

# APPENDIX D



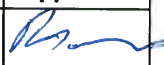
## NORONT RESOURCES LTD. EAGLE'S NEST PROJECT

### TERMS OF REFERENCE



**NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT**

**TERMS OF REFERENCE  
(REF. NO. NB102-390/1-7)**

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**APPENDICES**

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### Glossary of Terms and Acronyms

Alternative	Include both alternatives to and alternative methods to a proposed undertaking
Alternative methods	Alternative methods of carrying out a proposed undertaking are different ways of doing the same activity
Alternatives to	Alternatives to the proposed undertaking are functionally different ways of approaching and dealing with a problem or opportunity that has been identified
ARD/ML	Acid rock drainage/metal leaching
ATK	Aboriginal Traditional Knowledge
CEAR	<i>Canadian Environmental Assessment Registry</i>
CEEA	<i>Canadian Environmental Assessment Act</i>
CEA Agency	Canadian Environmental Assessment Agency
CEPA	Canadian Environmental Protection Act
Concentrate	Ore concentrate is the product generated by the milling process which removes the waste rock and concentrates the target metal component (i.e. nickel and copper)
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
Do Nothing Alternative	An alternative that is typically included in the evaluation of alternatives that identifies the implications of doing nothing to address the problem or opportunity
EA	Environmental assessment
EC	Environment Canada
EIS	Environmental impact statement
EMPs	Environmental management plans
EMS	Environmental management system
ENGO	Environmental Non-governmental Organization
Environment	The Ontario Environmental Assessment Act defines environment to mean:  Air, land or water; Plant and animal life, including human life; The social, economic and cultural conditions that influence the life of humans or a community; Any building, structure, machine or other device or thing made by humans; Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities; or, Any part or combination of the foregoing and the interrelationships between any two or more of them.
EPA	<i>Ontario Environmental Protection Act</i>
HADD	Harmful, alteration, disruption or destruction of fish habitat
Km	Kilometres
kV	Kilovolt
MMER	Metal Mining Effluent Regulations
MNR	Ministry of Natural Resources

MOE-EAB	Ontario Ministry of Environment - Environmental Approvals Branch
MNDM	Ministry of Northern Development and Mines
MPMO	Major Projects Management Office
NGO	Non-governmental Organization
NPAG	Non-potentially acid-generating
NWPA	Navigable Waters Protection Act
OEAA	<i>Ontario Environmental Assessment Act</i>
PAG	Potentially acid-generating
PM	Particulate matter
Project	Eagle's Nest Project
Proponent	Noront Resources Ltd.
QA/QC	Quality assurance/quality control
SARA	<i>Species at Risk Act</i>
Supporting Documentation	Documentation that is submitted to the Ministry of Environment, in addition to the terms of reference, which provides further information on issues discussed in the terms of reference. Information contained in the supporting documentation should support the proponent's request that the terms of reference be approved by providing justification for the choices made and details of processes or methodologies to be used.
TIA	Tailings impoundment area
ToR	Terms of reference
UTM	Universal Transverse Mercator
Undertaking	An enterprise, activity or a proposal, plan, or program that a proponent initiates or proposes to initiate
VEC	Valued Ecosystem Component

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**SECTION 1.0 - INTRODUCTION**

1.1 INTRODUCTION

The purpose of this report is to present the Terms of Reference (ToR) for the Noront Eagle's Nest Project environmental assessment, in compliance with provincial laws, regulations and guidelines applicable to the development of mining projects in Ontario. The ToR has been prepared to show how Noront intends to meet the requirements of *Ontario's Environmental Assessment Act (OEAA)* during the preparation of the Environmental Assessment (EA). The ToR is a work plan which becomes the framework for the preparation and review of the EA. It will be made available to the public and will be submitted to the Ministry of the Environment for review and a decision on whether to allow the Project to proceed.

The Project is also subject to a federal EA and must meet the requirements of the *Canadian Environmental Assessment Act*. In order to meet these requirements, the EA must also meet the requirements of the federal EIS guidelines which were accepted in January 2012. Canada and Ontario entered into a cooperation agreement in 2004 to increase the efficiency of the EA process (*Canada-Ontario Agreement on Environmental Assessment Cooperation, 2004*). The federal and provincial governments have indicated a willingness to follow the coordinated EA process for this project. The federal EIS guidelines and the provincial ToR will be used in coordination to produce EA documentation that will meet the requirements of both levels of government.

## SECTION 2.0 - IDENTIFICATION OF THE PROPONENT

Noront Resources Ltd. (Noront) is a Canadian mining company focused on exploration and development in the Ring of Fire region of northern Ontario. Noront is a publicly traded company on the Toronto Stock Exchange (TSX Venture: NOT). The Company is the sole proponent of the Eagle's Nest Project (Project) and holds a 100% interest in all of the underlying claims.

Noront's corporate contact information is:

Noront Resources Ltd.  
105 Adelaide Street West  
Suite 1100  
Toronto, Ontario  
Canada M5H 1P9  
Telephone: 1-416-367-1444  
Facsimile: 1-416-367-5444  
Website: [www.norontresources.com](http://www.norontresources.com)

The primary contacts for the Project are:

Mr. Paul Semple, P.Eng.  
Chief Operating Officer  
Noront Resources Ltd.  
[Paul.Semple@norontresources.com](mailto:Paul.Semple@norontresources.com)

Mr. Mark Baker, P.Eng.  
VP, Projects  
Noront Resources Ltd.  
[Mark.Baker@norontresources.com](mailto:Mark.Baker@norontresources.com)

## SECTION 3.0 - APPROACH TO CONDUCTING THE EA

### 3.1 INDICATION OF HOW THE EA WILL BE PREPARED

The EA for the Project will be prepared in accordance with the ToR, as approved by the Minister of the Environment, and in accordance with the requirements of the Ontario *Environmental Assessment Act* (OEAA), R.S.O. 1990, Chapter E. 18 and the federal EA guidelines. Planning for the Project has been underway for some time and potential alternatives are constrained by the nature of the Project. Noront will be preparing the EA in accordance with Sections 6(2)(a) and 6.1(2) of the OEAA. These requirements will be addressed through completion of:

- (a) a description of the purpose of the undertaking;
- (b) a description of and a statement of the rationale for,
  - (i) the undertaking,
  - (ii) the alternative methods of carrying out the undertaking, and
  - (iii) the alternatives to the undertaking;
- (c) a description of,
  - (i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,
  - (ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and
  - (iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking;
- (d) an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking; and
- (e) a description of any consultation about the undertaking by the proponent and the results of the consultation.

The objective of this ToR is to describe the approach and the methods that will be used to meet these requirements.

### 3.2 REPORTING

An EA report will be prepared to address all requirements outlined in the ToR, and will be consistent with the purpose of the OEAA and the public interest. The EA report will provide details regarding the rationale for the Project approaches selected and will be written to meet all provincial and federal requirements.

The EA report will also include the information requirements set out in the OEAA, as outlined in Section 3.1, and include the requirements outlined in the federal EIS Guidelines.

Detailed technical evaluation/studies of components of the environment will be appended to the EA as Technical Supporting Documents (TSDs). The TSDs may include, but not be limited to:

- Physiography and geology
- Air quality and noise
- Climate and meteorology
- Hydrology
- Hydrogeology
- Groundwater and surface water quality and geochemistry
- Terrestrial biology
- Aquatic biology
- Socio-economic
- Cultural heritage resources

The TSDs will include detailed descriptions of the existing environment, as determined from the baseline studies, details of any modeling and data assessments undertaken, and the details on impact assessment methods, results, and conclusions.

#### SECTION 4.0 - PURPOSE OF THE UNDERTAKING

The purpose of the Project is to develop a multi-metal underground mine to produce and supply a concentrate containing nickel, copper, platinum and palladium minerals. The undertaking will involve the construction, operation and closure, including remediation, of an underground mining facility and associated infrastructure. An access corridor will be used to transport the concentrate to a trans-load facility, where the concentrate will be loaded onto rail cars for transport to a location for further processing. The high-grade nickel-copper-precious metals Eagle's Nest deposit contains approximately 11 million tonnes of resources, which will provide for an 11 year mine life at the planned extraction rate of 2,960 tonnes per day (t/d).

Several components may be developed in conjunction with the development and operation of the mine, including:

- Underground mine and ancillary facilities
- Underground mill
- Concentrate handling and transfer facilities
- Surface infrastructure (accommodations building, services complex, access portals, etc.)
- Power generation facilities
- Power transmission lines
- Fuel storage areas
- Waste and water management facilities
- Explosives handling and storage facilities
- Site roads
- Transportation corridor to link the Project to the existing provincial infrastructure

Noront plans to utilize a proposed airstrip to be located on the east side of the Muketei River. The airstrip will facilitate the movement of personnel and supplies to and from the mine site. The airstrip will be developed by a third party, Marten Falls Logistics, a partnership between Marten Falls First Nation and Wilderness North.

The waste management facility located at the mine site will consist of an incinerator and a handling and sorting area. All wastes not fit to be incinerated will be transported off site to a certified landfill. All waste management facilities will be fenced off to prevent animals including wolves and bears from accessing potential food sources.

Concentrate will be shipped to a trans-load facility where it will be off-loaded and transferred into rail cars. The concentrate will then be shipped via rail to an existing smelter for further processing.

#### 4.1 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

An environmental assessment (EA) is the primary means of assessing the potential environmental impacts the Project will have on the existing environment. The environment, as defined by the *Ontario Environmental Assessment Act (OEAA)*, encompasses:

- Air, land or water
- Plant and animal life, including human life, the social, economic and cultural conditions that influence the life of humans or a community
- Any building, structure, machine or other device or thing made by humans
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities
- Any part or combination of the foregoing and the interrelationships between any two or more of them

An EA ensures that Noront will present mitigation and management strategies, monitoring plans, and considers all options that may improve the Project's design and reduce the potential for adverse environmental impacts. This will allow Noront to assess potential environmental effects of the proposed undertaking before any decisions are made to proceed. This will be accomplished through a comparative evaluation of alternatives. An EA also allows for consultation with potentially affected communities, government agencies and the general public to identify issues and concerns that will be considered during the planning of the Project and in the preparation of the EA. The EA will also provide an objective evaluation of the proposed undertaking of the Project and the potential impacts, advantages and disadvantages so that the Ontario Minister of the Environment can make a decision on whether or not the Project should be allowed to proceed.

The EA process is governed by the *OEAA* and the *Canadian Environmental Assessment Act*. The requirements and process of undertaking a provincial EA are administered by the Ontario Ministry of the Environment (MOE). The federal EA process is discussed in Section 4.2.3.

The objectives of the EA are to:

- Describe the baseline environmental and socio-economic conditions, against which potential impacts will be assessed
- Describe the Project activities and identify where these may interact with the environment
- Develop assessment criteria and identify appropriate indicators of potential impacts
- Describe the environmental and socio-economic and cultural effects that may be generated by the Project during the construction, operations, closure and post closure phases
- Assess the advantages, disadvantages, and impacts of different alternatives to the Project
- Assess the impacts of different alternative methods of carrying out the Project
- Describe the criteria selection and decision making process in the selection of the preferred alternatives
- Propose environmental and social impact management plans to describe impact avoidance, mitigation and/or reclamation such that impacts are mitigated and benefits are enhanced during each stage of the Project

- Include monitoring programs in the environmental and social management plans to verify that measures taken to manage impacts and benefits are achieving identified targets
- Describe roles and responsibilities for managing and reporting on the Project's environmental and social performance
- Ensure the involvement of interested and affected parties in each of the above activities so that environmental and social management plans address and incorporate their issues and concerns
- Ensure the involvement of government agencies in the EA process to help develop a project that can be approved and to ensure that the management plans address the requirements of the OEAA
- Assess the preferred alternatives in detail to determine residual effects after impact management measures have been applied
- Discuss the advantages and disadvantages of the undertaking

## 4.2 ENVIRONMENTAL ASSESSMENT REQUIREMENTS

### 4.2.1 Starting the EA Process

Prior to the preparation of the ToR, Noront discussed the Eagle's Nest Project with potentially affected First Nations, with provincial ministries (MOE, MNDM, MNR), and with federal departments (CEA Agency, MPMO), in order to develop a Project Description. As the EA process continues, Noront expects that other provincial and federal ministries will continue to supply comments and suggest improvements to the Project. Similarly, Noront looks forward to receiving further comments from First Nations, Métis, ENGOs and the general public.

The issuance of the ToR represents the first formal step in the provincial EA process. The ToR has been prepared in cooperation with Aboriginal groups, provincial and federal governments and the public. The ToR is being submitted to the MOE for review and, if deemed sufficient by the MOE, will be forwarded to the Minister for approval.

Noront has presented viable options in the ToR for various Project components; however, they do not necessarily represent the preferred final design or scope of the Project. Details of the Project may change based on the results of ongoing studies, stakeholder discussions, engagement activities and other external factors. A range of alternatives is presented in Section 6 and will be further evaluated in the EA. The EA will play a crucial part in the development of the Project, through the consideration and assessment of alternatives, as well as receiving and analysing input received from various stakeholders.

In July 2011, Noront submitted a Project Description to the federal government to initiate the EA process under the CEAA, and to the provincial government for information purposes. The Project Description meets the requirements of the federal Major Projects Management Office (MPMO) *Guide to Preparing a Project Description for a Major Resource Project* (December, 2008), and was designed to follow the Ontario Ministry of Northern Development and Mines (MNDM) *Project Definition Template for Advanced Exploration and Mine Development Projects*.

There are several EA and permitting authorizations which will be required to develop the mine site and related infrastructure. While there are no specific provincial EA requirements for a mining development in Ontario, many of the individual Project elements trigger EA requirements. As the Project components evolve, the EA and permitting triggers may also change. The federal EA requirements for mining development are dealt with under the *CEAA*.

The process of permitting a mine in Ontario's Far North is also subject to the *Far North Act, 2010*. Under the *Far North Act*, subject to certain exceptions, development activities in the Far North may not take place until there is an approved community based Land Use Plan for the area. The proposed mine site falls within the Far North and, as such will be subject to the provisions of the *Far North Act*.

The *Far North Act* enables a community based land use planning process to be led by First Nations, working jointly with the provincial government. The result of the community based Land Use Plans is to identify areas to be set aside for protection, and areas suitable for sustainable economic development opportunities. The plans will also establish land use designations and permitted uses for planning areas identified by First Nations. Community based Land Use Plans require joint approval by First Nations and the Ontario Ministry of Natural Resources. The *Far North Act* is discussed further in Section 4.3.

#### 4.2.2 Provincial EA Requirements

In Ontario, environmental assessment is an important planning and decision making process which has its authority in the *OEAA* to provide for the protection, conservation, and wise management of Ontario's environment. In Ontario, projects may be subject to an Individual EA, or to a Class EA. Class EAs are for projects that are carried out routinely, and have predictable and mitigatable environmental effects.

While there are no requirements in Ontario for a proposed mining project to undertake a provincial individual EA, there are components of the Project which may trigger either provincial Individual EAs or Class EAs, including:

- The potential construction of a 25 MW diesel-fuelled power generation plant
- The Disposition of Rights to Crown Resources for Project development occurring on Crown Land
- The potential construction of power transmission lines

A 25 MW diesel fuelled power generation facility would be subject to an Individual EA as required under O. Reg. 116/01. Any potential Class EAs could be elevated to an Individual EA by the Minister if unforeseen conditions or significant concerns are raised. In such a situation, the review process would need to be restarted.

Because of the provincial Class EAs required, and the need for an Individual EA for the potential of a power generation plant, Noront has voluntarily entered into a written agreement under Section 3.0.1 of the *OEAA* to have the *OEAA* apply to the whole Project. Noront also believes

that it will be more efficient to coordinate a single provincial EA, rather than of several Class EAs, with the parallel requirement of a federal comprehensive study for the Project. A number of Provincial approvals will also be required for the Project, which will require the participation of the Ministry of Northern Development and Mines (MNDM), the Ministry of the Environment (MOE), the Ministry of Natural Resources (MNR) and the Ministry of Labour (MOL).

The proposed ToR has been prepared following the *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario* (2009). The Provincial individual EA process and timelines are outlined in Figure 4.1.

The ToR lays out a clear assessment process and work plan for the proposed undertaking, including the:

- Identification of the purpose of the study or undertaking
- Description and rationale for the undertaking
- Description and rationale for a range of alternatives to be assessed
- Description of the environment and potential effects
- Assessment and evaluation of the alternatives, including identification of criteria, indicators and an evaluation method
- Plan for consultation with potentially affected communities, governments and the public during the preparation of the EA
- Selection of a preferred alternative to the undertaking and alternative methods

The assessment of residual effects and the identification of potential mitigation measures will take place during the assessment of alternatives and once preferred alternatives have been selected.

While the EA process is underway, Noront may make submissions to the provincial government on required authorizations, approvals and licenses for the Project. However, this will be done with the understanding that any such authorizations, approvals and licenses would not be fully reviewed or granted until after the EA process has been completed.

#### 4.2.3 Federal EA Requirements and Process

Concurrent with the provincial EA, there will be a federal EA process which is governed by the *CEAA*. The requirements and process of undertaking a federal EA are administered by the Canadian Environmental Assessment Agency (CEA Agency). The process used by the CEA Agency is an environmental review that describes the natural and socio-economic environment that could be potentially affected by the Project. It also describes ways of protecting the environment.

Under Section 5 of the *CEAA*, an environmental assessment is required because Natural Resources Canada may take action in relation to paragraph 7(1)(a) of the *Explosives Act*, and/or Fisheries and Oceans Canada may take action in relation to subsection 35(2) of the *Fisheries Act*.

Health Canada, Environment Canada, and Aboriginal Affairs and Northern Development Canada have indicated that they possess expert information that could be useful to the EA. The Major Projects Management Office is also engaged in this Project as it is considered a Major Resource Project under the Major Resource Project Regulatory Improvement Initiative.

The CEA Agency has determined that the Project is described by the following sections of the Comprehensive Study List Regulations under the Act:

- 10. The proposed construction, decommissioning or abandonment of a facility for the extraction of 200,000 m<sup>3</sup>/a or more of ground water or an expansion of such a facility that would result in an increase in production capacity of more than 35 percent;
- 30. (c) The proposed construction or decommissioning of an all-season runway with a length of 1,500 m or more.

The principal steps in the *CEAA* process typically include:

1. Preparation of a Project Description for review by potentially involved federal authorities.
2. Pre-consultation with federal and provincial authorities, and also with members of the general public and First Nations that could potentially be affected by the Project.
3. Determination of the level of review by CEA Agency, whether Screening, Comprehensive Study Report, Mediation or Panel.
4. Development of the Environmental Impact Statement (EIS) Guidelines by the CEA Agency to define those aspects of the Project that should be included in the EA, the focus and boundaries of the EA, stakeholders in the *CEAA* process (affected and interested parties, including government agencies, First Nations, and members of the general public, possibly including non-governmental organizations - NGOs), consultation needs, and the extent of coordination with provincial regulatory requirements.
5. Consultation by Noront with provincial government agencies, affected First Nations, and potentially members of the general public and interest groups on the scope of the EA.
6. Preparation of a Comprehensive Study EA (CSEA), if this is the level of review determined by CEA Agency.
7. Review of the CSEA and related materials by federal and provincial regulators, local First Nations, and interested stakeholders.
8. Response by Noront to comments received from government agencies, First Nations and other stakeholders.
9. Preparation of a draft Comprehensive Study Report (CSR) taking into consideration comments on the CSEA from First Nations and other stakeholders.
10. Preparation of a final CSR.
11. Publication of the final CSR for the mandatory public review period.
12. Ministerial decision on the CSR and the adequacy of the proponent's obligations under the *CEAA* process.

