

OSISKO MINING INC.

# WINDFALL LAKE MINE PROJECT

PROJECT DESCRIPTION | **SUMMARY**

WINDFALL LAKE PROPERTY

Project No.: 151-11330-26

JUNE 2017





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Osisko Mining Inc.

Project No.: 151-11330-26  
June 2017

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# 1 GENERAL INFORMATION

This document contains preliminary description requirements of the Canadian Environmental Assessment Agency (“CEEA”) as set out in the *Prescribed Information for the Description of a Designated Project Regulations* (SOR/2012-148).

Osisko Mining Inc. (“OSISKO”), a company focused on the exploration and development of precious metal resource properties in Canada, proposes to develop a new gold mine in the James Bay territory, extracting ore at a rate of 1,900 metric tons per day (tpd). Mining will be conducted underground with access to the ore provided by two ramps.

The name of the project is the “**Windfall Lake Mine Project**”.

The Windfall Lake Mine Project is a proposed underground gold mine, processing plant and associated facilities belonging to Eagle Hill, a wholly owned subsidiary of OSISKO.

**Table 1-1 Proponent**

Name of the proponent	Eagle Hill, a wholly owned subsidiary of Osisko Mining Inc.
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Person in charge of the project	Alexandra Drapack, P.Eng., MBA, PMP Vice-President Environment Services and Sustainable Development <a href="mailto:adrapack@osiskominig.com">adrapack@osiskominig.com</a>
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Website	<a href="http://www.osiskominig.com">www.osiskominig.com</a>
Québec business number (NEQ) in the <i>Registraire des entreprises du Québec</i>	1172033616

The mandate to produce the present preliminary information on the project and an environmental impact assessment (“EIA”) was entrusted to WSP Canada Inc. (“WSP”).

Person in charge of the project: Ms. Vanessa Millette, M.Sc.  
Project Manager  
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## 2 APPLICABLE LEGAL AND REGULATORY FRAMEWORK

### 2.1 FEDERAL PROCESS

In Canada, the Windfall Lake project, pursuant to section 16(c) of the *Regulations Designating Physical Activities* (SOR/2012-147): the construction of a new gold mine with an ore production capacity of 600 tpd or more is subject to screening under the *Canadian Environmental Assessment Act* (CEAA, SC 2012, c.19, s.52). The CEAA will act as the responsible authority for the application of the federal environmental process. This document is a description of the project within the meaning of section 8(1) of the CEAA and the *Prescribed Information for the Description of a Designated Project Regulations* (SOR/2012-148), subject to public consultation and prior screening. Under this process, the CEAA decides whether or not a comprehensive federal environmental assessment of the project is required.

Depending on the selected method of explosives management, either in situ or at an existing facility outside the mine site, an Explosives Factory Licence from Natural Resources Canada may be required under the *Explosives Act*. In addition, a Transport Canada permit under the *Transportation of Dangerous Goods Regulations* may also be required. Finally, the Windfall Lake Project will also be subject to the *Canadian Environmental Protection Act*, a declaration to the National Pollutant Release Inventory ("NPRI"), the *Species at Risk Act*, the *Migratory Birds Convention Act of 1994*, the *Metal Mining Effluent Regulations*, the *Environmental Emergency Regulations*, and an authorization to store and handle chemicals.

### 2.1 PROVINCIAL PROCESS

The Windfall Lake mineral deposit is located on territory governed by the *James Bay and Northern Quebec Agreement* (JBNQA). Therefore, the proponent is obliged to follow the environmental impact assessment and review process as described in the *Regulation respecting the environmental and social impact assessment and review procedure applicable to the territory of James Bay and Northern Québec* (Q-2, r.25). All mining projects located in this territory are subject to the *Environment Quality Act* and the JBNQA.

For the processing plant, two options are being studied: 1) installation on the Windfall Lake mine site, therefore on JBNQA territory, or 2) installation in an area to the east of Lebel-sur-Quévillon. If option 1 is selected, the process described above will apply. If option 2 is selected, the underground mine and associated facilities at the Windfall Lake site will be subject to an impact assessment, whereas the processing plant will require an application for authorization under section 22.

No regional environmental studies are reported in this sector.



### 3 PROJECT INFORMATION

The main objective of mining operations at Windfall Lake will be to extract gold ore and concentrate it at a processing plant located on the mine site or in an area 11 kilometres southeast of the town of Lebel-sur-Quévillon in Eeyou Istchee James Bay territory. Mill throughput at the Windfall Lake ore processing plant will be approximately 1,900 metric tons per day.

The project is situated north of the 49<sup>th</sup> parallel in the Nord-du-Québec administrative region, in Eeyou Istchee James Bay territory, on Category III lands.

The mine site is roughly 285 km from the city of Val-d'Or and 115 km east of the town of Lebel-sur-Quévillon, a region known for its gold, copper and zinc deposits. The ore processing plant would be located onsite or 11 kilometres southeast of the municipality of Lebel-sur-Quévillon in Eeyou Istchee James Bay territory. Discussions are underway with various stakeholders. Map 1 shows the possible locations for the mine and related infrastructure.

The geographic coordinates for the planned mine area and the potential plant site are as follows:

**Table 3-1 Geographic Coordinates for the Mine and Plant**

Mine Area	Potential Plant Site at Lebel-sur-Quévillon
49° 04' 10" North	49° 00' 43" North
75° 39' 14" West	76° 51' 37" West

