Environmental Impact Statement / Environmental Assessment Summary English

Springpole Gold Project

First Mining Gold Corp.

ONS2104

Prepared by:
WSP Canada Inc.

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Springpole Gold Project

Red Lake District, Northwest Ontario
Project #ONS2104

Prepared for:

First Mining Gold Corp.
Suite 2070, 1188 West Georgia Street
Vancouver, British Columbia, V6E 4A2

Prepared by:

WSP Canada Inc.
6925 Century Avenue, Suite 600
Mississauga, Ontario, L5N 7K2
Canada
T: (905) 567-4444

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

First Mining Gold Corp. (FMG) is proposing to develop, operate and eventually decommission / close an open pit gold and silver mine, including an ore processing plant and associated infrastructure, called the Springpole Gold Project (the Project). FMG is committed to developing the Project in a responsible manner that contributes to a healthy environment and prosperous economy, and that supports sustainable communities.

FMG is a publicly traded gold exploration and development company created in 2015, listed on the Toronto Stock Exchange under the trading symbol FF, United States OTC-QX under FFMGF, and Frankfurt Stock Exchange under FMG.

The Project is located in a remote area of northwestern Ontario, approximately 110 kilometres northeast of the Municipality of Red Lake and 145 kilometres north of the Municipality of Sioux Lookout (Figure 1–1). During an approximate 18 years from Project construction through to active closure, FMG plans to extract ore by open pit mining for onsite processing to meet global demands for gold and silver. The Project also has important critical mineral potential, hosting considerable tellurium which will be further evaluated during life of mine.

1.1 Environmental Assessment Context

The Environmental Impact Statement is intended to fulfil the requirements of the federal Environmental Impact Statement Guidelines. Federal Regulation Designating Physical Activities (SOR/2012-147) under the *Canadian Environmental Assessment Act 2012* identified the physical activities that constitute the designated projects that could require the completion of a federal environmental assessment. Provisions considered to potentially apply to the Project include:

- The construction, operation, decommissioning and abandonment of a new metal mill with an ore input capacity of 4,000 tonnes per day or more (Section 16(b)); and
- The construction, operation, decommissioning and abandonment of a new rare earth element mine or gold mine, with an ore production capacity of 600 tonnes per day or more (Section 16(c)).

FMG submitted a Project Description to the Canadian Environmental Assessment Agency (now Impact Assessment Agency of Canada), in February 2018. Based on the Project Description, the Canadian Environmental Assessment Agency determined that a federal Environmental Assessment was required and issued federal Environmental Assessment Guidelines for the Project on June 19, 2018, as amended on March 11, 2022.

In Ontario, Environmental Assessments are carried out in accordance with the Ontario *Environmental Assessment Act*, which generally applies to projects undertaken by provincial ministries and agencies, municipalities, and public bodies. Private sector projects are not required to complete an Individual Environmental Assessment unless required by a designating regulation under *Environmental Assessment Act* if there is a voluntary agreement to undertake an Individual Environmental Assessment.

Per Section 3.0.1 of the *Environmental Assessment Act*, a request for a Voluntary Agreement was submitted to the Ontario Ministry of the Environment and Climate Change (now the Ministry of the Environment, Conservation and Parks) to have the *Environmental Assessment Act* apply to the Project. It was determined that a single, coordinated provincial Individual Environmental Assessment process was preferred to address anticipated provincial Environmental Assessment needs.

FMG entered into a voluntary agreement with the Ministry of the Environment, Conservation and Parks on August 18, 2018, to conduct a provincial Individual Environmental Assessment for the Project that will satisfy the *Environmental Assessment Act*. The final Environmental Impact Statement / Environmental Assessment was prepared in accordance with the provincially approved Amended Terms of Reference and the requirements of the *Environmental Assessment Act*. Comments received from Indigenous communities, government agencies and other interested parties on the draft Environmental Impact Statement / Environmental Assessment have informed the final Environmental Impact Statement / Environmental Assessment and will continue to refine the design of the Project.

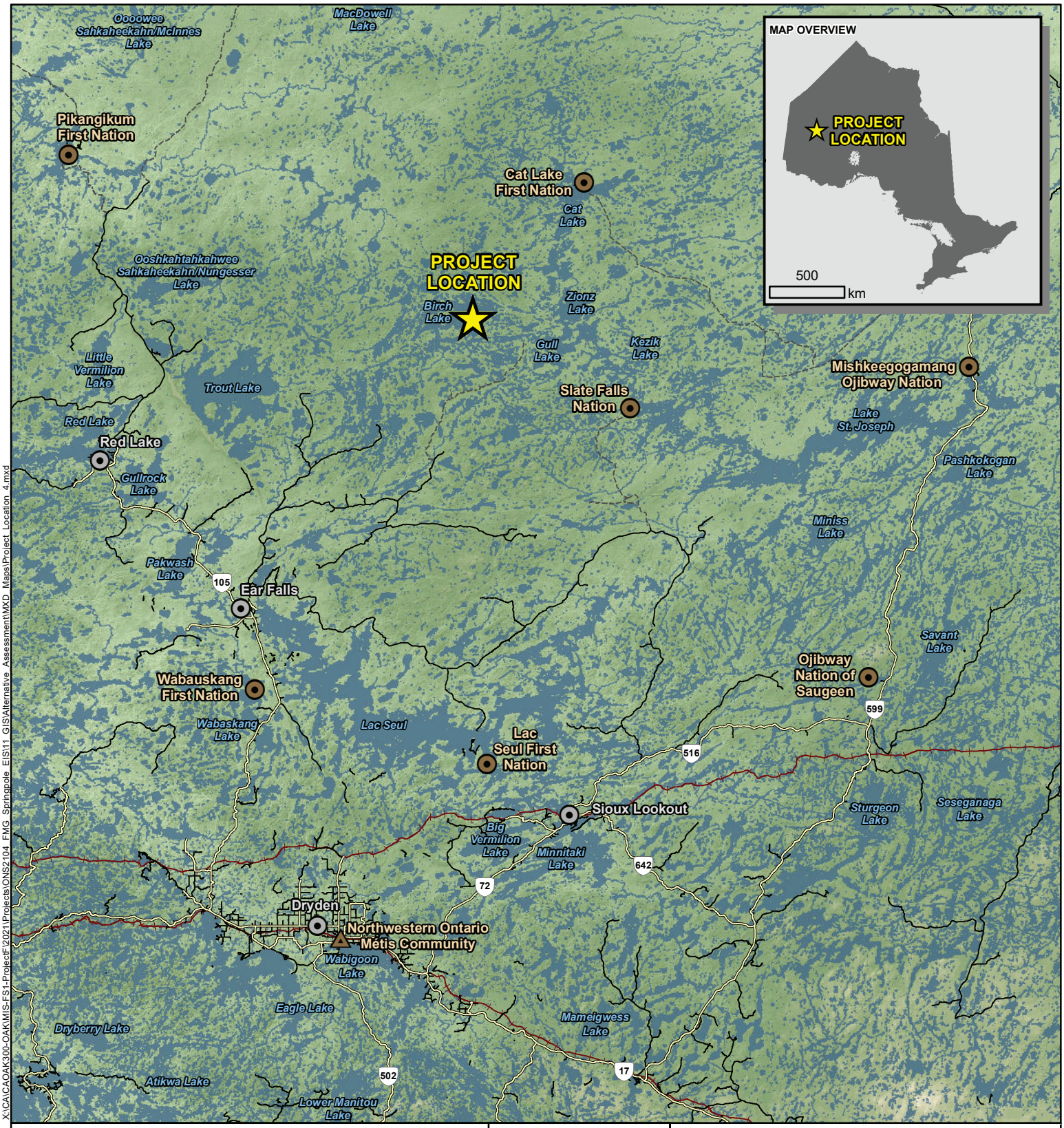
1.2 Consultation Process

The Environmental Assessment process is a planning tool to confirm the Project is considered in a careful and precautionary manner that avoids or mitigates potential environmental effects and considers the benefits and opportunities from the Project. A key part of the Environmental Assessment planning process initiated by FMG is the early and transparent sharing of Project information at key milestones and providing meaningful consultation opportunities on all aspects of the Project for Indigenous communities, regulators and other interested parties.

Consultation and engagement on the final Environmental Impact Statement / Environmental Assessment materials forms an important part of the overall Environmental Assessment and Project planning process. Consultation input and Project-related studies have been considered throughout the final Environmental Impact Statement / Environmental Assessment, including extensive baseline data collection, alternatives assessment and Project description refinements. Consultation and engagement will continue with agencies, the public, local Indigenous communities and other interested parties throughout the life of the Project. A summary of public participation and engagement with Indigenous groups is provided in Section 4.0.

1.3 About the Executive Summary

This document is the Executive Summary of the final Environmental Impact Statement / Environmental Assessment of the Project, as required by the Section 4.5 of the Guidelines for the Preparation of the Environmental Impact Assessment under the *Canadian Environmental Assessment Act* 2012. The Executive Summary provides a concise overview of the final Environmental Impact Statement / Environmental Assessment in a format intended for all audiences. It provides regulators, Indigenous communities and the public with a summary of the Environmental Assessment purpose, methods, findings and implications. It is meant to provide a high-level understanding of the proposed Project, its potential environmental and socioeconomic effects, and the planned mitigations.



LEGEND

- Project Location
- Town
- First Nation Reserve
- Northwestern Ontario Métis Community
- Highway
- Secondary Road
- Resource / Winter Road
- Railway

0 12.5 25 50 75 100 Kilometres

NOTES:
- Topographic information extracted from LIO, MNRF.

Datum: NAD83
Projection: UTM Zone 15N

N W E S

FIRST MINING GOLD

WSP

SPRINGPOLE GOLD PROJECT

Project Location

PROJECT N°: ONS2104	FIGURE: 1-1
SCALE: 1:1,500,000	DATE: September 2024

2.0 THE SPRINGPOLE PROJECT

This section introduces the proposed Project, including the Project's purpose and setting. It also provides information on Project development considerations, including the assessment of alternative means, and describes the Project components, activities and schedule that served as the basis for the Environmental Assessment. For illustrative purposes, key infrastructure associated with the proposed Project is shown in Figure 2–1.

2.1 Purpose of the Proposed Project

The purpose of the Project is to extract ore by open pit mining for processing on site to produce doré bars to meet global demands for gold and silver, and to provide a return on investment while supporting local employment and prosperity of the regional economy, including Indigenous economies. Doré bars are semi-pure products of gold and silver that will be transported off site and can be further purified for eventual use.

Critical minerals are essential resources that play a crucial role in various industries, including technology, manufacturing, defence, and especially renewable energy towards national and global decarbonization. Increase in current demand and forecasts are driving initiatives such as Ontario's Critical Mineral Strategy (Ministry of Natural Resources 2022); however, the deposit also contains critical minerals such as tellurium and fluorspar. Of the 31 critical minerals listed, tellurium, zinc, fluorspar and lithium occur in various quantities in and around the Project site. While silver is not currently listed as a critical mineral by the Canadian federal government, it is the most conductive element on earth, widely sought for industrial and green energy applications. Silver meets all the criteria listed by the Canadian government for a mineral to be listed, including its importance in the green economy along with the supply issues it faces domestically and globally. With over 24 million ounces of silver, the Project would be the most significant silver producer in Ontario and secure a domestic supply for over 10 years when industrial silver demand is projected to continue to rise with electric vehicle manufacturing and other green energy applications.

From construction through active closure, the Project will increase gross domestic product by $7.6 billion through direct, indirect and induced effects. This is equivalent to an average of just over $430 million per year. The Project will also create 43,880 person-years of employment (including direct, indirect and induced effects) in Canada during construction, operations and active closure.

Development of the Project will increase local and regional revenue, as well as business opportunities from which investments can be made in health and social services, community infrastructure, business development, training and employment. The Project will also increase the labour force capacity after operations cease to support future opportunities in the region and will result in the following infrastructure enhancements, which could be beneficial to the region.

2.1.1 Existing Facilities and Infrastructure

The Project site is an active mineral exploration area with established infrastructure and facilities present to support historical and ongoing exploration activities. These include a modular full-service exploration camp, fuel storage area, power generation equipment, an office, storage facilities, a sewage treatment plant and equipment yards. Recent exploration activities include geological mapping, geophysical surveys, diamond drilling and trenching.

The Project site is accessible by floatplane to Springpole Lake or Birch Lake during the late spring, summer and early fall. There is an existing exploration camp that can support approximately 40 people with heavy equipment used in the area. The Project site is currently accessible by floatplane direct to Springpole Lake during late spring, summer and early fall. In winter, the site is accessed by a wheel plane to an ice strip, which is constructed on Springpole Lake, and ice road. Following safety concerns with the Birch Lake ice road, a temporary overland winter access road was constructed late in 2023 from the northern end of the Wenasaga Road to the exploration camp to facilitate camp re-supply. During lake ice freeze-up in the fall and breakup in spring, the site is accessible only by helicopter.

2.2 Project Components and Activities

2.2.1 Buildings, Facilities and General Infrastructure

The Project will require the development of operational support buildings to facilitate onsite mining operations. Modular or pre-engineered steel frame buildings have been proposed and would be transported to site and installed during the construction phase. An accommodations complex will be required to provide accommodations for the work force on site. A modular facility for over 650 persons is expected to be required to support the construction phase and will be scaled back during operations. The facility will include a commercial kitchen, dining / recreation room and laundry facility. The accommodations complex location is southeast of the process plant site area along the mine access road to facilitate worker access to the mine and safety from other Project infrastructure.

Internal haul roads and service roads will link the principal site facilities to the mine access road, either directly or indirectly. Attention will be given to separating large haul truck traffic from other site vehicular traffic during ongoing design. Lighter vehicle roads will typically be 5 to 10 metres wide. For more remote locations, single lane roads may be established with pullout area(s). Culverts will be installed in low areas for cross drainage as needed for surface water management. Parking for buses, personal / contractor vehicles and other service vehicles will be available at the site.

2.2.2 Open Pit

An open pit mine is required to extract ore safely and economically for onsite processing. The pit is expected to be developed in a sequenced manner, starting with a portion to the northeast (Phase 1 pit) before transitioning to the main open pit. The ultimate pit, using a top of pit elevation of 409 metres above mean sea level and a bottom elevation of 88 metres above mean sea level, will be approximately 321 metres deep. The surface expression of the open pit will encompass approximately 132 hectares, and measure approximately 1.7 kilometres long and 1 kilometre wide. The open pit is proposed to have 12 metre benches, although some zones may have reduced bench heights as needed for stability. Inter-ramp angles will vary from 22 to 52 degrees depending upon the wall orientation and rock type. Mining widths of 35 to 40 metres are proposed, with preferred widths of 60 metres or more. The ramps from surface have an approximate 10 percent design gradient and will be either single or double lane width (27 to 35 metres width), designed to accommodate haul truck requirements.

The open pit mine production rate will vary over the life of the mine, but along with the ore stockpiles, will provide feed to the process plant, which has a typical throughput of 30,000 tonnes per day. The mine will generate about 101 million tonnes or 38.6 million cubic metres of ore, 20.4 million tonnes or 10.5 million cubic metres of overburden and 292 million tonnes or 133 million cubic metres of mine rock. The pit has a calculated mine life of approximately 10 years.

Pre-development of the open pit includes the construction of two dikes (west dike and east dike) to isolate a portion of the north basin of Springpole Lake during the first year of construction. The dikes include sufficient freeboard above the elevation of Springpole Lake to prevent any flooding during storm events. Dikes are essential for the safe and controlled dewatering of the open pit basin in advance of mining operations and have been successfully implemented at several other similar Canadian mining projects including the Diavik Mine and Gahcho Kué Mine in the Northwest Territories and the Meadowbank Mine in Nunavut. The dikes are designed to meet the factors of safety required by guidelines and regulations such as the Canadian Dam Association (2013, 2019) *Dam Safety Guidelines* and supporting technical bulletins and the *Lakes and Rivers Improvement Act* (RSO 1990, c. L.3). A 72-hour Probable Maximum Precipitation (400 millimetres) is used as the dike design factor. Instrumentation and monitoring will be installed within the dike fill and foundation materials to monitor the dikes. Earthquake design ground motion parameters have been determined for the dikes using the Natural Resources Canada seismic hazard calculator for the Laurentian Seismic Zone.

Once the open pit basin of Springpole Lake has been isolated using dikes, controlled dewatering and fish removal will occur with the involvement of interested local Indigenous communities. The controlled dewatering of the open pit basin will be completed in a manner to mitigate potential environmental effects on fish and fish habitat by managing and monitoring flow rates. The controlled dewatering is expected to take approximately six months to complete, based on continuous (24-hour, 7-day per week) pumping at a rate that can maintain Springpole Lake water levels within baseline natural variation, in accordance with Fisheries and Oceans guidelines. During the late stages of the open pit basin dewatering process, exposed lake bed sediment primarily within the open pit footprint will be preserved in temporary piles within the open pit basin for future re-use. These piles will be retained in the open pit basin to facilitate the creation of the fish habitat development area and reclamation at closure.

The open pit is planned to operate on two 12-hour shifts, 365 days a year. Conventional mining equipment (blast hole drill rigs, mining shovels, excavators, loaders, bulldozers and/or comparable equipment) will be selected to meet the mine production requirements. Rock (ore and mine rock) will be broken at the face using heavy equipment and explosives where necessary. Blasting patterns will vary according to the rock type, conditions and proximity to the dikes; however, the pit geology results in reduced required explosive use for the mine compared to other open pit mines where the rock is more consolidated.

2.2.3 Stockpiles

Separate stockpiles will be developed for the storage of overburden and lake bed sediment, mine rock, and mined ore. An estimated 11 million cubic metres of overburden and lake bed sediment would be stripped from the open pit basin and other locations on the Project site. Overburden not needed directly at other site locations for construction or progressive reclamation purposes is planned to be stored primarily in the surficial soil stockpile located east of the open pit.

Where practicable, surface organics and organic soils will be stripped and stored separately from the mineralized overburden at the surficial soil stockpile location as it has increased value for reclamation purposes. Overburden and surficial organics stripped from Project aggregate operations will be stockpiled at the aggregate locations to facilitate future reclamation of the aggregate extraction site(s).

Approximately 133 million cubic metres of mine rock will be produced by the Project. The non-acid generating mine rock will be preferentially re-used as a construction material for the Project, with the residual volume co-managed with the tailings produced by the process plant within a co-disposal facility.

Two ore stockpiles are to be developed: a high / mid grade stockpile, and a low grade stockpile located north of the process plant site. The high / mid grade stockpile will be removed and fully processed prior to construction and establishment of the fish habitat development area designed for closure. The stockpiles will be established by placing ore on a pad base constructed of non-acid generating mine rock that will provide a buffer between the ore and the native ground. Final design of the stockpiles will account for the nature of the material being managed to provide sufficient stability. An appropriate setback has been established to account for any minor slumping or sloughing during stockpile management.

Ore storage volumes vary but peaks at 9.9 million cubic metres near the end of Year 3. The ore stockpiles are expected to be fully consumed by the end of Year 9. After depletion of the high / mid grade stockpile, the area will be further restored and enhanced as part of the fish habitat development area, while the low grade stockpile area will be reclaimed as terrestrial habitat in accordance with the closure plan.

2.2.4 Ore Processing

Ore will be processed onsite at the process plant area using proven technology to doré bars for transport off site for sale. Excluding the primary crushing facilities, the following are contained within or immediately adjacent to the process plant:

- Primary gyratory crusher;
- Conveyor system for crushed ore;
- Semi-autogenous mill;
- Ball mill with hydro-cyclone cluster;
- Flotation circuit;
- Carbon in pulp leaching circuit;
- Elution and electrowinning gold room;
- Tailings cyanide destruction; and
- Tailings thickener.

Ore will be hauled either directly from the open pit or extracted from the ore stockpiles and fed into the primary apron feeder located in the process plant area. Crushed ore will be transported by conveyor to a covered crushed ore stockpile, which will hold approximately 16 hours of process plant feed. Crushed ore will be directed by the conveyor to the process plant, where it will undergo conventional ore processing in a series of circuits including comminution, concentration and separation, leaching and carbon adsorption, and gold recovery.

The crushed ore will be ground in a semi-autogenous mill, followed by a ball mill to complete the sizing process, and a hydro-cyclone cluster. In the cyclones, gravity and hydraulic forces separate the larger and smaller ore particles in suspension. Smaller particles in the cyclones tend to remain in suspension and are discharged as cyclone overflow to the flotation circuit. Larger particles will report to the ball mill for further grinding.

The hydro-cyclone overflow will flow through a three-stage flotation circuit in a series of tanks located adjacent to the process plant. The tanks will be surrounded by a walled concrete slab to provide secondary containment. The thickened ore slurry will then be leached in a series of tanks where oxygen and sodium cyanide are added within an alkaline environment to keep the cyanide in solution, to dissolve available gold and silver. The gold and silver dissolved in the cyanide solution is attached to the activated carbon in the carbon in pulp leaching tanks, which is then transferred to the recovery circuit and a pressurized elution circuit, followed by electrowinning to produce gold-silver precipitate. Finally, this precipitate is poured to form doré gold bars. A high efficiency of water recycling is achieved within the process plant. In addition, most of the activated carbon used in the process will be reactivated for re-use in the carbon in pulp leaching circuit.

Cyanidation is the only technically and cost-effective means of gold recovery from gold-bearing ore at a commercial scale for the ore type. The use of cyanide as a reagent to leach gold from ore is the standard practice throughout the industry, including at most other active gold mines in Ontario. Industry best practices are well established and will be used during the mixing and in-plant cyanide leaching process, and in the destruction and recycling of cyanide components in tailings prior to transport to the co-disposal facility for permanent storage. The Project will follow the International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold (International Cyanide Management Institute 2024).

Tailings are the primary by-product from the processing of ore. Prior to leaving the process plant, various treatment processes are available for removing cyanide from the tailings. In-plant destruction of cyanide in tailings using the sulphur dioxide and oxygen treatment process is well established and effective and is included in the Project design. The target concentration of total residual cyanide in the tailings after the cyanide destruction conform with the International Cyanide Management Code, and any low residual cyanide remaining in the tailings will naturally degrade when exposed to sunlight at the co-disposal facility.

Approximately 78 million cubic metres of tailings will be produced by the process plant over the life of the mine. Two types of tailings are proposed to be produced in the process plant: thickened non-acid generating tailings (80 percent of total tailings by mass) and conventional slurry potentially acid generating tailings (20 percent of total tailings by mass):

- Thickened non-acid generating tailings (approximately 62 million cubic metres): produced by passing a portion of the tailings after cyanide destruction through a tailings thickener in the process plant to produce a drier product that can still be transferred hydraulically by pipeline.
- Conventional slurry potentially acid generated tailings (approximately 16 million cubic metres): remaining tailings left in a conventional slurry form for long-term acid rock drainage mitigation.

These two tailings types will be co-managed in a co-disposal facility to best manage the potential for acid generation from the tailings in the long term and minimize the footprint of the Project and to facilitate operational efficiencies and reclamation.

2.2.5 Co-disposal Facility

Through a comprehensive alternatives assessment following the Environment and Climate Change Canada requirements, it was determined that the best means to manage mine rock and tailings for the Project would be in a single co-disposal facility with a dedicated cell for the potential acid generating portion of tailings. The primary advantages of a single co-disposal facility as compared to the use of a separate mine rock stockpile and tailings management facility is a considerable reduction in Project footprint, and greenhouse

gas emission reduction from reduced haulage of construction and mine waste materials (Appendix E). By thickening 80 percent of the tailings and co-mingling the thickened non-potentially acid generating tailings with mine rock, a relatively small portion of conventional slurry tailings remain for management. This approach reduces the volume of water present during operations in the south cell that is dedicated for the storage of conventional slurry tailings and further simplifies the closure strategy.

Co-disposal of mine wastes has been practiced in the mining industry for decades and for over 20 years the concept of purposely optimizing the different properties of tailings and mine rock has been a subject in the technical literature. The co-disposal facility is designed to take advantage of the different properties of the mine wastes, (tailings and mine rock). In particular, the lower permeability of the tailings will be used to provide an oxygen barrier for the mine rock. The use of soil and tailings as an oxygen barrier has also been successfully implemented in Ontario.

The co-disposal facility is proposed as a two-cell facility with a total surface area of approximately 380 hectares (Figure 2–1). It has been designed to effectively use non-potentially acid-generating mine rock for construction purposes and to permanently store potential acid-generating mine rock, non-potentially acid-generating thickened tailings and potential acid generating conventional slurry tailings. Overall, the majority of the co-disposal facility will be composed of mine rock by mass (roughly 65 percent) with the remaining 35 percent of the structure consisting of the co-located tailings. The non-potentially acid-generating tailings will be co-managed with the potential acid-generating mine rock in the north cell of the co-disposal facility, while the conventional potential acid-generating slurry tailings will be kept saturated in the south cell of the co-disposal facility to mitigate acid rock drainage potential.

An elevation difference will be maintained between the north and south cells so that runoff and tailings water reports to the south cell primarily by gravity. The thickened tailings will allow slightly steeper beaches to be formed during deposition to promote passive drainage through the internal dam and into the south cell. The internal dam will not be lined to intentionally promote water to pass through to the south, and enhancements to drainage including culverts could be added if needed.

The co-disposal facility design meets all relevant requirements of the Canadian Dam Association, as well as provincial requirements under the *Lakes and Rivers Improvement Act*. In addition, FMG will have a qualified geotechnical engineer dedicated to the safe design, construction and operation of the co-disposal facility. The major portion of co-disposal facility dams will be constructed on a robust bedrock foundation, and the remaining portions being constructed on areas of shallow overburden amenable to construction preparation. In addition to highly favourable geotechnical characteristics, the bedrock foundation uniformity across the co-disposal facility footprint provides highly effective mitigation for seepage management and capture.

The co-disposal facility design includes perimeter embankments constructed from non-potentially acid generating rock on the downstream side sourced from the open pit and onsite quarries. The north cell will have a centreline construction while the south cell will use a downstream raise construction method. The perimeter embankment of the south cell is designed to be lined with a geosynthetic liner or other low permeability material such as clay excavated from the open pit basin for seepage mitigation. A 120 metre setback is defined for the co-disposal facility in accordance with the MNR shoreline surface rights reservation policy, as well as a best practice to minimize impacts on local waterbodies.

The north cell (285 hectares) of the co-disposal facility will co-manage potential acid-generating mine rock and thickened non-potentially acid generating tailings. During operations, potential acid-generating mine rock will be trucked to the north cell for co--disposal, while the thickened non-potentially acid-generating tailings and potential acid-generating conventional slurry tailings will be pumped through a high-density polyethylene pipeline to the north and south cells, respectively. The intent of co-disposal in the north cell is for the placement of the thickened non-potentially acid-generating tailings to effectively encapsulate the potential acid-generating mine rock, thereby isolating the mine rock from atmospheric oxygen, which will mitigate potential acid generation and metal leaching concerns.

The south cell (95 hectares) will be designed to be water retaining and will comprise a slurry potential acid -generating tailings cell, with an internal water management pond during the operations phase. The south cell dam is proposed to be lined with a low permeable liner to mitigate seepage. Conventional slurry tailings will be pumped from the process plant to the south cell by means of a high-density polyethylene pipeline. The south cell will be operated to keep the potential acid-generating tailings in a saturated condition to similarly isolate the potential acid-generating tailings from atmospheric oxygen and restrict the potential for acid generation.

An Independent Geotechnical and Tailings Review Board has been formed and is composed of an independent panel of experts. The purpose of the Independent Geotechnical and Tailings Review Board is to provide independent oversight on the design, construction, operation, performance and closure planning for the co-disposal facility, with the objective of long-term safety and environmental protection.

2.2.6 Fisheries Compensation Components

Efforts have been made to design the Project to minimize encroaching on fish habitat; however, avoidance of fish habitat is not entirely feasible, given the location of the ore body and the number of watercourses and waterbodies in the area. During the life of mine, approximately 213 hectares of fish habitat is anticipated to be impacted, but a combination of reclaimed habitat at closure, the addition of the fish habitat development area and complementary measures will result in an overall net benefit to fish and fish habitat in the system.

The majority of the affected fish habitat is associated with the open pit basin so that mining can occur safely. Efforts have been made to minimize the disturbed area by placing dikes near the open pit while accounting for geotechnical foundation conditions, resulting in the anticipated preservation of 94 percent of Springpole Lake during operations, and returning lake area to 103 percent at closure. The primary mitigation (offset / compensation) option proposed for the Project will be the establishment of a new fish habitat area and reclamation of an expanded basin in Springpole Lake after mining ceases. It is fully expected that additional adjustments to offsetting and compensation measures under the *Fisheries Act* may be evaluated and made part of the final plan during the permitting process. However, the draft plan demonstrates that there are several opportunities available to meet or exceed regulatory requirements and ultimately increase overall fish habitat and productivity.

2.2.7 Water Management and Effluent Treatment Facility

Water management plans have been developed for the construction and operation phases of the Project and include the following best management practices:

- Contact water from the site is collected in ditches, sumps and constructed ponds and transferred into the integrated site water management system for containment, re-use, treatment and discharge as needed;

- Contact water is recycled as practicable, primarily for use in processing in the process plant;
- Treated effluent discharge location(s) are selected based primarily on the assimilative capacity of the receiving water; and
- The number of final discharge locations to the environment is minimized.

A water management plan for the operations phase of the Project was developed to describe the way site contact water will be collected, contained, treated and discharged to the southeast arm of Springpole Lake (the proposed receiving environment). A comprehensive review of site topography was completed to determine the location of ditches and local collection ponds to minimize the mine contact water footprint and prevent uncontrolled discharge to the environment. The water management system design uses standard engineering criteria for ditches, water storage ponds, and any necessary emergency spillway. Storage ponds and collection ditches are designed to manage the environmental design flood without discharge of untreated water to the environment. For the operations phase, the environmental design flood has been defined as a flood event with a 1:100-year return period, which is a typical requirement for mines in Ontario.

Contact water arising from precipitation and groundwater is collected in ditches, sumps and ponds and transferred into the integrated site water management system for containment, treatment and discharge to the environment in accordance with applicable regulatory requirements, as needed. The water management strategy is to collect site runoff in local collection ponds within each sub-watershed. The largest ponds are the co-disposal facility internal pond, central water storage pond and ponds located within the open pit sub-watershed. The water collected in these ponds is considered as contact water and requires treatment through the Effluent Treatment Plant prior to discharge to the environment. Designs and locations for perimeter ditching and ponds consider distances from nearby infrastructure and natural waterbodies and maintain setbacks from these features.

The co-disposal facility internal pond collects water from both the north and south cells and from co-disposal facility perimeter seepage collection ponds. Water collected in the co-disposal facility internal pond will be reclaimed to the plant/mill, reducing the need for freshwater demands from Birch Lake. Excess water will be pumped to the central water storage pond for monitoring, treatment and discharge to the environment in accordance with applicable environmental regulatory requirements, as needed. The inflow design flood is defined as the largest runoff event that a facility is designed to safely withstand and prevent overtopping of the water containment structures. The 72-hour Probable Maximum Precipitation has been used as the inflow design flood criteria for the internal pond in the co-disposal facility.

A central water storage pond is the ultimate collection point for contact water and will provide make-up water to the process plant as needed. Excess water will be pumped to the Effluent Treatment Plant for treatment, and subsequently discharged to the environment in accordance with applicable regulatory requirements. The storage required to contain the environmental design flood is estimated to be approximately 0.7 million cubic metres, assuming a minimum discharge / treatment rate of 1,200 cubic metres per hour required to manage the 1:100-year event.

All contact water from the Project mine site will be captured and managed by the water management system; this includes all haul roads but excludes the access road and treated effluent pipeline corridor. The open pit basin watershed storage will include temporary ponds to provide storage and house the dewatering pumps. The combined open pit basin contact water (surface and groundwater) will be pumped from the sumps to the central water storage pond.

Runoff from the southern end of high / mid grade ore stockpile will be collected by ditching, directed to a local collection pond, and transferred to the central water storage pond as needed. The low grade ore stockpile will require collection ponds at surrounding topographic low points to manage the surface water and seepage from the sub-watershed. Water from the surficial soil stockpile will be directed to a contact water management pond or a collection ditch and pumped to the central water storage pond. Ditching and berms will also be used to divert non-contact water from site facilities and haul roads.

The Effluent Treatment Plant will be designed to produce an effluent quality appropriate for discharge to the environment in accordance with applicable regulatory requirements, including the Metal and Diamond Mine Effluent Regulations, and the effluent concentrations required by the Ministry of the Environment, Conservation and Parks to protect the receiving water and aquatic resources. Best available technologies that are economically achievable will be considered for the Effluent Treatment Plant to meet protection requirements.

A biological process will be used based on the moving bed bioreactor concept, where plastic carriers with attached biofilm move freely in the water column and remove contaminants present in the wastewater. The moving bed bioreactor will also be used for cyanide destruction in addition to the in-plant destruction of cyanide in tailings using the sulphur dioxide / oxygen treatment process. Effluent treatment will continue to the removal of metals, with arsenic removal being achieved by ferrous sulphate and iron co-precipitation principles. This will be followed by sulphide precipitation for further metals removal with the dosing of sodium sulphide. Adjustment of pH will be controlled by dosing acid and caustic to alkaline conditions of 7.5 to 8 as needed. The final treatment stage involves flocculation, which includes a mixing tank before feeding to a clarification process. Following clarification, the fully treated effluent will be confirmed to meet all applicable regulatory discharge criteria before being released to the environment at the final discharge location in the southeast arm of Springpole Lake. This channelized section of Springpole Lake provides enhanced effluent mixing / attenuation, which will be supplemented with the use of a diffuser at the point of discharge.