While the *CEAA* process is underway, Noront may make submissions to the federal government on required federal authorizations, approvals and licenses for the Project. This will be done with the understanding that any such authorizations, approvals and licenses would not be fully reviewed or granted until after the *CEAA* process has been completed.

The Project has been accepted for a federal Comprehensive Study. As required by the *CEAA*, the CEA Agency finalized the Guidelines for the Environmental Impact Statement (EIS) in January 2012. The EIS Guidelines have been reviewed by the public and are posted on the CEA Agency's Canadian Environmental Assessment Registry (CEAR) website.

Figure 4.2 outlines the steps and timelines in the Comprehensive Study Process.

#### 4.2.4 Process of a Coordinated EA

The steps in an EA required by the MOE and by the CEA Agency are somewhat different. This requires a coordinated approach to meet the requirements of both federal and provincial legislation. Canada and Ontario entered into an agreement in 2004 (*Canada-Ontario Agreement on Environmental Assessment Cooperation (2004)*). For this Project, the two levels of government have indicated a willingness to follow the coordinated EA process and produce one body of documentation. The single EA document will address the requirements of both the provincial ToR and the federal EIS Guidelines.

The coordinated EA process is summarized in the following five steps, and is illustrated on Figure 4.3:

1. Pre-EA Planning, including signing of the voluntary agreement, development of the ToR and the EIS Guidelines.
2. EA commencement.
3. Environmental baseline studies and preparation of the EIS/EA Report.
4. EA decision.
5. Monitoring and follow-up.

On August 3, 2011, the CEA Agency accepted the Project Description and initiated the 90-day pre-environmental planning period. Noront entered into a written agreement with the Ministry of the Environment under Section 3.0.1 of the *Ontario Environmental Assessment Act (OEAA)* on September 9, 2011 to make the Project subject to the requirements of the *OEAA*. Pre-EA activities have been discussed in multiple meetings with federal and provincial agencies and Noront.

The EA commencement phase includes the development and approval of the ToR and the EIS guidance document. The ToR defines the provincial requirements and explains how Noront will undertake baseline studies and evaluate alternatives, while the EIS Guidelines identify the federal government's information requirements for the EA report. The EIS guidelines were finalized and posted on the Canadian Environmental Assessment Registry (CEAR) website in January 2012.

Baseline environmental studies will be completed and Noront will prepare and submit the EA report for federal, provincial and public review. Following the review period, the federal and provincial Ministers will provide a decision on the EA. Follow-up will confirm that significant adverse effects will not occur, or will be mitigated, and any potential effects are as predicted. Following the approval of the EA, the follow-up and monitoring programs will be finalized.

#### 4.3 FAR NORTH PLANNING ACT

In addition to the federal and provincial environmental assessment acts, development in the Far North is governed by the *Far North Act*, 2010. The Project will be subject to the provisions of the *Far North Act*. The purpose of the *Far North Act* is to provide for community based land use planning in the Far North that:

- Sets out a joint planning process between the First Nations and Ontario
- Supports the environmental, social, and economic objectives for land use planning for the peoples of Ontario
- Is completed in a manner that is consistent with the recognition and affirmation of existing Aboriginal and treaty rights in Section 35 of the *Constitution Act*, 1982, including the duty to consult

Community based land use plans will establish land use designations and permitted uses for planning areas identified by the First Nations. Land use plans will require joint approval by First Nations and the Ontario Ministry of Natural Resources.

The Objectives of the *Far North Act* include:

- Ensuring a significant role for First Nations in planning
- The protection of areas of cultural value, and the protection of ecological systems by including at least 225,000 km<sup>2</sup> of the Far North in an interconnected network of protected areas designated in community based land use plans
- The maintenance of biological diversity, ecological processes and ecological functions, including the storage and sequestration of carbon in the Far North
- Enabling sustainable economic development that benefits the First Nations

Under Section 12 of the *Far North Act*, the following activities are prohibited where community based land use plans do not exist:

- Opening a mine in the prescribed circumstances
- Commercial timber harvest
- Oil and gas exploration and production
- Constructing or expanding an electrical generation facility that uses wind or water as a source and any other infrastructure that is associated with it

- Constructing or expanding electrical transmission and distribution systems and electrical transmission and distribution lines in accordance with the definitions of “transmission system”, “transmit” and “distribute” in the *Electricity Act*, 1998, and any other infrastructure that is associated with them, including all weather transportation infrastructure
- Construction or expanding any infrastructure that is prescribed
- Any other land use or activity that is prescribed

Currently, there are no approved community based land use plans established within the area of proposed Project development. First Nations and the government of Ontario are currently participating in the early stages of the planning process.

## SECTION 5.0 - DESCRIPTION OF AND RATIONALE FOR THE PROJECT

The project description provided in this ToR represents a “Base Case” or preliminary description of the Project that represents one set of viable options for given Project components. The project description is based on early scoping and pre-feasibility studies that have been completed by Noront. This description should not be interpreted as presenting the final or preferred options. Through the assessment of alternative methods, and alternatives to, as described in Section 6, and in consultation with interested persons, the project description will be refined. The final project description will be presented in the EA.

### 5.1 PROJECT LOCATION

The Project is a proposed multi-metal mine located in northern Ontario within the James Bay Lowlands. The Project mine site is located approximately 300 km north of Nakina and 530 km northeast of Thunder Bay (Figure 5.1). The geographical coordinates are 52° 44' 29" N and 86° 17' 45" W.

In terms of land tenure requirements for mine development, temporary work permits and aggregate permits will be required for some elements of construction, but is expected that a portion or all of Noront's mining claims will be converted to lease. It is expected that a portion or all of any access road to site will become a public road owned by the province, but a spur road to the site may be required, and land tenure options for that will be explored with the MNR as required.

### 5.2 PROJECT RATIONALE

Noront has spent considerable time and effort to propose a Project which will as much as possible minimize environmental impact and maximize socio-economic benefits. Aside from the locational constraints of the mine, as determined by the nature of the deposit, Noront has incorporated input from local communities into the design of the Project. Using the input received during early engagement and consultation with interested persons, and the data gathered in previous assessments and investigations, some of the potential alternative methods have already been evaluated and discarded. The rationale for discarding certain alternatives are identified in Section 6.5 and will be discussed in detail in the EA. Noront has an interest in sustaining the production and supply of nickel, copper, platinum and palladium through the Project. Developing the Project would contribute to the production of these metals and to Noront's strategic goals.

Mining also remains an integral part of the northern Ontario economy. As existing projects move through their life cycle, there is an ongoing need to locate and develop new ore bodies to maintain the economy. Mining activities generate considerable direct and indirect economic benefits through employment. Most estimates suggest that there are three indirect jobs created for every direct mining job. The Project will contribute many jobs both on and off-site during construction, throughout its 11 year mine life and during decommissioning. A significant portion of the labour force will be derived from communities in the region. Along with direct employment to the local First Nations, the Project will bring additional training benefits and business opportunities. The development of the Project will also provide financial benefit to local First Nations and will generate tax revenues for the Province and the federal government.

### 5.3 PROJECT COMPONENTS

The major project components may include all or some of the following elements:

- An underground mine, mill and processing plant for crushing, grinding and flotation of the ore, and dewatering of the resulting concentrate. The end product will be a multi-metal concentrate containing nickel, copper, platinum, palladium and gold mineralization. Other associated infrastructure will be developed (for example, on-site all-weather roads, explosives handling and storage facilities, as well as waste and water management facilities) to support the mine. Because of the challenging soil conditions in the wetland and in order to minimize environmental impacts, Noront plans to locate as many of the facilities as practical underground.
- Transportation corridor to link the Project to the existing provincial infrastructure
- A trans-load facility at the terminus of a transportation corridor, where concentrate would be transferred to rail cars for shipment to a site for further processing
- A diesel-fuelled power generation station. An overhead transmission line may be required to deliver power from the station to the mine site, or alternatively, to deliver power to the mine site from the Ontario grid.

### 5.4 PROJECT LIFE CYCLE

The Project involves the construction, operation, closure and remediation of an underground mining facility. Mining of the high-grade nickel-copper-platinum-palladium Eagle's Nest deposit will occur at a rate of 2,960 tonnes of ore per day (t/d) or approximately 1 million tonnes of ore per year. Based on this production rate and currently defined mineral resources, the mine is expected to operate for 11 years.

#### 5.4.1 Project Phases

The Project will occur in three phases. The potential interactions with the natural and socio-economic environments and the potential occurrence of residual impacts are anticipated to be different in each phase. In order to focus the impact assessment, the project activities are divided into three main phases:

- **Construction Phase:** All of the activities associated with preparing the mine site and supporting infrastructure for operation of the mine will be carried out.
- **Operations Phase:** All of the activities associated with mining, ore processing, extraction of the ore and concentrate transport will be carried out for the life of the mine.
- **Closure and Post-Closure Phases:** All of the activities required to decommission, close and stabilize the mine and associated facilities will be carried out. In addition, the activities required to monitor the effectiveness of closure will be carried out and the potential for long-term effects will be considered.

#### 5.4.2 Construction Phase

During the construction phase, all activities associated with developing the mine site and supporting infrastructure will be carried out. Facilities to support construction may be developed

at different project locations, including the mine site and trans-load facility. These facilities may include:

- Accommodations for construction personnel and associated water and waste treatment
- Fuel storage with secondary containment
- Laydown areas

During the construction phase, equipment will be transported and site preparation activities will be undertaken. Clearing, grubbing, and site levelling, will be undertaken where infrastructure is to be built. Site drainage will be managed to minimize impacts to the natural environment. Aggregate for construction at the mine site and at any supporting infrastructure location will be sourced from licensed and/or permitted aggregate sites or from mine development rock.

The site infrastructure, including water supply pipelines, storage and maintenance areas, and permanent support facilities will be constructed. Construction of facilities where potentially hazardous materials are stored or used will include mitigation measures, such as impermeable surfaces and spill containment and clean-up equipment, in order to minimize potential environmental impacts.

Domestic waste products produced during the construction phase, such as food scraps, packaging and recyclables, as well as special wastes/hazardous wastes will be shipped to a licensed waste disposal site. Domestic sewage will be treated by an appropriately sized septic system or a sewage treatment plant, such as a rotating biological contactor (RBC).

#### 5.4.3 Operations Phase

During the operations phase, the process of removing ore will begin with the development of an underground mine. Noront plans to locate as many of the mine site facilities as possible underground in order to minimize potential environmental impacts and to eliminate some of the challenges associated with building in a wetland environment. Surface facilities will include living quarters, administration offices, an airstrip, the mine portal, the explosives handling and storage facilities, and staging areas for activities associated with surface access. Aggregate material will be sourced from underground for construction of the surface facilities.

A transportation corridor will be used to connect the Project to the existing provincial infrastructure. During peak production, it is anticipated that concentrate shipping could occur at a rate of 800 tonnes per day (approximately 20 truckloads). The corridor will also support the transportation of fuel and supplies to and from the mine site.

The operating phase also includes the operation of a number of facilities to support the mining activities. These may include First Aid facilities, accommodations, offices and laboratories. These may also include support facilities, such as sewage treatment facilities, waste disposal and potable water supply.

#### 5.4.4 Closure and Post-Closure Phase

The closure phase includes a list of activities that are designed to ensure that the Project site is closed in a manner that reduces the potential impacts to the social and natural environment. In the closure phase, the mining activities are completed and the dismantling and closure of the site begins. This will include the closing of domestic waste management areas in an environmentally acceptable manner. Closure also involves the progressive rehabilitation of disturbed sites through the removal of infrastructure that will not be needed during future phases of the Project. Reclamation will be undertaken to enhance natural recovery of the disturbed areas and allow for future use by people and wildlife. Mine Closure plans will follow the guidelines established in the *Mining Act* by the Ontario Ministry of Northern Development and Mines, and will take into account the needs and wishes of local communities for future use.

The following provides an example of the various components of the Project that may require remediation and closure:

- Underground Mine and ancillary facilities (securing mine openings)
- Surface infrastructure (removal of surface infrastructure)
- Aggregate stockpiles (if any)
- Pipelines
- Power generation facilities
- Fuel storage areas
- Waste and water management facilities
- Explosives handling and storage facilities
- Contaminated soils (if any)
- Site roads
- Power transmission lines

Closure activities defined in the closure plan also include monitoring (during closure and post closure) at the mine site and other sites requiring reclamation. Monitoring programs will need to address physical and chemical stability of any mine wastes, acid rock drainage and the metal leaching potential of wastes, surface water quality, groundwater quality and the physical stability of all mine related works. Biological monitoring programs may also be required post-closure. The duration of monitoring programs is typically a minimum of 5 years, post closure, but will be defined through consultations with the government, First Nation communities and additional stakeholders. Details of the activities to take place during the closure and post closure phases of the Project will be provided in the EA and presented in the Mine Closure Plan, as required under the *Mining Act*.

## SECTION 6.0 - DESCRIPTION OF AND RATIONALE FOR ALTERNATIVES

### 6.1 INTRODUCTION

The *OEAA* refers to two different types of alternatives: “alternatives to” a proposed undertaking and “alternative methods” to a proposed undertaking. As defined by the MOE, “alternatives to” are defined as “functionally different ways of approaching and dealing with a problem or opportunity”, while alternative methods are defined as “different ways of performing the same activity” (MOE, 2009). The assessment of a wide range of alternatives is essential to the EA planning process in Ontario. The following sections provide details about the various “alternatives to” and “alternative methods” that will be examined in the EA. As mentioned in Section 4, Noront will prepare the EA in accordance with Sections 6(2)(a) and 6.1(2) of the *OEAA*.

### 6.2 SELECTION OF ALTERNATIVES

To determine the range of alternatives to be evaluated in the EA, the following aspects were considered, as outlined in *The Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario* (MOE, 2009):

- Do they provide a viable solution to the problem or opportunity to be addressed?
- Are they proven technologies?
- Are they technically feasible?
- Are they consistent with other relevant planning objectives, policies and decisions?
- Are they consistent with provincial government priority initiatives?
- Could they affect any sensitive environmental features?
- Are they practical, financially realistic and economically viable?
- Are they within Noront’s ability to implement?
- Can they be implemented within the defined study area?
- Are they appropriate to the Noront Project?
- Are they able to meet the purpose of the Environmental Assessment Act?

In addition, alternatives were also selected based on input received during consultations with regulatory agencies, the public and Aboriginal groups.

### 6.3 ALTERNATIVES TO

The purpose of the Project is to develop a multi-metal underground mine to produce and supply a concentrate containing nickel, copper, platinum and palladium minerals. This purpose can only be achieved through the mining and processing of the deposit. As such, the only feasible alternative to the Project is the “do nothing alternative”.

### 6.3.1 Do Nothing Alternative

The EA will evaluate whether the anticipated benefits of the Project outweigh the predicted impacts. A comparison of the proposed project against the "do nothing alternative" will evaluate the potential environmental impacts of the Project against the socio-economic benefits.

The "do nothing alternative" will be used as a reference for comparison of alternative methods and will help determine to what extent the alternatives address advantages and disadvantages of proceeding with the Project.

## 6.4 ALTERNATIVE METHODS OF CARRYING OUT THE PROJECT

The EA will identify and describe technically and economically feasible alternative methods of carrying out the Project. The list of alternative methods presented in the ToR was determined through scoping and feasibility level studies and consultation with Project stakeholders (including government, public and aboriginal communities). The list may be refined during the EA process as the Project evolves.

In the following sections, several base cases are presented that represent the primary alternatives that will be considered in the EA. Noront is committed to undertaking a rigorous and iterative process during the EA to rationalize and select final preferred alternatives. The process of selection will integrate consultation with First Nations, the public and other stakeholders, as well as the evaluation of potential environmental impacts. Section 6.5 outlines alternative methods which were screened out during the preparation of the ToR and will not be considered further in the EA.

### 6.4.1 Mine Development Alternatives

The base case for mine operations uses underground mining techniques. This involves drilling, blasting and the movement of ore to a concentrator (mill). A ramp from surface will provide access to the mine workings. The ramp will be continued to a depth of approximately 1,200 m. It will be constructed adjacent to the ore body to connect the production levels and will be utilized to transport the ore to the mill. Ore will be processed underground resulting in two products, concentrate and backfill. All waste products from the milling circuit will be stored underground as paste or cemented paste backfill. Mine operations will also include the production of aggregate materials and the backfilling of stopes. The bulk concentrate produced in the mill will be transported to a trans-load facility where it will be transferred to rail for shipment to a site for further processing. Alternative methods for mine development could include an open pit mine. This alternative will not be considered in the EA as it has been excluded through pre-screening, as discussed in Section 6.5.

#### 6.4.2 Mine Design Alternatives

The following parameters were used as the base case for the design of the Eagle's Nest Project:

- An indicated resource of 11 Mt from 10 m below surface to 1,200 m below surface
- Design production rate of 4300 tpd, which is comprised of: 2,960 tonnes/day of ore, 350 tonnes/day of aggregate rock and 1,000 tonnes/day of waste
- Foot wall and hanging wall rocks and ore are generally competent
- Surface overburden is from 5 m to 20 m deep and 100% saturated
- Ore body sections developed in vertical blocks, varying in height from 100 m between sills to 150 m with 50 m sub-levels
- A 75 m thick Crown pillar and 50 m sill pillars (separating individual mining blocks) that are to be mined at end of mine life
- The specific gravity of the rock is 2.7, the bulk in situ ore is 3.0 and the tailings slurry is 1.57 at 50% density (solids by weight)

Production rate alternatives include:

- Less than 2960 t/d
- Greater than 2960 t/d

#### 6.4.3 Ore Processing Alternatives

An underground mill and processing plant will be constructed for the crushing, grinding, flotation and dewatering of the ore. The facility is currently expected to produce a single nickel, copper, platinum, palladium and gold concentrate, but may produce separate concentrates dependent on market conditions. The concentrate will be shipped off-site for further processing.

Alternative methods of ore processing could include:

- Off-site ore processing
- Above ground milling and processing facility
- Combination of above ground and underground milling and processing facilities

#### 6.4.4 Concentrate Handling and Storage Alternatives

Concentrate will be transported from the mine site to a trans-load facility where it will be transferred to rail cars for shipment to a site for further processing.

Alternative methods of concentrate handling could include:

- Pipeline transport of concentrate slurry to an off-site dewatering facility and onward transportation by truck to a trans-load facility
- Truck transport of dewatered concentrate from the mine site to a trans-load facility located either at Savant Lake (east-west road) or Aroland (north-south road)

#### 6.4.5 Project Construction Alternatives

Various alternative methods of constructing the Project will be evaluated. This may include approaches for construction of any road, pipelines or other facilities.

#### 6.4.6 Explosives Handling and Storage Alternatives

The explosives for the mining operations will be manufactured off-site and supplied to the Project as a contractor provided service. The explosives will be shipped to site when required and stored underground in a permanent magazine. A temporary storage facility will be used during the construction phase. All storage facilities will be constructed to meet NRCan's requirements under the *Explosives Act*.

As an alternative, an emulsion explosives plant could be constructed on-site. Raw materials for explosives would be transported to the site and stored at a suitable separation distance from the facility. Sensitizer for the emulsion, which increases its ease of detonation, would only be mixed during loading operations at the underground blasting areas. Magazines for detonators, boosters and some emulsion explosive cartridges (stick powder) would be constructed at suitable separation distances from other mine facilities and the explosives plant.

#### 6.4.7 Power Supply Alternatives

Electrical power will be required to support the mine site infrastructure. The estimated mine site power demand is less than 20 MW. The base case is to provide power with on-site diesel generators. However, alternative methods of supplying electrical power could include:

- Off-site diesel generators at a site (Webeque Junction) located south of Webeque approximately 90 km west of the Project site
- Connection to provincial power grid

Additionally, consideration will be given to constructing transmission lines to the provincial power grid which would be shared with other users (e.g., communities, mines, etc.).

