and cultural interest for the Cree, the management of which is entrusted to the Ouje-Bougoumou Cree Nation in order to transform the Assinica Wildlife Reserve into a "park for the Cree heritage lands of Assinica".
- The Chibougamau rail platform. The transhipment centre project involves the installation of 1.5 km of rail lines and a megadome warehouse for intermodal transhipment between truck and train. The dome will be used to handle Nemaska Lithium spodumene concentrate.

11.2 Environmental and social issues

Environmental issues are those components of the biophysical environment for which there are concerns about interaction with the project. The social issues selected, for their part, reflect the concerns of regional stakeholders in relation to the sensitive components of the human environment. These are mainly the effects that will be felt by the population during the start-up and operation of the project.

11.2.1 Valued Ecosystem Components (VECs) and Cumulative Effects Analysis

Air quality

The importance of protecting air quality is a matter of consensus in the scientific community and is also the subject of legal protection measures. In the context of the Moblan Lithium project, the component will be affected during the construction phase (medium impact, but of short duration) and, more strongly, during the operation phase (high impact, of medium duration). Information on related projects in the region that may affect air quality can only be qualitatively combined with the Troilus Mine, National Park and Chibougamau Rail Platform projects) given the limited information available and quantitatively for Nemaska Lithium and BlackRock.

Overall, the main elements with a cumulative effect on VEC are exhaust emissions from vehicles and other equipment, and emissions of dust, particulate matter, PM_{10}, $PM_{2.5}$ and trace metals.

Woodland caribou

The protection of woodland caribou herds (*Rangifer tarandus caribou*) is the subject of a consensus in the scientific community as well as legal protection measures since woodland caribou are designated vulnerable in Quebec under the *Act on threatened or vulnerable species* (chapter E-12.01). Three (3) woodland caribou herds are found in the vicinity of the Moblan Lithium project, the Nottaway (north of Matagami) and Assinica (north of Chapais and Chibougamau) herds, west of the mine site and the Temiscamie herd, east of the mine site and including the Mistissini territory north of Chibougamau. Given the limited information available on other projects, only a qualitative analysis of the potential cumulative effects on maintaining the integrity of woodland caribou herds in the region was conducted. The indicator used for the analysis of this VEC is the qualitative estimation of the impacts that will be caused by related projects in the vicinity of the Route du Nord and Chibougamau, mainly by road transport and habitat loss (deforestation and fragmentation).

11.2.2 Social Components (VSCs) and Cumulative Effects Analysis

Socio-economic conditions (non-indigenous and indigenous communities)

It is a component valued by all communities as it largely determines their quality of life.

The Moblan Lithium project is expected to have a significant positive impact on the region's economic development. The modelling of its economic impacts indicates that the project should contribute to the creation of 320 direct jobs and an increase in Québec's gross value added of $200 million.

Traffic and road safety

Traffic and road safety is a major concern for the communities in the study area.

Given the current state of the regional road network and the traffic on it, the project's main trucking operations will cause little or no disruption to the communities in the study area. The nuisances and risk of traffic accidents between users or with wildlife communities in the study area are mainly related to weather conditions, which have a significant impact on road conditions and safety.

The related projects considered in the cumulative impact analysis, the Nemaska project and the railway platform project could create traffic to the City of Chibougamau's industrial zone, but the city has a bypass road that avoids transit trucking and the associated risks.

12. Risk Management

The technological risk analysis for the project identified potential accidents in new facilities, assessed the potential consequences for the biophysical environment and communities, assessed the acceptability of the project in terms of technological risks and juged the acceptability of the project in terms of technological risks.

The main environmental risks that pose a danger to the activities of the Moblan Lithium Project are the risk of forest fires since 2.4% of the James Bay Territory is exposed to fire each year. The emergency response plan will include measures to ensure the safety of workers and allow their safe evacuation from the site and the protection of workers' health.

As is the case throughout the mining industry, both construction and operating activities could be affected by accidental spills, traffic accidents or fires. The reserves of combustible products will be smaller than the quantities set as thresholds representing a significant technological risk and requiring a more in-depth hazard analysis. The explosive storage area itself represents a hazardous area of the site with explosion and fire hazards. It will be built according to the best practices in the field of explosives storage and its operation will be subject to standardized standard procedures. The impact radius of an accidental explosion of the repository has been calculated and confirms that its location is located in such a way as not to endanger the health or safety of the public or mine site workers. The tailings pond does not have a dike per se, and the tailings are placed in the form of a solid cake. Only the water recovery tank will be built with a berm that has been sized taking into account the rainfall intensities prescribed by the 019 Guideline (Directive 019).