Freshwater will be required so that sufficient water is available for processing at all times of the year, and as needed for specialty uses where use of recycled water is not appropriate. A freshwater intake is proposed for Birch Lake, a very large waterbody located close to the primary freshwater use locations (process plant and accommodations complex). The intake will be located and designed to minimize environmental effects, including potential fish entrainment and impingement. Freshwater will be pumped from Birch Lake to water storage tank(s) until needed. Approximately 2.14 million cubic metres per year of freshwater will be required for the process plant and an additional 0.03 million cubic metres per year for the accommodations complex, on average, over the Project life. A potable water treatment system will be established to treat water intended for human consumption, although bulk bottled water may be used for drinking purposes, particularly during the construction phase.

2.2.8 Fuel and Chemical Storage

Chemicals requiring use and storage on the Project site will include process-related chemicals and reagents, fuels (diesel, gasoline, propane), and equipment maintenance materials (oils, grease, lubricants, coolants). All chemicals will be transported, stored and handled in accordance with applicable regulations and best management practices.

Most of the fuel required at the Project will be diesel needed to operate the heavy equipment fleet. A fuel depot will be established south of the process plant site and truck shop to store fuel products, and will be accessible to the mine fleet for fuel dispensing. The fuel depot is expected to store about 150,000 to 250,000 litres of ultra-low sulphur diesel ,and approximately 20,000 litres of diesel exhaust fluid. Smaller quantities of gasoline will also be used for selected small trucks, all-terrain vehicles, snowmobiles, boats, and gas-powered tools. Diesel and gasoline will be stored in double-walled Enviro tanks and provided with protection to guard against possible vehiclular collisions. All liquid fuel transfer areas where there is a reasonable potential for spills will be constructed as lined aprons and fitted with catchments to contain any fuel that might inadvertently be spilled. Automatic shut-off valves and other such equipment, as dictated by best practice, will be installed to further reduce the risk of spills during fuel transfer operations. Additionally, a limited quantity of aviation fuel may be retained to support helicopter use, with Jet B fuel stored in appropriately secured drums in a lined area at the airstrip.

2.2.9 Solid Waste Management

It is expected that the Project will produce approximately 45,000 to 65,000 cubic metres of non-hazardous waste between construction and closure. Non-hazardous solid waste, such as food scraps, refuse, fabric, metal tins, scrap metal, glass, plastic, wood, paper and similar materials, will be sorted and prepared for recycling off site where possible. Non-recyclable waste material will be transported to an approved waste management facilities located off site, such as in Ear Falls and/or Sioux Lookout. The Municipality of Ear Falls has confirmed capacity and approval to accept non-hazardous wastes from the mine. An open burn area may be requested on the Project site for burning of paper and clean wood wastes in accordance with provincial approval requirements.

Special management solid wastes will be stored in sealed containers in lined, bermed areas (or in other means of secondary containment as appropriate). Used lubricants and associated materials will be stored in tanks with secondary containment and shipped off site by a licensed disposal company. Small quantities of other used fluids, such as cleaning solvents and degreasing agents, will be classified by type and transported off site to licensed processing facilities in accordance with applicable regulations and best management practices.

2.2.10 Domestic Sewage

Domestic sewage and grey water from the accommodations complex will be treated by an appropriately sized packaged sewage treatment plant. The plant will produce an estimated 3.4 cubic metres per hour of treated effluent. Treated effluent from the domestic sewage treatment plant will be discharged to the environment with the treated site effluent. Sewage sludge from the plant is proposed to be vacuum-trucked off site to a licensed facility. Outlying site facilities are expected to be provided with holding tanks which will be periodically emptied and transferred for treatment in the onsite sewage treatment plant.

2.2.11 Aggregate Sources

The primary source of material for site construction, including for the construction of the dikes, co-disposal facility dams, haul roads, onsite access roads, the process plant site and other and building foundations, is expected to be non-acid generating mine rock from the open pit development. Two primary quarry locations are proposed to provide non-acid generating construction material for the Project: Fish habitat development area; and co-disposal facility quarry.

The fish habitat development area is proposed to provide fish habitat offsetting and compensation at closure. To facilitate a small overall Project footprint, non-acid generating material will be quarried from this area during construction and operation rather than developing a dedicated quarry at another location. An estimated 3.8 million cubic metres of non-acid generating rock will be available from the fish habitat development area. A quarry will be established during construction in the north cell of the co-disposal facility to reduce hauling distances during the construction of the co-disposal facility and reducing the overall height of the co-disposal facility.

Sand and gravel will be required primarily for backfill, drainage bedding and roads (sub-base, base and surface). Sand and gravel sources are expected to be required potentially for site construction, as well to build the mine access road to the Project site.

2.2.12 Access Road

The Project site is remote and only accessible by floatplane during the open water season and by ice road for a short period of time in the winter. A two-lane, all-season gravel access road is proposed as the primary Project access, which would extend approximately 18 kilometres from the end of the existing Wenasaga Road, which ends north of the Birch River crossing to the mine site (Figure 2–2). The Wenasaga Road is a public road that is currently used over most of its length primarily for regional forestry activities. There are no communities located along the route. The Wenasaga Road is currently approved as a primary Class public road, under the care and control of Dryden Fibre. FMG is continuing to work with Dryden Fibre to align the forest management road upgrades within the approved corridor to support the Project as needed. A security gate house and signage will control access to the mine site at a location to be determined in consultation with Cat Lake First Nation, Slate Falls Nation and the forestry road owner.

The proposed access route is the most direct and feasible route from the existing road network, avoiding major waterbodies and minimizing new disturbance. An updated alignment has reduced the number of potential water crossings from four to one. The road will have a travelling surface of approximately 9 metres. It is expected that the single minor watercourse crossings will be established using corrugated steel culvert(s), designed and installed to meet all regulatory requirements, including for fish passage. Ditching and drainage management culverts (cross drainage) may also be installed at low-lying areas if needed. Culverts will be inspected regularly to remove any blockage.

2.2.13 Airstrip

An airstrip will be co-located with the mine access road to transport personnel and equipment to the site on a less frequent basis (approximately two flights per week). And would be located approximately 2 kilometres southeast of the process plant site, oriented northwest–southeast as shown in Figure 2–2. The airstrip will be sized to accommodate Dash 8 or similar aircraft, with a runway length of approximately 1,000 metres and a width of approximately 30 metres. Co-locating the airstrip with the mine access road and the mine site will minimize additional footprint expansion and potential environmental impacts. The runway will be designed to meet applicable Transport Canada and other regulatory requirements. The airstrip does not meet the definition of an aerodrome as a designated physical activity as per the federal Regulations Designating Physical Activities (SOR/2012-147); however, the effects of the construction, operation and closure of the airstrip including up to two flights per week on noise and wildlife have been assessed.

2.2.14 Power Supply and Associated Infrastructure

During the initial construction phase, diesel-fired generators are expected to be the primary power supply until a transmission line connecting to the regional electrical grid can be constructed. It is expected that less than 5 megawatts of diesel-fired generation will be needed. Once the permanent power system is in place, the diesel generators will provide standby / backup power capacity in the event of temporary grid power outages.

A 93 kilometre, 230-kilovolt overhead transmission line is proposed to tie the Project into the Wataynikaneyap 230-kilovolt line between Dinorwic and Pickle Lake (Figure 2–2). The proposed transmission line route has been established to minimize overall length, reduce environmental effects and respect Traditional Land Use by adjacent Indigenous communities. Since the draft Environmental Impact Statement / Environmental Assessment was submitted for comment, engagement with the Slate Falls Nation resulted in optimizing the transmission line route to pass north of the community of Slate Falls adjacent to the existing E1C line, thereby reducing the length of new linear corridors created and avoiding important land use areas. Traditional Land Use information shared by Mishkeegogamang Ojibway Nation also noted several land use values located along the southern end of Alternative 3 transmission line route which further informed the optimisation of the transmission alignment. The transmission line is expected to be composed primarily of single, steel pole structures, established within a 40 metre wide corridor, much of which follows the existing E1C line.

Additional cleared corridor width may be required at turning points, or where pole anchors are needed (such as in poor ground conditions), as well as for temporary laydown area(s) and access roads. The switching station at the connection point with the Wataynikaneyap transmission line will have a footprint of about one acre. The incoming electrical power from the 230-kilovolt transmission line will be stepped down in an onsite substation for site distribution. The lines will be located within the plant site in cable trays or via underground duct banks as needed, but overhead powerlines will be used to distribute power to more distant facilities such as the mine and accommodations complex areas.

2.2.15 Labour Force

Mine construction and development will occur over an approximately three-year period. During the construction period, the majority of direct employment opportunities are expected to be filled directly by contractors as is typical of mine developments. Regional and local businesses and hiring local labour, with a focus on Indigenous peoples and others in the local area, will be encouraged. Employment opportunities with contractors are expected to include equipment operators, truck drivers, labourers, electricians, mechanics and other tradespeople. The estimated direct workforce required during the operations phase is 450 people. Four general types of jobs are anticipated to be required during operations: entry level (technical and trades), trades, middle management and supervisory. At this time, all positions are expected to be based at site.

2.3 Conceptual Closure Plan

2.3.1 Overall Approach

Mine decommissioning and closure will be completed to satisfy the Rehabilitation Standards under Ontario Regulation 35/24 of the *Mining Act*. The primary goal of decommissioning and closure of the mine site is to establish a site that is physically, chemically and biologically stable. The Project footprint will be rehabilitated to a productive and natural state as practicable. The reclamation and decommissioning / closure objectives for the Project include:

- Re-establish natural drainage;

- Rehabilitate disturbed lands;
- Confirm site runoff meets regulatory criteria;
- Establish a self-sustaining vegetative cover; and
- Creation of functional wetland habitat.

Infrastructure will generally be removed unless otherwise stipulated, such as based on agreements with the respective authorities and local communities. The Project site will be revegetated to support plant, wildlife and fish communities (or could be considered for other land uses as applicable). It is expected that revegetation will occur through active seeding and hand-planting of seedlings of commercially available, native plant species, as well as natural revegetation from local vegetation communities.

FMG has developed a closure strategy based on the current Project and has aligned the strategy with the cultural and socioeconomic objectives of local Indigenous communities. The Project has prioritized the maintenance of a small footprint to minimize impacts on the land prior to and following closure. This included co-locating the required quarries and high to mid grade ore stockpile with the co-disposal facility and fish habitat development footprints, and also co-locating the tailings and mine rock storage into a single facility. Closure activities include the reclamation and restoration of the adjacent lands, such as the low grade ore stockpile, the plant site and water management system. The Project has been designed to protect the environment at closure, and rigorous monitoring plans will confirm that the site conditions and drainage are as expected to allow re-use of the lands for Traditional Land Use.

Reclamation activities that can be performed prior to final closure and that do not pose a barrier to daily operations will be considered for progressive reclamation. Progressively reclaiming facilities and site features where practicable reduces the amount of work and time required at final closure. It also provides useful knowledge to improve final reclamation success, particularly with respect to revegetation methods.

2.3.2 Final Reclamation

Once mining concludes in approximately Year 10, the open pit basin will start to fill with water by direct precipitation and through groundwater infiltration from the surrounding bedrock. Without enhancement, it would take decades (approximately 30 to 40 years) for the open pit basin to refill to the same level as Springpole Lake. To considerably reduce the filling time, supplemental water from Springpole Lake is planned to be transferred to the pit in a controlled manner over a period of approximately four years while maintaining lake water levels within natural variation. The north end of the open pit is proposed to be backfilled to facilitate relocation of the haul road further from Birch Lake. The recontouring of the north end of the pit will also allow an enhanced littoral area for future fish habitat measure.

During the pit filling phase after mining is completed, an engineered spillway or siphon within one or both dikes is proposed to enable controlled transfer of water from Springpole Lake into the open pit basin to expedite filling of the pit. The open pit basin will be returned to the average pre-development water level of Springpole Lake (approximately 391.23 metres). The water transfer rate would be adjustable to reflect between 10 and 15 percent of the inflows to the lake based on Fisheries and Oceans guidance, which indicated that this reduction in instantaneous flows is unlikely to have detectable ecological effects on the downstream habitats. Water level monitoring will occur throughout the refilling process so that lake levels are maintained within natural variation.

Improvements in surface water quality within the isolated area are predicted to occur over time as filling occurs, and can be attributed to several time-dependent factors, including submerging of pit walls and cessation of sulphide mineral oxidation; reduced loadings from co-disposal facility seepage as the hydraulic gradient lessens; the input of direct precipitation to the lake surface increases relative to pit wall runoff; and the development of pit lake stratification serves to isolate more saline water quality. Water quality will be regularly monitored as the open pit basin fills. The basin will be maintained at a target level below the natural Springpole Lake elevation if needed, until such time as all regulatory requirements for reconnection are met.

Once the water quality in the refilled basin meets, and is predicted to continue to meet, all requirements, the water level will be increased to an eventual equilibrium water level controlled by the natural Springpole Lake elevation. Current modelling indicates that under average conditions reconnection could occur by Year 5 of active closure. The dikes will then be lowered, using appropriate methods and mitigation measures, to minimize environmental disturbance to establish a permanent reconnection between the filled basin and Springpole Lake. The dikes will be lowered and recontoured on the open pit basin side of the structure to provide additional spawning habitat opportunities for Lake Trout.

The operational design and the decommissioning and closure concept for the co-disposal facility have been developed to promote long-term chemical and physical stability, minimize erosion, provide long-term environmental protection and minimize long-term maintenance requirements. During progressive reclamation or at closure, the non-acid generating mine rock dams of the co-disposal facility will be covered as practicable with a growth medium and revegetated with commercially available native species or other approved species.

The co-disposal facility closure concept involves: 1) continuing to direct runoff from the north cell to the south cell; 2) maintaining minimum pond (or no pond with thick coarse rockfill cover) to maintain saturated potential acid generating tailings in the south cell; and 3) implementing an overflow spillway at the south cell to safely convey excess water (including the environmental design flood and inflow design flood) to the environment. Preparing the co-disposal facility for closure will involve the following:

- Construct an overflow spillway at the south cell perimeter dams to safely pass the inflow design flood to environment. The overflow spillway could potentially be located at the southeast and direct the flows to the open pit or Springpole Lake;
- Following completion of life of mine potential acid generating mine rock disposal within the north cell, deposit non-acid generating tailings over the entire north cell surface to fully cover the potential acid generating mine rock and limit oxygen ingress;
- Vegetate the tailings or, if necessary, place and grade an erosion protection cover over the entire north cell surface and direct all runoff to the south cell;
- Following completion of life of mine potential acid generating tailings deposition within the south cell and upon final closure of the co-disposal facility, deposit non-acid generating tailings or other suitable soil cover to remove excess pond capacity and provide cover over potential acid generating tailings; and
- Breach perimeter collection ponds and allow runoff and seepage water to report to environment once water quality requirements are met.

All material from the ore stockpiles (high / mid grade and low grade) will be processed during the final years of processing operations. Once depleted, the footprint of the former ore stockpiles will be tested and excavated if needed to confirm no potential acid generating material is remaining. Excavated materials, if any, will be transported and stabilized in the co-disposal facility prior to closing out that facility. Thereafter, the ore stockpile areas will be reclaimed (either regraded to promote natural drainage and revegetation or re-developed as part of the fish habitat and compensation activities).

Overburden materials stored in the surficial soil stockpiles, the lake sediments and any small local topsoil or organics stockpiles will be used to support revegetation efforts progressively during operation and during closure. Stockpiled organics will be fully utilized during reclamation activities.

During the initial decommissioning and closure phase, pumps, pipelines, sumps and associated equipment used to support open pit water management and surface water management will be decommissioned, drained and removed from the site when no longer needed. In addition, the ETP will continue to be used if needed, or will remain available for contingency use. Water management infrastructure will be decommissioned when no longer needed.

All petroleum products and chemicals will be used upon decommissioning and closure. Any remaining products will ultimately be removed from the Project site. An onsite Environmental Assessment will be conducted at the end of operations or the early decommissioning and closure phase to delineate areas of potential soil contamination, particularly around fuel handling areas. Soil found to exceed acceptable criteria will be remediated on site or transported off site to an approved facility.

Site roads and the mine access road will be decommissioned when no longer needed to support final reclamation, long-term management and environmental monitoring, assuming that the roads are no longer required to support any developments on site or local needs. If site roads and the mine access road are no longer needed, the roads will be scarified to alleviate surface compaction to aid in vegetative regeneration.

The 230 kV transmission line will continue to operate and provide power to the Project site, as needed, after operations cease. It is anticipated that the transmission line will remain in place to support regional needs and continue to benefit the region. Associated onsite power distribution line(s) and related infrastructure or equipment that are not needed and have no salvageable value will be dismantled and transferred to an approved waste management facility. Other power equipment and materials will be taken off site for sale or resale.

2.3.3 Post-closure Monitoring

A post-closure monitoring program will be developed as part of the regulatory closure plan so that the site remains physically, chemically and biologically stable. Proposed monitoring may include the following:

- General site inspections will be conducted regularly to confirm that appropriate vegetation is established and, when needed, remediation is provided (e.g., removal of trees from embankments);
- Physical stability monitoring will include annual dam safety inspections conducted by a qualified Professional Engineer and dam safety reviews will be completed every 10 years following closure (or as otherwise required by regulations or best management practices);
- Surface water and ground water monitoring will continue to demonstrate efficacy of decommissioning and closure measures;
- Revegetation will be monitored until vegetation covers are proven to be self-sustaining; and

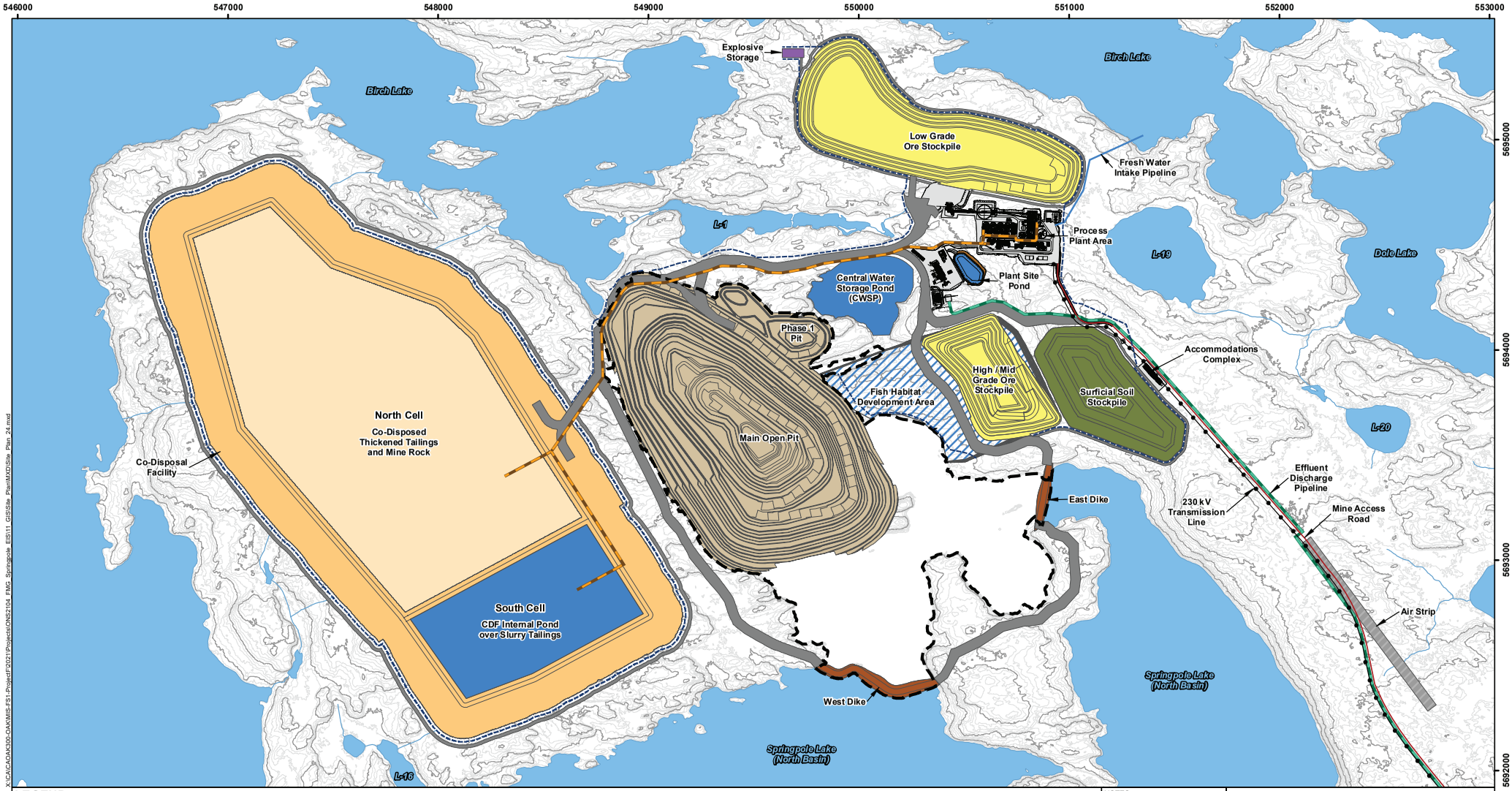
- Vegetation, aquatic and terrestrial monitoring will be completed to confirm decommissioning and closure plan objectives are met.

The overall intent is to restore the site to a self-sustaining ecosystem. In such a condition, the site can provide wildlife and aquatic habitat and the potential for Traditional pursuits. After completion of decommissioning and closure, no hazards will remain on the property that would be inconsistent with the natural environment. Long-term physical and chemical stability will be achieved and public safety maintained.

2.3.4 Opportunities and Continued Improvement

Although a closure strategy has been developed to support the Project, FMG is committed to maintaining a progressive mindset and exploring opportunities with emerging technologies and land uses. Such opportunities may include re-using the established facilities for community use or utilizing the restored site for a secondary purpose such as the generation of renewable energy. Among potential renewable energy potential being considered for the site is wind power and solar power with or without battery storage.

While not part of the current Project proposal or closure concept, FMG is committed to studying long-term sustainable green energy opportunities that could be implemented in post-closure, building on the key energy infrastructure put in place for the mine. For example, initial thinking includes exploring, with local interests, the concept of establishing solar or wind power generation on the co-disposal facility north cell in post-closure to supply and sell power to the grid. This may present a unique and sustainable opportunity for generations to come and will be further explored during the life of mine.



LEGEND

- Watercourse
- Waterbody
- Major Contours (5 m interval)
- Minor Contours (1 m interval)

Proposed Mine Features

- Open Pit
- Open Pit Basin
- Ore Stockpile
- Surficial Soil Stockpile
- Co-Disposal Facility
- Co-Disposed Thickened Tailings and Mine Rock
- Process Plant Area
- Dike
- Pond
- Haul / Access Road
- Explosives Storage
- Air Strip
- Mine Access Road
- Seepage / Runoff Collection System
- 230 kV Transmission Line
- Fresh Water Intake Pipeline
- Effluent Discharge Pipeline
- Tailings Pipeline Corridor
- Fish Habitat Development Area

0 0.5 1 2 3 4 5 Kilometres

NOTES:
- Contours extracted from 2020 LiDAR survey.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1, 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

First Mining Gold

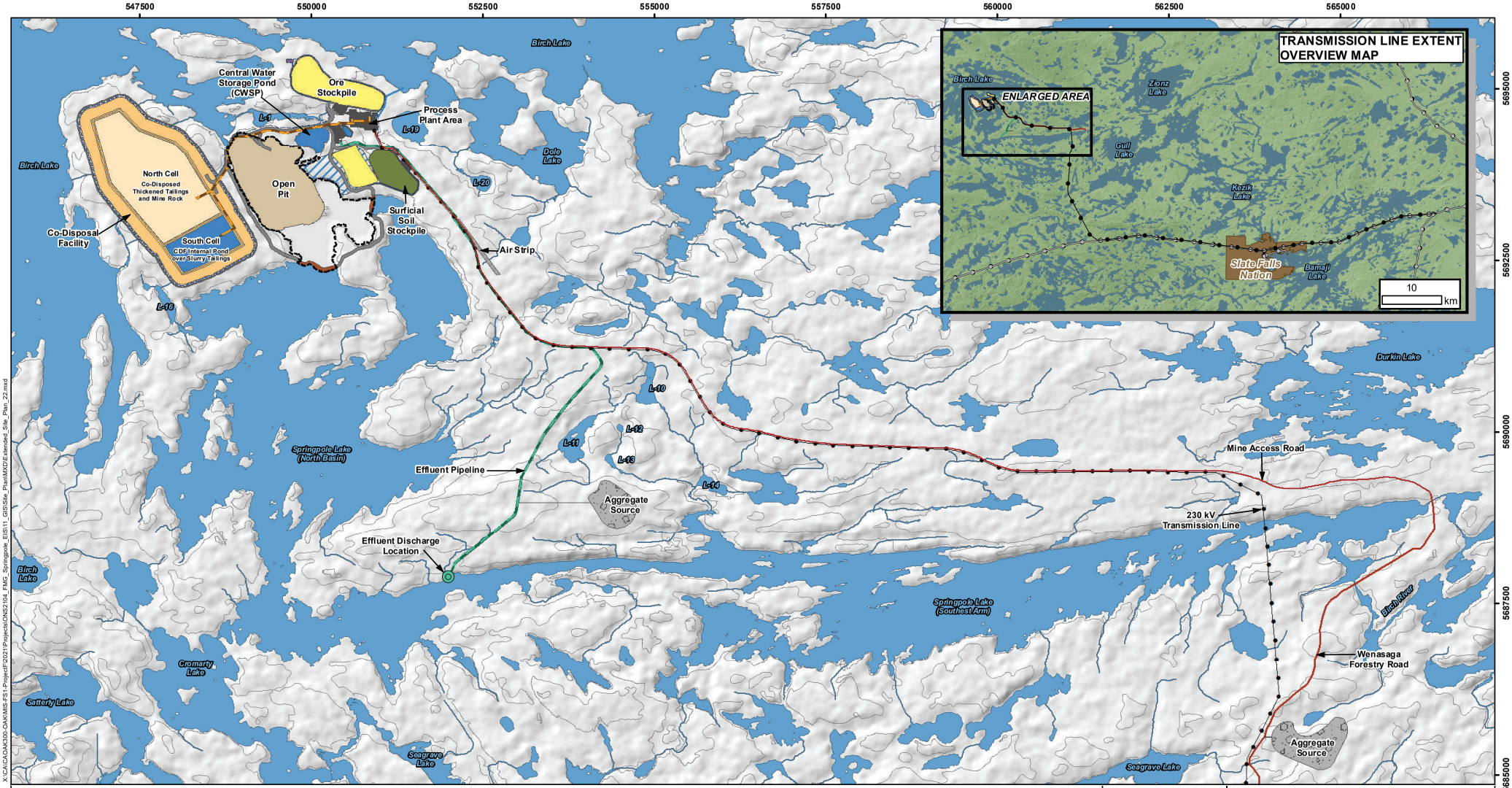
WSP

SPRINGPOLE GOLD PROJECT

EIS / EA Site Plan

PROJECT N°: ONS2104 | **FIGURE: 2-1**

SCALE: 1:17,000 | DATE: April 2024



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LEGEND

- Aggregate Source
- Existing Road
- Watercourse
- Waterbody
- Existing Transmission Line
- Contour (10 m intervals)

Proposed Mine Feature

- Open Pit
- Open Pit Basin
- Ore Stockpile
- Surficial Soil Stockpile
- Co-Disposal Facility
- Co-Disposed Thickened Tailings and Mine Rock
- Process Plant Area
- Dike
- Pond
- Haul / Access Road
- Explosives Storage
- Air Strip
- Mine Access Road
- Seepage / Runoff Collection System
- 230 kV Transmission Line
- Fresh Water Intake Pipeline
- Tailings Pipeline Corridor
- Effluent Discharge Pipeline
- Fish Habitat Development Area
- Effluent Discharge Location

0 1 2 4 6 8 10 Kilometres

NOTES:
- Topographic information extracted from LIO, MNRF.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1, 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

FIRST MINING GOLD

WSP

SPRINGPOLE GOLD PROJECT

EIS / EA Extended Site Plan

PROJECT N°: ONS2104 | **FIGURE: 2-2**

SCALE: 1:52,000 | DATE: April 2024

3.0 ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT

The assessment of alternative means (also known as alternatives assessment) was used to select alternatives that were considered in the Environmental Assessment for the Project. FMG evaluated the relative advantages and disadvantages of a range of feasible alternatives following the Environmental Impact Statement Guidelines and provincially approved Terms of Reference for the Project. The identification of alternatives for assessment and the assessment method used for evaluating alternatives has also been guided by the results of ongoing engagement and consultation with Indigenous communities, government agencies and the public.

Once potential alternative options were identified, each alternative option was assessed against four performance objectives: potential effects on the natural environment; potential effects on the social, economic, cultural and built environment; technical performance; and amenability to reclamation. Performance objectives are meaningful attributes essential for the Project's environmental and technical success and provide a basis for distinguishing between individual alternatives. Evaluation criteria and specific indicators for each performance objective were selected that could reasonably be applied to the assessment of alternatives to the Project and alternative means for the Project.

A summary of key alternative assessments completed for the Project, including the alternative options considered and ultimately selected alternative, is provided in Table 3-1.

Table 3-1: Summary of Alternatives Considered for the Project and the Selected Alternative

Project Alternatives	Alternative Options	Selected Alternative
Dike Location	• West Dike • Alternative W1: south and closest to the open pit • Alternative W2: southwest and downstream of W1 • East Dike • Alternative E1: immediately east and closest to the open pit • Alternative E2: east and farther downstream of E1 • Alternative E3: east and farther downstream of E1 and E2 • Alternative E4: south and farthest downstream of E1, E2 and E3	• Alternative W1: south and closest to the open pit, as it results in a smaller dewatered open pit, reducing effects on fish and fish habitat and has a smaller haul distance for trucks, thereby reducing air emissions and greenhouse gas emissions. • Alternative E2: east and farther downstream of E1 as it alleviates stability concerns resulting from blast-induced vibrations.
Mine Rock Storage Locations	• Alternative 1: West of Open Pit • Alternative 2: East of Springpole Lake	• Alternative 1: west of Open Pit provides a more compact overall site footprint; it also provides efficiency by requiring less infrastructure including haul road length and fewer mine trucks.
Tailings Storage Location	• Alternative 1: adjacent to the west side of the open pit • Alternative 2: southeast of the open pit • Alternative 3: southwest of the open pit • Alternative 4: near the mine access road and the north shore of the southeast arm of Springpole Lake • Alternative 5: near the mine access road to the west of Durkin Lake • Alternative 6: south of the southeast arm of Springpole Lake • Alternative 7: south of the southeast arm of Springpole Lake • Alternative 8: north of Bertha Lake	• Alternative 1: adjacent to the west side of the open pit maintains a minimum setback of 120 metres from Springpole Lake and Birch Lake, offers improved technical performance and reduces potential effects on the natural environment.
Mine Rock and Tailings Storage Methods	• Alternative 1: in-pit disposal • Alternative 2: co-disposal of mine rock and tailings • Alternative 3: separate facilities for mine rock and tailings	• Alternative 2: (co-disposal) will provide the most compact Project footprint.
Tailings Storage Technologies	• Alternative 1: conventional (slurry) tailings • Alternative 2: thickened tailings • Alternative 3: filtered tailings	• Alternative 1: conventional (slurry) tailings: conventional (slurry) tailings offers operational flexibility and certainty, as well as mitigation for potentially acid generating tailings management, as the tailings can be maintained in a saturated condition to help constrain acid generation. • Alternative 2: thickened tailings offers a reduction in the amount of water contained in the tailings slurry being sent for storage, and a somewhat reduced storage area.

Table 3-1: Summary of Alternatives Considered for the Project and the Selected Alternative

Project Alternatives	Alternative Options	Selected Alternative
Mine Rock and Tailings Storage Strategy	• Alternative 1: co-disposal facility using a perimeter embankment constructed of non-acid generating mine rock and aggregate to contain all thickened tailings (not geochemically segregated) and potentially acid generating mine rock. • Alternative 2: co-disposal facility at the same location as Alternative 1 for co-disposal of potentially acid generating mine rock and non-acid generating thickened tailings, but with an integrated tailings cell to store potentially acid generating conventional slurry tailings and an internal water management area. • Alternative 3: co-disposal facility at the same location as Alternative 1 to store all mine rock and non-acid generating tailings, but with a separate conventional slurry tailings management area located southeast of the process plant to contain potentially acid generating tailings including a water management component. • Alternative 4: co-disposal facility for all mine rock and tailings, with the tailings in a slurry form co-disposed with the potentially acid generating mine rock.	• Alternative 2: co-disposal facility for co-disposal of mine rock and thickened tailings with an integrated tailings cell to store conventional slurry tailings allows the Project to maintain a compact overall footprint, provides the best mitigation for metal leaching / acid rock drainage during operations and after closure, provides operational flexibility for tailings and water management, and has lowest overall capital costs.
Ore Processing Methods and Technologies	• Various methods are theoretically available for liberating gold from gold-bearing ores, but only a limited number of alternatives are viable and proven at a commercial scale. With the exception of gravity separation, all require chemical reagents. Use of gravity separation alone (without chemical treatment) cannot provide sufficient gold recovery for the Project to be financially viable. The only commercially viable method for recovering gold from the Project ore is appropriate application of a cyanide solution to dissolve the gold present in the ore for recovery (cyanidation).	
Ore Storage Locations	• Alternative 1: adjacent and north of the process plant • Alternative 2: between the fish habitat development area and the mine access road	• Alternative 1: (placement of the low grade ore stockpile adjacent to the process plant) supports maintaining a compact site footprint and is the most efficient, resulting in lower costs.
Overburden / Surficial Materials Storage	• Overburden and surficial soil / organics are proposed to mainly be stored in a single surface stockpile. With the selection of storage locations for mine rock, tailings and ore, only one potential location was identified for the storage of these materials: between the fish habitat development area and the mine access road.	
Site Buildings, Facilities and General Infrastructure	• The constraints posed by major site facilities such as the open pit, co-disposal facility, process plant and ore stockpiles result in few viable alternatives for the siting of most of the other required components, given the preference to limit the overall site footprint, and to avoid waterbodies and watercourses as practicable. As such, for much of the site buildings, facilities and general infrastructure, there are no alternative locations that would be a determining factor.	