#### 3.1 LAND OWNERSHIP

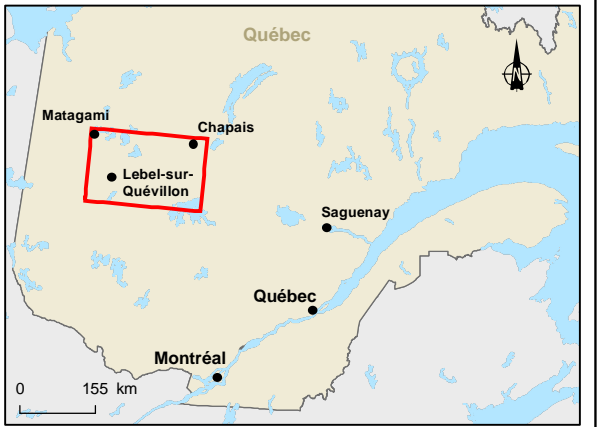
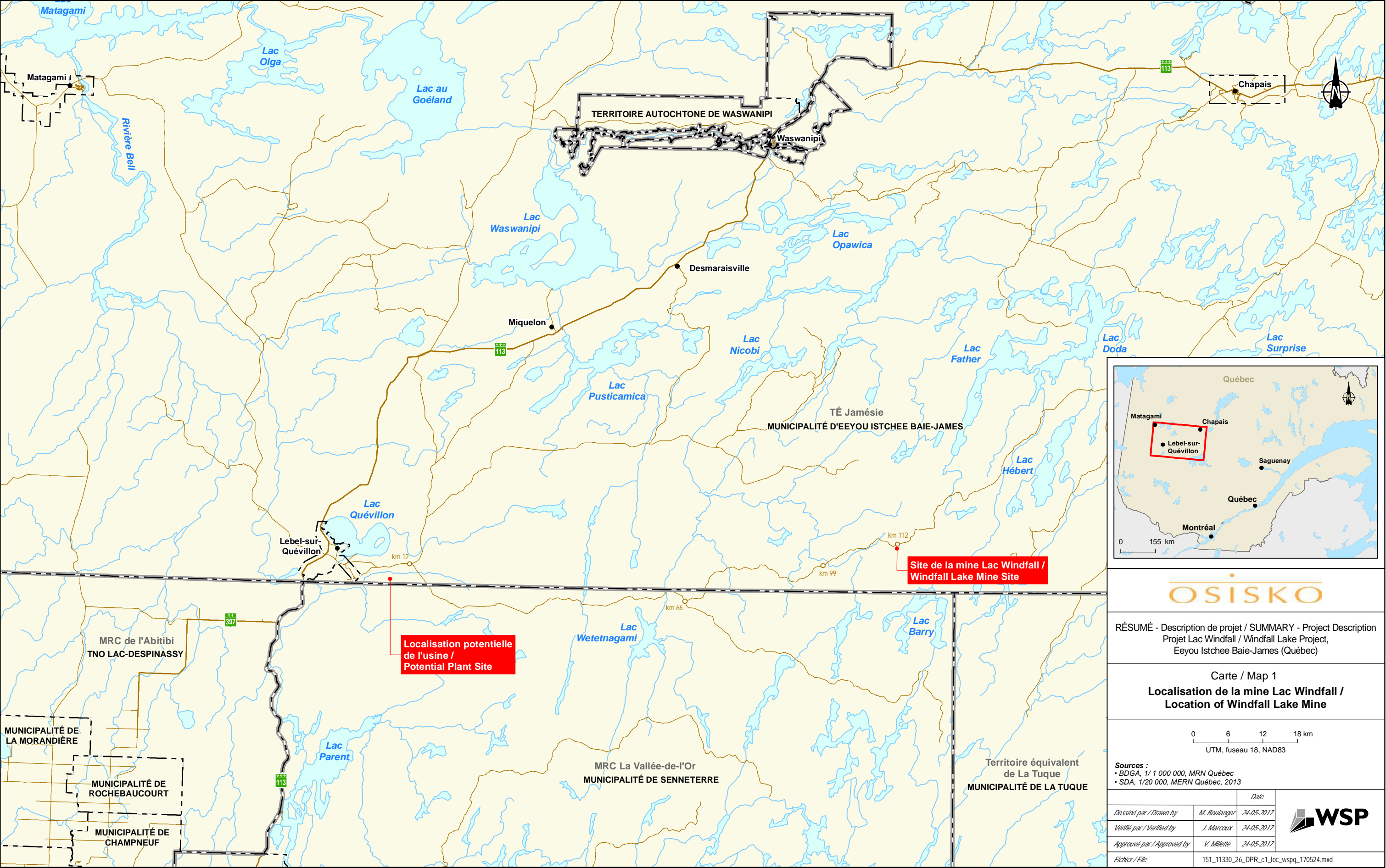
The study area for the mine and the potential location of the processing plant located southeast of Lebel-sur-Quévillon is entirely located on Crown land. No federal land is found within the Windfall Lake project area.

#### 3.2 MINERAL EXPLORATION RIGHTS

The Windfall Lake Project comprises 285 contiguous mining claims covering an area of 12,400 ha. The claims are held 100% by Eagle Hill. Other claims, also belonging to Osisko, are found in the potential area of the ore processing plant, southeast of Lebel-sur-Quévillon.







OSISKO

RÉSUMÉ - Description de projet / SUMMARY - Project Description  
Projet Lac Windfall / Windfall Lake Project,  
Eeyou Istchee Baie-James (Québec)

Carte / Map 1  
Localisation de la mine Lac Windfall /  
Location of Windfall Lake Mine

0 6 12 18 km  
UTM, fuseau 18, NAD83

Sources :  
• BDGA, 1/1 000 000, MRN Québec  
• SDA, 1/20 000, MERN Québec, 2013

		Date
Dessiné par / Drawn by	M. Boulanger	24-05-2017
Vérifié par / Verified by	J. Marcoux	24-05-2017
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## 4 DESCRIPTION OF THE WINDFALL LAKE PROJECT

### 4.1 EXISTING INFRASTRUCTURE

Several infrastructure components are still present on the mine site from past mining operations. These include a waste rock stockpile and two other lined stockpiles (one for ore and the other for waste rock). Also present are a ramp portal dating back to 2008, a sedimentation pond, a polishing pond and an overburden stockpile.

Further south is the Windfall exploration camp, which can accommodate 300 people.

### 4.2 GENERAL DESCRIPTION OF THE PROJECT

The Windfall Lake Project is situated in an area with a lake of the same name, roughly 115 kilometres from Lebel-sur-Quévillon. Access is afforded by forest roads 1000 (at km 12), 5000 (at km 66) and 6000 (at km 112).

The proposed Windfall Lake Project is an underground mine which will be accessed by two ramps. Ore will be extracted via drifts using conventional drilling (longhole), blasting, loading and hauling methods. The processing plant will have a capacity of roughly 1,900 tpd and the life-of-mine will be approximately 10 years.

To summarize, the main components of the Windfall Lake Project are as follows:

#### WINDFALL LAKE MINE SITE

- An underground mine served by two ramps; roughly 6.8 Mt of ore and 1.4 Mt of waste rock will be extracted from the mine;
  - A new production ramp;
  - The existing ramp (2008) will be used as an emergency exit and for auxiliary services;
- A waste rock stockpile with a capacity of approximately 1.4 Mt of rock;<sup>1</sup>
- An overburden stockpile with a capacity of approximately 500,000 m<sup>3</sup>;
- An ore storage area<sup>1</sup> with a capacity of approximately 10,000 tonnes;
- Water management structures for mine water and contact water (ditches, ponds);
- A water treatment plant;
- A warehouse and a maintenance garage;
- An explosive storage area and a storage site for petroleum products;
- A backfill preparation plant;
- A primary ventilation system located underground;

<sup>1</sup> The findings of geochemical studies will determine the acid-generating and leaching potential of the different lithologies (waste rock and ore). Once this information is known, it will be possible to establish the layout and footprint of the stockpiles in a manner that ensures surface and groundwater protection.

- A set of diesel generators (three units: two in operation, one on stand-by) of roughly 2.1 MW each if the plant is southeast of Lebel-sur-Quévillon, or a set of diesel generators or liquefied natural gas generators of ~25 MW if the plant is in the mine area;
- Camp accommodations for employees;
- An administration building with a dry;
- A guardhouse and parking lot.