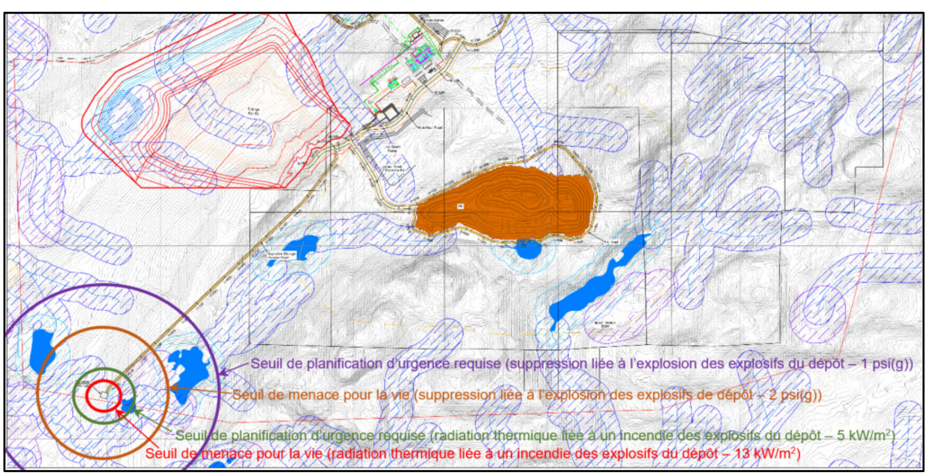


Figure 12-1 : Impact radius related to the worst-case explosion and fire scenario of the explosives storage

Although prevention is the first priority, the very nature of human and industrial activities creates risks that disasters may occur and have a disastrous impact on the company's operations, its employees, the population and/or the environment.

The implementation of an emergency response plan ensures a rapid response when an emergency occurs. The emergency plan was developed in accordance with applicable laws, regulations, standards and good practices. The emergency response plan also provides for the presence of an emergency response brigade and a fire water supply on site.

The implementation of the emergency plan is the responsibility of each of the parties responsible for the AEP (Figure 10-3) and the employees. It is the responsibility of the person in charge to communicate and collaborate with the local authorities located in the municipality of Chibougamau in order to maintain a link with resources in the event of an emergency. The PMU will be reviewed and updated by Ltithium Guo AO Ltd. and training will be provided to staff on a regular basis.

13. Environmental Monitoring Program

The objective of the environmental monitoring program is to ensure that the project complies with current environmental regulations, as well as with the conditions that will be defined by the government decree and the certificate of authorization. It also aims to ensure that the commitments and mitigation measures presented in the impact statement are respected and optimized, if necessary.

An environmental monitoring program has been developed and will be implemented at the beginning of the construction phase and will continue throughout the project until the restoration work is completed. For the duration of the project, the environmental manager designated by Lithium Guo AO will regularly be on site to ensure that Lithium Guo AO employees and subcontractors strictly apply the environmental monitoring program.

Lithium Guo AO will ensure that the environmental monitoring and follow-up program is respected and that the reports received reflect the reality of activities on the site. Any incident or accident that may cause adverse effects on the environment will be brought to the attention of Lithium Guo AO managers and government authorities and the application of the measures provided for this purpose will be monitored.

14. Environmental and social monitoring program

The objective of the environmental and social monitoring is to verify the accuracy of the impact assessment presented in the ESIA and to evaluate the effectiveness of the mitigation measures. This will allow Lithium Guo AO to implement corrective measures if necessary and ultimately improve forecasts for similar projects.

The program will also contain mechanisms for intervention in the event of environmental or social degradation.

The elements that will be monitored are listed in Table 12-1.

Table 14-1 : Elements subject to environmental or social monitoring

Physical environment	Biological environment	Social environment
Final effluent and surface water quality Domestic water treatment plants Groundwater quality Air quality Soil quality Noise and vibration Greenhouse gas emissions	Evolution of deforestation Protection of the vegetation cover Protection of wetlands and water Fish Habitat Protection Wildlife protection	Land use in the vicinity of the mine site Quality of life, health and community well-being Employment and local economic benefits Training of the workforce Infrastructure, traffic and road safety Landscape

15. Conclusion

The Moblan Lithium project, owned by Lithium Guo AO, has been developed in accordance with the laws and regulations applicable to mining projects, in respect of the natural environment in which it is located and in cooperation with the communities that will be affected by the project.

A comprehensive stakeholder consultation and engagement plan was implemented at all stages of the ESIA to adequately inform and involve local communities about the project. This collaboration with stakeholders made it possible to optimize the design of the project upstream and to consider several alternatives for the implementation of the project, in particular to protect elements of importance to Cree communities.

The project stages were developed according to the principle of avoiding potential environmental impacts, minimizing them and, as far as possible, compensating those that could not be avoided or minimized.

The baseline status of the project's physical, biological and social receiving environments was established on the basis of information gathering, stakeholder consultations and field inventories. This baseline allowed a preliminary identification of potential impacts and the adjustment of some project components to avoid impacts.

With regard to residual impacts after mitigation measures, it appears that the Moblan Lithium Project will have few significant negative impacts.

In terms of impacts on the biological environment, the main impacts are those related to the loss of habitat in the mine footprint and a reduction in habitat quality in the immediate vicinity of the mine.

In terms of impacts on the physical environment, the main impacts are related to atmospheric emissions and the subsequent degradation of air quality, particularly for crystalline silica, and to the lowering of groundwater tables near the mining pit.

The positive effects of the project are essentially related to the social environment, in particular the strengthening of socio-economic conditions and the demographic vitality of the region's communities: creation of approximately 1,700 jobs, including 320 direct jobs, income in the form of taxes, retention of local labour, etc.

In conclusion, the implementation of the plans and measures recommended by the ESIA will adequately mitigate and manage the negative impacts of the project, and enhance the positive impacts of the project. The project, which aims to contribute to the development of electric transportation around the world, further offers a sustainable perspective to communities in the Eeyou-Istchee James Bay region.

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