Table 3-1: Summary of Alternatives Considered for the Project and the Selected Alternative

Project Alternatives	Alternative Options	Selected Alternative
Process Plant Effluent Treatment	• Alternative 1: In-Plant Sulphur Dioxide / Air Treatment • Alternative 2: Natural Degradation • Alternative 3: Natural Degradation plus Hydrogen Peroxide Treatment	• Alternative 1: in-plant cyanide destruction using sulphur dioxide / air treatment offers a lower potential for effects on the natural environment and a higher treatment efficacy and would not require a dedicated polishing pond.
Water Supply	• Alternative 1: Birch Lake • Alternative 2: Springpole Lake • Alternative 3: Groundwater wells	• Alternative 1: Birch Lake location is closer to the process plant, which is the primary water user, resulting in a shorter pipeline which is easier and less costly to build and to operate (lower pumping and energy requirements).
Site Water Management	• Alternative 1: unnamed lake L-2 • Alternative 2: unnamed lake L-19 • Alternative 3: adjacent to the low grade ore stockpile • Alternative 4: adjacent to the mine access road and surficial soil stockpile	• Alternative 1: unnamed lake L-2 is located central to the Project site for optimal efficiency, reduced environmental effects. and lowest overall cost.
Treated Effluent Discharge Location	• Alternative 1: Birch Lake • Alternative 2: north basin of Springpole Lake • Alternative 3: southeast arm of Springpole Lake	• Alternative 3: discharge to the southeast arm of Springpole Lake offers the greatest natural effluent mixing and attenuation, as well as the highest overall watershed / catchment area and resultant overall assimilative capacity.
Site Access	• A reasonable range of viable alternatives could not be identified for this component, as an all-season access road is required to access the Project site.	
Mine Access Road Route	• Alternative 1 (17.8 kilometres in length): travels northwest from the end of the Wenasaga Road to site • Alternative 3 (28.1 kilometres in length): travels northwest from a connection point further south on the Wenasaga Road, along the northern shore of Seagrave Lake to the western end of Springpole Lake and north to site • Alternative 4 (28.2 kilometres in length): travels north from a minor road much further south off the Wenasaga Road • Alternative 5 (18.5 kilometres in length): travels northwest from the end of the Wenasaga Road to site, closer to the southeast arm of Springpole Lake	• Alternative 1 (17.8 kilometres in length): travels northwest from the end of the Wenasaga Road to site has the least overall effect on the natural environment.

Table 3-1: Summary of Alternatives Considered for the Project and the Selected Alternative

Project Alternatives	Alternative Options	Selected Alternative
Workforce Accommodations	• A reasonable range of alternatives could not be identified for workforce accommodations due to the remote location and availability in the area. The Project site is distant from existing communities, and travel to these communities is not a safe or reasonable for daily commute, particularly after 12-hour shifts and/or during poor weather conditions. Only an onsite accommodations complex was considered viable.	
Workforce Transportation	• Alternative 1: busing offered from centralized location(s) • Alternative 2: individual vehicle travel for the majority of workers	• Alternative 1: busing the majority of workers to site from a centralized location reduces the amount of traffic on the roads and potential for vehicle collisions.
Domestic Sewage Management	• Alternative 1: package sewage treatment plant • Alternative 2: septic tank(s) and tile field(s) • Alternative 3: onsite storage tanks with offsite treatment at existing sewage treatment plant	• Alternative 1: use of a package plant treatment system, which will provide the best quality effluent and greatest reliability despite somewhat increased capital and operating costs.
Solid Waste Management	• Alternative 1: offsite disposal at an existing approved landfill(s) • Alternative 2: development of a new onsite landfill	• Alternative 1: offsite disposal at an existing approved landfill(s) is expected to provide adequate service availability and capacity for the Project's needs.
Power Supply	• Alternative 1: connection to the regional electrical grid • Alternative 2: onsite diesel generation • Alternative 3: wind turbines • Alternative 4: solar panel farm	• Alternative 1: connection to the regional electrical grid by means of a 230-kilovolt transmission line and related infrastructure provides a reliable supply of electricity.
Transmission Line Routes	• Alternative 1: follows primarily along the proposed mine access road to the E1C line, continuing parallel to the existing E1C line for majority of the remaining length (57 kilometres). • Alternative 2: follows primarily along the proposed mine access road to the E1C line, parallelling the E1C line part way, but diverting southeast to avoid Slate Falls Nation Reserve. • Alternative 3: follows primarily along the proposed mine access road to the E1C line, parallelling the E1C line part way, but diverting south and then east to avoid Slate Falls Nation Reserve near the Slate Falls Road. • Alternative 4: follows primarily along the proposed mine access road part of the way to the E1C line, diverting southwest avoiding some of the classified habitat for Caribou (Boreal population) crossed by the E1C line, to continue near the Slate Falls Road.	• Alternative 1: following the mine access road and parallel to the existing line (57 kilometres) has the least disturbance due to the greatest length adjacent to the existing E1C transmission line and was the preferred route identified by Indigenous communities.

Table 3-1: Summary of Alternatives Considered for the Project and the Selected Alternative

Project Alternatives	Alternative Options	Selected Alternative
Explosive Handling and Storage	• Alternative 1: onsite manufacturing • Alternative 2: offsite manufacturing	• Alternative 1: onsite manufacturing provides a reliable explosives source without risk of disruption.
Aggregate Supply	• Alternative 1: north of southeast arm of Springpole Lake • Alternative 2: off Wenasaga Road	• Both Alternatives 1 and 2 will be developed for different uses if the types of materials required are available.
Mine Closure – Dewatered Open Pit Basin	• Alternative 1: connect the filled basin lake to Springpole Lake • Alternative 2: keep the filled basin lake separate from Springpole Lake	• Alternative 1: connect the filled basin lake to Springpole Lake and is predicted to continue to meet, the regulatory requirements in the near and long term.
Mine Closure – Co-disposal Facility	North Cell: • Alternative N1: placement of a thick layer of non-acid generating thickened tailings following completion of life of mine potentially acid generating mine rock disposal within the north cell • Alternative N2: designed cover of natural, low permeability material (such as local clays) South Cell: • Alternative S1: designed cover, such as of low permeability material • Alternative S2: partial water cover combined with designed cover	• Alternative N1: placement of a thick layer of NAG thickened tailings following completion of life of mine potentially acid generating mine rock disposal within the north cell non-acid generating tailings cover will be effective in mitigating metal leaching / acid rick drainage for potentially acid generating mine rock. • Alternative S1: designed cover, such as of low permeability material designed cover will be predictably effective in mitigating metal leaching / acid rick drainage for potentially acid generating mine rock.
Mine Closure – Demolition Waste	• Alternative 1: truck non-hazardous demolition waste off site to an existing landfill • Alternative 2: develop an onsite demolition landfill for non-hazardous wastes	• Alternative 2: having an onsite demolition landfill for non-hazardous wastes provides the most flexibility and reliability and lowest Project costs, and it could potentially be located within an already disturbed location to avoid new land disturbances.

4.0 SUMMARY OF ENGAGEMENT

FMG has aimed to establish positive and constructive relationships with local Indigenous groups, government agencies and public interested parties throughout the Environmental Assessment processes and will continue to over the life of the Project. FMG recognizes that meaningful engagement is based upon the timely provision of relevant information and ongoing dialogue and interaction to ensure that both concerns and opportunities are understood and taken into consideration as the Project advances.

In striving to take a meaningful approach to consultation, FMG has (and will continue to) gathered feedback and promoted environmentally responsible decision making in a collaborative manner with local Indigenous communities, government agencies and public stakeholders by:

- Identifying key public stakeholders and community leaders;
- Providing financial capacity for local Indigenous community needs related to the Environmental Assessment process (meetings, community meetings, and technical advisors);
- Working with local Indigenous communities, government agencies and public stakeholders to share information, request feedback, and address comments and questions;
- Involving local Indigenous communities, government agencies and public stakeholders early in the Project planning and continuing engagement throughout the Environmental Assessment process;
- Being open and transparent;
- Providing clear, concise and relevant information; and
- Focusing timing of engagement and consultation activities at key decision-making (consultation) milestones.

Local Indigenous communities, government agencies and public stakeholders were identified early in the Project based on having an interest in, or the potential to be affected by, the Project. FMG has carried out extensive consultation and engagement activities guided by community preferences, consultation plans, company policy, the approved amended Terms of Reference commitments, and provincial and federal regulatory requirements for the Project. Active participation in the Project from local Indigenous communities, government agencies and public stakeholders helps to inform Project planning and contributes to developing a mine that achieves a high level of environmental performance and delivers benefits to local communities and the region.

FMG's focus for Project consultation and engagement to date has focused on key decision-making milestones, including the following:

- Consultation processes and capacity building;
- The provincial Terms of Reference (including valued components, criteria and indicators);
- Traditional Knowledge and Traditional Land Use information;
- Baseline studies;
- Assessment of alternatives; and
- Draft Environmental Impact Statement / Environmental Assessment (including valued components, criteria and indicators, effects assessment methods and results, mitigation and monitoring).

FMG's approach to consultation and addressing the approved amended Terms of Reference commitments was an integrated process. The development and finalization of the Terms of Reference took over a full year as FMG shared information, engaged and communicated to seek feedback on valued components, criteria and indicators proposed for measuring changes in valued components, as well as on the proposed consultation plans. Another key engagement point was when the draft Environmental Impact Statement / Environmental Assessment was circulated with the criteria and indicators, as well as the effects assessment results, for review and input. The benefit of providing the draft Environmental Impact Statement / Environmental Assessment was that the Project and effects assessment could be reviewed holistically and allow interested parties to provide feedback and input on the assessment, results, and proposed mitigation and monitoring. The draft Environmental Impact Statement / Environmental Assessment illustrated the Project and allowed another review opportunity on key Environmental Assessment milestone aspects. Since the Project initiation in 2018, FMG has been engaging in multiple ways with local Indigenous communities, government agencies and interested public stakeholders and has considered feedback. The comments shared through the review of the draft Environmental Impact Statement / Environmental Assessment have been considered to help shape the Project and the subsequent final Environmental Impact Statement / Environmental Assessment submission.

Sections 4.1 to 4.3 provide a summary of the engagement with Indigenous groups, government agencies and public stakeholders.

4.1 Engagement with Indigenous Groups

FMG acknowledges and appreciates the importance of meaningful consultation and collaboration to build trust and sustainable relationships. FMG conducted consultation with local Indigenous communities throughout the Environmental Assessment process in an open and transparent manner. Consultation was proactive, flexible, and based on a goal of continuous improvement, particularly as local Indigenous communities identified how they preferred to engage throughout the Environmental Assessment process and the Project.

The Ministry of the Environment, Conservation and Parks and Impact Assessment Agency of Canada identified local Indigenous communities (interchangeably referred to as Indigenous communities or local Indigenous communities throughout Section 2.0) that may have an interest in or may be affected by the Project. The Indigenous communities identified by the Ministry of the Environment, Conservation and Parks or Impact Assessment Agency of Canada for the Environmental Assessment process include:

- Cat Lake First Nation (CLFN);
- Lac Seul First Nation (LSFN);
- Métis Nation of Ontario, Region 1, as represented by the Northwestern Ontario Métis Community (NWOMC);
- Mishkeegogamang Ojibway Nation (MON);
- Ojibway Nation of Saugeen (ONS);
- Pikangikum First Nation (PFN);
- Slate Falls Nation (SFN); and
- Wabauskang First Nation (WFN).

As noted in the Ministry of the Environment, Conservation and Parks' April 25, 2018, letter to FMG, the procedural aspects of consultation with Indigenous communities have been delegated to FMG for the provincial Environmental Assessment process. FMG's responsibilities for the procedural aspects of consultation include:

- Providing identified communities with information about the proposed Project (including anticipated impacts and information on timelines);
- Following up with communities to ensure they receive Project information and that they are aware of opportunities to provide comments about the Project;
- Gathering information from the communities about how the Project may adversely impact their Aboriginal and/or treaty rights or sites of cultural importance;
- Considering comments provided by communities and providing responses;
- Discussing potential mitigation strategies with communities; and
- Bearing the reasonable costs associated with these procedural aspects of consultation.

Consultation with local Indigenous communities has occurred to enhance awareness of the Project, understand comments and interests and address or resolve issues raised about the Project. Consultation with the communities has primarily focused on the key Environmental Assessment milestones, including sharing baseline studies, the assessment of alternatives, the draft Environmental Impact Statement / Environmental Assessment, Traditional Knowledge and Traditional Land Use Studies information as well as other topics of importance to communities. These other topics include environmental protection, community health and wellness, economic and employment opportunities, and education and training. Enhanced opportunities to participate in the planning process were provided based on the level of interest that communities expressed in the process. To date, CLFN, LSFN, MON, NWOMC and SFN have expressed a higher level of interest in participating compared to other communities.

4.1.1 Cat Lake First Nation (CLFN)

FMG initiated Project consultation with CLFN in July 2017 and CLFN and FMG have been engaging regarding the Project since. FMG has shared information with CLFN on the EA milestones, as described below, and throughout the process has received valuable input from the community. FMG has considered the comments and feedback received and, where appropriate, incorporated them into the final Environmental Impact Statement / Environmental Assessment. FMG has received a Traditional Knowledge and Traditional Land Use Study as well as a Socioeconomic Baseline Study from CLFN for consideration in Project planning. Table 4-1 presents a summary of the key engagement with CLFN.

Table 4-1: Summary of Key Engagement with Cat Lake First Nation

Date	Method of Engagement	Summary
December 1, 2017	Community Information Session	FMG held a Community Information Session in CLFN to introduce the Project, as well as the Environmental Assessment process and associated consultation processes to community members. FMG also provided an overview of the Terms of Reference and baseline studies. This allowed for an early opportunity to ask questions about the Project and process.
July 24, 2018	Community Information Session	FMG held a Community Information Session in CLFN to discuss the Environmental Assessment process and associated consultation processes with community members.

Table 4-1: Summary of Key Engagement with Cat Lake First Nation

Date	Method of Engagement	Summary
February 4, 2020	Community Information Session	FMG held a Community Information Session in CLFN to provide an overview of the Project, the draft Terms of Reference, Indigenous consultation processes, baseline studies, and alternative methods to community leadership and members.
November 2020	Document Review: Provincial Environmental Assessment Terms of Reference	FMG and CLFN engaged in substantial discussions throughout the Terms of Reference process including holding multiple Community Information Sessions in the community and providing written input into the final approved Terms of Reference.
December 3, 2021	Notice: Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
June – December 2021	Document Review: Baseline Studies	FMG provided CLFN the baseline studies for the Project for their review and input on June 18, 2021. FMG also provided the 2021 technical workplans for upcoming baseline studies to inform communities of the plans and methods for upcoming programs. CLFN provided FMG with their technical comments on the baseline studies on October 12, 2021. FMG and CLFN held multipled technical meetings to discuss and resolve comments. FMG provided responses to the technical comments on on November 29, 2021. FMG and CLFN held additional technical meetings to discuss and resolve comments in December 2021.
August – December 2021	Technical Review Meetings: Baseline Studies	FMG met with CLFN to discuss comments on the baseline studies, workplans for future years, and how they have been adjusted to address CLFN comments.
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided CLFN with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from CLFN on these tables.
October 27, 2021	Site Tour	FMG hosted a site tour at the proposed Project site and existing exploration camp with CLFN community representatives, which provided an opportunity for them to become more familiar with the location, existing environment and components of the proposed mine site.
November 3, 2021	Community Information Session	FMG held a Community Information Session in CLFN to share information on the Project, baseline studies, and the alternatives assessment. In general, the key discussion and comments were held around the Environmental Assessment process, protection of the environment, including wildlife and fish, as well as Traditional Knowledge of the area.
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. In June 2022, FMG also provided the draft Environmental Impact Statement / Environmental Assessment in hard copy and on a USB drive to CLFN.

Table 4-1: Summary of Key Engagement with Cat Lake First Nation

Date	Method of Engagement	Summary
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
June 13, 2023	Site Visit / Participation in Baseline Sampling	CLFN representatives attended a two-day Project site visit and participated in the water quality sampling program.
March – June 2024	Document Review: Draft Environmental Impact Statement / Environmental Assessment	CLFN emailed FMG on March 4, 2024, providing a cover letter and technical review comments on the draft Environmental Impact Statement / Environmental Assessment. The comment table attached included approximately 200 comments on the draft Environmental Impact Statement / Environmental Assessment across various topics, including the Project description, Traditional Knowledge and Traditional Land Use, human and ecological health, fish and fish habitat, water quality, archaeology, cultural heritage, terrestrial environment and geochemistry. On June 18, 2024, FMG provided responses to the comments received on the draft Environmental Impact Statement / Environmental Assessment related to the Project description, Traditional Knowledge and Traditional Land Use, human and ecological health, fish and fish habitat, water quality and geochemistry. On June 28, FMG provided responses related to the terrestrial environment, archaeology and cultural heritage comments.
April 24, 2024	CLFN Socioeconomic Report	CLFN provided FMG with the community's baseline Socioeconomic Report.
April 24, 2024	CLFN Indigenous Knowledge and Use Report	CLFN provided FMG with the community's Indigenous Knowledge and Use Report.
June 5, 2024	Community Information Session	FMG hosted a Community Information Session in CLFN to present updates on the Project to community members and receive feedback. FMG gave a presentation providing information and updates on the Project design, Environmental Impact Statement / Environmental Assessment, and FMG's current understanding of CLFN priorities, including their interest in an all-season community access road.
August 15, 2024	Technical Review Meeting: Fish and Fish Habitat	FMG met with CLFN to discuss their comments on the draft Environmental Impact Statement / Environmental Assessment related to Fish and Fish Habitat, and FMG's responses.
September 4, 2024	Site tour	FMG hosted a site tour of the proposed Project site and existing exploration camp with representatives and community members from CLFN.

The key topics of interest identified by CLFN to date include water quality, social aspects, employment and training, fish habitat and monitoring. The studies, comments and feedback provided by the community have been considered in the final Environmental Impact Statement / Environmental Assessment.

4.1.2 Lac Seul First Nation (LSFN)

FMG initiated Project consultation with LSFN in January 2017 and LSFN and FMG have been engaging regarding the Project since. FMG has shared information with LSFN on the EA milestones, as described below, as well as received valuable input from LSFN through various forms of engagement. FMG has considered comments shared and, where appropriate, incorporated them into the final Environmental Impact Statement / Environmental Assessment. FMG has received a Traditional Knowledge and Traditional Land Use Study as well as a Socioeconomic Baseline Study from LSFN for consideration in Project planning. Table 4-2 presents a summary of the key engagement with LSFN.

Table 4-2: Summary of Key Engagement with Lac Seul First Nation

Date	Method of Engagement	Summary
September 17, 2018	Community Information Session	FMG held three Community Information Sessions in Whitefish Bay, Kejick Bay, and Frenchman's Head, to provide an overview of the Project, including the environmental baseline studies proposed as well as the Environmental Assessment process, including the Terms of Reference.
November 13, 2019	Community Information Session	FMG held a Community Information Session to present information and receive feedback on the draft Terms of Reference and consultation plans, as well as present the environmental baseline study methods and results to date. The meeting included a presentation, animation video of the proposed Project and an open forum for discussion on the materials and to answer any questions from the community.
June – December 2021	Document Review: Baseline Studies	FMG provided LSFN with the baseline studies for the Project for their review and input on June 18, 2021. FMG also provided the 2021 technical workplans for upcoming baseline studies to inform communities of the plans and methods for upcoming programs. LSFN provided FMG with their technical comments on the baseline studies on October 12, 2021. FMG and LSFN held multiple technical meetings to discuss and resolve comments. FMG provided written responses to the technical comments on November 29, 2021. FMG and LSFN held additional technical meetings to discuss and resolve comments in December 2021.
October 27, 2021	Site Tour	FMG hosted a site tour of the proposed Project site and existing exploration camp with LSFN community representatives. This provided an opportunity for them to become more familiar with the location, existing environment and components of the proposed mine site.
November 2, 2021	Community Information Session	FMG held two Community Information Sessions in Kejick Bay and Frenchmen's Head, to provide an opportunity for FMG to present Project information and gather community feedback on the Project, specifically on the existing environmental baseline data and the alternative assessments for the Project.
August – December 2021	Technical Review Meetings: Baseline Studies	FMG met with LSFN to discuss comments on the baseline studies, workplans for future years, and how they have been adjusted to address LSFN comments.
December 3, 2021	Notice: Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.

Table 4-2: Summary of Key Engagement with Lac Seul First Nation

Date	Method of Engagement	Summary
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. In June 2022, FMG also provided the draft Environmental Impact Statement / Environmental Assessment in hard copy and on a USB drive to LSFN.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
March – June 2024	Document Review: Draft Environmental Impact Statement / Environmental Assessment	LSFN emailed FMG on March 4, 2024, providing a cover letter and technical review comments on the draft Environmental Impact Statement / Environmental Assessment. The comment table attached included approximately 200 comments on the draft Environmental Impact Statement / Environmental Assessment across various topics, including the Project description, Traditional Knowledge and Traditional Land Use, human and ecological health, fish and fish habitat, water quality, archaeology, cultural heritage, terrestrial environment and geochemistry. On June 18, 2024, FMG provided responses to the comments received on the draft Environmental Impact Statement / Environmental Assessment related to the Project description, Traditional Knowledge and Traditional Land Use, human and ecological health, fish and fish habitat, water quality and geochemistry. On June 28, FMG provided responses related to the terrestrial environment, archaeology and cultural heritage comments.
April 18, 2024	Community Information Session	FMG hosted a Community Information Session in LSFN to present updates on the Project to community members and receive feedback. FMG gave a presentation providing information and updates on the Project design, Environmental Impact Statement / Environmental Assessment.
April 24, 2024	LSFN Socioeconomic Report	LSFN provided FMG with the community's baseline Socioeconomic Report.
April 24, 2024	LSFN Indigenous Knowledge and Use Report	LSFN provided FMG with the community's Indigenous Knowledge and Use Report.
August 15, 2024	Technical Review Meeting: Fish & Fish Habitat	FMG met with LSFN to discuss their comments on the draft Environmental Impact Statement / Environmental Assessment related to Fish and Fish Habitat, and FMG's responses.
September 4, 2024	Site tour	FMG hosted a site tour of the proposed Project site and existing exploration camp with representatives and community members from LSFN.

The key topics of interest identified by LSFN to date include water quality, social aspects, employment and training, fish habitat, wildlife, air quality and noise. The studies, comments and feedback provided by the community have been considered in the final Environmental Impact Statement / Environmental Assessment.

4.1.3 Mishkeegogamang Ojibway Nation (MON)

FMG initiated Project consultation with MON in March 2018 and MON and FMG have been engaging regarding the Project since. FMG has shared information with MON on the EA milestones, as described below, and MON has shared valuable input into the final Environmental Impact Statement / Environmental Assessment from the community. FMG has received a Traditional Knowledge and Traditional Land Use Study from MON for consideration in Project planning. Table 4-3 presents a summary of the key engagement with MON.

Table 4-3: Summary of Key Engagement with Mishkeegogamang Ojibway Nation

Date	Method of Engagement	Summary
May 15, 2018	Chief and Council Meeting	FMG met with MON to discuss the Project and associated Environmental Assessment processes, potential site tours, and site access.
September 12, 2018	Chief and Council Meeting	FMG met with MON to discuss the Project and associated Environmental Assessment processes.
November 2020 – November 2021	Document Review: Provincial Environmental Assessment Terms of Reference	FMG and MON engaged in substantial discussions throughout the Terms of Reference process including holding multiple meetings and MON providing written input into the final approved Terms of Reference.
May – December 2021	Document Review: Baseline Studies	FMG provided MON the baseline studies for the Project for their review and input on May 31, 2021. FMG also provided the 2021 technical workplans for upcoming baseline studies to inform communities of the plans and methods for upcoming programs. MON provided FMG with their technical comments on the baseline studies on November 11, 2021. FMG provided responses to the technical comments on December 23, 2021.
August 2021	Technical Review Meetings: Baseline Studies	FMG had a series of meetings with MON and their technical consultants to present and discuss the baseline studies prior to MON completing their review.
October - December 2021	Document Review: Preliminary Alternatives Assessment	FMG provided MON with a preliminary alternatives assessment for key Project components on October 1, 2021. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. On December 21, 2021, MON provided FMG with comments on the preliminary Assessment of Alternatives. FMG considered the comments and feedback shared from MON, provided responses and incorporated the feedback into the draft Environmental Impact Statement / Environmental Assessment.
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.

Table 4-3: Summary of Key Engagement with Mishkeegogamang Ojibway Nation

Date	Method of Engagement	Summary
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. In June 2022, FMG also provided the draft Environmental Impact Statement / Environmental Assessment in hard copy and on a USB drive to MON.
July – September 2022	Technical Review Meetings: Draft Environmental Impact Statement / Environmental Assessment	Pending MON's comments on the draft Environmental Impact Statement / Environmental Assessment, three technical meetings were held with MON's consultants in July and September 2022 to discuss the progress on the review and answer any questions the MON reviewers have. The meetings were focused on Fish and Fish Habitat, Terrestrial, and Human Environment Sections.
August 3, 2022	Community Information Session	FMG held a Community Information Session to provide information about the Project, and to review and seek feedback on the draft Environmental Impact Statement / Environmental Assessment.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
July 11, 2023	Site Tour	FMG hosted MON for a site tour on July 11, 2023. Community members had the opportunity to see the proposed Project site and ask questions.
July 12, 2023	Community Information Session	FMG held a Community Information Session in MON. FMG provided a presentation on the draft Environmental Impact Statement / Environmental Assessment, including how the comments from the community were shaping the final Environmental Impact Statement / Environmental Assessment.
December 2023	MON Traditional Knowledge and Traditional Land Use Study	MON provided FMG with a redacted Traditional Knowledge Study for use in the final Environmental Impact Statement / Environmental Assessment.
December 5, 2023	Workshop: Fish & Fish Habitat	FMG held a collaborative community workshop on the FHCOP to present information on the options proposed in the draft FHCOP, and to discuss new potential offsetting options.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed MON and provided the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures, and an assessment of residual effects. FMG did not receive feedback from MON on this table and another opportunity to review will be provided as part of the review process on this final Environmental Impact Statement / Environmental Assessment.

Table 4-3: Summary of Key Engagement with Mishkeegogamang Ojibway Nation

Date	Method of Engagement	Summary
February 2024	Technical Review Meetings: Draft Environmental Impact Statement / Environmental Assessment	Throughout February 2024, FMG and MON met to discuss comments on the draft Environmental Impact Statement / Environmental Assessment, including related to fish and fish habitat, surface water, air quality, greenhouse gasses, terrestrial environment and incorporation of Traditional Knowledge and Traditional Land Use.
June 26, 2024	Workshop: Caribou	FMG hosted a collaborative workshop on the Caribou habitat offsetting strategy MON. The workshop presented information on the updated baseline Caribou studies, the potential offsetting options identified to date, and to discuss new potential offsetting options. Participants were invited to share knowledge, comments and questions on the options and bring forward potential new ideas.

The key topics of interest identified by MON to date include fish and fish habitat, water quality (water management and treatment), Caribou, incorporation of Tradtional Knowledge and Traditional Land Use, and training and employment. The studies, comments and feedback provided by the community have been considered in the final Environmental Impact Statement / Environmental Assessment.

4.1.4 Northwestern Ontario Métis Community (NWOMC)

FMG initiated Project consultation with NWOMC in August 2018 and NWOMC and FMG have been engaging regarding the Project since. FMG has shared information with NWOMC on the Environmental Assessment milestones and has incorporated valuable input shared by NWOMC into the final Environmental Impact Statement / Environmental Assessment. FMG has considered comments shared and, where appropriate, incorporated them into the final Environmental Impact Statement / Environmental Assessment. FMG has received a Traditional Knowledge and Traditional Land Use Study as well as a Supplemental Study from NWOMC for consideration in Project planning. Table 4-4 presents a summary of the key engagement with NWOMC.

Table 4-4: Summary of Key Engagement with the Northwestern Ontario Métis Community

Date	Method of Engagement	Summary
March 2020 – April 2021	Document Review: Provincial Environmental Assessment Terms of Reference	FMG and NWOMC engaged in substantial discussions throughout the Terms of Reference process including meeting multiple times and NWOCM providing comments on both the Terms of Reference and draft amended Terms of Reference which were considered.
May 31, 2021	Document provided for review: Baseline Studies	FMG notified NWOMC that baseline studies for the Project were uploaded to the Project website for their review and input. FMG provided the 2021 technical workplans for upcoming studies to inform communities of the plans and methods for upcoming programs. FMG did not received coments from NWOMC.
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided NWOMC with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from NWOMC on these tables.

Table 4-4: Summary of Key Engagement with the Northwestern Ontario Métis Community

Date	Method of Engagement	Summary
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
February 1, 2022	Community Presentation – Valued Component & Traditional Knowledge and Traditional Land Use Study	NWOMC consultants presented an overview of the findings from the Study and workshops conducted with NWOMC, as presented in the reports.
March 10, 2022	NWOMC Valued Component & Traditional Knowledge and Traditional Land Use Study	NWOMC provided their Valued Component and Traditional Knowledge and Traditional Land Use Studies, which were subsequently considered in the draft Environmental Impact Statement / Environmental Assessment report, as well as considered throughout the final Environmental Impact Statement / Environmental Assessment.
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. In June 2022, FMG also provided the draft Environmental Impact Statement / Environmental Assessment in hard copy and on a USB drive to NWOMC.
July – December 2022	Document Review: Draft Environmental Impact Statement / Environmental Assessment #1	NWOMC provided a cover letter and technical review comments on the draft Environmental Impact Statement / Environmental Assessment on July 29, 2022. On December 19, 2022, FMG provided responses to the comments received on the draft Environmental Impact Statement / Environmental Assessment.
September 22, 2022	Community Information Session	FMG had a Community Information Session to discuss comments and next steps regarding the draft Environmental Impact Statement / Environmental Assessment.
April – June 2023	Document Review: Draft Environmental Impact Statement / Environmental Assessment #2	On April 13, 2023, NWOMC provided FMG with a letter detailing NWOMC's review of FMG's responses to comments on the draft Environmental Impact Statement / Environmental Assessment. NWOMC and FMG met on May 29, 2023, to discuss the draft Environmental Impact Statement / Environmental Assessment review and next steps. Following the discussion, FMG provided its written responses to NWOMC's follow-up comments on June 23, 2023.
May 29, 2023	Technical Review Meetings: Draft Environmental Impact Statement / Environmental Assessment	FMG met with NWOMC to discuss the draft Environmental Impact Statement / Environmental Assessment review and next steps. It was discussed that the comments were resolved, and outstanding requests included that NWOMC to be involved in the fish compensation planning and would like to have a site tour.

Table 4-4: Summary of Key Engagement with the Northwestern Ontario Métis Community

Date	Method of Engagement	Summary
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with the community. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
September 7, 2023	Workshop: Fish & Fish Habitat	FMG and WSP held a workshop with NWOMC to discuss the draft FHCOP. NWOMC citizens provided comments and input on the draft FHCOP.
September 27, 2023	Site Tour	FMG hosted a site tour at the proposed Project site and existing exploration camp with NWOMC, which provided an opportunity for them to become more familiar with the location, existing environment and components of the proposed mine site.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed NWOMC and provided the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures, and an assessment of residual effects. It is understood that NWOMC will review this as part of the final Environmental Impact Statement / Environmental Assessment.
May 2, 2024	Workshop: Caribou	FMG presented information on the updated baseline Caribou studies, the potential offsetting options identified to date and discussed new potential offsetting options.

The key topics of interest identified by NWOMC to date include wildlife, fish and fish habitat, incorporation of Traditional Knowledge and Traditional Land Use, ongoing engagement in the Project, and follow-up and monitoring. The studies, comments and feedback provided by the community have been considered in the final Environmental Impact Statement / Environmental Assessment.

4.1.5 Ojibway Nation of Saugeen (ONS)

FMG initiated Project consultation with ONS in August 2018 and ONS and FMG have been engaging regarding the Project since. FMG has shared information with ONS on the EA milestones, as described below, as well as incorporated valuable input shared by ONS into the final Environmental Impact Statement / Environmental Assessment. FMG has considered comments shared and, where appropriate, incorporated them into the final Environmental Impact Statement / Environmental Assessment. Table 4-5 presents a summary of the key engagement with ONS.

Table 4-5: Summary of Key Engagement with the Ojibway Nation of Saugeen

Date	Method of Engagement	Summary
December 16, 2019	Chief and Council Meeting	FMG met with ONS Chief and Council to provide an update on the Project, draft Terms of Reference, and to discuss how Chief and Council wished to be consulted.
August 2, 2022	Chief and Council Meeting	FMG met with to discuss updates on the draft Environmental Impact Statement / Environmental Assessment, and the draft Community Consultation Plan.
October 2020 – September 2021	Document Review: Provincial Environmental Assessment Terms of Reference	FMG and ONS engaged in substantial discussions throughout the Terms of Reference process including meeting multiple times and ONS providing comments on the draft amended Terms of Reference which were considered.
May 31, 2021	Document provided for review: Baseline Studies	FMG notified ONS that baseline studies for the Project were uploaded to the Project website for their review and input. FMG provided the 2021 technical workplans for upcoming studies to inform communities of the plans and methods for upcoming programs. FMG did not receive comments from ONS.
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided ONS with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from ONS on these tables.
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies.
May 17, 2023	Community Information Session	FMG held a Community Information Session in ONS, to present an overview of the Project and the draft Environmental Impact Statement / Environmental Assessment. FMG provided an update on Project progress over the past year, including related to the co-disposal facility, water management, wildlife, and the FHCOP.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job

Table 4-5: Summary of Key Engagement with the Ojibway Nation of Saugeen

Date	Method of Engagement	Summary
		Opportunities, and Transmission Line Route.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed ONS the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures, and an assessment of residual effects. FMG did not receive feedback from ONS on this table and another opportunity to review will be provided as part of the review process on this final Environmental Impact Statement / Environmental Assessment.
February – August 2024	Document review: Draft Environmental Impact Statement / Environmental Assessment	FMG received a letter from ONS on February 27, 2024, that expressed a willingness to collaborate with FMG on labour, supply and contracting needs. FMG responded on March 20, 2024, and was further discussed during meetings held on March 14 and August 15, 2024.
May 1, 2024	Community Information Session	FMG held a Community Information Session in ONS regarding the Project Environmental Impact Statement / Environmental Assessment. FMG presented the following: FMG prioritizing communities and local businesses in its projects, work completed to date on the Project, the Project overview, and the revised transmission line route proposed for the final Environmental Impact Statement / Environmental Assessment.

FMG understands ONS is interested in business and contracting opportunities related to the Project and will continue these discussions as the Project moves forward. The feedback provided by the community has been considered in the final Environmental Impact Statement / Environmental Assessment.

4.1.6 Pikangikum First Nation (PFN)

FMG initiated Project consultation with PFN in August 2018 and PFN and FMG have been engaging regarding the Project since. FMG has shared information with PFN on the EA milestones and provided opportunities for the community to make comments and air concerns, as described in Table 4-6.

Table 4-6: Summary of Key Engagement with Pikangikum First Nation

Date	Method of Engagement	Summary
2019 - 2021	Document provided for review: Provincial Environmental Assessment Terms of Reference	FMG attempted to engage PFN throughout the Environmental Assessment process beginning in 2019, with opportunities to review the draft Terms of Reference and draft amended Terms of Reference. FMG did not receive a response to these attempts.
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided PFN with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from PFN on these tables.

Table 4-6: Summary of Key Engagement with Pikangikum First Nation

Date	Method of Engagement	Summary
October 8, 2021	Document provided for review: Baseline Studies	FMG notified PFN that baseline studies for the Project were uploaded to the Project website for their review and input. FMG provided the 2021 technical workplans for upcoming studies to inform communities of the plans and methods for upcoming programs. FMG did not receive comments from PFN.
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
May 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed PFN and provided the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures, and an assessment of residual effects. FMG did not receive feedback from PFN on this table and another opportunity to review will be provided as part of the review process on this final Environmental Impact Statement / Environmental Assessment.

4.1.7 Slate Falls Nation (SFN)

FMG initiated Project consultation with SFN in July 2017 and SFN and FMG have been engaging regarding the Project since. FMG has shared information with SFN on the EA milestones, as described below, as well as received valuable input from SFN that has incorporated into the final Environmental Impact Statement / Environmental Assessment. FMG has considered comments shared and, where appropriate, incorporated them into the final Environmental Impact Statement / Environmental Assessment. FMG has received a Traditional Knowledge and Traditional Land Use Study as well as a Socioeconomic Baseline Study from SFN for consideration in Project planning. Table 4-7 presents a summary of the key engagement with SFN.

Table 4-7: Summary of Key Engagement with Slate Falls Nation

Date	Method of Engagement	Summary
February 20, 2018	Community Information Session	FMG held a Community Information Session in SFN to introduce the Project and environmental baseline work done to date. The main topics presented included a Project overview, Springpole update and economic impacts, and 2018 environmental field studies.
April 24, 2018	Community Information Session	FMG held a Community Information Session in SFN to present a Project update, an overview of the provincial and federal Environmental Assessment process, consultation methods and processes, Traditional Knowledge integration, 2018 Field Studies, draft Terms of Reference, and the alternatives assessment.
October 24, 2018	Community Information Session	FMG held a Community Information Session in SFN to provide an overview of the Project, including the Environmental Assessment process and associated consultation processes, environmental baseline studies completed and proposed, as well as the Terms of Reference and alternatives assessment.
May 3, 2019	Community Information Session	FMG held a Community Information Session in SFN to present an overview of the Project, the Environmental Assessment process and Terms of Reference, as well as present the environmental baseline study results to date.
December 11, 2019	Community Information Session	FMG held a Community Information Session in SFN to provide updates on the Project, including the draft Terms of Reference. FMG presented an update and overview of the Project, proposed consultation methods and plans, the environmental baseline studies completed to date and alternative methods.
June – December 2021	Document Review: Baseline Studies	FMG provided SFN the baseline studies for the Project for their review and input on June 18, 2021. FMG also provided the 2021 technical workplans for upcoming baseline studies to inform communities of the plans and methods for upcoming programs. SFN provided FMG with their technical comments on the baseline studies on October 12, 2021. FMG and CLFN held multiple technical meetings to discuss and resolve comments. FMG provided responses to the technical comments on November 29, 2021. FMG and SFN held additional technical meetings to discuss and resolve comments in December 2021.
August – December 2021	Technical Review Meetings: Baseline Studies	FMG met with SFN to discuss comments on the baseline studies, workplans for future years, and how they have been adjusted to address SFN comments.
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided SFN with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from SFN on these tables.
November 4, 2021	Community Information Session	FMG held a Community Information Session in SFN to present an overview of the Project, baseline study methods and results to date, and the alternatives assessment.

Table 4-7: Summary of Key Engagement with Slate Falls Nation

Date	Method of Engagement	Summary
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
May – June 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. In June 2022, FMG also provided the draft Environmental Impact Statement / Environmental Assessment in hard copy and on a USB drive to SFN. FMG noted that the feedback gathered through the draft Environmental Impact Statement / Environmental Assessment review would be considered for an eventual final Environmental Impact Statement / Environmental Assessment.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed SFN and provided the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures and an assessment of residual effects. FMG did not receive feedback from SFN on this table and another opportunity to review will be provided as part of the review process on this final Environmental Impact Statement / Environmental Assessment.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
January 19, 2024	Workshop: Fish and Fish Habitat	FMG held a workshop with community members including leadership, as well as SFNs advisors and consultants. SFN shared valuable feedback on the FHCOP that FMG has incorporated into the final Environmental Impact Statement / Environmental Assessment.
April – June 2024	Document Review: Draft Environmental Impact Statement / Environmental Assessment	SFN emailed FMG on April 1, 2024, providing a cover letter and technical review comments on the draft Environmental Impact Statement / Environmental Assessment. Over 70 comments and questions were provided across various topics on the draft Environmental Impact Statement / Environmental Assessment. On May 8, 2024, FMG provided responses to the comments received on the draft Environmental Impact Statement / Environmental Assessment. On May 31, 2024, SFN emailed FMG, providing the SFN evaluation of FMG's responses and following a series of meetings, FMG provided responses on August 28, 2024.

Table 4-7: Summary of Key Engagement with Slate Falls Nation

Date	Method of Engagement	Summary
May 3, 2024	SFN Traditional Knowledge and Traditional Land Use and Socioeconomic Report	SFN emailed FMG a copy of SFN's Health, Socioeconomic, Indigenous Knowledge and Land Use Baseline Study for use in the final Environmental Impact Statement / Environmental Assessment.
June 11, 2024	Technical Review Meeting: Draft Environmental Impact Statement / Environmental Assessment and Caribou	FMG and SFN met to discuss draft Environmental Impact Statement / Environmental Assessment comments and FMG's responses regarding the effects assessment of Caribou.
June 12, 2024	Technical Review Meeting: Draft Environmental Impact Statement / Environmental Assessment and Alternatives Assessment	FMG and SFN met to review the approach to assessing Project alternatives and summarize the results of the assessment of alternatives, specifically related to the access road and transmission line routes.

The key topics of interest identified by SFN to date include Project components such as the transmission line and access road routes, water quality, social aspects, employment and training, fish habitat and wildlife.

4.1.8 Wabauskang First Nation (WFN)

FMG initiated Project consultation with WFN in December 2017 and WFN and FMG have been engaging regarding the Project since. FMG has shared information with WFN on the EA milestones and provided opportunities for the community to make comments and air concerns, as described in Table 4-8. The studies, comments and feedback provided by the community have been considered in the final Environmental Impact Statement / Environmental Assessment.

Table 4-8: Summary of Engagement with Wabauskang First Nation

Date	Method of Engagement	Summary
December 24, 2017	Chief and Council Meeting	WFN and FMG held an introductory meeting with WFN leadership for FMG to present information about the Project.
February 21, 2018	Community Information Session	FMG held a Community Information Session in WFN to present an overview of the proposed Project and environmental work done to date.
January 24, 2019	Community Information Session	FMG held a Community Information Session in WFN to present an overview of the Project and Environmental Assessment process.
May 22, 2019	Community Information Session	FMG held a Community Information Session in WFN to provide an overview of the Project and invited review and comment on presented materials.
August 2020 - 2021	Document provided for review: Provincial Environmental Assessment Terms of Reference	FMG attempted to engage WFN throughout the Environmental Assessment process beginning in 2019, with opportunities to review the draft Terms of Reference and draft amended Terms of Reference. FMG did not receive a response to these attempts.

Table 4-8: Summary of Engagement with Wabauskang First Nation

Date	Method of Engagement	Summary
October 1, 2021	Document provided for review: Preliminary Alternatives Assessment	FMG provided WFN with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high-level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG did not receive written feedback from WFN on these tables.
October 8, 2021	Document provided for review: Baseline Studies	FMG notified WFN that baseline studies for the Project were uploaded to the Project website for their review and input. FMG provided the 2021 technical workplans for upcoming studies to inform communities of the plans and methods for upcoming programs. FMG did not receive comments from WFN.
December 3, 2021	Notice: Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
May 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies.
June 2023 – October 2024	Community Bulletins	FMG developed monthly community bulletins starting in 2023 to provide environmental updates on specific topics related to the Project to be shared with community members. Community bulletins continue to be circulated regularly. The community bulletins to date have included the following topics: Baseline Studies Update, Co-disposal Facility Optimization, Environmental Assessment Progress, Fish Habitat Offsetting, Final Environmental Impact Statement / Environmental Assessment Site Plan, Water Management, 2024 Baseline Update, Training and Job Opportunities, and Transmission Line Route.
December 15, 2023	Document provided for review: Preliminary Summary of the Assessment of Effects on Indigenous Peoples	FMG emailed WFN and provided the Preliminary Summary of the Assessment of Effects on Indigenous Peoples table that outlined the potential effects of the Project on Indigenous peoples, proposed mitigation measures, and an assessment of residual effects. FMG did not receive feedback from WFN on this table and another opportunity to review will be provided as part of the review process on this final Environmental Impact Statement / Environmental Assessment.

4.2 Government Agencies

FMG has engaged government agencies early in the Project planning process to receive technical feedback that has helped to improve the Project. This engagement focused on consultation opportunities for a broad list of government agency reviewers at Environmental Assessment milestones. Throughout the Environmental Assessment process, FMG met with representatives from federal and provincial government agencies to share information about the Project and receive feedback at each phase. FMG engaged these government agencies to offer meetings to discuss the Project on topics such as baseline studies completed, valued components, assessment of alternatives, consultation with local Indigenous communities, Project optimizations, and the draft Environmental Impact Statement / Environmental Assessment document. During preparation of the draft and final Environmental Impact Statement / Environmental Assessment document, FMG took a collaborative approach to resolve regulatory and technical comments and used ongoing technical working group meetings with reviewers based on specific interests, areas of technical expertise, relevant regulatory jurisdiction or areas of concern. Numerous technical working group meetings have been held since the submission of the draft Environmental Impact Statement / Environmental Assessment document to ensure that government agency feedback is sufficiently addressed and incorporated in the final Environmental Impact Statement / Environmental Assessment document.

The process of identifying relevant government agencies began prior to the submission of the draft Terms of Reference. Based on FMG's understanding of other mining projects in the region, FMG development an initial list of government agencies with which FMG would consult with. The list has been modified through engagement and consultation with government agencies as the Project has advanced. Ongoing consultation has focused primarily on government agencies with a regulatory interest in the Project. The agencies are presented below based on their role in the Environmental Assessment process.

Core provincial agencies that have been consulted with throughout the Environmental Assessment process on various aspects of the Project including planning, design, and data collection include representatives from the Ministry of the Environment, Conservation and Parks, Ministry of Natural Resources; Ministry of Mines, Ministry of Citizenship and Multiculturalism, and the Ministry of Indigenous Affairs and First Nations Economic Reconciliation. FMG has also engaged other provincial agencies including the Ministry of Economic Development, Job Creation and Trade, Ministry of Labour, Immigration, Training and Skills Development; the Ministry of Municipal Affairs and Housing; the Ministry of Transportation; and the Ministry of Infrastructure to a lesser extent. Federal agencies that have been consulted throughout the Environmental Assessment process include Impact Assesssment Agency of Canada, Environment and Climate Change Canada, Fisheries and Oceans Canada, Indigenous Services Canada, Health Canada, Transport Canada and Natural Resources Canada. Government agencies have received communications and notices to keep them informed on the status of the Project and have been consulted based on their level of interest and available expertise/guidance. Government agencies which are outside the list of core agencies may become more involved in the Project as it proceeds through other phases of the Project.

Table 4-9 presents a summary of key engagement with government agencies.

Table 4-9: Summary of Engagement with Government Agencies

Date	Method of Engagement	Summary
December 3, 2021	Notice of Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
August 2020 - 2021	Document review: Provincial Environmental Assessment Terms of Reference	FMG engaged with government agencies throughout the Environmental Assessment process beginning in 2019, with opportunities to review the draft Terms of Reference and draft amended Terms of Reference. FMG incorporated the feedback received into the final amended approved Terms of Reference.
October 1, 2021	Document review: Preliminary Alternatives Assessment	FMG provided government agencies with a preliminary alternatives assessment for key Project components. These preliminary assessment tables were intended to be high level in detail to facilitate consultation. They provided a comparative analysis that focused on the key differentiating factors in the decision-making process to seek feedback prior to submission of the draft Environmental Impact Statement / Environmental Assessment. FMG received feedback from the Ministry of the Environment, Conservation and Parks.
December 3, 2021	Notice: Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via email.
May 2022 – October 2024	Document review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies. FMG received and responded to comments from several provincial and federal government agencies. FMG held several technical meetings over the 26-month review period to resolve comments prior to the final Environmental Impact Statement / Environmental Assessment.

4.3 Public Participation

FMG used a range of consultation methods at key stages to share Project information, provide notice of key opportunities to be involved, receive feedback, and engage in dialogue with public stakeholders. Identified public stakeholders have been and will continue to be engaged using various methods to provide notification and collect feedback from interested persons. FMG reached out to public stakeholders through social media, contact lists of interested public stakeholders, public open houses in municipalities in proximity to the Project site (Municipality of Sioux Lookout, the Municipality of Red Lake, the Township of Ear Falls and the City of Dryden), notices in local newspapers and radio announcements, circulation of documents and factsheets, general meetings and presentations, newsletters, plain language summaries and videos, precision targeted mailouts, and the maintenance of the Project website.

Table 4-10 presents comments and questions from public stakeholders as well as the responses provided.

Table 4-10: Summary of Engagement with the Public

Date	Method of Engagement	Response
September 15, 2021	Public Information Session in Sioux Lookout	FMG hosted a Public Information Session to inform and consult with local community members and stakeholders in the Municipality of Sioux Lookout at an early stage in the Environmental Assessment process.
December 3, 2021	Notice: Commencement of the Provincial Environmental Assessment via Email	FMG distributed the Notice of Commencement for the provincial Environmental Assessment process via newspaper and email.
December 16, 2021	Public Information Session in Ear Falls	FMG hosted a Public Information Session to inform and consult with local community members and stakeholders in Ear Falls at an early stage in the Environmental Assessment process.
May 30 – 31, 2022	Document provided for review: Draft Environmental Impact Statement / Environmental Assessment	FMG distributed the draft Environmental Impact Statement / Environmental Assessment via email to the Project contact list and posted it on its public website. Baseline studies for the Project were also made available as part of the draft Environmental Impact Statement / Environmental Assessment, along with additional materials and resources (e.g., fact sheets, presentations) to help facilitate an understanding of the studies.
July 19, 2022	Public Information Session in Ear Falls	FMG held a Public Information Session in Ear Falls to provide information about the Project and to seek feedback on the draft Environmental Impact Statement / Environmental Assessment.
July 20, 2022	Public Information Session in Sioux Lookout	FMG held a Public Information Session in Sioux Lookout to provide information about the Project and to seek feedback on the draft Environmental Impact Statement / Environmental Assessment.
October 2022	Virtual Webinar Series	In October 2022, FMG held the series of online webinars to share Project information and provide an opportunity for public stakeholders to ask questions about the findings of the draft Environmental Impact Statement / Environmental Assessment focused on: fish and fish habitat, the atmospheric environment, water resources, the terrestrial environment, and the human environment.
February 2023	Letter to Outfitters	FMG provided outfitters who were not previously on the public contact list, with a draft EA Notice and informed them that their businesses are located within the Project Regional Study Area, and they have been identified as potentially interested stakeholders.
May 30, 2023	Public Information Session in Ear Falls	FMG held a Public Information Session in the Township of Ear Falls to present an overview of the Project and the draft Environmental Impact Statement / Environmental Assessment.
May 31, 2023	Public Information Session in Sioux Lookout	FMG held a Public Information Session in Sioux Lookout to provide information about the Project and to seek feedback on the draft Environmental Impact Statement / Environmental Assessment.
November 2023	Virtual Webinar Series	FMG conducted a four-part public webinar series in November 2023 on the co-disposal facility, FHCOP, water management and treatment strategy, and alternatives assessment process.
November 29, 2023	Public Information Session in Red Lake	FMG held a Public Information Session in Red Lake to provide information about the Project and to seek feedback on the draft Environmental Impact Statement / Environmental Assessment.
November 30, 2023	Public Information Session in Dryden	FMG held a Public Information Session in Dryden to provide information about the Project and to seek feedback on the draft Environmental Impact Statement / Environmental Assessment.

Table 4-10: Summary of Engagement with the Public

Date	Method of Engagement	Response
January 2024	Letter to Land Users (outfitters, baitfish harvest licence holders, bear management area holders, trapline licence holders)	FMG emailed a letter to all the outfitters, baitfish harvest licence holders and bear management area holders in the Regional Study Area, providing a Project and Environmental Impact Statement / Environmental Assessment update letter and Project site map as a follow-up to a previous Project and Environmental Impact Statement / Environmental Assessment notification letter.
August 2024	Letter to Land Users (outfitters, baitfish harvest licence holders, bear management area holders, trapline licence holders)	FMG emailed and mailed a letter to all the outfitters, baitfish harvest licence holders and bear management area holders in the Regional Study Area, providing a Project and Environmental Impact Statement / Environmental Assessment update letter related to the optimized transmission line routing.

5.0 DESCRIPTION OF EXISTING ENVIRONMENT

The description of the existing environment provided in this section aims to familiarize the reader with the local setting in relation to the Project. The section represents a contextual description of the geographic area as a whole, focusing on what is reasonably expected to be potentially affected by the Project. This section provides a description of the existing conditions related to the natural, social, cultural, economic and built environment and is based primarily on extensive and robust environmental baseline studies that were conducted at the site and in the surrounding area between 2011 and 2023, as well as published information.

5.1 Meteorology and Climate

The mean annual precipitation for the area in the vicinity of the Project site was determined to be 704 millimetres, with the 1-in-25-year, 24-hour storm rainfall estimated to be 101.5 millimetres. Monthly rainfall is normally highest in June and July, when summer showers and thunderstorms occur. Snow typically starts to accumulate in October, becoming deepest in January and February with complete snowmelt expected by May. Climate normals for the Red Lake Airport Station, which is the closest Environment and Climate Change Canada weather station to the Project site, includes an average temperature of 1.3 degrees Celsius, and ranges from a low of -18.3 degrees Celsius (January) to a high of 18.1 degrees Celsius (July). Site-specific summer wind data from 2013 to 2017 did not indicate any wind direction as prevalent, but winds from the east and northeast were least common with the average wind speed for the dataset at 3.4 metres per second.

5.2 Air Quality

The Project site is located in a remote area, absent of nearby large urban centres and industrial sources. Baseline air quality is influenced by long-range transport of air contaminants, as well as by natural sources such as forest fires and volatile organic compound emissions from vegetation. Regional quality data from federal monitoring stations in Thunder Bay and Winnipeg for the 90th percentile did not exceed the Ontario Ambient Air Quality Criteria / Criterion and in most cases were well below the Ambient Air Quality Criteria.

When compared against the Ambient Air Quality Criteria, airborne particulate matter with a mass median diameter less than 10 micro metre and airborne particulate matter with a mass median diameter less than 2.5 micro metre were most notable at approximately 36 percent of the respective 24-hour Ambient Air Quality Criteria. Air quality at these urban station locations is influenced by higher motor vehicle activity and the proximity of other air emissions sources and is therefore considered to be conservative when used as existing baseline data. In contrast, the Project is located in a remote, primarily wilderness setting. The onsite data collected was comparable with the regional data and the data estimates used for the air quality assessment. The metals 90th percentile concentrations measured on site have been an order of magnitude below the respective Ambient Air Quality Criteria. Long-term average measurements of nitrogen dioxide and sulphur dioxide indicate concentrations on site are substantially lower than the Ambient Air Quality Criteria and regional estimates. Overall, the data from regional monitoring stations and onsite measurements indicate good air quality attributed to the rural setting with no significant anthropogenic sources of air emissions near the Project.

5.3 Noise and Vibrations

Baseline sound monitoring data indicate that the environment is characteristic of a rural (Class 3) area, in accordance with Ministry of the Environment and Climate Change guideline publication NPC-300. Average sound levels at both monitoring locations are 25 A-weighted decibels (nighttime) and 35 A-weighted decibels (daytime) on a one-hour L_{Aeq} basis. The results of the vibration monitoring indicate that the background Vibrating on Peak Particle velocity values are under 0.01 millimetres per second for more than 95 percent of the data collected, and the average Root Mean Square Velocity is approximately 0.001 millimetres per second.

5.4 Greenhouse Gases

As reported in the most recent Canadian national inventory report, the annual greenhouse gas emissions from Canada in 2021 were 670 megatonnes of carbon dioxide equivalent per year, and for Ontario it was 151 megatonnes of carbon dioxide equivalent per year. The Canadian greenhouse gas emissions for the heavy industry sector were 77 megatonnes of carbon dioxide equivalent per year in 2021, with 28 megatonnes of carbon dioxide equivalent per year reported from Ontario. The 2021 greenhouse gas emissions reported for the mining industry specifically in Canada were 11 megatonnes of carbon dioxide equivalent per year of direct emissions, 1.8 megatonnes of carbon dioxide equivalent per year from Ontario.

5.5 Groundwater

Groundwater levels generally correlate with local topography and decrease from inland topographic highs toward surrounding topographic lows and surface water features. Measured groundwater levels where monitoring wells are present around the site range from approximately 389.8 to 418.8 metres above mean sea level. Shallow / local groundwater flow pathways are likely toward nearby lakes / ponds, while deeper groundwater pathways are likely directed to larger lakes of the area (Springpole Lake and Birch Lake). Collected intermediate to deep groundwater samples from fractured bedrock were alkaline in nature, whereas the samples collected in shallow bedrock and overburden were slightly acidic to neutral. The predominantly alkaline nature of the groundwater samples suggests any natural acidification that is occurring is being neutralized by dissolution of carbonate mineralogy present within the bedrock. The analysis of groundwater also showed naturally elevated levels of sulphate, dissolved arsenic, dissolved iron and other heavy metals in some samples that may be attributed to the interaction between groundwater and the Springpole deposit orebody, which contains zones of sulphide minerals.

5.6 Surface Water

Water quality is an important parameter for both the physical and biological environments, helping to define the health of aquatic ecosystems and providing a basis for calculating allowable effluent discharge loadings, design input for potable water treatment systems, and for the assessment of potential effects.

The Project is situated between two lakes, Birch Lake and Springpole Lake. Birch Lake is a regional lake with a watershed area of approximately 1,050 square kilometres. Birch Lake has a surface area of 11,823 hectares and is irregular in shape. The maximum depth is 37 metres, with an average depth of 7.4 metres. The east end of the lake is deeper and more open than the west, which is characterized by narrow channels and comparatively shallow water. It flows west then south before discharging into Satterly Lake. From there, it flows into Cromarty Lake and joins the Springpole Lake watershed through the Birch River. The Birch River continues south until it meets Lake St. Joseph.

Springpole Lake has a large, generally circular northern basin connected to the long, narrow east arm of the lake by a narrow channel. Overall, Springpole Lake has a maximum depth of 35.1 metres and an average depth of 6.3 metres. Springpole Lake has a surface area of 28.6 square kilometres, a watershed area of approximately 98.2 square kilometres and an estimated volume of approximately 190 million cubic metres. The outlet of Springpole Lake is at the east end, where it flows into the Birch River and discharges into Gull Lake. In the north basin of Springpole Lake where open pit development is planned, the average monthly flows are expected to be highest in May (22.2 cubic metres per second) and June (22.9 cubic metres per second), following the spring freshet, and lowest during the late winter months of February (6.2 cubic metres per second) and March (5.4 cubic metres per second).

Water quality results indicate that the surface waters in all monitored waterbodies are typical of oligotrophic lakes in northwestern Ontario, demonstrating limited nutrient availability, low turbidity and saturated to near-saturated dissolved oxygen concentrations. Levels of total suspended solids and total dissolved solids were generally very low. Water column profile results indicate that most lakes experience a turnover during the year, but they remain stratified throughout the summer months.

Concentrations of total and dissolved metals are very low, often at or below analytical detection limits. There were a few occasions where measured baseline concentrations were higher than available water quality guidelines including the Ontario Provincial Water Quality Objectives and Canadian Water Quality Guidelines for the Protection of Aquatic Life for sampled waterbodies. These occurrences were irregular, generally associated with elevated total suspended solids total suspended solids levels and are considered representative of the natural heterogeneity of these lake systems. Parameters with concentrations greater than guidelines in the baseline condition include pH, total aluminum, phosphorus, total iron and total copper.

5.7 Fish and Fish Habitat

Springpole Lake has a surface area of 2,860 hectares and a large, generally circular, northern basin connected to the long, narrow southeast arm of the lake by a narrow channel. It is predominantly rocky, has a very heterogeneous shoreline, and contains numerous islands and rocky shoals. There are a number of tributary streams flowing into Springpole Lake, including the Birch River, which enters at the southwest end through a short section of rapids below Cromarty Lake. The outflow of Springpole Lake is also through the Birch River, at the east end, into Gull Lake. Most of the deepwater-water habitat in Springpole Lake is found in the northern portion of the lake. Thermoclines were typically 1 to 2 metres thick and found at depths ranging from 7 metres to a maximum of 13 metres in the summer of 2011. Water temperature in the upper layer of water of Springpole Lake ranged from 16 to 20 degrees Celsius, and from 3 to 16 degrees Celsius in the lower layer of water. The average dissolved oxygen concentrations for Springpole Lake were above 3 milligrams per litre throughout the water column, and at depths less than 30 metres they ranged between 7.4 and 10.1 milligrams per litre. The Springpole Lake fish community includes Walleye, Northern Pike, Yellow Perch, Rock Bass, Log Perch, Common White Sucker, Shorthead Redhorse, Common Shiner, Spottail Shiner, Lake Whitefish, Lake Herring, Lake Trout, Finescale Dace, Golden Shiner, and Burbot. The benthic invertebrate communities generally had a low number and diversity of taxa, with amphipods, pisidiidae and chironomids dominating.

Birch Lake has a surface area of 11,823 hectares, with an irregular shape and a predominantly rocky shoreline. The maximum depth is 37 metres, with an average depth of 7.4 metres. The east end of the lake is deeper and more open than the west, which is characterized by narrow channels and comparatively shallow water. The fish community reported for Birch Lake based on a review of previous studies includes 19 different species: Lake Trout, Lake Whitefish, Northern Pike, Walleye, Yellow Perch, Lake Herring,

Common White Sucker, Shorthead Redhorse, Greater Redhorse, Emerald Shiner, Blacknose Shiner, Spottail Shiner, Iowa Darter, Log Perch, Finescale Dace, Ninespine Stickleback, Northern Redbelly Dace, River Darter, and Northern Mottled Sculpin. The benthic invertebrate communities generally had a low number and diversity of taxa, with chaoboridae, amphipods, oligochaeta and chironomids dominating.

Seagrave Lake is located upstream of Springpole Lake and connected to the Birch River between Birch Lake and Springpole Lake by means of Seagrave Creek. Among the three lakes, Seagrave Lake has the smallest surface area (1,931 hectares) but is the deepest, with a maximum depth of 41.5 metres and mean depth of 6.4 metres. Seagrave Lake has four deep basins that have generally east–west orientations and are connected by narrow channels. The average thermocline depth was found to be between 8 and 9 metres, and dissolved oxygen was greater than 6 milligrams per litre throughout the water column. The fish community for Seagrave Lake includes Walleye, Lake Trout, Northern Pike, Lake Whitefish, Yellow Perch, Common White Sucker, Burbot and Cisco, and the lake has very low density of benthic invertebrates in most of the samples collected.

An additional 11 small (less than 20 hectares) waterbodies near the Project site, and 9 small tributaries that flow into Springpole Lake were sampled between 2012 and 2017. Fish species among the 11 small waterbodies typically included Yellow Perch, Northern Pike, Common White Sucker, Spottail Shiner, Finescale Dace, Brook Stickleback, Northern Redbelly Dace, Fathead Minnow and Iowa Darter. Among the tributaries, Common White Sucker, Brook Stickleback, Iowa Darters, Trout-perch, Finescale Dace, Log Perch, Northern Pike, Longnose Dace, Yellow Perch, Blacknose Shiner, Pearl Dace and Northern Mottled Sculpin were identified.

5.8 Vegetation and Wetlands

Baseline surveys for vegetation communities and wetlands were completed to identify and assess the existing vegetative assemblages and habitat, including plant species at risk. Wetland evaluations following the Ontario Wetland Evaluation System for northern Ontario were completed to acquire baseline wetlands data to map and describe wetlands in the vicinity of the Project site and identify any provincially significant wetlands.

The vegetation surveys identified 397 species of plants, with 11 classified as rare in Ontario. These were Black Ash, Northern Marsh Violet, Floating Marsh Marigold, Alpine Woodsia, Nahanni Oak Fern, Small Yellow Pond-lily, Lakecress, Smooth-margin Nitrogen Moss, Red Dung Moss, Yellow Dung Moss, and Cruet Dung Moss. Black Ash, the one documented species at risk, was found in proximity to the Project site; however, the most commonly encountered species were Speckled Alder, Labrador Tea, Bunch Berry, Sparse-flower Sedge, Stiff Clubmoss, Schreber's Moss, Green Reindeer Lichen, Peat Moss, Creeping Snowberry, Black Spruce, Knight's Plume Moss, Grey Alder, Lingonberry, and Mountain Fern Moss.

Terrestrial ecosites comprise most of the area and the dominant vegetation community is coniferous forest. Most areas are heavily dominated by Black Spruce and Jack Pine, with the spruce being more common in moister and more mature forests, while Jack Pine is more common in drier, rockier settings and in areas regenerating from fires and logging. Small amounts of White Spruce, White Birch, and Trembling Aspen may be mixed into coniferous forests. Balsam Fir may be common in the sub-canopy and understory of coniferous forests but is rarely present in the canopy. Low shrubs, including Labrador Tea and blueberries, are often abundant, but taller shrubs such as Green Alder are less common. Small Black Spruce and Balsam Fir are often abundant in coniferous forests. Ground layers of coniferous forest may have little plant growth besides moss or contain a diverse array of other plants. Typical species include Bunchberry, clubmosses,

Creeping Snowberry, Mountain Cranberry, Wild Sarsaparilla and Twinflower. Sparse treed, deciduous / mixed tree and bedrock ecosites are also present.

The wetland communities surveyed in proximity to the Project site include swamps, marshes, and bogs, and fens. Wetlands exist in different site types including palustrine (inland with no flow or intermittent inflow and either permanent or intermittent outflow), lacustrine (associated with a lake), and isolated (for example, fens and bogs). During the 2012 wetland evaluations, the majority of the wetlands were lacustrine sites, with some palustrine, and very few isolated. Based on the 2023 data, nearly half of the wetlands surveyed were lacustrine sites, and an increase in palustrine and isolated wetlands. Lacustrine sites are often associated with marshes. Marshes, in the boreal forest, are often found as a transition between open water and shorelines and contain dominant species such as robust emergent and submerged plant species. No provincially significant wetlands were identified in the vicinity of the Project.

5.9 Wildlife

5.9.1 Furbearers, Large Mammals, and Herptiles

Small mammal species captured during surveys included Southern Red-backed Vole, Deer Mouse, Least Chipmunk, Red Squirrel, and Masked Shrew. Furbearers observed in the area surrounding the site during surveys included Grey Wolf, Wolverine, River Otter, Snowshoe Hare, American Marten, Red Fox, Canada Lynx, Black Bear and Beaver. During the 2011 aerial surveys, high concentrations of Grey Wolf tracks were observed at the south end of Springpole Lake. Beavers also appear to be relatively abundant in the vicinity of the Project.

During the aerial surveys, 8 Moose were observed in 2011, 127 Moose in 2013, 42 Moose in 2020, and 32 Moose in 2021. Moose were also detected at four remote trail camera stations. The area around Springpole Lake was found to have some high-quality Moose habitat. Ten moose aquatic feeding areas were identified through the course of the baseline survey programs, with 60 percent identified as having a rating of moderate potential. Sixty-four moose aquatic feeding areas identified were of high or very high potential and are considered significant wildlife habitat.

Three amphibian species were identified in the vicinity of the Project: Gray Treefrog, Spring Peeper and Wood Frog. Amphibian species identified are all considered provincially and federally secure. Spring Peeper, Gray Treefrog, Wood Frog, American Toad, Northern Leopard Frog and Blue-spotted Salamander were spotted within the area surrounding the Project. Common Gartersnake was observed frequently throughout the baseline investigations. No other snake species are expected to occur in the area surrounding the Project as no other species range occurs beyond the southern edge of the boreal forest. No turtles were observed during field investigations, and the Project site is farther north than the northern range for most turtles in Canada. Western Painted Turtle and Snapping Turtle occur around Sioux Lookout and Ear Falls, however, and may potentially be found in the vicinity of the Project.

5.9.2 Caribou

No Woodland Caribou (Boreal population) were observed in the area surrounding the Project site during any aerial winter surveys. Evidence of potential calving and/or nursery for Woodland Caribou (Boreal population) use were found on Springpole Lake, Seagrave Lake and Dead Dog Lake. Woodland Caribou (Boreal population) were detected at one remote trail camera station established on a beach where Caribou tracks had previously been observed on the western shore of the north basin of Springpole Lake, near the southern tip of Johnson Island. Several observations of Woodland Caribou (Boreal population) signs were also made over the course of the baseline surveys, including eight observations of scat, two trails and one

incidental sighting. During the 2021 aerial survey, 10 Woodland Caribou (Boreal population) groups were recorded for a total of 92 Woodland Caribou (Boreal population) observed. No Woodland Caribou (Boreal population) groups were detected in close proximity of the Project during the survey period. Woodland Caribou (Boreal population) overwintering habitat adjacent to the Project is minimal, with vegetation cover generally consisting of early successional conifer dominant stands, which result in poor habitat quality because of recent disturbance by wildfire. Woodland Caribou (Boreal population) activity is therefore not anticipated to be frequent in the area adjacent to the Project. High-quality tracts of mature coniferous forest do occur south and southeast of the Project site, portions of which have been provincially classified as Category 1 overwintering areas for Woodland Caribou (Boreal population). These known overwintering areas all had confirmed use during the 2021 survey. In addition, several potential new wintering areas in the south and southeast corners of the Project were identified.

5.9.3 Wolverine

During the 2010 aerial survey Wolverine tracks were recorded south of the Project and a Wolverine was observed on Seagrave Lake. Winter habitat use by Wolverine was confirmed at multiple locations in proximity to the Project site during a winter aerial survey in February 2021 through track observations. Further identification of Wolverine in the vicinity of the Project occurred during the 2023 monitoring season; 25 stations were outfitted with white light cameras, infrared cameras, run-poles and purpose-built hair snags. Wolverine were detected at multiple stations; of these detections, six individual Wolverine were identified through genetic analysis.

5.9.4 Birds

During the bird surveys between 2011 and 2019, 68 bird species were observed from the 958 individuals recorded. An additional 32 bird species not recorded within point counts were observed during other surveys or incidentally, bringing the total bird species to 100. During the 2021 survey, 95 species of birds were recorded from 228 point count stations, with an additional 13 recorded during other field investigations. The most common bird species encountered during all field surveys were Ruby-crowned Kinglet, White-throated Sparrow, Nashville Warbler, Yellow-rumped Warbler, Magnolia Warbler, Winter Wren, Swainson's Thrush, Least Flycatcher, Red-breasted Nuthatch and Hermit Thrush. No Eastern Whip-poor-will were observed in targeted surveys in 2011 or 2019. Common Nighthawk were recorded at seven locations.

In 2021 and 2022, breeding bird surveys were conducted to characterize the nature, extent and importance of avian usage for wildlife and species at risk birds. In 2021, a total of 95 bird species were recorded during breeding bird survey point counts from the 228 point count stations. In 2022, a total of 85 bird species (and a pair of unknown species) were recorded during breeding bird survey point counts from the 141 point count stations. A combined total of 103 species were recorded during the 2021 and 2022 breeding bird surveys, with the most frequently observed including Ruby-crowned Kinglet, Nashville Warbler, White-throated Sparrow, Dark-eyed Junco, Golden-crowned Kinglet and Yellow-rumped Warbler. No target marsh bird species were encountered in any of the 2012, 2018 or 2019 marsh monitoring surveys.

Waterfowl were observed at 18 survey locations in 2012, 11 locations in 2017 and 21 locations in 2019. The most abundant waterfowl species were Common Merganser, Mallard, Canada Goose, Common Goldeneye and Hooded Merganser.

Two owl species, Boreal Owl and Northern Saw-whet Owl, were recorded during the 2012 nocturnal call-playback survey. A Barred Owl was also heard opportunistically during the 2012 field season and a pair were observed during the 2018 breeding bird point count surveys. Boreal Owl and the Northern Saw-whet Owl were also documented during surveys. Raptor nests for Bald Eagle and Osprey were observed during the 2021 aerial survey.

Under the *Endangered Species Act*, specific individual and habitat protections are in place for Threatened and Endangered species. Two Threatened species, the Eastern Whip-poor-will and Lesser Yellowlegs, have been observed in the vicinity of the Project. Additionally, six species of Special Concern, including the Bald Eagle, Barn Swallow, Canada Warbler, Common Nighthawk, Olive-sided Flycatcher and Rusty Blackbird, have also been observed in the vicinity. Provincially listed avian SAR observed during all years of field surveys included Barn Swallow, Olive-side Flycatcher, Bald Eagle, Common Nighthawk, Peregrine Falcon and Golden Eagle, with only Bald Eagle being observed close to the Project footprint site.

5.9.5 Bats

Five species of bat were identified in proximity to the Project in 2019: Eastern Red Bat, Hoary Bat, Silver-haired Bat, Northern Myotis and Little Brown Myotis). Acoustic surveys conducted in 2021 confirmed these findings. Bat maternity roosting habitat assessment results indicate that nearly all deciduous, mixed and coniferous forests in the area surrounding the Project have sufficient cavities to support bat maternity roosts. No bat hibernacula sites are situated close to the Project site.

5.10 Commercial Land Use and Resources

The major industries in the area include mining, forestry, and resource-based tourism. The area includes three forest management units: Trout Lake Forest, Red Lake Forest and Whiskey Jack Forest.

The Project is located within the Trout Lake Forest Management Area and is subject to the Trout Lake Forest Management Plan, pursuant to the *Crown Forest Sustainability Act*, which is administered by the Ontario Ministry of Natural Resources. The Trout Lake Forest Management Area encompasses approximately 10,313 square kilometres. Harvesting operations within the Trout Lake Forest Management Area are conducted through the Sustainable Forestry Licence, issued to Domtar Corporation (now known as Dryden Fibre), which is responsible for all aspects of forest management planning, harvesting, forest management road access, reforestation and compliance monitoring of forest operations. This licence requires that the licensee carry out renewal and maintenance activities necessary to provide for the long-term sustainability of the Crown forest in the Trout Lake Forest Management Area. The majority of conifer timber produced from the Trout Lake Forest Management Area is delivered to the EACOM Timber Corporation sawmill in Ear Falls, Ontario. As part of forestry activities, the Wenasaga Forestry Road was constructed to support these activities. The road has been extended northwards, and it is currently within 18 kilometres of the Project site.

The region hosts a small number of remote tourism operations and seasonal camps. Remote designated tourism lakes identified in the 2018 Crown Land Use Policy Atlas Policy Report in the general vicinity of the Project include Birch Lake, Seagrave Lake, Bertha Lake, Dead Dog Lake, Gull Lake, Fawcett Lake and Christina Lake.

There is a concentration of active mineral claims to the north and west of the Project and extending southwest toward Ear Falls and Red Lake. There is another concentration of active mineral claims east of Slate Falls. The closest operating mines are located in Red Lake (Evolution Mining Red Lake Complex).

5.11 Recreational Land Use

Land and resource use was investigated to assess how people use the land and the resources within the area surrounding the Project site. Examples of land and resource use include hunting, fishing, forestry, plant harvesting, snowmobiling, camping and boating.

Recreational fishing is active throughout the region, with available species including Brook Trout, Crappie, Lake Sturgeon, Lake Trout, Lake Whitefish, Largemouth Bass, Smallmouth Bass, Muskellunge, Northern Pike, Rainbow Trout, Splake, Walleye, Sauger, Yellow Perch and Northern Sunfish. The region is also used for hunting and trapping of large and small game, including Moose, White-tailed deer, Black Bear, Ruffed and Spruce Grouse, Sharp-tailed Grouse, Ptarmigan, Double-crested Cormorant, Snowshoe Hare, Arctic Fox, Red Fox, Opossum, Raccoon, Skunk, and Weasel.

5.12 Traditional Land Use

The Indigenous communities who participate in activities include hunting, fishing, harvesting of plants, and cultural and ceremonial practices on the land are Cat Lake First Nation, Lac Seul First Nation, Mishkeegogamang Ojibway Nation, Ojibway Nation of Saugeen, Pikangikum First Nation, Slate Falls Nation, Wabauskang First Nation and Northwestern Ontario Métis Community.

Slate Falls Nation maintain close ties to the land, hunting, fishing, and trapping regularly. The Choose Life program provides on-the-land experience for youth with support from knowledge holders to teach snaring, setting up fish nets, hide tanning and other skills. Traditional foods in Cat Lake First Nation are recognized as an important part of local food security, with the most common sources being Moose, Beaver, Rabbit, Walleye, Partridge, Duck, Geese, berries, Trout, Whitefish, and Northern Pike. Cultural continuity in Cat Lake First Nation is a critical component of overall wellness with most cultural learning occurring on the land, where knowledge and experiences are passed between generations through programs such as Jordan's Principle, Choose Life, and Oshki-Pimanche-O-win. Traditional Land and Resource Use in Lac Seul First Nation is an important aspect of their culture, and stewardship and subsistence harvesting play support a Traditional economy. Traditional food in Lac Seul First Nation includes Moose, fish (Walleye, Whitefish and Lake Trout), Beaver, Muskrat, rabbits, and wild rice.

Hunting and trapping locations are common around lakes and take advantage of trails and resource movement patterns within the surrounding forest. Traditional Land and Resource Use of the area surrounding the Project hunting and trapping with Beaver, Bobcat, Caribou, Deer, Duck, Ducks, Fisher, Fox, Goose, Grouse, Lynx, Marten, Mink, Moose, Muskrat, Otter, Partridge, Rabbit, Skunk, Spruce Grouse, Squirrel, Weasel, Wolf and Wolverine being the preferred trapping and hunted wildlife. Preferred fishing locations were identified around waterbodies and watercourses where habitat, including Birch Lake and Springpole Lake, would support the various stages of aquatic resources, including spawning sites. Traditionally fished species include Lake Sturgeon, Lake Trout, Northern Pike, Perch, Sauger, Tulibee, White Sucker, Walleye and Whitefish.

Indigenous communities place high value on a variety of plant species for their nutritional benefits, medicinal purposes and ceremonial uses, including wild rice, rat root, wild carrots, bulrush, strawberries, saskatoon berries, blueberries, raspberries, blackberries, cherries, cranberries, juniper, sage, sweet grass, willow, cedar, pine, balsam fir, alder, fiddleheads, yarrow, Labrador tea, mint, rosehip, Chaga, nuts, mushrooms and various tree barks. Other trees and plants are used as tools and building materials, including poplar, spruce, ash, jack pine, and moss. Indigenous communities noted that camps and cabins used for habitation, cultural practices and as spiritual sites are commonly found along lakeshores, including along Birch Lake and Springpole Lake.

5.13 Archaeology and Cultural Heritage

Archaeological assessments conducted for the Project followed applicable regulations and guidelines. Some of the prime areas of potential tested in 2021 included areas adjacent to the major water sources (Springpole Lake), as well as the smaller, mapped inland streams and ponds inland.

The 2021 Stage 2 fieldwork found no archaeological resources within the areas identified in the 2020 Stage 1 report. Two pictograph sites were identified, though not within the proposed development areas. A Stage 2 assessment of the bay surrounding the pictograph sites found no archaeological resources. Due to the steep rocky terrain, the area was considered generally undesirable for habitation. The 2023 Stage 1 archaeological assessment identified no areas with archaeological potential, and no further archaeological assessment of the area was required.

Built heritage resources in or near the study area of the Project include a travel route, portages and eight cabins or camps, consisting of small, framed buildings, generally less than 50 years old, with a kitchen, dining area, and living quarters, which were used as camps. Three cabins were further evaluated and determined to not have cultural heritage value. Two other cultural heritage landscapes were determined to have potential and assessed in the 2021 report:

- Springpole-Birch Lake Portage cultural heritage landscape, a trade route dating to the 1700s; and
- Springpole exploration camp, a mining camp with multiple structures and circulation routes, dating to 1928.

The built heritage and cultural heritage landscape evaluation determined that the Springpole exploration camp did not have cultural heritage value; however, the Springpole–Birch Lake Portage was assessed to have cultural heritage value.

5.14 Human and Ecological Health

In the context of human and ecological health, the existing environment considers potential risk to human and ecological health associated with present, pre-Project existing conditions, including ambient environmental conditions and existing sources of potential risk including chemical concentrations in air, soil, water, sediment and country foods. Considerations for human and ecological health are directly linked to other values components addressed in the final Environmental Impact Statement/ Environmental Assessment, and they are informed by baseline data collected for air quality, surface water, fish and fish habitat, vegetation communities and wetlands, wildlife and wildlife habitat, commercial land and resource use, outdoor recreation, and Traditional Land and Resource Use. These sections, as previously detailed in this Summary, outline the existing environmental conditions relevant to human and ecological health considerations that may be affected by the Project.

6.0 SUMMARY OF THE ENVIRONMENTAL ASSESSMENT

6.1 Assessment Approach

The approach to the assessment of potential effects of the Project is based on the selected valued components. For each valued component, a description of the existing conditions within the Local and Regional Study Areas is provided, based on field investigations, and is used to support the assessment of potential effects. Interactions between the Project and the valued component are identified and pathways to potential effects are described. Mitigation measures to prevent, eliminate or reduce negative effects, are described and include elements inherent in the Project design that are intended to prevent or limit the effects from developing. Following the identification of mitigation measures, an analysis is conducted to support the characterization of adverse residual effects (effects that remain after the application of mitigation) using significance attributes. Residual adverse effects identified for the Project are carried forward into the cumulative effect assessment (to determine the potential for overlapping effects with other adjacent projects.

6.2 Air Quality

Air quality is included as a valued component since air quality parameters, such as excess dust and emissions from fuel combustion, can have an effect on the environment and humans if present in certain concentrations. Air quality has intrinsic importance to the health and well-being of humans, wildlife and vegetation.

6.2.1 Potential Effects

The potential effects of the Project on the air quality, prior to mitigation, includes changes in air quality parameter concentrations. The key air parameters emitted from the Project are particulate matter (fugitive dust), criteria air parameters and other by-products of fuel combustion parameters, and metals present on the fugitive dust (particle-bound).

A screening was completed to identify Project components and activities and associated effects pathways that could potentially affect air quality. Project activities that would have the potential to affect air quality during the Project lifespan include:

- Site preparation activities for the mine site including clearing, grubbing and earthworks;
- Construction of Project infrastructure;
- Combustion of fossil fuels in stationary, mobile, and heavy equipment;
- Handling and stockpiling of mine rock, ore and surficial soils and overburden;
- Blasting in the open pit; and
- Reclamation and closure activities.

Site preparation activities for the mine site including clearing, grubbing and bulk earthworks interact with air quality due to emissions from the operation of equipment. The construction of the mine access road including the aggregate resource areas, as well as the airstrip and transmission line also have a potential effect on air quality due the operation of equipment. These activities could result in fugitive air emissions such as SPM from the movement of materials by equipment on unpaved surfaces, and in combustion gas emissions such as nitrogen dioxide, carbon monoxide and sulphur dioxide in the exhaust of equipment used during these activities.

Air emissions will be most pronounced during the maximum operating scenario in the operations phase of the Project. The maximum operating scenario is a conservative estimate of the material movement during mine operation and includes a hybrid of Year 3 and Year 4, where Year 3 accounts for the maximum ore extracted and Year 4 accounts for the maximum mine rock extracted. The emission of fugitive dust and combustion gases could result in potential effects on air quality during this phase. Further, air emissions such as hydrogen cyanide, copper sulphate and calcium oxide could occur from ore processing.

The potential effects on air quality associated with the construction of the mine access road and transmission line will be effectively limited to heavy equipment operation during the short-term construction phase that will move along the length of the route. As a result, the potential effects would be confined to a limited geographic area over a short duration. There are also two aggregate pits that will be developed to support the construction of mine infrastructure. The construction of buildings and onsite infrastructure and operation of the water management facilities are not expected to have an interaction with air quality as the use of equipment and movement of materials will be immaterial.

The operation of the water management and treatment facilities, airstrip, accommodations complex and the remaining mine site infrastructure is not expected to interact with air quality due to the limited use of equipment and movement of materials and was therefore not quantitatively assessed. Progressive reclamation activities would be captured under the management of the surficial soils stockpile, as this material would be used to support those activities.

There will also be periodic maintenance activities associated with the transmission line and mine access road; however, these are expected to be infrequent and of short duration, and therefore potential effects on air quality are unlikely.

6.2.2 Mitigation Measures

Air emissions are reduced due to optimization of the co-disposal facility through additional engineering and trade-off assessments carried out in response to feedback received on the draft EIS/EA, including the production of a thickened pumpable tailings instead of filtered tailings transported by truck.

During construction, operation and active closure, a dust management plan will be implemented to identify potential sources of fugitive dusts, outline mitigation measures that will be employed to control dust generation and detail the inspection and record keeping required to demonstrate that fugitive dusts are being effectively managed. Dust control measures will be developed based on best practices, that are predictably effective and are not prone to failure. For example, water spray and supplemental dust suppressants will be used to control emissions from roads and stockpiles. In addition, maintenance of vehicle fleets and site infrastructure to minimize dust loading and using control equipment such as dust collectors, baghouses, scrubbers, and filters will also reduce air emissions during operations.

During construction and operation, a blasting plan will be implemented and include measures to minimize the length of time the blasting material is allowed to sit in a drill hole before blasting, thereby reducing generation of nitrogen oxides. The blast schedule will optimize air dispersion to minimize effects on air quality, including by avoiding blasting during unfavourable meteorological conditions, as needed.

6.2.3 Residual Effects and Determination of Significance

A dispersion modelling approach was used to predict air parameter concentrations for the Project. Model results were combined with baseline conditions and compared to the relevant air quality criteria. Air quality is predicted to change from existing conditions due to the Project; however, the modelled concentrations for all particulate fractions (Figure 6–1, Figure 6–2 and Figure 6–3), nitrogen dioxide (Figure 6–4) and sulphur

dioxide (Figure 6–5), metals (for all averaging periods) are below their respective Ambient Air Quality Criteria at both the property boundary and the points of reception during the construction and operations phases. As a result, exceedances of Ambient Air Quality Criteria outside the property boundary are not shown on the figures.

The combustion of fuels results in trace emissions of polycyclic aromatic hydrocarbons to the air. The modelled concentrations of benzo(a)pyrene (a surrogate for polycyclic aromatic hydrocarbons) is below the 24-hour Ambient Air Quality Criteria at the extent of the property boundary and points of reception during the construction and operations phase. However, the annual modelled concentration for benzo(a)pyrene exceeds the Ambient Air Quality Criteria due to the baseline concentration, which already exceeds the Ambient Air Quality Criteria, for both the construction and operations phases.

The modelled concentrations for respirable silica, diesel particulte matter and volatile organic compounds are below the respective Ambient Air Quality Criteria for all averaging periods at the extent of the property boundary and all points of reception during construction and operation, including those located within the property boundary. Because the effects of air quality cease once mining and ore processing, and reclamation activities, the duration of the effect is limited to the duration when emissions would be released. Residual effects on air quality were determined to be **not significant**.

There is a moderate to high degree of confidence in the predictions provided by the air quality assessment. The methods included baseline studies and an industry standard air dispersion model that accounted for all potential Project emissions. The air dispersion model was inherently conservative because it was configured to predict maximum concentrations. These steps reduced the likelihood of underestimating air quality effects.

6.3 Noise and Vibrations

Noise is selected as a valued component since excessive noise can be disrupting to local land users, including Indigenous harvesters, and sensitive wildlife species, and it has the potential to affect human health and well-being. Potential vibration from short duration Project activities, such as blasting, may also affect local land users, including Indigenous harvesters, and disturb fish when they occur in close proximity to fish habitat.

6.3.1 Potential Effects

The potential effects of the Project on the noise and vibration, prior to mitigation, include:

- Change in sound levels; and
- Change in vibration levels.

Noise emissions from all mining equipment and activities could result in increased noise levels during construction, operations, and decommissioning and closure of the Project. Sources of noise include land clearing, site preparation, construction of facilities and infrastructure, mine development, mine access road and airstrip traffic, and active closure activities.

The main noise-generating source during operations is blasting in the open pit.

6.3.2 Mitigation Measures

During construction and operation, site equipment will be operated to meet applicable noise and vibration limits at points of reception, when applicable. Local Indigenous communities and identified points of reception will be advised ahead of transmission line construction work periods and as the construction work

proceeds. Local Indigenous communities will be consulted with to coordinate construction activities related to the transmission line to minimize overlap with the timing of Traditional Land Use activities (e.g., fall moose hunt) and other sensitive periods. A mechanism will be established for receiving and responding to noise complaints in a timely manner during construction, operation and closure phases.

Construction of the transmission line will occur primarily during the daytime hours to minimize disturbances during sleeping hours. Motorized equipment will be selected or designed with mufflers / silencers to limit noise emissions and regular inspections and maintenance will take place to confirm that equipment and machinery used on site is operated in good working condition. Reversing alarms should be dimmable with white noise and/or strobe lights rather than noise-emitting alarms, but in accordance with the applicable health and safety regulations. The use of engine brakes will be prohibited and engines will need to be stopped for vehicles on standby, depending on seasons and weather. Vehicles and equipment will be operated in such a way that impulsive noise is minimized, where possible.

For helicopter use during transmission line construction, minimum flight altitudes will be maintained unless the helicopters are engaged in construction tasks, landing or departure.

Prior to construction, a detailed blasting plan will be developed for the Project to determine the maximum allowable explosive loading at various locations to aid in complying with applicable limits for vibration at receptors.

6.3.3 Residual Effects and Determination of Significance

The Project mine site activities are expected to operate in compliance with the applicable provincial and federal sound level limits for its daytime, evening and nighttime operations. Changes in the noise environment were assumed to be continuous through the lifespan of the proposed Project, but noise levels would return to baseline conditions at the end of the decommissioning and closure phase when activities cease (Figure 6–6).

The Project is expected to have short-term exceedances of Health Canada Noise Guideline limits during construction of the transmission line at points of reception within approximately 500 metres of the transmission line right-of-way. However, construction will proceed in a linear fashion along the transmission line route with only a limited amount of time being spent at any particular location. Any exceedance will be temporary in nature, expected to occur only when construction activities are in close proximity to a point of reception and limited to the vicinity of the transmission line right-of-way. Residual effects from the Project on sound levels is predicted to be **not significant**.

A blasting management plan will be prepared prior to construction by a qualified blasting contractor, and where blasting occurs within the vicinity of a fish-bearing waterbody, a detailed blast design will be developed to comply with federal blasting guidelines. Following these plans, the effects of vibration will be mitigated and there will be no predicted residual effects from Project-related vibration.

The prediction of effects was conducted on the basis of industry standards for modelling of noise and vibration and used input data that were based on information provided from commonly accepted engineering methods and past project experiences, and an understanding of the Project. There is a high degree of confidence in the predictions provided by the noise assessment. Uncertainty in the noise assessment was addressed by making conservative assumptions that overestimated potential effects (i.e., a precautionary assessment).

6.4 Greenhouse Gases

Greenhouse gases are gases that contribute to potential climate change by trapping heat in the atmosphere, and include carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons, sulphur hexafluoride and nitrogen trifluoride. Greenhouse gases are a contributing factor to anthropogenic (i.e., human caused) alteration of climate, greenhouse gases emissions were selected as a valued component, and the release of greenhouse gases from the Project has been assessed.

6.4.1 Potential Effects

A screening was completed to identify Project components and activities and associated effects pathways that could potentially affect greenhouse gas emissions. Project activities that would have the potential to affect greenhouse gas emissions during the Project lifespan, prior to mitigation, include:

- Operation of equipment, biomass removal and changes in land use during site preparation;
- Use of explosives for blasting;
- Use of combustion of fossil fuels in stationary, mobile, and heavy equipment;
- Handling and stockpiling of mine rock, ore and surficial soils and overburden; and
- Reclamation and closure activities.

6.4.2 Mitigation Measures

The Project is designed to reduce emissions of greenhouse gases, most notably through the installation of a transmission line such that the electricity demand may be supplied from the Ontario grid, as opposed to the use of generators. Greenhouse gases from the use of diesel fuel for mobile heavy equipment will be minimized through strategic mine scheduling to reduce the total distance travelled by haul trucks and other equipment. A Greenhouse Gas Management Plan will be developed that will describe the energy and heat conservation, efficiency and management programs for the Project, and outline mitigation measures to reduce greenhouse gas emissions during all phases.

FMG is also implementing a strategy to reduce the net greenhouse gas emissions to zero over the life of the Project. The Net-Zero Plan developed to achieve this target includes the use of technologies and practices to reduce fossil fuel use and carbon offsets to balance greenhouse gas emissions that cannot be eliminated. It also includes a commitment to considering opportunities to incorporate renewable energy sources and takes into consideration opportunities to reduce overall Project emissions.

6.4.3 Residual Effects and Determination of Significance

The assessment of greenhouse gas emissions associated with the Project included sources associated with energy use, specifically fossil fuel combustion and purchased electricity, and the land use changes that have the ability to affect the carbon balance with the removal of the vegetation carbon sink (existing forest).

The residual effects analysis calculated the estimated annual direct greenhouse gas emissions, as well as for the total carbon dioxide equivalent emissions. The estimated maximum annual greenhouse gas emissions from each Project phase on provincial and federal levels were assessed through comparison to the most recent available emission totals for Ontario and Canada.

The key findings from the greenhouse gas assessment were:

- Project greenhouse gas emissions would contribute approximately 0.05 percent of the total Ontario annual total emissions and approximately 0.01 percent of the federal annual total emissions; and

- Project greenhouse gas emissions would not meaningfully affect Ontario's and Canada's abilities to reach climate change commitments within the current regulatory framework.

As a result, effects on the greenhouse gas emission valued component as a result of the Project are predicted to be **not significant**.

The methods used to predict GHG emissions relied on current Project design information with a sufficient level of detail to determine the magnitude of the effects from the Project and provides a high level of confidence. The GHG intensity of the power grid used in these predictions are based on current government policies and measures in place.

6.5 Groundwater

Groundwater has been included as a valued component because it is directly linked to other components of the aquatic ecosystem including surface hydrology, surface water quality. There are no groundwater wells in the vicinity of the Project that are used as a source of drinking water, nor are there any known springs near the Project that are used as a source of drinking water. As such, effects on groundwater users are not expected.

6.5.1 Potential Effects

The potential effects of the Project on the groundwater, prior to mitigation, include:

- Change in groundwater quantity; and
- Change in groundwater quality.

Site preparation activities for the mine site, including clearing, grubbing and bulk earthworks, will potentially affect groundwater quantity due to the change in surface water catchment areas contributing to groundwater. During construction groundwater quantity will be primarily affected by the construction of the co-disposal facility and the development of the open pit due to the excavation below the groundwater table and the associated water management. The construction of the mine access road, airstrip and the transmission line is anticipated to occur during frozen conditions, above the water table, or within a small area for a very short period of time, as such potential effects on groundwater from these activities will be effectively managed with standard best practices.

During operations, potential effects on groundwater are related to the requirement to manage groundwater and surface water that collects in the open pit and the co-disposal facility. Seepage from the co-disposal facility could also affect groundwater quality. During decommissioning and closure, the local groundwater levels will gradually recover until the open pit basin fills to the natural elevation of Springpole Lake, at which time groundwater levels will stabilize at a post closure level similar to levels at baseline.

6.5.2 Mitigation Measures

During construction, mitigation measures include limiting the Project footprint to the extent possible to reduce the area subject to changes in infiltration rates from site development, and thereby reducing groundwater recharge. In addition, management practices for excavation and open pit dewatering will be implemented to reduce effects on the groundwater table. Locating the co-disposal facility on favourable geologic conditions at the Project site supports long-term stability and provides effective seepage management due to the lower hydraulic conductivity at the location. During construction, a geosynthetic clay liner will be installed on the upstream side of the perimeter dam of the co-disposal facility south cell to mitigate the potential for seepage through the dam during the operation and closure phases.

An integrated water management system will be implemented during all phases of the Project to collect and control water from the stockpiles, co-disposal facility and mine site. Water collection ditches are designed and implemented to collect overland flow and seepage and direct it to the integrated water management system. During decommissioning and closure, the filling of the open pit basin will be accelerated by transferring water from Springpole Lake in a controlled manner while maintaining lake water levels in Springpole Lake within the same order of magnitude and scale as existing conditions, thereby returning groundwater levels to baseline conditions.

6.5.3 Residual Effects and Determination of Significance

The Project is predicted to have a localized residual effect on groundwater in the immediate vicinity of the mine site infrastructure. Given the large size of Birch Lake and Springpole Lake, the predicted change in groundwater discharge represents a negligible component of the overall lake water balance (e.g., less than 0.2 percent for Springpole Lake) and will not affect surface water quantity or lake water levels. Further, the groundwater flow is also expected to return to near baseline conditions in the post-closure phase, after cessation of open pit operations, and the filling of the open pit basin.

The residual effect on local groundwater quality is a change due to seepage from Project components during operations within the Project Development Area; however, the seepage rate and quality, are predicted to improve during the final closure phase with the exception of arsenic and phosphorus. The change in groundwater quality will not result in an exceedance of surface water guidelines in the receiving water and there is unlikely to be an adverse effect on a surface water system valued component. The residual effect on groundwater quality will return to baseline conditions in the post-closure phase, after cessation of open pit operations. Therefore, residual adverse effects on groundwater quantity and quality are predicted to be **not significant**.

There is high confidence in the predictions for groundwater effects. The predicted effects are determined using well-established models and do not consider supplemental contingency mitigation factors (e.g., bedrock grouting), lag and travel times or naturally occurring attenuation processes and therefore, likely over predict effects. Input data used in predictive modelling are of high quality, and the range of existing and projected variability in both the existing regime and the mine-influenced regime have been considered in the model sensitivity cases.

6.6 Surface Water

Surface water is selected as a valued component because it is critical to the life function of human and non-human biota; supports Indigenous, commercial, and recreational uses; and provides cultural value to humans. The surface water valued components encompass aspects related to surface water, including hydrology (surface water volume and flow), as well as surface water quality.

6.6.1 Potential Effects

The potential effects of the Project on the surface water systems, prior to mitigation, include:

- Change in water quantity; and
- Change in water quality.

The primary Project activities that potentially interact with surface water systems which may lead to these potential effects include:

- The construction and operation of the mine site water management infrastructure, fish habitat development area and co-disposal facility;

- The temporary dewatering, re-filling, and then subsequent reconnection of the open pit basin to Springpole Lake;
- Discharge of treated effluent from the combined ETP and STP to the southeast arm of Springpole Lake; and
- Limited seepage from Project components.

The development of use of mine site water management infrastructure, including fish habitat and the co-disposal facility, will potentially affect surface water to the change in local catchment areas, which changes the contributions of both surface water and groundwater flows reporting to the surface water receiving environment. In particular, effects of open pit water management are anticipated as the open pit will generally act as a sink to groundwater flow (i.e., hydraulic low), drawing groundwater into the pit from immediately adjacent areas during mine operation. This is expected and typical of all open pit mining operation.

During construction, operations, and active closure, discharge of treated effluent (combined STP and ETP) to the southeast arm will potentially affect water quality. Operational discharge requirements are predicted to be greatest at the end of operations, resulting from increased groundwater inflows to the open pit and site runoff as various site features develop.

6.6.2 Mitigation Measures

To minimize potential effects on surface water system, the Project incorporates a range of mitigation measures. The mine site layout has been designed to be compact to reduce both disturbance area and the amount of contact water requiring management. During construction, operation, and closure phases, an integrated water management system will capture and control contact water from stockpiles, the co--disposal facility, and plant site areas. Collected contact water that is not recycled for ore processing will undergo treatment at the effluent treatment plant before being discharged to Springpole Lake, in compliance with permitting requirements. The effluent treatment plant will meet regulatory standards, including those under Metal and Diamond Mining Effluent Regulations, and will integrate best available technologies economically achievable to protect water quality.

During active closure, passive filling with precipitation and groundwater of the open pit basin will be supplemented by water transferred from Springpole Lake in a controlled manner to reduce the fill time while maintaining lake water levels in Springpole Lake within the same order of magnitude and scale as existing conditions.

6.6.3 Residual Effects and Determination of Significance

The Project is predicted to have a minor residual effect on Birch Lake and Springpole Lake. The residual effects on surface water quantity in Birch Lake and Springpole Lake are seasonal changes in outflows, velocity and lake levels during active closure and are associated with pit filling; however, these changes are predicted to be within the same order of magnitude and scale of existing conditions.

Surface water quality modelling completed to support the Project identified that resulting water quality in the receiving environment would meet water quality guidelines for the protection of aquatic life. Measurable changes in water quality as a result of the Project are expected to be limited to the immediate vicinity of the treated effluent discharge in the southeast arm of Springpole Lake (mixing zone). The water quality modelling predicted changes in surface water quality that would not be measurable in either Birch Lake or

the north basin of Springpole Lake (Figure 6–7). Therefore, residual effects from the Project on hydrology and surface water quality in Birch Lake and Springpole Lake were determined to be **not significant**.

With the implementation of best management practices for the installation of watercourse crossings along the mine access road and mine site haul roads, the effects of surface water quantity on local inland waterbodies will be mitigated. As the effects on surface water quantity are predicted to be indistinguishable from baseline conditions, there are no residual effects from the Project on local inland waterbodies. In addition, with implementation of effective sedimentation and erosion control measures there are no potential increases to total suspended solids and turbidity in the receiving environment beyond the range of natural variation. Therefore, there are no residual effects predicted for surface water in the local inland waterbodies due to sedimentation.

Predictions based on these methods are associated with a high degree of confidence, as the methods adopted for the hydrology assessment included extensive baseline studies and quantitative modelling, and resulted in an understanding of the hydrological system, provided context for natural variability and responses to climate, and allowed for the quantitative assessment of Project effects.

6.7 Fish and Fish Habitat

Fish and fish habitat were selected as a valued component for assessment because fish and their habitats are key indicators of fishery sustainability, productivity and environmental health. This VC includes fish, the habitat that supports these fish, and the health of these fish populations. Fish habitat means fish-frequented waters on which fish depend directly or indirectly to carry out their life processes.

6.7.1 Potential Effects

The potential effects of the Project on the fish and fish habitat, prior to mitigation, include:

- Change in fish communities;
- Change in fish habitat; and
- Change in fish health.

Direct effects on fish and fish habitat are due to the physical loss of fish habitat from the development of the open pit. Potential Project direct effects also include physical habitat loss and disturbance associated with the construction and operation of a freshwater intake in Birch Lake and treated effluent and treated sewage outfall in Springpole Lake. Project activities that have the potential to indirectly affect fish and fish habitat during the Project lifespan include:

- Changes in Springpole Lake surface water quality from effluent treatment plant and sewage treatment plant discharges;
- Runoff from the Project footprint that could cause changes in the concentrations of nutrients and suspended solids;
- Seepage from co-disposal facility that could affect fish health;
- Sediment release during in-water construction and from ground disturbance; and
- Changes to water flows and levels from site water management activities (e.g., water withdrawals, dewatering of the open pit.

The detonation of explosives near waterbodies can produce post-detonation shock waves which result in a pressure deficit referred to as overpressure that can cause impacts in fish. Vibrations can also harm fish eggs and larvae.

6.7.2 Mitigation Measures

Potential effects on fish due to changes in surface water quality during the Project lifespan will be minimized by collecting and treating contact water (i.e., water that may have been altered by Project activities) as necessary prior to release to the environment. Proposed mitigations, such as the use of erosion and sediment control best management practices, limiting the disturbance area of Project components, and reclaiming and revegetating disturbed areas, will reduce the potential effects on both fish and fish habitat. Additionally, water management infrastructure will be designed to re-use and recycle water wherever possible to minimize the amount of freshwater withdrawn from the lake and reduce effects on downstream fish habitat.

Infrastructure such as the freshwater intake, treated effluent and treated sewage outfall would be designed to minimize the physical footprint and associated loss or disturbance of fish habitat in the lake. This in-water infrastructure would be located to avoid sensitive or unique fish habitat in Springpole Lake, to the extent feasible, and will be designed to minimize effects on fish and fish habitat. The freshwater intake would be fitted with a fish screen to minimize the potential for fish to be drawn into the intake. Where possible, in-water construction associated with these developments would be scheduled to avoid sensitive fish spawning and egg incubation periods for fish in Birch Lake. Prior to construction, a detailed blasting management plan for areas adjacent to fish habitat that meets DFO criteria or alternative values derived will be developed in consultation with DFO to minimize effects on fish due to blasting.

Other measures that will be implemented to avoid or minimize the direct effects of the Project on fish and fish habitat include:

- Minimize the mine site footprint and overprinting of waterbodies where possible.
- Relocate fish from the work area prior to undertaking in-water works for the construction of Project infrastructure in Springpole Lake.
- Prior to dewatering the open pit basin area, a comprehensive fish removal program (fish out) will be conducted within the basin to minimize the unintentional death of fish.
- Implement the measures outlined in the Fish Habitat Offsetting and Compensation Plan, such as constructing a new embayment (46 hectares in the fish habitat development area) to the east of the dewatered area to be new, functional fish habitat at closure.
- Enhance the open pit basin (dewatered) area for selected key fish species (determined during engagement and consultation) by modifying cover, structure and substrates to improve fish habitat suitability where appropriate.
- The construction of Project roads has been designed to avoid watercourse crossings, where practicable, to minimize effects on fish and fish habitat.

6.7.3 Residual Effects and Determination of Significance

It is anticipated that a combination of offset and compensation measures implanted for the Project will mitigate for the impacted fish habitat and, as a result, there will be no residual effects on fish habitat following the implementation of the Fish Habitat Offsetting and Compensation Plan (Appendix F).

Changes in Fish Habitat

Construction of the east and west dikes is required to allow the dewatering of a portion of the north basin of Springpole Lake to allow the development of the open pit. These dikes are essential for the safe and controlled dewatering of the pit area in advance of mining operations and have been successfully implemented at several other mines in Canada. This will result in the temporary loss of fish habitat in Springpole Lake within the footprint of the dikes and subsequently the dewatered portion of the north basin of Springpole Lake. Once the portion of the north basin of Springpole Lake is isolated, clean water will be pumped over the dikes back into Springpole Lake.

Once mining concludes in approximately Year 10, the open pit basin will start to fill with water by direct precipitation and groundwater infiltration from the surrounding bedrock. To reduce the filling time, supplemental water from Springpole Lake is planned to be transferred to the pit in a controlled manner while maintaining lake water levels within natural variation. The proposed active filling rate would be adjustable to reflect up to 10 percent of the inflows to Springpole Lake; guidance provided by DFO indicates that a 10 percent to 15 percent reduction in instantaneous flows is unlikely to have detectable ecological effects on downstream habitat. The reclaimed basin is expected to support the same fish community in the same or greater abundance as baseline conditions while increasing the total lake surface area by approximately 3.5 percent and the total lake volume by approximately 16 percent. As a result, there will be no residual effects on fish and fish habitat following reclamation and refilling of the open pit basin.

The co-disposal facility will result in most downstream channels experiencing catchment reductions, and as such, the entire area of the impacted channels downstream of the co-disposal facility is considered to be affected fish habitat. However, fish productivity in these systems will be partially mitigated by relocating fish that occur in the affected waterbodies to downstream habitats prior to constructing the co-disposal facility. Further, the loss of fish habitat will be mitigated with the offsetting measures.

The proposed water taking from Birch Lake would be less than 5 percent of the flow from the lake and is not expected to result in measurable changes to lake levels or downstream water levels. Through the integrated water management system, the flow of treated effluent discharged to the southeast arm of Springpole Lake will be attenuated to reduce erosive forces. Further, the discharge pipe will be designed and oriented to mitigate erosion from discharge. Both the water intake and treated effluent discharge structures would be removed at closure and the area restored.

It is anticipated that a combination of offset and compensation measures will mitigate for the 213.2 hectares of impacted fish habitat and, as a result, there will be no residual effects on fish habitat following the implementation of the Fish Habitat Offsetting and Compensation Plan.

Changes to Fish Communities

During construction, once the portion of the north basin of Springpole Lake is isolated, clean water will be pumped over the dikes back into Springpole Lake. Prior to dewatering this area, a comprehensive fish removal program (fish-out) is proposed to minimize the unintentional death of fish associated with dike construction and dewatering of the isolated basin. Fish removals are a common mitigation measure for projects impacting waterbodies, including large-scale lake removals, and each project requires individual consideration as to the best methods and preferred objectives. The objectives and end use of the fish will be determined through further engagement with Indigenous communities and federal and provincial regulators.

During the operations phase, a water intake structure will be constructed in Birch Lake northeast of the ore stockpiles to provide freshwater for the process plant and accommodations complex. To mitigate the potential effects on fish communities due to entrainment or impingement from the operation of water intakes during all phases, a screen or other deterrents at the pump intakes will be implemented per DFO Code of Practice.

Overall, with the implementation of mitigation measures, including the offsetting measures, the predicted changes in local fish communities will be effectively mitigated, and no residual effects on fish are anticipated due to the relocation of fish, blasting, and fish entrainment or impingement.

Changes in Fish Health

Prior to construction, a site-specific preliminary ESCP will be developed for the Project. The ESCP will evaluate the construction efforts that may produce erosion and include mitigation measures such as diversion berms, sedimentation ponds, grading recommendations to manage erosion, and other erosion and sediment control measures to minimize the risk of fines entering local waterbodies and increasing suspended solids. Further, mitigation will be implemented during the dewatering of the isolated portion of Springpole Lake so that suspended sediment levels do not exceed discharge criteria for the receiving environment. Earthworks are anticipated to be completed seasonally, and the risk of elevated sediments in waterbodies following mitigation measures is anticipated to be short term and limited to localized areas; therefore, residual effects on fish health are not predicted.

The treated effluent will meet the requirements of the Metal and Diamond Mining Effluent Regulations and provincial approvals and will be protective of aquatic life, including fish and benthic invertebrates. This will be verified with monitoring required by the Metal and Diamond Mining Effluent Regulations and provincial approvals, which includes water quality, benthic invertebrates and fish tissue sampling. By using the integrated water management system, the flow of treated effluent discharged to the southeast arm of Springpole Lake will be attenuated and diffused to reduce erosion and sedimentation and improve mixing. As such, water quality is not anticipated to have a residual effect on fish health as the applicable regulatory requirements will be protective of aquatic life.

Runoff and seepage water will be collected by ditches around the perimeter of the co-disposal facility and ore stockpiles, then pumped to the internal co-disposal facility pond and contact water management ponds, respectively. As necessary, this water may be transferred to the central water storage pond and/or the process plant for re-use or treated in the effluent treatment plant prior to discharge. The co-disposal facility and ore stockpiles will maintain a setback of 120 metres from adjacent waterbodies, as applicable. Overall, with the implementation of mitigation measures, including the offsetting measures, the predicted changes in fish health will be effectively mitigated, and result in no residual effects on fish.

As required by federal legislation and policy, the temporary change to 213 hectares of fish habitat will be counterbalanced as a component of the Project and is considered mitigation in the context of the EA. With the proposed design, mitigation and implemented offsetting measures, residual effects on fish and fish habitat are not predicted, and therefore a determination of significance is not required.

The level of confidence in the prediction is considered to be high. The predicted effects are based on previous experience, in which the potential effects and mitigation measures are well understood. In addition, the data used in the assessment are based on extensive field studies carried out since 2011. Further, the assessment of effects on fish and fish habitat uses a conservative and precautionary approach that includes watercourses in the impacted area total despite their having a low probability of being fish frequented, and assuming a 100 percent impact on waterbodies only partially affected.

6.8 Vegetation and Wetlands

Vegetation communities and wetlands were selected as a valued component because vegetation communities and associated terrestrial habitat potentially provide:

- Areas of biological diversity;
- Habitat for locally common species, Significant Wildlife Habitat and Species at Risk;
- Corridors or linkages for wildlife movement;
- Supporting function of other ecosystem elements;
- Areas of economic, social, or cultural practice (such as hunting, trapping and gathering); and
- Areas of educational, scientific, or aesthetic interest.

Further, wetlands have a role in supporting biodiversity, Traditional Use by Indigenous communities, and contributions to ecosystem functions at local and regional landscape scales.

6.8.1 Potential Effects

The potential effects of the Project on the vegetation communities and wetlands, prior to mitigation, include:

- Change in the relative abundance and diversity of plant species and vegetation communities;
- Change in the function, connectivity, and quality; and
- Change in relative abundance and area of wetland extent.

Project activities that would have the potential to affect vegetation during the Project lifespan, prior to mitigation, include:

- Land clearing;
- Site preparation;
- Construction of facilities and infrastructure;
- Handling of ore and mine rock;
- Changes to water and air quality;
- Drawdown of groundwater; and
- Other supporting mining construction, operation, and decommissioning and reclamation activities.

6.8.2 Mitigation Measures

The Project footprint has been optimized to be compact, thereby limiting to the degree practicable the areal extent of disturbances to vegetation and wetlands. Additionally, the transmission line, airstrip and mine access road have been co-located within a shared infrastructure corridor, where feasible, to minimize the areal extent of disturbance to vegetation communities and wetlands. Topsoil and the upper organic layer will be salvaged when constructing in and adjacent to wetlands to facilitate revegetation of the mine site using native vegetation. Silt fences will be installed on approaches to wetlands to minimize erosion and sedimentation. During operations, progressive revegetation and encouragement of natural revegetation / recolonization of disturbed areas will be undertaken to minimize the length of time areas are disturbed.

Revegetation efforts will preferentially use local vegetation sources, incorporate plant species of interest to Indigenous communities, and avoid the use of non-native or invasive species. In addition, an invasive species management plan will be implemented during construction, operation and active closure phases to reduce the spread of invasive and non-native species from the Project, which could affect native vegetation.

During the filling of the open pit basin, transferring water from Springpole Lake in a controlled manner while maintaining lake water levels in Springpole Lake will help accelerate the return of groundwater levels, thereby reducing effects on wetlands. In addition, construction activities will be completed in wetlands during late summer, fall or winter, whenever practicable.

During the active closure phase of the Project, final rehabilitation activities of the mine development areas will be completed to create a stable, productive, and naturalized state. The closure plan includes the rehabilitation of disturbed lands (using commercially available native seed sources) and the establishment of self-sustaining vegetative cover. The closure phase will also include consultation with local Indigenous communities on wetland creation. The mine access road will be scarified to alleviate surface compaction to aid in vegetative regeneration during the closure phase.

6.8.3 Residual Effects and Determination of Significance

The Project is predicted to have a localized residual effect on vegetation communities and wetlands in the immediate vicinity of infrastructure. The residual effects associated with the physical loss of vegetation communities and wetlands within the Project footprint due to clearing for the Project, a localized change in connectivity of these communities, and potential reduction of wetlands due to localized drawdown.

Change in the Relative Abundance and Diversity of Plant Species and Vegetation Communities and Wetlands

A change in relative abundance and diversity of plant species and vegetation communities, including species of interest to Indigenous communities, species at risk and species of conservation concern may occur during the construction and operation of the Project due to vegetation loss or alteration, fragmentation, competition from invasive and non-native species, and vegetation management. The footprint of the Project is 1,365 hectares, with 670 hectares representing the land overprinted by the mine site. Physical loss of vegetation communities is restricted to the Project disturbance area and represents a less than 1 percent change in the region. The region is relatively homogenous therefore, these vegetation communities are common throughout the region. As such, removal of vegetation in the Project disturbance area is unlikely to threaten the long-term viability of vegetation communities.

No plant species at risk have been documented in the Project Development Area. While Species of Conservation Concern have been found in the Project Development Area, the vegetation communities and habitat for these species are anticipated to be undisturbed by the Project. Further, species of interest to Indigenous communities are abundant in the local and regional area and removal during construction is not anticipated to affect the viability of the species of Indigenous interest.

The Project will result in a very small incremental change to the landscape and rehabilitation measures will be implemented during the operation and closure phases as outlined in the approved closure plan. Revegetation trials will occur during the operations phase to evaluate and optimize the revegetation strategy for closure. During the closure phase, areas within the Project Development Area will be revegetated through active seeding of commercially available native plant species and preparation of the ground surface to promote natural revegetation. There will be opportunities provided to Indigenous communities to refine the list of plant species in the closure phase revegetation plans and to participate in

the revegetation trials during life of mine. In areas where species of conservation concern occur, transplanting and salvage of topsoil and upper organic layer may be considered.

With the implementation of mitigation measures (including reclamation and revegetation), predicted residual effects from the Project on the long term viability, abundance and/or distribution of vegetation communities and wetlands is determined to be **not significant**.

Change in the Function, Connectivity, and Quality

There will be minor and localized changes in the function, connectivity and quality of vegetation communities and wetlands due to indirect effects from dust deposition and changes in groundwater. Overall, dust deposition on plants results in some visible stress on individual plants, which can result in a decrease in the plant's productivity. The structure of localized vegetation communities may also be affected by excessive dust. The vegetation communities in the Project site most affected by dust deposition are those located alongside the roads on which mine haul trucks will be travelling. However, a dust management plan using water primarily, and dust suppressants as needed, will be implemented at the start of construction and during operation to limit the effects. Moreover, the predicted worst-case air quality of the mine site was modelled. The zone of influence is largely contained within the Project Development Area and represents less than one percent of the vegetation and wetland communities in the region.

Groundwater drawdown as a result of pit dewatering could affect both the horizontal and vertical connectivity of wetland systems in the mine site portion of the Project Development Area. During open pit operations, the groundwater drawdown will change the water budget available to vegetation communities and wetlands resulting in potential effects on 0.04 percent in the region. The controlled refilling of the open pit basin at closure will return groundwater levels to baseline conditions supporting wetlands in the Project Development Area. The residual effect of the decrease in the quality, connectivity and function of vegetation communities and wetlands from groundwater drawdown is determined to be **not significant**.

6.9 Wildlife and Wildlife Habitat

Wildlife and wildlife habitat has been selected as a valued component due to the potential interactions with project activities. The wildlife species included in this valued component are considered to have ecological, aesthetic, recreational, economic and/or cultural importance. For the purposes of this methodology, wildlife refers to birds, mammals, reptiles, and amphibians but excludes bats and threatened and endangered Species at Risk, which have been identified and assessed as separate valued component.

6.9.1 Potential Effects

The potential effects of the Project on the wildlife and wildlife habitat, prior to mitigation, include:

- Change in relative abundance of habitat;
- Change in the function, connectivity and quality of habitat; and
- Change in risk of mortality.

Project activities that potentially interact with wildlife and wildlife habitat which may lead to these potential effects include:

- Changes in wildlife habitat due to the loss of vegetation from site preparation activities at the mine site, and along the mine access road and transmission line during construction;

- Indirect changes in wildlife habitat due to changes in environmental conditions from groundwater drawdowns, water management, air emissions and lighting at the mine site during construction and operation;
- Indirect changes in wildlife habitat due to sensory disturbance from noise at the mine site, and along the mine access road during operation;
- Changes in wildlife habitat due to the management of vegetation along the mine access road and transmission line corridor during operation; and
- Changes in the risk of mortality due to the removal of wildlife habitat during construction and the operation of equipment during all phases.

6.9.2 Mitigation Measures

Several key measures will be implemented to avoid or minimize the effects of the Project on wildlife and wildlife habitat.

The Project will be developed within a compact mine site and the transmission line, airstrip and mine access road will be co-located within a shared infrastructure and existing corridors, where feasible, to reduce the potential direct loss of wildlife habitat. Vegetation and wetland mitigation will focus on minimizing clearing and removal of woody vegetation, using mechanical removal practices, and implementing measures for invasive species. Vegetation removal will be conducted outside sensitive times for wildlife, and buffers will be used where practicable to reduce potential effects on wildlife. Disturbance to wildlife habitat will be minimized by using existing trails and roads for travel during construction.

Indirect effects on wildlife habitat due to sensory disturbances will be managed with noise mitigation measures that will include the use of acoustical enclosures, silencers and mufflers on equipment, and the prohibition of engine brakes. Lighting will be managed to minimize sensory disturbance to wildlife habitat by maintaining light sources below natural or artificial barriers and using shielding to reduce light spill and glare. Mitigation measures for air quality, including a dust management plan, will be implemented to control dust emissions from roads and mineral stockpiles, which could indirectly affect vegetation communities. Surface water management will include an integrated water management system to collect and control contact water, thereby reducing potential changes in water quality in adjacent waterbodies that wildlife use.

To mitigate the direct and indirect loss of wildlife habitat, progressive and final rehabilitation will be undertaken in accordance with the closure plan, incorporating local vegetation and wildlife habitat features, where feasible.

To reduce the potential risk of wildlife mortality, reduced speed limits will be enforced along project-controlled roads within high-quality wildlife habitats, and vehicles must stop for wildlife crossings. Wildlife awareness training will be provided to project employees and wildlife observations and collisions will be logged and reported. Hunting and trapping by Project personnel will be prohibited within the gated controlled access portion of the Project Development Area during all phases. Domestic solid waste will be properly secured, stored, and disposed of at an offsite licensed facility to mitigate the habitat sink effect of increased predator densities.

6.9.3 Residual Effects and Determination of Significance

The Project is predicted to have residual localized effects on wildlife and wildlife habitat in the Local Study Area. The residual effects on wildlife are associated with the localized loss of habitat due to the construction of the Project, changes in the function, connectivity and quality of habitat during all phases of the Project, and increased risk of mortality. For most of the valued components, these effects are described on the scale of the wildlife Local Study Area, as the effects would not be measurable on a regional scale.

Change in Relative Abundance of Habitat

The Project footprint is predicted to remove less that one percent loss of most wildlife habitats in the Regional Study Area. The habitat required for wildlife to carry out the life processes necessary to survive and reproduce, and wildlife habitat functions are present elsewhere in the Regional Study Area. Therefore, loss of wildlife habitat in the Project Development Area is unlikely to threaten the long-term viability, abundance and/or distribution of wildlife or the availability of their habitats.

All proxy species, except Fisher and Osprey, have less than a one percent change in the Regional Study Area, indicating that the effect of habitat is localized to the Project Development Area suitable habitat exists elsewhere. Fisher has a 1.21 percent and Osprey has a 4.74 percent loss in the Regional Study Area; however, these habitat types are abundant with the Regional Study Area, therefore a change in the amount of these habitats is unlikely to threaten the long-term viability, abundance and/or distribution of birds. Overall, following appropriate guidance documents and applying effective mitigation strategies, the direct impacts will not result in a change in the form and function of significant wildlife habitat. Overall, predicted residual effects from the Project on the long-term viability, abundance and/or distribution of wildlife or the availability of their habitats is determined to be **not significant**.

Change in the Function, Connectivity and Quality of Habitat

Change in the function and quality of habitat considers the effects on habitat indirectly altered by air, groundwater drawdown and sensory disturbance. The indirect effects of air quality are not expected to impact large mammals, herptiles, raptors, shorebirds, waterfowl, bog/fen wetland birds, special concern species or culturally important species. Project-related changes constitute less than one percent of the habitat within the Regional Study Area for these species, implying a low probability of negative effects on suitable habitat and habitat functions.

The alteration of the groundwater and surface water regime in adjacent wildlife habitats could affect local suitability and use and reduce habitat effectiveness from fragmentation and change in habitat configuration. These changes could occur due to water collection systems or groundwater drawdown as a result of dewatering activities and could affect the abundance and composition of wetland vegetation utilized as a bird habitat. Groundwater drawdown is predicted to change less than one percent of wetland habitats in the Regional Study Area implying a low probability of negative effects on suitable habitat and habitat functions.

Sensory disturbance can impact behaviour and reproductive success as prey species have evolved anti-predator responses to threatening stimuli, such as loud noises and rapidly approaching objects, and therefore perceive human-caused noise and movement as a form of predation risk (Frid and Dill 2002). The effect of sensory disturbance is predicted to reduce the quality of wildlife habitat for furbearers in the Regional Study Area by less than five percent, and less than one percent for large mammals. Overall, habitat functions are maintained elsewhere in the Regional Study Area; therefore, there is a moderate potential to adversely affect these species and those with similar life processes and habitat requirements. There may be

residual effects on amphibians due to acoustical interference that may affect anuran chorus behaviour directly by modulating call rates of the chorus participants or indirectly by suppressing calling behaviour (Sun and Narins 2005). Although there will operational effects associated with noise thresholds in the Regional Study Area; these habitat functions are maintained elsewhere in the Regional Study Area. In contrast, chronic and frequent noise interferes with animals'' abilities to detect important sounds.

Acoustical masking from increased noise can interfere with bird communication, particularly at lower frequencies and during the breeding period, which can reduce habitat function and result in locally reduced species richness, diversity and/or abundance (Rheindt 2003; Wood and Yezerinac 2006). Bird assemblages would be most sensitive during the breeding / nesting period although they can increase the amplitude of vocalizations in response to increased ambient noise levels. The effects of noise on bird habitat are predicted to be less than a five percent change in the Regional Study Area was found. Overall, habitat functions are maintained elsewhere in the Regional Study Area with similar life processes and habitat requirements.

Overall, following appropriate guidance documents and applying effective mitigation strategies, the direct and indirect impacts will not result in a change in the form and function of significant wildlife habitat. Therefore, a change in the quality of wildlife habitat from air quality, groundwater drawdown and sensory disturbance in the Project Development Area is unlikely to threaten the long-term viability, abundance and/or distribution of wildlife or the availability of their habitats.

Landscape fragmentation, an indirect effect of the Project, can disrupt habitat function, connectivity and quality, thereby altering habitat suitability and community dynamics. Fragmentation of wildlife habitat can result from linear corridor developments, such as cleared rights-of-way and roads, through contiguous habitats, which can decrease species densities (Andrews 1990; Bayne et al. 2005). Barrier effects or alterations in species' movement patterns could also result from linear corridors intersecting with habitats (Carthew et al. 2009; Dunne and Quinn 2009). The implementation of mitigation measures (e.g., compact footprint, using existing corridors to co-locate infrastructure) is predicted to have a negligible residual effect on wildlife movement due to fragmentation from the transmission line and the mine access road. Overall, wildlife and wildlife habitat functions are maintained elsewhere in the Regional Study Area; therefore, landscape fragmentation is unlikely to threaten the long-term viability, abundance and/or distribution of wildlife or the availability of their habitats. Overall, predicted residual effects from the Project on the long-term viability, abundance and/or distribution of wildlife or the availability of their habitats is determined to be **not significant**.

Change in Risk of Mortality

Ground disturbance and vegetation clearing can result in physical disturbance of key habitat features (e.g., nests, dens, bat maternity roosts) and vehicle and equipment movement can result in accidental mortality (i.e., wildlife-vehicle collisions). The construction and operation of the mine access road and transmission line have the potential to provide movement corridor functions for predators, such as Wolves, which may increase the mortality risk for prey species such as Moose. There are legislative requirements to warrant following appropriate timing windows and Best Management Practices for vegetation removals (e.g., the *Migratory Birds Convention Act*, *Fish and Wildlife Convention Act*) to avoid the destruction of individuals and habitat. Mitigation in the form of avoiding construction and operations activities during sensitive timing windows and changes in human behaviour largely reduces the risk of mortality. In addition, mitigation measures include reducing predator sight lines by limiting removal to hazard trees along roads and only clearing for safe access and infrastructure needs, and strategic planting of vegetation to provide visual barriers. Overall, mortality from Project activities is unlikely to threaten the long-term viability,

abundance and/or distribution of wildlife therefore, the residual adverse effect is determined to be **not significant**.

6.10 Boreal Caribou

The Project is located within the northern portion of the Churchill range and adjacent to the Berens and Kinloch ranges for Boreal Caribou. Boreal Caribou are classified as Threatened species under the provincial *Endangered Species Act* and the federal *Species at Risk Act*. Caribou and their habitats are protected under the *Endangered Species Act* and *Species at Risk Act*. The lands around the Project provide known wintering areas and calving / nursery areas which represent key Caribou habitats. Potential travel routes also lead from wintering areas in Berens Range and surrounding Springpole Lake (adjacent to the Project) to calving areas located on Birch Lake and further south.

6.10.1 Potential Effects

The potential effects of the Project on the Woodland Caribou, prior to mitigation, include:

- Direct Habitat Changes;
- Indirect Habitat Changes;
- Change in Range Condition;
- Change in Population Demography; and
- Change in Community Dynamics via Predator – Prey Dynamics.

Project activities that potentially interact with Boreal Caribou which may lead to these potential effects include:

- Changes in Boreal Caribou habitat due to the loss of vegetation from site preparation activities at the mine site, and along the mine access road and transmission line during construction;
- Indirect changes in Boreal Caribou habitat due to changes in environmental conditions from groundwater drawdowns, water management, air emissions and lighting at the mine site during construction and operation;
- Indirect changes in Boreal Caribou habitat due to sensory disturbance from noise at the mine site, and along the mine access road during operation;
- Changes in Boreal Caribou habitat due to the management of vegetation along the mine access road and transmission line corridor during operation; and
- Changes in the risk of mortality due to the removal of Boreal Caribou habitat during construction and the operation of equipment during all phases.

6.10.2 Mitigation Measures

Several key measures will be implemented to avoid or minimize the effects of the Project on Boreal Caribou.

To mitigate the loss of habitat for Boreal Caribou, the mine site will be developed on a compact site, and the areal extent of disturbance will be limited. Further, the transmission line, airstrip and mine access road will be co-located within a shared infrastructure corridor, where feasible. The new transmission line route will be aligned adjacent to the existing E1C transmission line corridor, to the extent possible, to reduce the creation of new linear corridors and the loss of habitat for Boreal Caribou. In addition, vegetation management along the transmission line corridor will be minimized within Category 1 Boreal Caribou

habitat to that necessary for safe operation, and strategic vegetation treatments will be undertaken to reduce the potential for barriers to the movement of Boreal Caribou.

To mitigate the potential effects on Boreal Caribou, the disturbance in Category 1 and 2 Boreal Caribou habitat will be minimized by using existing trails and roads for travel during construction of the Project. Clearing and construction activities will be avoided in Category 1 Boreal Caribou nursery habitat during the calving and nursery periods. Further, Project-related traffic speed will be reduced along the mine access road in sections traversing Category 1 Boreal Caribou habitat during seasonally sensitive periods. During all phases of the Project, encountered Boreal Caribou will not be disturbed.

To further mitigate the potential effects on Boreal Caribou habitat and the condition of the range, Boreal Caribou habitat features will be incorporated into the overall closure plan for the mine, and include revegetation of suitable areas using vegetation species that will support the development of mature coniferous refuge habitat suitable for Boreal Caribou, incorporating the restoration of lichen and lichen treatments in select areas and removing stockpiles to facilitate Boreal Caribou access. In addition, a habitat restoration program for Boreal Caribou will be designed in collaboration with Indigenous communities and the Ministry of the Environment, Conservation and Parks. The Program will include the creation of suitable Boreal Caribou calving habitat through the reclamation of a small island in the open pit basin of Springpole Lake, the development of suitable restoration of habitat of existing disturbed areas for Boreal Caribou and the deferral of forestry and mineral exploration lands where suitable Boreal Caribou habitat exists, where feasible.

6.10.3 Residual Effects and Determination of Significance

The residual effects on Caribou (Boreal population) are associated with the localized loss of habitat due to the construction of the Project, the localized alteration of habitat due to the operation of the Project (e.g., sensory disturbance), change in recruitment due to predation and change in the movement of Caribou due to the creation of semi-permeable barriers to movements.

Change in Relative Abundance of Habitat

A direct change in Boreal Caribou habitat will occur during construction within the Project Development Area. It has been conservatively assumed that habitat in the mine site area (1,527.9 hectares) and mine access road (183.7 hectares) of the Project Development Area will be removed during construction, however the habitat will be altered in the transmission line corridor (314.7 hectares). With the effective implementation of mitigation measures, the residual effect on local habitat due to direct habitat disturbance will be primarily concentrated at the Project Development Area scale. The residual effects are anticipated to last until the forest regenerates to a suitable state for Boreal Caribou but will be fully mitigated once the habitat returns to a mature coniferous refuge habitat for Boreal Caribou.

Change in the Function, Connectivity and Quality of Habitat

During the construction through to the operations phase, there will be ongoing sensory disturbance due to the operation of the mine, the mine access road, and the transmission line; although noise will be more transient along the linear corridors. With the effective implementation of mitigation measures, the residual effect due to indirect changes in habitat from sensory disturbance will be primarily concentrated within the Local Study Area. However, Boreal Caribou are predicted to have a short-term negative response (e.g., startle reflex) to sources of intermittent or unpredictable noise increases (e.g., drilling, blasting, vehicle operation, low-level aircraft).

Movement dynamics and the assessment of semi-permeable barriers revealed three centers of movement activity along the mine access road where the Project has the potential to cause local scale semi-permeable barrier effects for Boreal Caribou moving across the landscape. With the implementation of key mitigation measures, potential effects on habitat connectivity at these crossing locations will be reduced and will be effective in buffering barrier effects that may occur.

Overall, the adverse residual effect on Boreal Caribou due to direct and indirect changes in habitat is predicted to be not significant at the habitat Regional Study Area or population Regional Study Area scales.

Change in Risk of Mortality

Linear corridors may also facilitate access for predators, which may increase mortality risk and alter localized habitat function. By reducing predator sight lines by limiting removal to hazard trees and only clearing for safe access and infrastructure needs, and strategic planting of vegetation to provide visual barriers, the potential effect will be reduced but is anticipated to occur throughout construction, operation and closure within the Local Study Area. Overall, the adverse residual effect on Boreal Caribou due to changes in the risk of mortality is predicted to be not significant at the habitat Regional Study Area or population Regional Study Area scales.

6.11 Wolverine

Wolverine are selected as a valued component given their ecological, cultural and economic importance in Ontario and Canada. Wolverine play a vital role in Ontario's ecosystems as both scavengers and predators affecting prey availability and behaviours. Wolverine are listed as Special Concern under Canada's *Species at Risk Act* (SARA; S.C. 2002, c. 29) and Threatened under Ontario's *Endangered Species Act, 2007* (ESA; S.O. 2007, c. 6). Given their reliance on large, connected and intact ecosystems and their sensitivity to disturbance, Wolverine are considered indicators of boreal forest ecosystem health.

6.11.1 Potential Effects

The potential effects of the Project on the Wolverine, prior to mitigation, include:

- Change in habitat availability and effectiveness;
- Change in movement; and
- Change in mortality risk.

Project activities that potentially interact with Wolverine which may lead to these potential effects include:

- Changes in Wolverine habitat and movement corridors due to the loss of vegetation from site preparation activities at the mine site, and along the mine access road and transmission line during construction;
- Indirect changes in Wolverine habitat due to changes in environmental conditions from air emissions and lighting at the mine site during construction and operation;
- Indirect changes in Wolverine habitat and movement corridors due to sensory disturbance from noise at the mine site, and along the mine access road during operation;
- Changes in Wolverine habitat due to the management of vegetation along the mine access road and transmission line corridor during operation; and
- Changes in the risk of mortality due to the removal of Wolverine habitat during construction and the operation of equipment during all phases.

6.11.2 Mitigation Measures

The key measures to mitigate the change in the habitat availability and effectiveness of Wolverine habitat during the construction, operation and closure phases include the development of a compact mine site and co-locating the transmission line, airstrip and mine access road within a shared infrastructure and using existing corridors, where feasible. In addition, prior to the construction phase of the Project, a pre-construction winter aerial survey will be undertaken to map Wolverine activity centres and potentially active natal or maternity Wolverine dens within 10 kilometres of the Project Development Area. In the event of a Wolverine observation or encounter within the construction area, Project activities will be ceased within the construction area and the surrounding 500 metres until the individual is no longer present within 500 metre of the construction area. In the event a den site is observed or encountered within the construction area, Project activities will cease within 8 kilometres of the den site until a Qualified Professional has assessed the den site. Further, the removal of moderate and high-quality Wolverine habitat will be limited within the Project Development Area, as practicable, during all phases of the Project, and the removal of vegetation will be avoided during the nursery period for Wolverine. With respect to indirect effects on Wolverine habitat that could occur due to sensory disturbances, noise mitigation measures will be implemented and include the use of acoustical enclosures, silencers and mufflers on equipment as well as the prohibition of engine brakes. Sensory disturbance from lighting will be managed by maintaining light sources below natural or artificial barriers and using shielding to reduce light spill and glare. During the closure phase, reclamation activities will support the improvement in habitat suitability and effectiveness for Wolverine.

In addition to the measures described above, other measures that will be implemented to mitigate the change in movement for Wolverine during all phases of the Project include minimizing vegetation management along the transmission corridor to that necessary for safe operation; maintaining natural vegetation structure and composition to the extent possible for Wolverine habitat connectivity in areas along the transmission line identified as moderate or high-quality habitat for Wolverine; removing Project-related infrastructure and installing physical barriers to prevent vehicular access at closure; replanting disturbed areas; and implementing many of the offsetting measures targeted toward other species (e.g., Boreal Caribou), which will also benefit Wolverine and their habitats.

Measures that will be implemented to mitigate the potential change in the risk of mortality include enforcing speed limits along Project-controlled roads within high-quality wildlife habitat, requiring Project-related vehicles travelling on the mine access road to come to a stop if Wolverine are encountered; properly securing, storing and disposing of domestic solid waste products that may be an attractant for scavenging wildlife at an offsite licensed facility; and providing Project-related employees and contractors with education and awareness training for protected species prior to entering the site to perform Project activities.

6.11.3 Residual Effects and Determination of Significance

The Project is predicted to have residual effects on Wolverine (a Species at Risk) associated with the localized loss of habitat due to the construction of the Project and sensory disturbance during all phases of the Project.

Change in Relative Abundance of Habitat

The removal of vegetation representing quality Wolverine habitat within the Project Development Area is less than 0.2 percent of the available habitat in the Regional Study Area. These habitats are common throughout the Local Study Area and regional study, and there is a low potential to adversely affect Wolverine or their habitat to carry out the life processes necessary to survive and reproduce. The residual

effect is predicted to be reversed with rehabilitation of the mine site and mine access road at closure, which will result in revegetation that may support. Once construction of the transmission line is completed, vegetation along the corridor will return and be subject to infrequent maintenance only.

Change in the Function, Connectivity and Quality of Habitat

Construction activities associated with the development of Project components have the potential to create both physical and sensory barriers that may affect Wolverine movement. Wolverines are sensitive to industrial noise, especially denning females.

Change in Risk of Mortality

Impacts on Wolverine movement during the Project will have the greatest effect if occurring during the natal and maternal denning period (between January 1 and April 30). Based on the result of the run poles stations, it is unlikely that transmission lines act as physical barriers to Wolverine. Reclamation of habitat during Project closure phase will support the improvement in habitat suitability and effectiveness for Wolverine. Overall, the adverse residual effect on the Wolverine due to an increased risk of mortality is predicted to be not significant.

6.12 Bats

Little Brown and Northern Myotis are classified as Endangered bat species, provincially and federally, and have been identified in and around the Springpole Gold Project (Project) site. These species have experienced severe declines due to white-nose syndrome, a fungal disease that causes widespread mortality among cave hibernating bats. Endangered bat species in Ontario have specific individual and habitat protection under the provincial *Endangered Species Act, 2007* (ESA; S.O. 2007, c.6). Three additional species are proposed for addition to the Environmental Site Assessment, including Hoary Bat, Silver-haired Bat, and Eastern Red Bat. These three additional species have also been confirmed as using the area around the Project. Bats, then, are selected as a valued component due to their potential interactions with the Project.

6.12.1 Potential Effects

The potential effects of the Project on the bats, prior to mitigation, include:

- Change in habitat;
- Change in the function, connectivity and quality of habitat; and
- Change in risk of mortality.

Project activities potentially interacting with bats that may lead to these potential effects include:

- Changes in bat maternity and foraging habitat due to the loss of vegetation from site preparation activities at the mine site, and along the mine access road and transmission line during construction;
- Indirect changes in bat habitat due to changes in environmental conditions from air emissions and water management at the mine site during construction and operation;
- Indirect changes in bat habitat due to sensory disturbance from noise along the mine access road during operation;
- Changes in bat maternity and foraging habitat due to the management of vegetation along the mine access road and transmission line corridor during operation; and

- Changes in the risk of mortality due to the removal of bat maternity and foraging habitat during construction and the operation of equipment during all phases.

6.12.2 Mitigation Measures

The key measures to mitigate the change in the relative abundance of habitat for bats during construction, operation and closure phases, include the development of a compact mine site and co-locating the transmission line, airstrip, and mine access road within a shared infrastructure and using existing corridors where feasible. In addition, avoiding the removal of bat maternity habitat between April 15 and August 31, avoiding the removal or disturbance of foraging habitat within 2.6 kilometres of candidate bat hibernacula, and undertaking the establishment of artificial bat habitat during operation and closure phases.

In addition to the measures noted above, a 500 metre radius of uncleared habitat around the entrance for candidate bat hibernacula will be maintained during construction and operation to mitigate the change in the function, connectivity, and quality of bat habitat.

To mitigate the change in the risk of mortality, mitigation measures for potential effects on wildlife will be implemented, such as enforcing speed limits along Project-controlled roads within high-quality bat habitat, and providing wildlife (including species at risk) awareness training to Project employees.

6.12.3 Residual Effects and Determination of Significance

The Project is predicted to have residual effects on Species at Risk bats.

Change in Relative Abundance of Habitat

The removal of bat habitat is direct and localized to the Project Development Area and occurs in a landscape with high forest cover. There is less than a one percent direct loss of maternity roosting and foraging habitat in the Regional Study Area and there is sufficient suitable habitat that exists elsewhere to support bats. Progressive reclamation measures carried out during operations and final reclamation at closure may promote the re-establishment of vegetation for roosting and foraging habitat. While the vegetation communities are not likely to return to the pre-existing conditions, this is not expected to limit the ability of this species to move through the landscape. The adverse residual effect on the bats due to a change in the relative abundance of habitat is predicted to be not significant.

Change in the Function, Connectivity and Quality of Habitat

Indirect changes on the function, connectivity and quality of bat habitat will occur during the construction, operation and closures phases, however the most pronounced effects will occur during the operations phase. These indirect changes in habitat at the Local Study Area scale will result from activity within the Project Development Area due to changes in surface and groundwater, changes in dust deposition, changes in lighting and changes in from noise. The change in groundwater and surface water regime in adjacent habitats could affect suitability and utilization of local bat habitat, and result in reduced habitat effectiveness due to fragmentation and changes in habitat configuration. This change in habitat from groundwater changes represents a reduction of 0.12 percent in maternity habitat and 0.07 percent in foraging habitat in the Regional Study Area. With the implementation of groundwater and surface water mitigation measures, the potential effects from groundwater and surface water changes on bat habitat will be mitigated.

Dust from operations may negatively impact forest canopies and thus habitat for roosting bats. There is limited high-value terrestrial habitat suitable for bats, as the majority of the area is open water. As a result, there will be limited area subject to change due to dust deposition (i.e., a reduction of 0.32 percent of the available maternity habitat and 0.25 percent in available foraging habitat in the Regional Study Area). With

the implementation of mitigation, the potential effect of dust on bat habitat will be mitigated within the Project Development Area.

Additional artificial lighting will be required during the construction, operation and closure phases of the Project. The use of artificial lighting may affect bats due to avoidance of commuting routes that are affected by artificial lighting, changes in foraging areas affected by artificial lighting, delayed emergence from roosting areas, avoidance of roosting areas affected by artificial lighting and reduced reproductive success (Stone et al. 2015). With the implementation of mitigation for lighting through the construction, operation and closure phases, the potential effect of lighting on bat habitat will be mitigated within the Project Development Area.

During construction and operation of the Project, sensory disturbance is the main driver of altered habitat used by bats for foraging and maternity roosting. Activities occurring during operations will result in increased sound levels that will reduce the distance and area over which acoustic signals can be perceived by bats (Barber et al. 2009). The affected habitat from sound level changes represents a reduction of 0.52 percent in maternity habitat and 1.40 percent in foraging habitat in the Regional Study Area. The closet candidate hibernaculum is located more than 500 metres from the Project Development Area and is not expected to be affected by sensory disturbance from Project. With the implementation of the mitigation measures, the potential effects of sensory disturbances on bat habitat will be mitigated.

Overall, adverse residual effects on the bats due to indirect changes on the function, connectivity and quality of bat habitat is predicted to be not significant.

6.13 Species at Risk Birds

Species at risk birds is selected as a valued component due to the potential interactions of the Project with species listed as Threatened and Endangered Species under the provincial *Endangered Species Act*, 2007, and Threatened and Endangered species listed under the federal *Species at Risk Act*, 2002.

The following species are considered in this section: Eastern Whip-poor-will, Lesser Yellowlegs, and Short-eared Owl, all listed as Threatened species. It should be noted that Barn Swallow, while listed as Special Concern under the *Endangered Species Act*, is also listed as Threatened under the federal *Species at Risk Act* and has a residence description. Like most birds documented in the study area, Barn Swallow is also offered protection under the federal *Migratory Birds Convention Act, 1994* (MBCA; S.C. 1994, c. 22; see Section 6.16.1.1 Federal Legislative Requirements). Birds that are listed under the *Migratory Birds Convention Act* and *Species at Risk Act* and have a residence description have residences protected on private and public lands. Therefore, Barn Swallow nests are also considered in this section.

6.13.1 Potential Effects

The potential effects of the Project on the SAR birds, prior to mitigation, include:

- Change in relative abundance of habitat;
- Change in the function, connectivity, and quality of habitat; and
- Change in the risk of mortality.

Project activities potentially interacting with SAR birds that may lead to these potential effects include:

- Changes in SAR bird habitat due to the loss of vegetation from site preparation activities at the mine site, and along the mine access road and transmission line during construction;

- Indirect changes in SAR bird habitat due to changes in environmental conditions from groundwater drawdowns, water management, air emissions and lighting at the mine site during construction and operation;
- Indirect changes in bat habitat due to sensory disturbance from noise at the mine site, and along the mine access road during operation;
- Changes in SAR bird habitat due to the management of vegetation along the mine access road and transmission line corridor during operation; and
- Changes in the risk of mortality due to the removal of SAR bird habitat during construction and the operation of equipment during all phases.

6.13.2 Mitigation Measures

As with other wildlife species, the key measures to mitigate the change in the relative abundance of habitat for bats during construction, operation and closure phases, include the development of a compact mine site and co-locating the transmission line, airstrip, and mine access road within a shared infrastructure and using existing corridors where feasible. Further, the removal of Category 1, 2 and 3 habitat for Eastern Whip-poor-will during constrution will be avoided. The removal of nests for Barn Swallow, Eastern Whip-poor-will or Lesser Yellowlegs will also be avoided during all phases of the Project.

The change in the function, connectivity, and quality of Species at Risk bird habitat during construction, operation and closure will include the implementation of mitigation measures for noise, in addition to the measures noted for the direct loss of Species at Risk bird habitat.

To mitigate the change in the risk of mortality on SAR birds, mitigation measures for potential effects on wildlife will be implemented, such as enforcing speed limits along Project-controlled roads within high-quality bat habitat, and providing wildlife (including species at risk) awareness training to Project employees. Further, compliance with the requirements of the *Migratory Birds Convention Act* and Migratory Birds Regulations will be met if Barn Swallow, Eastern Whip-poor-will or Lesser Yellowlegs individuals are encountered during Project activities.

6.13.3 Residual Effects and Determination of Significance

The Project is predicted to have residual effects on Species at Risk birds focused on direct habitat losses, indirect habitat alterations, and the risk of mortality during the Project. Species at Risk birds included in the assessment are Eastern Whip-poor-will, Lesser Yellowlegs, and Short-eared Owl.

Change in Relative Abundance of Habitat

The removal of Eastern Whip-poor-will habitat is direct, localized and occurs in a landscape with high forest cover. There is less than a one percent direct loss of breeding habitat in the Regional Study Area, meaning that enough suitable habitat to support Eastern Whip-poor-will exists elsewhere. During operations, displaced Eastern Whip-poor-will may forage in areas further away from the mine site portion of the Project Development Area, including the new transmission line corridor, as this corridor may generate new open habitats necessary for foraging and nesting. Vegetation communities are not likely to return to the existing conditions, but this is not expected to limit the ability of this species to move through the landscape and may encourage new use of elements such as the transmission line corridor.

The removal of Lesser Yellowlegs habitat is direct and localized to the Project Development Area, and breeding habitat is widely available in the Regional Study Area. There is less than a one percent direct loss of breeding habitat in the Regional Study Area, meaning that enough suitable habitat to support Lesser Yellowlegs exists elsewhere. Vegetation communities are not likely to return to the existing conditions, but this is not expected to limit the ability of this species to move through the landscape. Lesser Yellowlegs appear to be tolerant to some breeding habitat disturbances.

The removal of Short-eared Owl habitat is direct and localized to the Project Development Area. Suitable breeding habitat in the Regional Study Area is limited, and the removal of the Project Development Area may fragment the habitat. There is less than a one percent direct loss of breeding habitat in the Regional Study Area, meaning that suitable habitat to support Short-eared Owl exists elsewhere.

Vegetation communities are not likely to return to the existing conditions, but this is not expected to limit the ability of this species to move through the landscape. Short-eared Owl is considered sensitive to habitat fragmentation (Committee on the Status of Endangered Wildlife in Canada 2021).

Mitigation to reduce residual effects is recommended, including construction in the smallest footprint possible, minimizing the disturbance by using existing trails and roads, minimizing the area cleared with heavy machinery, minimizing the removal of woody vegetation, and progressive revegetation. Overall, the residual effect on Species at Risk birds due to a change in Relative Abundance of Habitat is predicted to be **not significant**.

Change in the Function, Connectivity and Quality of Habitat

Indirect effects on Species at Risk bird habitat will occur during all phases, but the greatest effects will occur during the operations phase. The indirect habitat loss or alteration at the Local Study Area scale will result from activity within the Project Development Area, such as dust deposition and the alteration of the groundwater regime from drawdown for the open pit. Dust from operations has the potential to deposit particulate matter, which may negatively impact forest canopies and, thus, habitat for nesting birds; however, the implementation of a dust management plan will mitigate this effect.

The alteration of the groundwater and surface water regime in adjacent Species at Risk bird habitats could affect local suitability and use and reduce habitat effectiveness from fragmentation and change in habitat configuration. These changes could occur due to water collection systems or groundwater drawdown as a result of dewatering activities. They could affect the abundance and composition of wetland habitats used for Eastern Whip-poor-will and Yellow Lesserlegs breeding and foraging activities. The groundwater drawdown is estimated to impact approximately one percent of wetlands in the Local Study Area. Air quality and groundwater drawdown effects during operation had no impact on Short-eared Owl habitat as the indirect effects are localized to the Project Development Area, and no Short-eared Owl habitat occurs in the Project Development Area.

Sensory disturbance is the main driver of impaired habitat function. For example, Owls, in general, have acute hearing which they use to hunt small mammals and birds (Kauffman 1996). Short-eared Owls reportedly find prey mostly by sound but also by sight (Kauffman 1996). Therefore, it can be inferred that excessive noise could potentially interfere with their hunting and communication.

While there may be some temporary changes in bird behaviour in the Project Development Area or Local Study Area, these effects are not expected to have long-term impacts on the populations of Whip-poor-will, Yellow Lesserlegs, and Short-eared Owl. The area indirectly altered by air, groundwater drawdown, and noise exceedances overlaps; however, the largest change is 0.04 percent, 0.52 percent, and 0.23 percent

decrease in the Regional Study Area from sensory disturbance for Whip-poor-will, Yellow Lesserlegs, and Short-eared Owl, respectively. Overall, the residual effect on Species at Risk birds due to a change in function, connectivity, and quality of habitat is predicted to be **not significant**.

Change in Risk of Mortality

Ground disturbance and vegetation clearing can result in physical disturbance of key habitat features (e.g., nests) and vehicle and equipment movement can result in accidental mortality (i.e., wildlife-vehicle collisions), which is elevated during sensitive timing windows. There are legislative requirements to warrant following appropriate timing windows and Best Management Practices for vegetation removals to avoid the destruction of individuals and habitats.

During construction and operations and, to a lesser extent, closure, collisions of birds with vehicles and anthropogenic structures represent one of the largest sources of human-caused mortality of songbirds. Increased vehicular traffic within the Local Study Area may cause an increase in mortality risk through wildlife-vehicle collisions. Eastern Whip-poor-will are known to roost on gravel roads within their preferred habitat. Foraging individuals or displaying males may also collide with vehicles. Aerial foraging and road-roosting behaviour make this species susceptible to collision risk. However, this can be mitigated with strict and enforced speed limits and wildlife awareness training for Project employees. Increases in wildlife-vehicle collisions are not typically observed on mine sites. Overall, the adverse effect on Species at Risk birds due to a change in risk of mortality is predicted to be **not significant**.

6.14 Commercial Land and Resource Use

Commercial land and resource use was selected as a valued component because there are commercial activities in the region which use land and resources such as forestry and mineral exploration activities, outfitter facilities, traplines and bait harvesting areas.

6.14.1 Potential Effects

The potential effects of the Project on commercial land and resource use, prior to mitigation, include:

- Change in forestry resources;
- Change in trapping ability and experience;
- Change in commercial bait harvesting;
- Change in outfitter camps and experience;
- Change in aggregate resources; and
- Change in access to mineral claims.

Project activities that potentially interact with outdoor recreation which may lead to these potential effects include the following.

- The loss of vegetation that may include merchantable timber;
- The requirement for aggregate material for construction activities;
- The removal of wildlife habitat and displacement of wildlife due to sensory disturbances which would reduce the abundance of species available for trapping and could decrease the experience of trapping;

- The removal of commercial baitfish habitat in the mine site area, a change in baitfish habitat due to dewatering of the open pit basin, and operation of the dewatering pumps could result in the entrainment and impingement of baitfish;
- A change viewscapes and sensory disturbances affecting the experience of trapping, commercial bait fishing and outfitter camps
- A change in access to mineral claims, could occur due to construction of the transmission line which could restrict access to mineral claims.

6.14.2 Mitigation Measures

The key measures to mitigate the effects on commercial land and resource use during construction, operation and closure phases, include the development of a compact mine site and co-locating the transmission line, airstrip, and mine access road within a shared infrastructure and using existing corridors where feasible. The change in forestry resources during construction, operation and closure will be mitigated by working with local forestry companies to salvage valued harvestable timber and offering it to the forestry companies managing the two affected Forest Management Units.

The measures to mitigate a change in trapping ability, including the associated experience during construction, operation and closure, include the implementation of measures for reducing sensory disturbance, maintaining active engagement with trappers including access to resources, and developing a strategy to control unauthorized use of the mine access road.

The change in commercial bait harvesting, including the associated experience during construction, operation and closure, will be mitigated with the implementation of measures for fish habitat offsetting and compensation. To mitigate a change in outfitter camps, including the associated experience during construction, operation and closure, the measures to mitigate sensory disturbances from noise and changes in viewscapes will be implemented. Changes in aggregate resources during construction, operation and closure will be mitigated by developing a compact mine site to limit the amount of aggregate material required for construction. To mitigate a change in access to mineral claims during construction, operation and closure, FMG will work with mineral claim holders and regulators to accommodate access to mineral claims by claim holders and to secure permission to construct the transmission line on mineral claims held by others.

6.14.3 Residual Effects and Determination of Significance

The Project is predicted to have residual localized effects on commercial land and resource use in the immediate vicinity of the Project. Predicted changes to trapping and bait harvesting from increased access, and a decrease in the area available for use, abundance of wildlife species trapped, and quality of the experience is predicted to result in a residual effect on commercial land and resource use. There will be a minor reduction in the area available to trappers and bait harvesters; however; less than 10 percent of habitat for trapped species and less than seven percent of bait harvest areas will be lost. FMG will maintain regular communication with trapline holders SL197 and SL 200 regarding activities and opportunities to facilitate their land use activities. It is recognized that noise could have an effect on the experience of individual trappers and bait harvesters; however, the degree to which avoidance may occur is subject to individual sensitivities and choices. With the implementation of mitigation measures, the residual effect on commercial land and resource use due to changes in trapping and bait harvesting is predicted to be **not significant**.

The Project will result in the removal of potentially merchantable timber within the Project Development Area through the clearing of the site, mine access road corridor and the transmission line corridor during the construction phase. The planned harvesting of the Trout Lake Forestry Management Unit from 2020 through 2061 in the Local Study Area is approximately 6,000 hectares, of which an estimated 1,000 hectares will occur in the Project Development Area. Prior to construction, merchantable timber will be salvaged and offered to the forestry company managing the affected Forestry Management Unit. As such, the potential residual effect on forestry resources with respect to commercial land and resource use is predicted to be negligible; therefore, a determination of significance is not required for forestry resources.

There are no outfitter camps in the vicinity of the Project, the closest camps being 9 kilometres to the west and 10 kilometres to the south. The Project will not be visible at those camp. With the implementation of mitigation measures, the potential residual effect on outfitter camps is negligible and a determination of significance is not required.

The Project will excavate rock in the Project Development Area for construction, thereby reducing the requirement to obtain aggregate from other parts of the Project Development Area or farther away. There is no anticipated need to access aggregate from existing operations outside the Project Development Area; however, if supplemental aggregate is required, the existing operations have the necessary authorizations and it would provide positive business and economic benefits. The potential residual effect on aggregate resources is negligible and a determination of significance is not required.

During all phases, FMG will work with mineral claim holders and regulators to accommodate access to mineral claims by claim holders and to secure permission to construct the transmission line on mineral claims held by others. With implementation of the identified key mitigation measures, the potential residual effect on the access to mineral claims with respect to commercial land and resource use is predicted to be negligible, therefore, a determination of significance is not required.

6.15 Outdoor Recreation

Outdoor recreation was selected as a valued component because it is possible for recreational fishing, hunting, navigational routes, outdoor recreation and wildlife viewing, and the use of seasonal cabins to occur near the Project.

6.15.1 Potential Effects

The potential effects of the Project on outdoor recreation, prior to mitigation, include:

- Changes in recreational fishing;
- Changes in recreational hunting;
- Changes in recreation areas; and
- Changes in navigation.

Project activities will remove vegetation and could affect wildlife abundance and success of recreational hunting in the area. In addition, the operation of Project equipment could create sensory disturbances to wildlife, altering their behaviour and use of wildlife habitats in the region. Vibration from blasting could affect fisheries resources in the vicinity of the mine site. The construction of the dikes and the controlled dewatering of the open pit basin could affect also fish and fish habitat within the mine site. The presence of the Project could cause a change in viewscapes that may affect the experience associated with recreational fishing, hunting and the use of recreational areas. Removal of the portage route between

Springpole and Birch Lakes within the north basin of Springpole Lake and changes to hydrology during construction and operation could affect navigation. A change in workforce on site may affect availability of wildlife and fisheries resources used for hunting and recreational fishing.

6.15.2 Mitigation Measures

The key measures to mitigate the effects on outdoor recreation during the construction, operation and closure phases include developing a compact mine site and co-locating the transmission line, airstrip, and mine access road within a shared infrastructure as well as using existing corridors where feasible. Changes in the experience associated with outdoor recreation due to sensory disturbances will be mitigated with noise measures such as the use of acoustical enclosures, silencers and mufflers on equipment, and the prohibition of engine brakes. Further, fishing and hunting within the controlled access portion of the Project Development Area will be prohibited by Project personnel while working or residing on site.

In addition to the measures noted above, the change in recreational fishing will be mitigated with the implementation of measures for fish and fish habitat, including the development of fish habitat offsetting and compensation measures. Changes in recreational hunting will be mitigated with the measures for wildlife and wildlife habitat, including the reclamation of the mine site at closure. To mitigate potential changes by users of recreational users, sensory disturbance from lighting will be managed by maintaining light sources below natural or artificial barriers and using shielding to reduce light spill and glare, and viewscapes will be mitigated by preserving a tree line as a buffer to minimize the amount of the mine site that can be seen from recreational areas.

The changes in navigation during construction, operation and closure will be mitigated by maintaining alternative access to portages for navigation routes that traverse the Project Development Area during construction and operations phases, re-establishing portage routes during the closure phase in a suitable location based on feedback from land and resource users, communicating Project activities affecting waterbodies/watercourse used for navigation throughout the construction, operation, and decommissioning/closure phases to potentially affected local resource users, and posting signage around the Project Development Area to alert local resource users of the presence of Project facilities and activities.

6.15.3 Residual Effects and Determination of Significance

During the construction phase, two dikes will be constructed to dewater the open pit in a controlled manner. The open pit basin and location of the two dikes has been optimized to minimize the area of temporary disturbance, resulting in the temporary removal of fish habitat over only six percent of the area of Springpole Lake. The remaining 94 percent of Springpole Lake will remain available for recreational fishing; recreational fishing in Birch Lake will be unaffected by the Project. It is recognized that noise and a change in viewscapes could have an effect on the experience of those participating in recreational fishing, the degree to which avoidance may occur is subject to individual sensitivities and choices. At closure, fish habitat will be restored through the implementation of fish habitat offsetting measures as described in Appendix F and reconnection of the open pit to Springpole Lake during closure. In addition, through coordination with the Ontario Ministry of Mines, the South Bay Mine, which is located approximately 45 kilometres southwest of the Project, will be rehabilitated and three lakes (i.e., Boomerang, Mud and Amanda Lake) will be restored to support local fish populations again.

With the implementation of mitigation measures for noise, viewscapes, surface water and fish habitat, along with the minimal Project footprint, reclamation measures during operations and closure phases, and the prohibition of fishing within the controlled access portion of the Project Development Area, there will be no residual effects on recreational fishing.

During construction of the Project, there will be a localized reduction of wildlife habitat due to activities in the Project Development Area, and there will be indirect alterations to wildlife habitat in the areas adjacent to the mine during operations due to sensory disturbances. The Project only overprints 3.3 percent of available hunting area in the Local Study Area and 0.33 percent in the Regional Study Area. It is recognized that noise and a change in viewscapes could have an effect on the experience of those participating in recreational hunting, the degree to which avoidance may occur is subject to individual sensitivities and choices.

With the implementation of mitigation measures for noise, viewscapes and wildlife habitat, along with the minimal Project footprint, reclamation measures during operations and closure phases, and the prohibition of hunting within the controlled access portion of the Project Development Area, there will be no residual effects on recreational hunting.

There are no recreational areas within the Local Study Area and direct Project-related changes in aquatic and terrestrial habitat will not affect these areas. In addition, it is not anticipated that direct changes in aquatic and terrestrial habitat from the Project will affect access to these remote recreational areas, as there is no existing road connecting to these areas.

With the implementation of mitigation measures for sensory disturbances for noise, dust and viewscapes during construction and operations phase, reclamation to improve fish and wildlife habitat, and the reduction and eventual cessation of sensory disturbances at closure, there will be no residual effect on recreational areas.

The construction and operation of the Project will isolate the mining area with the construction of the dikes that will remove approximately 6 percent of the navigable water surface area of Springpole Lake during construction and operations and will require establishment of an alternative navigation route during construction and operation phases to mitigate the loss of an existing portage route between Springpole Lake and Birch Lake used by the local trapline holder. The existing portage route will be re-established at closure.

With the implementation of mitigation measures for surface water, along with the minimal Project footprint, the maintenance of alternative access to portages and the re-establishment of portage routes at closure, if applicable, there will be no residual effect on navigation.

With the proposed design and mitigation measures, residual effects on outdoor recreation are not predicted and, therefore, a determination of significance is not required.

6.16 Economy

The local and regional economy was selected as a valued component in part because the Project will affect the local and regional economy, as conveyed by employment levels and labour income, business opportunities and income, training and government revenues. The development of the Project will increase employment, business opportunities and diversification, and revenue in the region from Project expenditures; may promote in-migration, bringing new tax revenue; and will increase government revenue through the payment of fees and taxes.

6.16.1 Potential Effects

The potential effects of the Project on local and regional economy, prior to mitigation, include:

- Change in employment levels in municipalities;

- Change in labour income;
- Change in business opportunities;
- Change in business income;
- Change in demand for training; and
- Change in government revenues.

Development of the Project will increase local and regional revenue, as well as business opportunities from which investments can be made in health and social services, community infrastructure, business development, training and employment. The Project will also increase the labour force capacity after operations cease to support future opportunities in the region and will result in infrastructure enhancements, which could be beneficial to the region, including potentially after the Project closes if they are retained. For example, the transmission line provides a potential long-term sustainable business opportunity for local Indigenous communities. FMG will pursue discussions with the local Indigenous communities during the life of mine to explore opportunities for long-term community benefits.

6.16.2 Mitigation Measures

Proposed mitigation and enhancement measures will reduce adverse effects and enhance beneficial effects on the economy. Measures to be implemented in helping to avoid or minimize the effects of the Project on the economy include the following:

- Post job qualifications early and identify available training and training providers so local and Indigenous residents can acquire the necessary skills and qualify for potential Project employment.
- Communicate employment skills requirements to local training providers to plan appropriate Project-related training; participate in the development of training programs to inform needs.
- Conduct recruiting programs as well as regular and effective outreach and communications with Indigenous communities to support recruitment, including through measures that may increase awareness of and access to information on employment opportunities at the Project and associated education, training, skills, and employment experience requirements and opportunities;
- Collaboration with proximate communities in securing funding for employment readiness programs, to be delivered by health care service providers and trainers to prepare community members for Project opportunities, with a focus on long-term operational phase employment;
- Give preference to Indigenous communities and local municipalities in hiring Project employees.
- Give preference to contracting for goods and services from the businesses in the Indigenous communities and local municipalities.

Enhancement measures to be implemented to enhance the effects of the Project on the economy include the following:

- Establish a Health and Wellness Strategy focused on employee mental health and wellness to complement health and safety programs and to support local and Indigenous employees.
- Support processes and initiatives related to employment readiness, training and educational initiatives with Indigenous communities, such as skills assessment, career counselling, referrals to education upgrading, creation of training plans, career sessions at local schools and educational site trips.

- Work with local and Indigenous businesses to enhance the opportunity to participate in the supply of goods and services for construction and operations (e.g., facilitate workshops about opportunities available, collaborate with small businesses to prepare bids in response to requests for proposal, provide business education).
- Provide coaching and mentoring for advancement to senior, supervisory and/or management-level positions on the Project to employees who are members of Indigenous communities and have expressed an interest in career development, and who have demonstrated a likelihood to succeed in such development.

6.16.3 Residual Effects and Determination of Significance

The Project demand for labour during construction and operation phases will increase local and regional employment levels and labour income, including for Indigenous communities. This positive effect will be enhanced by preferentially employing local and regional residents. During the approximately 17.5 years from construction through active closure, the Project will create a total of 43,880 person-years of employment in Canada. The Project will also increase the Canadian gross domestic product by $7.6 billion, which is equivalent to an average of about $430 million per year. The residual effect is strongly positive for an underserviced region of Northwestern Ontario and could support government's re-investment of revenue in local services and infrastructure.

Labour demands will likely extend to the regional centres of Kenora and Dryden. Given the employment opportunities generated by the Project, the relative high income associated with mine-related work and the economic diversification opportunity, the residual effect is strongly positive. The Project demand for goods and services during construction and operations phases will create opportunities for local and regional business with or without experience in the mining industry to participate in the Project through contracting and procurement. This positive effect will be enhanced by preferentially contracting local and regional businesses and building capacity in the region through the life of the mine. The spending of Project-related labour income will have induced positive effects on local businesses through the spending of the labour income at local and regional businesses.

The availability of jobs at the Project can encourage more individuals to seek additional training to become qualified for Project employment, including through available employment funding programs—in particular, during the construction and operations phases. Mitigation measures are aimed at ensuring the awareness and availability of suitable training and funding programs, so the opportunities and benefits are maximized.

Government revenues will increase through taxes and fees paid by the Project, and by individuals and businesses that participate in the Project. These revenues will occur during the construction and operations phases, and then they will subsequently decline during the closure phase. The annual revenues, federal and provincial levels combined, will total approximately $77 million during construction, $228 million during operations and $9 million during closure and will, in part, flow to local and regional municipalities supporting community services and infrastructure for the long term.

Overall, the Project will have a net positive effect on the local and regional economy of an underserviced area of Northwestern Ontario, and it will have a positive effect at the provincial and national levels through employment and labour income, expenditures to local and regional businesses, and increased revenues to local and regional municipalities and participating Indigenous communities. Because the Project will result in positive residual effects, a determination of significance is not required.

The level of confidence in the prediction is considered to be high due to experience with other similar and recent Project developments, while acknowledging the individual nature of choices made by the local labour force and businesses in seeking employment, training and business opportunities associated with the Project.

6.17 Local and Regional Infrastructure

Local and regional infrastructure and services were selected as a valued component because of their importance to the communities in the region. The Project has the potential to increase demand for local and regional infrastructure and services if there is a Project-related increase in-migration to the local municipalities and Indigenous communities. An increase in in-migration could potentially increase the demands for educational services, housing, health and emergency services, municipal and community services, and infrastructure (including utilities) and the increased use of roads and airports.

6.17.1 Potential Effects

The potential effects of the Project on local and regional infrastructure, prior to mitigation, include:

- Change in the demand on educational services;
- Change in the demand for housing;
- Change in the demand for emergency services, municipal services and infrastructure;
- Change in the demand for municipal and provincial community resources; and
- Change in the demand on transportation networks.

The construction and operation of the mine and its facilities interact with local and regional infrastructure due to the change education and training requirements, the need for transportation to the mine site and the need for electrical, water, waste and wastewater services. The Project employment and expenditures may result an in-migration of people to the municipalities that may change the demand for educational, health care, recreational, social, municipal, emergency services, and housing. In addition, Project employment and expenditures may increase traffic volumes and the use of the road network due to Project-related activities and the increased population and the travel of workers and movement of Project cargo could change the level of traffic at airports.

During closure, the removal of assets that can be salvaged, demolition and recycling and/or disposal of the remaining materials, and disposal of demolition-related wastes in approved facilities interacts local and regional infrastructure due to the potential requirement for community resources such as landfills. The need for Project employment and expenditures during closure may result in a decrease in population, which reduces the demand on educational, health care, recreational, social and emergency services and on housing. However, a decreased level of employment may result in an increase in the demand for post-secondary school training to transition to other employment.

6.17.2 Mitigation Measures

To mitigate the change in the demand for educational services during construction, operation and closure, FMG will communicate employment skill requirements to local education / training providers during construction and operations to facilitate planning for appropriate Project-related training.

The change in the demand for housing will be mitigated by providing onsite accommodations for the Project workforce during construction and operations phases to minimize daily commuting from local communities and constructing and operating the Project with a rotational workforce which reduces the

need for Project workers to move to the local communities for employment as well as potential impacts on roads from daily commuting. Further, preferential hiring of employees from the local municipalities will be implemented during all phases to provide local employment and labour income and to reduce potential in-migration and potential additional demands on infrastructure and services, and the Project schedule and potential labour demand will be communicated to local municipalities during construction and operations phases for housing planning purposes.

To mitigate the change in the demand for emergency services, municipal services and infrastructure, communications will be maintained with relevant agencies and organizations during construction and operations to facilitate management of Project-related implications for services and infrastructure. In addition, a Health and Wellness Strategy will be implemented for Project employees which will, in part, contribute to management of demands on infrastructure and services in the municipalities and Indigenous communities. To reduce potential demands for emergency services, Project-rescue vehicles and trained First Responders will be on site during all phases. Further, power for the Project operations will be provided through a connection to the Wataynikaneyap 230-kilovolt line, and a water treatment and sewage treatment system will be provided at the Project site to minimize demands on municipal services.

The change in the demand for municipal and provincial community resources will be mitigated by maintaining communications with relevant agencies and organizations during construction and operations to facilitate management of Project-related implications for services and infrastructure, and the Health and Wellness Strategy will be implemented for Project employees which will contribute to the management of demands on municipal and provincial community resources.

To mitigate the change in the demand on transportation networks, onsite accommodations for the Project will be provided for workforce during construction and operations phases to minimize daily commuting from local communities. Further, the Project will be constructed and operated with a rotational workforce which reduces the potential impacts on roads from daily commuting, and bus transportation to the worksite will be provided for the employees from a centralized location(s) to reduce traffic and minimize daily commuting.

6.17.3 Residual Effects and Determination of Significance

The Project is predicted to have residual effects on local and regional infrastructure and services in the immediate vicinity of the Project. The residual effects from the Project on local and regional infrastructure and services are described below.

Change in Demands on Education

The impact on primary and secondary school enrollment will be minimal, due to the expectation that 70 percent of the construction labour force and 90 percent of the operations labour force will be from the local municipalities and Indigenous communities resulting in low in-migration to those communities. An increase in demand for post-secondary school training is expected to occur due to individuals pursuing training to gain the skills required to obtain employment on the Project. The Confederation College campuses in Red Lake and Sioux Lookout and adult learning centres in Red Lake and Sioux Lookout have the capacity to meet an increase in demand. FMG will communicate employment skill requirements to local training providers to facilitate planning of appropriate training. Employment assistance programs (i.e., Ontario Works) and counsellors, available in the Regional and Local Study Areas to assist with training opportunities and preparing for employment, are likely to experience increased demands in preparation for employment during construction. It is expected that government programs will be established to support Project-specific training, however, there will be a residual effect on demand for education due to individuals

pursuing training to gain the skills required to obtain employment on the Project. The demand of employment related training may increase the demand on educational services, however, that demand is expected to be within the capacity of the existing education providers. As a result, the residual effect on the educational services due to a change in the demand for employment-related training education is predicted to be **not significant**.

Change in Municipal Services

The Project will increase demand on emergency services during construction and operations activities and due to travel to and from the Project Development Area. The level of potential demand will be reduced through Project health and safety processes, onsite emergency response and security personnel. Traffic incidents will be reduced through speed restrictions for travel within the Project Development Area, having a rotational workforce in onsite accommodations that eliminates daily commuting traffic, and providing bus transportation which will reduce traffic volumes. Demands on emergency services and traffic level will be reduced during closure with a reduction in the Project workforce. During construction and operation and closure, non-recyclable waste material will be transported to an approved waste management facility located off site, thereby increasing the demand on that service; however, landfills in the local municipalities have the capacity to accommodate the Project-related waste. As a result, the residual effect on the local and regional infrastructure and services due to a change in the demand for municipal services is predicted to be **not significant**.

Change in Transportation

The anticipated low in-migration rates to the communities means there will be limited additional demand on transportation infrastructure by residents. There will be additional traffic on regional highways and the Wenasaga Forestry Road by vehicles transporting workers, equipment and goods to the Project Development Area during construction and to the mine site during operations and closure. A schedule of major equipment delivery and removal will be communicated to local communities to reduce the impacts on local traffic. Oversized loads will be transported in parts and load restrictions will be enforced to reduce impacts on road infrastructure, where feasible. At closure, traffic volumes are predicted to decline. In addition, a small airstrip to accommodate a Dash-8 or similar aircraft will be constructed within the Project Development Area to move personnel on an irregular basis to the site which would reduce traffic volumes on roads to the mine site area of the Project Development Area.

The mine access road will create all-weather access to the mine site from the current terminus of the Wenasaga Road, however, public access will be restricted beyond the gated portion of the mine access road. The construction of the approved upgrades to the Wenasaga Road and the mine access road will provide a beneficial effect by supporting access to that portion of the Trout Lake Forest Management Area and the potential development of a regional road network to Indigenous communities further north.

Overall, the residual effect on the local and regional infrastructure and services due to a change in the demand on the transportation network is predicted to be **not significant**.

Overall, the prediction confidence for residual effects on local and regional infrastructure is high due to the understanding of Project requirements and the capacity of existing infrastructure and services.

6.18 Traditional Land and Resource Use

Indigenous Traditional Land and Resource Use includes activities related to the harvesting of resources, such as hunting, fishing, trapping, gathering plants and areas where teaching or transfer of knowledge regarding cultural practices occur, ceremonial sites, travel routes or sacred sites. It includes a distinct collection of established knowledge built up and held by a group of people through generations. Traditional Land and Resource Use is a component of Traditional or Indigenous Knowledge that is cumulative, dynamic and builds upon the historic experiences of a people and adapts to social, economic and environmental changes. Aboriginal and Treaty rights, which include the right to practice Traditional activities such as hunting, trapping, fishing and plant gathering, are protected under Section 35 of the *Constitution Act* (1982) and Indigenous communities exercise those rights throughout the region.

Traditional Land and Resource Use was selected as a valued component for assessment to evaluate how the Project may interact with Traditional activities, sites and resources identified by Indigenous communities

6.18.1 Potential Effects

The potential effects of the Project on Traditional Land and Resource Use, prior to mitigation includes:

- Change in availability, access to and experience related to Traditional terrestrial wildlife harvesting (hunting and trapping);
- Change in availability, access to and experience related to Traditional aquatic wildlife harvesting (fishing);
- Change in availability, access to and experience related to Traditional terrestrial plant (food and medicine) harvesting; and
- Change in availability, access to and experience related to Traditional habitation, cultural and spiritual sites / areas.

Project activities potentially interacting with local and regional infrastructure that may lead to these potential effects include the following:

- During construction, work being done could result in a pathway to potential effects due to the loss of vegetation and changes in wildlife habitat; a loss of fish and fish habitat; changes to surface water quality; sensory disturbances to Traditional Land Users; and the loss of access to Traditional harvesting as well as Traditional habitation and cultural and/or spiritual areas.
- During operation, the operation of the mine components may result in sensory disturbances due to noise and vibration from blasting, and the generation of dust may affect the experience associated with Traditional harvesting and cultural activities as well as wildlife habitat and mortality, fish species, and vegetation.
- During closure, final reclamation activities of disturbed areas during the active closure phase may result in effects on Traditional Land Use due to sensory disturbances to wildlife and Traditional Land Users, changes in surface water quality, and generation of dust. The filling of the open pit basin with water may lead to changes in water levels and flows, which may affect availability and access to Traditional plant, fish and wildlife harvesting areas.

6.18.2 Mitigation Measures

The key measures to mitigate the potential effects on Traditional Land and Resource Use during construction, operation and closure phases include developing a compact mine site and co-locating the transmission line, airstrip and mine access road within a shared infrastructure as well as using existing corridors, where feasible. In addition, an access management strategy will be developed with local Indigenous communities to manage access along the mine access road with the purpose of supporting Traditional Land and Resource Use access and minimizing new public access. Further, an Environmental Committee(s) will be established to facilitate communications and meaningful engagement with local Indigenous communities during construction, operation and closure of the Project. The committee will also facilitate the use of Traditional Knowledge in Project-related activities and provide a forum to share and evaluate environmental information, review Project approvals and environmental management and monitoring plans, participate in adaptive management and identify mitigation measures, and address emerging issues and areas of interest identified by communities.

To mitigate the potential change in the availability, access to and experience related to Traditional terrestrial wildlife harvesting (hunting and trapping), local Indigenous communities and identified points of reception will be advised ahead of transmission line construction work periods and as the construction work proceeds. In addition, FMG will work with local Indigenous communities to coordinate construction activities related to the transmission line to minimize overlap with the timing of Traditional Land Use activities (e.g., fall moose hunt) and other sensitive periods. Regular communication will be maintained with trapline holders SL197 and SL 200 regarding activities and opportunities to facilitate their land use activities, and FMG will work with the Ministry of Natural Resources and trapline licence holders to determine alternative options for trapline losses during the construction and operation phases. Hunting at the Project will be prohibited for employees and contractors while on site, during all phases. Further, the mitigation measures for dust, noise, vegetation communities, and wetlands and wildlife will be implemented.

The potential change in the availability, access to and experience related to Traditional aquatic wildlife harvesting (fishing) will be mitigated by maintaining Project designs such that no new public access points will be developed on Springpole Lake during the construction, operation and closure phases. Where there is interest, opportunities will be provided to local Indigenous communities and Traditional Land Users to harvest aquatic resources within the Project Development Area prior to construction. Further, fishing at the Project will be prohibited for employees and contractors while on site, during all phases. In addition, the measures for the mitigation of noise and surface water will be implemented and the measures for the mitigation of potential effects on fish and fish habitat will be implemented, including the fish habitat offsetting objectives.

To mitigate the potential change in the availability, access to and experience related to Traditional terrestrial and plant use (food and medicinal), revegetation will be undertaken in the mine site area, where practicable, and include input from Indigenous communities and Traditional Land and Resource Use planning documents. Further, where there is interest, opportunities will be provided to local Indigenous communities and Traditional Land Users to harvest plants within the Project Development Area prior to construction.

The potential change in the availability, access to and experience related to habitation and use of spiritual or cultural sites will be mitigated with the implementation of measures for noise, archaeology and cultural heritage. In addition, treed buffers will be maintained between Project infrastructure and waterbodies to reduce visual disturbance. FMG will work with local Indigenous communities to coordinate construction activities related to the transmission line to minimize overlap with the timing of Traditional Land Use activities and will support the development and delivery of Indigenous-led ceremonies on site to pay respect

to the land, air and water prior to construction and at other key Project milestones. Further, the alternative navigation route identified to maintain access between Springpole Lake and Birch Lake will be established prior to construction and maintained until post-closure, when the existing portage will be re-established.

6.18.3 Residual Effects and Determination of Significance

Changes in the Availability, Access to and Experience related to Traditional Wildlife Harvesting

Cat Lake First Nation reported wildlife harvesting activities have taken place within five kilometres of the Project Development Area and Misheegogamang Ojibway Nation and Slate Falls Nation have reported Traditional Land Use along the transmission line corridor.

The mine site, mine access road and transmission line will result in a localized loss of wildlife habitat in the Project Development Area during construction, operation, and active closure. The extent of the total Project Development Area affects only 1 percent of the furbearer habitat in the Local Study Area and only 4.9 percent of the large mammal habitat in the Local Study Area. The habitat for the harvested species is common throughout the Local Study Area and the Regional Study Area, and the removal in the Project Development Area is unlikely to affect the availability of Traditional wildlife harvesting opportunities. The effects on wildlife resources due to habitat loss will be largely reversed at closure following habitat restoration activities in the mine site area. Wildlife response to construction and operation may result in a localized decline in species abundance which could directly affect Traditional wildlife harvesting in areas immediately adjacent to the Project Development Area, During all phases of the Project, trapping and hunting will not occur directly in the Project Development Area for safety and, prior to construction, FMG will develop an access management strategy to manage access along the mine access road with the purpose of supporting Traditional Land and Resource Use access and minimizing new public access. There will be no new public access points created on Springpole Lake. FMG will also prohibit hunting and fishing by Project employees and contractors while on site during all phases to avoid potential increased pressure on local resources. Changes to viewscapes, which may affect the experience for Traditional Land and Resource Use on Birch Lake and Springpole Lake, are mitigated by Project setbacks and buffers. Sensory disturbance due to noise is reduced through optimization of the co-disposal facility and the reduction of the number of haul truck activity. The potential residual effect on Traditional wildlife harvesting is predicted to be not significant.

Changes in the Availability, Access to and Experience Related to Traditional Fish Harvesting

Cat Lake First Nation described that within 5 kilometres of the Project Development Area, they know of productive aquatic habitat and that they harvest fish there. Lac Seul First Nation fish for Lake Trout within 5 kilometres of the Project Development Area and Mishkeegogamang Ojibway Nation and Slate Falls Nation have identified use of parts of the Project Development Area, which could include fishing. The Northwestern Ontario Métis Community identified Birch Lake as one of their fishing areas.

The construction of two dikes and dewatering of the open pit basin will disrupt approximately six percent of Springpole Lake and a portion of one deepwater basin with Lake Trout habitat. Refilling of the open pit basin at closure will re-establish productive Lake Trout habitat and habitat for additional fish species at closure resulting in an increase in the surface area of Springpole Lake by approximately 3.5 percent compared to baseline. In addition, the effects on Traditional aquatic harvesting due to the loss of fish habitat will be offset during the operation and closure phase with the additional measures outlined in the Fish Habitat Offsetting and Compensation Plan (Appendix F).

A freshwater intake will be installed in Birch Lake to provide freshwater to the Project, which will follow DFO requirements and will not affect fish in Birch Lake; the water volume required for the Project is minimal and will have no effect on the water quantity in Birch Lake and there will be no change in Traditional fishing opportunities in Birch Lake. Water quality within Birch Lake and Springpole Lake will also be maintained.

There will be no new public access points created to either Birch Lake or Springpole Lake and fishing by employees and contractors will be prohibited while working at the Project site will avoid placing additional fishing pressure on local waterbodies during all phases of the Project. Traditional Land and Resource Use access will remain unchanged and FMG will establish the alternative navigation route identified to maintain access between Springpole Lake and Birch Lake until post-closure, when the existing portage has been re-established.

Changes to viewscapes, which may affect the experience for Traditional Land and Resource Use on Birch Lake and Springpole Lake is mitigated by Project setbacks and buffers. Sensory disturbance due to noise is reduced through optimization of the co-disposal facility and the reduction of the number of haul truck activity. The potential residual effect on Traditional fish harvesting is predicted to be not significant.

Changes in the Availability, Access to and Experience Related to Traditional Plant Harvesting

Food plant habitats and harvesting were identified by Cat Lake First Nation within approximately five kilometres of the Project Development Area. Mishkeegogamang Ojibway Nation and Slate Falls Nation use areas that overlap with part of the transmission line corridor which may include plant harvesting.

Traditional plant harvesting opportunities will be affected only within the Project Development Area, where vegetation is overprinted by Project infrastructure and, as vegetation will be maintained along the transmission line route, plant harvesting may still continue there following construction. Project development is anticipated to affect 7.4 percent of the vegetation and wetlands Local Study Area and 0.3 percent of the Regional Study Area and the harvested plant species are common throughout the Local Study Area and the Regional Study Area. During all phases of the Project, Traditional plant harvesting will not occur directly in the Project Development Area for safety. An access management strategy will be developed with local Indigenous communities to manage access along the mine access road with the purpose of supporting Traditional Land and Resource Use access and minimizing new public access. No new public access points will be created on Springpole Lake and there will be no increase in public activity that could disturb Traditional Land and Resource Use. The progressive and final rehabilitation of the mine site area will include a revegetation plan that will incorporate plant species of interest to Indigenous communities and reclamation efforts carried out during closure will be guided by input from Indigenous communities and land use planning documents. Measures implemented to offset Caribou habitat in accordance with the requirements of achieving an overall benefit will also serve to offset aspects of Traditional plant harvesting in the region. Changes to viewscapes, which may affect the experience for Traditional Land and Resource Use on Birch Lake and Springpole Lake is mitigated by Project setbacks and buffers. Sensory disturbance due to noise is reduced through optimization of the co-disposal facility and the reduction of the number of haul truck activity. The potential residual effect on Traditional plant harvesting is predicted to be not significant.

Changes in the Availability, Access to and Experience Related to the Habitation and Use of Spiritual or Cultural Sites

Indigenous communities have identified that there are place names for locations, habitation sites for harvesting activities, transportation routes, and ceremonial sites within approximately 5 kilometres of the Project Development Area.

Based on information gathered to date, the Project will not directly overprint Traditional habitation, cultural or spiritual sites. FMG will work with local Indigenous communities to coordinate construction activities related to the transmission line to minimize overlap with the timing of Traditional Land Use activities (e.g., fall moose hunt) and other sensitive periods. There is the potential for Project-related noise in the areas adjacent to the Project Development Area to affect the experience of conducting Traditional activities. However, noise will be reduced on Springpole Lake given the location of the dikes being setback for the mining operations and the co-disposal facility optimization will also reduce noise disturbance due to the reduction in haul truck activity. Changes to viewscapes, which may affect the experience for Traditional Land and Resource Use on Birch Lake and Springpole Lake is mitigated by Project setbacks and buffers with the co-disposal facility being the only visible component of the Project from a distance. Sensory disturbance to Traditional Land and Resource Use activities will cease at closure. With the implementation of mitigation measures, there will be no residual effect on Traditional habitation or use of spiritual or cultural sites.

6.19 Archeology, Built Heritage Resources and Cultural Heritage Land Use

Archaeological resources contribute to our understanding of history and were selected as a valued component. Archaeological resources include:

- Objects, sites or the locations of a Traditional societal practice that are of historical, cultural or archaeological significance to Ontario, a community or Indigenous people, including locations containing, or with the potential to contain, the physical remains of past human activity;
- Certain landscape features; and
- Sites containing evidence that Indigenous people have historically used an area.

These resources include, but are not limited to, burials / graves, accommodation complexes, special or spiritual places, travel routes and find spots of Indigenous or Euro-Canadian artifacts. The effects assessment in this section has been scoped to archaeological sites (both Indigenous and Euro-Canadian).

Built heritage resources are a constructed feature associated with a property's cultural heritage value; cultural heritage landscapes are a geographic area identified as having cultural heritage value. Built heritage resources and cultural heritage land use are identified as a valued component in recognition of the interests of government agencies, responsible for the effective management of these resources, and potentially affected Indigenous communities and parties that have an interest in resources related to their history and culture.

6.19.1 Potential Effects

The initial site preparation activities in the mine site area of the Project Development Area would include surface disturbances that would affect any unknown archaeological resources, if present. It is also possible that chance finds or deeply buried archaeological resources will be encountered during construction. If an archaeological resource was present but not mitigated, activities during the construction phase would cause the loss of the archaeological resource by removing the resource from its original context.

The site preparation activities in the Project Development Area also have the potential to affect built heritage resources and cultural heritage land use due to surface disturbances, which may also affect the cultural heritage landscape. The assessment of potential effects on built heritage resources and cultural heritage land use includes the presence of buildings / landscape features 40 years old or older.

6.19.2 Mitigation Measures

Stage 1 and Stage 2 archaeological assessments of the mine site area did not identify any archaeological resources. Before construction, a Stage 2 archaeological assessment will be completed at the areas identified as having archaeological potential along the preferred route of the proposed transmission line. Additionally, as the Project advances, additional archaeological assessment may be undertaken before construction, if required to address new information or refinements to the Project Development Area.

Measures to be implemented to avoid or minimize the effects of the Project on BHRs and CHLs include noting heritage properties on Project maps to identify the heritage status of the property to Project personnel and prior to construction determine specific mitigation measures to be applied, such as documentation or applying buffer zones, as appropriate.

FMG is committed to maintaining alternative access to a portage for navigation routes that traverse the Project Development Area during the construction and operation phases. During the closure phase, portage route(s) will be re-established in a suitable location based on feedback from known land and resource users.

6.19.3 Residual Effects and Determination of Significance

There is a possibility that unknown built heritage, cultural heritage and archaeological resources could be unearthed during land clearing; however, a Heritage Impact Assessment will be completed in areas of cultural and archaeological potential prior to ground disturbance activities in the construction phase. In addition, a chance find procedure would be implemented during clearing activities. Therefore, no residual effects on built heritage, cultural heritage and archaeological resources are anticipated; and a determination of significance is not required.

6.20 Human and Ecological Health

Human and ecological health is selected as a valued component as it has inherent importance to the wellbeing of humans, food security, the natural environment and environmental and safety regulatory requirements.

6.20.1 Potential Effects

The potential effects of the Project on human and ecological health, prior to mitigation, include:

- Change in human health; and
- Change in ecological health.

Site preparation activities for the mine site, the construction of the mine access road, including the aggregate resource areas, as well as the airstrip and transmission line could result in changes to air quality due to fugitive air emissions.

During operation of the mine site and mine access road, the Project may change air quality due to the operation of equipment and the processing of ore. Further, the discharge of treated effluent to the southeast arm of Springpole Lake will potentially affect water quality. Operational discharge requirements are predicted to be greatest at the end of operations as a result of increased groundwater inflows to the open pit and site runoff as various site features develop.

6.20.2 Mitigation Measures

Measures to be implemented to avoid or minimize the effects of the Project on air quality and surface water will be sufficient to manage potential effects on human and ecological health during all phases of the Project.

6.20.3 Residual Effects and Determination of Significance

Change in Human Health

The results of the human health-specific screening identified four chemicals of potential concern for further evaluation in the human health risk assessment. The predicted increases in the concentrations of chemicals of potential concern between the Baseline Assessment Scenario and the Project and Post-Closure Assessment Scenarios were negligible for air, soil, sediment, surface water and country foods. Predicted increases in the concentrations of chemicals of potential concern in surface water did not result in exceedance of applicable human health or aquatic life guidelines.

The change in calculated risk levels from the Baseline Assessment Scenario to Project and Post-Closure Assessment Scenarios are negligible and potential risks to human receptors who spend time in cabins and/or practise Traditional Land Use in areas surrounding the Project are not anticipated. In general, a high degree of conservatism is incorporated into the models used to predict Project-related air emissions, deposition to soil and predicted surface water, sediment and fish concentrations. In addition, the conservative assumptions used in the human health risk assessment model result in overestimation of the predicted risks to human health.

Change in Ecological Health

The results of the assessment on ecological health determined that surface water concentrations did not exceed guidelines, soil concentrations did not exceed benchmark values for terrestrial receptors, and there is a low potential risk to birds and mammals. Due to the conservative assumptions associated with the ecological risk assessment, there is no potential risk to mammals and birds due to the Project.

The Project is not predicted to result in a change to human or ecological health. Monitoring programs, including for surface water and fish, will be implemented to verify the accuracy of the predicted effects, validate the models and assess the effectiveness of the implemented mitigation measures.

6.21 Effects on Indigenous People

This section assesses the effects of the changes to the environment on Indigenous peoples, as required by Section 5(1)(c) of CEAA 2012.

6.21.1 Potential Effects

The potential effects of the Project on local and regional infrastructure, prior to mitigation, include:

- Changes in Indigenous health conditions;
- Changes in Indigenous socioeconomic conditions;
- Changes in Indigenous physical and cultural heritage; and
- Changes in current use of lands and resources for Traditional purposes.

Project construction will include removal of vegetation and alteration of wildlife habitat and locally the abundance of harvested wildlife, removal of fish habitat, and may affect water quality. Construction of the dikes in a portion of Springpole Lake will remove fish habitat and may affect the use of navigable waters and access to areas associated with outfitting and recreation. The construction of Project infrastructure will result in a change to the landscape which may potentially affect access to resources used for Traditional activities.

During construction and operation, Project employment and expenditures may increase personal income and business opportunities and income and may provide skill and capacity building opportunities. Construction of the transmission line will strengthen the resilience of local infrastructure. Project employment may expose Indigenous workers to harassment or racism.

In all Project phases, Project changes to air quality and noise may create sensory disturbances for wildlife and Traditional harvesting and cultural activities.

During closure, the re-vegetation will take place and the open pit basin will be filled with water and re-connected to Springpole Lake.

6.21.2 Mitigation Measures

To mitigate the potential changes in Indigenous health conditions during construction, operation and closure, the mitigation measures relevant to Indigenous health conditions will be implemented for air quality, noise and vibration, surface water, fish and fish habitat, vegetation communities and wetlands, and wildlife and wildlife habitat.

The potential changes in Indigenous socioeconomic life will be mitigated by giving preference to Indigenous communities and local municipalities in hiring employees for the Project and contracting for goods and services. In addition, FMG will establish a Health and Wellness Strategy focused on employee mental health and wellness to complement health and safety programs and to support local and Indigenous employees. Furthermore, FMG will support reasonable requests and work schedule flexibility for Indigenous employees for time off to pursue Traditional Land Use activities, during the construction, operation and closure phases. As well, onsite accommodations will be provided that are safe and welcoming for the Project workforce during construction and operations phases, and the Project will use a rotational workforce to support the employment of local and regional workers.

To mitigate the potential changes in Indigenous physical and cultural heritage, mitigation measures will be implemented for noise, archaeology and cultural heritage. Further, a tree line will be preserved as a buffer around the mine site to diminish the amount of the mine site that can be seen. This buffer around the Project will be maintained wide enough to withstand the loss of trees, such as those toppled by wind.

The potential changes in the current use of lands and resources for Traditional purposes will be mitigated with the measures for Traditional Land and Resource Use described in Section 6.18, including the following key measures:

- Maintaining Project designs such that no new public access points are developed on Springpole Lake;
- Implementing the mitigation measures relevant to current use for air quality, noise and vibration, surface water, fish and fish habitat, vegetation communities and wetlands, and wildlife and wildlife habitat;
- Prohibiting hunting and fishing at the Project by employees and contractors while on site;

- Providing the opportunity to establish Environment Committee(s) with interested Indigenous communities prior to construction;
- Developing an access management strategy Plan with local Indigenous communities prior to construction to manage access along the mine access road, north of the Birch River crossing, during the construction, operation and closure phases of the Project, with the purpose of supporting Traditional Land and Resource Use access and minimizing new public access; and
- Establishing an alternative portage route prior to construction to maintain access between Springpole Lake and Birch Lake and maintain the alternative route until post closure when the existing portage has been re-established.

6.21.3 Residual Effects and Determination of Significance

Change in Health Conditions

Predicted changes to health conditions of Indigenous peoples are driven by potential changes in the environment from the Project, including air quality, water quality, and noise and vibration and in potential changes in the current and future availability and quality of country foods.

Changes in air quality will be mitigated using the measures described in Section 6.2 and are predicted to be below regulatory guidelines (provincial ambient air quality criteria) at the property boundary. Noise from the Project will be confined to within the Local Study Area around the mine site area and noise along the transmission line corridor will only occur during constrction and only for a short period at any one location. Water released from the mine site will have been treated and be within regulatory guidelines and will have no impact on health conditions of Indigenous peoples.

Potential changes in the availability of country foods could occur due to removal or alteration of vegetation, wetlands, and wildlife habitat, however, the removed habitat constitutes less than 10 percent of the available habitat for wildlife in the Regional Study Area will be partially reversed upon closure. Sensory disturbances to wildlife may extend into the Local Study Area and disperse some wildlife away from the Project Development Area. Sensory disturbances will be reduced through mitigation and reversed at closure. opportunities will be provided to local Indigenous communities and Traditional Land and Resource Users to harvest vegetation and aquatic resources within the Project Development Area prior to construction.

Harvesting in the mine site area of the Project Development Area will be prohibited during construction and operations for safety reasons, however, that is a small percentage of the available habitat in which to harvest country foods in the Regional Study Area. An access management strategy will support continued Traditional activities along the mine access road. FMG will support reasonable requests and flexibility in work schedules for Indigenous employees for time off to pursue Traditional Land Use activities, during construction, operation and closure phases. In addition, during construction, operation and closure phases of the Project, FMG will support community land-based cultural activities. The small area where plants and wildlife will not be available does not reduce the availability of vegetation and wildlife as country food.

Fish habitat will be removed from a small portion of Springpole Lake during construction, eliminating the availability of fish in that area until the open pit is reconnected with Springpole Lake upon closure. Collected water on the mine site that is not recycled in ore processing will be treated at the effluent treatment plant and discharged to the southeast arm of Springpole Lake in accordance with final permitting requirements. Fish will not be affected by changes in water quality. There will be no effect on the availability of fish as a country food due to changes in abundance or quality.

Employment by the Project may expose Indigenous workers to racism or harassment, which may potentially affect their mental health and indirectly place a greater burden on community health and social services. This will be managed through the establishment of a Health and Wellness Strategy (Appendix Q-3), which includes implementation of anti-discrimination policies; mandatory diversity, cultural and gender sensitivity training for supervisors, managers and contractors; and Indigenous cultural awareness training content in site orientations and cultural spaces. In addition, FMG will support reasonable requests and work schedule flexibility for Indigenous employees for time off to pursue Traditional Land Use activities during construction, operation and closure phases.

There will not be a residual effect on Indigenous health conditions with the application of mitigation measures and due to the small area where the availability of country foods may be affected compared to their availability elsewhere in the Regional Study Area. Therefore, a determination of significance is not required.

Change in Socioeconomic Conditions

Predicted changes to the socioeconomic conditions of Indigenous peoples are driven by potential changes to navigation, commercial and recreational land and resource use, food security and community level socioeconomic conditions.

The known travel routes on Birch Lake and Springpole Lake will not be affected by the Project. