



Ambershaw Metals, Inc.

**Ambershaw Metals Inc.  
Bending Lake Iron Project  
Project Description  
July 2019**

Prepared for:  
Canadian Environmental Assessment Agency

Prepared by:  
Ambershaw Metals Inc.  
1184 Roland Street, Suite 500  
Thunder Bay, ON  
P7B 5M4

Tel: (807) 707-9959

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## Preamble

The Bending Lake Iron Ore deposit has a long history in northwestern Ontario. The site has had exploration activities for over 50 years. Efforts to bring the deposit into production commenced in 2010 with the Bending Lake Iron Group (BLIG). BLIG was an indigenous-owned company that undertook a detailed baseline study to support and prepare a Project Description (PD). The PD was submitted to the Canadian Environmental Assessment Agency (the Agency). Extensive public, federal, provincial government and indigenous consultation was undertaken by BLIG. The Agency issued “*Guidelines for the Preparation of an Environmental Impact Statement Pursuant to the Canadian Environmental Assessment Act for the Proposed Josephine Cone Mine Project*” in June 2012.

Ambershaw Metallics Inc. (AMI), a subsidiary of Legacy Hill Resources, acquired the Project via bankruptcy sale of all the assets of BLIG in November 2015. Since acquiring the Project, AMI has retained several consulting firms to maintain the ongoing collection of environmental baseline data to supplement previous work that was completed by BLIG. Additionally, AMI has undertaken a comprehensive indigenous consultation plan with strong outreach to all communities that may or may not be interested in project participation. While the focus of this consultation was to support the Advanced Exploration Permit for the bulk sample, discussions were undertaken regarding all aspects of the project leading to the development of the mine. As a result of Indigenous consultation, AMI has decided to eliminate a Tailings Management Area alternative located west of Highway #622.

The PD produced by BLIG was done so under the guidance of the Canadian Environmental Assessment Act (CEAA). A new federal Environmental Assessment (EA) process was proclaimed shortly after BLIG received their Environmental Impact Statement (EIS) Guidelines. This new EA process is called CEAA 2012.

AMI has chosen to submit an updated PD under CEAA 2012 in order to conform to the current EA requirements. Furthermore, the existing Environmental Impact Statement Guidelines lapsed in the summer of 2018.

AMI has also chosen to evaluate a number of alternatives to the existing project design in the EA, including:

- an assessment of three alternative Tailings Management Areas;
- using the proprietary “cold bonding” process to replace the traditional pelletizing process. This “cold bonding” process avoids the need for an induration furnace in the production of pellets or briquettes. The environmental impacts associated with the cold bonding technology reduce the environmental footprint when compared to a conventional pellet plant with induration;
- with the “cold bonding” technology being the replacement to a conventional pellet plant there is no further need to provide natural gas to the plant. Accordingly, construction of a natural gas pipeline to the plant is no longer required; and
- using an enclosed, electrically powered conveyor system to move the product from the mine to the rail line paralleling Highway 17, thus reducing the environmental effects resulting from construction of a railway or trucking.

The Project will be known as the Bending Lake Iron Project.

## **1.0 General Information and Contacts**

### **1.1 General Description of the Project**

The Project consists of developing an iron ore mine located in the Kenora Mining Division and the Dryden Ministry of Natural Resources and Forestry (MNR) District, Ontario, Canada. It is located in a heavily cut-over area of forest approximately 285 km (177.1 miles) northwest of Thunder Bay, Ontario. Thunder Bay provides the closest port on Lake Superior for shipping within the Great Lakes. The property is located approximately 49 km (30.5 miles) southwest of Ignace, Ontario and 80 km (49.7 miles) north of Atikokan, Ontario and can be accessed via a public access road from Highway 622. The property spans approximately 11.5 km northwest to southeast and covers parts of the Bending Lake Area with claims spilling into the Kawashegamuk Lake Area and Wapageisi Lake Area. A series of contiguous mining claims staked for infrastructure purposes extends northeast from the Bending Lake Area to Highway #17.

This Undertaking involves the establishment, construction, operation, decommissioning and abandonment of an open pit iron ore mine with ancillary facilities on patented land claims. These facilities would include:





- A tailings management area, containment structures and associated material stockpiles;
- A waste rock stockpile area;
- Ore processing facilities and ore stockpiles;
- Pelletizing or briquetting plant using “cold bonding” technology, finished products storage and load out facilities;
- Support facilities and infrastructure, including but not limited to water supply and treatment, waste management and storage facilities and stormwater management facilities;
- Damming and dewatering natural waterbodies to accommodate mine infrastructure;
- An administration complex, warehouse, maintenance garage, accommodations complex, aggregate plant, and fuel storage facilities;
- Related on-site access roads, pipelines and low voltage electrical power facilities;
- An explosives storage facility; and,
- A high voltage electric transmission line from the Hydro One network to the mine site.

Another component of the mining operation is an infrastructure corridor, located on staked mining claims, from the mine site to a site adjacent to the Canadian Pacific Railway, located about 20 kilometres west of Ignace. This corridor would be suitable for conveyor, rail or truck transport and would also contain the high voltage electric transmission line. It would make use of or parallel existing forest access roads to the maximum extent possible.

This Project is primarily designed to extract, process and ship ore found locally at the Bending Lake deposit. The Bending Lake deposit has currently estimated resources in excess of 335 million tons of iron ore.

The processing plant will be designed to produce approximately 2 million tons per year of concentrated iron ore pellets or briquettes. The project will process a maximum of 23,000 tonnes of iron ore per day from one open pit and move approximately the same amount of waste rock per day on an average day for the entire mine life. The maximum amount of concentrated pellets/briquettes produced per day is estimated at 5,600 tonnes. Based upon the expected total



resource, the mine is projected to have a life span of between 30 and 40 years. Figure 1 provides the general Project location.

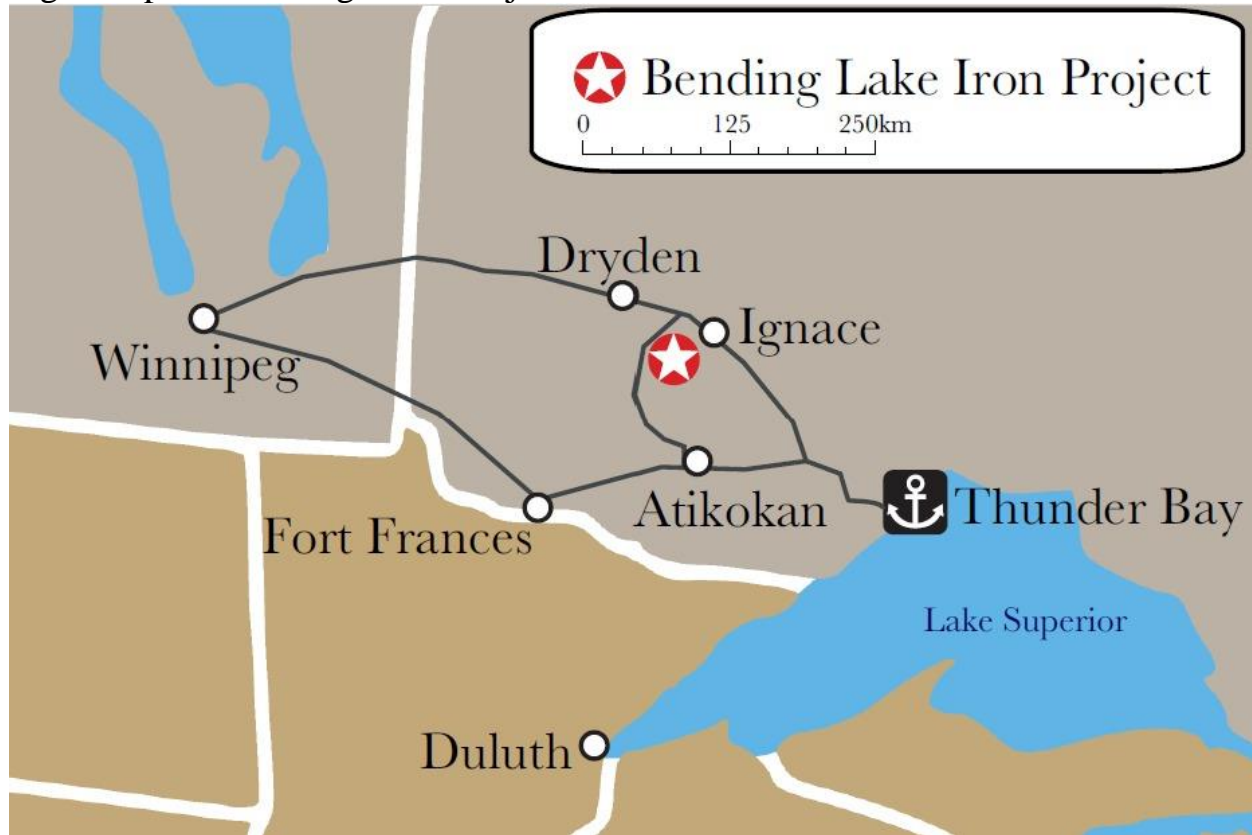


Figure 1: General Project Location

## 1.2 Proponent Information

The name of the undertaking is the Bending Lake Iron Project. The proponent of this Project is AMI. AMI is privately held by Legacy Hill Resources and Element ASA. The head office location and corporate contact is:

100 King Street West, Suite 5600  
Toronto, ON M5X 1C9  
Tel: 647-846-0230  
D. Saradhi Rajan, Chairman & Director  
dsrajan@legacyhillresources.com  
[www.ambershaw.ca](http://www.ambershaw.ca)

The AMI field office and Contact for EA Purpose is:

1184 Roland Street, Suite 500  
Thunder Bay, ON P7B 5M4  
Tel: 807-707-9959  
Franz-George Ostrop, Chief Operating Officer

E-mail: gostrop@ambershaw.ca

### **1.3 Overview of Consultation Undertaken to Date**

This Project is well known in north-western Ontario. An extensive Agency, Public and Indigenous contact program was undertaken in support of the original Project Description that was previously submitted to the Canadian Environmental Assessment Agency in 2011.

Subsequent to AMI re-commencing the EA Process and proceeding with their Advanced Exploration Permit application, consultations have been held with the Agency and Fisheries and Oceans Canada at the federal level. Provincial agencies contacted include the Ministry of Energy Northern Development and Mines (MENDM), MNRF, Ministry of Labour (MOL) and Ministry of Environment Conservation and Parks (MOECP). Preliminary discussions have been held with the Township of Ignace and the Atikokan Economic Development Corporation.

An extensive number of indigenous communities were previously consulted. AMI has engaged each of the following communities, councils and groups (more details are found in Appendix A – First Nation, Metis and Community Engagement Highlights):

#### **Treaty 3 First Nation Communities and Councils:**

Grand Council Treaty 3

Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services

Wabigoon Lake Ojibway Nation

Eagle Lake First Nation

Lac des Mille Lacs

Lac Seul First Nation

Wabauskang First Nation

Whitefish Bay First Nation

Seine River First Nation

Nigigoonsiminikaaning First Nation

Couchiching First Nation

Rainy River First Nation

Mitannjigamiing First Nation

Lac La Croix First Nation

**Metis Nation of Ontario:**

Region One

Provincial Office

**Township of Ignace:**

Mayor and Council

Economic Development Office

General Public

## **1.4 Other Relevant Information**

### **1.4.1 Environmental Assessment Processes**

Most of the major elements of the Project have not changed since the Agency, in a previous review of the Project Description, determined that a federal EA is required. This determination was made in *Environmental Impact Statement (EIS) Guidelines* (June 2012) and expected to be reconfirmed by the Agency in a new EIS Guidelines document issued in response to this Project Description. The Project is a Designated Project included in the *Regulations Designating Physical Activities*. Specifically, section 16 states that an EA may be required when an undertaking involves “*the construction, operation, decommissioning and abandonment of:*

- (a) *a metal mine, other than a gold mine, with an ore production capacity of 3,000 tpd or more; and*
- (b) *a metal mill with an ore input capacity of 4,000 tpd or more...”*

In Ontario, private sector mining projects are not subject to provincial Individual EA requirements. Some components of the undertaking, however, may be subject to one or more prescribed Class EA processes. The three most likely provincial Class EA processes that have been identified include:

- the MNRF Class Environmental Assessment for Resource Stewardship and Facility Development for various undertakings, including tree clearing, aggregate production and occupancy of Crown lands;
- Hydro One’s Class EA for Minor Transmission Facilities for a high voltage transmission line connection (approximately 17 km.) between the existing powerline and the mine site; and,
- The Ministry of Transportation Class EA for Provincial Transportation Facilities for entry to the Project from Highway 622 and a bridge crossing of Highway 17.

These Class EAs will be undertaken independently from the federal EA, however, in order to avoid possible public and Indigenous people’s confusion with separate EA processes, consultation and notification activities will be coordinated jointly. In addition, background data on the physical, natural and human environments of the study area will be common.

The Class EAs will identify potential environmental effects to the natural, physical and social/human environment and provide measures to mitigate negative effects. They will be subject to agency, public and Indigenous consultation with respect to the particular component of the project being considered.

#### **1.4.2 Permits and Approvals**

Table 1 lists key federal and provincial approvals that may be required for the project to proceed to construction and operation. There are no municipal approvals required as the nearest municipality is the Town of Ignace and the Project is outside of the municipal boundaries. Those functions normally undertaken by a municipality (e.g. building permits) will be managed by the provincial government.

**Table 1: Summary of Potential Permit and Approval Requirements**

<b>Agency</b>	<b>Act and/or Regulation</b>	<b>Permit/Approval</b>	<b>Applicability to the Bending Lake Iron Project</b>
Local Municipality absent so the default is the Ontario Ministry of Municipal Affairs and Housing	<i>Building Code Act</i> Section 8	Building Permit	<ul style="list-style-type: none"> <li>Buildings will be constructed at the Mine Site.</li> </ul>
Local Municipality absent so the default is the Ontario Ministry of Natural Resources and Forestry (MNRF)	<i>Fire Protection and Prevention Act</i> , Section 12	Fire Code requirements	<ul style="list-style-type: none"> <li>Project will need to meet Fire Code at all locations</li> </ul>
Local Health Unit	<i>Health Protection and Promotion Act</i> , O. Reg. 554/90	Notice of Camp Opening	<ul style="list-style-type: none"> <li>Will likely be required for the Accommodations Complex at the Mine Site (required for camps with a capacity greater than 5) during the construction phase.</li> </ul>
Ontario Ministry of Natural Resources and Forestry (MNRF)	<i>Aggregate Resources Act</i>	Aggregate Permit/License	<ul style="list-style-type: none"> <li>Aggregate permit already issued to use blast rock for aggregate.</li> </ul>
	<i>Public Lands Act</i> , O. Reg. 973-90	Land Use Permit	<ul style="list-style-type: none"> <li>Infrastructure on Crown lands not on patented mining claims.</li> </ul>
	<i>Public Lands Act</i> , O. Reg. 975/90, O. Reg. 543/96	Work Permit	<ul style="list-style-type: none"> <li>Various activities on site and infrastructure corridor.</li> </ul>
	<i>Lakes and Rivers Improvement Act</i> , Sections 14 and 16	Authorization for Water Crossing	<ul style="list-style-type: none"> <li>Infrastructure corridor.</li> </ul>
	<i>Ontario Aggregate Resources Act</i> , Part V Aggregate Permits, O. Reg. 244/97	Permit for Aggregate Pit/Quarry	<ul style="list-style-type: none"> <li>Use of blast rock on site.</li> </ul>
	<i>Crown Forest Sustainability Act</i> , Part	Forest Resource License – Cutting Permit for Timber	<ul style="list-style-type: none"> <li>Site and infrastructure corridor clearing.</li> </ul>



*Project Description – Bending Lake Iron Project*

<b>Agency</b>	<b>Act and/or Regulation</b>	<b>Permit/Approval</b>	<b>Applicability to the Bending Lake Iron Project</b>
	III – Forest Resource Licenses		
	<i>Endangered Species Act</i> , Sections 16 to 20	Permits and Agreements	<ul style="list-style-type: none"> <li>There is potential for listed species. The inventory will confirm presence. The EA will need to demonstrate that if listed species are present, reasonable alternatives, including those that would not adversely affect the species, have been considered, and reasonable steps to minimize adverse effects are taken.</li> </ul>
	<i>Fish and Wildlife Conservation Act</i> , Part VI Licenses and Other Authorizations	Authorization/Permit for collection of fish for testing	<ul style="list-style-type: none"> <li>Baseline studies and consultation with MNR will determine likelihood of requirement for authorization.</li> <li>An application for a Scientific Collectors Permit will be submitted.</li> </ul>
Ontario Ministry of Transportation (MTO)	<i>Environmental Assessment Act</i> , Part II.1 – Class Environmental Assessments	Highway Encroachment permit	<ul style="list-style-type: none"> <li>Potential bridge crossing of Highway 17.</li> </ul>
	<i>Public Transportation and Highway Improvement Act</i> Section 31, 34 and 38	Entrance Permit	<ul style="list-style-type: none"> <li>May be required for upgrading access to Highway 622.</li> </ul>
Ontario Ministry of the Environment, Conservation and Parks (MOECP)	<i>Environmental Protection Act</i> , Part II.1	Environmental Compliance Approval	<ul style="list-style-type: none"> <li>Various sources of air and noise associated with the mine development and operation.</li> <li>Required for tailings management, sewage (domestic wastewater) treatment, and stormwater management.</li> </ul>
	<i>Environmental Protection Act</i> , O. Reg. 560/94 and O. Reg. 561/94	Effluent Monitoring and Effluent Limits – Metal Mining Sector and Industrial Mining Sector	<ul style="list-style-type: none"> <li>Applicable (&lt;50 m<sup>3</sup> /day of process effluent, cooling water or overflow effluent)</li> </ul>



*Project Description – Bending Lake Iron Project*

<b>Agency</b>	<b>Act and/or Regulation</b>	<b>Permit/Approval</b>	<b>Applicability to the Bending Lake Iron Project</b>
	<i>Environment Protection Act, O. Reg. 222/07 and O. Reg. 224/07</i>	Environment Penalties and Spill Prevention and Contingency Plans	<ul style="list-style-type: none"> <li>Detailed spill identification and response plans required for Mine Site.</li> </ul>
	<i>Safe Drinking Water Act, O. Reg. 170/03 and O. Reg. 248/03</i>	Environmental Compliance Approval – Municipal and Non-municipal Drinking-water Systems (transitioning to the Drinking Water Works Permit)	<ul style="list-style-type: none"> <li>May be required for Accommodations Complex at Mine Site, depending on capacity and servicing requirements.</li> </ul>
	<i>Ontario Water Resources Act, Section 34, O. Reg. 387/04</i>	Permit to Take Water	<ul style="list-style-type: none"> <li>Make-up water during processing as well as various activities during construction.</li> </ul>
	<i>Environmental Protection Act, O. Reg. 347/90</i>	Generator Registration Number	<ul style="list-style-type: none"> <li>Required for waste management.</li> </ul>
Ontario Ministry of Labour (MOL)	<i>Occupational Health and Safety Act, O. Reg. 854/90</i>	Pre-development review process	<ul style="list-style-type: none"> <li>Mine site will require safety and procedures review prior to Project development.</li> </ul>
	<i>Occupational Health and Safety Act, O. Reg. 213/91</i>	Notice of Project under Section 23(2)	<ul style="list-style-type: none"> <li>Will be applicable to the mine site and associated facilities.</li> </ul>
Ontario Energy Board (OEB)	<i>Ontario Energy Board Act, Section 92(1)</i>	Leave to construct a Power Transmission Line (order Pursuant to the OEB Act)	<ul style="list-style-type: none"> <li>May be required if AMI planned their own transmission line as opposed to Hydro One making the application.</li> </ul>
Ontario Ministry of Energy, Northern Development and Mines (ENDM)			
	<i>Mining Act (1990 as amended 2009), Sections 140 and 141, O. Reg. 240/00</i>	Mine Closure Plan	<ul style="list-style-type: none"> <li>Will be required for the mine.</li> </ul>
	<i>Mining Act (1990 as amended 2009), O. Reg. 240/00</i>	Public Notice of Project Status	<ul style="list-style-type: none"> <li>Public Notice of Project Status will be provided.</li> </ul>
	<i>Mining Act (1990 as amended 2009), Section 81</i>	Application for lease of Surface Rights	<ul style="list-style-type: none"> <li>May be required for adjacent lands.</li> </ul>
Ontario Ministry of Tourism, Culture and Sport (MTCS)	<i>Ontario Heritage Act, Part IV – Conservation of Resources of Archaeological Value</i>	Archaeological Clearance Letter.	<ul style="list-style-type: none"> <li>Stage 2 assessment will be completed as part of the EA</li> </ul>





