

# ESIA METHODS

## Shaakichiuwaanaan Project



## What is an ESIA?

An **Environmental and Social Impact Assessment (ESIA)** is a process used to predict, understand and manage the potential effects a project may have on the environment and people.

The ESIA considers a number of different questions in order to rate potential impacts, including:

- The **nature** of the impact – is it a positive or negative change?
- The **value** of the affected resource to the ecosystem or people.
- The **degree of change** from the current conditions.
- The **extent** of the change – what area or how many people are affected?
- The **duration** of the change – will it be short-term, or will it last for a long time?

The **significance** of the impact combines the other factors as an overall rating.

## Study areas

The ESIA is built on a series of environmental and social baseline studies. These studies have been done by expert consultants over the last few years, to understand the local environment and communities.

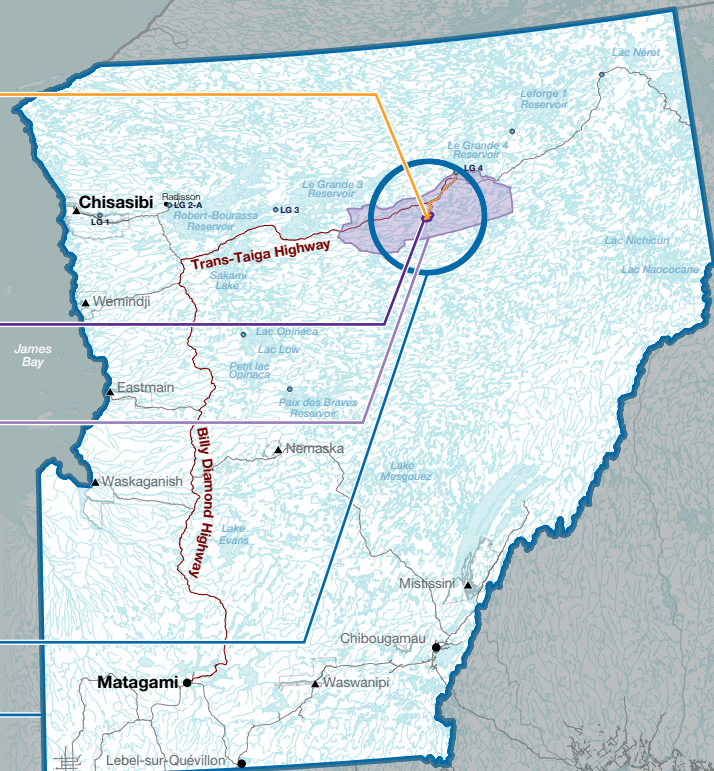
**The Project Area** is where most Project activities will take place. It includes a 25-m buffer around the planned mine site and access road.

**The Local Study Area** includes the lands immediately surrounding the mine site and key access roads.

- **Biophysical:** includes the zone within 3 km of the mine site and within 1 km of the access road and powerline.
- **Human environment:** includes the three traplines closest to the Project (CH39, VC26, and M02A).

**The Regional Study Area** looks more broadly at potential effects across Eeyou Istchee James Bay.

- **Biophysical:** includes a 50-km radius around the mine site.
- **Human environment:** includes the wider region of Eeyou Istchee James Bay.



# Mitigation and management measures

Mitigation and management measures are actions that PMET will take to:

- Avoid impacts where possible
- Reduce impacts that cannot be avoided
- Manage impacts over the life of the Project
- Enhance positive impacts

The overall goal of the ESIA is to minimize potential negative impacts on the environment and people.

## How to read the ESIA summaries

PMET has prepared a series of factsheets to explain the early findings of the ESIA.

These ESIA summaries are sharing early, draft results of the impact assessment. These results are not final. Some of the studies and models are still being completed, and PMET is seeking feedback from the community to refine the results.

**Significance:** indicates the “residual significance”, meaning the overall rating for the impact that is expected to remain *after* mitigation and management measures are in place.

### Minor Impact



A small change. You might notice it, but it will not affect the valued component in a serious way.

### Moderate Impact



A noticeable change. It may affect the valued component for a period of time, but the effects can be managed and are not

### Major Impact



A larger change. It could affect the valued component in an important way, and may be harder to reverse.

*The above examples focus on potential negative (“adverse”) impacts. Positive impacts (“benefits”) can be rated in the same way.*

**Extent:** indicates the area expected to be affected by the change, based on the ESIA Study Areas (see map on reverse page).

### Project Area



### Local



### Regional



**Duration:** indicates how long the change is expected to last.

### Short-term



Changes are temporary, lasting less than 2 years. They may occur during a specific phase of construction or early project activities and stop shortly after the activity ends.

### Medium-term



These changes may last for more than 2 years, but they are not permanent. For example, they may occur during mine operations but will not extend beyond closure.

### Long-term



Changes may continue beyond closure and restoration. These impacts may be permanent or harder to reverse.

# AIR QUALITY

## Shaakichiuwaanaan Project

Community members have shared concerns about dust, noise, and other emissions that could affect animals and plants, habitats and people when they are on the land.