#### PROCESSING PLANT, LOCATED AT LABEL-SUR-QUÉVILLON OR THE MINE SITE

- An ore processing plant;
- An ore storage area with a capacity of approximately 10,000 tonnes;
- An overburden stockpile with a capacity of approximately 250,000 m<sup>3</sup>;
- A tailings management facility with a capacity of 6.8 Mt of tailings;
- A water intake;
- Water management structures for tailings water and contact water (ditches, ponds);
- A water treatment plant;<sup>2</sup>
- Mechanical maintenance workshop;<sup>2</sup>
- An electrical transformer station connected to the Hydro-Québec grid;<sup>3</sup>
- A 100-km power line;
- Administration buildings<sup>2</sup> and a laboratory.

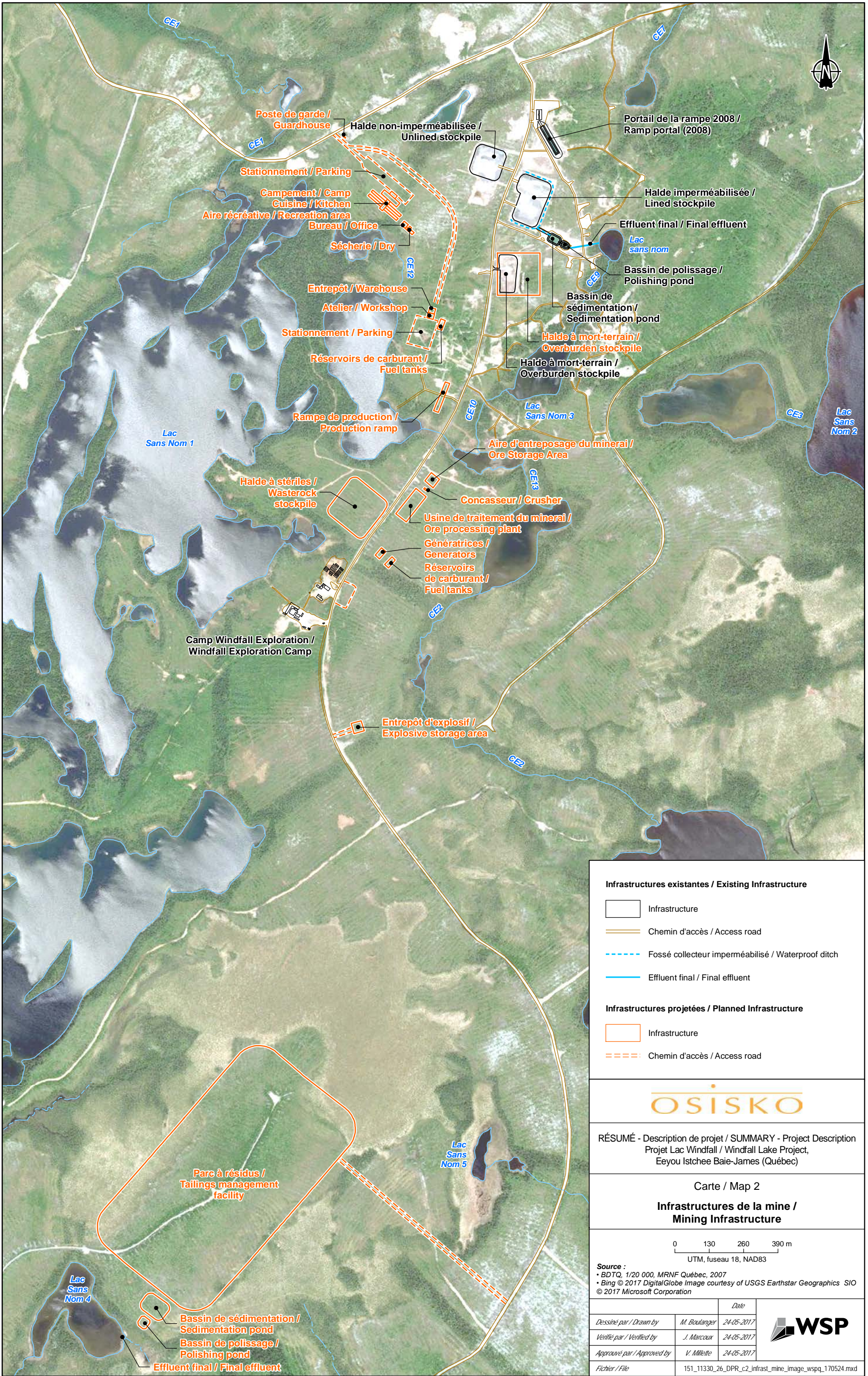
In the event the ore processing plant is located southeast of Lebel-sur-Quévillon, ore will be hauled by trucks from the mine to the processing plant (104 km) along existing forestry roads.

Map 2 shows the Windfall Lake mine infrastructure for the case in which the concentrator is located onsite, and Map 3 shows the infrastructure if it is located near Lebel-sur-Quévillon.

<sup>2</sup> This facility is necessary only if the ore processing plant is located 11 kilometres southeast of Lebel-sur-Quévillon. If the processing plant is at the mine site, this facility will be shared.