Agency	Act and/or Regulation	Permit/Approval	Applicability to the Bending Lake Iron Project
Transport Canada (TC)	<i>Transportation of Dangerous Goods Act</i> , Section 31, <i>Transportation of Dangerous Goods Regulations Part 14</i>	Permits of Equivalent Level of Safety	<ul style="list-style-type: none"> <li>All activities will be conducted in a manner consistent with the Act.</li> </ul>
	Navigation Protection Act	Decision	May be required for damming and dewatering part of the West Arm of Bending Lake
Canada Transportation Agency	<i>Canada Transportation Act</i> , Part III – Railway Transportation	Establishment of railway spur line	<ul style="list-style-type: none"> <li>Construction of about 25 km of tracks in a new rail corridor.</li> </ul>
	<i>Canada Transportation Act</i> , Section 6(1)	Establishment of explosives storage facility with a capacity of less than 200 tonnes	<ul style="list-style-type: none"> <li>Construction of an explosives storage facility</li> </ul>
Environment and Climate Change Canada (ECC)	Metal and Diamond Mining Effluent Regulations	Regulatory Amendment to Schedule 2	<ul style="list-style-type: none"> <li>Placement of deleterious waste rock or tailings in fish-frequented water bodies may be required. A determination of whether fish habitat is involved must be made by DFO.</li> </ul>
Environment and Climate Change Canada (ECC)	Metal and Diamond Mining Effluent Regulations		<ul style="list-style-type: none"> <li>Regulatory requirements apply to the area of mine operations.</li> </ul>
Natural Resources Canada (NRCan)	<i>Explosives Act</i> , Section 7	Explosives Permit	<ul style="list-style-type: none"> <li>Explosives storage will be located onsite.</li> </ul>
Fisheries and Oceans Canada (DFO)	<i>Fisheries Act</i> , Section 35(2)	Authorization	<ul style="list-style-type: none"> <li>A determination will have to be made regarding the tailings management area.</li> </ul>

### 1.4.3 Regional Study

The Project and the region surrounding it has not been the subject of an environmental study. The MNR has developed a Crown Land Use Atlas which identifies existing land uses and features and provides general management prescriptions for the Crown land units identified in the Atlas. In addition, the area

is part of the Sustainable Forest Management Licence held by Domtar and administered by the MNRF. The Wabigoon Sustainable Forest License area has an approved 10-year plan spanning 2019-2029. This plan was developed, adopted and activities monitored by the OMNRF with ongoing input from Indigenous groups, a multi-disciplined Local Citizens Advisory Council, and the public. This 10-year plan and annual incremental one-year plans, proposed work schedules and annual reports of completed activities conducted within the context of the long term 2019-2029 are publicly available via Ontario’s Electronic Forest Management Plan we portal. An executive summary of the 10 year and annual planning, execution and monitoring process is attached and available at:

<http://www.efmp.lrc.gov.on.ca/eFMP/viewFmuPlan.do?fmu=130&fid=58997&type=CURRENT&pid=58997&sid=25120&pn=FP&ppyf=2019&ppyt=2029>

## 1.5 Project Description Report Organization and Content

This Project Description Report has been prepared to meet the requirements as described in “*Prescribed Information for the Description of a Designated Project Regulations of the CEAA, 2012.*” It has also been prepared according to the “*Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012*” (the Agency, June 2014).

The report follows the required structure found in the Guide under the heading “*Contents of a Project Description.*”

- Section one provides general information and contact(s);
- Section two provides Project Information, including a description of such things as the physical works;
- Section three provides a description of the Project location including mapping of environmental features and land and water use;
- Section four provides information on federal involvement including financing, federal land involvement and federal permits or other authorizations that may be required to carry out the project;
- Section five provides a brief assessment of the environmental interactions of the Project;
- Section six provides a summary of engagement and consultation with Indigenous groups; and
- Section seven provides a summary of consultation with the public and other non-indigenous groups.

## **2.0 Project Information**

### **2.1 General Description of the Project**

The main objectives of the Bending Lake Iron Project are to extract iron ore from an economically viable deposit, process the ore and ship it to market while attempting to maximize economic benefits to local communities and Indigenous peoples. At the same time, the Project will minimize environmental effects through process design and siting facilities to take advantage, where possible, of existing disturbed (logged) areas. It will include the construction, operation, closure and abandonment of a new open pit iron ore mine at the Bending Lake property. The proposed site plan consolidates facilities and locates them as close as possible to the open pit in order to minimize the size of the operation. Finished product will be transported from the mine site to the Canadian Pacific Rail mainline via an enclosed conveyor, existing forestry roads or a 25 km rail line. Electrical Power will be supplied to the Project via a high-voltage transmission line in the same right-of-way.

The major components of the Project are:

- Open pit mine;
- Explosives storage facility;
- Waste rock stockpile area;
- Tailings Management Area;
- Tailings transport pipeline and return water pipeline;
- Crushing facility;
- Processing plant;
- Ore stockpiles from mine;
- Ore stockpiles from crushing;
- Concentrate storage facilities;
- Pelletizing or Briquetting Plant (“cold bonding”);
- Finished product storage and loading facilities;
- Administrative offices and accommodations;
- Maintenance offices and shop areas;
- Warehouse and other buildings used to store materials and equipment required in the manufacturing process;
- Railroad, haul road or conveyor system;
- Fuel storage facilities;

- Railroad maintenance building (if selected as preferred alternative);
- Electrical power lines and substation;
- Process water lines for water taking;
- Process water lines for recirculation; and
- Water and waste management facilities.

It is estimated that there will be an average workforce of 250 persons per year during the operations phase of the mine. During construction, the workforce could peak at about 400 persons per year. Employees for the Project will be sourced locally where possible. Living quarters will be provided on-site for the construction phase only.

## **2.2 Designated Activities**

Based on the CEAA 2012, the Bending Lake Iron Project is a Designated Project under Section 15 of the *Regulations Designating Physical Activities*. Specifically, this section states that an EA may be required when an undertaking involves “*the construction, operation, decommissioning and abandonment of:*

- (a) *a metal mine, other than a gold mine, with an ore production capacity of 3,000 tpd or more; and*
- (b) *a metal mill with an ore input capacity of 4,000 tpd or more...”*

The Project will mill a maximum of 23,000 tonnes per day of ore and produce a maximum of 5,600 tonnes per day of pellets or briquettes.

As per the requirements of Part VII of the *Mining Act (1990 as amended 2009, c. M. 14)*, a certified Closure Plan will be submitted for the Project. The Closure Plan will be prepared based on specific requirements outlined in *Ontario Regulation 240/00* and will include a description of the method, schedule, cost and financial assurance of all rehabilitation of the disturbed areas including watercourses and land.

## **2.3 Components and Activities**

### **2.3.1 Physical Works**

#### **2.3.1.1 Open Pit**

The open pit design has a maximum width of 1 km, maximum length of 3200 m. and a maximum depth of 300 m. These dimensions, as well as the open pit outline will be finalized during the EA process.

The pit design includes damming a section of the West Arm of Bending Lake. At this stage it is assumed that such damming will be possible, given the extremely shallow depth (an average of 1 to 2 metres) of the aquatic area to be affected, as well as the potential to successfully mitigate the impact to this fishery.

The side slopes of the pit will be benched to provide for slope stability and for access roads and ramps for the mine trucks hauling rock blasted from the pit.

Once production activities begin, approximately 50,000 tonnes of ore and waste rock will have to be mined daily to meet the annual production requirements. Total ore reserves at the mine site are estimated to be approximately 335 million tons which will result in an expected mine life of 30 to 40 years.

Ore will be extracted from the pit by blasting using AN-FO or a similar type explosive. The mine plan will determine the blasting progression as well as the location and dimension of mine walls and benches. The development of bench and mine wall locations and dimensions will adhere to existing mine safety regulations which will be incorporated into the initial mine plan design. Extracted ore will be loaded onto haul trucks with a shovel, excavator or equivalent material handling equipment and transported to the surface via haul road. The haul road from the pit to the crusher will be designed in accordance with applicable design standards to maximize safety and hauling efficiency.

The open pit mine will require the installation of sumps to facilitate dewatering. Excess water will be removed from the pit by pumping systems that will remain in operation during the life of the mine. Water that is removed from the mine will be utilized as process makeup water if sufficient quantities are available. If the volume of water at the mine is in excess of the process requirement then testing and treatment facilities will be available to ensure water quality prior to discharge.

### **2.3.1.2 Waste Rock Stockpile Area**

During construction, overburden (soil cover) will be removed and stored in a location adjacent to the mine pit and waste rock stockpile area. It will be used as final surface during mine closure. The dimensions of the overburden storage area are anticipated to be less than two km<sup>2</sup> in surface area. It will be determined through the EA process when more details are known regarding the soils depths of the areas to be cleared.

Waste rock (non-iron ore bearing rock) will also be produced during the construction phase and stored adjacent to the open pit area. This will come from boulders forming part of the overburden and stripping the surface rock layers covering the iron ore deposit.

Once mining commences, non-ore bearing rock will be separated from the iron ore deposit. As a result, approximately one ton of waste rock will be produced for every ton of iron ore. Based on the current resource estimates, approximately 500 million tons of waste rock will be produced during the life of the mine. The primary contributor of waste rock will be rock produced from stripping activities, but the initial magnetic separation process (dry cobbing) will also yield substantial quantities of waste rock. The majority of the waste rock produced is expected to be chemically inert so much of the waste rock produced by dry cobbing will be used in maintaining and expanding the tailings management area, road and plant maintenance projects and mine reclamation projects. Geochemical testing will be done to properly characterize all the mine wastes.

The waste rock stockpile area will be located in an area adjacent to the western edge of the mine opening and will cover an area of less than 10 km<sup>2</sup>. Waste rock will be removed from the mine by the same methods used in the removal of iron ore. Haul trucks will deliver material to the waste rock stockpile area and develop the area according to a detailed waste rock management plan that will consider development including the final closure of the facility.

Additional studies and investigations will be required to determine the optimal waste rock storage design and possible alternatives. The development of the mining plan will identify potential opportunities to improve the waste rock stockpile area through better estimates of waste rock production as mining operations progress.

Much of the waste rock produced during the initial stages of the Project will be used in the construction of the dams on the west arm of Bending Lake, construction of a containment embankment for the tailings area and for aggregate production. Based upon preliminary tests, most of the waste rock has been determined to be non-acid generating. Any rock that is determined to be acid generating will be segregated and stored in a separate, contained area of the waste rock stockpile area in order to control any acid rock drainage. The size and exact location of such an area will be determined as part of the EA.

### **2.3.1.3 Tailings Management Area (TMA)**

Three alternative TMAs have been identified on the site plan (Figure 3). An assessment of alternative TMAs will be undertaken during the EA and a preferred TMA will be selected.

Process tailings will be pumped to one of these TMAs. The TMA will be located in an area that will minimize the impact on area resources including water and fisheries. TMA option 1 will have surface expression of approximately 5 km<sup>2</sup> and will incorporate systems to re-use runoff water in the design. TMA option 2 will have a surface expression of approximately 10 km<sup>2</sup> and will follow the same design criteria as option 1. TMA Option #3 will also have surface expressions of no more than 10 km<sup>2</sup> as topography of the area is yet to be determined for best design criteria.

The TMA selected will be constructed in a series of cells which will allow for expansion over time. The outline of the TMA represents the maximum extent of the TMA. The TMA alternatives have different sizes, however the volume able to be contained in each TMA will be the same due to different heights of the tailings.

Process tailings will be pumped via slurry pipeline running from the mine site to the selected TMA development site. The pipeline to TMAs 2 and 3 will follow the infrastructure corridor while the pipeline to TMA 1 will follow the main road from the plant and south on Highway #622 to the TMA. The preferred site will be developed to maximize the reclaim of process water and run off from rain and snow melt. Water will be collected in a settling area and pumped back to the mine site through a return water line that will be constructed in the same corridor as the tailings pipeline.



#### **2.3.1.4 Processing Plant**

Ore from the mine will be processed in multiple process steps located at a single plant site adjacent to the mining operation.

Crushing will be performed in a crushing plant, which is located close to the open pit. Most likely, a two-stage crushing system will be used that reduces the ore to a sufficient size for first stage magnetic separation. Typically, a jaw crusher is used as a primary crusher and a cone crusher is used as a secondary crusher. The crushed rock will pass through a screening unit. Oversized particles will be returned to the crusher, while the passing fraction will be fed to a magnetic separation unit. Fifteen to 40% of the material that enters the magnetic separation unit will not meet minimum quality requirements with regard to the iron content and will be rejected as waste rock. From the crushing plant the preconcentrate is conveyed via a conveyor belt system to the processing plant.

The manufacture of concentrate will utilize a primary and secondary grinding circuit to complete the iron ore size reduction process. Most probably a High Pressure Grinding Roller mill (HPGR) in combination with a ball mill will be used to grind the crushed ore and liberate the magnetite. Instead of a HPGR, an autogenous or semi-autogenous mill could be used, and instead of a ball mill for 2<sup>nd</sup> stage grinding, a roller grinding mill or a tower mill. If feasible the 1<sup>st</sup> stage grinding will be done dry. 1<sup>st</sup> stage grinding is followed by magnetic separation (2<sup>nd</sup> stage of magnetic separation) to further reduce the amount of waste particles. At this stage process water will be added and the slurry will then enter 2<sup>nd</sup> stage grinding, where it is ground to a fineness required to liberate magnetite from remaining silicates. As the next step magnetite will be separated from non-magnetic minerals using a wet magnetic separator. To achieve a high-quality concentrate, it may be necessary to further remove silicates by using flotation. After flotation the clean concentrate will be dewatered using filter press technology or similar. The final product will be a filter cake which then will be sent to the pelletizing or briquetting plant.

Material with insufficient iron content will be pumped to the designated tailings management area TMA. Water created by tailings settling will be returned from the TMA to the processing facility by an installed water pipeline and pumping system, running parallel to the tailings pipeline.



## **The “Cold Bonding” Technology**

Concentrate will be combined with other raw materials and pelletized through a cold bonding process.

“Cold Bonding” of iron ore concentrate is a process of agglomerating finely ground iron ore to pellets or briquettes, which can be used as feed for Direct Reduction Steel Plants or Blast Furnace Steel Plants. In contrast to any conventional iron ore pelletizing process the “Cold Bonding” technology does not require the pellets or briquettes to undergo an induration process. The “Cold Bonding” Process uses a mix of polymers averaging 0.5% binder. The process uses standard equipment like intensity mixers, balling discs or drums for producing pellets. In case briquettes are being produced, a briquetting machine is used instead of balling equipment.

An induration process with temperatures up to 1,350 °C is not required to harden the pellets / briquettes, as the binder provides sufficient strength to the pellets / briquettes. For this reason, this technology allows for significant savings on energy costs and environmental emissions compared to a standard pelletizing plant. The organic chemicals used as a binder are non-deleterious polymers generally available in the global chemical industry and having a safe track record of usage.

Finished pellets or briquettes will be stored in silos or storage bins and loaded onto outbound trains or a conveyor. Finished product will travel approximately 25 km. from the mine to the rail mainline for shipment to market.

### **2.3.1.5 Buildings**

The mining operation will require the construction of several buildings which will be required for processing facilities, maintenance facilities, storage facilities, administrative facilities and infrastructure. Accommodations facilities will be provided through a temporary trailer camp. The site layout was developed to minimize land disturbance and to take advantage of geographic features in order to maximize operational efficiency.

All buildings and technical structures at the plant site (technical complex), with the exception of the explosives storage building and crushing complex, will be located an average distance of 850 metres from the northwest edge of the proposed open



pit. The technical complex will cover an area of 250,000 square metres with an approximate dimension of 250 m x 1000 m and will include the following major structures:

Administrative building;  
Maintenance & warehouse building;  
Electrical substation;  
Mill feed bins/silos;  
Rail loading building;  
Processing plant;  
Coarse tailings loading building;  
Bins/silos for storing additives;  
Finished product bins/silos;  
Mill feed silos;  
Process water building;  
Tailings pumping building;  
Clarifier; and  
Mill water reservoir.

The crushing complex will include the following major structures:

- Crushing and Dry Cobbing Building;
- Ore stockpile adjacent to crushing building; and
- Cobbed rock stockpile adjacent to crushing building.

To further maximize operating efficiency, the crusher building will be located approximately 325 metres from the north wall of the open pit and will house all equipment required to reduce mine ore to a suitable size, followed by cobbing, which is the first magnetic separation process. Crushed ore will be transported by belt conveyor to the processing building, which will be located within the main plant footprint. Figure 2 below illustrates the general layout of the processing facility.

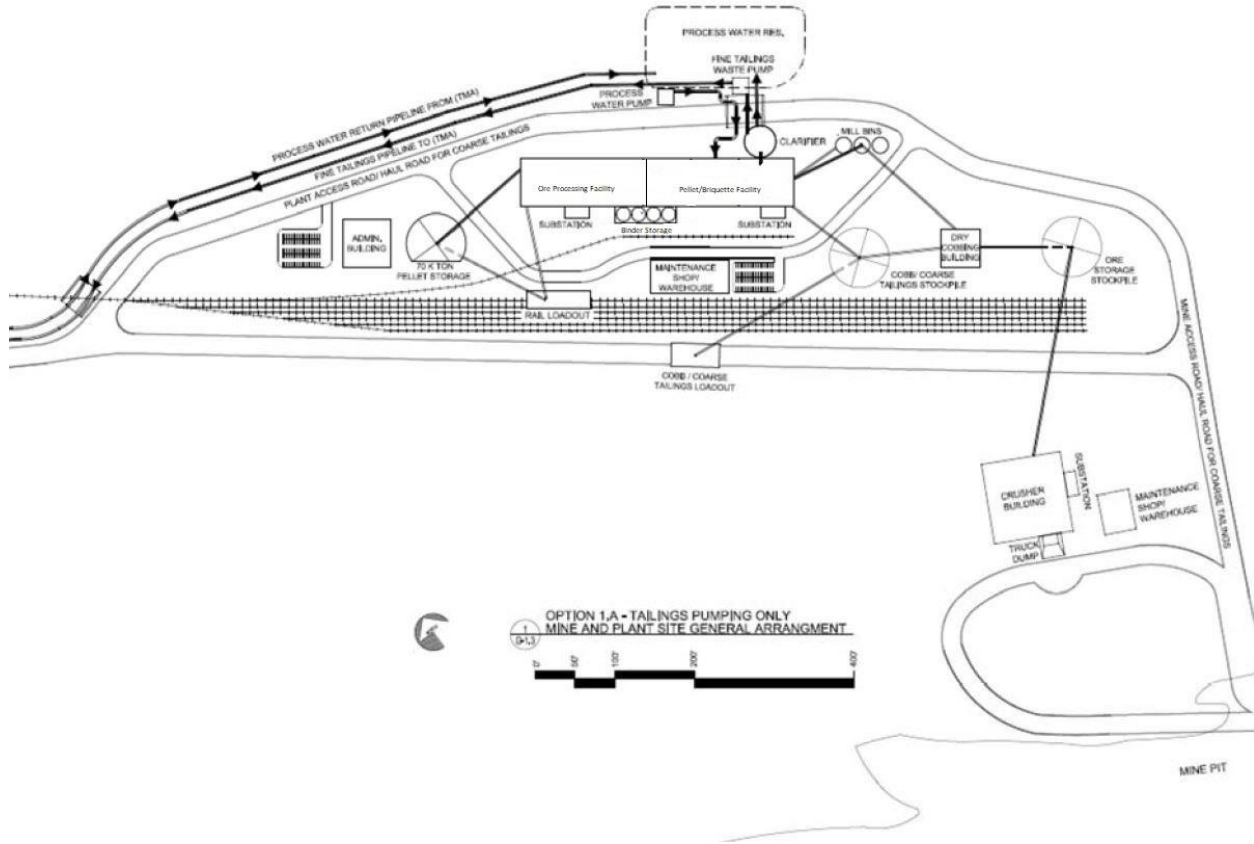


Figure 2: Plant Layout

### 2.3.1.6 Fuel Storage and Fueling Station

Mobile equipment operating in the mine area as well as locomotives (if rail transport from the mine to the mainline is chosen) will have to be refueled frequently in designated refueling areas. All tanks and associated refueling equipment will be located in areas that restrict traffic flow and adhere to regulatory and safety guidelines. Tanks will be constructed to meet regulatory requirements and will include spill retention enclosures. Two areas will be utilized for equipment refueling at the mine site. The first area will be located near the open pit mine and the truck maintenance shop and will be utilized for refueling heavy mobile equipment and smaller plant vehicles. The second fueling station will be located within the plant footprint near the rail load out facility. This station will be used to refuel diesel locomotives only.

### **2.3.1.7 Railroad**

A 25 km long railroad is one of the alternatives that will be considered to transport processed pellets or briquettes between the mine site and the Canadian Pacific Railway (CP Railway). The route will be designed assuming year-round use with a minimum of Class II operations (25 mph). Maximum grades were targeted at 1% with a minimum targeted horizontal curvature of 250-metre radius. Locally, these targets were exceeded in isolated areas and in sections where lower operating speeds would be expected.

The rail route will connect to the Canadian Pacific Railway mainline via a siding (designed to accommodate a full train from the mine) just north of Highway 17 and west of the Doreen Lake Road. AMI may operate the line to the CP mainline or it may be contracted out. The alignment will run up the side of a valley to gain elevation, crossing Highway 17 with a conventional steel bridge that includes an increased clearance envelope for oversize loads. The route will generally parallel the west side of the Doreen Lake Road and existing forestry roads to the south and west. At the Northwest corner of Bending Lake, the rail alignment will continue along the west shore of the North and Middle arms of the lake, climbing the hillside until reaching the northern edge of the pit and processing area.

A very preliminary route has been defined, and it is likely that further modifications will be required before a final design is determined. The route crosses generally undulating terrain with many rolling hills. Due to the shallow depth and extent of exposed bedrock, the rail alignment and profile will need to be carefully studied to balance the need for extensive blasting cuts or deep fills. Over the length of the rail line, 21 minor water crossings requiring culverts and one waterbody crossing of 15 metres that will require a bridge were identified between the Canadian Pacific Railway and the mine site. The study contemplates crossings that minimize impacts to the waterway and floodway in accordance with MTO and AREMA standards. Any in-water work will conform with MNRF Guidelines.

As alternatives, hauling finished product by truck (along the Doreen Lake Road and secondary forestry roads) or covered conveyor will be considered. This would allow for steeper road gradients, tighter horizontal curvature and shorter distance. If the product was hauled by truck, secondary forest access roads would have to be upgraded according to requirements for roads in the Wabigoon Forest Management

Plan and MNRF/MTO requirements. The route for the covered conveyor, (which is called an “infrastructure corridor”) would connect to the Canadian Pacific Railway just north of Highway #17 and west of the Doreen Lake Road. Should either of these two alternatives be selected as preferred in the EA, a transloading facility would be constructed along with a siding either by AMI or, more likely paid for by AMI but constructed by CP Rail to their specifications. The facility would consist of a material storage area and railway car loading facilities adjacent to a railway spur line. The alternatives will be evaluated in detail during the EA.

### **2.3.1.8 Tailings pipeline**

Approximately 2.5 million tonnes per annum of process tailings and water will be pumped from the processing site to the TMA via a pipeline. The pipeline will follow a route that minimizes environmental impact in terms of water crossings and corridor length. The tailings pumping system will be located at the mine adjacent to the concentrate building. The tailings will discharge directly into an area in the TMA designed to allow the process tailings to separate from the process water. Once adequate water quality has been achieved, the process water will be returned to the plant and reused.

The return water pipeline will run in the same corridor as the tailings pipeline and will be utilized to return water from the TMA to the mine. Pumps will be located at the TMA to withdraw process water from settling ponds designed to reduce the level of suspended solids.

The tailings and return water pipelines to TMA #1 will follow the access road from the plant to Highway #622 and parallel the highway south to TMA #1. The tailings and return water pipelines for TMAs #2 and #3 will be located within the infrastructure corridor from the plant to the respective TMA.

### **2.3.1.9 Makeup Water Pipeline**

As described in other areas of this Project Description, makeup water will be Sourced from recycled treated water (primarily from the TMA), mine dewatering operations, including part of the West Arm of Bending Lake and water from rainfall and snow events. Should additional water be required it will be withdrawn from wells or other permitted sources near Bending Lake and pumped to the plant. This will be determined during the EA.

### **2.3.1.10 Water Treatment and Discharge**

Water with high levels of suspended solids will be treated by use of detention ponds in order to allow the suspended particles to settle out. Dissolved metals, salts, nitrates and ammonia associated with blasting activities can be treated actively to meet federal and provincial requirements in order to be discharged into receiving streams and lakes. Treated water will either be discharged to the TMA or the receiving environment. This will be determined during the EA Process.

A package sewage treatment plant will be used to treat sewage from the camp operations and septic tanks and tile fields may also be used for smaller isolated sewage sources.

### **2.3.1.10 Roads**

There is an extensive network of main haul roads and secondary access roads which were built and used by Domtar to access the area to harvest timber. These roads would be upgraded for use by construction and mining equipment.

The primary road access for the Project would be heading east from Highway 622 towards Bending Lake along a series of existing roads. The access from Highway 622 would require upgrading to Ministry of Transportation standards and the remainder of the road would require some upgrading.

There is another access to the Project heading south from Highway 17 and then west around the north-western end of Bending Lake using forestry main haul roads. This is the location of the proposed infrastructure corridor that would include a high voltage electric transmission line and a rail or conveyor system to get the product to the CP rail mainline paralleling Highway 17. Some improvements to the main haul road would be made to accommodate increased traffic as per MNRF and MTO Guidelines.

An internal road system will be developed to link the main components of the mine. Where possible, the road system will incorporate and upgrade existing logging roads. The detailed road locations and design specifications will be developed during the EA process.

### **2.3.1.11 Explosives Storage**

All activities involving the manufacture of explosives will be outsourced to companies that specialize in the handling and manufacture of explosives. There will be no manufacturing of explosives on site. Any explosives storage facilities located at the mine will strictly adhere to regulatory guidelines. The final siting of the explosives storage facilities will be developed during the EA process through discussions with the regulator related to set-back requirements.

### **2.3.1.12 Area to be Affected by the Undertaking**

No more than 50 km<sup>2</sup> will be directly affected by the undertaking, with the intention of the project design component to reduce the total impacted area through best management practices. This includes the processing plant, open pit mine, tailings management area, overburden stockpile area, waste rock stockpile and infrastructure corridor.

## **2.3.2 Project Production Capacity**

The Bending Lake Iron Project will produce a maximum of 23,000 metric tons of iron ore daily that will result in a maximum annual production rate of 8 to 9 million metric tons. The capacity of the plant will be sufficient to process all of the ore mined on an annual basis, with a daily input capacity of 25,000 metric tons. Stockpiled ore will exist solely for process reasons in an effort to maintain consistent and uninterrupted material flow to the concentrator.

## **2.3.3 Expansion**

AMI confirms that the proposed Project is not an expansion and accordingly, this section is not applicable.

## **2.3.4 Physical Activities Incidental to the Project**

### **2.3.4.1 Electric Transmission Line**

The power infrastructure for the mine will tie into the existing 115kV transmission line (M2D) or 230 kV transmission line (D26A) owned by Hydro-One. Both of these transmission lines run generally parallel to Highway 17. It is likely that the



new transmission line for the mine will be owned and operated by Hydro One and tie into the existing line approximately 8 km east of the line's intersection with Highway 622 and will extend for approximately 25 km to the mine. The new transmission line will run along the same general corridor as the rail or haul road to the mine. If the 115kV line is not a useable option due to capacity limitations, then the second option would be to tie into the 230kV line at the same location. This option would require some additional work to gain clearance over the existing 115 kV line at the tie point, but the location and distance requirements will be the same.

The mine's requirement for power is assumed to be approximately 10 megawatts (MW) and includes supplying mining and crushing operations with power. The concentrator and pellet processing operations require an additional 15 MW of power. Both of these loads will be supplied by either the existing M2D 115kV transmission line or the D26A 230kV transmission line. One primary substation will be required to supply the mine. This primary transformer or transformers will step down the incoming voltage to a usable voltage (approximately 5kv) to be distributed through the mine and processing facility.

An EA for the transmission line route will be undertaken by AMI as part of the approvals process using Hydro One's Class EA for Minor Transmission facilities. The EA will identify the environmental effects of the transmission line on the natural, physical and social environment and will provide detailed mitigation measures to avoid or minimize these effects. These mitigation measures will form part of an environmental management plan that is part of the Class EA.

The line will be constructed to Hydro One specification by a private powerline constructor that has experience in this work. The transmission line will be for the sole use of the mine. As a result, AMI will pay for the construction of the powerline and all necessary infrastructure, after which Hydro One will assume the operation of the line during mine operations. Once the mine is decommissioned, the powerline will also be decommissioned at AMI's cost as per agreement between AMI and Hydro One, unless Hydro One has another use that it could be put to.



## 2.4 Emissions, Discharges and Waste

### 2.4.1 Atmospheric Emissions

The proposed Project consists of an open pit mine and an ore processing facility. Atmospheric emissions, including greenhouse gas emissions (primarily carbon dioxide), are expected during construction, operations and decommissioning phases of the Project. For the construction phase, the atmospheric emissions are associated with typical construction activities, including surface preparation (e.g., scraping, grading, road construction), wind erosion, material transfer, mobile equipment and stationary combustion sources.

For the operations phase, the Project activities that are associated with atmospheric emissions include drilling, blasting, material handling, transportation, crushing, screening, pelletizing or briquetting, mobile equipment and stationary combustion sources. AMI will be using a “cold bonding” process to produce pellets or briquettes. This will minimize air emissions associated with the pelletizing or briquetting process. Many of the atmospheric emissions during the decommissioning phase of the Project are associated with activities that are similar to the construction phase.

For the Project, the atmospheric emissions can be categorized as non-combustion and combustion emissions. The non-combustion emissions include particulate matter and its constituents (e.g., metals, metallic salts). The combustion emissions include conventional combustion products, including nitrogen oxides (NO<sub>x</sub>), fine particulate matter, sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>). Also associated with combustion are volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and nitrous oxide (N<sub>2</sub>O). The latter is mainly associated with blasting operation. From the above list of air contaminants, CO<sub>2</sub>, N<sub>2</sub>O and some of the VOCs (e.g., unburned hydrocarbons such as methane) are considered to be greenhouse gases (GHGs) which contribute to climate change.

For particulate matter, the emissions are categorized into 3 fractions based on the particulate size, as follows:

- Total Suspended Particulates (TSP), particulate matter with aerodynamic diameter less than 44 microns;



- PM<sub>10</sub> or inhalable particulate matter – particulate matter with aerodynamic diameter of less than 10 micron; and,
- PM<sub>2.5</sub> or respirable particulate matter – particulate matter with aerodynamic diameter of less than 2.5 micron.

Particulate emissions associated with combustion sources, including internal combustion engines, are typically of the finer fraction (i.e., PM<sub>2.5</sub>), whereas those associated with mining operations are mainly of coarser fraction (i.e., TSP). Particulate matter from mining operations, including tailings areas, can also have higher concentrations of metals / metal salts, and depending on the nature of these constituents, the particulate matter emission can have a greater impact on the environment and human health.

Some of the above-mentioned sources are discussed in more detail below:

**Mobile Equipment** – Heavy non-road mobile equipment such as excavators, loaders, earth movers and mining trucks fall under this category. Also included in this category are road trucks and vehicles as well as trains. For these sources, atmospheric emissions consist of tailpipe/exhaust emissions associated with internal combustion of fossil fuels (i.e., diesel and gasoline) as well as particulate emissions from re-suspension of road dust as well as tire and brake wear. The tailpipe emissions are typically controlled by on-board emission control devices such as catalytic converters, particulate traps, SCRs, EGRs and PCVs as well as by regular maintenance of the engines. The emissions associated with the travel of the mobile equipment are typically controlled by sweeping and/or water of travel routes and use of dust suppressants on road surfaces.

**Stationary Emission Sources** – Process equipment such as emergency generators fall into this category, where the emissions are exhausted through stacks. Emissions from these sources include combustion and process products and by-products. The process emissions are typically controlled using emission control systems such as dust collectors and scrubbers.

Other types of stationary emission sources are crushers and screeners. Particulate matter is the main air contaminant emitted from these sources. Particulate emissions can be controlled by using water sprays during crushing/screening as well as utilizing enclosures with dust collection systems.

**Wind Erosion** – Wind results in re-suspension of particulate matter from disturbed surfaces, travel routes, mine tailings, open conveyors and stockpiles. These sources are commonly referred to as fugitive sources of particulate matter. Their emissions can be reduced by applying water and dust suppressant chemicals to the exposed/disturbed surfaces as well as by enclosing exposed conveyors and conveyor transfer points. Minimizing the exposed areas through staging the extraction and timely rehabilitation of the disturbed areas can also help reduce fugitive particulate emissions.

**Indirect Sources of Emission** – There will also be indirect atmospheric emissions due to the use of electricity from the grid to power the Project’s operations. Atmospheric emissions associated with electricity generation pertain to fossil fuel (e.g., natural gas, coal, diesel) combustion and are similar in nature to those mentioned above. Emissions from fossil fuel-fired generating stations are controlled by emission control systems such as electrostatic precipitators, low-NOx burners and scrubbers.

#### **2.4.2 Greenhouse Gases**

Greenhouse gas emissions have become known as a contributor to climate change. Methods (e.g. choice of equipment, pelletizing/briquetting process) to reduce or minimize greenhouse gas emissions from the process will be considered and evaluated during the Environmental Assessment process.

In terms of greenhouse gases (GHGs), the Bending Lake Iron Project has many advantages when compared with a typical iron ore mine.

- There is no induration furnace and thus no fossil fuels are used in the pelletizing/briquetting process, which would be a major source of GHGs;
- Electricity will be provided by Hydro One’s electrical grid in northwestern Ontario which is almost exclusively dependent upon renewable (waterpower, wind and solar power) sources;
- Since this will be a new facility, the support vehicles used for the Project are expected to be new Class 2B and Class 3 heavy-duty vehicles with emission limit regulations for CO<sub>2</sub>, NO<sub>x</sub> and methane;
- Process equipment will be new and will incorporate recent advances in GHG reduction technology;



- An energy management and GHG emissions management plan will be developed with the support of management; and
- GHG saving techniques such as reducing equipment idling time during loading and dumping will be employed.

The project will generate and emit Greenhouse Gases (GHGs) during its construction, operation, decommissioning and reclamation phases, with the operation phase having the highest contribution. The construction phase of the project will be for a limited time period, and the GHG emission sources will be primarily associated with fossil-fuel combustion for operation of equipment, including mobile equipment (e.g., dozers, excavators, loaders, haul trucks) and stationary equipment (e.g., temporary power generators, heating units). A conservative high-level estimate of GHG emissions associated with the construction phase, calculated as CO<sub>2</sub> – equivalent per annum is approximately 35,000 tonnes. This is merely a 0.06% of the Ontario’s 2030 GHG target of 62 Mt and 0.02% of Canada’s 2020 GHG target of 155 Mt. More accurate analysis of the GHG emissions during the construction phase will be undertaken during the EA, and when more detailed information regarding the construction phase becomes available.

The GHG emissions during the operations phase are mainly associated with the extraction and transportation of iron ore from the mine site to the processing facility and transport of pellets from the processing facility to the CP Rail’s mainline. The processing of iron ore at the facility occurs based on chemical reactions (i.e., cold-bonding) and does not utilize furnaces. Combustion of fossil-fuel for ore processing / heat is expected to be minimal with negligible GHG emissions, when compared against other operation-related sources. Key sources of GHG emissions during the extraction process include blasting and transportation of iron ore. During blasting, Ammonium Nitrate Fuel Oil (ANFO) detonation results in GHG emissions. Use of diesel-powered mobile equipment such as front-end loaders and rock trucks for handling and transporting the iron ore to the processing plant also generates GHG emissions. After the processing and conversion to iron pellets, the product (iron pellets) is transported via rail to the CP mainline, approximately 25 km from the processing facility. The facility is expected to generate approximately 5,600 tonnes of product per day and there will be one round- trip via rail (50 km) from the processing plant to the CP mainline per day.



GHG emissions are expected during the product handling, through operation of diesel-powered mobile equipment. GHG emissions are also generated by the diesel-powered locomotive. The annual GHG emissions during decommissioning and reclamation are expected to be significantly less than the operation phase and are estimated at 20,000 tonnes of CO<sub>2</sub>-equivalent per year. The maximum annual GHG emissions for the operation phase of the project, assuming a 365-day operation per year is estimated at approximately 110,000 tonnes CO<sub>2</sub>-Equivalent. This would be less than 0.2% of Ontario's 2030 target and 0.07% of Canada's 2020 target. It is unlikely that the plant will operate for this number of days per year, however, this is the most GHG emissions that could be produced. More accurate analysis of the GHG emissions during the operation, decommissioning and reclamation phases will be undertaken for the EA, and when more detailed information regarding the operation, decommissioning and reclamation phases becomes available.

Although the above high-level conservative estimates of GHG emissions for various phases of the project are considered to be relatively low, the proponent commits to developing a greenhouse gas management plan with a focus on minimizing emissions through realizing process efficiencies and energy saving opportunities.

### **2.4.3 Noise**

The Bending Lake Iron Project is being developed in a greenfield location with no noise receptors located close by. There is one seasonal residence on the east side of Bending Lake, however there are no permanent residences nearby. Noise, therefore, is more of an occupational hazard for workers at the mine. In areas of the operation that are deemed to present a health risk from noise, signage will direct those entering the area to wear suitable hearing protection.

The primary sources of noise include blasting, equipment operations and processing equipment. This will be evaluated in the EA against the baseline conditions determined in a noise study conducted in the area in 2017 that showed background sound levels ranged from about 25 to 40 dBA. More detailed information relating to the studies carried out can be found in Appendix B.

#### **2.4.4 Sources and Location of Liquid Discharges**

There are a number of sources of potential liquid discharge during the construction and operations stages of the mine. During construction there will be greywater and blackwater waste associated with the temporary construction camp. The camp will consist of portable trailers. These trailers will include office trailers, sleeping accommodation, mess trailers and washroom trailers. The washroom trailers will be self-contained, and wastes will be pumped out into liquid waste haulage trucks. These wastes will be trucked out by a licenced waste hauler that will dispose of the wastes in an approved, MOECP disposal site.

During the operations stage of the project, blackwater and greywater waste will be disposed of in an on-site sewage treatment system, approved by the MOECP. This system may consist of a package sewage treatment plant and/or a septic tank and weeping tile system or a number of smaller systems.

Wastewater from the vehicle wash facility will be contained and disposed of in a leaching pit. Stormwater runoff from hard surfaces will be collected and channeled to settling areas (stormwater management ponds) where a combination of evaporation and leaching into the ground will take place. This will also allow for suspended particles to settle out. In the case of the TMAs, snowmelt and rainwater will be collected in order that it can be used as part of the process water for the tailings pipeline. It is not anticipated that treatment, other than having particulates settle in a pond, will be required. Any potentially acid generating rock will be isolated, and water accumulated in this cell will be allowed to evaporate. Dewatering the West Arm of Bending Lake will also provide a source of process water. Should additional sources of water be required they could be wells drilled in the vicinity for that purpose or from a local lake via a water intake and a pipeline. These alternatives will be considered during the EA.