#### 6.4.8 Water Supply Alternatives

Water for the mine, mill, and surface operations will be supplied from groundwater seepage into the underground workings and from groundwater wells. Potable water will be sourced from groundwater wells and supplied through a potable water treatment plant.

Water supply alternatives could include surface water sources.

## 6.4.9 Waste and Wastewater Management Alternatives

### 6.4.9.1 Mine Waste Rock Alternatives

Waste rock from the initial underground development will be trucked to the surface to be used as potential aggregate or other fill material for surface infrastructure. Aggregate crushing, screening and stock piles will be located on surface. Mine waste rock and material excavated from aggregate stopes would undergo comprehensive acid rock drainage/metal leaching (ARD/ML) testing prior to potential use as aggregate, fill, or in concrete for surface construction. The ARD/ML testing would incorporate appropriate static and kinetic testing methods, and geochemical testing would also include chromium speciation analyses. An alternative would be not to use the material for aggregate.

### 6.4.9.2 Tailings Management Alternatives

All of the tailings produced by the mill will be stored underground. Most will be turned into cemented paste backfill and stored in ore stopes. The remainder (estimated to be 20 to 30% of tailings produced) will be dewatered and stored in aggregate stopes excavated in the host granodiorite rock mass. Seepage water from backfill and aggregate stopes will be pumped back to the mill for treatment and re-use.

The aggregate stopes will be situated in the host rock between the 75 m level and 125 m level, away from the shaft, ramp and mill infrastructure. The stopes will be mined out by the same production practices as the ore stopes using a blast hole mining method. Additional cavities within the 125 m level to 175 m level horizon will be excavated to provide rock handling infrastructure (coarse rock pass, crusher/screen plant, crushed rock product passes and bins). The demand for aggregate will be predominantly during the construction phase of the project for use on surface as fill material and as the aggregate component of concrete. As such, the aggregate stopes will be available from the start of production for holding waste rock and tailings.

Tailings management alternatives could include:

- Cemented underground storage
- Un-cemented underground storage
- Lined above ground storage
- Un-lined above ground storage

### 6.4.9.3 Mine and Mill Wastewater Management Alternatives

Water will be required for ore processing. The process plant water needs will be provided through the recycling of process water and mine water. Process wastewater will be lost to the tailings voids and through the paste backfill process. It is expected that the process plant will operate at a deficit and there will be no surplus process water discharged to the environment. A detailed water balance will be developed and included

in the EA report based on an assessment of alternative methods for elements in the wastewater process, including:

- Do not recycle water
- Recycle as much water as possible
- Use process water for tailings paste backfill
- Do not use process water for tailings paste backfill

#### 6.4.9.4 Organic and Solid Waste Alternatives

Waste products will include domestic waste, such as food scraps, packaging, and refuse. Inert waste such as glass, scrap metal and clean plastics will also be produced. Due to the location of the Project, a below grade landfill site is not possible for the disposal of non-hazardous materials. The most suitable way to dispose of non-hazardous waste on site is through incineration. An incinerator will be the primary means of disposing of domestic waste during the construction, operation and closure phases of the Project. Materials not suitable for incineration, such as recyclable plastic, tins, and glass, will be sorted, compacted and stored until they can be shipped off site. Similarly, scrap metal will be stored on-site with the recyclables until it can be shipped off site or reused. Wood packaging will be burned on site or transported off site as appropriate.

A proposed dual chamber manual incinerator with a minimum residence time of one second in the combustion zone, at a defined minimum combustion temperature, will be used. Waste passing through the primary chamber will burn and release volatile gases and soot that will travel to the secondary high temperature chamber for additional incineration. The end product is then sent to either a wet or dry scrubbing system. Details surrounding monitoring of the emissions will be determined through the provincial air emissions approval process. The on-site waste management facility will be fenced off to prevent animals, including wolves and bears, from accessing potential food sources.

Alternative organic and solid waste methods could include:

- Location of the incinerator on-site and off-site
- On-site landfill
- Shipment to an off-site licensed landfill

#### 6.4.9.5 Hazardous Waste Alternatives

Hazardous waste may include, but not be limited to, biomedical waste, contaminated soils, used petroleum products and petroleum contaminated containers. These wastes will be handled and stored in sealed containers in lined and bermed areas or in secondary containment. These materials will be sent off-site to an appropriate licenced facility. Contaminated soils will be treated on-site in a bioremediation area.

Used glycol and lubricating oils will be stored in tanks and sent off-site to a licensed disposal facility. All contaminated liquids will be stored in clearly marked containers and sent to a licensed disposal facility. Empty fuel tanks will be stored within the fuel storage area and returned to the vendor. If the containers are not returnable, they will be cleaned, crushed and stored on-site until they can be shipped off-site.

No alternatives to hazardous waste management are apparent or have been suggested to date by stakeholders.

#### 6.4.9.6 Sewage Treatment Alternatives

Domestic sewage will be treated by an appropriately sized septic system or a sewage treatment plant such as a rotating biological contactor (RBC). A RBC plant would be fed by a pair of alternating duty, constant feed submersible pumps, that are installed at the bottom of an in-ground concrete surge tank and pump chamber.

Alternative methods to sewage treatment may include the type of sewage system technology, receiving water and discharge location/method.

#### 6.4.9.7 Storm water Management Alternatives

Collection and settling ponds will be constructed to manage runoff from surface infrastructure, including water potentially contaminated by contact with waste rock during the initial development of the mine. Any contaminated water will be treated as required.

Alternative methods to surface water management could include the location of ditches, ponds, treatment facilities and discharge locations.

#### 6.4.10 Mine Site Access Alternatives

Access to the Project is currently limited to aircraft as there are no existing all-season or winter roads to the proposed mine site.

A transportation corridor will link the Project to the existing provincial infrastructure. The province has committed to the proposed development of a new all-season road to run south from the Ring of Fire. The provincial Minister of Northern Development and Mines has recently committed the province to support the Cliffs Natural Resources business plan for the nearby chromite deposit. Accordingly, Noront has adopted the use of a north-south route, constructed by another party, as the base case for access to the mine site. In this scenario, a site near Aroland First Nation would be used for a trans-load facility.

The transportation corridor alternatives may include an east-west transportation corridor to be constructed by Noront and others (all-season and/or winter road)

Noront favours the east-west corridor based on the evaluation of potential impacts to the environment, primarily caribou habitat, sensitive wetlands, consultation with First Nation communities and the results of an access route study outlined in Appendix A.

#### 6.4.11 Support Facility Alternatives

A single, multiple use Services Building Complex will be developed. This building will include the administration and engineering office, warehouse, mine dry, nursing station, assay and environmental laboratory, surface maintenance shops, health & safety offices, and training rooms. An accommodation building will be developed with approximately 350 rooms (700 people with double occupancy in rooms). This building will be attached to the services building complex.

The location of support facilities are the only alternative method to be considered in the EA.

#### 6.4.12 Summary of Alternative Methods Being Considered in the EA

The following list is a summary of the alternative methods for each project component that will be considered further in the EA.

- Mine development alternatives
  - Underground mining techniques
- Mine design alternatives (production rate alternatives)
  - Less than 2960 t/d
  - Greater than 2960 t/d
- Ore Processing Alternatives
  - Underground mill and processing facility
  - Above ground milling and processing facility
  - Combination of above ground and underground milling and processing facilities
  - Off-site ore processing
- Concentrate handling and storage alternatives
  - Transport on access corridor by truck to trans-load facility for loading to rail cars
  - Location of trans-load facility either near Aroland or Savant Lake
  - Pipeline transport of slurry to off-site dewatering facility for truck to trans-load facility for loading onto rail cars
- Project construction alternatives
  - Various alternative methods of constructing any road, pipeline or other facilities
- Explosives handling and storage alternatives
  - Explosives manufactured off-site and supplied by contractor, to be stored underground in a permanent magazine
  - Construction of emulsion explosives plant on-site.

- Power supply alternatives
  - On-site diesel generators
  - Off-site diesel generators
  - Connection to provincial power grid
- Water supply alternatives
  - Groundwater sources
  - Surface water sources
- Mine waste rock alternatives
  - Used as aggregate or fill material on surface
  - Not used for aggregate or fill material on surface
- Tailings management alternatives
  - Tailings stored underground as cemented paste backfill
  - Un-cemented underground storage
  - Lined above ground storage
  - Un-lined above ground storage
- Mine and mill wastewater management alternatives
  - Do not recycle water
  - Recycle as much as possible
  - Use process water for tailings paste backfill
  - Do not use process water for tailings paste backfill
- Organic and solid waste alternatives
  - Incineration of waste on-site, shipment of non-incinerated waste off-site
  - Location of incinerator on-site or off-site
  - Shipment of all waste to an off-site licensed landfill
- Hazardous waste alternatives
  - Stored in sealed containers and shipped off-site
- Sewage treatment alternatives
  - Septic system or sewage treatment plant (such as a rotating biological contactor)
  - Type of technology used
  - Location of facility and location of discharge
- Storm water management alternatives
  - Location of collection and settling ponds, treatment facilities and discharge
- Mine site access alternatives
  - All season north-south transportation corridor
  - All season or winter east-west transportation corridor
- Support facility alternatives
  - Location of support facilities

## 6.5 SCREENING OF ALTERNATIVE METHODS

Potential alternative methods of carrying out the Project are constrained by the nature of the Project and the baseline studies completed to date. There are several alternatives that were evaluated during the preparation of the ToR and will not be carried forward to the EA. For example, certain mining method alternatives (underground vs. open-pit), alternatives for power supply, and transportation options have

been excluded. Pre-screening of alternatives in the ToR is a result of scoping and feasibility level studies and consultation with communities and other groups. The goal of the pre-screening process was to optimize the Project and minimize potential environmental impacts through construction, operation, closure and post-closure phases. The rationale for the exclusion of certain alternative methods from the EA is discussed in the following sections.

#### 6.5.1 Mining Methodology

The Eagle's Nest deposit is a near-vertical pipe-like structure measuring (at surface) 200 m on strike by 60 m wide and extending down to a depth of 1,200 m. The deposit is open at depth with inferred resources down to 1,600 m depth. As such, this deposit structure can only be mined economically through underground mining techniques, due to the extremely large amount of material that would have to be excavated if an open pit methodology was utilized. Additionally, the wetland conditions and associated issues to contain a surface opening, including the possible requirement to apply refrigerated "freeze-wall" technology, make an open pit structure unsuitable for extracting the deposit. With the high rock competency exhibited in the deposit and the granite-type (granodiorite) rock around it, standard bulk stoping (blast hole) mining is possible. A traditional shaft is not planned since the headframe would have to be sunk through the peat bog. The twin ramp system that is currently envisioned can provide the requisite access, emergency egress routes, ventilation and materials handling.

#### 6.5.2 Power Source

Hydroelectric, solar, natural gas and wind power alternatives were assessed during the preparation of the ToR. Solar and wind alternatives were determined not to be capable of providing a reliable power supply for the Project. Moreover, construction of a hydroelectric generating station is not seen to be practical or technically applicable. The construction of such a facility would also have unjustifiable adverse environmental effects compared to the other alternatives. Natural gas electricity generation was also considered unacceptable as a new pipeline and facility would need to be constructed. The construction of the pipeline and natural gas power plant would not be economically feasible.

Noront would prefer to obtain power from the Ontario power grid. Unfortunately plans for supplying grid power to the Ring of Fire region have not yet been made by the province. The document "Ontario's Long-Term Energy Plan", released by the province on November 23, 2010, does mention power transmission to the region through upgrading the lines to Pickle Lake. As such, this alternative will be considered in the EA. However, the provision of power to the Ring of Fire and local communities needs to be defined and no dates are noted in the Energy Plan.

Diesel generators were selected for the base case due to their proven capability to supply reliable power for a remote location. Alternative locations for the diesel generators will be considered in the EA.

### 6.5.3 Concentrate Shipment

Noront considered many alternate ways to access the site and ship concentrate to a trans-load facility. Several alternative methods will not be assessed in the EA:

- Hovercraft were considered to move materials, but the high costs to operate the required fleet of hovercraft makes this option less viable. There is also concern for the noise level created by the hovercraft, which could impact the movement patterns of local wildlife (caribou).
- The flat terrain was evaluated for use of a canal and barges. Factors against this alternative include the cost to build and operate a canal system, the necessity to limit water flow along the canal to protect the peat bog from drainage, and the operational issue of trying to operate 100 km of canal in winter.
- Airships have been suggested for accessing remote northern communities and mining operations. No large capacity, commercially viable and proven reliable airships are in service. There is talk of plans to develop ships with 20 or 50 tonne payloads, but even larger capacity airships would be required to meet the materials handling requirements: of 600 tpd over a distance of 330 km. Given the uncertainty of availability and unknown costs for operating a fleet of airships, this alternative is not being pursued.

### 6.5.4 Summary of Alternative Methods Not Being Considered in the EA

The following list is a summary of the alternative methods that have been considered during the preparation of the ToR and screened out. They will not be considered further in the EA.

- Mining methodology
  - Open pit mining
- Power Source
  - Hydroelectricity
  - Wind
  - Solar
- Concentrate Shipment
  - Hovercraft
  - Canal system
  - Airships

## SECTION 7.0 - DESCRIPTION OF THE EXISTING ENVIRONMENT AND POTENTIAL EFFECTS OF THE PROJECT

### 7.1 PROJECT DESCRIPTION

The EA will provide a final description of the Project components in order to identify the interactions of each component with the physical, biological and socio-economic environment. The description will be sufficiently detailed to enable identification and assessment of potential impacts during each of the phases in the Project life cycle (construction, operations, closure and post closure). The Project description will include information on the:

- Purpose and rationale of the Project
- Regional and local geology, including an analysis of the mineralized body
- Description of Project components, including:
  - The Project footprint
  - The materials to be used
  - Technologies, procedures and processes
  - The products, by products and waste generated
  - Hazardous materials, water and waste management systems
- Workforce accommodation, management and training
- Implementation plans, costs and schedules
- Closure and post closure plans

The Project description will also provide details on the alternatives considered during the finalization of the Project and the rationale for choices made. Noront's current scoping study methodology includes using trade off studies that investigate alternatives based on their cost effectiveness and their potential environmental and social impacts.

### 7.2 IDENTIFICATION OF STUDY AREAS

The following sections provide a description of the environmental components to be provided in the EA.

#### 7.2.1 General Study Area

The significance of an environmental impact partially depends on the geographic extent. As such, impact assessments will be considered on the basis of specific study areas related to project development. More specifically, the potential impacts of the Project will be assessed on the basis of local and regional areas. The local study areas will include the physical footprint and extend beyond the immediate footprint to include the area around the site where impacts are likely to occur. For example, the mine site local study area would include the mine and ancillary infrastructure illustrated on Figure 7.1 and would extend beyond the immediate footprint to include the area around the site where impacts are likely to occur. Local study areas will be defined in the EA for the mine site and trans-load facility. The regional study area extends beyond the local study area to include the maximum geographical extent in which impacts from the Project are expected. For instance, Figure 5.1 illustrates the communities that are located

within the socio-economic regional study area. In this case the regional study area encompasses the local First Nation communities that may be negatively or positively impacted by the Project. Additional local and regional study areas will be required if infrastructure is developed beyond to the mine site to support the operation.

The EA will define specific study areas for each of the study components. Each component will be assessed within the context of local or regional study areas. The size and extent of each study area may differ for each environmental study component. For example, the study area for assessing terrestrial biological effects (e.g., caribou migration) will likely be more extensive than the hydrological study areas. Watershed boundaries will be utilized where applicable to ensure that potential impacts on an entire watershed are considered.

### 7.2.2 Caribou Study Area

The local and regional study areas will incorporate the potentially affected caribou range or ranges. Cumulative effects of this Project, as well as other developments in the Ring of Fire on caribou will be assessed as directed by the Ontario Caribou Conservation Policy under the ESA (2007). Noront is currently a member of a MNR working group that aims to develop resource selection modelling for caribou in the Ring-of-Fire region. One of the objectives of this work is to define caribou population ranges, which will assist in defining the study area necessary for the Project's caribou component. This includes the mine site, potential transportation corridors, and the associated aggregate pits and service roads. Appendix B provides a summary of the Ontario Woodland Caribou Recovery Strategy and the Ontario Woodland Caribou Conservation Plan. The appendix also describes the anticipated information needs and analyses.

### 7.3 GENERAL SITE INFORMATION

Current access to the Esker Camp exploration site is by helicopter or airplane equipped with floats in the summer and skis and/or wheels during the winter. Flights typically originate from Nakina, which is located 300 km to the south, from Pickle Lake, which is located 300 km west southwest, or from Webequie, which is located 80 km west northwest. Koper Lake, located 3 km to the east of the camp, serves as the main access point for float planes and is used as a winter ice strip. Nakina is accessed by all-season road and rail, while Pickle Lake is accessible by all-season road. Both centres have paved airstrips.

The deposit is located adjacent to the Muketei River near a series of esker deposits. The esker deposits are overlain by post-glacial lacustrine and marine silt and clay. The local area consists of large wetland areas with extensive organic soils and small water bodies.

Environmental baseline studies were initiated by Noront in 2009 and are ongoing. Preliminary results were discussed with provincial ministries in May, 2011 and April, 2012. Their comments were reviewed and applied to planning for 2012 baseline studies.

#### 7.4 PHYSIOGRAPHY, GEOLOGY AND GEOCHEMISTRY

The regional study area is underlain by Precambrian rocks of the north-western part of the Archean Superior Province. The Superior Province is a part of the central region of the Canadian Shield. A series of Meso-archean volcanic and plutonic belts, trending from west to east, formed as micro-continents and are separated by Neo-archean meta-sedimentary belts and crustal faults.

Eagle's Nest is a magmatic massive sulphide deposit dated at 2,73 Ma that was intruded into a granodiorite dated at 2,77 Ma (Mungall et al, 2010). The deposit is located within a significant greenstone belt at the eastern exposure limit of the Oxford-Stull Domain where it disappears under the Paleozoic cover. The geology of the greenstone belt is not fully understood due to the lack of exposed supracrustal rocks in the region and interpretation is almost exclusively from airborne geophysical surveys and diamond drilling.

Surficial material in the region consists of un-stratified post glacial till interspersed with bedrock outcrops and stratified till. The surficial material at the mine site is predominantly silty clay loam, of marine and lacustrine origin, overlying coarser sands of an esker deposit. Soil development in the region varies depending on drainage. Low lying areas consist of organic soils, while better drained soils are regosolic.

Screening level environmental testing and chemical analyses were conducted on granodiorite and ultramafic intrusion diamond drill core samples. These tests were conducted to determine whether materials sourced from underground would be suitable for construction aggregate. The samples were subjected to standard extraction tests and chemical analyses used to estimate the short and long-term solute release produced by natural rock weathering. The analyses were done to determine:

- The ultimate potential of this material to generate acidic leachate (based on acid/base accounting (ABA) analyses)
- The short term potential of this material to produce leachate that contains metals or other regulated solutes at concentrations above regulatory discharge standards (using synthetic precipitation leach procedure (SPLP) tests (modified to 1:4 rock:water ratio)
- The ultimate potential for dissolution of metal and other regulated solute by long term oxidation (using the peroxide oxidation net acid-generating potential (NAG) test)

Test results show that the granodiorite and granodiorite with mafic intrusion samples were not acid generating. Test results show that the granodiorite and mafic intrusion had neutralization potentials of at least 3 times greater than their acid generating potentials. Test results also found that several solid phase metal concentrations were below detection limits, including arsenic, bismuth, antimony and selenium. Nickel was present in concentrations of 5.5 to 10 µg/g and copper concentrations ranged from 5.5 to 50 µg/g.

Primary elements of potential environmental concern are arsenic and vanadium within the deeper mafic dyke/granodiorite rock. Test results from these rocks suggest that both elements exceed the Provincial Water Quality Objectives (PWQO) standards in both effluent from the meteoric-water leach test and the NAG-test leachate. Both of these elements can have moderate to high mobility in the environment. These rocks will not be utilized as aggregate sources.