## Potential impacts

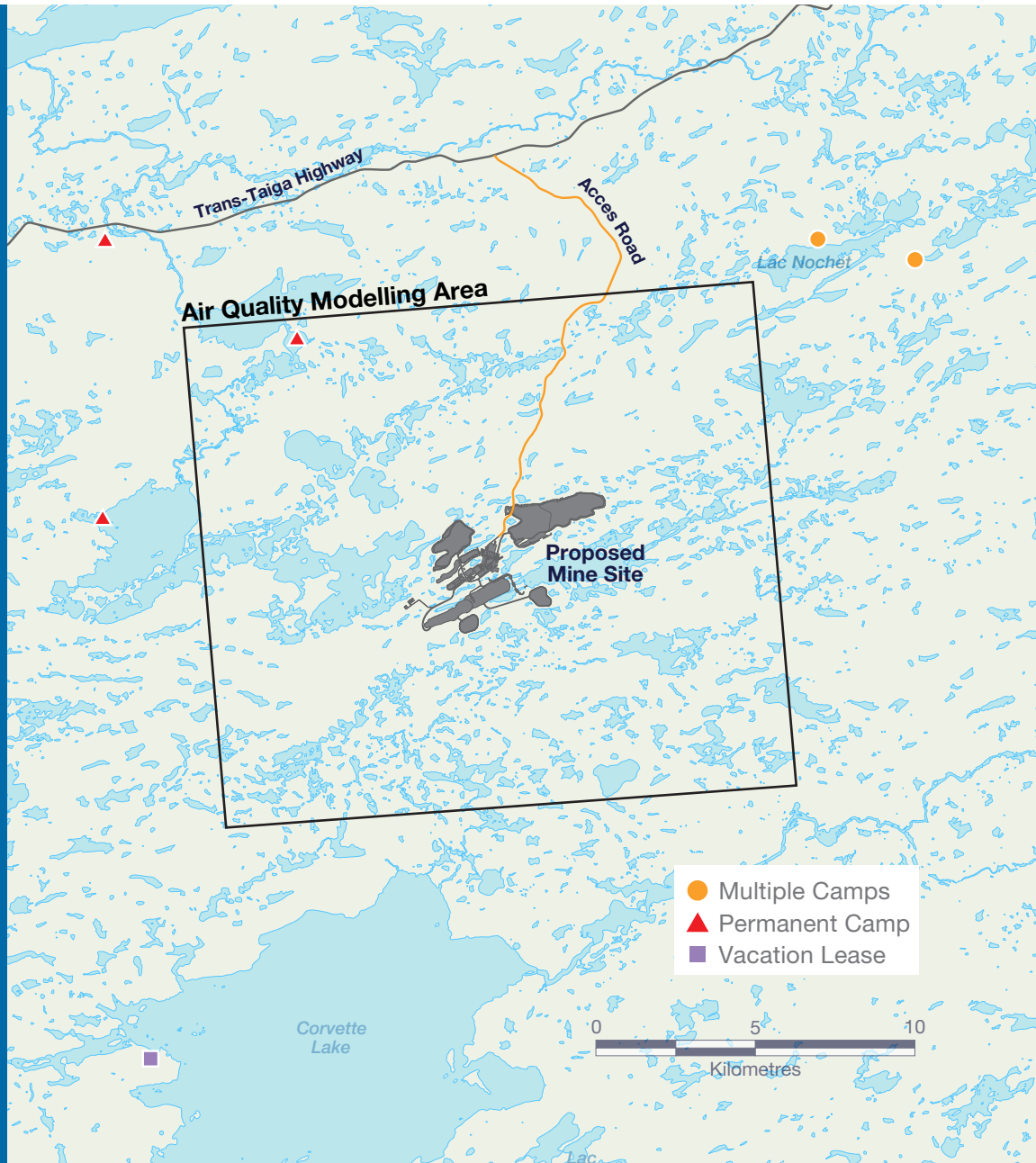
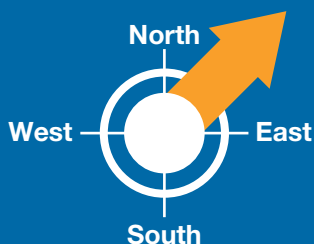


The Project could change air quality in nearby areas. Traffic on roads and activities at the mine site could **increase dust** levels close to the mine site and roads. **Other emissions** from vehicles and equipment could also affect local air quality.

PMET has used an air quality model to predict how emissions from future activities will affect air quality during operations. Five locations where people could be affected were added to represent different sensitive areas within the territory.

We have studied wind patterns at the site since 2018, and the wind usually blows from the southwest or west. Our modelling shows that impacts will not extend far from the mine site or access road. Air quality at local camps and cabins will not be affected.

### General Wind Direction





# How will PMET avoid and reduce impacts?

PMET has identified ways to minimize and manage potential impacts. Here are some examples:

## REDUCING DUST

- Develop a **dust management plan**.
- Enclose part of the rock crushing process within a building in order to **contain dust**.
- In snow-free seasons, use water and dust suppressants to **control dust** on roads and at the mine site.
- During the winter, keep areas of the mine site covered by **snow**, where possible.
- During the winter, use **gravel or sand** on roads, instead of chemical de-icers.



## REDUCING OTHER AIR EMISSIONS

- **Maintain vehicles and equipment** to reduce exhaust emissions.
- Connect the mine site to the **electrical grid**, avoiding the need for diesel generators.
- Use **electricity**, instead of diesel, to power underground mining equipment.



Example of a water-spraying truck used for dust control at a mine site.

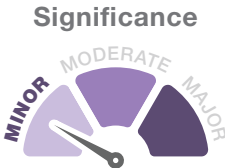
**WHAT CONTRIBUTES TO DUST LEVELS?**  
 A number of activities at the proposed mine site can produce dust, including:

- Blasting rock in the open pit
- Transferring rock from trucks to rock piles
- Crushing rock
- Traffic on roads
- Dust from the dry tailings facility, waste rock piles, and the ore processing plant.

# What will the residual impacts be?



**AIR QUALITY**  
 The Project is expected to have a **minor impact** on air quality, with small changes close to the mine site and road.



**SHARE YOUR THOUGHTS**



Community input is important to us! This assessment is preliminary and will be revised based on your input. Use the QR code to share your feedback.