Hazardous liquid waste which can include used equipment oil, paints and other chemicals from the plant site will be collected in a central location, stored so that they cannot be released into the environment and transported via a MOECP approved waste hauler for disposal at a licenced facility.



## 2.4.5 Waste Types and Disposal Strategies

Table 2 (below) summarizes the solid and liquid waste streams anticipated. Annual volumes are not known at this time but will be calculated during the EA when more accurate information has been acquired.

Table 2: Solid and Liquid Waste Streams

Waste Stream	Anticipate Annual Volumes	Potential Locations for Disposal	Other Notes
<b>Solid Wastes</b>			
Municipal Solid Waste		Transported via MOECP approved hauler for disposal at an MOECP approved facility	Source separated either on-site or at disposal location.
Recyclables		Transported via MOECP approved hauler for disposal at an MOECP approved facility	Reduce, Reuse, Recycle, Recover. Source separated either on-site or at disposal location.
Solid Non-Hazardous Waste (Domestic and Industrial)		Transported via MOECP approved hauler for disposal at an MOECP approved facility	To be stockpiled on-site in animal proof containers
Cleared Brush		Burned	MNRF Permit
Hazardous Waste		Transported via MOECP approved hauler for disposal at an MOECP approved facility	To be stored in bermed and lined facility/container
Process Solids fine tailings		Tailings Management Area	
<b>Liquid Wastes</b>			
Sanitary Wastewater (i.e. Sewage) - Construction		Transported via MOECP approved hauler for disposal at an MOECP approved facility or treated and disposed via approved on-site facility.	Collected in portable infrastructure for approximately 400 construction workers.
Sanitary Wastewater (i.e. Sewage) - Operations		Treated and disposed via approved on-site facility (i.e. septic tank and tile field).	Anticipated approximately 250 workers.
Vehicle Wash Facility wastewater		Collection and storage in a leaching pit/settling pond	
Site Runoff (i.e. Stormwater) - Construction	Runoff volumes from hard surfaces	Temporary collection areas	

Process Plant and Tailings Water	unknown at this time	Treated and possible re-use as make-up water.	
Hazardous Liquid Waste		Transported via MOECP approved hauler for disposal at an MOECP approved facility	

## **2.5 Project Phases and Schedule**

### **2.5.1 Schedule, Duration and Staging**

There are five general Phases related to the development of the mine at Bending Lake.

- (1) Project Definition Phase – Gathering Baseline Environmental Data, Conceptual, Feasibility and Detailed Engineering, Continued Exploration Drilling, Terms of Reference preparation along with Indigenous and Public Consultation. The work commenced in 2011 and continued in 2016 with AMI becoming the project owner. It is anticipated to be complete by the end of 2021.
- (2) Environmental Assessment Phase – Gathering Baseline Environmental Data, Feasibility and Detailed Engineering, Continued Exploration Drilling, Field studies, and Identification of Long Lead items along with Indigenous and Public Consultation. A Project Description will be submitted for review by the Agency in summer, 2019. An extensive amount of field studies to support the EIS have already been undertaken. A gap analysis will be conducted in 2019 and the remaining field studies required to support the EIS will be undertaken during 2019 and 2020. Agency/public and Indigenous consultation will continue throughout the process, with the goal of producing a draft EIS around early to mid-2021 and approval of the E.I.S. by the end of 2021. Acquisition of permits will begin by mid-2021 and completed in early 2022.
- (3) Construction Phase – land clearing, pit development grading, foundation placement, equipment placement. Clearing of the site is expected to commence during Winter 2021-2022. Much of the site has been heavily logged already. Construction start-up of buildings and facilities is planned for spring of 2022.



- (4) Start up and Production Phase – equipment commissioning, mining, product shipping. This is planned for late 2024 – 2025 and production is expected to last for about 30 to 40 years or until 2055 - 2065.
  
- (5) Closure and Abandonment Phase - Mine Closure and abandonment will likely take 3 to 5 years at which time the project will be fully decommissioned in compliance with all regulatory requirements and the Mine Closure Plan. This Phase is expected to occur between 2055 and 2065. While some decommissioning of localized areas will occur throughout the Production Phase, the mine will be fully decommissioned over a period of five years and the end of production and then abandoned. The open pit will be allowed to fill naturally. The dams on the West Arm of Bending Lake will be removed to allow fish passage once the pit water level is the same as the rest of the lake, the TMA and waste rock storage area will be contoured to allow for natural drainage. They will be covered with overburden from the overburden stockpile and revegetated. All infrastructure will be removed and or decommissioned. A monitoring program will be established and carried out through this phase to ensure that there will be no long-term detrimental effects on the natural environment.

## **2.5.2 Major Activities During the Mine Life Cycle**

Following the receipt of all applicable approvals, the Project will be developed in these three phases:

- Site preparation and construction;
- Operations; and
- Closure.

### **2.5.2.1 Site Preparation and Construction**

Site preparation will include any necessary clearing to remove vegetation to allow for the construction of surface facilities and the pit. All areas proposed for buildings, the waste rock storage area, the TMA and the infrastructure corridor and a surrounding buffer area will be cleared of vegetation. Usable timber resources will be harvested prior to development and either utilized in construction activities or shipped offsite for processing. With respect to the infrastructure corridor,



should the rail or conveyor alternative be chosen, then the corridor will be cleared similar to the other facility areas on site, however overburden and low growing vegetation would not be removed. The high voltage transmission line would take advantage of cleared right-of-way in the Infrastructure corridor or along forest roads. This will be determined in the provincial Class EA that is required for approval of the line. The trucking of product to rail alternative would make use of the existing forest main haul road and secondary roads. In addition, levelling of the areas proposed for facilities will be required and establishment of site drainage will be undertaken. Soils and vegetative matter from these areas will be removed and stored together in a location for re-use during mine closure. Waste rock from clearing and site preparation (including blast rock from site levelling, waste rock overburden from the pit and loose rock in the overburden) will be separated, crushed and used for road building, TMA perimeter construction and wherever else aggregate is required for.

During the construction phase, overburden and waste rock will also be removed at the pit to expose the ore body. This material will be moved to the designated stockpile areas for storage or use in the construction project. One of the more significant facilities that would use this waste rock would be the dams across the West Arm of Bending Lake. It is anticipated that very little of the waste rock generated during the construction phase will go to a storage area but rather be used during construction.

Once the clearing, grading and roadbuilding is complete, construction of various components of the mine will be undertaken relatively simultaneously, although the longer lead time components will be started first. A temporary construction camp, consisting of office, accommodations, washroom and kitchen trailers will be established on site. The facilities will be used first by the clearing contractor as clearing is expected to start in the late fall. The camp will grow in the spring to accommodate private construction contractors working on various components of the Project. Labour (specialty skills) will be brought in from the outside, however it is anticipated that a large amount of the labour will be sourced locally and from Indigenous communities.

Since the construction phase will require the transport of heavy equipment to the Project site, the existing roads may require repair/redevelopment and new roads will be constructed to standard specifications for mining equipment. Where roads do not already exist, the locations will be further studied and engineered for optimum location during the EA. Roads associated with the infrastructure corridor

will either be existing main haul roads or will be constructed to all-weather road standards used by Domtar in the Wabigoon Forest as per MNR/MTO standards.

Preparation of the land for buildings and construction of the railway and tailings and return water pipelines may require grading, excavation, blasting, earth moving and bridging or culverts over watercourses. All infrastructure will be located adjacent to roads to facilitate construction and maintenance. The mine processing facility is to be located as close to the open pit as is practical. It will include buildings and road infrastructure as previously mentioned and a road system to link the buildings and facilities together. Explosives will be stored at a protected location, a safe distance from the pit and mining operations as prescribed by regulations. A tailings pipeline will link the facilities with the TMA and a new rail line or conveyor will be constructed at the site and extend to the north-east. The tailings pipeline will be located within the infrastructure corridor or adjacent to the main access road and south parallel to Highway 622, dependent upon which TMA is selected. A new high voltage electric transmission line will be constructed from a transformer station at the processing site and proceeding to the north to connect with Hydro One.

As previously mentioned, the ore body runs under the West Arm of Bending Lake. In order for the mine to be economically viable over 30 to 40 years, part of this arm has to be dammed and dewatered to access the ore body. This will be done where the water narrows around an island located in the middle of the West Arm (figure 3). Two dams will be constructed on the West Arm of Bending Lake to connect with an island in the middle of the West Arm. The dams will have an approximate 12 metre crest and the sides of the dams will slope at a gentle angle to be determined through an engineering study. The dams will be approximately three metres above the normal lake level. Construction of the dams will be a priority in the Project Schedule and would probably be done under wet conditions using silt curtains to minimize sediment transport. Waste rock would form the majority of the dam material used. It would be placed once the bottom sediments in the area were removed to provide a firm foundation. A low permeability wall would be constructed through the completed dam and extend into the bedrock to prevent seepage. Once construction is complete, fish salvage and dewatering would commence.

The TMA will be constructed to manage the tailings associated with the mining process. The tailings embankment surrounding the TMA will be constructed of a combination of waste rock, naturally occurring earthen materials and the coarser fraction of the tailings themselves. The TMA will be constructed in a series of

cells in order to allow for expansion to the approximate boundaries of the alternative selected in the EA. The height of the TMA will be determined by the particular site selected of the three alternatives. Given that the local topography is classified as being relatively flat, there are few areas that could provide natural topographic containment. A perimeter runoff and seepage collection system will collect storm water and seeping discharges which will, if necessary, be treated in a treatment plant at the project site and used as make-up water for the slurry pipeline.

With TMA expansion, it will be necessary to construct berms and other material retention areas in order to effectively manage return water and material storage. Whenever possible, waste rock from mining or cobbing operations will be utilized in the development of the TMA. Construction activities are expected to take approximately 2 to 3 years to complete.

#### **2.5.2.2 Operations**

The mining operation will consist of blasting rock in the pit, initial separation into ore bearing and non-ore bearing rock with the ore bearing rock being transported by truck to the crushing plant and the non-ore bearing rock being transported to the waste rock storage area. The main equipment used in the open pit includes drills to allow for blasting of the rock, loading equipment with a capacity of 15 to 20 cubic metres, and mine trucks with a capacity of up to 250 tonnes. Other equipment found at the Project will include track dozers, motor graders, excavators, backhoes, front end loaders, lift trucks, water trucks, personnel vehicles, fuel/lube trucks, mobile lighting equipment, fork-lifts, pickup trucks and tractor trailers.

Once the ore bearing rock is at the plant, it will be processed as described in section 2.3.1.4. Tailings, which are produced from the refining process, will be transported to the TMA via a slurry pipeline. A return water pipeline, located in the same right-of-way, will bring water back to be re-used in the process. The initial water for the slurry pipeline will be sourced from the West Arm of Bending Lake which will be dewatered in order to accommodate the open pit. Other water sources during operations will be from the TMA and if required from wells or from another local waterbody like Bending Lake. This will be determined during the EA.

Concentrate will be stored on site, as well as the finished product in order that shipping can continue for a short time in the case that operations at the mine were



temporarily shut down. The finished product (pellets or briquettes) will be shipped via truck, rail or enclosed conveyor to a siding area off the CP Rail mainline. If rail is the chosen method of shipping from the processing plant, no re-handling of the product will be required. Should the conveyor or truck be the preferred method of transport, then storage and handling facilities will be located at the rail siding to facilitate loading the finished product into rail cars.

Most of the labour during the operations phase is expected to be accommodated in Ignace as it has the capacity to accommodate families and single persons. This may also help to mitigate some of the negative social aspects of a large influx of mostly male workers in the area. There will also be a small camp at site to accommodate temporary staff. This will be serviced by a well and a septic tank and tile field or a package sewage treatment system.

During operations it is expected that labour will be sourced from local Indigenous communities and from Ignace, which is within commuting distance.

### **2.5.2.3 Closure and Rehabilitation**

The Closure Plan will be prepared based on the specific requirements outlined in *Ontario Regulation 240/00* and will include a description of the method, schedule, cost and financial assurance of all rehabilitation to be conducted on the site once closure commences. The proposed closure is anticipated to include natural flooding of the pit and rehabilitation of the disturbed areas including watercourses and land. These disturbed areas will be restored to pre-development conditions, to the extent practical.

Upon closure, all building and supporting infrastructure will be decommissioned in accordance with the certified Closure Plan that will be submitted for the Project (per Part VII of the *Mining Act (1990 as amended 2009)*). All mobile equipment and structures will be transported off site and either sold or disposed of in an approved facility. Hazardous and non-hazardous waste will be transported to approved disposal facilities

Mine reclamation will be ongoing where possible throughout the mine operations phase. Upon closure, waste rock piles will be contoured in order to minimize erosion and stormwater damage. Overburden from the overburden storage area will be used for topping the waste rock and TMA to provide a medium for vegetative growth and the area will be revegetated, as will the overburden storage area. The perimeter dam surrounding the TMA would be flattened in order to provide for natural drainage. The open pit will be allowed to fill with water naturally. An

estimate of the time required for filling will be provided through detailed hydrogeologic studies undertaken during the EA. Once the dammed area has reached the natural lake level, the dams will be breached and lowered to allow fish passage. The extent of lake trout habitat will be increased from pre-development conditions once this occurs.

Access to mine roads will be blocked with boulders to prevent vehicle access to the pit.

### **3.0 Project Location**

#### **3.1 Coordinates, Maps and Plans**

##### **3.1.1 Geographic Coordinates**

The Bending Lake Iron Project is located in the Kenora Mining Division and the Dryden Ministry of Natural Resources and Forestry (MNR) District, Ontario, Canada. The Project is covered by National Topographic System (NTS) map sheet 52F/08. The centre of the Project has approximate geographic coordinates of 49°19'26.4688" N and 92°10'47.3335" W, Universal Transverse Mercator (UTM) North American Datum 83, Zone 15 N 5463800 m, E 559600 m.

##### **3.1.2 Site Maps/Plans**

Figure 3 provides a site plan of the Project.

The site plan identifies the major components of the Project, including the open pit, the location of the processing facility, the waste rock storage area, the overburden storage area, and the three TMAs, one of which will be selected as preferred.

In the detail area shown in Figure 3, the area of the proposed dam across the West Arm of Bending Lake is identified.

The proposed infrastructure corridor, leading from the facilities buildings in a north-east direction towards Highway #17, has also been identified in the site plan. The tailings pipeline and return water pipeline are located within this corridor should TMA 2 or 3 be chosen. Should TMA 1 be chosen the tailings pipeline and return water pipelines would be located parallel to the main access road from the plant and Highway #622 south to the TMA.



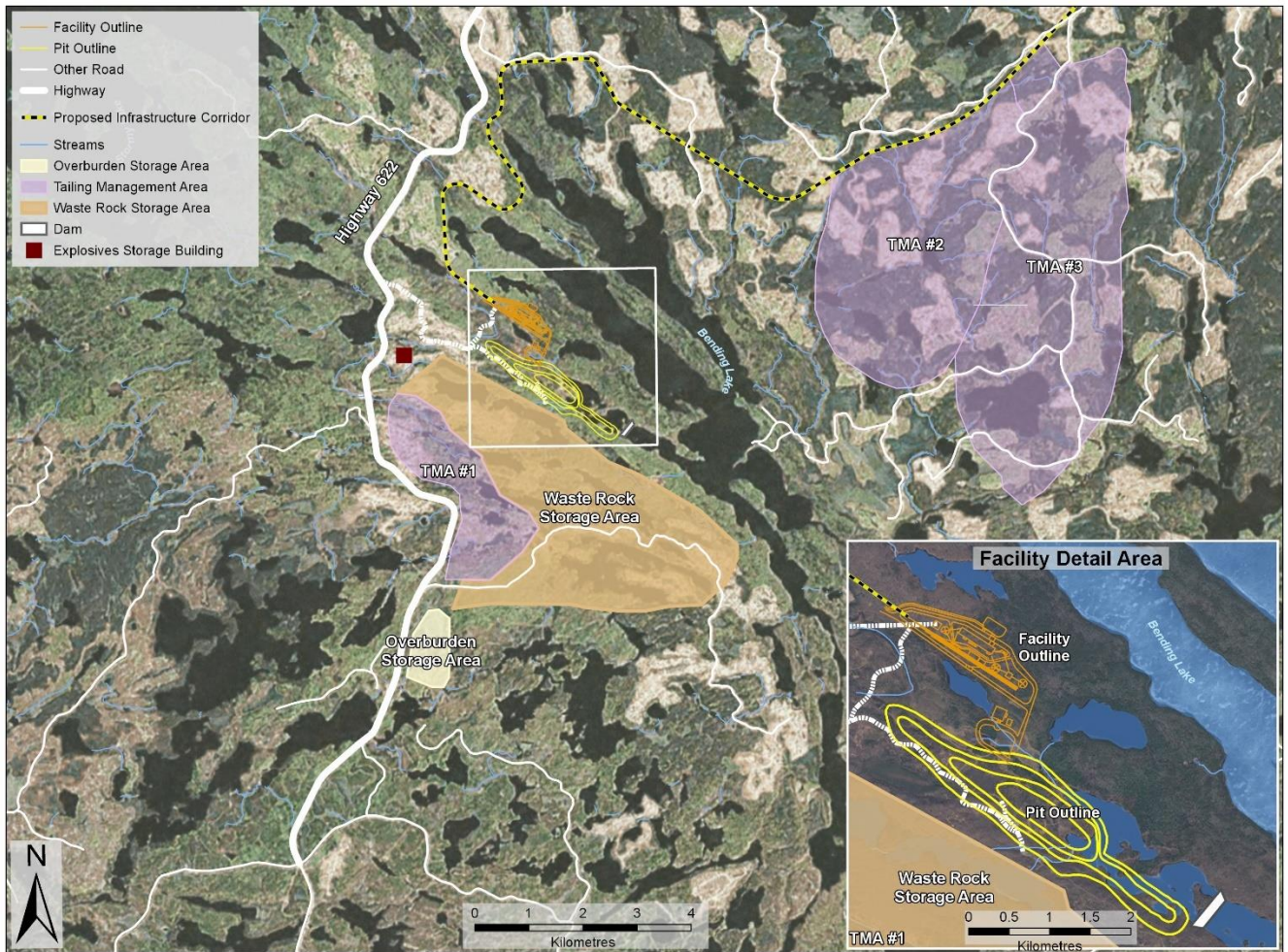


Figure 3: Project Site Plan

### 3.1.3 Maps of Project Components

Figure 4 is a plan of the infrastructure corridor. The background on this figure provides a good illustration of how much of the area has been recently disturbed by logging. The extensive network of main and secondary haul roads also illustrates the level of human disturbance to the forest. The infrastructure corridor generally parallels a main forest access road south from Highway 17 and other secondary forest access roads as it swings to the west around Bending Lake.



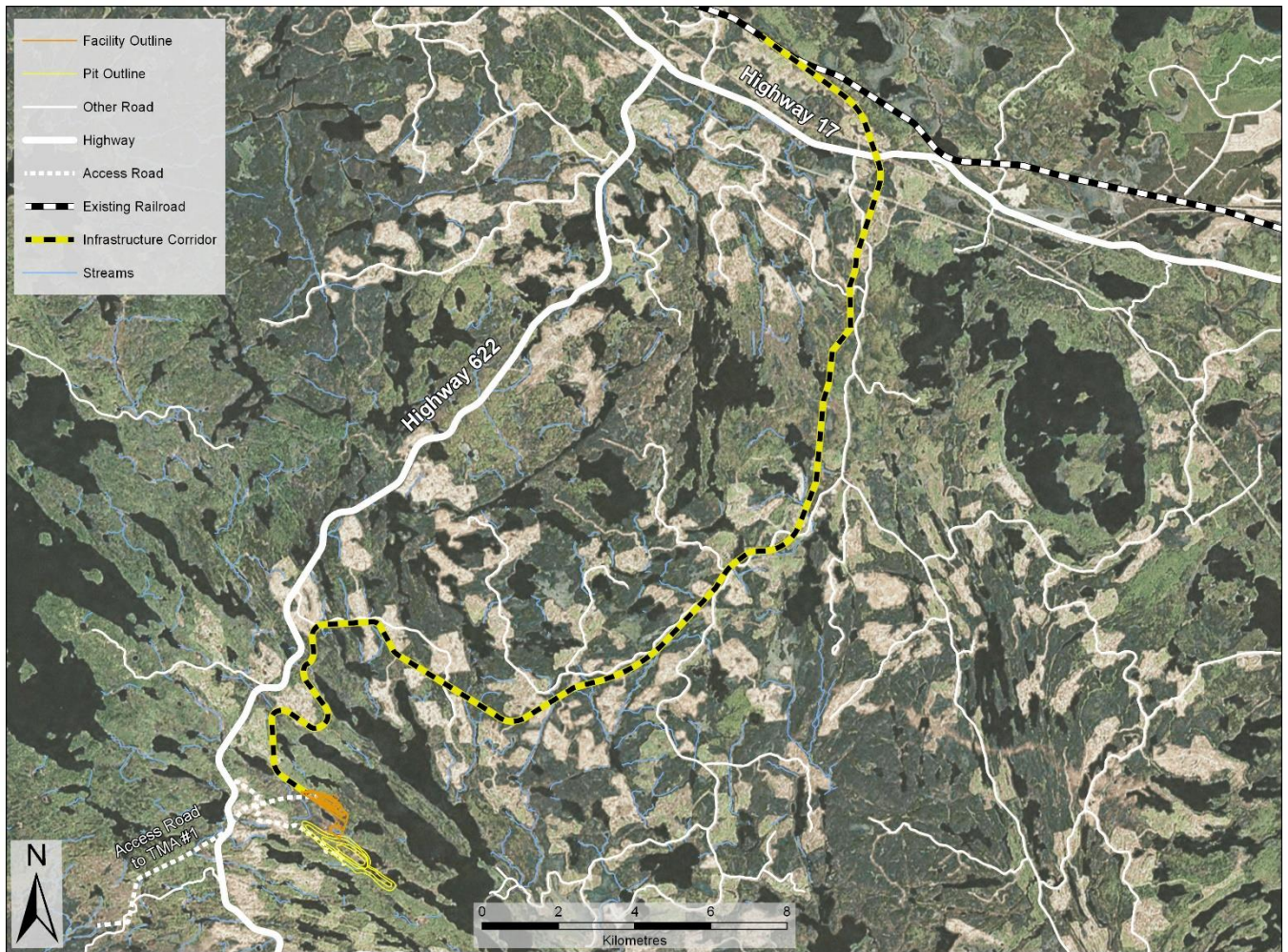


Figure 4: Infrastructure Corridor

### 3.1.4 Photographs of Work Locations

Figure 5 illustrates the location of the proposed processing plant and the locations of photographs taken from A through O. The red arrows at the photo location indicate the direction from which the photo is taken.



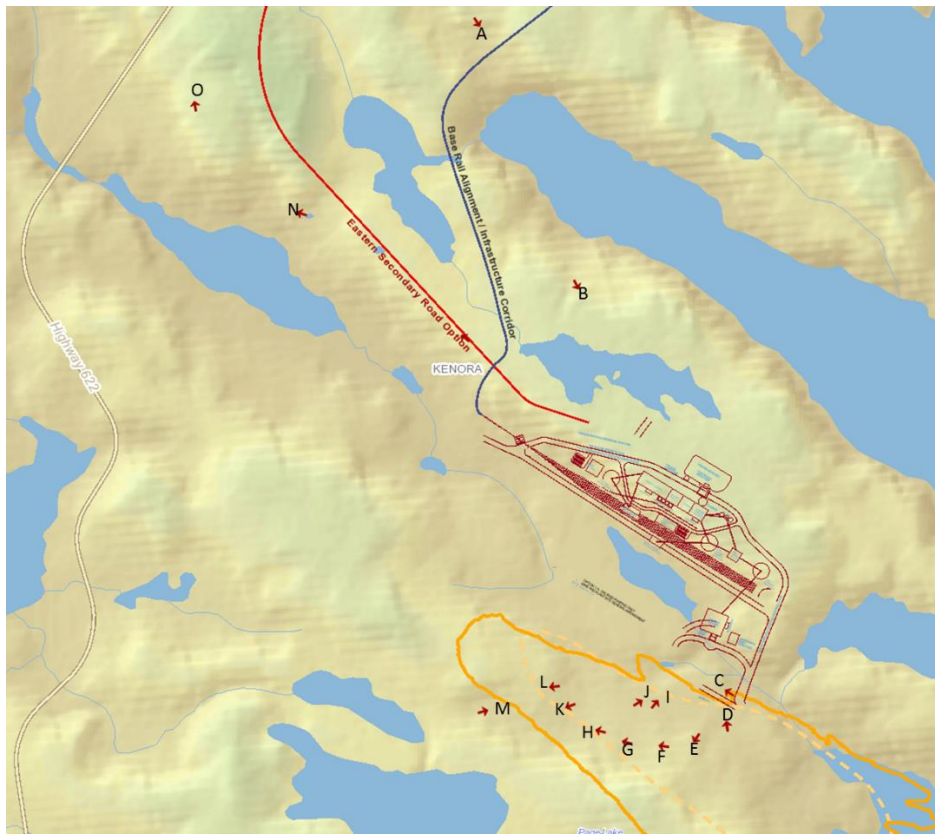


Figure 5: Photographs of Work Locations



Location A: View of West Arm of Bending Lake



Location B: View of Typical Forest West of Bending Lake



Location C: Old Bulk Sample Area





Location D: Old Bulk Sample Area



Location E: Unnamed Lake on the Ore Body



Location F: On the Ore Body



Location G: On the Ore Body





Location I: On the Ore Body



Location J: On the Ore Body



Location K: On the Ore Body Looking West



Location M: Looking West





Location O: Looking Towards Hwy. #622

### **3.1.5 Proximity to Residences, Traditional Territories and Federal Lands**

#### **3.1.5.1 Residences**

There are no permanent, seasonal or temporary residences located on the area of the mining claims or in proximity. There is a seasonal residence on the east side of Bending Lake. The mine operations should have minimal or no effect on this residence. There are three registered traplines near the Project, but none are located on the private lands that comprise the mine site and adjacent facilities.

The closest settlement area is the Town of Ignace, located within commuting distance to the mine (approximately 65 km.). Ignace has a present population of around 1,200 persons and is resource dependent (mining and forestry). There is adequate municipal servicing capacity to accommodate mine workers as the Town had over 2,000 people in the 2006 census. Atikokan and Dryden are located at significantly greater distances from the mine, although people do commute 100 km. from Dryden to work in the Wabigoon Forest.

No federal lands are involved with this undertaking.

### **3.1.5.2 First Nation Communities**

The distance from First Nation Reserves to the Project has been provided in table form below. First Nations who have indicated they wish to be advised of proposed activities have not provided maps defining the boundaries of their overlapping traditional territories. AMI's patent lands are not available for use by any persons without the express written consent of the company. No unauthorized access is permitted to any person for the purposes of hunting, trapping, harvesting, gathering, extraction or travel by any means.

The Ontario Ministry of Natural Resources and Forestry maintains a confidential listing and licensing program to grant use of areas adjacent to AMI's patent lands. The location of these confidentially held resource based interests, licenses and or permits are identified and available in digital map format on the provincial electronic Forest Management Plan web portal under the Wabigoon Sustainable Forest License values maps for the provincially approved 2019-2029 Forest Management Plan. These value maps include descriptions of all natural environment and resource values identified on the crown lands surrounding all AMI patent lands. These value sets have been compiled via forest management planning, remote sensing of current vegetative states, fish and fish habitat attributes, potential wildlife areas, known areas of concern, commercial trapping areas, wildlife management zones, bear management areas, known non-timber vegetation harvesting sites. AMI will draw upon these publicly generated value sets as the starting point for enhanced, project specific EA consultations with indigenous persons and the general public as described in AMI's Plan of Consultation attached as an appendix to this Project Description.

This project is not located on any lands which are subject to an existing or unresolved land claim by the Anishinaabeg of Treaty 3. Figure 6 provides a map provided by the Grand Council of Treaty #3 showing locations of First Nation communities.

The project lies within Treaty #3 watershed defined territorial boundaries shared by 28 independent First Nation communities, all of which are signatories to Treaty # 3 (1873) or Treaty 3 adhesions of 1874-5. The Grand Council of Treaty 3 has assisted AMI in the identification of communities which may have an interest in being made aware of, reviewing and or participating in development activities; the



desires for which are expressed and acted upon on a community by community basis at the direction of their respective councils.

AMI has reached out to each individual community to receive direction on their respective wishes in that regard. Community based expressions of interested are highlighted in appendix A of this document.

While all Crown lands in the Treaty 3 land mass may be used by the Anishinaabe people for traditional purposes, no specific conflicts or concerns have been expressed or raised by First Nation Communities to AMI with respect to the bulk sampling footprint or the mine on AMI’s patent lands. First Nation Communities which have expressed an interest in the project and direct engagement on project activities have asked for the opportunity to review permit applications made by AMI as they arise and are submitted to any regulatory bodies.

AMI has committed to providing substantially complete Draft permit applications and environmental assessment information to all First Nation Communities and Tribal councils in advance of their submission to regulatory bodies. The following First Nation communities have expressed an interest in being made aware of project development activities related to the Bending Lake Iron Project:

<b>First Nation Community</b>	<b>Driving Distance from Site (km)</b>
Wabigoon Lake Ojibway Nation	80
Lac des Mille Lac First Nation	173
Seine River First Nation	95
Eagle Lake First Nation	125
Nigigoonsiminikaaning First Nation	121
Couchiching First Nation	158
Lac Seul First Nation	170
Whitefish Bay First Nation	284
Grand Council Treaty 3	244

These communities have not shared any maps detailing their respective traditional use areas with AMI. AMI is committed to maintaining open, transparent dialogue with all those communities who express an interest in our proposed and ongoing development activities.

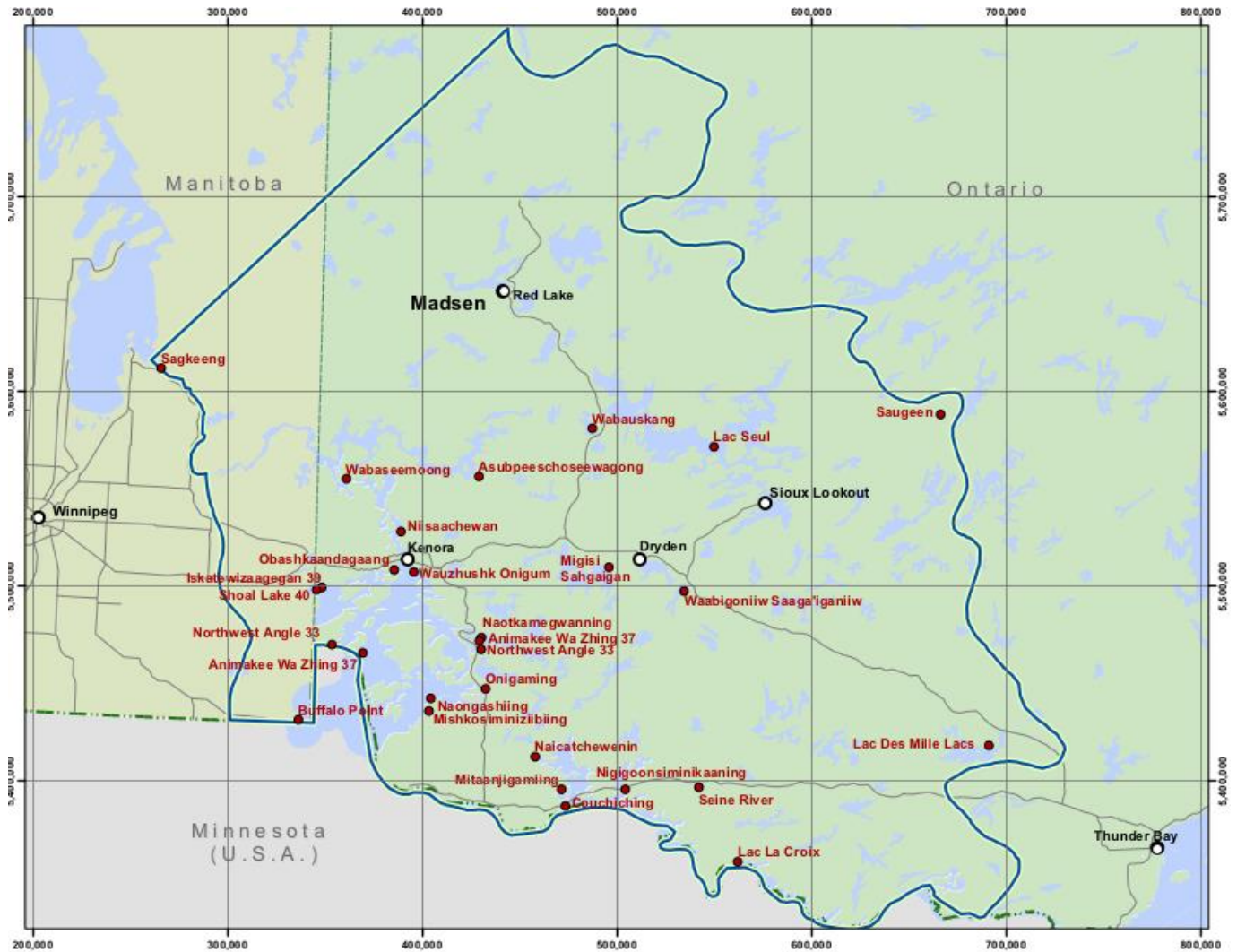


Figure 6: Indigenous Communities

### 3.1.5.3 Metis Communities

This project is not located on any lands which are subject to an existing or unresolved land claim by the Metis Nation of Ontario.

This project lies within Treaty #3 watershed defined territorial boundaries shared by several Metis Nation communities which are signatories to Treaty # 3 adhesions of 1874-5. While the entire Treaty 3 land mass may be used by the Metis people for traditional purposes, no specific conflicts or concerns have been expressed or

raised by the Metis to AMI with respect to the bulk sampling footprint or the development of a mine on AMI’s patent lands.

The Metis Nation of Ontario Region One Consultation Committee (MNOROCC) has asked for the opportunity to review permit applications and EAs made by AMI as they arise and are submitted to any regulatory bodies. AMI has committed to providing substantially complete Draft permit applications and EAs to MNOROCC in advance of submission to regulatory bodies.

### **3.2 Land and Water Use**

#### **3.2.1 Zoning Designations**

There are no zoning designations since the area is outside of municipal jurisdictions. The MNRF Crown Land Use Atlas has general designations, however they do not apply to private land.

#### **3.2.2 Legal Description of the Project Site**

AMI holds both patented and leased claims for the Property, as summarized below. There are:

- 49 mineral patented claims (surface and mineral rights 100%)
- 3 mineral licences of occupation (these cover water bodies, so AMI owns the mineral rights under them)
- In addition, AMI has 24 mineral claims (Crown land, so AMI only has exploration rights – no surface or resource ownership)

The Project is to be completed on the patented claims where AMI controls the surface and mineral rights. Access will cross Crown land with the existing road network to Hwy 622 and the infrastructure corridor will be located on staked mining claims. A list of the claims is found below.

<u>Item</u>	<u>Property Description including Parcel No and Claim No</u>	<u>PIN</u>
1	PCL 6308 SEC DKF: Mining Claim K183 Unsurveyed Territory, District of Kenora	42184-0048 (LT)

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2	PCL 6309 SEC DKF: Mining Claim K184 Unsurveyed Territory, District of Kenora	42184-0044 (LT)
3	PCL 6310 SEC DKF: Mining Claim K185 Unsurveyed Territory, District of Kenora	42184-0045 (LT)
4	PCL 6311 SEC DKF: Mining Claim K186 Unsurveyed Territory Being Land and Land Covered with the Water of Self Lake; District of Kenora	42184-0046 (LT)
5	PCL 21091 SEC DKF: Pt Mining Claim K17531 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14705. District of Kenora	42184-0058 (LT)
6	PCL 21092 SEC DKF: Pt Mining Claim K17532 Unsurveyed Territory Not Covered by the Waters of Page Lake as in PA14706; District of Kenora	42184-0057 (LT)
7	PCL 21093 SEC DKF: Mining Claim K17533 Unsurveyed Territory Not Covered by the Waters of Page Lake as in PA14707; District of Kenora	42184-0056 (LT)
8	PCL 21094 SEC DKF: Pt Mining Claim K17534 Unsurveyed Territory Not Covered by the Waters of Page Lake as in PA14708. District of Kenora	42184-0060 (LT)
9	PCL 21095 SEC DKF: Pt Mining Claim K17535 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14709; District of Kenora	42184-0061 (LT)
10	PCL 21096 SEC DKF: Pt Mining Claim K17536 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14710; District of Kenora	42184-0062 (LT)
11	PCL 21068 SEC DKF: Mining Claim K17537 Unsurveyed Territory Being Land and Land under the Water of Part of Self Lake within the Limits of this Mining Claim; District of Kenora	42184-0043 (LT)
12	PCL 21087 SEC DKF: Mining Claim K17538 Unsurveyed Territory; District of Kenora	42184-0042 (LT)
13	PCL 21077 SEC DKF: Mining Claim K17539 Unsurveyed Territory; District of Kenora	42184-0041 (LT)

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14	PCL 21078 SEC DKF: Mining Claim K17540 Unsurveyed Territory; District of Kenora	42184-0039 (LT)
15	PCL 21079 SEC DKF: Mining Claim K17541 Unsurveyed Territory; District of Kenora	42184-0038 (LT)
16	PCL 21080 SEC DKF: Mining Claim K17542 Unsurveyed Territory Excepting the SRO On and Over a Strip of Land Along the Shores of an Unnamed lake and Which Said Strip of Land is Bounded by the High Water Mark of an Unnamed Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora	42184-0036 (LT)
17	PCL 21081 SEC DKF: Mining Claim K17543 Unsurveyed Territory Excepting the SRO On and Over a Strip of Land Along the Shores of an Unnamed lake and Which Said Strip of Land is Bounded by the High Water Mark of an Unnamed Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora	42184-0035 (LT)
18	PCL 21097 SEC DKF: PT Mining Claim K17544 Unsurveyed Territory Not Covered by the Waters of an Unnamed lake as in PA14711; District of Kenora	42184-0033 (LT)
19	PCL 21098 SEC DKF: PT Mining Claim K17545 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14712; District of Kenora	42184-0063 (LT)
20	PCL 21099 SEC DKF: PT Mining Claim K17546 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14713; District of Kenora	42184-0065 (LT)
21	PCL 21100 SEC DKF: PT Mining Claim K17547 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14714; District of Kenora	42184-0066 (LT)
22	PCL 21101 SEC DKF: PT Mining Claim K17548 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14715; District of Kenora	42184-0068 (LT)
23	PCL 21102 SEC DKF: PT Mining Claim K17549 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14716; District of Kenora	42184-0069 (LT)

24	PCL 21069 SEC DKF: Mining Claim K17550 Unsurveyed Territory Being Land and Land Under the Water of part of a Small Pond within the Limits of this Mining Claim; District Kenora	42184-0067 (LT)
25	PCL 21070 SEC DKF: Mining Claim K17551 Unsurveyed Territory Excepting the SRO On and Over a Strip of Land Along the Shores of Bending Lake and Which Said Strip of Land is Bounded by the High Water Mark of Bending Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora	42184-0071 (LT)
26	PCL 21082 SEC DKF: PT Mining Claim K17552 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14691; District of Kenora	42184-0072 (LT)
27	PCL 21071 SEC DKF: Mining Claim K17553 Unsurveyed Territory Being Land and Land Under the Water of a Small Pond within the Limits of this Mining Claim; Excepting the SRO On and Over a Strip of Land Along the Shores of Bending Lake and Which Said Strip of Land is Bounded by the High Water Mark of Bending Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora	42184-0064 (LT)
28	PCL 21103 SEC DKF: Mining Claim K17555 Unsurveyed Territory Being Land and Land Under the Water of Part of Self Lake within the Limits of this Mining Claim; District of Kenora	42184-0047 (LT)
29	PCL 21104 SEC DKF: Mining Claim K17556 Unsurveyed Territory, District of Kenora	42184-0050 (LT)
30	PCL 21105 SEC DKF: PT Mining Claim K17557 Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14719, District of Kenora	42184-0051 (LT)
31	PCL 21106 SEC DKF: Mining Claim K17558 Unsurveyed Territory, District of Kenora	42184-0049 (LT)
32	PCL 21107 SEC DKF: PT Mining Claim K17559 Unsurveyed Territory Not Covered by the Waters of	42184-0052 (LT)



Page Lake as in PA14721, District of Kenora

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|----|--|-----------------|
| 33 | PCL 21072 SEC DKF: Mining Claim K17560<br>Unsurveyed Territory, Excepting the SRO On and Over a Strip of Land Along the Shores of Page Lake and Which Said Strip of Land is Bounded by the High Water Mark of Page Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora   | 42184-0053 (LT) |
| 34 | PCL 21073 SEC DKF: PT Mining Claim K17561<br>Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14677. District of Kenora  | 42184-0054 (LT) |
| 35 | PCL 21074 SEC DKF: PT Mining Claim K17562<br>Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14678. District of Kenora  | 42184-0055 (LT) |
| 36 | PCL 21075 SEC DKF: PT Mining Claim K17563<br>Unsurveyed Territory Not Covered by the Waters of Bending Lake as in PA14679. District of Kenora  | 42184-0059 (LT) |
| 37 | PCL 21108 SEC DKF: PT Mining Claim K17878<br>Unsurveyed Territory Not Covered by the Waters of Turtle River as in PA14722. District of Kenora  | 42184-0075 (LT) |
| 38 | PCL 21109 SEC DKF: PT Mining Claim K17879<br>Unsurveyed Territory Not Covered by the Waters of the Turtle River as in PA14723. District of Kenora  | 42184-0076 (LT) |
| 39 | PCL 21110 SEC DKF: PT Mining Claim K17880<br>Unsurveyed Territory Not Covered by the Waters of the Turtle River as in PA14724. District of Kenora  | 42184-0077 (LT) |
| 40 | PCL 21112 SEC DKF: Mining Claim K17882<br>Unsurveyed Territory Situate in the Bending Lake Area Excepting the SRO On and Over a Strip of Land Along the Shores of Turtle River and Which Said Strip of Land is Bounded by the High Water Mark of the Turtle River and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora | 42184-0078 (LT) |
| 41 | PCL 21076 SEC DKF: Mining Claim K17883<br>Unsurveyed Territory Being Land and Land under the   | 42184-0074 (LT) |

Water of part of a small Pond within the Limits of this Mining Claim; Excepting the SRO On and Over a Strip of Land Along the Shores of the Turtle River and Which Said Strip of Land is Bounded by the High Water Mark of Turtle River and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora

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|----|---|-----------------|
| 42 | PCL 21113 SEC DKF: Mining Claim K17884<br>Unsurveyed Territory Being Land and Land Under the Water of a small Pond within the Limits of this Mining Claim; District of Kenora   | 42184-0073 (LT) |
| 43 | PCL 21114 SEC DKF: Mining Claim K17885<br>Unsurveyed Territory; District of Kenora  | 42184-0070 (LT) |
| 44 | PCL 21089 SEC DKF: PT Mining Claim K17887<br>Unsurveyed Territory Not Covered by the Waters of an Unnamed Lake as in PA14698, District of Kenora  | 42184-0029 (LT) |
| 45 | PCL 21090 SEC DKF: PT Mining Claim K17888<br>Unsurveyed Territory Not Covered by the Waters of an Unnamed Lake as in PA14699, Except PT1.23R10164; District of Kenora   | 42184-0028 (LT) |
| 46 | PCL 21083 SEC DKF: PT Mining Claim K17889<br>Unsurveyed Territory Not Covered by the Water of an Unnamed Lake as in PA14692; District of Kenora   | 42184-0032 (LT) |
| 47 | PCL 21084 SEC DKF: Mining Claim K17890<br>Unsurveyed Territory; District of Kenora  | 42184-0037 (LT) |
| 48 | PCL 21085 SEC DKF: Mining Claim K17891<br>Unsurveyed Territory Excepting the SRO On and Over a Strip of Land Along the Shores of an Unnamed Lake and Which Said Strip of Land is Bounded by the High Water Mark of an Unnamed Lake and by a Line, Every Point of which is Distant 400 Ft from the Nearest Point in the Said High Water Mark; District of Kenora | 42184-0034 (LT) |
| 49 | PCL 21086 SEC DKF: Mining Claim K17892<br>Unsurveyed Territory; District of Kenora  | 42184-0040 (LT) |



### **3.2.3 Land Use or Resource Plans**

The only actual plan that is applicable near the project site is the Forest Management Plan for the Wabigoon Forest. An open house was held in February 2019 and others are proposed for August of 2019 to finalize a new ten-year harvesting and management plan for 2019-2029. Representatives from the MNRF and Domtar, the Sustainable Forest Management license holder are involved.

The area around the patented land and the corridor is shown on the MNRF land use Atlas as General Use areas which are defined as:

“About 70 percent of the planning area has been placed in a general use designation. This designation includes all Crown lands not placed into a specific designation or EMA. A full range of resource and recreational uses can occur in General Use Areas. Management of General Use Areas will occur in the context of maintaining ecological sustainability. There is an extensive set of legislation, policy and guidelines that will support and direct management actions in General Use Areas.”

In the short term, further planning in General Use Areas will primarily occur through the forest management planning process. This planning is required to consider a broad range of objectives. For example, there are many forest management guidelines that provide specific direction for the management or protection of significant natural values.

Planning in the General Use Areas will also need to consider the implications of management actions on adjacent land use designations. For example, the new protected areas have been delineated on the basis that extensive buffering is not required, because of the ecologically sustainable management that will occur on adjacent lands.

### **3.2.4 Lands and Resources currently Used for Traditional Purposes by Indigenous Peoples**

The proposed Bending Lake Iron Project is located on patent lands wholly owned by AMI. These patent lands are not currently available to indigenous peoples for traditional purposes such as trapping, hunting, fishing, gathering or forest harvest purposes.

The lands and waters surrounding AMI’s patent land parcels, and the proposed infrastructure corridor spanning from AMI’s patent lands to Ignace are designated as Crown lands and may be used by indigenous persons for traditional purposes.

The proposed infrastructure corridor follows a mature, MNRF approved forest access road system from the AMI patent lands property, northeast to the Canadian Pacific Rail Line located adjacent to Highway 17.

#### **4.0 Federal Involvement – Financial Support, Lands and Legislative Requirements**

##### **4.1 Federal Financial Support**

There is no proposed or anticipated federal financial support that federal authorities are, or may be providing, to support the carrying out of the designated project.

##### **4.2 Federal Lands**

There are no federal lands that will be used for carrying out the designated project.

##### **4.3 Federal Permits, Licences or Authorizations Required**

In order to carry out the project a number of federal agencies will be involved in the permitting and approvals process. They include Fisheries and Oceans Canada, Environment Canada, Natural Resources Canada, Transport Canada, the Canadian Transportation Agency. Section 1.4.2 of this Project Description provides a list of these agencies and the permits/authorizations that may be required.

#### **5.0 Environmental Effects**

##### **5.1 Physical and Biological Setting**

###### **5.1.1 Geology**

The Bending Lake Iron Project is situated at the southeasterly end of a 30 km long northwest-southeast trending belt of Achaean volcanic and sedimentary rocks, metamorphosed to greenschist and amphibolite facies, which is part of an arcuate,



70 km long belt of supracrustal rocks referred to informally and in the literature as the Manitou-Stormy Lakes greenstone belt. The Achaean supracrustal rocks consist of a thick succession of differentiated mafic to felsic volcanic rocks and interbedded and overlying clastic and chemical sedimentary rocks, and their metamorphosed equivalents, preserved in the Bending Lake area in a broad, overturned, northeast facing, southwest dipping synformal structure bounded on the northeast by younger granitic rocks of the Revel Batholith and on the southwest and south by the Irene-Eltrut Lakes Batholithic Complex. Due to this folding and thickening of the iron formation large quantities of magnetic iron formation have been concentrated resulting in the exploitation interest. (Bending Lake Iron Group, 2012)

The Bending Lake iron mineralized formation is principally made up of quartz (chert) and iron oxides with varying amounts of iron-aluminum silicates. It is composed essentially of chert (including quartz), magnetite, specular hematite and layered silicate minerals such as biotite, amphibole and chlorite. (Bending Lake Iron Group, 2012)

The iron mineralized formation is fine grained and well banded. Iron oxides are magnetite and minor specular hematite. The mineralized rock may be referred to as cherty magnetite-hematite or Algoma type. Gangue minerals in the iron formation are quartz, biotite, sericite, muscovite, chlorite and carbonates. Garnets, epidote and pyrite occur as replacement minerals. Sulphide mineralization appears to be of a syngenetic nature. Two types of sulphides have been identified in both drill core and outcrop; pyrite and pyrrhotite. Pyrite occurs mostly as minor disseminations in the iron formation and in the surrounding sediments. Pyrrhotite generally occurs as narrow, massive veins in the iron formation and sediments. These massive sections appear to be associated with quartz stringers and vary in width from a fraction of an inch to a couple of feet (Bending Lake Iron Group, 2012).

An extensive amount of field data has been collected as part of the previous Project Description in 2011 and 2012. In addition, various terrestrial and aquatic surveys have been undertaken in the mine area in 2017 and 2018 associated with the permit activities for the Advance Exploration Site.

### **5.1.2 Topography**

The Project is situated in an area of rugged, rolling terrain of moderate relief with shallow to moderate slopes. Perched small wetlands lie within 200m of the

proposed bulk sample site. Where present, surficial soils are generally shallow ground moraine intermixed with organics. Soils are generally thin and bedrock exposure is common. Soil thickness from 0.38 to 9m was encountered in the vicinity of the Project during the 2017 ground water monitoring well installations.

Ground elevations range from a high of approximately 406masl on the northwest trending ridge where the bulk sample site is located down to 392masl at Bending Lake.

### **5.1.3 Vegetation**

The Project lies within the boreal forest region of Ontario, near the transition zone with the Great Lakes-St Lawrence mixed forest region. The forest communities of the area are dominated by black spruce, jack pine, trembling aspen and white birch. Wetlands vary in morphology, nutrient content and species diversity. Fens and bogs are present where there is isolation from groundwater. Swamps and marshes are in closer proximity to groundwater or lakes and rivers. The richer wetlands support more species diversity while some of the poor acidic wetlands support a limited number of species that are specially adapted to restricted nutrient regimes.

Many traditional use plants (of Indigenous peoples) such as black spruce, willow, bog cranberry, Labrador tea and blueberry are common with species like wild rice being more limited in extent.

In total, 162 species of vascular plants were recorded, of which 156 species (96%) were native and 6 (4%) were non-native. The majority of plants (153 species) have an S5 ranking, indicating that they are common within Ontario and 7 species have a ranking of S4, indicating they are apparently secure in Ontario. The remaining 2 species are ranked as SU (unranked). No provincial or federal Species at Risk were recorded.

No vascular Species At Risk species were identified in the general Project area. The area recently surveyed in 2017 for the Advance Exploration permit was clear-cut within the last 15 years and thus has a Forest Resource Inventory designation of 100% birch, even though the birch trees are less than 5 m in height and represent the natural regeneration of a disturbed forest. Much of the forest around the Project has been recently logged. Appendix C provides more detailed vegetation information.

#### **5.1.4 Wildlife and Breeding Bird Surveys (2017-2018)**

Wildlife found in the Project area are typical of those found in the Boreal forest. Ungulates predominantly consist of moose and white-tailed deer. Other common species include black bear, wolf, porcupine, marten, chipmunk, red squirrel, muskrat, beaver, mink, otter, martin and fisher. Lynx is less common.

The results from the 2012 and 2017 breeding amphibian surveys have confirmed that there is an abundance of amphibian breeding habitat within the study area and habitat opportunities are well represented. A total of five frog species were heard calling throughout the study area, including wetland breeding species (i.e. American Toad, Spring Peeper, Gray Treefrog, Boreal Chorus Frog and woodland breeding species (i.e. American Toad and Wood Frog. Spring Peeper was the most abundant species. All species recorded are considered provincially common and widespread in Ontario. All species are considered within their species range.

In the summer and fall of 2017, the following species were observed: Bald Eagle, Eastern Whip-poor-will, Common Loon, Moose, American Toad, Gray Treefrog, and Northern Green Frog. All of these species are considered common (S-rank S5) or uncommon but secure (S-rank of S4) within the province, with the exception of Bald Eagle, addressed under the Significant Wildlife Habitat Assessment, and Eastern Whip-poor-will, surveyed as part of the Nightjar Survey efforts.

In the summer of 2018 the observation of Beaver, River Otter, Black Bear, Eastern Chipmunk, Bald Eagle, Ruffed Grouse, Western Painted Turtles, Gray Treefrog, Wood Frog, Northern Green Frog, Mink Frog, and Boreal Chorus Frog were noted. All of these species are considered common (S-rank S5) or uncommon but secure (S-rank of S4) within the province, with the exception of Bald Eagle which was seen at two locations in 2018.

A total of 138 species of birds were recorded during breeding bird surveys between 2017 and 2018. All species recoded breeding are ranked S5 (common) or S4 (uncommon but not rare). 14 Species of At Risk birds were observed during the breeding surveys: Eastern Meadowlark, Bobolink, Grasshopper Sparrow, Canada Warbler, Golden-winged Warbler, Wood Thrush, Barn Swallow, Bank Swallow, Olive-sided Warbler, Eastern Wood Pe-wee, Chimney Swift, Common Nighthawk, Eastern Whip-poor-will and Bald Eagle. Detailed information is provided in Appendix C.

### **5.1.5 Bat Tree Snag Survey and Acoustic Monitoring (2017-2018)**

The screening survey included use of four bat detector devices (2 hand-held and 2 SM3Bat Wildlife Acoustics mounted units) for the identification of presence/absence of Species At Risk. These devices were deployed as part of the nocturnal surveys. Candidate maternal roost areas in the study area were identified by locating suitable Ecosites (mixed or deciduous forests and swamps that have potential to support trees of at least 25cm diameter) and then conducting cavity-tree density plots in the field within two representative Ecosites in 2017 to screen for the presence of potential high-quality sites.

Hoary bat, Silver-Haired bat and Little Brown Myotis were three species of bats that were conclusively identified as being present in the general Project area (10 km X 10 km). Eastern Red bat and Northern Myotis, were also identified as statistically present through the classification software. Appendix C provides more detailed information.

### **5.1.6 Nocturnal Bird and Owl Surveys (2017)**

Breeding amphibian and nocturnal bird surveys included combining surveys for different wildlife groups in order to maximize survey effort and data collection. Survey methodology followed the Marsh Monitoring Program for breeding amphibians and MNRF protocol for crepuscular species including Common Nighthawk and Whip-poor-will (Whip-poor-will Roadside Survey Participant's Guide, Birds Studies Canada, 2011).

Nocturnal Birds and Owl surveys were conducted on May 31, 2017. There were 11 survey stations around Bending Lake. The only bird species recorded during the night survey was the Eastern Whip-poor-will west of highway 622. Two or three individuals were heard calling 100 metres north of the survey station. Field investigations determined suitable breeding habitat for nocturnal birds and owls within the study area to be rare. Other crepuscular, nocturnal and owl species were identified during breeding bird surveys in 2017 and 2018 including Great Horned Owl, Barred Owl, Great Grey Owl, Northern Hawk Owl, Long-eared Owl, Northern Saw-whet Owl, Boreal Owl, American Woodcock and Common Nighthawk

### **5.1.7 Hydrology and Surface Water Quality**

The hydrological regime in the area surrounding the Project is snow-melt dominated and is characterized by high flows in the late spring and low flows during the winter months. Flows decrease through the drier summer months and water levels begin to rebound in autumn with the onset of increased precipitation from fall storms.

There is a small first order stream which drains Page Lake into Bending Lake. Surface water from the Project site will flow generally in a Northwest direction into the small wetland located to the north of the Project Site and will drain into Bending Lake. The wetland connection to Bending Lake is ephemeral in nature and lacks surface flow during low flow events.

Water samples were collected at 28 sites in 2017 and 2018 within the general vicinity of the project area to provide baseline water quality data. Sites could potentially be used as nearfield/far-field exposure and reference depending upon development options. Several sites were sampled on multiple occasions to assess temporal variability in water quality parameters. All samples were submitted to ALS labs in Thunder Bay for analysis and comparison to Ontario's provincial water quality objectives for surface water quality (e.g., alkalinity, conductivity, pH, TDS, total phosphorous, nitrates, ammonia, total suspended solids, iron, and manganese). More details are provided in Appendix D, Hydrological Baseline Report and Appendix E, Surface Water Quality Baseline Report.

### **5.1.8 Fish and Fish Habitat**

Waterbodies and watercourses in the Project area fall into one of three classes: Large waterbodies like Bending Lake which are cool water lakes; small unnamed lakes, which average less than 20 ha in surface area, supporting primarily baitfish populations; and small tributary watercourses, many of which are ephemeral. These tributaries generally support baitfish or forage fish. Page Lake doesn't fall into any of these categories as it is a named lake larger than 20 ha. Page Lake, however, is also a baitfish/forage fish lake.





All of the alternative TMAs and the waste rock stockpile area have one or more small unnamed waterbodies located within their boundaries. Dependent upon which one of the three TMAs is selected these waterbodies will be filled, as will the waste rock stockpile area. One of the alternatives also affects Page Lake. As part of the “alternatives assessment” for the TMAs, the effect on the aquatic resources of the waterbodies will be considered during the EA.

The Infrastructure Corridor used for transport of product from the mine to the CP rail mainline will cross 21 creeks and one waterbody. All of the creeks are less than two metres wide and less than 25 centimetres in depth. It is proposed to cross them using a culvert. The waterbody crossing is 15 metres in width and has an unknown depth. It is proposed to be crossed using a bridge. In-water work during the prescribed timing windows will be approved by the MNRF. Detailed fisheries assessment work will be undertaken during the EA.

DST (2011) and Palmer (2017) completed a variety of aquatic surveys in the Project area. More detailed information is provided in Appendix F. The topography of the site provides a height of land divided between the lake and the immediate proposed pit. Bending Lake is a large, oligotrophic lake situated within the Turtle River watershed. The fish community is diverse with large sportfish species that include:

- lake trout (*Salvelinus namaycush*)
- northern pike (*Esox lucius*)
- walleye (*Sander vitreus*)
- yellow perch (*Perca flavescens*)
- lake whitefish (*Coregonus clupeaformis*)
- smallmouth bass (*Micropterus dolomieu*)
- burbot (*Lota lota*)

Various forage fish, such as pearl dace (*Margariscus maragarita*), various dace species (*Phoxinus spp.*), and stickleback species (brook and ninespine) are to be anticipated. No aquatic species at risk have been identified within Bending Lake, with the closest species being lake sturgeon (*Acipenser fulvescens*), approximately 200 kilometers downstream of the proposed work area.





The MNRF manages Bending Lake for lake trout. The area of the West Arm proposed to be dammed dewatered does not provide lake trout habitat as it is very shallow. During the EA, discussions with the MNRF and Fisheries and Oceans Canada will determine the significance of the area lost and if suitable similar habitat in other areas of the lake to sustain the lake trout fishery is required. Upon closure and rehabilitation of the mine there will be a significant increase to the amount of potential lake trout habitat created. It should also be noted that the Province of Ontario has existing fish advisories in effect for Bending Lake for Lake trout, northern pike, walleye, smallmouth bass, and burbot, with respect to mercury. Details can be found at <https://www.ontario.ca/environment-and-energy/sport-fish-consumption-advisory?id=49199208> .

As the project develops, a benthic community survey will be completed in the fall of 2019 that corresponds with sediment metals and grain size to assess existing conditions.

Discussions with the Ministry of Environment Conservation and Parks will be ongoing to complete a study design to assess current mercury levels in fish tissue and ensure potential operations will not degrade food consumption guideline from existing conditions.

Detailed aquatic studies will be undertaken in the area of Bending Lake proposed to be dammed and dewatered. Discussions and a management and compensation plan will be developed in consultation with Fisheries and Oceans Canada.

#### **5.1.9 Geochemistry**

Geochemistry work has been initiated by Palmer Environment Consulting Group, as per Reg 240/00. Further pre-submission consultation with ENDM is planned regarding this aspect of the forthcoming Advanced Exploration Closure Plan. Studies to date completed indicate rock sampled collected were classified as non-potentially acid generating (NPAG) due to abundance of carbonate/silicate minerals providing buffering capacity.

#### **5.1.10 Hydrogeology and Groundwater**

Based on a review of the MECP Water Well Records database, there are a total of 116 water well records within a 50-km radius of the Project. Most of the wells are situated along the TransCanada Highway, approximately 35 km northwest of the

Project, and within the Township of Ignace. Of the 116 water well records, 78 are used for domestic water supply, 7 are used for commercial water supply, 3 for industrial water supply, 8 for public water supply, and 20 are either abandoned or are used for monitoring or test well purposes. Based on the available data, wells range in depth from 4.50 m to 505 m, and 59 are screened within the bedrock aquifer, and 57 are screened within the overburden. The water well records are provided in Appendix G for reference.

Technical studies have been initiated by qualified professionals to characterize ground water and prescribe a monitoring program, as per O. Regulation 240/00. The results of these studies will form part of the EA.

AMI is currently planning a field program to install wells for the certified monitoring program and confirm ground water flow paths in the Project area.

#### **5.1.11 Climate**

Site-specific climate information is available for the Project. Two data stations were installed for the Bending Lake Iron Project by RWDI in 2011. On-Site Metrological data were available from August 2011 to May 2012 (Station 1 and 2) and from September 2012 to August 2013 (Station 2). Station 1 and 2 are located approximately 17 km (North) and 14km (East), respectively, from the centre of the Project.

Additional baseline data for climatic conditions were also gathered from other sources. Environment Canada provides climate normal and averages for two stations near the Project: Dryden Airport and Dryden City. Historical monthly data were available at both stations, with data from 1981 to 2010 used for the comparison. Dryden Airport and Dryden City stations are both located 80 km (North West) from the Project and assumed to be representative of the study area because of its proximity.

The climate in the study area is moderate continental, which is characterized by long, cold winters and relatively short, cool summers. Detailed information is found in the Air Quality Assessment produced by RWDI in 2017, located in Appendix H.

## **5.2 Changes to Fish and Fish Habitat, Aquatic Species and Migratory Birds**

### **5.2.1 Potential Changes to Fish and Fish Habitat**

There are a number of potential changes to fish communities and fish habitat that may result from mine development activities, they can include but are not limited to:

- Alteration or loss of fish habitat;
- Changes in water quality and hydrology;
- Fish mortality related to development activities;
- Exposure to deleterious substances;
- Introduction of invasive species; and
- Harm or harassment of Species at Risk

Fisheries assessment work has been completed in 2011-2012 and more recently in 2017 (Palmer Environmental). The recent study is found in Appendix F.

Additional work will be undertaken during the preparation of the EA through additional baseline studies, and ongoing consultation with regulatory agencies, First Nations and other stakeholders.

Figure 7 is a map showing sub-watersheds, the direction of water flow, waterbodies and watercourses in the general area of the Bending Lake Iron Mine. The outlines of the three TMAs, the Waste Rock Storage Area and the Overburden Storage area have been overlain on Figure 7 to illustrate the waterbodies and watercourses that would be affected by the TMA alternatives (only one to be selected during the EA) as well as the Waste Rock and Overburden Storage Areas. Where the lakes have been classified (cold – cool – warm water) this has been identified on the map. From previous studies these waterbodies are shallow and support forage and baitfish.

The inset to Figure 3 illustrates that portion of the West Arm of Bending Lake that would be dammed and dewatered as part of the open pit mine. This area is also very shallow and supports forage and baitfish.

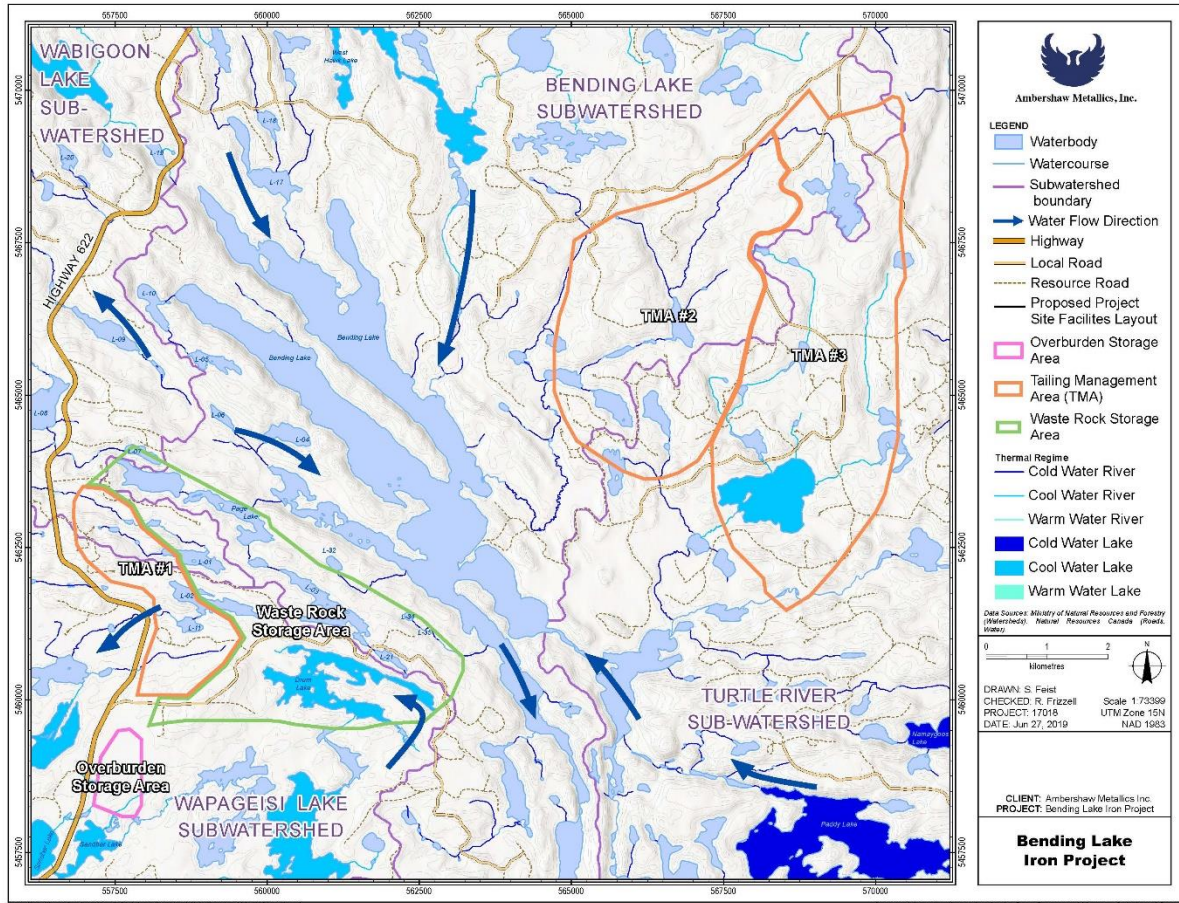


Figure 7: Waterbodies and Watercourses Affected

## 5.2.2 Fish and Fish Habitat Studies

### Mapping and Characterization

An assessment of physical and chemical characteristics of waterbodies within the Project area will be undertaken, including information such as: area; flow rates; depth profiles; shoreline structure; water clarity; temperature; oxygen; pH; conductivity profiles; substrate composition in streams; connectivity of waterbodies; and barriers to fish movement. Habitat mapping for streams will follow the Ontario Stream Assessment Protocol (OSAP) and include: substrate, depth, in-stream morphology, cover and bank stability at each site.

### Fish Community Surveys





Fish community surveys will take place during preparation of the EA. After regulatory consultations have occurred and potentially critical areas have been identified, additional assessments may be required or locations may be changed.

Sampling methods for lake systems will follow the broad-scale fish community monitoring (BSM) protocol designed by the MNRF. The BSM protocol targets large and small bodied fish by setting large and small mesh gillnets at all depth strata throughout a lake system. Gill netting can be a lethal form of fish sampling; however, mortalities tend to be  $\leq 2\%$  of the total fish population of a given lake. BSM netting can occur anytime while surface water temperatures are above 18°C. Fish community surveys for streams in the study area will be conducted by electrofishing during the open water season. Electrofishing is not considered to be a lethal form of fish sampling and there tend to be no mortalities associated with this effort.

All assessments conducted will include details such as, date, time, effort (e.g. hours set), UTM coordinates, and various other details, when deemed appropriate.

### Fish Population Health and Age Analysis

Detailed assessment of two fish species will occur to collect baseline data that will be used to compare to data collected once the mine is operating under the Metal Mining Effluent Regulation (MMER). The selection of fish species for detailed assessments depends on the fish community dynamics, trophic structure, abundance of each species within the community, and the exposure level of the waterbody with respect to proposed mine-related activities. As part of an Environmental Effects Monitoring (EEM) program, a requirement of the MMER, recommendations for the selection of fish species for detailed data collections are as follows (Environment Canada, 2002).

- Two species of relatively sedentary finfish;
- Commercial, sport, or subsistence fish are not recommended, as resident populations are already under pressure from existing activities; and
- Large species should be avoided since adult abundance of small species will respond more rapidly to stressors that affect fecundity and survival.

### **5.2.3 Fish Tissue Analysis**

Fish tissue metal analysis will be carried out for several waterbodies within the vicinity of proposed mine-related activities after regulatory consultations have occurred and critical areas have been confirmed.

A fillet from each of eight adults from each location of interest will be collected and analyzed for metals, along with recording associated characteristics such as length, weight, and sex, and collecting age structures (i.e. otoliths and scales).

### **5.2.4 Benthic Invertebrate Assessment**

Benthic invertebrates will be collected from streams and lakes identified in discussions with the MNR (with the MNR). Three grab samples will be collected per sample location using a petit ponar sampler (lake sites). One sample from each of the creek locations identified will also be collected using the kick and sweep method following the Ontario Benthos Biomonitoring Network protocol. All samples will be cleared of any debris, placed in laboratory supplied containers and fixed with 10% formalin for at least 72 hours. After 72 hours fixation, samples will be changed to 80% ethanol. Samples will be shipped to a laboratory for sorting and identification by a professional taxonomist. Taxon density, taxon richness, the relative proportion of the most abundant taxa, Simpson's diversity, evenness and the Bray-Curtis index will be determined from the resulting data and statistical comparisons of invertebrate communities will be made between the reference and potentially impacted sites.

### **5.2.5 Aquatic Species (Species at Risk)**

An “aquatic species” as defined under the Federal Species at Risk Act is defined as a “wildlife species that is a fish, as defined in section 2.1 of the Fisheries Act, or a marine plant, as defined in section 47 of that Act.”

Under section 2 of the *Fisheries Act*, a “fish” includes:

- (a) parts of fish;
- (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals; and

- (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals

Under section 47 of the *Fisheries Act*, a “marine plant” includes all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton. As no aquatic Species at Risk, as defined above, are known to be present at, or in the vicinity of, the site, no mitigation of environmental effects is anticipated to be required. Should additional information on the presence of aquatic Species at Risk at the site become available, applicable consultation, assessment and mitigation plans will be considered.

### 5.2.6 Migratory Birds

There are a number of potential ways that the proposed Project could affect migratory birds including, but not limited to:

- Mortality as a result of construction;
- Mortality as a result of vehicle collisions;
- Modification of behaviour (e.g. movement);
- Habitat fragmentation and loss;
- Displacement due to invasive species; and
- Increased predation.

Table 3 provides a detailed list of possible effects of the development of each component of the undertaking on the environment.

The principal potential adverse effects of the Project on migratory birds would be those associated with direct habitat loss as a consequence of vegetation removal. The disturbance of nesting birds during the nesting season (April 1 to August 15) is also a concern.

The most common waterfowl species observed was mallard duck, red head duck, and scaup species. The majority of observations were within wetlands and Bending Lake. This area is not expected to be adversely affected by the Project development.

The following measures will be implemented in order to reduce the potential impacts of Project construction:



- Prior to construction, the site will be searched for nesting birds;
- Construction will occur outside the nesting season (April 1 to August 15) for migratory birds in areas where nesting birds are discovered;
- The overall footprint of the project will be minimized where possible;
- The project site will be decommissioned and re-vegetated to the extent possible as per the mine Closure Plan;
- Where practicable, a 30 m buffer will be maintained on all lakes, rivers, wetlands and unique or sensitive habitats; and
- Best management practices from the Stand and Site guide for song birds and other small birds will be followed.

For the study of avian resources at the mine site, the proponent will undertake additional studies to provide a general validation of wildlife habitat and communities within the study area to verify the presence and abundance of birds and bird habitat.

### **5.3 Changes to Federal Lands and Transboundary Effects**

There are no federal lands on or adjacent to the area of the proposed undertaking. As such, no federal lands will be directly impacted by the Project. The Project is approximately 100 kilometres from the Ontario - U. S. border and a much greater distance to the border between Ontario and Manitoba. Air emissions modeling will be undertaken as part of the EA and meet the Ontario regulatory requirements. The 100-kilometer distance is generally used as a determinant of no transboundary effects related to Project air emissions. This is according to Article V of the Canada/US Air Quality Agreement, which requires significant new emission sources of certain contaminants within 100 km of the international border to be reported. The project will not produce significant amounts of reportable emissions and is outside the 100 km limit. The project is within the Winnipeg River sub-basin and drains to Hudson Bay. As such, there will be no transboundary effects from water transport, however unlikely they might be. The low contribution of the Project to potential greenhouse gas emissions is predicted to result in a minimal transboundary effect.

## **5.4 Environmental Effects of the Project on Indigenous Peoples**

### **5.4.1 Trapline Licence Areas**

The MNRF administers and oversees the issuance of trapping licences in the province. Trap Line permit holders are granted the right to set trap lines on Crown lands within fixed geographic boundaries, each of which is identified by a unique identifying permit number. While the MNRF will not release the names or addresses of the persons holding each licence, they will act as an intermediary between resource development proponents and the trap line holders. AMI has identified a total of 7 trap line holders who may have an interest in project development efforts at the Bending Lake Iron Deposit. AMI will call upon the MNRF to assist in our efforts to describe our proposed development activities, answer questions, receive feedback and use this aggregate feedback to inform our proposed development plans in a way which mitigates concerns received to the greatest extent possible. Key Trap Line areas include: IG053, IG054, IG055, IG056, DR010 and AT049, DR009.

### **5.4.2 Bear Management Areas**

The MNRF administers and oversees the Bear Management Areas and hunting licences in the province. Bear Management Areas are utilized to support sustainable bear populations and permitted hunting activities within each area. While the Ontario Ministry of Natural Resources and Forestry will not release the names or addresses of the persons holding any particular bear harvesting license, they will act as an intermediary between resource development proponents and commercial bear hunting operations. AMI has identified a total of 8 Bear Management Areas in proximity to the Bending Lake Iron Deposit. AMI will call upon the MNRF to assist us in our efforts to describe our proposed development activities, answer questions, receive feedback and use this aggregate feedback to inform our proposed development plans in a way which mitigates concerns received to the greatest extent possible. The Bear Management Area boundaries found nearby and their unique identifying numbers include: DR-09A-020, DR-09A-022, IG-09A-040, IG-09A-042, IG-09A-043, IG-12A-003, IG-12A-004, IG-12A-007

### **5.4.3 Regional Resource Based Tourism Values**

The MNRF maintains a comprehensive listing of Resource Based Tourism Values, and any relevant contact information which may be associated with each value. These values include:

- Personal or Commercial boat cache permits
- Land Use Permits for recreational or commercial camps or cabins
- Vegetation harvesting locations
- Canoe routes, portages, picnic areas and camp sites
- Trapper Cabins associated with registered commercial trapping licences.
- Trail systems,
- Beaches
- Public Access points

The MNRF will not release the names or addresses of any persons holding site specific permits. They will however act as an intermediary to between resource development proponents and the permit holders. AMI has identified a number of boat cache permit holders who may have an interest in project development efforts at the Bending Lake Iron Deposit. AMI will call upon the MNRF to assist us in our efforts to describe our proposed development activities to stakeholders with an interest in resource based tourism values, answer questions, receive feedback and use this aggregate feedback to inform our proposed development plans in a way which mitigates concerns received to the greatest extent possible.

### **5.4.4 Regional Wildlife Values Identified on the Wabigoon Forest**

The MNRF maintains a comprehensive listing of Regional Wildlife Values in support of comprehensive forest management planning activities. These values include:

- Potential Moose feeding areas
- Potential Wintering Grounds
- Potential Seasonal Staging Areas
- Potential Migration Routes
- Potential Calving or nesting areas.

These values or remotely sensed ecosite types are expressed in map form to identify physical locations which have the potential to support specific wildlife values of interest to forest management activities. Since this information has been developed through remote sensing, it will be used as a base and supplemented through field study and will be used in the EA.

#### **5.4.5 Areas of Cultural and Heritage Significance**

The MNRF maintains a confidential inventory of areas and sites which are known to be of cultural or heritage significance within the Wabigoon Sustainable Forest Licence area. These sites are held in confidence by the MNRF. AMI will consult with the MNRF, First Nation communities and the Metis Nation of Ontario to understand the location, nature and potential to impact areas of cultural and heritage significance in the EA consultation process.

BLIG undertook a Stage I Archaeological Assessment of the Project area in 2011. While no artefacts were recorded in the area of the Project, evidence of archaeological resources is present in the Ignace area and the Turtle River is considered a significant historical waterway. A more detailed Stage II assessment of the Project area will be undertaken during the Environmental Assessment and incorporated with Indigenous traditional knowledge.

There is a canoe route located near the eastern shore of Bending Lake that is part of the Maukinak Trail, a 212 km long trail segment of the Path of the Paddle that follows ancient indigenous canoe routes known as the “onigum” to the Anishnabek People. The canoe route enters the north end of Bending Lake via a portage from Three Mile Lake and exits Bending Lake at the south end via a portage to Smirch Lake. It is on the other side of the lake from the Project. The proposed mine site will not be visible from the Canoe route and is not expected to have any impact on canoe route users.

#### **5.4.6 Indigenous Engagement Regarding Environmental Effects**

AMI has conducted extensive outreach and consultation with all Indigenous groups identified by the Grand Council of Treaty 3 and the Ontario Ministry of Energy, Northern Development and Mines and more fully described in the Plan of

Consultation attached as Appendix A. These discussions provided an introduction to AMI's acquisition of the Bending Lake Iron Project properties, and its intent to perform pre-commercial sampling and testing of the ore body to provide proof of concept for commercial mining operations at the site. Parties engaged are fully aware of AMI's objectives of developing and operating commercial mining activities at the Bending Lake Iron Deposit, evacuating processed ore via an as yet to be constructed service corridor to Ignace Ontario, from where it would be shipped by rail to North American steel mills.

AMI will continue to actively engage potentially affected Indigenous groups as identified in this Project Description. The names and descriptions of these groups and consultation activities to date are included in Section 6. The purpose of this consultation is to determine the potential impact of the Project on Aboriginal communities, including:

- Health and Socio-economic Conditions;
- Physical and Cultural Heritage Features;
- The use of lands and resources for traditional purposes; and
- The determination of significant structures, sites, or items from of historical, archaeological, paleontological or architectural significance.

Although details related to traditional use have not been identified through Indigenous consultations to date, potential effects on Indigenous Peoples that AMI is aware of include:

- Potential effects on aquatic populations and habitat;
- Potential effects on traditional harvesting area;
- Potential effects on archaeological resources;
- Potential presence of native medicines;
- Potential effects on traditional canoe/portage routes; and
- Potential socio-economic effects (i.e. employment opportunities).

AMI will engage with Indigenous communities throughout the EA consultation and mine development process to fully understand and mitigate any potential impacts on indigenous values and traditional uses of the surrounding area. These discussions will inform all aspects of our development activities and ongoing

operations and mine closure outcomes. The EA engagement process will provide the conduit for all interested members of the general public, First Nations and metis communities to express concerns, requests or suggestions on the ways and means to mitigate any perceived and expressed concerns. The EA project consultation process will include opportunities for individuals to both receive project development plans and information and communicate any concerns with the same. AMI will aggregate and utilize feedback received to inform and enhance project development plans and activities. In addition, opportunities for Indigenous employment in the Project will be explored with First Nations and Metis peoples.

Table 3 provides a summary of possible effects of the project on the environment. Through engagement with Indigenous groups during the EA process AMI will confirm the completeness of the table, determine the specific effects to Indigenous peoples, the significance of the effects and what can be done to mitigate the negative ones.

**Table 3: Possible Effects of the Project on the Environment**

Project Component	Possible Effects of Development
Open Pit	<ul style="list-style-type: none"> <li>• Potential for changes to surface and groundwater quality and flow associated with deepening of the north pit.</li> <li>• Potential impacts to the atmospheric environment including noise, dust, and GHG emissions.</li> <li>• Potential impacts to the fish and benthic community in the west arm of Bending Lake to be dewatered.</li> <li>• Potential impacts of navigation as a result of damming part of the West Arm of Bending Lake.</li> </ul>
Waste Rock Stockpile Area and Overburden Stockpile Area	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential for changes to surface and groundwater quality as a result of ARD/ML (potential expected to be low).</li> <li>• Potential aquatic impacts to the small unnamed lakes and Page Lake that may be overprinted.</li> <li>• Potential navigation impacts to the waterbodies that may be overprinted.</li> </ul>

Project Component	Possible Effects of Development
Processing Plant	<ul style="list-style-type: none"> <li>• Potential for impacts to the atmospheric environment including noise, dust, and GHG emissions.</li> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential disturbance to terrestrial and avian species associated with operational noise.</li> </ul>
Storage and Loading Facilities (i.e. warehouse and inventory, ore storage, fuel storage, chemical storage, explosives storage, truck storage)	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential for changes to surface and groundwater through accidental spills.</li> </ul>
Buildings (e.g. administration and temporary accommodations)	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> </ul>
Tailings Management Areas	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial, wetland, and aquatic habitat associated with tailings disposal.</li> <li>• Potential for changes to surface and groundwater quality as a result of ARD/ML (potential expected to be low).</li> <li>• Potential for direct discharge of stormwater to the environment if not properly managed.</li> </ul>
Construction Workforce	<ul style="list-style-type: none"> <li>• Increase in indirect spending and jobs in the area.</li> <li>• Economic benefit to the region through the need for accommodation and associated facilities for operations workforce.</li> </ul>
Electrical Power Supply and Infrastructure	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential for impacts to the atmospheric environment including noise and emissions during construction.</li> <li>• Potential fisheries values for proposed location of this project component are not known, however, in-water work associated with culvert crossings could harm fish or fish habitat.</li> <li>• Potential for aesthetic impacts.</li> </ul>
Community	<ul style="list-style-type: none"> <li>• Social issues, increased demands for community-based services associated with the construction and operations workforce.</li> </ul>



Project Component	Possible Effects of Development
Water Management Facilities (i.e. vehicle washing and stormwater)	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential for changes to surface and groundwater quality associated with stormwater discharge.</li> </ul>
Waste Management Facilities	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial habitat through site preparation.</li> <li>• Potential for changes to surface and groundwater through accidental spills or seepage of wastewater.</li> </ul>
Roads, Railways and Covered Conveyor	<ul style="list-style-type: none"> <li>• Potential for impacts to the atmospheric environment associated with construction, noise and dust.</li> <li>• Potential fisheries values for proposed location of this project component are not known. Fish community and fish habitat assessments to identify potential changes and support future mine permitting and design of potential mitigation measures.</li> <li>• Potential loss or fragmentation of vegetation in the infrastructure corridor.</li> </ul>
Process Water Pipeline and Pumphouse	<ul style="list-style-type: none"> <li>• Potential loss or fragmentation of terrestrial and aquatic habitat through site preparation.</li> <li>• All potential fisheries values for proposed location of this project component are not known. Fish community, population, fish tissue and fish habitat assessments to identify potential changes and support future mine permitting and/or design of potential mitigation measures will be undertaken.</li> </ul>

## **6.0 Proponent Engagement and Consultation with Indigenous Groups**

### **6.1 Indigenous Groups Engaged**

The following communities, councils and groups have expressed an interest in being kept informed as to the nature, scope, timing, methodology of completing the Advanced Exploration Program and the development of the proposed mine. These engagements occur via community meetings, formal written correspondence,

informally via email and telephone per the wishes and direction of each individual party:

**Treaty 3 First Nation Community Contact Information**

**Grand Council Treaty #3** active engagement requested and ongoing

P.O. Box 1720, Kenora, ON P9N 3X7

Tel: (807) 548-4214; Toll Free: 1-800-665-3384; Fax: (807) 548-5041

Email: [reception@treaty3.ca](mailto:reception@treaty3.ca)

**Wabigoon Lake Ojibway Nation** active engagement requested and ongoing

70 Mainroad, RR1 Site 115 Box 300, Dryden, ON P8N 2Y4

Phone: 807-938-6684; Fax: 807-938-1166

**Eagle Lake First Nation** active engagement requested and ongoing

P.O. Box 1001, Migisi Sahgaigan, ON P0V 3H0

Phone: (807) 755-5526 x222; Fax: (807) 755-5696

[contact@eaglelakedevelopment.com](mailto:contact@eaglelakedevelopment.com)

**Lac des Mille Lacs First Nation** active engagement requested and ongoing

1100 Memorial Ave, Suite 328, Thunder Bay, ON P7B 4A3

Phone: (807) 622 9835; Fax: (807) 622 9866

[info@lacadesmillelacsfirstnation.ca](mailto:info@lacadesmillelacsfirstnation.ca)

**Seine River First Nation** active engagement requested and ongoing

PO BOX 124,

Seine River First Nation, ON P0W 1H0

Phone: (807) 599-2224; Fax: (807) 599-2865

<http://seineriverfirstnation.ca>

**Nigigoonsiminikaaning First Nation** active engagement requested and ongoing

P.O. Box 68 Nigigoonsiminikaaning First Nation , ON P9A 3M5

Phone: (807) 481-2536; Fax: (807) 481-2511

Website: <http://www.nigigoonsiminikaaning.ca/home.php>

**Couchiching First Nation** active engagement requested and ongoing

RMB 2027, RR#2 Fort Frances, ON P9A 3M3

Phone: 807-274-3228; Fax: 807-274-6458

**Lac Seul First Nation** passive engagement requested - cc only

P.O. Box 100 Hudson, ON P0V 2A0

Phone: 1-807-582-3503; Fax: 1-807-582-3449

Website: <http://www.lacseul.firstnation.ca/>

**Whitefish Bay First Nation** passive engagement requested - cc only

Pawitik Post Office, Pawitik, ON

Phone: (807) 226-5411; Fax: (807) 226-5389

**Naicatchewenin First Nation**

R.R.# 1, Box 15, Devlin, ON P0W 1C0 no interest in future engagement

Telephone: (807) 486-3407

Fax: (807) 486-3704

**Rainy River First Nation**

Box 450, Emo, Ontario P0W 1E0 no interest in future engagement

Telephone: (807) 482-2479

Fax: (807) 482-2603

**Mitaanjigamiing First Nation**

P.O. Box 609, Fort Frances, ON P9A 3M9 no interest in future engagement

Telephone: (807) 274-2188

Fax: (807) 274-4774

**Treaty 3 - Metis Nation of Ontario**

**Northwest Metis Council** active engagement requested and ongoing

Ronald Robinson, President

34B King Street Dryden, ON P8N 1B4

Phone: 807-223-8082; Fax: 807-223-8083

e-mail: [nwmetis@drytel.net](mailto:nwmetis@drytel.net)

**MNO - Provincial Office**                      active engagement requested and ongoing

75 Sherbourne St., Suite 311, Toronto, ON M5A 2P9

Ph: 416-977-9881

E: [BonnieB@metisnation.org](mailto:BonnieB@metisnation.org)

The following communities, councils and groups have expressed an interest in being kept informed as to the nature, scope, timing, methodology of completing the Advanced Exploration Program and subsequent mine development. These engagements occur via community meetings, formal written correspondence, informally via email and telephone per the wishes and direction of each individual party:

Treaty 3 First Nation Communities

Grand Council Treaty 3                      active engagement requested and ongoing

Wabigoon Lake Ojibway Nation              active engagement requested and ongoing

Eagle Lake First Nation                      active engagement requested and ongoing

Lac des Mille Lacs                              active engagement requested and ongoing

Seine River First Nation                      active engagement requested and ongoing

Nigigoonsiminikaaning First Nation       active engagement requested and ongoing

Couchiching First Nation                      active engagement requested and ongoing

Lac Seul First Nation                              passive engagement requested - cc only

Whitefish Bay First Nation                      passive engagement requested - cc only

Treaty 3 - Metis Nation of Ontario

Region One	active engagement requested and ongoing
Provincial Office	active engagement requested and ongoing

## **6.2 Engagement or Consultation Activities Carried Out to Date**

A summary of consultation activities carried out to May 18, 2019 is as follows. More details are found in First Nations, Metis and Community Engagement Highlights found in Appendix A.

Multiple methods were used to contact and engage with First Nations and Metis, including meetings, mail, e-mail and telephone. The following requested active and ongoing engagement: Grand Council Treaty 3; Pwi-Di-Goo-Zing Ne-Yaa-Zhing Advisory Services; Couchiching First Nation, Eagle Lake First Nation; Lac des Mille Lacs First Nation; Nigigoonsiminikaaning First Nation; Seine River First Nation and Wabigoon Lake Ojibway Nation. Wabauskang First Nation was not interested in being further engaged regarding the project. The following requested passive engagement at this time through being copied on material related to the project: Lac La Croix First Nation; Lac Seul First Nation; Mitanjigmaniing First Nation; Rainy River First Nation; and Whitefish Bay First Nation.

The Consultation Committee of Region One of the Metis Nation of Ontario (MNO) and the MNO's Provincial Office of Lands and resources have also been engaged in a similar fashion and they have requested to be actively involved with the project. Their concerns for the natural resources surrounding the project were similar to those of the First Nations.

## **6.3 Overview of Key Comments/Concerns Expressed by Indigenous Groups**

Although Indigenous consultation focused on the Advanced Exploration stage, the entire mining life cycle was discussed. A key theme that came out at most meetings was the protection of water quality, wildlife and vegetation on surrounding areas for traditional use. Participants were encouraged to discuss and engage with respect to any and all proposed development plans including:

- Historical Activity of previous ownerships. 1954 to AMI Acquisition;

- AMI Activities from acquisition 2014 to date, including baseline environmental studies performed in support of proposed Advanced Exploration and Mine Development activities;
- Location, Scope, Timing, Methodology of completing a 100,000 tonne bulk sample, ore processing and pre-commercial testing of Bending Lake Iron ore in North American Steel mill facilities as early as fall 2019;
- Intent to proceed with an EA process for the proposed mine, concurrent with the completion of the Advanced Exploration permit; and
- Intent to continue baseline environmental studies to inform efforts to compete a parallel commercial mine permitting process which will continue throughout 2019 and beyond.

A summary of main issues raised at community engagement meetings can be grouped into a number of categories: (1) Status of baseline environmental studies underway in support of proposed mine development activities; (2) An assessment of any Acid rock drainage potential which might occur as a result of ore processing; (3) Significant natural and social features; and, (4) Potential for Financial Benefits; and Operational issues.

Questions were raised with respect to reliance on historical environmental studies. It was explained that AMI commissioned up-to-date environmental baseline studies to inform and support application for both an Advanced Exploration permit and eventual mine permitting efforts. AMI confirmed that additional studies would be commissioned as part of the EA.

The issue of acid rock drainage came up on a number of occasions. AMI confirmed that certified testing has been done in the past and that additional ore body specific ARD-ML potential would and will be completed to determine if Acid Rock Drainage (ARD) will be an issue and, if necessary, to determine an ARD Management Plan.

There was concern about the impacts on provincially registered trapline holders in the area. AMI confirmed that there are no provincially issued registered resource use licences or permits in place on AMI's wholly owned patent land parcels, however AMI would work with registered trapline holders in the area adjacent to the mine and infrastructure corridor.



AMI committed to contacting all registered trapline holders with the assistance of the Ontario Ministry of Natural Resources and Forestry to determine whether any potential concerns might exist with Trap Line Holders, Bait Fish harvesters, Boat Cache permit holders, private Land Use Permit holders and /or Commercial Resource Based Tourism operators in the surrounding area.

A number of significant wildlife areas and species were identified, as well as pictograph sites. These, if not already documented in the environmental baseline studies undertaken and MNR values maps will be recorded and confirmed during the EIS. Due to the confidential nature of some of these features, they will be considered during the E.I.S. process but not displayed to the general public. The issue of a commercial fishery on Bending Lake was mentioned and the concern about damming and diking an arm of Bending Lake. AMI indicated that these issues would be addressed during the E.I.S.

First Nation, Metis and members of the general public sought clarification with respect to the proposed ore transport corridor proposed for eventual commercial mining operations. AMI confirmed its intent to evacuate iron ore within a proposed corridor from the mine site to the CP rail corridor near Ignace, Ontario which will follow an existing, permitted forest harvest access road system.

All First Nation and Metis parties expressed an interest in seeing preferential hiring and treatment for Indigenous-owned businesses and whether Indigenous groups could have an equity position in the Project. These discussions are ongoing.

There were a few operational issues around potential dust generation which may occur with a commercial mining operation. AMI indicated that a Dust Management Plan would be prepared to manage this issue. There was a question about whether there could be a use for low grade crushed ore tailings. AMI confirmed that AMI is interested in determining a commercially viable use to utilize low grade crushed ore tailings to minimize the scope of potential tailings management activities required with an operating mine.

It is essential to understand that AMI receives all comments, questions, concerns and suggestions received from First Nation, Metis and the general public with the objective of informing and improving all proposed activities in advance of execution of those activities. It has not been seen as appropriate to attribute or attach specific ownership items which comprise the aggregate body of comments

received. AMI’s engagement efforts are intended to be collaborative and accretive at all times. AMI will maintain a confidential record of significant comments and concerns received during the EA community consultation process. This record will not be made public at any time to preserve the privacy and confidentiality of those who choose to participate in the EA community consultation process.

#### **6.4 Future Indigenous Consultation and Information Gathering**

Appendix A provides an outline of engagement activities completed to date while Appendix I provides details on future consultation. These engagements to date focused on AMI’s intent to perform a pre-commercial test mining program, and to provide proof of concept necessary to support a decision to proceed towards commercial production as described in this project description. First Nations and Metis groups have expressed an interest in becoming engaged with any potential mine development plans, studies and activities once those plans are substantially defined via this project description. It is essential to understand that while a general description of proposed commercial mining has been communicated to and endorsed in principal by First Nations and Metis communities to date, that all parties expect to be engaged in a cooperative and collaborative manner beginning in late fall 2019 after the successful completion of AMI’s test mining and milling program is completed.

AMI will engage with each First Nation Community and Metis council in the specific manner, scope, timing and methodology which has yet to be expressed and requested by each respective group. AMI expects to and will maintain continuous contact with community assigned representatives. Community representatives will express the community specific preferences for the scheduling and delivery of communications, community meetings and information sharing sessions as directed by each community.

#### **7.0 Consultation with the Public and Other Parties**

##### **7.1 Key comments and Concerns Received from the Public**

AMI made a public presentation to Ignace Town Council, members of the Town of Ignace Senior Administration and the general public in attendance on December 4, 2018.



- Council, Administration and the general public were generally aware of the extensive project development of previous owners and developers.
- Council, Administration and the general public expressed significant support for the project, and AMI's intent to resume development activity, and AMI's intent to flow extracted ore from the mine site northwards to Ignace.
- No concerns were expressed by Council administration or the general public

The intent of this initial meeting was to provide those in attendance with an informal update of AMI's proposed development activities, including the intent to perform a test mining and milling program in 2019 to inform and support potential commercial mining operations at the Bending Lake Iron deposit.

## **7.2 Future Consultation with the Public**

AMI will begin EA Community consultations with the broader public beginning after submission of this Project Description to the Canadian Environmental Assessment Agency. This engagement process will include public meetings in Ignace with advance notice provided via print, radio and where appropriate, direct mailings.

As a major user of the surrounding area, AMI will engage Domtar and attempt to ensure that the parties involved in the review of their new Forest Management Plan are also engaged in the EA for the Bending Lake Iron Project.

The MNRF will provide assistance with respect to informing and engaging nearby Resource Based interests such as Trap Line permit holders, Bait Fish operators, harvesting licensees, Land Use Permit holders and Commercial Tourism operators regulated and monitored by the province of Ontario. Appendix I provides an outline of future engagement activities planned during the completion of the EIS. AMI is committed to respectful and meaningful community engagement as demonstrated during the Advanced Exploration permit process.

## **7.3 Agency Consultations**

The ENDM hosted an intra-agency meeting with all provincial; and federal regulatory bodies which has the potential to require declarations, attestations, applications for permit of any kind relating to the scope of the proposed Advanced Exploration bulk sampling program. Attendees included and permitting direction was received from:



- Ministry of Energy, Northern Development and Mines;
- Ministry of Natural Resources and Forests;
- Ministry of Transportation;
- Ministry of Environment Conservation and Parks;
- Ministry of Labour;
- Kenora Resident Geologist; and,
- Department of Fisheries and Oceans.

All direction received at this meeting and summarized in writing thereafter have been actioned and completed.

## 8.0 REFERENCES

1. Aboriginal Consultation and Accommodation Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (Government of Canada, March 2011)
2. *Canadian Environmental Assessment Act* (R.S.O. 1992)
3. Early Aboriginal Engagement: A Guide for Proponents of Major Resource Projects (Government of Canada, December 2008)
4. Fladgate Exploration N1 43-101 Independent Technical Report – Resource Estimate Bending Lake Property Kenora Mining Division, Ontario
5. A Guide for Proponents and the Public – Federal/Provincial Environmental Assessment Coordination in Ontario (Government of Canada and MOE, June 2007)
6. Guide to Preparing a Project Description for a Major Resource Project (Government of Canada, December 2008)
7. Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012 (Government of Canada, June 2014)
8. Ambershaw Metallics Inc.; Bending Lake Advanced Exploration Project – Advanced Exploration Closure Plan; Thunder Bay, Ontario, March 2011
9. Ambershaw Metallics Inc.; Bending Lake Advanced Exploration Project – Project Description; Thunder Bay, Ontario, October, 2018
10. Bending Lake Iron Group Otd.; Bending Lake Iron Deposit – Josephine Cone Mine, Project Description; Thunder Bay, 2011
11. Canadian Environmental Assessment Agency, Guidelines for the Preparation of an Environmental Impact Statement Pursuant to the Canadian Environmental Assessment Act for the Proposed Josephine Cone Mine Project; Toronto, Ontario, June, 2012





12. DST Consulting Engineers Inc.; Proposal for an Environmental Baseline Study – Bending Lake Mine Site; Thunder Bay, Ontario, June, 2011
13. DST Consulting Engineers Inc.; Bending Lake Iron Group – Water Taking Assessment; Thunder Bay, Ontario, June 17, 2011
14. Krech Ojard Engineers and Architects; Bending Lake Mining – Proposed Mining and Processing Locations; Superior, Wisconsin, USA, August 29, 2011
15. Krech Ojard Engineers and Architects; Bending Lake Iron Group – Plant Site Evaluation; Superior, Wisconsin, USA, September 26, 2011
16. Krech Ojard Engineers and Architects; Bending Lake Iron Group – Material Transport Systems Evaluation; Superior, Wisconsin, USA, September 26, 2011
17. Palmer Environmental; Ambershaw Mining Project – Hydrogeology Characterization Data Report, Advanced Exploration Permit.
18. RWDI; AMI Project – Air “Quality Assessment; Guelph, Ontario, November 24, 2017
19. RWDI; AMI Project – Noise Baseline Study; Thunder Bay Ontario, November 23, 2017