LABRADOR IRON MINES
LIMITED

Houston Beneficiation Plant
Environmental Registration

Prepared by:

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LABRADOR IRON MINES LIMITED

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1.0 INTRODUCTION

1.1 Identification of the Proponent

Name of Corporate Body: Labrador Iron Mines Limited (LIM)

Address: Suite 700, 220 Bay Street
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Labrador Iron Mines Limited (LIM), a wholly owned subsidiary of Labrador Iron Mines Holdings Limited, is Canada's newest iron ore producer with a portfolio of direct shipping iron ore (DSO) operations and projects located in the Labrador Trough, in the province of Newfoundland and Labrador. Initial production commenced at the James Mine in June 2011, and leading to the development of the Houston 1 and 2 Deposits Mining Project the company's objective is to increase production towards 5 million tonnes per year from a portfolio of 20 iron ore deposits in Labrador and Quebec, all within 50 kilometres of the town of Schefferville. LIM is listed on the Toronto Stock Exchange and trades under the symbol "LIM".

LIM is proposing to construct a beneficiation plant to beneficiate iron ore extracted from the approved Houston 1 and 2 Mining Project.

1.2 Contacts and Address

Chief Executive Officer

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1.3 Regulatory Framework

1.3.1 Newfoundland and Labrador Environmental Assessment Process

The Houston Beneficiation Plant is subject to an environmental assessment pursuant to Part III of the Newfoundland and Labrador Regulations 54/03, *Environmental Assessment Regulations, 2003*, under the *Environmental Protection Act*, SNL 2002 Ce-14.2. This document registers the Project within the Province, which is distributed to relevant provincial and federal departments, aboriginal groups, as well as posted to the Department of Environment and Conservation (DOEC) website for public review and comment. Following review of the registration document, the DOEC Minister makes a determination of the undertaking; it may be released or rejected; an Environmental Preview Report (EPR) may be required; or an Environmental Impact Statement (EIS) may be required.

1.3.2 Government of Canada Environmental Assessment Process

Federal environmental assessment (EA) is regulated under the *Canadian Environmental Assessment Act (CEAA), 2012*. Under CEAA 2012, only projects that are included within the *Regulations Designating Physical Activities* will possibly require federal EA. The Houston Beneficiation Plant is considered a *Designated Project* pursuant to Section 15(2) of the Regulations as it involves the construction, operation, decommissioning and abandonment of a metal mine with an ore production capacity greater than 3000 t/d. The ore beneficiation target for the Houston Beneficiation Plant is up to 1.5 MT/yr, which is based on a 12,000 t/d projection.

To initiate the federal process, a Project Description document is submitted to the Canadian Environmental Assessment Agency (CEA Agency) by the proponent along with a Summary Document that is provided in both official languages. The Summary Document is distributed by the CEA Agency to federal departments as appropriate and is posted on the CEA Agency website for access by the general public.

The federal decision-making and coordinating authority for a federal EA is the CEA Agency. Other federal departments may also provide specialized knowledge or expert advice through the EA processes. These Departments may include Fisheries and Oceans Canada, Transport Canada, Environment Canada, Health Canada, and Natural Resources Canada.

Where both federal and provincial EAs are required, the CEA Agency and the DOEC Environmental Assessment Division typically work together in decision making.

1.3.3 Purpose of this Document

This document serves to register the Houston Beneficiation Plant Project under the Provincial *Environmental Assessment Regulations* and to file the Project Description in accordance with the requirements of the *Canadian Environmental Assessment Act (CEAA), 2012*.

1.4 Nature of the Undertaking

This undertaking, the Houston Beneficiation Plant, involves the beneficiation of iron ore from the Houston 1 and 2 Deposits Mining Project (Houston Project), in western Labrador. The Houston

Project is located approximately 10 km from the existing Schefferville Area Iron Ore Mines (James Mine). James Mine was assessed in the Environmental Impact Statement (EIS) (Labrador Iron Mines, 2009) submitted to the federal and provincial regulators in August 2009 and released from further environmental assessment in November 2009. The James Mine is currently in operation and in compliance with all applicable permits and approvals. Environmental baseline data for the Houston Project Area, which includes the Houston Beneficiation Plant project area, was initiated in 2008 as part of the overall Schefferville Area Iron Ore Project.

The Houston Project was registered under both the federal and provincial environmental assessment processes in December, 2011 (Labrador Iron Mines 2011) and released from further environmental assessment on March 26, 2012. The Houston Beneficiation Plant is located within the study area assessed in both the EIS and the Houston Project Environmental Registration.

The Houston deposits consist of three ore bodies (Houston 1, 2 and 3) and 12 mineral rights licenses representing 112 mineral claims covering approximately 2,800 hectares (Figure 1-1). The Houston 1 and 2 deposits contain a NI-43-101 resource estimate of 23 million tonnes of Iron ore of potential direct shipping quality with an anticipated 10-15 year mine life.

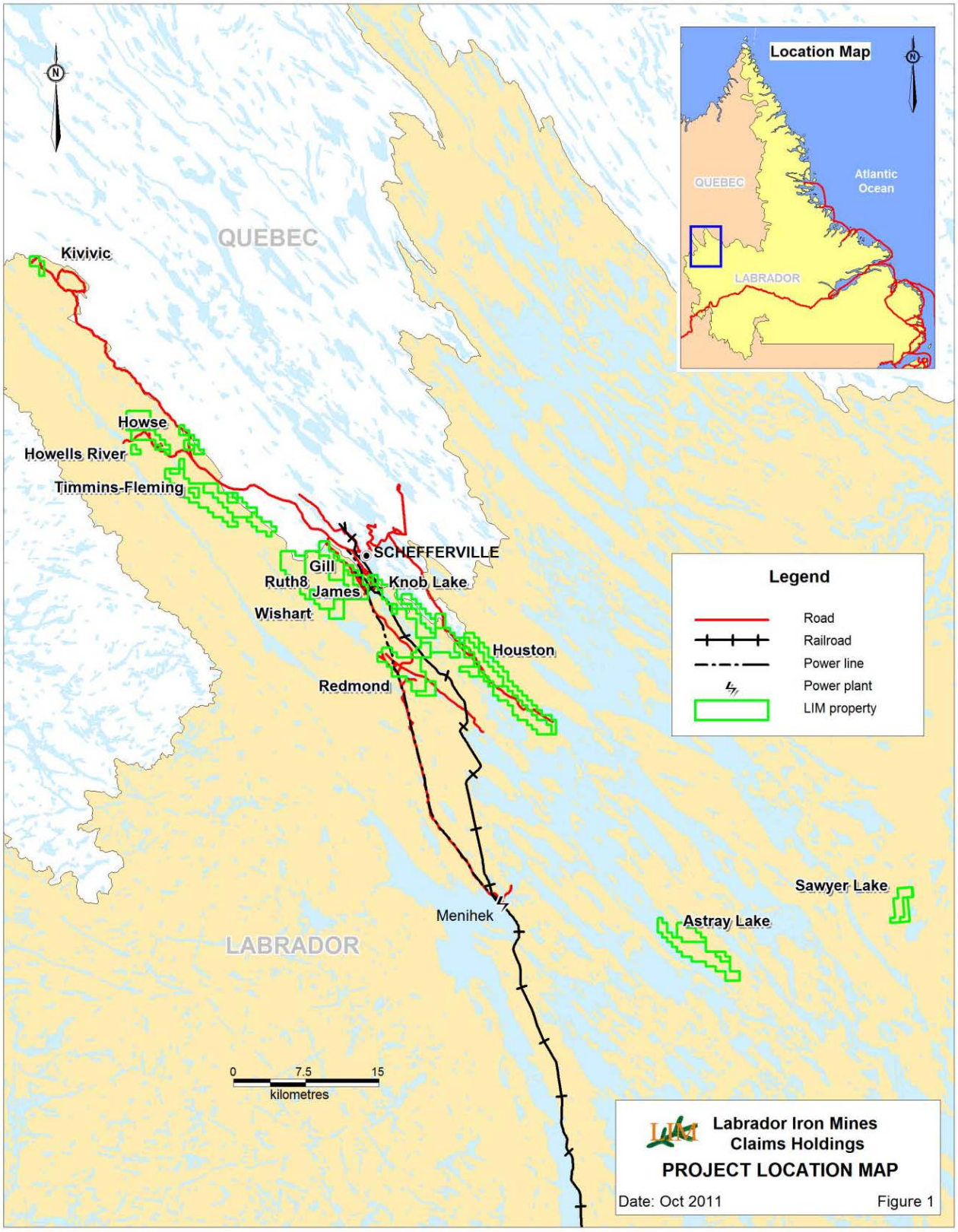
The operation of the Houston Beneficiation Plant will benefit from the presence of existing or approved infrastructure including the Houston Haul Road and the Rail Siding which are under construction as part of the Houston Project, as well as the Redmond Pit. A unique feature of this project is that there is no discharge to the environment. Process water will be extracted from a previously flooded pit (Redmond Pit) which does not have an outlet and the plant rejects water will be discharged back into the Pit, i.e. a closed loop system.