Other elements that exceeded the PWQO standards include aluminium, copper, chromium, silver and hydronium ion (i.e., pH). These elements are unlikely to be a concern because they are highly reactive in natural environments. As such, little buffering would be required to reduce the pH to below PWQO standards (pH 8.5). These metals also tend to strongly adsorb to mineral surfaces and/or precipitate rapidly at near neutral pH. As a result, these constituents are likely to drop quickly out of solution when effluent from this rock encounters soil or aquifer materials.

In more sensitive areas, it may be possible to remove solutes from the leachate by simple treatment (e.g., flocculation in a settling pond) or through light amendment of the granodiorite with a chemical adsorbent. Additional geotechnical and chemical testing is ongoing. When available, the test results will be applied to the design of the Project.

#### 7.5 CLIMATE AND METEOROLOGY

The James Bay Lowlands region of northern Ontario has a humid continental climate with cool short summers and cold long winters. The area has a perihumid high boreal ecoclimate and does not experience a dry season. The local climate is affected by the proximity to Hudson Bay and James Bay. Fog is common in the early morning and may last all day during the summer months. There are usually one or two days of dense fog in the summer that restrict the use of aircraft. There are typically two or three days during the winter months when snow storms restrict activity in the region. The following weather statistics are based on data collected from the Environment Canada meteorological station at Lansdowne House (Neskantaga), approximately 130 km to the southwest, from 1971 to 2000:

- The average daily temperature is  $-1.3^{\circ}\text{C}$
- Summer temperatures are generally between  $10^{\circ}\text{C}$  and  $20^{\circ}\text{C}$  with a mean July temperature of  $12^{\circ}\text{C}$  and a mean maximum summer temperature of  $22^{\circ}\text{C}$ . The extreme maximum summer temperature is  $37^{\circ}\text{C}$ . Winter temperatures are generally between  $-10^{\circ}\text{C}$  and  $-30^{\circ}\text{C}$  with a mean January temperature of  $-21^{\circ}\text{C}$  and a mean minimum temperature of  $-27^{\circ}\text{C}$ . The extreme winter minimum recorded has been  $-48^{\circ}\text{C}$ ; and an extreme wind chill of  $-58^{\circ}\text{C}$  has been recorded.
- The period from mid-June to mid-September is generally frost free
- Lakes start to freeze in mid-October and start to thaw in mid-April
- The average annual precipitation is 699.5 mm with approximately 241.6 mm falling as 2.416 m of snow. Measurable precipitation falls on an average of 169 days during the year with snow falling on 89 of those days.
- The average snow depth is 65 cm in February
- Winds average between 13-17 km/hour depending on the month, and blow from the west to northwest in the winter and from the west to southwest in the summer. In May, however, winds are predominantly from the northeast
- Easterly winds commonly bring fog from James Bay and are associated with heavy precipitation

#### 7.6 AIR QUALITY AND NOISE

The mine site area is in a remote setting, far away from concentrated human activity. The atmospheric environment is expected to be relatively free of contaminants. The existing air quality conditions will be

characterized using published literature and air quality data from established long-term monitoring stations in northern Ontario.

The background noise conditions are expected to be representative of a rural sound environment, characterized by sounds of nature. Current noise conditions are influenced by ongoing mineral exploration activity, such as helicopters, aircraft, and other equipment.

Potential effects of the Project's air and noise emissions will be assessed, including those arising from Project-related traffic.

### 7.7 HYDROLOGY

Surface water includes water accumulating on the ground in wetlands, lakes and streams. The mine site is located within the Attawapiskat watershed. The Attawapiskat watershed is approximately 56,589 km<sup>2</sup> in area and drains northeast into James Bay.

Streams in the study region are low gradient and have low velocity flow throughout most of the year. The stream banks are typical of low gradient streams and are well defined by earth, boulders, bedrock outcrops and natural levees. Beaver dams are common features on small to medium sized streams. Stream flow peaks in the spring as a result of snowmelt runoff and rainfall runoff from saturated soils. Flows recede through the summer and increase in the fall due to an increase in rainfall and decrease in evaporation. Flows are normally lowest in winter and some small streams freeze completely to the stream channel bed. Snowfall is an important component of the hydrologic cycle in the region as accumulated snow represents a significant stored water component.

### 7.8 HYDROGEOLOGY

The James Bay Lowlands are characterized by predominantly flat, poorly drained soils with slow rates of plant decay. As a result, the development of organic soils and peat is common throughout much of the area. The organic surface layer typically ranges from 3 to 5 metres in thickness. It is underlain by a clay/silt till layer of up to 2 m thick, and a Quaternary till layer of up to 5 m thick. Depth to bedrock ranges from 5 to 12 m below the surface. Two aquifers have been defined at the mine site; a shallow overburden aquifer and a deeper bedrock aquifer. The clay/silt till layer creates an aquitard, which restricts the movement of groundwater from one aquifer to the other.

Stream systems are cut minimally into the landscape, have low slope and slow flows. Due to low relief and low permeability soils, the streams are connected to the overburden aquifer and are not typically connected to deeper bedrock aquifers. The groundwater table in the overburden is typically at or near the surface due to the flat terrain and underlying low permeability silts and clays. Where the low permeability overburden material exists, the shallow overburden aquifer is isolated from groundwater in the deeper bedrock. The permeability of the bedrock is expected to decrease with depth so, in general, the most permeable bedrock aquifer will occur along the bedrock/overburden interface.

Glaciofluvial esker deposits are common in the Project area. Eskers are ridges that typically consist of a core of stratified sands and gravels. In esker deposits, the soils are much better drained, there is little

surface organic material and the groundwater table is further below the surface. Eskers are of particular interest for the caribou habitat values analysis at the sub-range and range scales. Being a small proportion of the landscape, eskers may have functions proportionally greater than their area alone might suggest. The well-drained terrestrial vegetation on top with full sized trees and forest cover (absent in the wetlands), and abundant ground lichens may play an important role in seasonal caribou habitat use.

Baseline groundwater studies are being conducted as part of the EA to characterize the existing groundwater regime and to support the definition of potential impacts, mitigation measures, monitoring and contingency planning as mine planning proceeds. This will include studies of shallow and deeper groundwater wells relevant to mining.

## 7.9 WATER QUALITY

Baseline surface water quality is being monitored at 11 sites around the proposed mine site. Groundwater quality is being monitored in seven shallow overburden wells and four deeper bedrock wells around the proposed mine site.

Preliminary surface water quality sampling shows that the water at the mine site generally falls within the Provincial Water Quality Objectives (PWQO) for the protection of aquatic life and the Canadian Environmental Quality Guidelines (CCME). However, iron, aluminum and to a lesser extent cadmium, copper and zinc exceeded PWQO and CCME guideline limits. In some cases, in situ pH levels do not meet the PWQO or CCME guidelines. Dissolved oxygen also exceeded PWQO guideline limits at some sites. Iron exceeded both PWQO and CCME guideline limits in most of the groundwater wells sampled. Aluminum exceeded both CCME and PWQO guideline limits at some locations while remaining below method detection limits (MDLs) at others. Additional metals that exceeded PWQO limits included cobalt, nickel, tungsten and zinc.

## 7.10 BIOLOGY

### 7.10.1 Terrestrial Environment

The Project is located within the Boreal Forest of Ontario. The proposed mine site is located in the James Bay Lowland Ecoregion that is characterized by cool, short summers and cold winters.

Most of the James Bay Lowlands are poorly drained with dominant vegetation consisting of sedges, mosses, and lichens with or without stunted Black Spruce and Tamarack. Wetlands cover up to 75% of the ecoregion in certain areas and are composed mainly of northern ribbed fens, northern plateau bogs, and palsa bogs. In the southern portion of the ecoregion and along rivers, the forests are composed of Balsam Fir, White and Black Spruce, Trembling Aspen, and White Birch.

Bird surveys conducted to date have documented the presence of 76 bird species. The ten most abundant breeding bird species include the following (in order of decreasing abundance) Swainson's Thrush, Yellow-rumped Warbler, Ruby-crowned Kinglet, White-throated Sparrow, White-winged Crossbill, Hermit Thrush, Tennessee Warbler, Gray Jay, Winter Wren and Northern

Waterthrush. Shorebirds observed during field studies include the Solitary Sandpiper, Semipalmated Sandpiper, Spotted Sandpiper and Greater Yellowlegs. Raptors observed in the Project study area include Bald Eagle, Osprey, Sharp-shinned Hawk, Red-tailed Hawk and the Northern Harrier.

Known mammal and bird species at risk that have been observed during baseline investigations include Woodland Caribou (threatened), Bald Eagle (special concern), Canada Warbler (special concern), Common Nighthawk (special concern), Olive-sided Flycatcher (special concern), and Rusty Blackbird (special concern).

According to species atlas data for Ontario, the only reptile that is found in the regional study area is the Eastern Garter Snake. Also from atlas data, amphibians that likely occur in the Project study area include the American Toad, Boreal Chorus Frog, Gray Treefrog, Green Frog, Mink Frog, Northern Leopard Frog, Spotted Salamander, and the Spring Peeper.

However, due to its remote location and lack of development, the regional study area has not been surveyed systematically or rigorously. Data from recent work by the Far North Terrestrial Biodiversity Project (2010) and the Far North Caribou Project in the Ring of Fire (ongoing) has not necessarily been entered into OMNR's Natural Resources and Values Information System (NRVIS) database. The absence of records in the NRVIS system should not be assumed to indicate absence of biodiversity and habitat features in the region. As more surveys are conducted in the region, more ecological data will become available.

#### 7.10.2 Aquatic Environment

Bogs and fens are common throughout the James Bay Lowlands and perform numerous ecosystem functions. Wetlands provide habitat for many bird species, moose and other wildlife. A vast number of streams are present in the lowlands and connect the many shallow lakes and wetlands in the area. Water bodies in the study area support a variety of cool and cold water fish. Large rivers including the Ekwan, Muketei, Attawapiskat and Ogoki support populations of Walleye (*Sander vitreus*), Lake Sturgeon (*Acipenser fulvescens*), Brook Trout (*Salvelinus fontinalis*), Lake Whitefish (*Coregonus clupeaformis*) and other fish species. A number of lower energy watercourses connected to these rivers provide habitat for Walleye and Northern Pike (*Esox lucius*). Typically, Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersonii*) and other small foraging fish species are present with these larger bodied fish. Smaller streams and lakes in the area also support a variety of smaller-bodied fish including cyprinid species, Brook Stickleback (*Culaea inconstans*) and Mottled Sculpin (*Cottus bairdii*).

A number of lakes, ponds and beaver impounded watercourses surround the proposed mine site. A comprehensive surface water quality monitoring program has been implemented as part of baseline studies. In addition, a focussed aquatic baseline assessment of surface water was conducted in 2011, and included surface water and aquatic sediment quality monitoring, as well as benthic macroinvertebrate, and fish community surveys.

## 7.11 SOCIO-ECONOMIC AND CULTURAL

### 7.11.1 Regional Land Use

The Project is located in a region that has seen little to no development. The population within the James Bay Lowlands Ecoregion is approximately 7,100. The area includes the traditional lands of a number of First Nations which support traditional land uses including, but not limited to, hunting, trapping and fishing. Land uses in the area include hunting, trapping, fishing and recreational activities mainly consisting of tourist lodges, fly-in camps, and self-directed recreational activities which will be identified and mapped.

The nearest communities to the Project are Nakina (population 700), located 300 km south southeast and Pickle Lake (population 400), located approximately 300 km west southwest. Major service centres include Thunder Bay (population 109,000), located approximately 530 km south southwest, and Timmins (population 43,000) located approximately 575 km southeast.

### 7.11.2 Aboriginal Communities

The Project lies within the James Bay Treaty or, as it is commonly referred to, Treaty 9. The site of the project lies within a region that has overlapping traditional lands. Specifically Marten Falls, Webequie, and Neskantaga First Nations all state that they have used the area from time immemorial. Other communities also indicate that their traditional lands will be impacted to some degree by the proposed Project.

Other First Nations communities that may potentially be affected by the Project have been identified as Nibinamik, Eabametoong, Mishkeegogamang, the Ojibway Nation of Saugeen, Attawapiskat, and Aroland First Nations. Marten Falls, Webequie, Nibinamik, Neskantaga and Eabametoong First Nations are part of the Matawa Tribal Council. Attawapiskat First Nation is a member of the Mushkegowuk Tribal Council.

The following provides a brief description of the potentially impacted communities:

- **Marten Falls First Nation** is an Anishinaabe First Nation which occupies a community at Ogoki Post, approximately 130 km southwest of the Project at the junction of the Ogoki and Albany Rivers. As of February 2008, the First Nation had a total registered population of 600 people, of which their on-reserve population was 283 people. Year round access to the community is by air. A winter road is constructed each year. Noront understands that the Project is situated within the traditional lands of the Marten Falls First Nation since, according to a trap line registration regime developed by the government of Ontario, many community members from Marten Falls hold trap lines within the Project area.
- **Webequie First Nation** is an Ojibway First Nation located approximately 80 km to the northwest of the Project, on the northern peninsula of Eastwood Island on Winisk Lake, 540 km (336 mi) north of the city of Thunder Bay. Webequie is a fly-in community with no summer road access. The primary access to the community is by air to Webequie Airport or

winter road, which connects to the Northern Ontario Resource Trail. In 2006, Webequie was reported to have an on reserve population of 642 people and an off reserve population of 75. Noront understands that the proposed mine site is situated within the traditional lands of the Webequie First Nation.

- **Nibinamik First Nation**, also known as Summer Beaver Band, is a small Oji-Cree First Nation located on the Summer Beaver Settlement that is connected to the rest of the province by its airport, and a winter/ice road that leads to the Northern Ontario Resource Trail. In October 2009, Nibinamik First Nation had a registered population of 440 people. The community is located approximately 140 km west of the Project and is accessible by air year round and by winter road. The potential east-west all season access corridor falls within the traditional lands of Nibinamik First Nation.
- **Eabametoong First Nation**, also known as Fort Hope, is an Ojibway First Nation located on Eabamet Lake in the Albany River system, approximately 300 km northeast of Thunder Bay. It is accessible by airplane to Fort Hope Airport, by water, or by winter/ice roads, which connect the community to the Northern Ontario Resource Trail. It has the largest community population in the area with approximately 1,176 people living on reserve and 990 people living off reserve. Fort Hope is located approximately 170 km southwest of the Project. The potential east-west all season access corridor is located, in part, on the traditional lands of the Eabametoong First Nation.
- **Neskantaga First Nation**, also known as Lansdowne House, is an Oji-Cree First Nation located along the shores of Attawapiskat Lake, on the Attawapiskat River, approximately 130 km southwest of the Project. In 2006, Lansdowne House was reported to have an on reserve population of 274 people and an off reserve population of 99 people. The community is accessible by air year round and a winter road for a short period of time each year. Neskantaga First Nation states that the Project location falls on the traditional lands of their community. The proposed east-west all season access corridor is located, in part, on the traditional lands of the Neskantaga First Nation.
- **Aroland First Nation** is an Ojibway and Oji-Cree First Nation located approximately 20 km west of Nakina, and approximately 300 km south of the Project. It is reported to have an on reserve population of 328 people and an off reserve population of 246. Access to the community is by an all season road. The proposed trans-load facility for the north-south access corridor is located on the traditional lands of Aroland First Nation.
- **Attawapiskat First Nation** is a Cree First Nation located at the mouth of the Attawapiskat River at James Bay. The on reserve population reported in the Statistics Canada 2001 Census was 1,293. The community is approximately 260 km east from the Project. The proposed mine site is located in sub-watersheds of the Attawapiskat River; hence the community is downstream of the proposed project. Noront understands that Attawapiskat has indicated they have used the land located close to the project site to pursue their traditional activities. Travel to Attawapiskat is by air and by winter road. The airport operates year-round with a gravel runway.

- **Mishkeegogamang First Nation** is an Ojibway First Nation located on Highway 599, approximately 20 kilometres south of Pickle Lake. In September, 2007, its total registered population was 1,535, of which the on-reserve population was 866.
- **Ojibway Nation of Saugeen** is an Ojibway First Nation and is located approximately 20 kilometres northwest of Savant Lake. In December, 2007, its total registered population was 206, of which the on-reserve population was 72.

The Project lies well outside the traditional harvesting lands of the Métis Nation of Ontario (MNO). However the MNO members have suggested that they could be impacted by the potential transportation of material to the mine site.

Traditional land and resource use (trapping, fishing, bait harvesting, hunting, etc.) is important to the identified Aboriginal communities for economic and subsistence purposes. Land and resources are also used for cultural or spiritual purposes. Construction and operations may potentially interfere with Aboriginal participation in current use of traditional lands and resources.

#### 7.11.3 Cultural Heritage Resources

The Project is situated approximately 25 km from the Otokwin-Attawapiskat River Provincial Park which runs the entire length of the river and includes a 200 m buffer on both sides of the river.

Preliminary archeological studies near the mine site are underway. A Stage 1 Assessment with field inspection will be conducted in 2012 to identify and confirm areas of high archeological potential. A report will be submitted for approval to the Ministry of Tourism and Culture. Once the report is approved, Stage 2 subsurface testing will be conducted. Archaeological research in the region suggests that the area was occupied by humans as early as 7,000 years before present. These early humans, known as the Shield Archaic Culture, tended to locate themselves near caribou river crossings. Previous archaeological research has also shown that ungulates and fish were exploited by Aboriginal peoples from circa 1000 A.D. to contact with Europeans.

Evidence also suggests that the region was intensively used during the historic fur trade. Previous research has indicated that the study area is located within a region that was explored by the mid-to-late 18th century. Additionally, there is a history of mining in the region spanning from the early 20th century until the present.

At present there are no registered archaeological sites in the immediate vicinity of the Project. This lack of archaeological sites can be attributed to several factors, not the least of which is the overall lack of development in the area, compared to Southern Ontario. However, there is archaeological potential in the Project area.

## 7.12 BASELINE STUDY PROGRAMS

Baseline studies will provide benchmark conditions for assessing potential impacts to the environment, and the baseline data will be used to inform the evaluation of alternatives in selecting a final undertaking. Baseline data collected will be of the quality, depth and relevance needed to meet the requirements of the EA, consistent with provincial and federal requirements. The baseline studies have been, and will continue to be, conducted using standard protocols and scientifically defensible methods. Where appropriate, these methods have been and will continue to be discussed with regulatory authorities. Preliminary discussions have been initiated with the Federal Department of Fisheries and Oceans (DFO), and the Provincial Ministry of Natural Resources (MNR) and Ministry of the Environment (MOE). The results and methods of the baselines studies will also be discussed with Aboriginal communities and the public. The EA will provide detailed information on the methods and approach of each baseline study.

The objectives of the baseline studies are to:

- Describe the physical, biological and socio-economic conditions and trends in areas potentially affected by the Project in order to understand potential impacts and develop appropriate mitigation and management measures
- Describe the geochemical characteristics of the mineral resource extraction process and the mine wastes that will be generated by the Project in order to develop an understanding of the factors that could affect the environment
- Inform the selection of alternatives to minimize environmental impacts of the Project
- Establish benchmarks for monitoring programs that will be implemented during the construction, operation, closure and post closure phases of the Project, such that Project impacts can be properly addressed as necessary as the Project proceeds
- Interact with potentially affected populations in the course of baseline data collection in order to exchange information on the Project and to provide people the opportunity to express their concerns and preferences with regard to the Project development

## 7.13 BASELINE CHARACTERIZATION TOOLS

Preliminary baseline studies have been conducted in support of a mining scoping study. Studies are ongoing to provide further detail for the feasibility study, and to support the development of an EA that meets federal and provincial requirements. To date, baseline studies have been conducted through the review of pre-existing documentation and extensive field studies. Baseline studies have included an assessment of:

- Surface water quality and quantity
- Groundwater quality and quantity
- Soils and sediment type and quality
- Vegetation communities
- Wildlife communities
- Aquatic habitat and communities
- Physiography, geology and geochemistry

- Climate and meteorology
- Socio-economic conditions
- Cultural resources

Environmental baseline studies are ongoing at the mine site, have been conducted along the proposed east-west access corridor, and are underway for the potential trans-load facility near Aroland. Details on the environmental baseline studies are provided in the following sections.