# MIYUPIMAATISIUN

## Shaakichiuwaanaan Project

COMMUNITY  
WELLBEING

Community members have emphasized the importance of protecting miyupimaatisiun, including the holistic wellbeing of physical, mental and emotional health, wellness, and social and cultural life.

## Potential impacts



The Project could contribute to stress levels, wellbeing, and sense of safety for both community members and workers—particularly women.

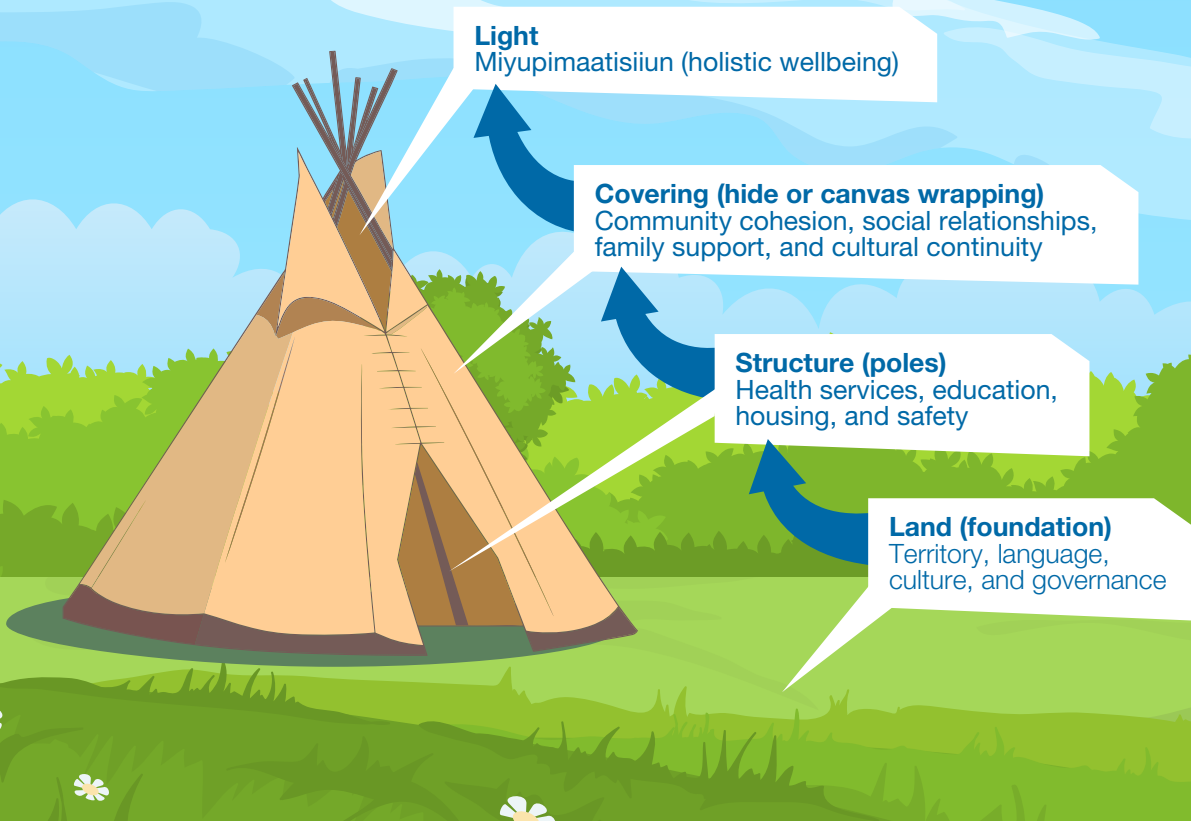


The Project could affect land use practices, community cohesion, and cultural activities, including time spent on the land and with family.



The Project could affect physical health of workers or community members. It could also exacerbate existing health issues and challenges with living conditions.

Miyupimaatisiun is founded in the core social determinants of health and wellbeing. Like a mitchuap, these elements combine to strengthen the Cree way of life.



# How will PMET avoid and reduce impacts?



PMET has identified ways to minimize and manage potential impacts. Here are some examples:

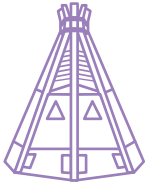
## MENTAL, EMOTIONAL AND PSYCHOSOCIAL WELLBEING

- Provide **psychosocial support services** for both Cree and non-Cree workers, including employee and family assistance programs.
- **Prevent harassment** in the workplace (and between workers and community members) and provide access to a safe and confidential reporting process.



## SOCIAL HEALTH, COMMUNITY COHESION AND CULTURAL WELLBEING

- Build a **Cree cultural space** where workers can gather and share their culture.
- Provide a **recreational centre** at the mine site, for socializing and activities.
- Ensure **communication tools** are available at the site so workers can stay connected to their families.



## PHYSICAL HEALTH AND LIVING CONDITIONS

- Maintain **ongoing dialogue** with Chisasibi and the Cree Board of Health to ensure workers' health needs are accommodated.
- Provide an **on-site medical clinic** with a nurse available to provide culturally appropriate primary care.



# What will the residual impacts be?



### MIYUPIMAATISIUN (WELLBEING)

Changes to Miyupimaatisiun can be experienced differently by different people. For some, the Project could have a **moderate impact** on Miyupimaatisiun.

Significance



Scale

REGIONAL



Duration

MEDIUM-TERM



SHARE YOUR THOUGHTS



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# WETLANDS AND WILDLIFE

## Shaakichiuwaanaan Project

Community members have expressed that wetlands, migratory bird areas, and wildlife habitats are essential for supporting hunting, trapping, and conservation of the Cree way of life.

### Potential impacts

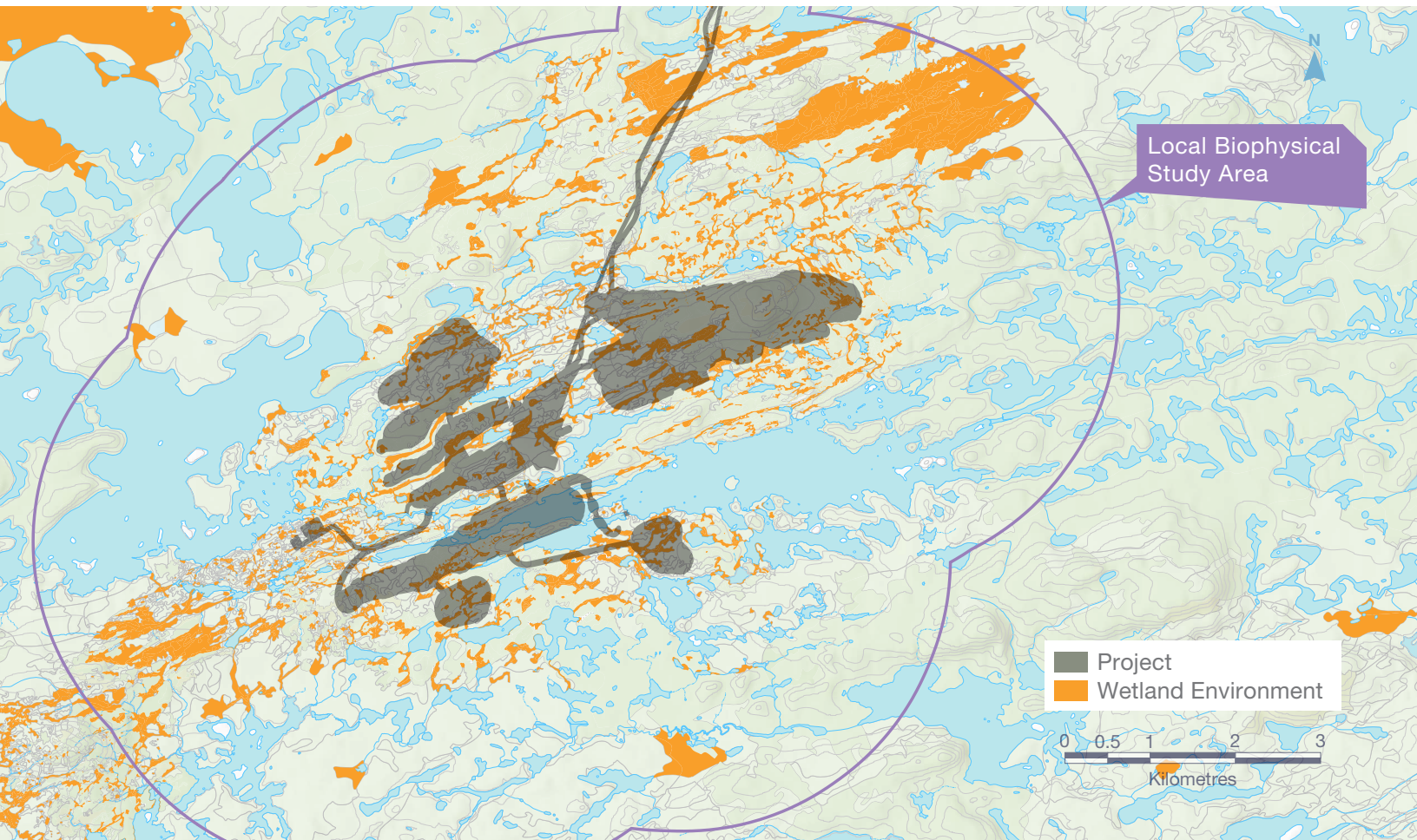


Construction of the mine site will result in the loss or disturbance of some areas of **wetlands and small water bodies**.



Increases in noise, traffic, and human activity may disturb **birds, mammals, and other wildlife**. Changes in the landscape could also affect the availability of habitat in some areas.

### Much of Eeyou Istchee is covered by wetlands and water bodies



### HOW CAN YOU HELP?

PMET is developing a compensation plan to offset impacts on wetlands. Let us know if you have an idea for a wetland restoration project in Eeyou Istchee!

# How will PMET avoid and reduce impacts?



PMET has identified ways to minimize and manage potential impacts. Here are some examples:

## REDUCING DISTURBANCE TO WETLANDS

- **Minimize the footprint** by using land that has already been cleared or disturbed, where possible.
- **Avoid working in wetlands** unless ground is frozen or water levels are low.
- **Replant** disturbed areas with local plant species to help the land recover naturally.
- **Protect natural vegetation** along streams, wetlands, and access roads to reduce erosion and maintain healthy habitats.



## PROTECTING BIRDS AND WILDLIFE

- Restore vegetation cover by promoting the growth of **native plant species** adapted to the local ecological conditions.
- Avoid clearing vegetation during **bird nesting seasons** to protect eggs and young birds.
- **Limit traffic speeds** to reduce noise and visual disturbance, lower the risk of vehicle-wildlife collisions, and allow animals to move safely across the landscape.

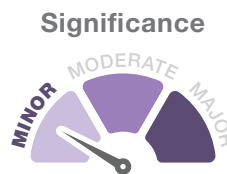
PMET is developing a compensation plan to offset impacts on wetlands. We are looking for local initiatives in Eeyou Istchee. If you have ideas for community projects, please let us know!

# What will the residual impacts be?



### WETLANDS

The Project is expected to have a **minor impact** on wetlands.



Scale  
**LOCAL**

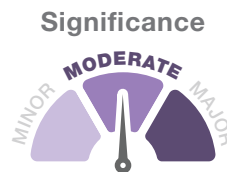


Duration  
**MEDIUM-TERM**



### BIRDS AND WILDLIFE

The Project could have a **moderate impact** on birds and wildlife.



Scale  
**REGIONAL**

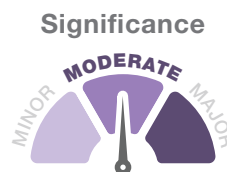


Duration  
**MEDIUM-TERM**



### SPECIES AT RISK

The Project could have a **moderate impact** on wildlife species with special conservation status.



Scale  
**LOCAL**



Duration  
**MEDIUM-TERM**



**SHARE YOUR THOUGHTS**



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# WATER QUALITY AND USE

## Shaakichiuwaanaan Project

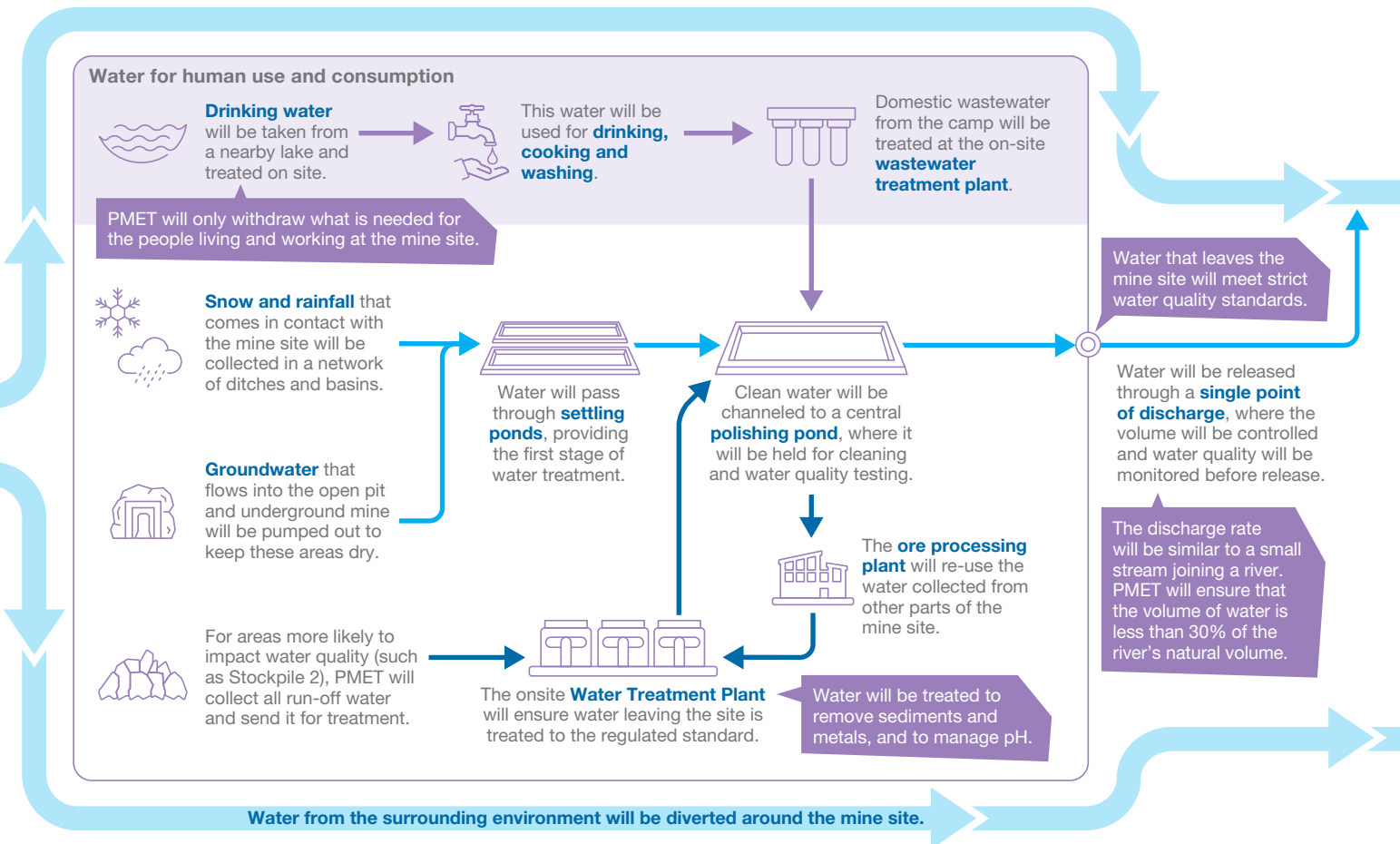
Cree land users have shared concerns about changes to lakes, streams, and water quality. Water is central to the Cree way of life.

## Potential impacts



Activities at the mine site could **change water quality**. All water from the mine site will be collected and treated before being returned to the environment.

### How is water collected and managed?

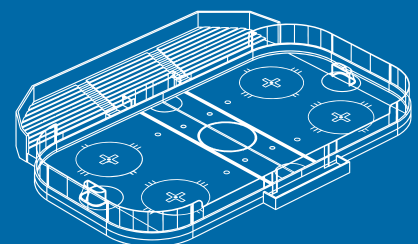


### HOW BIG ARE THE PONDS?

We want to be sure that the ponds are big enough to handle all the water in a way that is safe and protects the environment.

Each **settling pond** will be 235 m long, and nearly the size of 8 hockey rinks put together!

The **polishing pond** will be twice this size, with an area similar to 16 rinks.

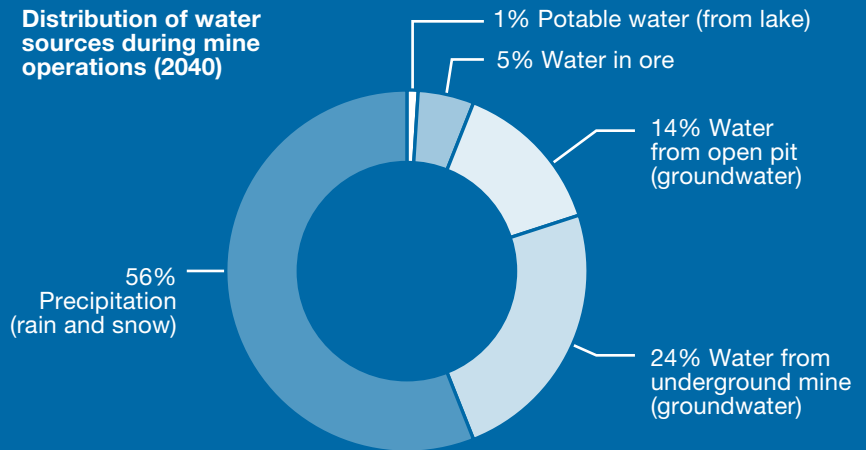


## DID YOU KNOW?

The only water taken from a lake will be water for domestic use—drinking, cooking, and washing. All other water used at the mine and in the process plant will come from rain or snow, and groundwater that naturally enters the mine.

Overall, the amount of water taken from the lake will be very small (1%) compared to the volume of water from other sources.

Distribution of water sources during mine operations (2040)



## How will PMET avoid and reduce impacts?



PMET has identified ways to minimize and manage potential impacts. Here are some examples:

### PROTECTING LAKES AND STREAMS

- Protect water bodies and wetlands by storing soil and snow piles at a **safe distance** from water.
- Keep **runoff water** away from streams and water bodies.
- **Restore** the banks of wetlands or water bodies if they are disturbed.

60 metres



### WATER QUALITY MONITORING

PMET will monitor water quality over the life of the mine, including testing the quality of water that is released back to the environment.

Our commitment to water quality does not stop at the end of operations. PMET's water monitoring program plans to continue testing water quality for approximately 20 years following mine closure (based on monitoring results).



## DID YOU KNOW?

The Shaakichiuwaanaan Project will use very little water compared to other lithium projects. During operations, around 1.3 cubic metres of water will be used for every tonne of ore.

## What will the residual impacts be?



### WATER QUALITY AND USE

The Project could have a **moderate impact** on water quality and use.

### Significance



### Scale

LOCAL



### Duration

MEDIUM-TERM



## SHARE YOUR THOUGHTS



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# FISH HABITAT AND HEALTH

## Shaakichiuwaanaan Project

Cree land users have shared concerns about changes to fish habitat and health. Fish is central to culture, food security, and the Cree way of life.

## Potential impacts



Building a mine could change the way that water flows through the environment, and the quality of water in the environment. These changes could affect fish habitat and fish health.

PMET will divert water from Shaakichiuwaanaan Anaadohyatch Lake so that it can continue downstream in the same watershed. Protecting fish and fish habitat will be a priority as we make this change.



### DID YOU KNOW?

As part of the Project, PMET will need to partially drain the Shaakichiuwaanaan Anaadohyatch lake. This lake is considered a low-productivity habitat, meaning it naturally has limited food available for the fish and supports only a small population.



Longnose Sucker  
ᐱᐃᐃᐃᐃᐃᐃ Mihkumaapii



Burbot  
ᐱᐃᐃᐃᐃᐃᐃ Miyaahkitui



Northern Pike  
ᐱᐃᐃᐃᐃᐃᐃ Chinushaau



Lake Trout  
ᐱᐃᐃᐃᐃᐃᐃ Kukimaau



Lake Whitefish  
ᐱᐃᐃᐃᐃᐃᐃ Atihkimaakw



White Sucker  
ᐱᐃᐃᐃᐃᐃᐃ Nimaapii



Allegheny Pearl Dace



Brook Trout  
ᐱᐃᐃᐃᐃᐃᐃ Maasimaakus

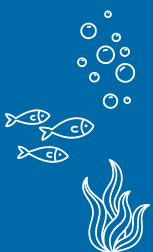


Round Whitefish

### AVOIDING IMPACTS THROUGH DESIGN

The footprint of the mine site has been carefully designed to minimize potential impacts on fish habitat including spawning grounds.

By considering the placement of each stockpile, and reducing the size of the open pit, we were able to avoid impacts on more than 100 hectares of fish habitat—therefore reducing the loss of habitat by around 65%. Overall, the Project will result in the direct loss of 57 hectares of fish habitat.

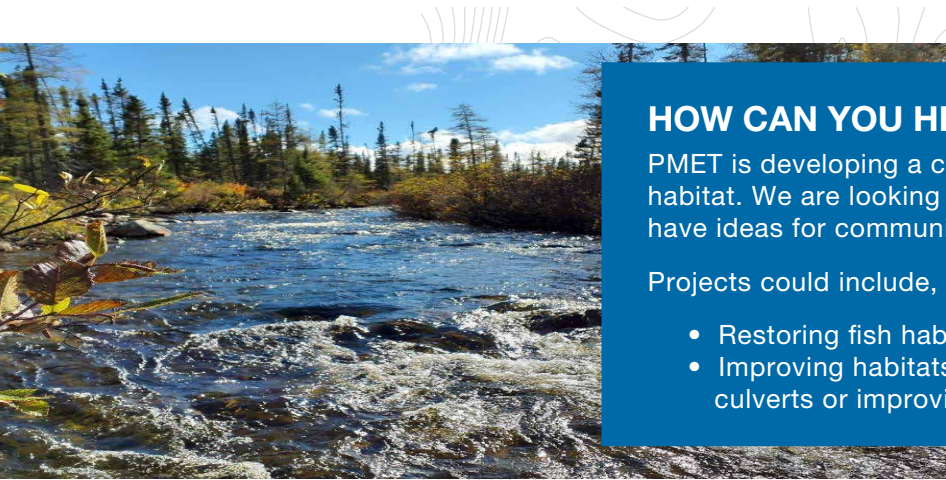


# How will PMET avoid and reduce impacts?

PMET has identified ways to minimize and manage potential impacts. Here are some examples:

## PROTECTING WATER FLOW AND FISH HABITAT

- **Minimize the footprint** of the Project. By using hybrid mining methods, the open pit is now about half the size of the original design.
- Design surface infrastructure to **avoid impacts on fish spawning grounds**, and avoid working in water during spawning season.
- **Control the spread of sediments** in water by confining in-water work areas and, where possible, working in frozen conditions or during low-flow periods.
- Build the **diversion channel** in a way that provides good quality fish habitat, including pools, riffles, and shelter for fish and other species.
- **Relocate fish** from affected parts of Shaakichiuwaanaan Anaadohyatch Lake before those areas are drained.



### HOW CAN YOU HELP?

PMET is developing a compensation plan to offset impacts on fish habitat. We are looking for local initiatives in Eeyou Istchee. If you have ideas for community projects, please let us know!

Projects could include, for example:

- Restoring fish habitat in abandoned sand pits or other sites
- Improving habitats and access for fish, such as unblocking culverts or improving spawning areas

## What will the residual impacts be?



### WATER FLOW

The Project is expected to have a **minor impact** on the way that water flows and moves through the environment.

### Significance



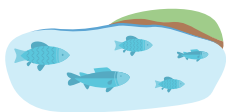
### Scale

**LOCAL**



### Duration

**MEDIUM-TERM**



### FISH AND HABITAT

The Project could have a **moderate impact** on fish habitat, including the loss of habitat to build the open pit and other infrastructure.

### Significance



### Scale

**LOCAL**



### Duration

**LONG-TERM**



**SHARE YOUR THOUGHTS**



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# TRADITIONAL ACTIVITIES

## Shaakichiuwaanaan Project

Community members have expressed the importance of protecting traplines, harvesting areas, family cabins and camps, and continued access to the territory.

## Potential impacts



Wildlife may avoid the Project area due to noise and human activity, which could affect **hunting and trapping** near the mine site. There could also be increased pressure on wildlife resources due to improved road access for hunters and trappers.



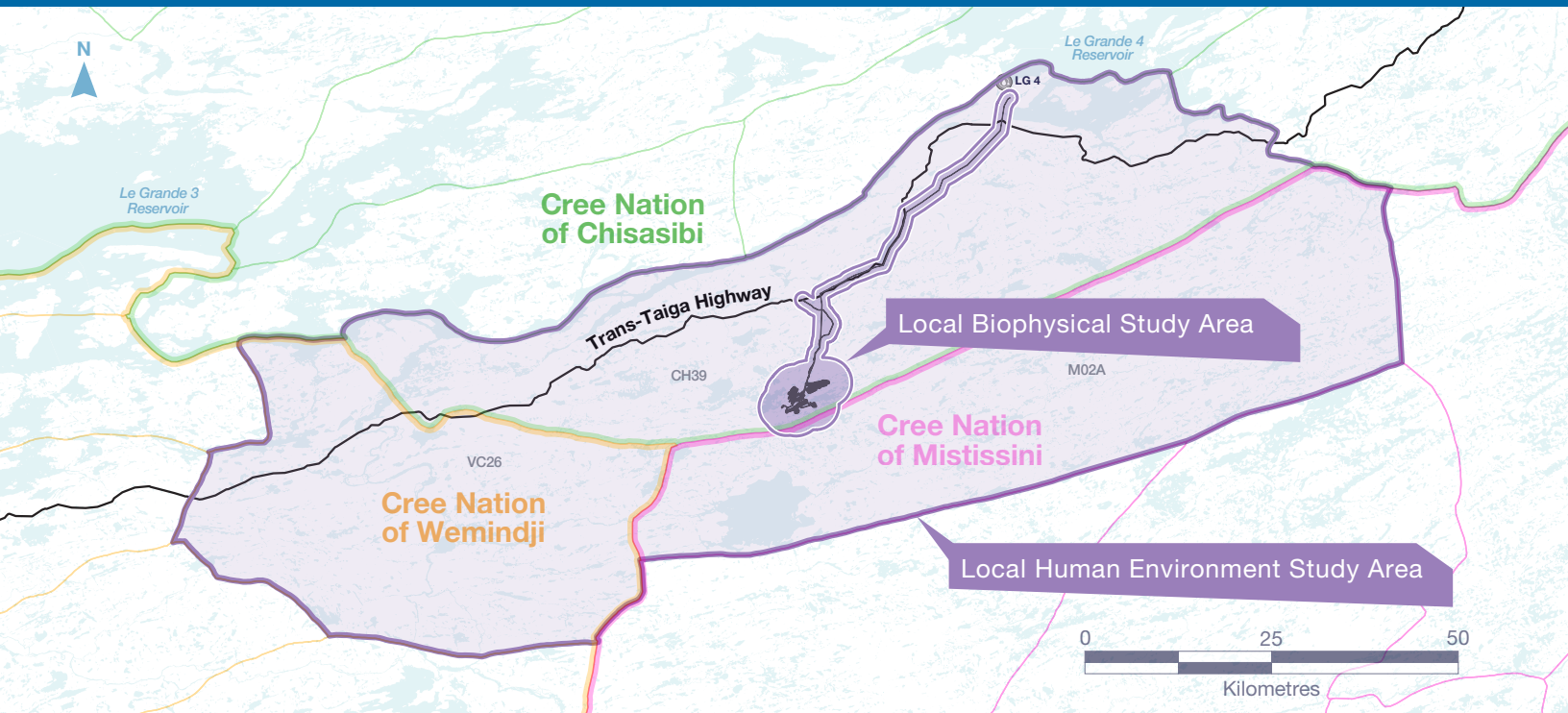
Project activities may change access to some **fishing and harvesting** areas, or the quality of fish or plant harvests.



Environmental changes near the mine site could affect how people feel when they are on the land, including their **sense of wellbeing** and connection to the Cree way of life.

## PLANNING FOR LIFE AFTER MINING

Although still in early stages, PMET is already planning for closure, including how lands and waterways will be restored. The goal of closure planning is to return the site to a safe, healthy, and sustainable condition.



## HOW CAN YOU HELP?

Community input is an important part of closure planning. We would love to hear what you think is needed for PMET to support long-term and sustainable steward of the land, and how we can partner with the Cree Nation of Chisasibi to plan for closure of the mine.



# How will PMET avoid and reduce impacts?

PMET has identified ways to minimize and manage potential impacts. Here are some examples:

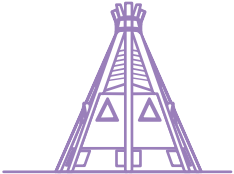
## PROTECTING TRAPLINES AND HARVESTING

- Maintain **safe access** to traplines, travel routes, and harvesting sites, and notify land users if there are changes.
- **Minimize environmental disturbance** and replant affected areas with local plant species.
- At the mine site, use **downward-facing lights** to avoid impacts on the sky.



## RESPECTING CREE CULTURE AND LAND USE

- Build a **Cree cultural space** where workers can gather, cook, and share stories.
- **Train workers** on wildlife management, and build awareness of Cree culture and land use.
- **Prohibit workers** from hunting or fishing while at the site.



## FORUMS TO SUPPORT CREE PARTICIPATION AND OVERSIGHT

- Establish an **Environmental Monitoring Committee** to discuss concerns, monitor the project, and identify solutions through all phases of the mine.
- Establish an **Economic Opportunities, Training, and Employment Committee** to support Cree employment, training, and business development.



# What will the residual impacts be?



### HUNTING AND TRAPPING

The Project is expected to have a **moderate impact** on hunting and trapping.

#### Significance



#### Scale



#### Duration



### FISHING AND HARVESTING

The Project may have a **minor impact** on fishing and other harvesting.

#### Significance



#### Scale



#### Duration



### WELLBEING ON THE LAND

Impacts on wellbeing may vary depending on the person and location. However, considering all other impacts, the Project could have a **moderate impact** on Cree wellbeing on the land.

#### Significance



#### Scale



#### Duration



## SHARE YOUR THOUGHTS



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## JOBS AND TRANSPORTATION

### Shaakichiuwaanaan Project

Community members have asked for clear information about employment opportunities and economic benefits, as well as potential impacts on road safety.

## Potential impacts



New jobs and business opportunities from the Project are expected to support **local economic development**.



Increased heavy traffic on the Billy Diamond and Trans-Taiga highways could lead to increased **road safety risks** for other road users (and wildlife).

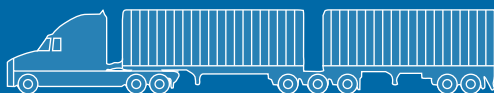
Chisasibi is the nearest community to the Shaakichiuwaanaan Project. The proposed mine site is about a 5-hour drive from Chisasibi, travelling east on the Trans-Taiga Highway.

An access road will connect the mine site to the Trans-Taiga Highway.

Large trucks will carry concentrate from the mine site to Matagami, where it will be transferred to trains.

During operations, there will be approximately 30 full trucks leaving the mine site each day, and 30 empty trucks returning from Matagami.

A one-way trip is 844 km and will require at least 11 hours of driving.



## DID YOU KNOW?

The trucks transporting the spodumene concentrate will consist of two covered trailers with a total capacity of 75 tonnes.

# How will PMET avoid and reduce impacts?



PMET has identified ways to minimize and manage potential impacts. Here are some examples:

## BUILDING LOCAL ECONOMIC OPPORTUNITIES

- Design **procurement practices** to support Cree businesses and suppliers.
- Prioritize **local hiring** in alignment with PMET policies
- Participate in **training programs** with local institutions.
- Hold regular **job-information sessions** in Chisasibi to share updates and opportunities.



## SUPPORTING CREE PARTICIPATION AND OVERSIGHT

- Establish an **Economic Opportunities, Training, and Employment Committee** to support Cree employment, training, and business development.



## OPERATING SAFETY ON THE ROAD

- Collaborate with regional partners to develop a **transportation and traffic management plan**.
- Install **speed-control devices** on project vehicles and trucks.
- Clearly mark areas where **wildlife crossings** are most likely.



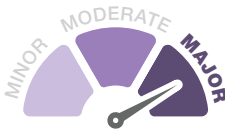
# What will the residual impacts be?



### ECONOMIC OPPORTUNITIES

The Project is expected to have a **major and positive impact** on economic activities, including jobs and business opportunities for the Cree Nation of Chisasibi.

#### Significance



#### Scale



#### Duration



### ROAD SAFETY

With increased traffic on the Trans-Taiga and Billy Diamond highways, the Project could have a **moderate impact** on road safety.

#### Significance



#### Scale



#### Duration



**SHARE YOUR THOUGHTS**



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