The proposed Houston Beneficiation Plant will receive ore from the Houston 1 and 2 deposits initially and potentially from the Houston 3 deposit at a later date. Mining of the Houston 1 and 2 deposits will be conducted in a sequential manner using conventional open pit mining methods. Once mined, the ore will be hauled by truck approximately 1.5 km to the proposed beneficiation plant, to be located adjacent to the Houston Haul Road. As with the existing approved Silver Yard facility, the proposed Houston Beneficiation process involves the crushing, screening, washing and magnetic separation of the rock. No chemicals will be added as water is the only constituent used in the beneficiation process. The resulting wash water consists of water and fine rock material (reject fines).

The throughput of the plant is designed for 600 tonnes per hour with an average daily production of 12,000 tonnes during peak operation. The processed ore will then be hauled approximately 6 km to the Houston Rail Siding where it will be loaded onto rail cars for transport south to the port of Sept Iles.

As with LIM's nearby existing James Mine project, the final products to be produced from the Houston 1 and 2 deposits will include lump and sinter fine ores for direct shipping to end users in Europe and/or Asia.

Figure 1-1 Labrador Iron Mines Claims Holdings



1.5 Purpose and Rationale for the Undertaking

The purpose of the undertaking is to beneficiate iron ore mined from the Houston Project to satisfy market demand for high-grade direct shipping iron ore products. The construction of a wet beneficiation plant will be an economically beneficial addition to LIM's Schefferville Area Iron Ore Mining operation and will provide an additional boost to the economy of western and central Labrador and in turn, contribute to long-term economic stability in the area.

1.6 Alternatives to the Undertaking

Originally, LIM anticipated that the ore from the Houston Project would be beneficiated at either the Silver Yard facility at James Mine or at the proposed Redmond Mine area. However, the Silver Yard facility has reached capacity and the Redmond area has been determined to be uneconomic, therefore, a new facility is required.

1.7 Alternatives within the Undertaking

To assist in the decision making processes involved in the development of the Houston Beneficiation Plant Project, LIM retained DRA Americas to conduct a comprehensive trade-off study. The objective of the study was to select a plant location and configuration that optimized the capital and operating cost of the plant, maximized the resource use of the area, while minimizing the adverse effects to the surrounding environment. The study focused on two major components, water management and plant location. Given the interdependencies between the options, several configurations were considered and compared using both qualitative and quantitative analysis that took into consideration a variety of factors including environmental effects, risk, costs, technical factors and logistics.

1.7.1 Water Management

The two main components for water management that were focused on were: (1) how the plant reject water was to be discharged and (2) where the process water was to be sourced.

Reject Water Disposal

The options for disposal of rejects water were to either discharge to a local water body or into Redmond Pit. Discharging into Redmond Pit was selected for two primary reasons. First of all, it is an abandoned Iron Ore Company of Canada pit which has ample capacity for the predicted plant life of 12 years. Second, direct effluent release into the environment is avoided as there is no discharge outlet. As Redmond Pit is an abandoned pit with no self-sustaining fish communities (D. Yetman, 2008, DFO, February 2008) or surface connectivity to existing fish habitat, it has been deemed an acceptable location for the wet plant rejects.

Process Water

The alternative sources of process water considered were the: extraction form a nearby lake; de-watering water from Houston pit; and extraction from Redmond pit. Extracting process water from a nearby lake was ruled out due to environmental considerations as well as the

requirement for an access road. The option of acquiring process water from the Houston 1 and 2 deposits de-watering wells was rejected due to the variability of flow, i.e. there is no assurance of a constant supply. This could potentially adversely affect the operation of the beneficiation plant as well as the management and operation of the rejects line.

Once it was decided that Redmond Pit would be the reject water disposal location, using it as the source for process water as well would result in a closed system with no discharge to the environment. Water will be withdrawn from Redmond Pit, piped to the beneficiation plant, used in the process cycle and piped back to the pit.

1.7.2 **Location**

The two alternative locations for the Beneficiation Plant considered were the Houston Rail Siding and a site 1.5 km from the Houston 1 and 2 mine site.

Reducing the distance for the transportation of unprocessed ore was a major consideration in the selection of the plant location. Approximately 20-25% of the unprocessed ore is removed as reject material during processing. By locating the plant near the mine site, the haulage distance of the unprocessed ore is reduced to 1.5 km, as opposed to the 6.0 km distance to the Houston Rail Siding. This results in an overall reduction of truck haulage by 20 – 25% and a coinciding reduction in exhaust emissions.

2.0 DESCRIPTION OF THE UNDERTAKING

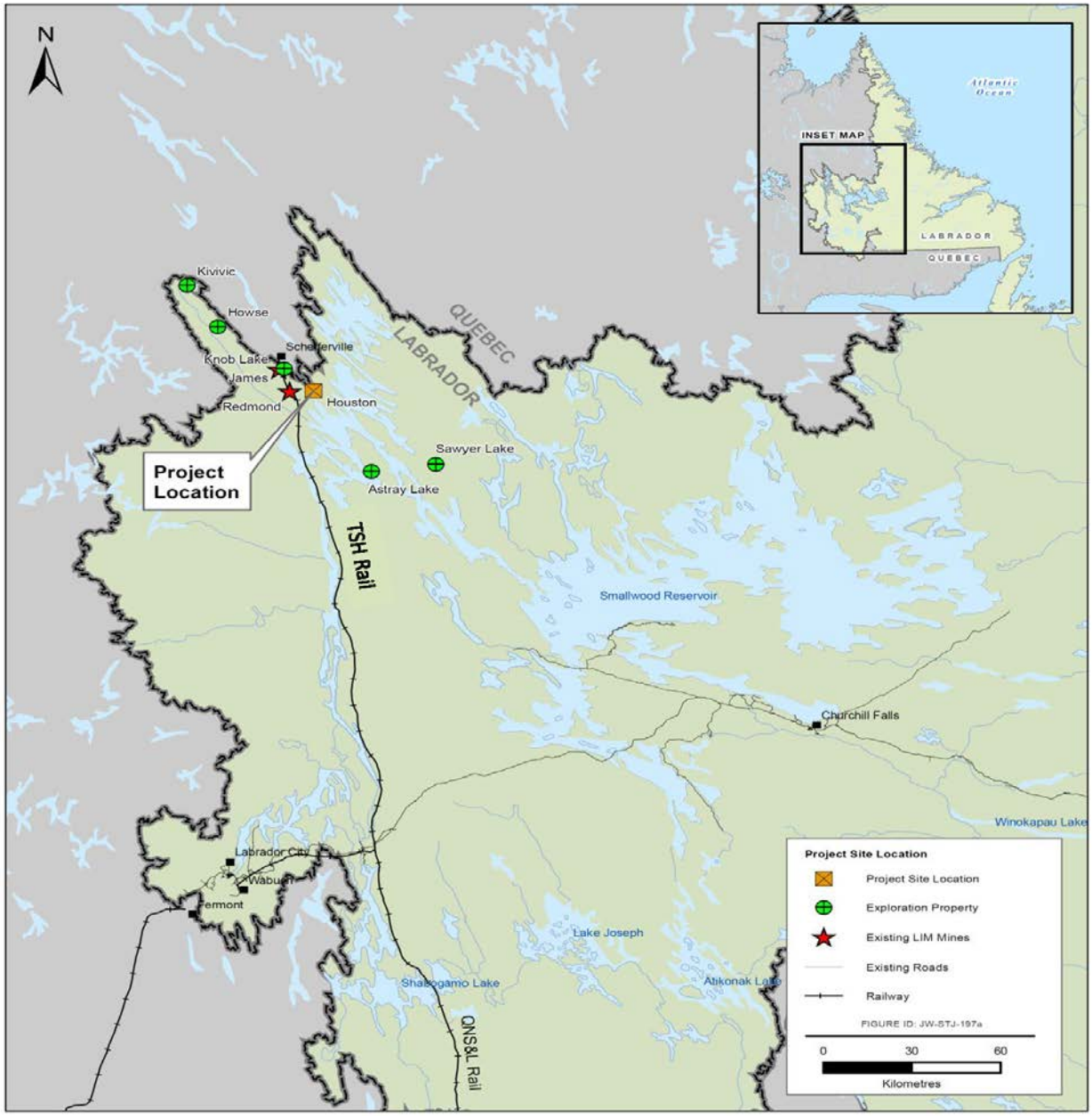
LIM plans to start mining the Houston deposits and initially process the DSO using a portable dry screening and crushing plant that will be re-located from the James Mine. During the construction of the Beneficiation Plant, the ore will be processed through the dry plant and will be sold to generate capital. Off-grade material will be stockpiled and stored until the wet beneficiation plant is in operation.