#### 7.13.1 Surface Water Quality and Quantity

Surface water quality monitoring was initiated at the Project site in 2009. A total of 11 surface water quality sites were established and undergo seasonal sampling. In 2011, four surface water quality sites were established along the proposed east-west corridor south of Webequie. Parameters sampled include those outlined in the *Mining Act* along with methyl mercury and radium 226. Sampling at these sites will continue through 2012.

Water quality samples were obtained along the proposed east-west access corridor in 2011 in conjunction with the aquatic assessments. A total of 41 water quality samples were taken.

Hydrological studies began in 2010 within the Attawapiskat, Ekwan and Winisk watersheds. There are two hydrology stations located near the Project site which remain in operation. Six sites were located along the proposed east-west corridor during 2010 and 2011 baseline studies. Each station is equipped with a water level sensor and data logger for continuous stage monitoring. Seasonal water level and discharge measurements have been obtained. Stream flow monitoring at the mine site will continue in 2012.

#### 7.13.2 Groundwater Quality and Quantity

Groundwater studies were initiated in 2010 with the installation of 11 bedrock and overburden groundwater monitoring wells near the mine site. Response testing was conducted on each well after installation and development. Each well is equipped with a water level sensor and data logger to continuously record groundwater elevation. Monitoring of these wells is ongoing and will continue in 2012. Additional overburden and shallow bedrock wells are being installed in 2012 at the mine site near proposed infrastructure. Deep bedrock wells are also being installed to assess potential groundwater conditions near proposed underground infrastructure.

Bedrock and overburden groundwater monitoring wells were installed in 2011 along the proposed east-west route at the proposed Webequie Junction site, and at the proposed east-west road trans-load facility near Savant Lake. Seven monitoring wells were installed at the proposed Savant Lake trans-load Facility and eight at the Webequie Junction site.

Groundwater quality samples have been obtained seasonally in conjunction with surface water sampling. Water quality parameters include those outlined in the *Mining Act* and include methyl mercury and additional specialized parameters depending on the location of the well.

### 7.13.3 Terrestrial Baseline Studies

Terrestrial baseline study programs were initiated in 2009 and have included:

- Breeding bird surveys
- Winter mammal surveys
- Wildlife inventories
- Vegetation community surveys within forest and wetland habitats
- Species at Risk Assessments with attention to caribou habitat and population studies

These studies have focused on defining the existing terrestrial environment in the local study area near the mine site, in the regional study area near Webequie Junction and along the proposed east-west access corridor. Terrestrial studies near the mine site are ongoing and will continue in 2012.

Additional data on range-scale caribou values and functions, which are currently being addressed by the Ontario Far North Caribou Working Group, will be considered in the examination of transportation and mine location alternatives. This will include determining and evaluating habitat loss, identifying barriers to caribou movement, assessing potential displacement due to Project impacts, and addressing increased caribou predation from top carnivores and humans. The cumulative effects of other proposed linear corridors and mining developments will also be considered. The Working Group is developing a Resource Selection Function (RSF) model that will be used to quantify potential impacts on caribou at various range levels. However, the cooperative RSF work being done is not the determinant of the caribou ranges but rather will support the caribou range delineation produced by MNR by identifying the primary habitat influences on caribou activity and characterizing these influences.

### 7.13.4 Aquatic Baseline Studies

Fisheries assessments were initiated in 2009 at the mine site and were focused on the Muketei River. Field investigations in 2010 were focused at identifying the fish communities and habitat within the lacustrine environments along the east-west access corridor. During 2011, comprehensive aquatic studies were completed at the mine site, near Webequie Junction, and at the potential Savant Lake trans-load Facility. The 2011 aquatic baseline program consisted of:

- Fish community and habitat surveys
- Sediment quality assessments
- Benthic macroinvertebrate community assessments
- Water Quality Assessments

Additional aquatic baseline studies are planned for 2012 near the Project site, which include fish tissue sampling for both sport and forage species.

#### 7.13.5 Physiography, Geology and Geochemistry

Geological surveys have been ongoing since the discovery of the deposit and physiographical investigations are also ongoing at the Project site.

With respects to geochemistry, further acid rock drainage (ARD) and metal leaching (ML) investigations will take place within mineralization, overburden, aggregate materials, waste rock and potential tailings at the mine site.

#### 7.13.6 Climate and Meteorology

A meteorological station was installed near the Project site in 2009. Temperature, air pressure, wind speed and direction, rainfall, incoming shortwave radiation, and relative humidity are measured hourly by a HOBO U30 Logger. Long term climate data have been compiled from Environment Canada weather stations in the regional study area. Local and regional meteorological data collection is ongoing.

Potential climate variability will be evaluated to consider possible impacts on project components. For example, the feasibility of potential winter roads could be affected by seasonal climate variability.

#### 7.13.7 Air Quality and Noise

Existing air quality conditions will be characterized using available literature and monitoring data from stations in northern Ontario. These data will be used to determine background concentrations of the indicator compounds for the project. Air predictions and ambient air quality will be compared to the Ministry of the Environment's Ambient Air Quality Criteria (AAQCs). Emissions of indicator compounds will be calculated for the various project components including, but not limited to, vehicle use, mine operations, waste incineration and aggregate production. Accepted dispersion models will be used to predict concentrations of each compound.

Noise conditions are expected to be representative of remote areas of the province and will be primarily based on literature search. Baseline noise monitoring has been completed at the mine site to supplement theoretical background conditions. Noise emission levels from the various elements of the Project will be developed. The assessment of noise effects will be done in accordance with the Ontario Ministry of the Environment Noise Pollution Control (NPC) Guideline Publications. In addition, the assessment of noise will be consistent with the Health Canada National Guidelines for Environmental Assessment: Health Impacts of Noise (May, 2005), and the Health Canada Noise Impact Assessment Orientation Document for Projects Triggering CEAA (May 2005).

#### 7.13.8 Socio-economic Baselines Studies

Noront has been collecting, and will continue to collect, data on the socio-economic environment through consultation with community members, the review of existing published and unpublished data, and government databases.

#### 7.13.9 Cultural Heritage Resources

In 2010 Woodland Heritage Services Ltd. conducted a Stage 1 archaeological assessment along the proposed access corridors and at the Project site. Further assessments, including Stage 2 assessments, at sites of high archaeological potential identified during the stage 1 assessment are scheduled to occur once the proposed project footprint has been defined. In addition, the project areas will be reviewed to determine if there are known and potential built heritage resources and cultural heritage landscapes.

### 7.14 POTENTIAL EFFECTS OF THE PROJECT

A preliminary, non-inclusive list of potential environmental effects is outlined in the following sections. It is expected that a broader and more detailed range of potential effects will be identified when final alternatives are selected, as baseline studies are completed, and through consultation with the public, First Nation communities and government reviewers. Some of the potential effects may require more detailed investigation, for example impact of wildlife movement from the development of linear utility and infrastructure corridors, and the increased human access to remote areas.

#### 7.14.1 Mine Development and Operation

- Loss or fragmentation of terrestrial habitat due to development of mine site facilities
- Changes in air quality due to dust and fumes from the mining operation, storage and use of explosives, handling and transport of the concentrate, and aggregate crushing, screening, and stock-piling; change in noise levels and air quality from the operation of heavy machinery
- Pumping of mine water to surface water courses which could affect local water quality if groundwater quality differs substantially from surface water quality; although all mine water is planned to be re-used by the underground mill, in the event that all mine water cannot be re-used, it will be treated and discharged into naturally filtering wetlands
- Runoff from temporary waste rock piles during initial mine development; the piles will be stored on pads so that runoff can be captured and treated, if necessary
- Seepage to soils and groundwater and runoff to surface water from aggregate piles and settling ponds during mine development and operations
- Fuel or chemical spills at the mine site
- Concentrate or chemical spills at the mine site
- Increased human interaction with wildlife

#### 7.14.2 Water Management Systems

- Residues and suspended materials from on-site ditches, wash areas, and maintenance facilities could affect water quality in receiving waters, to be mitigated by stormwater management and treatment
- Drawdown of groundwater through development of the mine and associated facilities; however, the deep bedrock has a low hydraulic conductivity, so the overburden and shallow groundwater aquifers will be isolated from mine operations
- Potential impact to wetlands, peat and water movement due to the drawdown of groundwater

#### 7.14.3 Power Generation

- Noise, air quality and lighting impacts from operation of diesel generators and the transfer and storage of fuel, and disruption of habitat during the construction of potential power line transmission corridors
- Disruption, loss and fragmentation of habitat during the construction and maintenance of potential transmission lines
- Fuel or chemical spills at the power generation site

#### 7.14.4 Trans-load Facility Development and Operation

- Changes to noise levels and air quality from the operation of heavy equipment
- Concentrate spills
- Seepage to soils and groundwater and runoff to surface water from the sedimentation pond and concentrate stockpiles
- Dust and fumes from handling of the concentrate

#### 7.14.5 Access Road Corridor Operation

- Loss or fragmentation of terrestrial and aquatic habitat due to potential development of access and/or transportation corridors
- Disturbance and/or fragmentation of wildlife habitat during potential construction of access corridors
- Dust, fumes and lighting from the transport of the ore concentrate; fuel, chemical or concentrate spills from vehicle accidents
- Seepage to soils, to groundwater and/or runoff to surface water from concentrate or fuel spills along access corridor
- Potential increased erosion and sedimentation of waterbodies from road runoff, to be mitigated by stormwater management, including proper ditching
- Improvement of fish habitat due to replacement of corduroy crossing with culverts along the proposed east-west corridor
- Increased access to resources including fishing, hunting and aggregates

- Potential impacts related to the extraction of aggregate materials
- Increased access to wilderness areas and provincial parks which could lead to:
  - Increased traffic and use of the parks (snowmobile/ATV)
  - Increased fishing pressure within the park
  - Effects on existing recreational features
- Potential impacts to pre-existing traplines and traditional hunting areas
- Potential impacts to stream morphology and flows

#### 7.14.6 Waste Management Systems

- Potential effects on surface water quality from fuelling and servicing areas, mitigated by collection of water to storm water system and treatment of storm water
- Domestic water, mitigated by sewage treatment prior to discharge
- Seepage to soils and groundwater and runoff to surface water from solid waste storage areas
- Changes to air quality from the operation of the incinerator located at the mine site
- Changes to air quality from hazardous waste handling, storage and disposal, and domestic waste storage and domestic sewage treatment

#### 7.14.7 Potential Socio-Economic Effects of Mine Operation

- Increased employment and procurement of goods and services
- Potential for demographic changes in potentially affected First Nation communities that may be attributable to the Project
- Potential benefits and adverse effects of increased infrastructure and services that may result from the Project
- Potential for an increase in demand on existing infrastructure and public services that may result from the Project
- Visual impact on the area of the mine site and associated infrastructure, expected to be minimal
- Changes in the dynamics of tourism and recreational activities, including commercial recreational tenures and activities and areas important to recreational use by residents and visitors
- Effects to potential navigation and current waterway uses
- Effects on traditional land use activities by Aboriginal people, such as hunting, fishing, trapping and harvesting and other traditional uses of the land
- Potential effects on cultural heritage resources
- Potential effects of the Project on social structure and conditions in the LSA, including family cohesiveness, violence, potential for sexually transmitted infections and other communicable diseases, drug use, changes in mental health and gambling
- Potential impact on community demographics, community resilience to changes associated with mining activity, and community governance
- Potential human health effects of the Project arising from potential chemical releases to the environment from the Project, if applicable

- Potential economic benefits that may accrue to local communities, northwestern Ontario and the province
- Potential socio-economic effects of mine closure

#### 7.15 CUMULATIVE ENVIRONMENTAL EFFECTS

Noront will identify and assess the cumulative environmental effects of the Project, including on site and off site components, in combination with other past, present or future projects that are “certain” or “reasonably foreseeable” projects and/or activities. If applicable, this may include: future mines, transportation alternatives (road vs. rail corridors), hydroelectric generation, power transmission and any other projects or activities.

Cumulative effects may result if:

- Implementation of the Project causes direct residual negative effects on the environmental components, taking into account the application of technically and economically feasible mitigation measures
- The same environmental components are affected by other past, present or reasonably foreseeable future projects or activities

Therefore, environmental components that would not suffer an adverse effect from the Project can be omitted from the cumulative effects assessment.

The EA will describe the analysis of the total cumulative effect on each valued ecosystem component (VEC) over the life of the Project, including the incremental contribution of all current and proposed projects or additional activities. The EA will include different forms of effects (e.g., synergistic, additive, induced, spatial or temporal) and identify impact pathways and trends. The cumulative effects assessment will be prepared based on the guidance document entitled: *Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* (CEAA, 2007).

## SECTION 8.0 - ASSESSMENT AND EVALUATION OF THE ALTERNATIVES

In order to evaluate project alternatives, it will be necessary to establish criteria, indicators and evaluation methods. The criteria will be designed to assess the effects of the undertaking and alternatives and the undertaking on the environment. In addition, each criterion will have one or more indicators that will identify how the potential environmental effects will be measured. The proposed evaluation criteria and indicators that will be used for assessing the alternatives in the EA include but are not limited to those outlined in Table 8.1 along with the potential data sources.

### 8.1 EVALUATION METHODS

In order to ensure that the alternatives are evaluated in a clear, logical, and traceable fashion, the information generated through the following analyses will be summarized in a series of tables and elaborated on within the text of the EA.

#### 8.1.1 Net Effect Analysis

The first evaluation method is a “net effects analysis” which will evaluate the alternatives to and the alternative methods of carrying out the undertaking. The net effects analysis will be done in consultation with government agencies, Aboriginal groups and the public, and will consist of the following steps:

1. Development of evaluation criteria and indicators based on the proposed undertaking, existing environmental conditions, the range of alternatives to be considered and type and scale of potential environmental effects and their relative significance.
2. Application of evaluation criteria and indicators to each alternative to identify the potential effects on the environment.
3. Development of appropriate impact management measures.
4. Application of the avoidance, mitigation and/or compensation measures to identified potential effects in order to identify the net effects on the environment.

The evaluation criteria and indicators presented in Table 8.1 will be further refined during the EA process and documented in the final EA. The assessment of environmental effects will increase in detail as the preferred alternatives are identified.

#### 8.1.2 Comparative Evaluation - Reasoned Argument

Following the completion of the net effects analysis, the alternatives will be compared through a reasoned argument method to identify the preferred alternative. The reasoned argument method highlights the relative advantage and disadvantage of each alternative based on its identified net effects. As a result, the relative differences and key impacts of each alternative, for each

factor/environmental component, will be understood and examined to provide a clear rationale for the selection of a preferred alternative.

## 8.2 IMPACT ASSESSMENT

### 8.2.1 Natural Environment

While the impact assessment will include predictions of changes to physical environmental components, the focus of determination of significance will be based on the biological receptors that are subject to those changes. Numerical guidelines are readily available for many physical parameters, such as water and air quality; however, the significance of any exceedance lies in determination of the effects on, or risks to, biological receptors.

Consequently, the environmental impact assessment will also address biological resources. Many of the pathways of effects relate to changes in the physical environmental components listed above. Potential impacts may also arise from direct project-related activities. For example, site clearing may physically displace or alter habitat, and project development may incur indirect socio-economic factors, such as increased human population density, and improved access which could result in increased exploitation of local biological resources. Biological components of the environment generally include:

- Aquatic habitat (e.g., creeks and rivers)
- Aquatic biota (e.g., algae, plants, invertebrates and fish)
- Terrestrial habitat (e.g., forests, grasslands, wetlands, riparian corridors)
- Terrestrial biota (e.g., plants, and “wildlife” including amphibians, reptiles, birds and mammals)
- Wolf-caribou and bear-caribou predator prey relationships, caribou behavioural responses, habitat losses and impacts, and caribou migration routes

Taken together, the physical and biological impact assessments include the natural environmental impact assessment, and are used to predict any changes to the quality and availability (quantity) of resources in the study area. The assessment process evaluates both the potential impacts of the Project, and the Project’s alternatives. The process of assessing and evaluating the positive and negative impacts of the Project, as outlined in the following sections, is based on the integration of a number of criteria and sources of information. The process includes 1) an evaluation of site-specific information, in the form of empirical data from the site, modelling studies, and consultation with Aboriginal groups, stakeholders and regulators; and 2) a review of the broader technical and scientific literature. The latter includes any published scientific literature, impact assessments and environmental effects studies at similar sites, published Best Management Practices and professional judgment and experience.

#### 8.2.1.1 Determination of the Significance of an Impact

The determination of the significance of an impact is often assessed relative to existing criteria, for example regulatory guidelines. As a result, physical components, such as air quality, surface water and groundwater quality, and soils and sediment quality are assessed with respect to the environmental standards applicable to the undertaking. Environmental standards/criteria applicable to the Project will include provincial and federal criteria, standards, and/or guidelines for air, noise, water, soil, sediments and biota. The levels of significance of effects of these components will be one of the following:

- **Low:** Predicted concentrations are below applicable standards.
- **Moderate:** Exceedance of standards, up to 10-times the standard (to account for safety factors that are usually built into these standards).
- **High:** Predicted concentrations are more than 10-times the applicable standards.

Exceedance of a regulatory criterion is not necessarily a significant effect in itself, and it does not automatically provide a measure of significance to biological receptors. Each environmental change must be interpreted according to the degree of risk of impact to the biological communities. This evaluation will be based on specific attributes of pathway, exposure and receptor characteristics, as well as the likelihood of measurable effects on populations or communities. This approach recognizes that effects at the community or population level can have much longer lasting impacts than effects on individuals. Therefore, the levels of significance of effects on biological communities will be assessed on the basis of the following:

- **Low:** Effects are limited to a few individuals, usually in the immediate vicinity of the impact, and are not expected to result in population-level changes.
- **Moderate:** Population-level changes may occur, but are not expected to be beyond the normal range of fluctuations of population size or density for those species. Populations are expected to possess compensatory responses sufficient to recover from these changes.
- **High:** Population-level changes may occur that are expected to result in changes in population size or density beyond the normal range of fluctuations for those species. It is uncertain whether populations would possess compensatory responses sufficient to recover from these changes.

The determination of significance is based on the potential impacts on biological receptors, rather than the physical environment, since the effects on physical components, such as water quality, are determined with respect to their potential biological effects (e.g., water quality guidelines that have been developed with the purpose of protecting biological resources). Hence, the assessment of significance is considered within this context.

With respect to caribou, it is not necessary for the animals to be present or close by for there to be cumulative negative impacts. While the ultimate effects occur to individuals and will be measured as impacts to populations, the proximate effects and measures are often related directly to the physical environment as indicators of potential impacts. For example, the location and density of linear features are important indicators and will be assessed at the sub-range and range scales.

Where potentially significant impacts to the environment are identified, additional mitigation measures will be incorporated, where feasible, to minimize the residual impacts, which will then be re-evaluated to determine the final significance of the likely impact. However, avoidance or prevention of negative impacts will be the priority.

The assessment will be conducted with the use of tables that organize and summarize the process described above into comparable and intuitive presentations for each of the Project phases.

The significance of the predicted changes in the environment will be assessed relative to measurement criteria. The assessment of significance will be conducted in consideration of different assessment categories that are used to predict the magnitude and likelihood of an effect. The categories to be considered are:

- **Direction:** Whether a potential impact will be positive, neutral or negative.
- **Geographic Extent:** The area over which an impact will be experienced.
- **Duration:** The period of time over which an impact occurs.
- **Frequency:** How often an impact occurs within a given time period.
- **Reversibility:** The potential for recovery from an impact to a level similar to baseline conditions.
- **Magnitude:** Describes the results of an impact in a measurable way by means of specific criteria (e.g., area of habitat lost, density or numbers of species affected), relative to the baseline condition and to relevant provincial or federal standards, guidelines, or criteria.

#### 8.2.2 Socio-economic/Cultural Environment

Potential effects of the Project on the social, economic, and cultural environment, and to human health will be assessed. These will include the effects of improved transportation and the provision of employment opportunities on the local communities and First Nations. The social, economic, and cultural impact assessment will measure both the positive, negative, direct and indirect effects of the Project on individuals, organizations, communities and governments. Information on any predicted social, economic and/or cultural benefits of the Project will be considered through an analysis of the advantages and disadvantages of the Project. This information will be reviewed by the public, Aboriginal communities and government reviewers before a decision is made by the Minister of the Environment in assessing the justifiability of any significant adverse environmental effects.

The principles outlined regarding establishing baseline conditions will be applied to the assessment of potential effects on social, economic and cultural issues.

#### 8.2.2.1 Determination of the significance of an Impact

Impact assessment methodology for the Socio-economic Impact Assessment (SIA) is described in this section. As with environmental impacts, socio-economic impacts will also take into consideration construction, operations, closure and post-closure stages of the Project. Social impact assessment takes into consideration the socio-economic components of the environment, including:

- Politics and governance
- Economics
- Demographics and people
- Health
- Social maladies
- Education
- Land tenure and use
- Infrastructure
- Cultural Heritage and archaeology
- Indigenous peoples or ethnic minorities

The SIA will be focused on identifying potential impacts to First Nation communities with special consideration with respect to the potential impacts to sites of aboriginal cultural significance and traditional land use areas. The evaluation method, and the confirmation of what elements will be studied, will be confirmed through consultation with Aboriginal communities, the public and government reviewers.

#### **Evaluation Methods**

The key steps in developing the socio-economic elements impact assessment are described below:

- **Socio-economic baseline:** The basis of social analysis is the socio-economic baseline, complemented by consultation and discussion with those who may be affected by the Project. Information collected during the baseline study and through consultation is used to identify factors that may be influencing the human environment prior to Project implementation.
- **Review of Project activities:** Project activities that may affect the social or economic characteristics of local communities are identified.

- **Key Issue Identification:** Key social and economic issues identified during the scoping phase of the EA are revised and considered with the final Project activity details. The purpose is to identify the essential issues for the Project within the overall social, political and cultural context described in the baseline.
- **Impact Categories:** The key issues are used to develop a set of impact categories that form the basis of the impact assessment. Each impact category may have a set of sub-category topics that address issues raised during consultation.
- **Mitigation:** Actions are developed to avoid or minimize negative impacts and maximize benefits. The interventions to minimize negative impacts and maximize positive impacts make up the social elements of the Environmental and Social Management Plan.
- **Residual Impacts:** Residual impacts, also referred to as social significance, are the impacts predicted to occur after mitigation. The impact assessment is performed on residual impacts.

#### Evaluation Indicators

Determination of socio-economic impact follows a different methodology than the one used for physical and biological impacts. There are, however, some similarities in the definition of attributes. The four attributes applied to the determination of socio-economic impact significance are listed and defined below:

- **Direction:** Indicates whether the impact is positive, negative or neutral. Some impacts may have both positive and negative dimensions.
- **Magnitude:** Indicates the degree of change in a socio-economic parameter and is generally a qualitative assessment.
- **Geographic extent:** Indicates the geographic and administrative units that will be impacted. Some impacts may affect only individuals, whereas others may affect the Local Study Area (LSA), Regional Study Area (RSA) or the entire country.
- **Duration:** Indicates the length of time over which an impact may occur. Duration is usually related to the description of the Project.

Unlike environmental impacts, social impacts will not be assessed on probability. Socio-economic impacts are part of an ongoing process of interdependent economic and social change. Although there are isolated exceptions, most socio-economic impacts are experienced continuously by people. Thus, probability is not often a useful attribute for significance assessment, and so social impacts will be assessed by consultation with potentially affected communities.

### 8.2.3 Impact Management

Impact management measures, such as mitigation, compensation, enhancement and adaptive management will be proposed where a Project activity may have an adverse effect on the environment. In many cases, the Project activities described already include impact management measures (e.g., mitigation by design), with the result that these activities typically do not result in adverse effects. Where additional impact management measures are warranted, these will be proposed. Where additional impact management measures are identified, a second assessment will be undertaken to determine the potential significance of the impact with the mitigation measures applied.

Technical and feasible measures investigated to manage the Project's potential adverse environmental effects will be documented within the EA. These measures will be presented in a fashion that will give clarity and definition to the measures taken. Impact management will be carried out as needed.

## SECTION 9.0 - COMMITMENTS AND MONITORING

During the EA, a monitoring framework will be developed for the post-EA phase, to address the pre-construction, construction, operation, closure and post-closure phases of the Project. It will include compliance and effects monitoring, and will include the schedule and frequency of the proposed monitoring plans and methods. Any follow-up programs will also be indicated.

The EA will include a list or table of commitments made by Noront during the ToR process, and where or how they have been addressed. The EA will also include a list or table of any commitments made by Noront during the preparation of the EA. These include commitments relating to additional studies, monitoring programs, public consultation and contingency planning, impact management measures (i.e., mitigation measures), as well as documentation and correspondence.

### 9.1 MONITORING PLANS

Based on the environmental and socio-economic impact assessment, the EA will outline two impact management plans; an Environmental Management Plan (EMP), and a Social Management Plan (SMP). Environmental and Social Monitoring Plans will be developed as part of the EA to address specific monitoring requirements. These will be focused on those components where there is potential for effects from Project activities. The Monitoring Plans will include compliance and effects monitoring, and will be used to verify the predictions of the impact assessment. Where required the plans will be used for the development of adaptive management strategies to address any unforeseen effects, especially unforeseen cumulative effects. These plans will:

- Provide a comprehensive list of commitments made by Noront during the ToR process, and detail where or how they have been dealt with in the EA
- Provide a list of commitments made during the preparation of the EA
- Reflect the results of consultations and be predicated on an ongoing program of consultations over the life of the Project
- Include compliance and effects monitoring
- Describe the mitigation and benefit enhancement measures that will be put in place to address significant residual Project impacts specific to each of the construction, operations, closure and post closure phases
- Describe the monitoring of impact mitigation and benefit enhancement measures
- Describe how the implementation of mitigation and benefit enhancement measures will be managed to ensure success. This will take into account institutional capability to participate in management of the Project's environmental and social performance where such participation is deemed appropriate.
- Present monitoring costs, schedules and frameworks, as developed during the preparation of the EA

### 9.1.1 Environmental Management Plan

The objective of the Environmental Management Plan (EMP) is to set out clearly the key components of environmental management for the Project and thereby ensure that the following concepts are realized throughout the construction, operation, closure and post-closure phases of the Project:

- Negative impacts on the physical and biological environments are mitigated if avoidance and prevention are not possible
- Benefits that will arise from the development of the Project are enhanced
- Compliance with existing legislation and consistency with provincial guidelines and best practice
- Compliance with Project permits and approvals

The EMP will address:

- Management of physical environment
- Management of biological environment
- Emergency preparedness and response
- Contingency planning
- Health and safety
- Closure and post closure
- Management plan implementation

For each of the above referenced subject areas, the EMP will identify policies, practices and/or procedures, including monitoring, inspections and audits, which will contribute to the mitigation of any potential environmental impacts. Mitigation could involve selecting alternatives for particular Project components that reduce the potential for negative impacts and including techniques and procedures to reduce the overall impact significance.

In addressing emergency preparedness and response, the EMP will identify the principal environmental risks associated with the Project, evaluate each risk qualitatively and propose measures to minimize the potential for occurrence and, in the event of occurrence, to minimize the potential for negative effects.

In addressing closure and post closure, the EMP will set out objectives and propose measures, including contingency measures, for achieving those objectives. In addition, the EMP will address progressive rehabilitation, describe expected post closure conditions and propose post closure monitoring.

### 9.1.2 Social Management Plan

The Social Management Plan will address the avoidance of, minimization of, and/or compensation for, any negative socio-economic effects that could result from the Project. It will also address the enhancement of any positive benefits that could result. For example, mitigation and enhancement could involve:

- Selecting alternatives for particular Project components that reduce the potential for negative impacts and/or enhance the potential for benefit
- Developing Project practices and procedures that reduce the potential for negative impacts and/or enhance the potential for benefit
- Identifying social impacts and benefits that can be directly mitigated and/or enhanced, developing specific measures that address those impacts and benefits
- Identifying other social impacts that are difficult to completely mitigate, such as changes resulting from in-migration or out-migration, and developing broad measures that contribute to the quality of life of the affected populations

The Social Management Plan will also set out the monitoring required to ensure that identified mitigation and benefit enhancement measures are implemented and that identified objectives are achieved. The monitoring will facilitate the adaptive management of socio-economic effects, many of which are inherently unpredictable. Indicators of the achievement of objectives will be identified and these will become the parameters to be monitored. In practice, the monitoring will be based both on ongoing data collection and consultations, and will also use any secondary data sources that might be available.

## SECTION 10.0 - CONSULTATION PLAN AND CONSULTATION TO DATE

### 10.1 CONSULTATION PLAN FOR THE ENVIRONMENTAL ASSESSMENT

#### 10.1.1 Introduction

Consultation is a central objective of the provincial EA process. Consultation planning was undertaken with consideration of the MOE *Code of Practice on Preparing and Reviewing the Terms of Reference for Environmental Assessments in Ontario* (2009) and *Consultation in Ontario's Environmental Assessment Process* (2007). A detailed Consultation Plan is provided in Appendix C. This section provides a summary of the key elements and objectives of the Consultation Plan.

The following elements of a successful Consultation Plan, as suggested by the MOE, have been included in the Consultation Plan:

- Clear Objectives
- Stakeholder Identification
- Consultation Methods
- Issue Identification
- Integration of Input
- Proponent Evaluation of Consultation

Aboriginal people may have constitutionally protected rights, and can offer a unique understanding of the environment based on their special relationship with the land. The duty to consult with Aboriginal people, where engaged, lies with the Crown and, although procedural aspects of the consultation process can be delegated to project proponents, the ultimate responsibility for meeting any duty to consult rests with the Crown.

#### 10.1.2 Objectives

As outlined in the MOE *Code of Practice: Consultation in Ontario's Environmental Process* (2007), a consultation plan must:

- Indicate how potentially interested and affected persons, including Aboriginal peoples, will be identified, notified and consulted
- Indicate how government agencies will be identified, notified and consulted
- Identify the points in the environmental assessment process when interested persons will be consulted
- Identify the decisions that interested persons can provide input to and what role they can play when the proponent makes choices
- Acknowledge and attempt to address concerns raised during the environmental assessment process

In addition, as stated in the *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario* (2009), the consultation plan should outline:

- The general consultation methods proposed
- How input from interested persons will be obtained
- A description of key decision-making milestones during the preparation of the environmental assessment when consultation will occur
- Issue resolution strategy

Based on the above requirements the objectives of the consultation plan are to outline:

- Key stakeholders and the process by which they are identified
- The consultation strategy including the consultation methods that will be used to involve stakeholders in the EA process, how Noront will provide access to information and how feedback on the Project will be provided
- The consultation phases in the preparation and review of the EA and the key points in the EA process when consultation will occur
- How Noront will document and address concerns that are raised during the EA process

## 10.2 CONSULTATION TO DATE

The initial consultation strategy for the Project was to proactively meet with government agencies, stakeholders and Aboriginal groups to share information and receive feedback about the Project. A summary of the pre-EA consultation phase activities is provided in the following sections. An overview of the preliminary list of issue categories and subjects is provided in Table 10.1. This pre-EA phase of consultation was followed by consultation related to the development of the ToR. Details of the consultations activities that occurred during the development of the ToR are provided in the Record of Consultation.

## 10.3 PRE-EA CONSULTATION ACTIVITIES

### 10.3.1 Public

Consultation activities with the public included written information sharing, videos, face-to-face meetings, community events and website updates. A website developed by Noront called Mikawaa (Discovery in Oji-Cree – [www.mikawaa.com](http://www.mikawaa.com)) allows interactive online discussion with community members. Noront has also created a Project website ([www.eaglesnestmine.com](http://www.eaglesnestmine.com)) and periodically updates the company website ([www.norontresources.com](http://www.norontresources.com)). A monthly radio program is transmitted through Wawatay Radio to discuss various aspects of the Project in Oji-Cree. Wawatay Radio reaches most communities by FM, Bell Express View and on the internet.

### 10.3.2 Municipal

Information meetings have been undertaken with municipal leaders and Open House sessions have been held in the communities of Pickle Lake, Ignace and the City of Thunder Bay. Less formal meetings have also taken place in Greenstone, Pickle Lake and Thunder Bay.

### 10.3.3 Provincial and Federal Government

An extensive and continuing series of meetings and presentations have taken place with Provincial and Federal government agencies, and Project reports and memos have been distributed for review and comment. Discussion with government agencies has focused on the EA permitting and approval process and schedule, tailings management, and baseline studies.

### 10.3.4 Aboriginal Engagement

Aboriginal Engagement on the Project was initiated in 2007. Engagement activities included letters, e-mails and telephone discussions. These engagement activities were held to introduce Noront and the Project to the communities and other stakeholders and to enable the building of a positive relationship with communities and stakeholders. Continued relationship building is taking place with frequent telephone calls and communication exchanges between First Nation Chiefs and Councils and Noront.

Engagement meetings were initiated in 2010 with Marten Falls and Webequie First Nations. The meetings were to build on existing relationships, actively sharing information and seeking feedback from Aboriginal communities. Completed activities related to issues scoping and the ToR include a series of presentations providing an overview of the Project, discussions with trap line holders in the Project area, hiring of First Nations field guides and sponsorship of community based programs to foster interest in mining for school aged children and adults. Communication and feedback have been initiated through phone calls, letters, and emails. Table 10.2 provides a summary of Aboriginal engagement meetings.

### 10.3.5 Participation of Métis Communities

Initial efforts were made in 2010 to contact the Northwest Métis Council. Other contacts had been made to the headquarters of the Métis Nation of Ontario to help Noront identify individuals for follow-up contact. In October 2010, the Métis expressed an interest to Noront regarding the Project. In June 2011, Noront met with the Métis Nation of Ontario lands and resources director. Phone meetings and a face-to-face meeting occurred during the summer of 2011 with plans to determine additional meetings with potentially affected MNO groups. After further discussions, the project location was considered outside the region where Métis Nation of Ontario members practice their traditional hunting activities.

#### 10.3.6 Issues and Concerns

Previously identified issues and concerns include:

- Business, employment and training opportunities
- Completion of Project Open Houses in the communities
- Environmental concerns, including route and exploration activity
- Social concerns in regards to demands on community infrastructure
- Impact to traditional territory from Project development
- Presentation of Project updates to community members to ensure meaningful engagements
- ATK studies
- All-season road development
- Slurry pipeline

Table 10.3 provides a preliminary summary of the issues and concerns that have been raised during initial engagement with First Nation communities.

## SECTION 11.0 - FLEXIBILITY AND CONTINGENCY PLANS

### 11.1 FLEXIBILITY TO ACCOMMODATE NEW CIRCUMSTANCES

It is recognized that circumstances may arise that could prevent the commitments made in the ToR from occurring. In addition, the project description presented in the ToR is preliminary and the proposed activities presented may change as additional studies are completed during the EA process. Flexibility has been incorporated into the ToR to accommodate new circumstances that may arise during the EA process. The content of the EA may be refined, where appropriate, to reflect the input gathered through studies and received through consultation and engagement.

As such, it is possible that minor variations to the ToR will occur without the need to re-start the EA process. However, any proposed modifications to the ToR will be discussed, and agreed, with the MOE prior to being implemented.

### 11.2 CONTINGENCY PLANS

Short term contingency plans will be developed by Noront to accommodate unforeseen situations which may arise. When required, these plans would outline a course of action to be followed if unforeseen situations arise that would prevent Noront from implementing or operating a component of the Project on a temporary basis.

## SECTION 12.0 - OTHER APPROVALS REQUIRED

The development of the Project, as indicated in Section 1, is subject to the *OEAA* and the *CEAA* as well as the *Far North Act*. The development of the Project will also require a variety of additional federal, provincial and municipal permits and approvals. A preliminary list of the anticipated licences, permits and approvals that may be required prior to mineral development and/or construction activities is provided in Table 12.1. Table 12.2 provides a preliminary list of guidelines, criteria, objectives and standards that may apply to the Project. This table will be updated during the EA.

## SECTION 13.0 - REFERENCES

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**SECTION 14.0 - CERTIFICATION**

This report was prepared, reviewed and approved by the undersigned.

Prepared by:

<original signed by>

Andrew Rees, PhD.  
Project Environmental Scientist

<original signed by>

Jason Plamondon, B.Sc.  
Staff Scientist

<original signed by>

Reviewed by:

Steve Aiken, P. Eng.  
Manager Environmental Services

<original signed by>

Approved by:

Robert A. Mercer, Ph.D., P.Eng.  
Managing Principal, North Bay

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TABLE 8.1  
NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT

TERMS OF REFERENCE  
PRELIMINARY LIST OF EVALUATION CRITERIA, INDICATORS AND POTENTIAL DATA SOURCES

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Factor/Environment	Proposed Criteria	Indicators	Potential Data Sources
Natural Environment	Surface Water Quality	Comparison with available objectives/guidelines/standards Potential for change from baseline conditions	Baseline studies completed in the vicinity of the proposed undertaking including site surface water and drainage studies Ongoing site monitoring reports Surface water quality assessment Government data sources including field studies, guidelines and published water quality information Results of geochemistry studies (i.e. ARD and ML assessment) Published and unpublished data sources including technical papers and reports Proposed design of the undertaking
	Surface Water Quantity	Potential for change from baseline conditions	Baseline studies completed in the vicinity of the proposed undertaking including site surface water and drainage studies Ongoing site monitoring reports Topographic Maps Government data sources including published groundwater quantity data and guidelines Various GIS data sources including Land Information Ontario, satellite imagery and aerial photography Published and unpublished data sources including topographic and other mapping, technical papers and reports Proposed design of the undertaking
	Groundwater Quality	Potential to change from baseline conditions Comparison with available objectives/guidelines/standards	Baseline studies completed in the vicinity of the proposed undertaking including site geological and hydrogeological investigations Ongoing site monitoring reports Groundwater quality assessments Regional information on groundwater quality Published and unpublished data sources including, technical papers and reports Proposed design of the undertaking
	Groundwater quantity	Potential for change from baseline conditions Changes to groundwater functions in relation to recharge and discharge and aquatic/wetland habitat	Baseline hydrogeological studies including the installation of surficial and bedrock monitoring wells Geophysical investigations including ground penetrating radar surveys utilization of models to developed water balances to determine flow calculations Proposed design of the undertaking
	Terrestrial Environment	Direct loss of habitat functions Habitat fragmentation, disruption and destruction Indirect loss of wildlife habitat Impact on Species at Risk Effects on forest cover Effects on biodiversity Effects on ecosystem integrity Effects on ecological connectivity Loss of soils Occurrence of wildlife-vehicle accidents	Proposed design of the undertaking Baseline studies completed in the vicinity of the proposed undertaking (wildlife surveys, inventories, Land Classification) Published and unpublished data sources Government data sources and databases including field data and published and unpublished data through the data sharing agreement Various GIS data sources including Land Information Ontario, satellite imagery and aerial photography ATK studies Consultation with aboriginal, public and government
	Aquatic Environment	Direct loss of aquatic habitat through the harmful alteration, disruption or destruction of habitat Indirect loss of aquatic habitat and functions through sedimentation and dewatering Direct loss of aquatic species Indirect loss of aquatic species Impact on Species at Risk Changes to surface water quality and quantity Changes to sediment quality Direct and indirect loss of riparian habitat Number of watercourses/water bodies in the study area	Proposed design of the undertaking Baseline studies completed in the vicinity of the proposed undertaking (wildlife surveys, inventories, Land Classification) Published and unpublished data sources Government data sources and databases including standards, objectives and guidelines field data and published and unpublished data through the data sharing agreement Various GIS data sources including Land Information Ontario, satellite imagery and aerial photography ATK studies Consultation with aboriginal, public and government
	Atmospheric Environment	Potential to change from existing conditions Compliance with regulatory standards	Baseline studies Regional air quality data Interpolation based on existing data Onsite and local meteorological monitoring Proposed design of the undertaking and operation data Government data sources and databases Published and unpublished data sources Emissions monitoring and air quality dispersion assessment
	Acoustic Environment	Potential to change from existing conditions Compliance with regulatory standards Proximity of receptors	Noise monitoring in the vicinity of the undertaking Interpolation based on available data Acoustic assessment and modeling Proposed characteristics of the undertaking and operation data

TABLE 8.1  
NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT

TERMS OF REFERENCE  
PRELIMINARY LIST OF EVALUATION CRITERIA, INDICATORS AND POTENTIAL DATA SOURCES

Print Oct/01/12 15:19:01

Factor/Environment	Proposed Criteria	Indicators	Potential Data Sources
Cultural Environment	Archaeological Resources	Presence of known archaeological resources Potential effects on areas on archaeological potential	Determination of archeological potential by conducting a Stage 1 archaeological assessment Stage 2 archaeological assessment conducted in areas of high archaeological potential Published and unpublished documentation Government data sources including archaeological site data base Consultation with Aboriginal groups and Stakeholders Proposed design of the undertaking
	Physical and Cultural Heritage Resources	Presence of built heritage resources or cultural heritage landscapes Presence of designated, commemorated, inventoried, and identified built heritage resources and cultural heritage landscapes in proximity to the proposed undertaking. Potential effects on above ground cultural heritage resources. Effects can include direct and indirect impacts.	Published and unpublished documentation Consultation with Aboriginal groups and other stakeholders Site analysis and survey of cultural heritage resources located within the proposed study area Relevant studies that have surveyed cultural resources in the area Government data sources Proposed design of the undertaking
Socio-economic Environment	Aboriginal Interest and Land and Resource Use	Potential direct and indirect effects on past, current and planned tradition land and resource use	ATK studies Consultation with Aboriginal groups and government Existing published and unpublished documentation
	Outdoor Recreation and Tourism	Potential indirect and direct effects on outdoor recreation and tourism in the vicinity of the undertaking	Consultation with Aboriginal groups and government Existing published and unpublished data sources Baseline study reports
	Hunting, Trapping, Guiding, and Gathering for Subsistence	Potential indirect and direct effects on hunting, trapping, guiding and gathering for subsistence	Consultation with Aboriginal groups and government Existing published and unpublished data sources Baseline study reports
	Fishing	Potential to effect the commercial, recreational and subsistence lake and stream fisheries	Consultation with Aboriginal groups and government Existing published and unpublished data sources Baseline study reports
	Traffic Impacts	Potential to effect to the current traffic levels, air quality through emissions, and human, animal and plant life	Consultation with Aboriginal groups and government Existing published and unpublished data sources Baseline studies
	Navigable Waters	Potential to directly or indirectly effect the use of navigable waters Potential to change from baseline conditions	ATK studies Existing published and unpublished data sources Baseline studies conducted within the vicinity of the undertaking Various GIS data sources including Land Information Ontario, satellite imagery and aerial photography
	Human Health	Potential to directly and indirectly effect human health Potential to change from baseline conditions	Baseline studies Government data sources and databases Published and unpublished documentation

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1	090112	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SEA
2	21MAY12	ISSUED WITH REPORT REVISION 0017	JSP	ALR	SEA
REV	DATE	DESCRIPTION	PREP'D	CHECK'D	APP'D

**TABLE 10.1**

**NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT**

**TERMS OF REFERENCE  
PRELIMINARY ISSUE CATEGORIES AND SUBJECTS**

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<b>Issue Category</b>	<b>Issue Subject</b>
Project Phases	Project Construction
	Project Operations
	Project Closure
	Project Post-Closure
Project Details	Mine site operations and facilities
	Siting / Location
Project / EA Management	Proponent
	Project Schedule
	Regulatory / EA Process
	Project Description
	Project Support
	Public Participation
	Aboriginal Consultation
Water	Surface Water Quality
	Surface Water Quantity
	Groundwater Quality
	Groundwater Quantity
Atmosphere	Air Quality
Biology	Aquatic and Terrestrial Habitat
	Aquatic and Terrestrial Biota
Geology	Site Geology
	Geochemistry
Socio-Economic	Employment
	Hunting and Fishing
	Community Infrastructure
	Traffic and Transportation
	Population Demographics
	Education and Training
	Human Health and Safety
Public Health	
Aboriginal Interests	Traditional Land Use
	Traditional Knowledge

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1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**TABLE 10.2**

**NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT**

**TERMS OF REFERENCE  
SUMMARY OF ABORIGINAL ENGAGEMENT MEETINGS**

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<b>Date</b>	<b>Communication Summary</b>	<b>Participants</b>
March 29, 2010	Meeting for purposes of providing a copy of the project description.	Webequie First Nation Marten Falls First Nation
April 6, 2010	Meeting for purposes of addressing community issues.	Marten Falls First Nation
April 9, 2010	Meeting for purposes of addressing community issues.	Webequie First Nation
August 2 & 3, 2010	Meeting for the purposes of providing an update to the community capacity skills survey.	Webequie First Nation
September 2, 2010	Meeting to introduce the proposed ATK study and proposed project route corridor.	Webequie First Nation
March 15, 2011	Meeting to provide project information to community members and ATK study information.	Webequie First Nation
April 11, 2011	Meeting to provide project information.	Eabametoong First Nation
April 20, 2011	Meeting to provide a project update, to discuss the proposed business opportunities and to offer a project Open House.	Webequie First Nation
June 20, 2011	Meeting to discuss the Airstrip and business development.	Marten Falls First Nation
June 30, 2011	Meeting to discuss project update.	Long Lake First Nation #58
September 13, 2011	Meeting to discuss corridor to Webequie First Nation junction and the ongoing work at the site.	Webequie First Nation
October 6, 2011	Meeting to discuss the Wilderness North having access to the land adjacent to the airstrip.	Marten Falls First Nation
October 11, 2011	Meeting to discuss business opportunities.	Métis Nation of Ontario
October 13, 2011	Meeting to discuss road development.	Mishkeegogamang First Nation
October 14, 2011	Meeting to discuss recent letter from community.	Eabametoong First Nation
October 20, 2011	Meeting to discuss communities interested in the East- West Corridor.	Eabametoong First Nation
October 20, 2011	Meeting to discuss the environmental assessment processes.	Nimbinik First Nation, Ginoogamang First Nation, Webequie First Nation, Aroland First Nation, Marten Falls First Nation, Long Lake First Nation # 58, Eabametoong First Nation

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1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

**TABLE 10.3**

**NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT**

**TERMS OF REFERENCE  
PRELIMINARY SUMMARY OF ISSUES AND CONCERNS**

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<b>Issue Subject</b>	<b>Summary of Discussion</b>
Employment and Training	Issues raised relating to business opportunities, employment and training. Opportunities to bring community members into the industry.
Social Concerns	Discussion about the potential increasing demands on community infrastructure. Concerns about the increased use of illegal substances with more money in the community through employment.
Treaty Rights	Concerns raised about Aboriginal and treaty rights relating to hunting and trapping.
Information Sharing	Concerns expressed about the lack of information sharing between Noront and the community.
Facilities, Permitting	Concerns raised about the development and permitting of the airstrip. Discussion of potential pros and cons to development of all-season road.
Traditional Knowledge Studies	Concerns raised about sharing information with Noront and issues of trust concerning the use of the information.
Environmental Concerns	Concerns raised about previous environmental problems in the region being repeated.

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1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

TABLE 12.1

NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT

TERMS OF REFERENCE  
PRELIMINARY LIST OF PERMITS, LICENCES AND APPROVALS

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Permit/Approval	Agency	Act	Regulations	Trigger/Activity
<b>Provincial Permits</b>				
Work Permit	MNR	Public Lands Act	O.Reg. 975/90 Work Permits - road or building construction on public lands. O.Reg. 453/96 Work Permit - Construction - for construction of road facility to enable crossing of a water body	Any work on water crossings. (culvert installations, construction of a bridge, seasonal ice bridges)
Work Permit	MNR	Public Lands Act	O.Reg. 975/90 Work Permits - for road or building construction on Public Land (Crown Land)	Any work that involves upgrading of existing roads or building new roads or trails on Crown Land
Timber Cutting Licence	MNR	Crown Forest Sustainability Act	N/A	Tree removal on Crown Land
Approval	MNR	Lakes and Rivers Improvement Act	N/A	Water Retaining Structures
Land Use Permit	MNR	Public Lands Act	Public Lands Act O.Reg. 973/90 land use permits	When land tenure is required to use Crown land for building
Work Permit	MNR	Public Lands Act	O.Reg. 453/96 - Work Permit - Construction - for construction of buildings on public land	Construction of buildings on public land (road construction camps)
Burning permit	MNR	Forest Fire Prevention Act	O.Reg. 207/96 Outdoor Fires	Burning of removed vegetation
Aggregate Permit/Licence	MNR	Ontario Aggregate Resources Act (ARA)	O.Reg. 244/97	Removal of aggregate from pit or quarry (road construction)
Environmental Compliance Approval - Air and Noise	MOE	EPA	O.Reg. 419/05 Air pollution - Local Air Quality O.Reg. 337 - Ambient Air Quality Criteria. Guideline A-7 Air Pollution Control, Design and Operation Guidelines for Municipal Waste Thermal Treatment Facilities	Discharge of an airborne contaminant into the natural environment, including noise (milling, ventilation, generators, incinerator, aggregate crushing, screening and stockpiling)
Generator Registration Report	MOE	EPA	O.Reg. 347/90 part 5. General Waste management	Storage and transportation of hazardous wastes
Waste Audit and Reduction Plan	MOE	EPA	O.Reg. 102/95 - Waste Audits and Waste Reduction Work Plans	Requirement for waste audit and waste reduction plan for construction projects
Environmental Compliance Approval	MOE	EPA	N/A	Discharge of industrial wastewaters to surface water as a result of industrial process
Environmental Compliance Approval	MOE	EPA	N/A	Construction and operation of a waste disposal site (waste processing and transfer)
Environmental Compliance Approval	MOE	Ontario Water Resources Act	O.Reg. 560/94 Effluent Monitoring and Effluent Limits - metal mining sector. O.Reg. 561/94 Effluent monitoring and Effluent Limits Industrial minerals Sector	Industrial Sewage Works Environmental Compliance Approval (ECA) requirement for discharge of mine wastewater and/or domestic sewage to ground/surface water
Water Well Installation	MOE	Ontario Water Resources Act	O.Reg. 903 Wells	Well drilling for water supply or groundwater monitoring, in accordance with O.Reg. 903 Ontario Water Resources Act
Permit to Take Water (>50,000 L)	MOE	Ontario Water Resources Act	O.Reg. 387/04 Water Taking	Taking more than 50,000 L per day
Building/Land Use Permit	Ministry of Transportation	Public Transportation and Highway Improvement Act	N/A	Building near highways
Entrance Permit	Ministry of Transportation	Public Transportation and Highway Improvement Act	N/A	Requirement for a new or upgraded road entrance onto a provincial highway

**TABLE 12.1**  
**NORONT RESOURCES LTD.**  
**EAGLE'S NEST PROJECT**  
**TERMS OF REFERENCE**  
**PRELIMINARY LIST OF PERMITS, LICENCES AND APPROVALS**

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Permit/Approval	Agency	Act	Regulations	Trigger/Activity
Encroachment Permit	Ministry of Transportation	Public Transportation and Highway Improvement Act	N/A	Activities within 45 m of the highway may be controlled for safety considerations
Verification of Closure Plan Completion	MNDMF	Mining Act	O.Reg 240/00 Mine development and Closure Plan	Completion of closure plan
Notice of Project Status	MNDMF	Mining Act	O.Reg 240/00	Public Notification
Pre-development review process	MOL	Occupational Health and Safety Act	Occupational Health and Safety O.Reg 854/90 Mines and Mining Plants	Requires safety and procedures review of project prior to development
<b>Federal Permits</b>				
Permit	NRcan	Explosives Act Section 7	N/A	Explosives Use
Licence for explosives Magazine	NRcan	Explosives Act Section 7	N/A	Required for constructing or maintaining an explosives magazine
Fish Habitat Authorization	DFO	Fisheries Act	Fishery (General) Reg (SOR/93-53)	Work on water crossings or work near water that is fish habitat
Approval	TC	Navigable Waters Protection Act	Navigable Waters Works Regulations	Any work for crossing a navigable water body that may interfere substantially with navigation
<b>Provincial EA Process</b>				
Individual EA approval	MOE	Ontario Environmental Assessment Act	N/A	Voluntary Agreement
<b>Federal EA Process</b>				
Approval	CEAA	Canadian Environmental Assessment Act	N/A	Federal involvement in the Project. Federal issued Permits, Licences and Approvals.

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**NOTES:**

- MNDMF - ONTARIO MINISTRY OF NORTHERN DEVELOPMENT, MINES AND FORESTRY.
- MOE - ONTARIO MINISTRY OF THE ENVIRONMENT.
- MNR - ONTARIO MINISTRY OF NATURAL RESOURCES.
- MOL - ONTARIO MINISTRY OF LABOUR.
- DFO - DEPARTMENT OF FISHERIES AND OCEANS.
- TC - TRANSPORT CANADA.
- CEAA - CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY.
- NRCAN - NATURAL RESOURCES CANADA.
- EPA - ENVIRONMENTAL PROTECTION ACT.

1	05OCT12	INCORPORATION OF REVIEWER COMMENTS	JBP	ALR	ABA
2	27MAY12	ISSUED WITH REPORT N8102-2951-7	JBP	ALR	ABA
REV	DATE	DESCRIPTION	PREP'D	CHECK'D	APPROV'D

TABLE 12.2

NORONT RESOURCES LTD.  
EAGLE'S NEST PROJECT

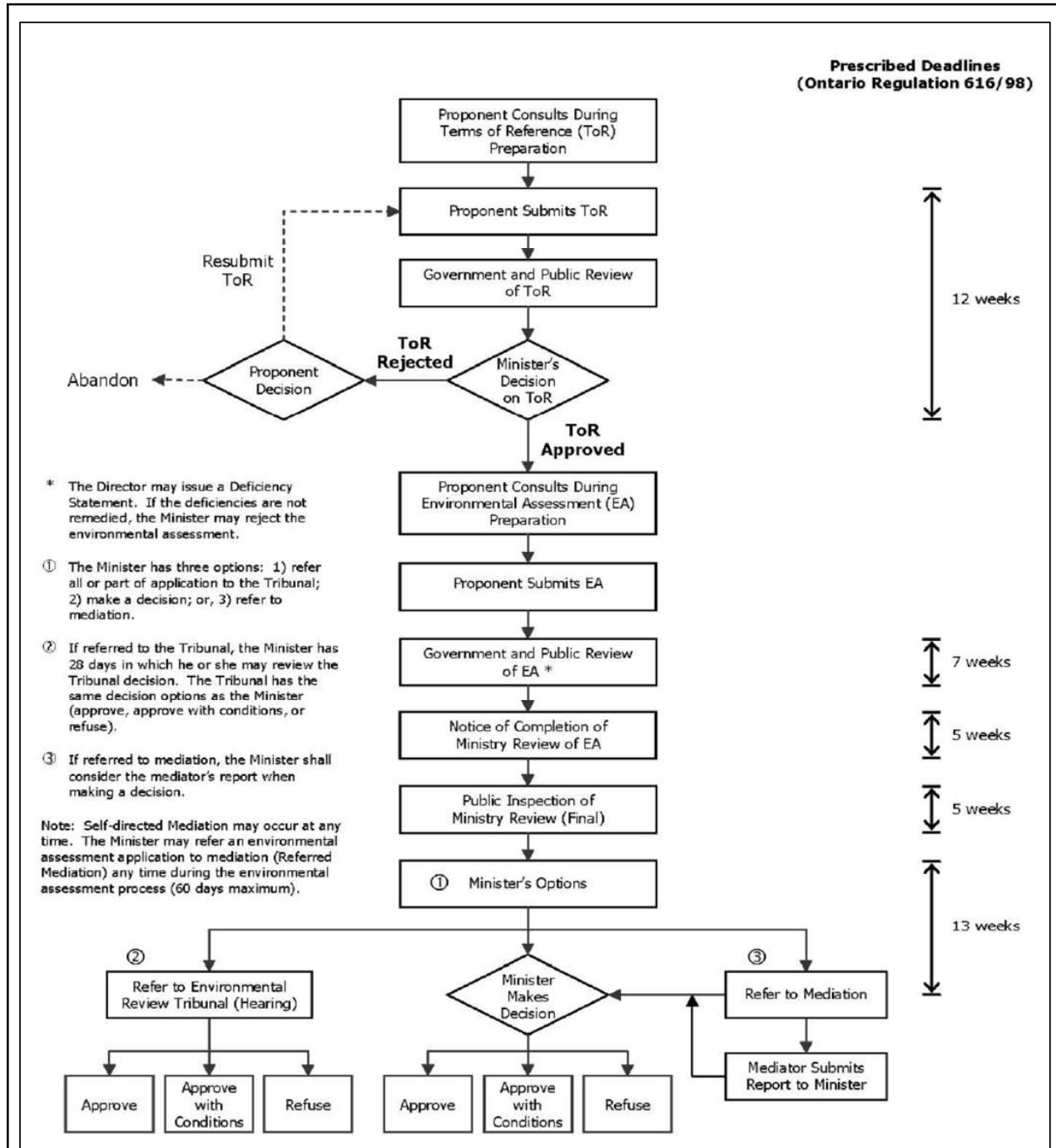
TERMS OF REFERENCE  
PRELIMINARY LIST OF POLICIES, GUIDELINES, CRITERIA AND STANDARDS

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Agency	Topic	Documentation
MOE	Surface Water	Determination of Contaminant Limits and Attenuation Zones, Procedure B-7-1 (formerly referenced by 15-08), Ontario Ministry of the Environment  Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy, July 1994 (reprinted February 1999)  MOE 1993 – Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario
	Groundwater	Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities, Guideline B-7 (formerly 15-08), Ontario Water Resources Act, April 1994  Technical Guidance Document For Hydrogeological Studies In Support of Category 3 Applications for Permit to Take Water, Ministry of the Environment, Operations Division, April 2008  Ontario Drinking Water Quality Standards, Ontario Regulation 169/03, Safe Drinking Water Act, 2002  Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, June 2003 (revised June 2006), Ontario Ministry of the Environment
	Waste Management	Landfill Standards: A Guideline on the Regulatory and Approval Requirements for New and Expanding Landfilling Sites, Ontario Regulation 232/98, Environmental Protection Act, May 1998 (revised June 2010)
	Atmospheric and Noise	Noise Limits: shall comply with the MOE noise limits in: - Publication NPC-205, "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", October, 1995 as amended; or - Publication NPC-232, "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", October, 1995 as amended; as applicable  Noise Screening: shall be prepared in accordance with: - General noise screening process for S.9 Applications - Primary noise screening process for S.9 Applications  Supplement to application for approval: - Secondary noise screening process for S.9 applications  Noise Reports: shall be prepared in accordance with: - Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995 as amended - Guide for the Preparation of an Abbreviated Acoustic Assessment Report (A – AAR) - Supporting Information for the Preparation of an Acoustic Assessment Report  Vibration Limits: shall comply with the MOE vibration limits in: - draft technical publication "Impulse Vibration in Residential Buildings", November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, August 1978 - Publication NPC-119, "Blasting", Model Municipal Noise Control By-Law, Final Report, August 1978  Vibration Reports: shall be prepared in accordance with: - Publication NPC-233, "Information to be Submitted for Approval of Stationary Sources of Sound", October, 1995 as amended - Supporting Information for the Preparation of a Vibration Assessment Report  Air Quality Documents: - Ontario Regulation 419: Air Pollution - Local Air Quality and Ontario's Ambient Air Quality Criteria

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1	05OCT12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

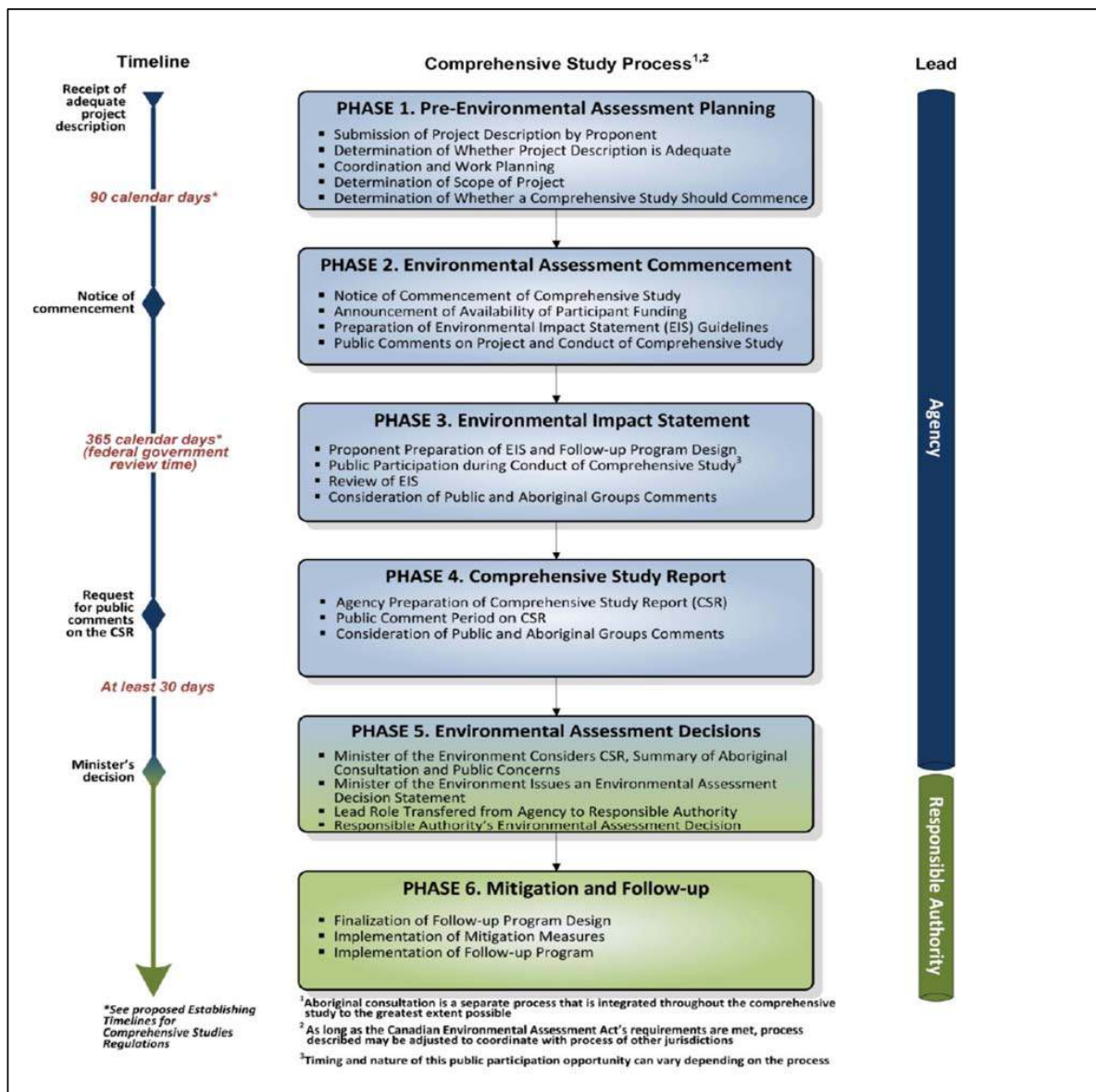


**NOTES:**

1. SOURCE: MINISTRY OF THE ENVIRONMENT.

NORONT RESOURCES LTD.		
EAGLE'S NEST PROJECT		
<b>PROVINCIAL INDIVIDUAL EA PROCESS</b>		
<b><i>Knight Piésold</i></b> CONSULTING	P/A NO. NB102-390/1	REF. NO. 7
	<b>FIGURE 4.1</b>	
		REV 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA

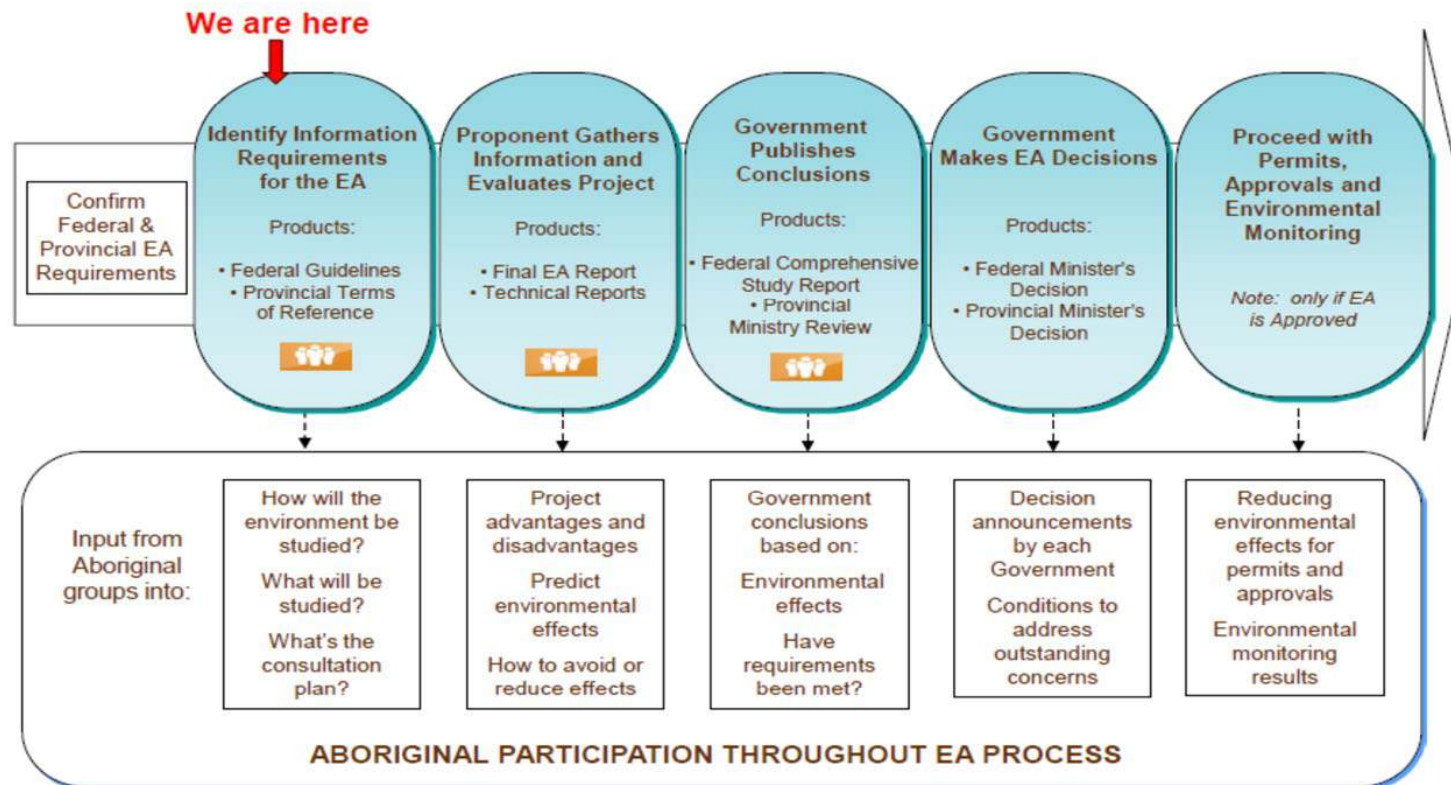


**NOTES:**

1. SOURCE: CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY.

						NORONT RESOURCES LTD.		
						EAGLE'S NEST PROJECT		
						CEA AGENCY COMPREHENSIVE STUDY PROCESS		
1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA	Knight Piésold CONSULTING	P/A NO. NB102-390/1	REF. NO. 7
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA		FIGURE 4.2	REV 1
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D			

## COORDINATED ENVIRONMENTAL ASSESSMENT (EA) PROCESS



Version: February 2012



Formal Consultation Opportunity



NORONT RESOURCES LTD.

EAGLE'S NEST PROJECT

COORDINATED EA PROCESS

**Knight Piésold**  
CONSULTING

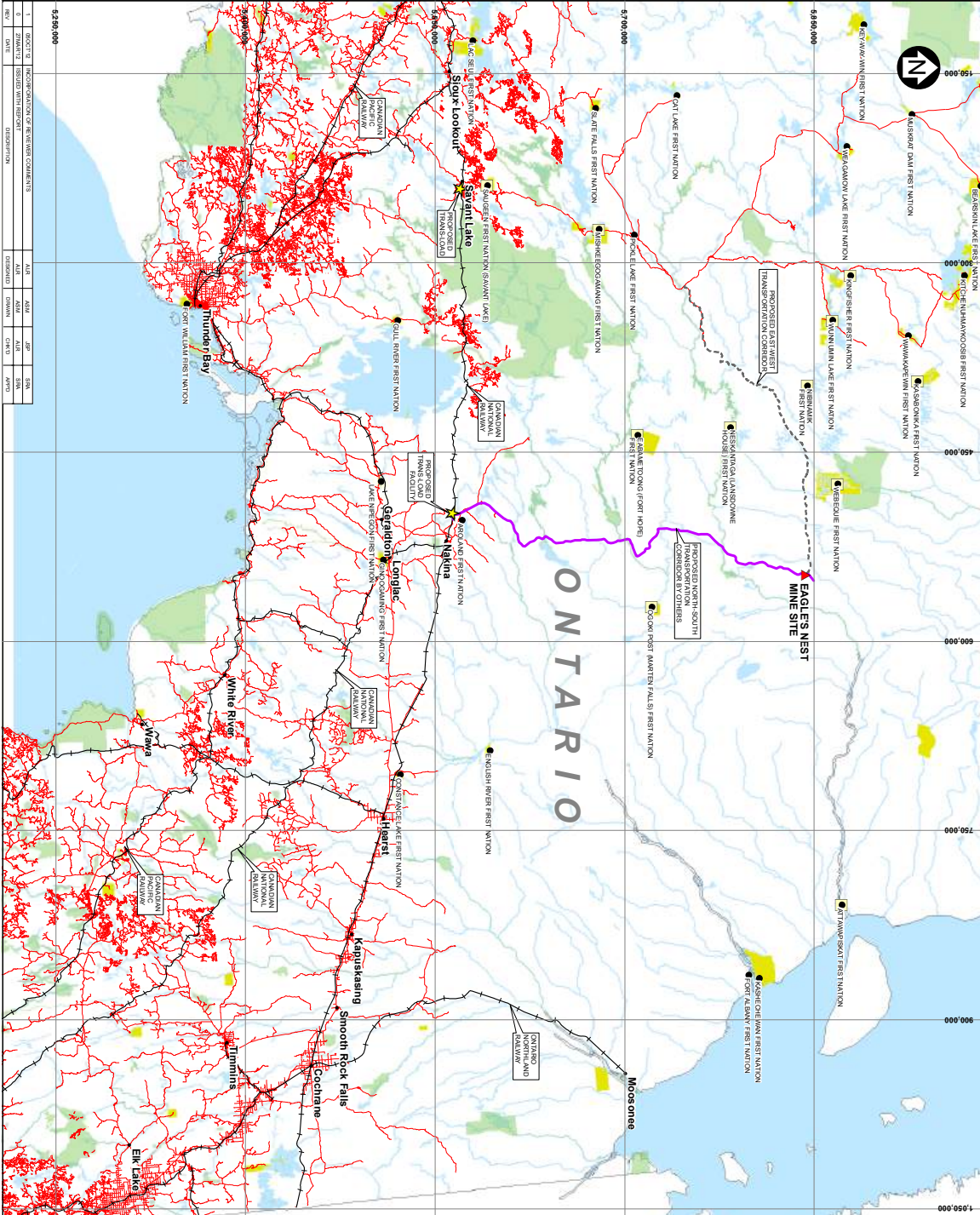
P/A NO.  
NB102-390/1

REF. NO.  
7

**FIGURE 4.3**

REV  
1

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	JSP	ALR	SRA
0	27MAR'12	ISSUED WITH REPORT NB102-390/1-7	JSP	ALR	SRA



**LEGEND:**

- ★ EAGLES NEST MINE SITE
- COMMUNITY
- SCHEDULED COAL-FIRED POWER PLANT
- PROPOSED NORTH-SOUTH ROUTE BY OTHERS
- PROPOSED EAST-WEST ALTERNATIVE CORRIDOR
- RAILWAY
- ROAD
- WATER
- PARK
- FIRST NATIONS RESERVE

**NOTES:**

1. BASE MAP: © TERRACONCEPTS INC. ALL RIGHTS RESERVED. CANADIAN DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT. 2011.
2. COORDINATE SYSTEM: UTM ZONE 18N.
3. ROUTE OPTION: SCHEDULED IN CONJUNCTION WITH THE PROPOSED MINE SITE APPROXIMATELY 500 METERS SOUTH OF THE NORTH-SOUTH ROUTE BY OTHERS.

SCALE: 1:50,000

0 25 50 100 150 METERS

**NORONT RESOURCES LTD.**

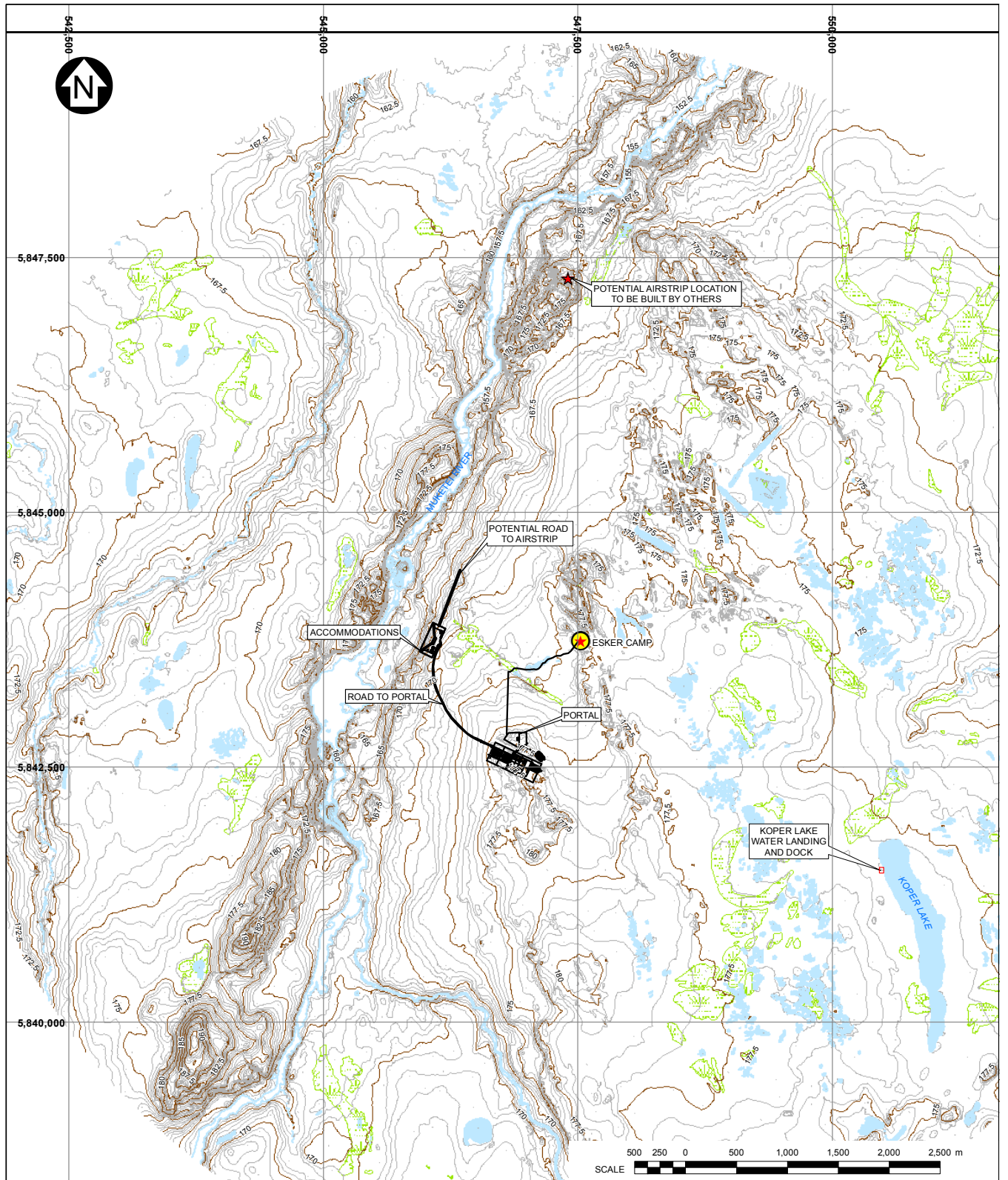
**EAGLES NEST PROJECT**

**PROJECT LOCATION MAP**

**Knight Priced Consulting**

DATE: 11/02/2011

FIGURE 5.1

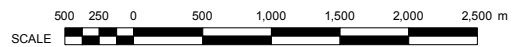


**LEGEND:**

- MINOR CONTOUR
- MAJOR CONTOUR
- INFRASTRUCTURE
- STREAM
- SWAMP
- WATER

**NOTES:**

1. BASE MAP PROVIDED BY SNC LAVALIN INC., 2010.
2. CO-ORDINATE GRID IS IN METRES.  
DATUM: NAD83  
PROJECTION: UTM ZONE 16
3. CONTOUR INTERVAL IS 1.5 METRES.
4. INFRASTRUCTURE IS BASED ON INFORMATION PROVIDED BY TETRA TECH (APRIL 19, 2012) AND MODIFIED BY KPL SEPT 2012).



NORONT RESOURCES LTD.

EAGLE'S NEST PROJECT

LOCAL SETTING  
EAGLE'S NEST MINE SITE

**Knight Piésold**  
CONSULTING

PIA NO.  
NB102-390/1

REF NO.  
7

**FIGURE 7.1**

REV  
1

REV	DATE	DESCRIPTION	ALR	ASM	JSP	SRA
1	05OCT'12	INCORPORATION OF REVIEWER COMMENTS	ALR	ASM	JSP	SRA
0	27MAR'12	ISSUED WITH REPORT	ALR	ASM	ALR	SRA
			DESIGNED	DRAWN	CHKD	APPD