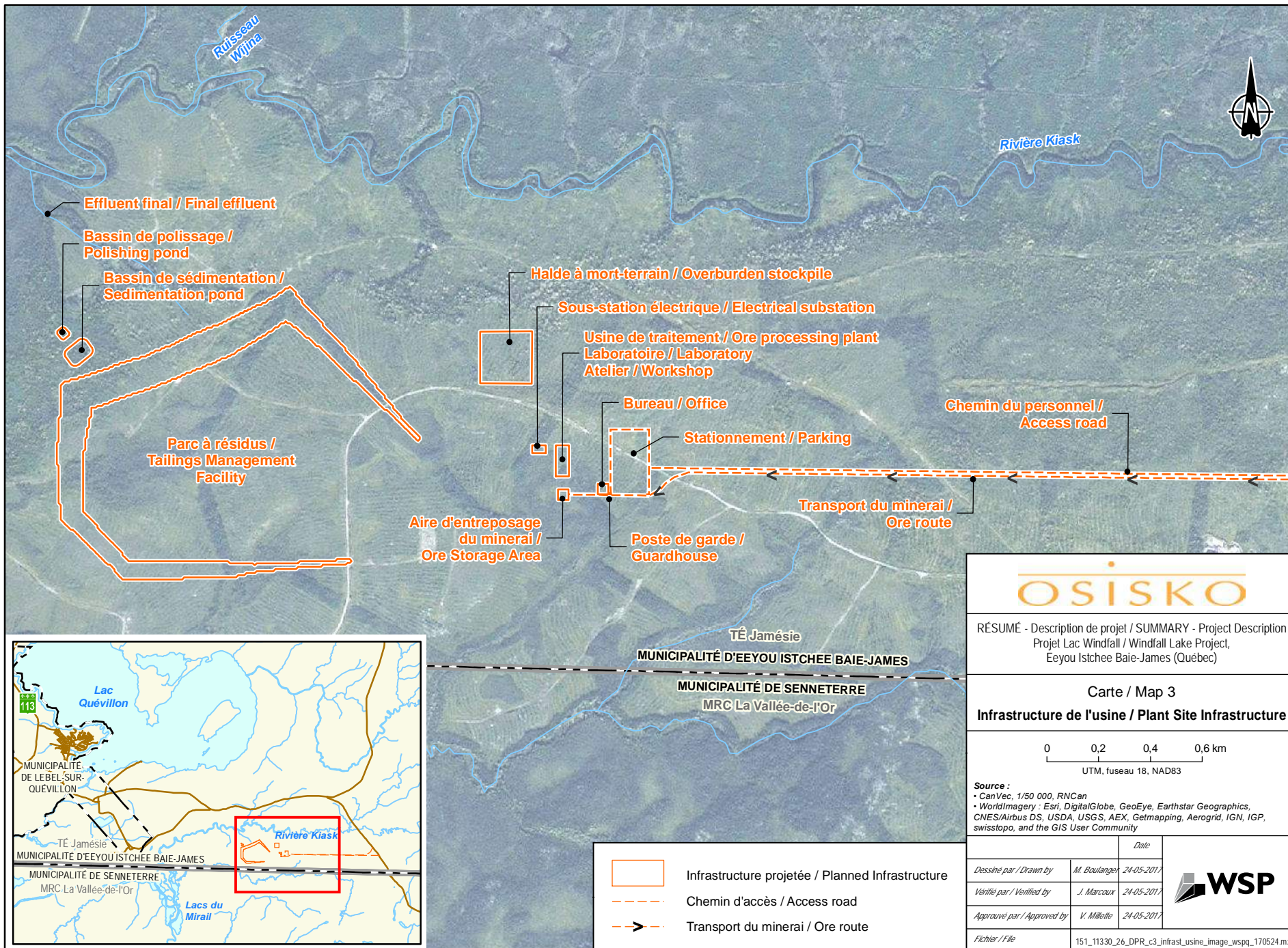
<sup>3</sup> Only if the ore processing plant is located 11 kilometres southeast of Lebel-sur-Quévillon.















### 4.3 MINE OPERATING SCENARIOS

According to the latest drilling results, the scenario retained is as follows: the underground mine will have a mill throughput of 1,900 tpd over a 10-year life span for a total production of 6.8 Mt of ore.

Although it is typical to set up the ore processing plant at the mine site, several major benefits prompted OSISKO to consider building it 11 kilometres southeast of Lebel-sur-Quévillon. The motivating factors include the proximity of an electrical substation, which would avoid the use of generators or the construction of a power line greater than 100 kilometres in length, and the presence of a nearby labour force.

Whether the processing plant is located at the mine site or near Lebel-sur-Quévillon, OSISKO will study different potential sites for the tailings management facility as well as different methods of tailings deposition (e.g., slurry, thickened tailings, paste tailings or filtered tailings). The evaluation of these options will ensure the most advantageous site and deposition method in terms of social, environmental, technical and economic considerations.

### 4.4 MINERALIZATION, RESOURCES AND RESERVES

A mineral resource update completed by SRK (Canada) in November 2014 estimated 748,000 ounces of gold at a grade of 8.42 g/t gold in the indicated category, and 860,000 ounces of gold at a grade of 7.62 g/t gold in the inferred category.

### 4.5 ORE EXTRACTION

The total mining rate (ore and waste rock) will range between 2,400 tpd and 3,200 tpd, which will ensure a daily production of 1,900 tonnes of ore. The throughput for the processing plant will be 1,900 tpd.

The deposit will be mined using underground mining methods with the possibility of two to three micro pits. The mine plan envisions the extraction of 6.8 Mt of ore and 1.4 Mt of waste rock over a life-of-mine of 10 years.

The ramp system, with an average grade of 15 %, will allow mining operations to reach the deepest part of the deposit and extract the rock. Scooptrams and trucks will be used to load the ore and waste rock. If mining includes micro pits, conventional mining methods will be used (drilling and blasting). Further details will be provided in the EIA.

If the processing plant is located at the Windfall mine site, some or all of the tailings will be used as paste backfill. On the other hand, if the processing plant is near Lebel-sur-Quévillon, then waste rock, to which cement will be added, will serve as the primary source of backfill. Another alternative that will be evaluated is to truck the tailings from the processing plant near Lebel-sur-Quévillon to the mine site to supplement the cemented waste rock as backfill.

## 4.6 STORAGE AREAS

Overburden removed during stripping operations to prepare the ground for construction will be piled in dedicated areas on the mine site for later use during rehabilitation work.

Waste rock generated during ramp and drift development will be stored in a stockpile and managed in a way that minimizes environmental impacts while taking into account technical and financial considerations. The geochemical characteristics of the waste rock will also determine how the stockpile will be managed in order to ensure surface water and groundwater protection. The stockpile will be located near the ramp portal and could accommodate a total of 1.4 Mt of rock.

If the plant site is located in the area of Lebel-sur-Quévillon, the ore will be temporarily stored in a stockpile near the ramp portal before being loaded into trucks and hauled to the ore processing plant. If the plant site is located in the area mine, the ore will be transported directly to a stockpile near the plant before processing.

## 4.7 ORE TRANSPORT

If locating the ore processing plant 11 kilometres southeast of Lebel-sur-Quévillon is chosen as the preferred option, the ore will be hauled by 75 to 90-tonne trucks from the mine site to the plant. The roads currently comply with ore haulage requirements, except for a bridge that will need to be enlarged (Map 4).

## 4.8 ORE PROCESSING

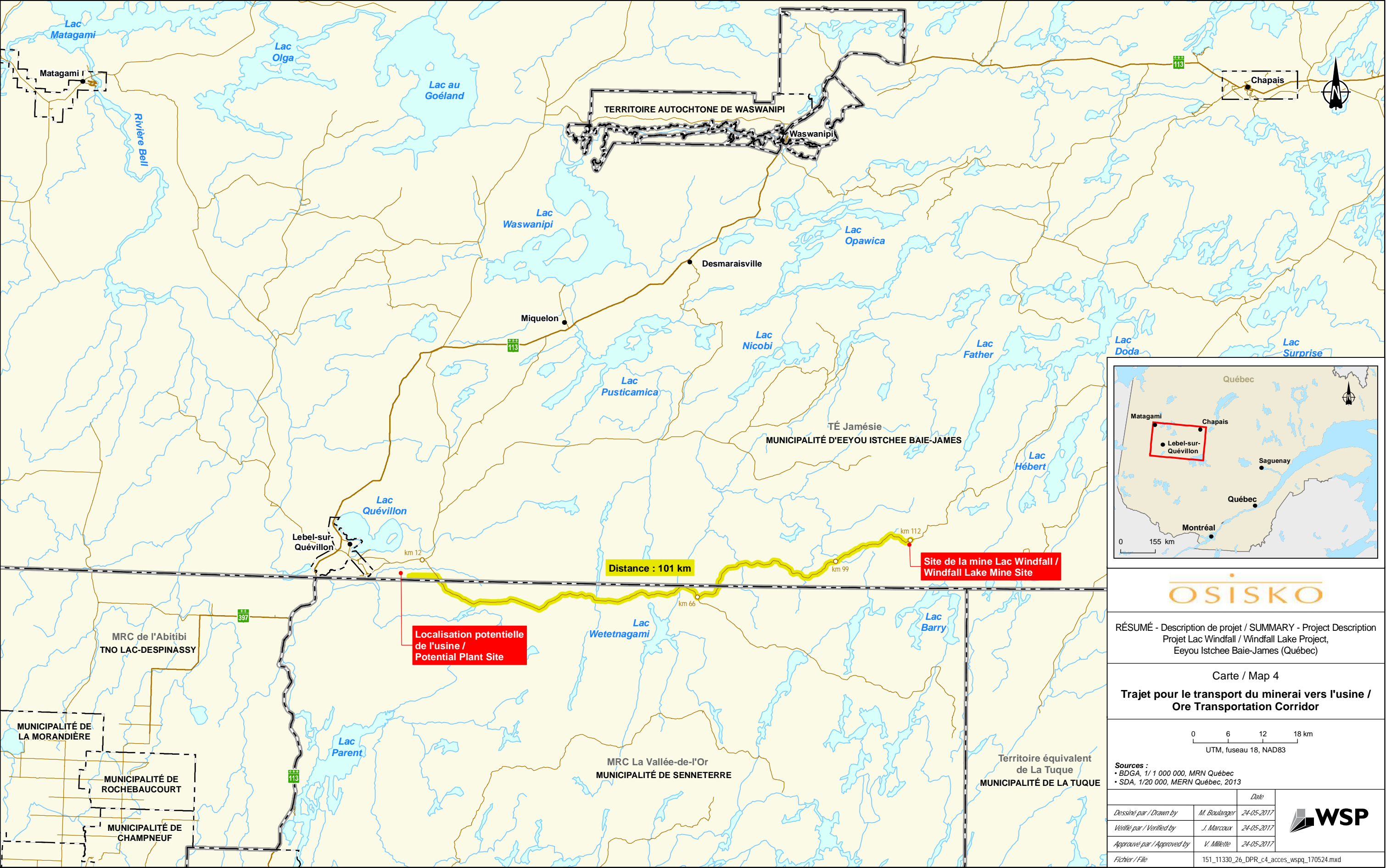
The ore processing plant will be modular, installed in an area roughly 11 kilometres southeast of Lebel-sur-Quévillon or at the mine site itself. The plant will have a processing capacity of 1,900 tpd of ore and an availability factor of 92 %.

The preliminary ore process flowsheet consists of primary crushing followed by conventional grinding. The milled ore then enters a gravity circuit. The gravity circuit concentrate is sent to an intensive leaching circuit using a cyanide solution followed by electrolysis where gold is recovered and poured in doré bars.

The concentrate and the rejects of the flotation circuit are both submitted to leaching using a cyanide solution. The resulting pulp goes through a CIP (carbon-in-pulp) circuit to recover the gold. The carbon charged with gold is then sent to carbon stripping followed by the electrolysis circuit. The gold sludge generated by electrolysis is finally melted and poured in doré bars. The preliminary recovery estimate is 96% of the gold contained in the ore.

The processing plant will include intermediate pulp thickening steps in order to maximise water reuse. Also, the rejects of the carbon-in-pulp circuit will go through a cyanide destruction treatment before going to the tailings management facility. At the end of the ore treatment process, around 6.8 Mt of tailings will be produced over the life-of-mine.

The principal reagents will be lime, a collector, a frothing agent, sodium cyanide, sodium hydroxide (caustic soda), sodium metabisulphite, hydrochloric acid, copper sulphate, a flocculant, calcium carbonate, and several others.





## 4.9 TAILINGS MANAGEMENT FACILITY

The total quantity of tailings will be 6.8 Mt for a volume of approximately 4.5 Mm<sup>3</sup>. The selected management method and the geochemical characteristics of the tailings will guide the design of the confinement and water management structures in order to optimize the technical and financial aspects while minimizing the environmental impacts and ensuring the protection of groundwater.

### 4.10 WATER MANAGEMENT

Water management will consist of ditches and ponds that will collect contact water. Where possible and whenever advantageous to do so, runoff water will be diverted to avoid contamination.

Mine water generated by underground operations or micro pit operations will be collected, tested and treated to meet the appropriate effluent criteria prior to discharge. As for process water, a portion will end up in the tailings at the tailings management facility, and the rest will be collected after being extracted from the tailings during the thickening and/or filtration process.

Finally, if the process plant is located near Lebel-sur-Quévillon, the project will have one effluent at the process plant site and a second effluent at the mine site. If the process plant is located at the mine site and depending on the location of the tailings management facility, there could be two effluents at the mine site.

## 4.11 PROJECT EXECUTION PHASES

### 4.11.1 CONSTRUCTION PHASE

In 2008, a bulk sampling program at Windfall Lake involved the stripping and clearing of a certain surface area. The use of this previously disturbed area will be prioritized but additional areas will also need to be stripped and cleared to provide sufficient space for buildings, mining equipment, the new production ramp, the waste rock stockpile, the ore stockpile, and the tailings management facility. Overburden will be stored in a pre-determined location and reused during the closure phase. In the event that the processing plant is installed southeast of Lebel-sur-Quévillon, stripping and clearing will still be required, although large expanses of land in this area have already been cleared by logging activities.

Work site organization will include procurement activities, implementation of an environmental monitoring program, upgrading existing roads and the bridge, renovating the existing exploration camp, and upgrading the generator sets and power distribution system.

This work will include construction of the various buildings, namely the processing plant, laboratory, warehouses, maintenance workshop(s), administrative offices, camp for the production phase, backfill preparation plant and other ancillary buildings. Foundations for the stockpiles, water management infrastructure (ditches, ponds, water treatment plant) and tailings management facility will also be built during this phase.

#### 4.11.2 PRODUCTION PHASE

Development of drifts leading to the various stopes where ore will be extracted will require drilling, blasting, and loading and hauling of ore and waste rock to the surface.

Stoping of ore will be followed by backfilling of voids using paste backfill containing tailings or using cemented waste rock. During mining activities, drifts will be kept dry; mine water will be pumped to the water management facilities on surface. The same applies for the micro pits.

Once at surface, ore will be sent to the processing plant to recover the gold. Tailings derived from ore processing will be stored in the tailings management facility. In the event that the plant is located 11 kilometres southeast of Lebel-sur-Quévillon, ore will be hauled to the processing plant over a distance of approximately 100 km. Once at surface, waste rock will be stockpiled. Another possibility would be to use some of the newly excavated waste rock to backfill stopes without ever reaching the surface.

#### 4.11.3 CLOSURE PHASE

As stipulated in the *Mining Act*, a rehabilitation plan will be submitted to the Ministère de l'Énergie et des Ressources Naturelles for approval. This plan will be prepared in compliance with applicable requirements from the *Guidelines for Preparing a Mining Site Rehabilitation Plan* and *General Mining Site Rehabilitation Requirements*, Directive 019 pertaining to the Mining Industry and any other applicable requirement such as those stipulated in the Soil Protection and Rehabilitation of Contaminated Sites Policy and the *Land Protection and Rehabilitation Regulation* (c. Q-2, r. 37). Geochemical studies will be conducted to assess the acid-generating and leaching potential of the various lithologies (waste rock and ore). For the micro pits, flooding will be considered along with waste rock backfill. Decisions will be taken when preparing the closure plan.

Post-rehabilitation monitoring and maintenance will be conducted in accordance with measures stipulated in Directive 019.

### 4.12 EMISSIONS, EFFLUENT AND WASTE

As an example, Table 4-1 sets out a list of project activities that will be monitored for emissions, effluent and waste product, along with the proposed management methods.

Preliminary GHG calculations are presented in Table 4-2 and are indicative only. More detailed calculations on GHG will be submitted in the EIA.

**Table 4-1 Emission, Effluent and Waste Product**

Activity	Components	Management Method
Equipment maintenance	<ul style="list-style-type: none"> <li>Used oil</li> <li>Used antifreeze</li> <li>Batteries</li> <li>Etc.</li> </ul>	<p>Recycling through companies that provide collection and final disposal services. A storage container that meets standards will be set up.</p> <p>Hazardous waste will be briefly stored on the site and a hazardous waste management procedure established.</p>
Handling of explosives	<ul style="list-style-type: none"> <li>Explosives and cap boxes</li> <li>Explosives container</li> </ul>	An explosives waste management procedure will be established.
Crushing of material	<ul style="list-style-type: none"> <li>Dust generation</li> <li>Noise generation</li> </ul>	Crushers will operate under a structure designed to reduce dust emissions and noise.
Operating the site	<ul style="list-style-type: none"> <li>Dust generated by machinery</li> <li>Spills caused by machinery</li> </ul>	<p>Water trucks will suppress dust generated by vehicles circulating on the site and access roads.</p> <p>A preventative maintenance plan will be implemented; contaminated soil management will follow a government-approved procedure.</p>
Trucking (haulage)	<ul style="list-style-type: none"> <li>Dust</li> <li>Atmospheric contaminants (in particular: GHG, fine particules, NO<sub>2</sub>, NO<sub>x</sub> and SO<sub>2</sub>)<sup>1</sup></li> </ul>	<p>A vehicle speed limit will be set and monitored to minimize dust.</p> <p>A vehicle maintenance program will ensure proper functioning and reduced emissions.</p>
Plant operations	<ul style="list-style-type: none"> <li>Atmospheric contaminants (in particular: GHG, fine particules, NO<sub>2</sub>, NO<sub>x</sub> and SO<sub>2</sub>)<sup>1</sup></li> <li>Generators</li> </ul>	<p>Pollution control measures will be implemented at the plant to minimize emissions.</p> <p>Good maintenance program and selection of efficient models.</p>
Water management at the mine and processing plant sites	<ul style="list-style-type: none"> <li>Contaminated water</li> </ul>	Water quality will be monitored at the final effluent in order to meet the appropriate criteria prior to discharge.
Other activities	<ul style="list-style-type: none"> <li>Domestic waste generated by workers</li> <li>Sewage</li> </ul>	<p>Domestic waste will be stored in animal-proof containers before entering the domestic waste disposal system.</p> <p>Domestic wastewater (sewage) will be stored in a tank before being picked up by a specialist company.</p>

<sup>1</sup> GHG emissions will be evaluated during the upcoming impact assessment.



**Table 4-2 Windfall Lake Project's Preliminary Assessment of GHG Emissions**

Sources, Construction Phase	GHG Emissions, kilotonnes of CO <sub>2</sub> eq/year
Construction	9
Sources, Operation Phase	GHG Emissions, kilotonnes of CO <sub>2</sub> eq/year
Mine	51
Plant (option 1)	50
Transportation (option 2)	4
Lebel-sur-Quévillon Plant (option 2)	0.4
Total, Option 1 (mine and plant)	101
Total, Option 2 (mine, Lebel-sur-Quévillon plant & transportation)	56

### 4.13 JOBS

Construction work is expected to create 300 jobs, and mining operations will require 325 employees, 150 for the mine and 175 for the processing plant and administrative jobs. These jobs will be held for the 10-year life of the project. Some jobs will be reserved for members of the Aboriginal communities with an interest in the project.

### 4.14 PROJECT SCHEDULE

The planned steps of the Windfall Lake Project are summarized below.

**Table 4-3 Windfall Lake Project Schedule**

Activity	Schedule
Rehabilitation of the existing exploration ramp	Early Q3 2017
Extension of the exploration ramp and bulk sample	Late Q4 2017
Underground definition drilling	Early Q2 2018
Feasibility study	Early Q2 2017 – Late Q2 2018
Environmental impact assessment	Early Q3 2017 – Late Q3 2018
Environmental assessment process	2017–2019
Permitting	2019
Construction	2019
Production	2020–2030
Site closure	2030–2031

### 4.15 PROJECT INVESTMENT

The Windfall Lake Mine Project represents an investment estimated to be \$350 to \$400 million.



## 5 ENVIRONMENTAL COMPONENTS

### 5.1 BIOPHYSICAL ENVIRONMENT

#### 5.1.1 PLANT SITE – AREA EAST OF LEBEL-SUR-QUÉVILLON

The study area is situated in the James Bay physiographic region, in the Abitibi Uplands. This region is characterized by glacial deposits of silt and clay that promoted the formation of numerous vast peat bogs interspersed by tracts of forest (FAPAQ, 2003).

The topography is generally flat, rising slightly in the southeast part of the study area.

The site is situated within the Bell River watershed. The largest water body is Quévillon Lake. The northern part of the study area borders Kiask Creek, a Bell River tributary. Finally, a small unnamed watercourse flows east to west in the southern part of the study area.

The spruce-moss bioclimatic domain dominates the vegetation landscape in the study area. However, large expanses of land in this area have been logged over the past few years. Wetlands are present in the western part of the study area.

As a result of logging and its proximity to Lebel-sur-Quévillon, there is limited potential for wildlife, whether it is mammals, birds, amphibians or reptiles. Water courses, which run along the edges of the study area, may contain fish populations.

#### 5.1.2 WINDFALL LAKE MINE SITE

The study area is situated within the James Bay physiographic region, in the Abitibi Uplands. This region is characterized by glacial deposits of silt and clay that promoted the formation of numerous vast peat bogs interspersed by tracts of forest (FAPAQ, 2003).

The site is situated within in the Opawica River watershed. Most of the water bodies in the study area are small. Unnamed Lake 1 is the largest, covering 109 ha. The waters from Windfall Lake flow northward through a chain of lakes. The waters of Unnamed Lake 1 flow to the southeast. Two eskers, oriented northeast-southwest, are present between Windfall Lake and Unnamed Lake 1. Neither is used as a source of drinking water.

The spruce-moss bioclimatic domain dominates the vegetation landscape in the study area. The domain is composed of forests of variable density dominated by black spruce (*Picea mariana*). Ericaceous shrubs are found everywhere, forming a relatively dense shrub layer. The herbaceous stratum, however, shows little diversity. The moss layer, which is mainly composed of feather (hypnaceous) mosses, sphagnum and a few lichens, covers the entire ground (Hydro-Québec, 2004).

Significant wetlands have been documented in the vicinity of the Windfall Lake Property.

The wildlife habitats of the Nord-du-Québec region are generally characterized by low productivity. As a result, most of the wildlife species present have relatively low population densities (Hydro-Québec, 2004).

Among the species of mammals that likely frequent the study area are the moose (*Alces alces*), the grey wolf (*Canis lupus*), the black bear (*Ursus americanus*), the Canada lynx (*Lynx canadensis*) and the snowshoe hare (*Lepus americanus*). Although woodland caribou (*Rangifer tarandus*) are present in the

greater region, the Windfall Lake site lies beyond their official range, thus the potential to find this species in the study area is very low.

For birds, the most likely species to be present are those typically found in the spruce-moss domain such.

As for amphibians and reptiles, a search of the *Atlas des amphibiens et des reptiles du Québec* ("AARQ") revealed eight species that may be found in the study area provided a suitable habitat is present.

Seven species of fish were caught during fishing programs in 2009 and 2016: the northern pike (*Esox lucius*), the mottled sculpin (*Cottus bairdii*), the cisco (*Coregonus artedii*), the burbot (*Lota lota*), the white sucker (*Catostomus commersoni*), the lake chub (*Couesius plumbeus*), the brook trout (*Salvelinus fontinalis*), the yellow perch (*Perca flavescens*) and the brook stickleback (*Culaea inconstans*).

With regards to special-status plant species, the information obtained from the *Centre de données sur le patrimoine naturel du Québec* (CDPNQ) of the MDDELCC and the MFFP did not reveal any threatened or vulnerable plant species, or those likely to be listed as such, in the study area (CDPNQ, 2010a). The same was true for wildlife species (CDPNQ, 2010b). Furthermore, during the coming inventories, special attention will be paid to these species and those listed in the Species at Risk Public Registry of Canada.

## 5.2 HUMAN ENVIRONMENT

The project is located on the territory of the Eeyou Istchee James Bay Regional Government. With 7,609 inhabitants, Chibougamau has the largest population in the region. Other towns include Lebel-sur-Quévillon with a population of 2,260 (2016).

The territorial regime introduced by the JBNQA is a determining factor in land use. It provides for the division of James Bay territory into Category I, II and III lands. The mine area intersects Category II and III lands. On Category II lands, the Crees namely have exclusive rights to hunting, fishing and trapping, while on Category III lands, they have the exclusive right to trap fur animals and some advantages in outfitting services, without exclusive rights. The Windfall Lake Project is located within Category III land boundaries, mostly on public lands dominated by forestry activities.

Lebel-sur-Quévillon, located just over 115 km from the mine site, is an urbanized area that groups together residential, commercial, service, industrial, institutional and public works uses.

The archaeological potential study Archéos08, (2007) shows that the archaeological significance of the mine area is largely unknown and no documented site is present. According to the Archéos08 report, the only known archaeological manifestations in this area are two native prehistoric Aboriginal sites discovered in the late 1970s on the banks of the Saint-Cyr River, 6 km east of Barry Lake.

Finally, it should be mentioned that the Windfall Lake Project is located on the traditional lands of the Waswanipi Cree community, specifically on the traplines of Mr. Marshall Icebound (W25B) and Mr. Gary Cooper (W25A). The Cree village of Waswanipi is located about 75 km north-northwest of the Windfall Lake Project. The processing plant is located on the traplines of the Algonquin community of Lac Simon.

Three First Nation communities have been identified as having a potential interest in the project: the Cree First Nation of Waswanipi, the Algonquin community of Lac Simon and the Attikamekw community of Obedjiwan.

Our meetings with the tallymen, of the community of Waswanipi, helped us confirm the location of some of their camps. Additional visits will allow, more thoroughly, to identify the presence of seasonal or temporary camps in the area.

## 6 ENVIRONMENTAL EFFECTS

During the construction phase, the principal environmental impacts are expected to be the following:

- the potential local degradation of certain air quality parameters (GHG emissions);
- soil erosion and sediment transport;
- potential changes in the quality of water courses passing through the mine site and the ore haulage route;
- disturbances to wildlife (noise, dust and traffic) and higher death rates among less mobile species during construction work;
- disruptions or displacements of hunting and trapping activities (First Nation members and non-Aboriginals), possibly more pronounced than those experienced during exploration work.

During the operation phase, the principal environmental impacts are expected to be the following:

- the potential local degradation of certain air quality parameters (GHG emissions);
- soil erosion and sediment transport;
- potential changes to the flow pattern in surface water on the mine site;
- potential changes in water quality downstream from the effluent discharge point;
- changes to the natural environment due to the encroachment of mining infrastructure in the territory;
- disturbances to First Nation members and non-Aboriginals during ore haulage from the mine site to Lebel-sur-Quévillon if the plant is installed there;
- disturbances to wildlife (noise, dust and traffic) and higher death rates among less mobile species during ore haulage from the mine site to Lebel-sur-Quévillon if the plant is installed there;
- a loss of wetlands due to encroachment;
- disruptions or displacements of hunting and trapping activities (First Nation and non-Aboriginal members), possibly more pronounced than those experienced during exploration work.

During the closure phase, the principal environmental impacts are expected to be the following:

- soil erosion and sediment transport;
- potential disturbances to wildlife (noise, dust and traffic) and higher death rates among less mobile species during closure construction work.



## 7 FUNDING FROM THE FEDERAL GOVERNMENT

The Windfall Lake Project of Osisko Mining will not receive any funding from federal authorities.

The project is not situated on federal lands.



## 8 INFORMATION AND PUBLIC CONSULTATION PROCEDURES

### 8.1 SUMMARY OF CONSULTATIONS

OSISKO held various meetings and information sessions with representatives and members of local communities. In addition, information letters on exploration activities were sent to municipalities. It should be noted that prior to the project being acquired by Oban, which changed its name to Osisko Mining Inc., in June 2016, representatives from Eagle Hill Exploration Corporation, the former owner of the Windfall Lake Project, met informally with representatives of Lebel-sur-Quévillon and participated in an information session organized by the Economic Development Corporation of Lebel-sur-Quévillon in November 2014.

The main concerns expressed by the citizens of Lebel-sur-Quévillon relate mainly to the potential economic benefits for the City and the project's timetable. For Senneterre, even though the Windfall Lake Project is not located on its territory, stakeholders felt that local entrepreneurs could benefit from business opportunities generated by the project.

No regional information sessions were held. However, the public has been made aware of the project through articles published in local and regional media.

OSISKO will develop a community engagement plan, including the project description, stakeholder list, local and regional study areas, detailed communication and engagement processes, and a schedule of activities. The community engagement plan will be explained and discussed with local authorities. The identified non-Aboriginal communities will be Lebel-sur-Quévillon, Chapais and Chibougamau as well as Senneterre and Val-d'Or. The plan will also serve to consolidate the relationship of trust OSISKO has built with the Aboriginal community of Waswanipi. OSISKO has recently initiated discussions with the Aboriginal communities of Lac Simon and Obedjiwan to present the project and to learn about their potential interest in the project. Community representatives will be consulted to determine the final form of the plan. This plan will facilitate the follow-up of the consultation and public participation processes required during the authorization process. It will also aim to develop effective channels of communication with key stakeholders and to foster community support and participation throughout the life of the project.

Information on the project and its technical specifications at all stages of development, from the beginning of the environmental assessment to the submission of recommendations by government authorities, will be produced and submitted in French and English using language that is clear and easily understandable. Some of the information may require translation into Cree, Attikamekw and Algonquin. Information on the environmental review process and project-specific authorization requirements will also be presented to stakeholders.

The information component aims to ensure that stakeholders have access to fair, objective and relevant information to facilitate their understanding of the project, the approval process, the conditions for construction, operation and rehabilitation of the future mine.

Consultation will involve seeking stakeholder views on the project and on the consultation process itself. The consultation component aims to take into consideration the concerns and expectations of the stakeholders during the planning of all phases of the project.

Finally, a committee will be formed to take part in environmental monitoring at every phase of the project, from construction to closure, including when the mine is in operation.

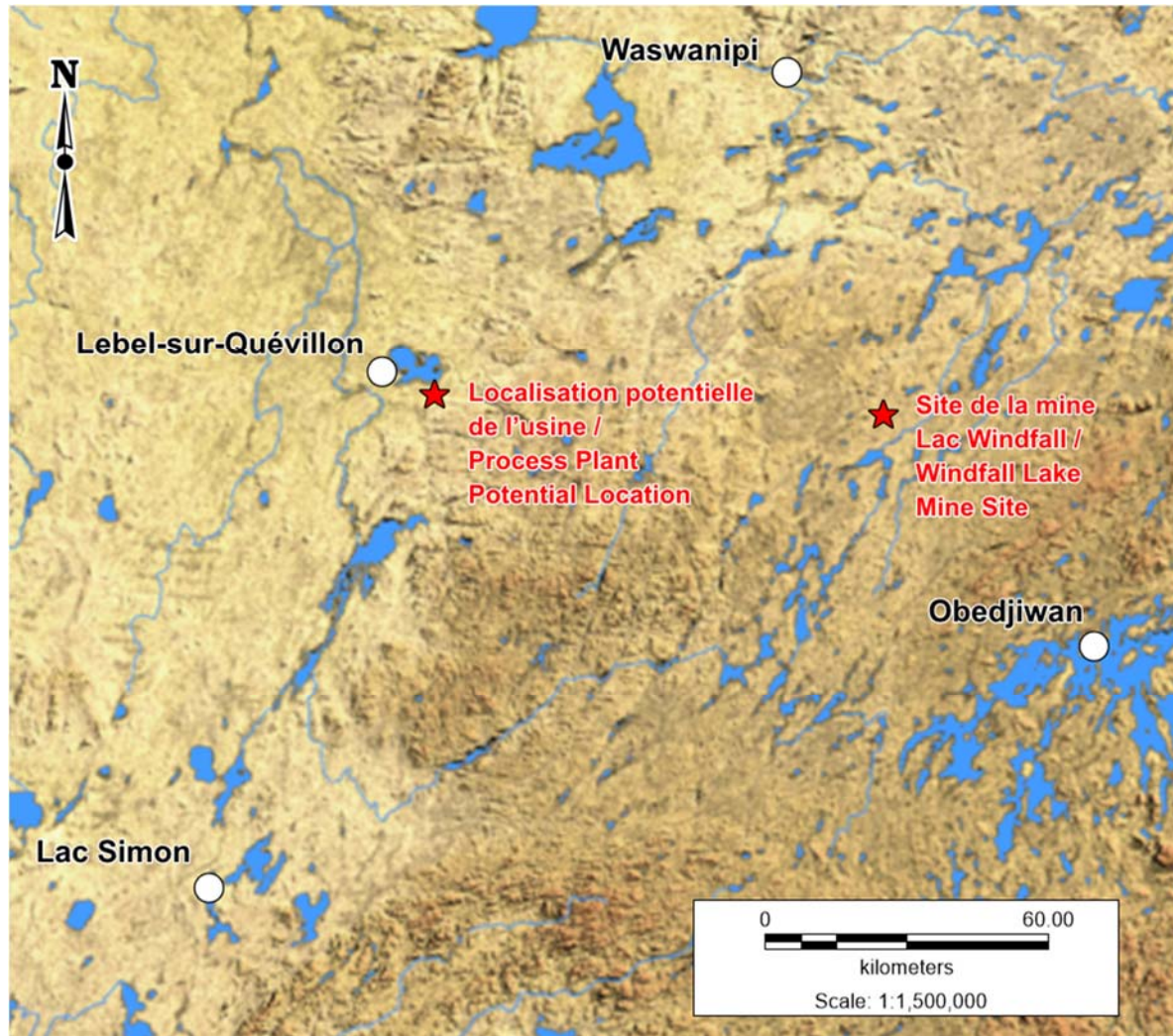


## 8.2 COMMENTS AND CONCERNS RAISED BY ABORIGINAL GROUPS

OSISKO understands that First Nations people have protected constitutional rights and can offer a unique understanding of the environment based on their special connection to the land.

The Windfall Lake Project is located about 75 km south-south-west of the Waswanipi Cree community (Map 5).

**Map 5** Location of Aboriginal Communities



Information on the project was forwarded to the band council, the Deputy Chief, the Manager of Natural Resources, the tallymen and the Cree Trappers' Association and the Cree Human Resources Development through meetings, presentations and information letters. Meetings were held with the tallymen to explain the nature of the work and to know their use of the territory. OSISKO also presented the Windfall Lake Project to the entire community at the Waswanipi Mining Exposition in February 2017.



The main concerns are described below. They focus on the importance of respecting the environment, the impact of exploration activities on water and wildlife and the economic benefits to the community.

During a visit to the Windfall camp, community members raised concerns about the health and safety of workers and people nearby. They also asked if workers had the right to hunt and fish, and if the camp has established procedures in case of fire.

Since the project has evolved from an exploration project with drilling as its principal activity to a development project that includes the selection of a new potential site for a processing plant near Lebel-sur-Quévillon, the Crown has identified two other Aboriginal communities in addition to the Cree First Nation of Waswanipi that may have an interest in the project. They are the Obedjiwan community of the Atikamekw Nation and the Lac Simon community of the Anishinabeg Nation.