2.1 Geographic Location

The proposed Project is wholly within the province of Newfoundland and Labrador and is located approximately 10 km from LIM's existing approved James Mine; 1.5 km from the approved Houston Project; and 20 km southeast from the town of Schefferville (Figure 2-1). Approximate co-ordinates of the beneficiation plant site are N 54° 41' 35", W 66° 39' 43".

Access to the property will be via the existing public Menihek access road and the Houston haul road which will be constructed as part of the Houston Project. LIM currently holds a Surface Lease (#135) for the Houston 1 and 2 Project which includes a portion of the Beneficiation Plant site. Prior to commencing construction, LIM will request an amendment to the Lease to include all Project infrastructure.

Figure 2-1 Project Location



2.2 Physical Features

This Project is limited to the construction, development and operation of a wet beneficiation plant and supporting infrastructure.

When and where possible, existing infrastructure from James Mine and the approved Houston Project will be utilized to support the Project.

Below is a list of infrastructure associated with the Beneficiation Plant area. Refer to Figure 2-2 and Figure 2-3 for infrastructure location and site layout.

- Site Roads;
- Beneficiation Plant;
- Truck Shop, Warehouse and Workshop;
- Administration Offices and Lunchroom;
- Change House & Washrooms;
- Fuel Storage and Dispensing Facility;
- Oil Storage;
- Diesel Generators;
- Sewage Treatment System;
- Water Supply (potable and fire)
- Stockpiles (Lump Ore, Sinter, Fines, Ultra Fines and Plant Feed); and
- Reject and Process Water Pipelines.

A detailed description of the required infrastructure is provided in Section 2.4.

2.3 Environmental Setting

2.3.1 Physical and Biological Environment

The proposed beneficiation plant and associated infrastructure is located within the study area previously assessed in both the Schefferville Area Iron Ore Mine EIS and the Houston 1 and 2 Deposits Mining Project Environmental Registration. A large body of knowledge exists as a result of the numerous baseline surveys and extensive literature reviews conducted in support of these environmental assessments. A detailed and thorough analysis can be found within these documents while a brief summary is provided below.

2.3.1.1 Topography

The terrain in the area is comprised of parallel ridges and valleys trending northwest to southeast, with bare rock exposures and barrens. Average elevation of the properties varies between 500 m and 700 m above sea level.

2.3.1.2 Climate

The Schefferville area and vicinity have a sub-arctic continental taiga climate with very severe winters. Daily average temperatures exceed 0°C for only five months a year. Daily mean temperatures for Schefferville average -24.1°C and -22.6°C in January and February respectively. Mean daily average temperatures in July and August are 12.4°C and 11.2°C, respectively. Snowfall in November, December and January generally exceeds 50 cm per month and the wettest summer month is July with an average rainfall of 106.8 mm.

2.3.1.3 Terrestrial

The proposed project area is located in the Schefferville region, situated at the southern edge of the forest tundra (Hustich 1949; Hare 1950; Waterway et al. 1984). The area has been subject to surface disturbance associated with historical iron mining activities. Where not disturbed, the Project area contains varied land classes from exposed tundra/exposed bedrock with lichen and very scattered trees and shrubs to low wetland areas (including bogs). Intermediate land classes consist of varied forest types with spruce-moss and spruce-lichen predominating although merchantable timber was not noted. Observed canopy closure for all forest sites ranged from 0 to 80 percent, with most in the range of 30 to 60 percent (Labrador Iron Mines 2011).

2.3.1.4 Rare Plants

Rare plants are categorized as those species listed in Schedule 1 of the federal *Species at Risk Act* (SARA) and designated endangered or threatened under the Newfoundland and Labrador *Endangered Species Act* (NLESA). The SARA Public Registry, and the Annotated Checklist of the Vascular Plants of Newfoundland and Labrador (Meades 2010) were reviewed for information on the potential presence of rare plants within or in proximity to the Houston Project area. No listed plant species, protected federally under Schedule 1 of SARA or provincially pursuant to the NLESA, have been identified or are suspected to occur in the Houston Project area, (Labrador Iron Mines 2011).

2.3.1.5 Aquatic

There are no waterbodies within the proposed footprint of the Beneficiation Plant. The Gilling River and an unnamed tributary will be crossed by the process water and reject water pipelines, however the crossings will be along the Houston Haul Road which was previously assessed as part of the Houston 1 and 2 Deposits Mining Project. As previously noted, the Department of Fisheries and Oceans have determined that Redmond Pit is not fish habitat.

2.3.1.6 Wildlife

Various field surveys have been undertaken to identify the presence of wildlife species in the vicinity of the Houston Project area. These include wildlife and vegetation surveys conducted on the Houston Property in August 2009 (Stassinu Stantec 2010), two caribou surveys conducted in May 2009 (D'Astous and Trimper 2009) and May 2010 (D'Astous and Trimper 2010), and additional surveys conducted by AECOM during the summer 2011.

Caribou surveys conducted in May 2009 and May 2010 showed no use of the area by caribou at this time. During the caribou surveys, incidental observations of moose (*Alces alces)*, black bear (*Ursus americanus*), wolf (*Canis lupus*), river otter (*Lutra candensis*), lynx (*Lynx canadensis*), porcupine (*Erethizon dorsatum*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), Spruce Grouse (*Falcipennis canadensis*), Willow Ptarmigan (*Lagopus lagopus*), Golden Eagle (*Aquila chrysaetos*), Osprey (*Pandion haliaetus*), Bald Eagle (*Haliaeetus leucocephalus*) and American Crow (*Corvus brachyrhynchos*) were recorded (D'Astous and Trimper 2009; 2010). There was no marten (*Martes americana*) sign observed during the surveys in the Houston Project area, (Labrador Iron Mines 2011).

2.3.1.7 Species at Risk

No terrestrial wildlife species at risk were identified within the Project area during the field surveys conducted for the Houston Project. Two bird species of special conservation concern were observed in the region during the field studies for the James Redmond EIS: Rusty Blackbird, listed as a COSEWIC species of Special Concern and as vulnerable on Schedule C of the *Newfoundland and Labrador Endangered Species Act*; and the Grey-cheeked Thrush which is listed as vulnerable on Schedule C of the *Newfoundland and Labrador Endangered Species Act*.

2.3.1.8 Historic Resources

No archaeological or cultural sites are known or registered in the Houston Project area. A Stage 1 Historic Resources Overview Assessment (Stage 1 HROA) was completed in June 2008 prior to commencement of proposed exploration activities. Based on a site visit, no sites or materials of historic resources significance, or any areas of potential, were observed. Therefore, no mitigation measures were required or recommended in the assessment report prepared for LIM and the Provincial Archaeology Office (PAO) of the Newfoundland and Labrador Department of Tourism, Culture and Recreation (Jacques Whitford Limited 2009b).

In 2011, an archaeological assessment was conducted of the proposed Houston road by Stantec (formerly Jacques Whitford) on behalf of LIM. Based on the review of available information, including published and unpublished literature, archaeological reports, the Archaeological Site Record Inventory at the PAO and aerial photography, it was determined that given the nature and extent of ground disturbances that have occurred in the area from past mining activities as well as the prevalent topographic and hydrographic features, the majority of locations researched have Low historic resources potential, (Labrador Iron Mines 2011).

2.4 Construction and Development

The Project will benefit from the presence of existing approved infrastructure. Disturbance to the natural environment will be kept to a minimum and limited to the footprint of the Project infrastructure only.

The primary construction activities for the development of the beneficiation plant will include:

- Site preparation (clearing of vegetation, grading and excavation);
- Transporting equipment, construction materials and related supplies to site;

- Construction and erection of the plant,
- Construction / installation of the maintenance shop, and other buildings (e.g. office and washroom); and
- Environmental monitoring.

During construction, the requirement for temporary facilities (e.g. office, lunchroom, septic, potable water, power supply) will be satisfied through the use of existing infrastructure at the James Mine, and / or the Houston mine site. Once the beneficiation plant and all associated infrastructure have been constructed, all portable infrastructure from the Houston Project will be transported to the beneficiation plant location and utilized accordingly.

The camp and kitchen located at James Mine (Bean Lake Camp) will be used for both the construction and operation phases of the project.

The total footprint of the plant and associated infrastructure including roads and stockpiles is approximately 300 m x 250 m (75,000 m^2). An estimated 8.5 ha of vegetation clearing and 25,000 m^3 of earthworks will be required for the Project in its entirety.

An overview of the major construction activities is provided below.

2.4.1 **Roads**

Approximately 750 m of new site access/haul roads, ranging in width from 7 m to 30 m will be constructed at the plant site and to connect into the Houston Haul Road. (Figure 2-2).

2.4.2 **Beneficiation Plant**

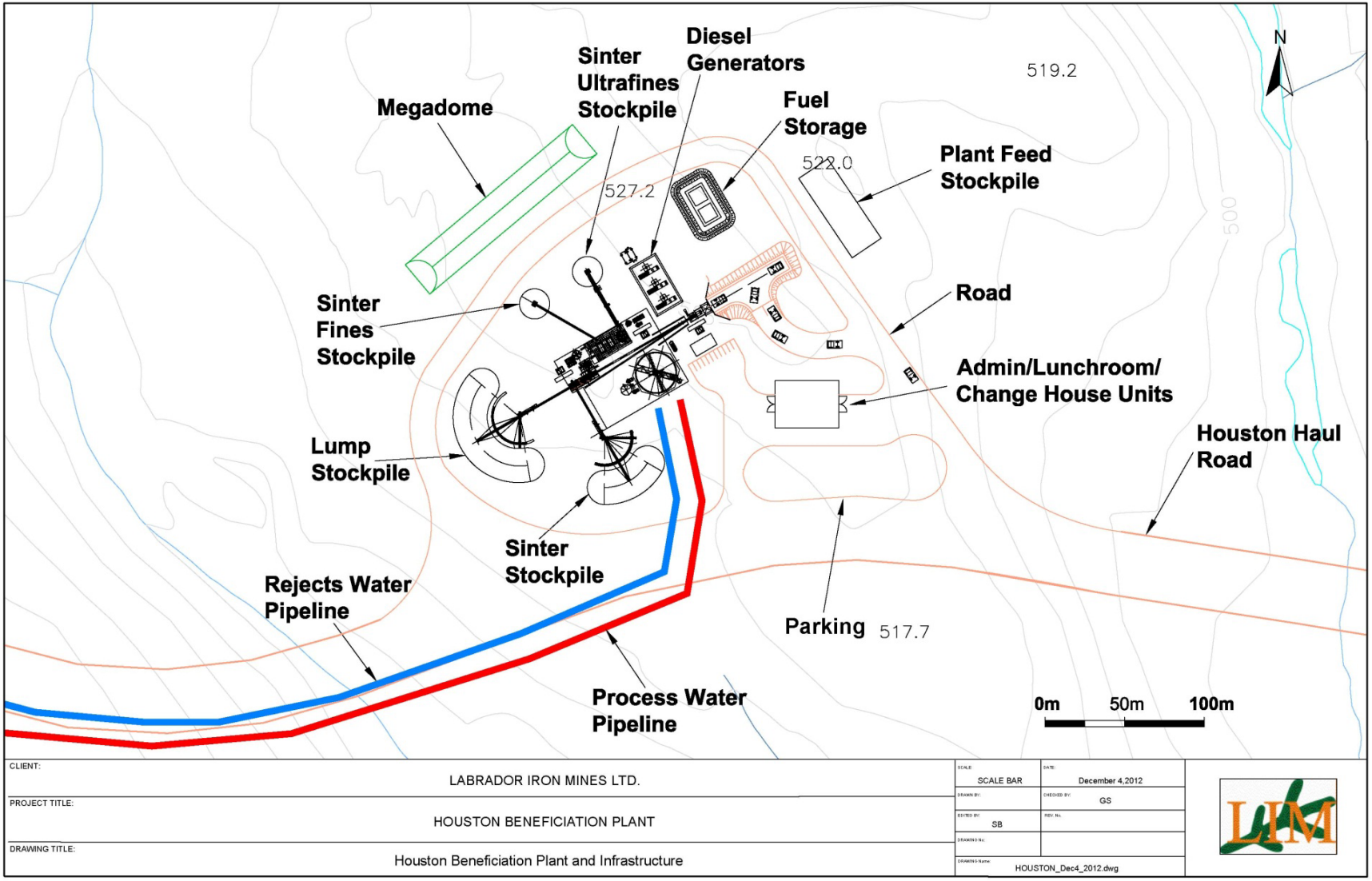
The beneficiation plant will occupy a footprint of approximately 20,660 m^2 and will consist primarily of crushing, screening, washing equipment, magnetic separators and conveyors.

2.4.3 **Truck Shop, Warehouse and Workshop**

The truck shop, warehouse and workshop will be housed within a Megadome measuring approximately 137 m x 24 m x 13 m. This will allow sufficient space for the maintenance and storage of heavy equipment (i.e haul trucks) and spare parts as well as a mechanical and electrical workshop.

The floor in the truck shop portion will be concrete and poured prior to the erection of the structure while the remainder of the flooring will be precast concrete slabs for lining only.

Figure 2-2 Houston Beneficiation Plant Detail View



2.4.4 Administration Offices and Lunchroom

The administration offices and lunch room will be modular trailer units. There will be a total of eight (8) units, each occupying a footprint of approximately 36 m^2.

2.4.5 Change House/Washrooms

The change house/washrooms (male and female) will be a modular unit occupying a footprint of approximately 30 m^2.

2.4.6 Fuel Storage and Dispensing Facility

The fuel storage system will consist of two bladders with a combined capacity of 227 m^3. The bladders will be equipped with liners for secondary containment, an oil water separator, fill pump and associated hoses and valves. The fuel will be distributed via two separate fuel dispensing systems.

The bladders will be used to supply fuel for the plant generators and mobile equipment and will be filled by a certified contractor, via mobile supply vehicles.

There will be containment berms located around the bladders and the oil water separator. Following construction of the berms, the liners will be installed and then the bladders will be placed into position.

2.4.7 Oil Storage

The oil storage consists of a 6 m^3 container complete with drum storage, flammable cabinets and secondary containment of sufficient capacity.

It`s anticipated that there will be approximately four 200 L drums of oil on-site at any given time.

2.4.8 Generators

The expected peak demand load from the beneficiation process is currently estimated at 3,517.70 kW and total connected load is 6,068.55 kW.

Electrical power will be generated by up to four (three on duty, one on standby) mobile diesel generators each running at 1825 kW. The generators will be self-contained units in weatherproof enclosures placed on concrete pads, with all the proper protection, controls and synchronizations in place.

A standby/emergency generator will supply power to emergency systems including the fire suppression system and other necessary items (e.g. lighting, pumps, air compressors).

2.4.9 Sewage Treatment System

Sewage will be treated/processed using a rotating biological contractor (RBC) Biodisk.

2.4.10 **Water Supply**

Potable Water

Potable water will be sourced from a domestic well(s) to be developed on site. The specific location has not yet been determined. A water treatment system capable of providing 16,250 L/day will be constructed.

Fire Protection Water

Fire protection water will be supplied to the wet plant via a 100 m^3 tank and distributed, as necessary, via adequate pumps and piping.

2.4.11 **Stockpiles**

There will be five stockpiles located at the plant location: four product stockpiles: lump, sinter, fines, ultra fines, as well as a plant feed stockpile. (Figure 2-2)

2.4.12 **Pipelines**

Two pipelines are required for the wet plant as detailed below. Both pipelines will be above-ground and placed along the shoulder of the Houston Haul Road. (Figure 2-3)

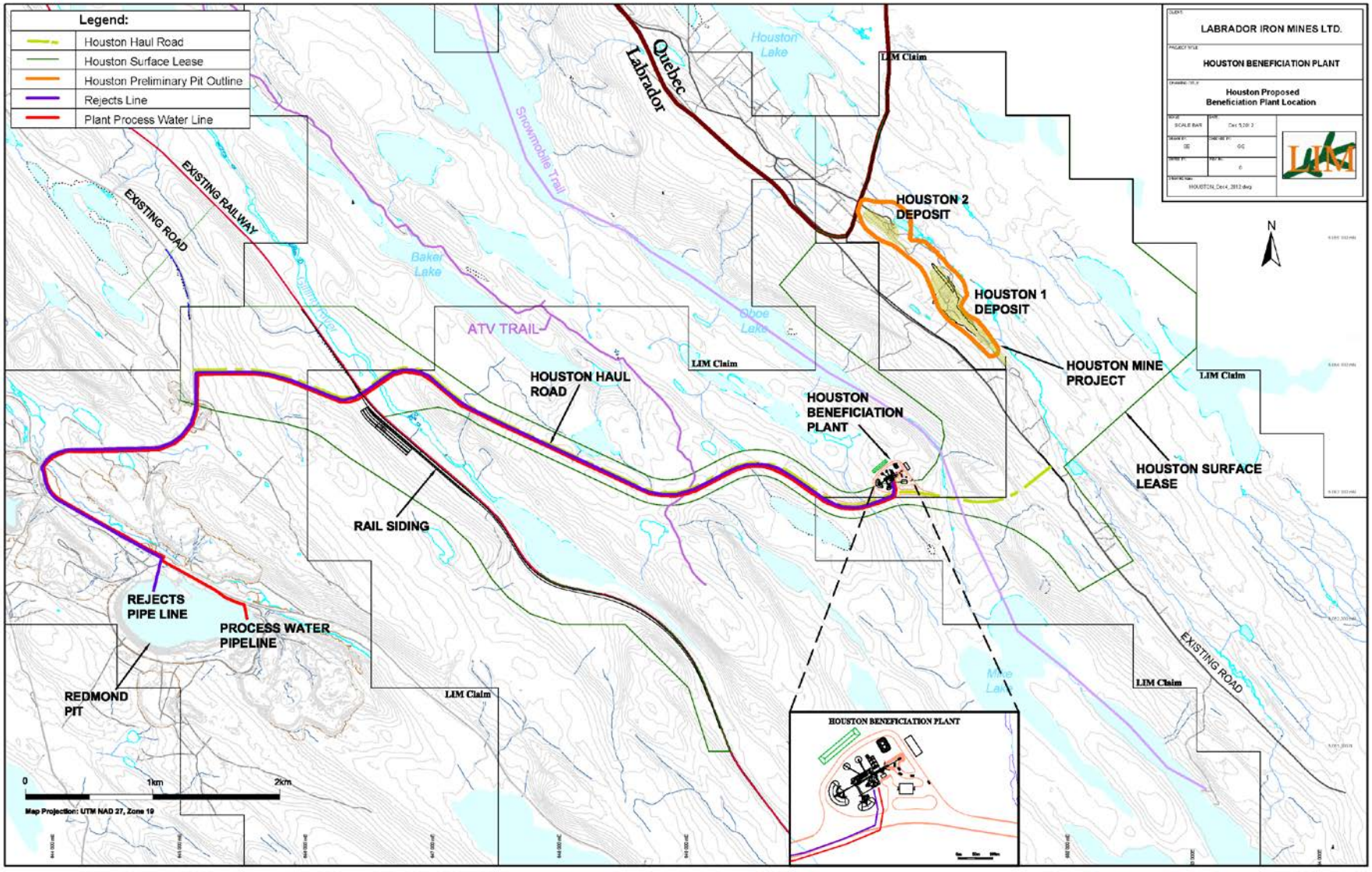
To support the pipelines, a 2 m wide by 0.75 m high support berm has been proposed for the approximate 9-10 km distance from the plant to Redmond Pit, with concrete blocks placed every 200 m for additional support.

Reject Water Pipeline

A 40 cm high density polyethylene (HDPE) pipe will carry the plant reject water to the discharge location at Redmond Pit. At the Gilling River bridge, the pipe will be encapsulated in an outer protective rigid pipeline for addition protection against accidental rupture or breakage.

Cleanout areas of the reject water pipeline will be established at low points along the pipeline. These areas will be used to drain the pipeline once per year for winter shut-down and in the emergency case that the pipeline becomes blocked and cannot be flushed. The standard procedure to shut-down the rejects pipeline will be to flush the solids to Redmond Pit. The clean out areas will be placed at selected low points along the pipeline where the pipeline can be emptied and discharged into natural or engineered depressions lined with geo fabric to retain solids. These locations will be selected areas away from rivers, streams or lakes. The lowest point in the pipeline is at the Gilling River. A valve and hose will be located at the lowest point such that the pipeline can be emptied into a vacuum truck and the material transported to Redmond pit.

Figure 2-3 Plant Location and General Site Layout



To minimize the volume handled at this point, clean out areas, as discussed above, will be established at higher elevations.

An emergency rejects sump will be located at the plant site in the event that the rejects water line would need to be drained in the case of an unexpected plant shut down.

Process Water Pipeline

A 50 cm HDPE pipe, paralleling the rejects pipeline, will transport process water to the plant from Redmond Pit.

2.5 Operations

The Beneficiation plant design is outdoors and due to the harsh winter climates in the Schefferville area, is scheduled to operate for 6 months per year (May through October). An option to extend the plant's operation for a longer period of time may be considered in the future, which would involve enclosing the plant within a building. Such an option would allow the wet plant to operate longer per year, leading to higher volume of processed product per year and, as a result, a reduction in mine life.

2.5.1 Process Description

The beneficiation process is outlined in Figure 2-4. The plant is designed for a nominal operating rate of 600 tph to a maximum of 720 tph and an overall ore recovery estimated to be 75%. The following are the major components of the plant, which are described below.

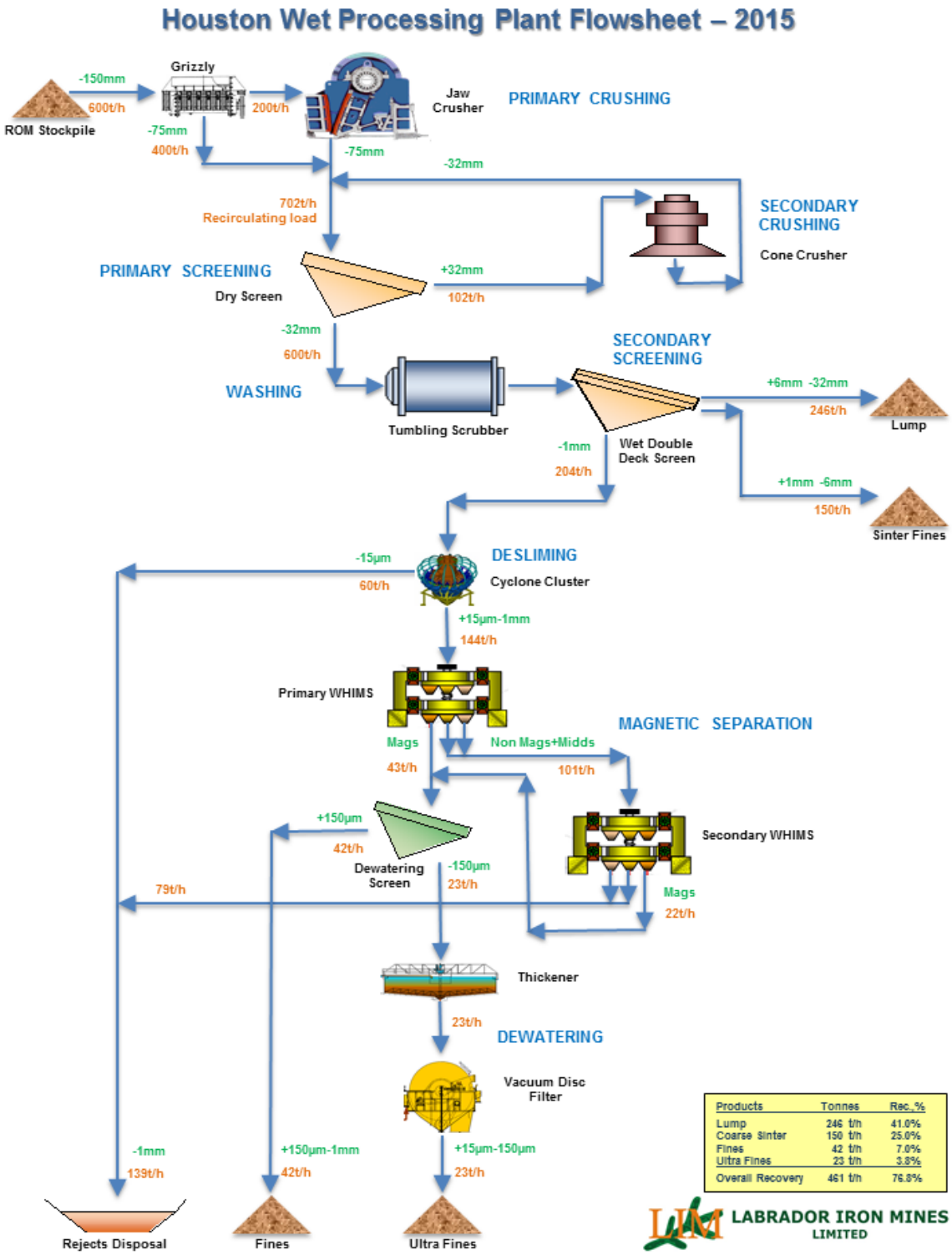
- Plant Feed Area (Primary Tip and Crushing);
- Scrubbing and Secondary Crushing;
- WHIMS Thickening and Filtration;
- Rejects Pumping;
- Plant Water; and
- Services.

2.5.1.1 Plant Feed (Primary Tip and Crushing)

The plant feed area includes the ramp for the haul truck, static grizzly, inload bin, grizzly feeder, primary (jaw) crusher, sacrificial conveyor and plant feed conveyor (Figure 2-4).

Run-of-mine ore will be dumped directly by trucks into the 250 tonne in-load bin fitted with static grizzly set at 300mm bar spacing for feed top size control. A vibrating grizzly feeder set at 75mm will draw ore from the in-load bin. The grizzly feeder oversize will be fed to the jaw crusher set at 75 mm to produce a 125 mm lump size. The product of the primary crushing station will be transported by a series of conveyors to the primary screen. A metal detector will be installed on the plant feed conveyor to prevent tramp iron from damaging subsequent equipment, particularly the secondary crusher. The under-crusher conveyor will be fitted with a programmable hammer sampler for automatic sampling.

Figure 2-4 Houston Wet Processing Plant Flow Diagram



2.5.1.2 Screening, Scrubbing and Secondary Crushing

This area includes the primary screen, scrubber, secondary crusher, secondary screen and several conveyors. The plant has been designed as a single line process, thus eliminating several machines, conveyors and lessening the footprint of the plant.

Primary screening will be carried out by a horizontal vibrating screen with aperture size of 32mm which will be operated in closed circuit with the secondary crushing circuit. The screen oversize with particle sizes +26mm will be conveyed to a 40t secondary surge bin while the undersize -32mm particle size, will gravitate to the ore scrubber. A pan feeder will reclaim material from the surge bin feeding it to the cone crusher which will be fitted with a coarse profile cavity set at 45mm producing 70mm lump size material. The secondary crusher product will be transported back to primary screening.

A short length belt conveyor will be used to aid the feeding of material to the ore scrubber to minimize clogging issues in the feed chute. Ore scrubbing will be accomplished for 30sec at 65% solid concentration to disintegrate agglomerated fines from rocks. Process water will be added in the scrubber feed at controlled flows relative to the plant feed rate to maintain the operating pulp density.

The discharge of the ore scrubber will gravity flow to a double deck secondary multi-sloped vibrating screen equipped with water sprays. The top and bottom deck of the secondary screen will be fitted with 6mm and 1mm opening panels, respectively. Materials retained on the top deck (-32mm, +6mm) and on the bottom deck (-6mm, +1mm) will be transported to the lump ore and sinter fines stockpile, respectively, via transfer conveyors and stackers. Materials passing the bottom deck (-1mm) will be pumped to the cyclone cluster.

Hammer samplers will be installed on the transfer conveyors of lump ore and sinter fines for product quality control and accounting.

2.5.1.3 WHIMS, Thickening and Filtration

This area consists of the cyclone cluster, primary and secondary WHIMS, dewatering screen, thickener, disc filter and a conveyor.

Seven out of the nine 10” hydrocyclones will be operated at any one time to de-slime the secondary screen undersize removing particles finer than 15 microns. The overflow of the cyclone, where majority of the fine particles will be reporting is then pumped to the rejects tank while the underflow will be fed to the primary Wet High Intensity Magnetic Separator (WHIMS). The non-magnetic materials from the primary WHIMS will be reprocessed in the secondary WHIMS to maximize recovery. The combined magnetic products of primary and secondary WHIMS will be pumped to the 5-deck Derrick Screen Stacksizer fitted with 300 micron aperture panels. The Derrick screen oversize (-1mm, +0.3mm) at 12% moisture will be conveyed to the fines stockpile while the undersize (-0.3mm, +0.015mm) will be pumped to the thickener. Thickener underflow at 75% solid concentration will be pumped to a vacuum disk filter as final dewatering step. The filter cake, with moisture content of 15%, will be conveyed to the ultra-fines stockpile.

At regular frequency, the cloth of the disk filter will be washed to reduce blinding, thus restoring filtration efficiency. The cloth wash water will be pumped back to the thickener feed well for pulp dilution.

2.5.1.4 Rejects Pumping

Three process streams will handle the plant rejects which include the cyclone cluster overflow, secondary WHIMS non-magnetic materials and thickener overflow. The plant rejects will be pumped to Redmond pit by three pumps operating in series. Each pump will be operated with full flow flush seal gland water that will be supplied by a dedicated positive displacement pump.

2.5.1.5 Plant Water

Redmond pit water will be the sole source of water for the process plant as well as for emergency supply. Raw water from the pit will be pumped by diesel-driven pumps to the 140m^3 process water and 10m^3 gland water tanks. Water from the vacuum filter drain will be recycled back to the plant though the process water tank while the filtrate will be pumped to the thickener for dilution.

2.5.1.6 Services

High pressure compressed air for servicing instruments and operating pneumatic tools will be supplied by an air compressor installed with an air dryer and air receiver.

2.6 Rehabilitation and Closure

A Rehabilitation and Closure Plan will be prepared and submitted, as required under the *Newfoundland and Labrador Mining Act*, Chapter M-15.1. In accordance with the Act, the Plan will detail the rehabilitation processes to be implemented at each stage of the project up to and including closure.

The plan will be considered a living document that will be reviewed and updated as necessary throughout the project life. Each year, Operation work plans, outlining schedule and planned rehabilitation activities for the Project, will be submitted to the Province in accordance with the provincial *Mining Act*.

LIM intends to employ and promote strategies and methods that will minimize adverse effects on the environment throughout the construction and operational phases of the Project which will aid in the overall rehabilitation process. Such mitigating strategies include:

- Terrain, soil and vegetation disturbances will be limited to that which is absolutely necessary to complete the work within the defined project boundaries;
- Wherever possible, organic soils, glacial till, and excavated rock will be stockpiled separately and protected for later rehabilitation work;
- Surface disturbances will be stabilized to limit erosion and promote natural re-vegetation;
- Natural re-vegetation of surface disturbances will be encouraged; and
- LIM will incorporate environmental measures in the contract documents. As such, contract documents will reflect the conditions specified for the construction and operation

of the project. Contractors will thus be contractually bound to comply with the environmental protection standards set by LIM and in effect, ensure compliance with the applicable federal and provincial regulatory requirements.

2.6.1 Closure

Approximately one year prior to the cessation of operations the rehabilitation and closure plan will be reviewed and updated in consultation with the Mines Branch, Department of Natural Resources. This final review will define the detailed closure rehabilitation design and procedures to fully reclaim the Houston Beneficiation Plant area.

Closure rehabilitation within the LIM development footprint will generally include the following activities:

- Clean-up, removal and proper disposal of potentially hazardous materials;
- Dismantling and off-site removal of buildings and structures (e.g. beneficiation buildings, conveyors, crushing plant, laydown areas, fuel storage areas);
- Removal of process water, reject water, and sewage water pipelines;
- Replacing overburden and re-vegetation of disturbed area; and
- Re-establishment of site drainage patterns, as near practical, to natural, pre-development conditions.

2.6.2 Post Closure Monitoring

As required, a post-closure monitoring program will be designed and implemented in consultation with appropriate regulatory agencies. Once physical and chemical stability of the site has been achieved, the land will be relinquished to the Crown.

2.7 Potential Sources of Pollution During Construction and Operation

The following are potential sources of pollution identified during the construction, development and operation of the beneficiation plant.

2.7.1 Surface Drainage

There will be a sump to collect spillage from the beneficiation plant process, which will be discharged via the rejects water pipeline into Redmond Pit. A perimeter berm will be constructed to direct drainage to the sump.

2.7.2 Rejects Water

Effluent originating from the beneficiation area will contain rock fines (20%) but will have no chemical constituents. Thus, washwater from the proposed wet plant discharged into Redmond pit will not impact the surrounding environment other than to build the level of solids in the pit for which it has ample capacity for the predicted plant life of 12 years.

2.7.3 Domestic Sewage

During construction, prefabricated skid mounted portable trailer units with a holding tank will be utilized. The tank will be pumped out by a certified contactor and disposed of according to applicable regulations.

During operations, domestic sewage will be treated with the Biodisk system to ensure that it is acceptable before discharging back into the environment. The concentrated waste will be collected by a certified contractor and disposed of in accordance with applicable regulations.

2.7.4 Solid Waste

Domestic waste will be generated in small quantities. Proper on-site storage will be provided and the waste will be disposed of off-site in accordance with applicable regulations. Other waste materials including non-hazardous industrial waste (e.g. tires, containers, wood pallets) and technology-related wastes (e.g. batteries) will be identified in LIM's Waste Management Plan and reused or recycled where possible and practical.

2.7.5 Hazardous Waste

It is not expected that the beneficiation plant will generate any hazardous waste. However, should any be generated, they will be stored in accordance with the appropriate regulations and moved off-site by a licensed contractor to an approved facility in accordance with applicable regulations.

2.7.6 Petroleum, Oil and Lubricants

Construction and operating activity poses a risk for the release of petroleum, oil and lubricants from operating equipment and machinery. All contractor and company equipment will be inspected on a regular basis to ensure compliance. Furthermore, storage tanks will be properly contained and emergency spill kits will be on-hand and available. Used oils and lubricants will be stored in proper bins and disposed of by a licensed waste oil handler.

In the event of a hydrocarbon spill/leak or other hazardous materials, the Schefferville Area Iron Ore Project Emergency Response Plan will be implemented. Response and clean-up activities will be conducted in accordance with applicable legislation and regulations.

2.7.7 Noise

As the plant is remote from any dwellings, noise is not anticipated to affect local residents. Noise will also be decreased by the topography as the site is situated within a forested area. Furthermore, use of industry standard equipment compliant with all applicable noise regulations and effective maintenance systems including regular inspections of all noise suppression equipment will be conducted.

2.7.8 Air Emissions

Emissions are anticipated to be minimal and limited to combustion and dust emissions resulting from vehicle and heavy equipment operation. There may also be fugitive dust arising from the excavation and transportation of the material and from plant operations (e.g.crushing).

Dust suppression methods, including water spray and water trucks will be used to mitigate any dust generated from plant operations or from the transportation of the material along gravel roads.

All vehicles and heavy equipment will have all required emissions and noise control equipment in place and maintained in good working order. An anti-idling policy will be implemented to limit emissions of vehicles/equipment while not in use.

2.8 Potential Resources Conflicts During Construction and Operations

2.8.1 Wildlife

Minimal clearing and grubbing is required, however, to avoid adverse effects on migratory birds and bird species of special conservation concern, all clearing activities will be conducted in accordance with the approved LIM Avifauna Management Plan. LIM's no hunting, fishing, or trapping policy will be implemented throughout the construction and operation of the Project, therefore no wildlife conflicts are anticipated.

2.8.2 Water Resources

No water resource conflicts are anticipated, as there are no stream crossings or other interactions with waterbodies in the Project area and no discharges to the aquatic environment.

2.8.3 Land Use

The proposed undertaking will not interfere with land use activities in the area. There are no seasonal or temporary residences located within a 5 km radius of the proposed Plant site. The reserves of Matimekush-Lac John and the Naskapi Nation of Kawawachikamach, are located in Quebec and are approximately 20 km and 35 km northwest of the Project area, respectively. There are no conflicts anticipated with traditional land use in the area by community residents.

There is an all-terrain vehicle trail and a snowmobile trail in the general vicinity (Figure 2-3), which is used by local residents for cross-country travel. The Project is not anticipated to have any adverse effect on these trails or on their use.

2.8.4 Vegetation

Clearing or grubbing will be kept to a minimum. Trees cut during clearing will be limbed, cut in 2 m lengths, stacked and made available to local residents.

2.8.5 Fish and Fish Habitat

There are no stream crossings associated with the construction of the pipelines and no waterbodies within 100 m of the beneficiation plant. Process water will not be withdrawn from, or rejects water discharged to any body of water other than Redmond Pit, which is not fish habitat. Therefore, effects on fish and fish habitat or other aquatic species are not anticipated.

2.8.6 Socio-economic

LIM has engaged in substantial community and public consultation activities including aboriginal consultation in both Labrador and Quebec (in the Schefferville area) and surrounding areas since 2008 and will continue to do so during the construction and operation of the plant.

This Project will add an additional economic stimulus to the Schefferville area as well as to the provinces of Newfoundland and Labrador and Quebec.

2.8.6.1 Aboriginal Consultation

LIM has signed Impact and Benefits Agreements (IBAs) for all its mining activities in the Schefferville area with the four Aboriginal Organizations with asserted land claims in the area. The four groups are: Innu Nation of Labrador; Naskapi Nation of Kawawachikamach; the Uashat mak Mani-Utinem First Nation (ITUM); and the Matimekush – Lac John First Nation. Consultations regarding the Houston Beneficiation Plant Project have been initiated at the most recent quarterly IBA Implementation Committee meeting held with the four Aboriginal groups on October 22, 2012 in Schefferville. Subsequent to that, project information has been provided to the ITUM, who were absent from the meeting and a request for a meeting issued. There were no concerns expressed by either of the organizations in regards to the proposed Project.

LIM has consulted with the four Aboriginal organizations on all phases of the Schefferville Area Mine Project and have obtained concurrence on the permits required for its construction and operation activities.

2.8.7 Federal Lands

There are no federal lands, including national parks or Canadian forces bases, proximate to the Project area and the Project is located wholly within the province of Newfoundland and Labrador. Thus, there are no changes to the environment anticipated to federal lands or to other provinces as a result of carrying out the Project.

2.9 Environmental Protection

In addition to the the Schefferville Area Iron Ore Project Emergency Response Plan, LIM also has an approved Waste Management Plan (WMP) and an approved Environmental Protection Plan (EPP) in place for the Houston Project. The WMP provides direction on waste handling, storage, transport and treatment of various waste produced. The EPP outlines practical procedures required for all personnel, contractors or suppliers to reduce or eliminate potential adverse environmental effects associated with the project. These documents will be updated, as

necessary, to reflect any required changes and enforced for the duration of the project. Prior to commencing operations all workers will be properly trained in the WMP, ERP and EPP procedures and responsibilities.

Environmental Compliance Monitoring will be conducted during all phases of the work program from construction to closure. Environmental data collection will be conducted to support the requirements for environmental protection.

Several monitoring studies already initiated for the James Mine Project, including, but not limited to air quality monitoring, caribou and wildlife monitoring, avifauna monitoring, groundwater and surface water quality monitoring, Real Time Water Monitoring and traditional environmental knowledge (TEK) consultation, are anticipated to be expanded to include the Houston Beneficiation Plant, as applicable.

LIM demonstrates commitment to the protection of the environment through its sustainable mining practices at its current operations and this approach will be implemented throughout all phases of the beneficiation plant project.

2.10 Employment, Occupations and Economic Benefits

As demonstrated at the existing James Mine, LIM is committed to the creation and implementation of employment equity practices to help achieve maximum employment and training benefits for the region, including the recruitment, training, and advancement of qualified visible minorities and women, and, as such, is fully prepared to implement a Women's Employment Plan in association with the development and operation of the Project. LIM is also committed to ensuring maximum benefit to Newfoundlanders and Labradorians who reside nearest the resources.

LIM currently has an approved Benefits Plan and a Women's Employment Plan in place, which will be implemented during the construction and operation of beneficiation plant.

2.10.1 **Construction**

As indicated in Table 2-1, approximately 112 employees will be required during the construction phase of the Project. Certain management positions will be required throughout construction and may overlap with positions at LIM's existing operating mines at the James and Houston properties. Construction activities are expected to commence in June 2014 and be completed in June 2015. It is anticipated that construction will be continuous with two 12 hour shifts per day. The number of construction personnel on site at different stages of construction may vary depending on the phase.

Table 2-1 Occupations Required During Construction

National Occupational Classification	Position Description	Number of Personnel
0711	Construction Manager	1
2131	Project Engineer	1
7611	Earthworks Construction Worker	12
7611	Civil Construction Worker	16
7611	Structural Construction Worker	10
7611	Mechanical Construction Worker	22
7611	Platework Construction Worker	8
7611	Piping Construction Worker	20
7611	Electrical Construction Worker	10
7611	Instruments Construction Worker	7
7611	Commissioning Personnel	5
Total		112

2.10.2 Operations

As indicated in Table 2-2, Approximately 23 full-time direct or contract employees will be required during the operation phase. The operating schedule is based on two 12 hour shifts per day on a continuous basis from May through to November annually.

Table 2-2 Occupations Required During Operation

National Occupational Classification	Position Description	Number of Personnel
8221	Plant Superintendent	1
8221	Shift Foreman	1
2142	Metallurgist	1
9231	Control Room Operator	2
9411	Crushers Operator	2
9411	Screening/Washing Operator	2
9411	Fines Area Operator	2
9415	Samplers	2
7311	Mechanic (Millwright)	1
7242	Electrician/Instrumentation	1
9411	Product Loader Operator	4
2211	Lab Technologists	4
Total		23

3.0 APPROVAL OF THE UNDERTAKING

Following release from the environmental assessment process, the Project will require various approvals, permits and authorizations prior to Project initiation. Table 3-1 summarizes anticipated permits, approvals and authorizations that may be issued by the province of Newfoundland and Labrador for the Project. There are no Federal permits, approvals or authorizations anticipated to be required for the Project.

Table 3-1 Anticipated Permits, Approvals and Authorizations

Permit, Approval or Authorization Activity	Issuing Agency
Provincial	
▪ Release from environment assessment process	Department of Environment and Conservation (DOEC) – Environmental Assessment Division
▪ Permit to Construct a Non-Domestic Well ▪ Certificate of Approval (C of A) to Alter a Body of Water, Schedule H: Other works within 15m of a body of water	DOEC – Water Resources Management Division
▪ C of A for Construction and Operation ▪ C of A for Generators ▪ Approval of Environmental Contingency Plan (Emergency Spill Response) ▪ Approval of Environmental Protection Plan	DOEC – Pollution Prevention Division
▪ Permit to Control Nuisance Animals	DOEC – Wildlife Division
▪ Blasters Safety Certificate ▪ Approval for Storage & Handling Gasoline and Associated Products ▪ Fuel Tank Registration ▪ Life and Safety ▪ Permit to Construct a Potable Water System ▪ Permit to Construct a Sewage Treatment System	Government Service Centre (GSC)
▪ Approval of Development Plan, Rehabilitation and Closure Plan, and Financial Security	Department of Natural Resources (DNR) – Mineral Development Division
▪ Surface Rights Lease (Amensment)	Department of Natural Resources (DNR) – Mineral Lands Division
▪ Operating Permit to Carry out an Industrial Operation During Forest Fire Season ▪ Permit to Cut ▪ Permit to Burn	DNR – Forest Resources

4.0 SCHEDULE

Subject to regulatory and environmental approvals, LIM anticipates commencing construction activities for the Houston Beneficiation Plant in June 2014 and finishing approximately one year

later (June 2015). There is no construction scheduled during the winter months (December to March). See Table 4-1.

Table 4-1 Proposed Construction Schedule

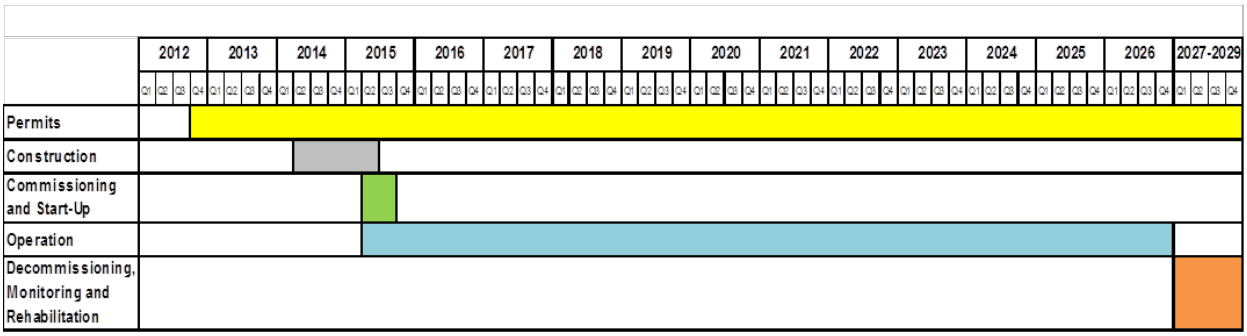
Activity	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec 14 - Mar 15	Apr-15	May-15	Jun-15
Earthworks & Civil										
Struct, Mech & Platework										
Piping										
Electrical & Instruments										

LIM anticipates commencing production in June or July of 2015. The estimated production schedule to year 2026 is based on 600 tonnes per hour (12,000 tonnes per day) capacity with a maximum of 720 tonnes per hour. Based on the 12,000 tonnes per day capacity and the expected overall recovery of 75%, it is estimated that a total of 1.5 million tonnes of product will be recovered from 2.0 million tonnes of feed per year over the 12 year life of mine (Table 4-2). The overall project schedule is shown in Table 4-3. Decommissioning, rehabilitation, closure and monitoring will occur during the 2026 to 2030 time period.

Table 4-2 Proposed Production Schedule

	Ore (Tonnes)	
Period	**Feed**	**Recovered**
2015	1,000,000	750,000
2016	2,000,000	1,500,000
2017	2,000,000	1,500,000
2018	2,000,000	1,500,000
2019	2,000,000	1,500,000
2020	2,000,000	1,500,000
2021	2,000,000	1,500,000
2022	2,000,000	1,500,000
2023	2,000,000	1,500,000
2024	2,000,000	1,500,000
2025	2,000,000	1,500,000
2026	2,000,000	1,500,000
OVERALL	23,000,000	17,250,000

Table 4-3 Project Schedule



5.0 FUNDING

The Project will be wholly funded by LIM with an estimated cost of approximately $65 million.

President + COO

Feb 4/13
Date

for J.F. Kearney
Signature of Chief Executive Officer

6.0 PROJECT RELATED DOCUMENTS

The following is a list of the various project-related documents used in the preparation of this document:

- AECOM, 2009, Breeding Bird Monitoring Report – James, Redmond, Silver Yards, Knob Lake, Houston, Howse, and Proposed Road Crossing Areas. Unpublished Report prepared for Labrador Iron Mines Ltd.
- AECOM 2011, Fish Habitat Assessment Report - Redmond Houston Road Corridor. Unpublished Report prepared for Labrador Iron Mines Ltd.
- AECOM 2011, Fish Habitat Assessment Report –Houston Property Unnamed Tributary. Unpublished Report prepared for Labrador Iron Mines Ltd.
- AECOM 2011, Environmental Noise and Vibration Baseline and Impact Assessment report – Houston Property. Unpublished Report prepared for Labrador Iron Mines Ltd.
- AECOM, 2012, Natural Environment Baseline Report – Road Corridor. Unpublished Report prepared for Labrador Iron Mines Ltd.
- Department of Fisheries and Oceans Canada. 2010 K. Simms. Letter of Advice, File NO.08-HNFL-NA1-0009. Labrador Iron Mines Schefferville Area Iron Ore.
- Labrador Iron Mines Limited, 2009, Environmental Impact Statement (Revised). Schefferville Area Iron Ore Mine (Western Labrador).
- Labrador Iron Mines Ltd. 2010. Avifauna Management Plan for Activities Associated with the James, Silver Yard and Redmond Properties.
- Labrador Iron Mines Ltd. 2010, Labrador Iron Mines Development Plan, Schefferville Area Iron Ore Mine (Western Labrador).
- Labrador Iron Mines Ltd. 2010, Labrador Iron Mines Rehabilitation and Closure Plan, Schefferville Area Iron Ore Mine (Western Labrador).
- Labrador Iron Mines Limited. 2011, Project Registration for the Houston 1 and 2 Deposits Mining Project.
- Labrador Iron Mines Limited, 2011, Waste Management Plan. Schefferville Area Iron Ore Mine.
- Labrador Iron Mines Limited. 2012, Houston 1 and 2 Deposits Mining Project Environmental Protection Plan (Supplemental to the Schefferville Area Iron Ore Mining Project Construction and Operation Activities EPP).
- Yetman D., Senior Habitat Biologist, DFO. 28/09/2008, Email to L. Wrong Labrador Iron Mines.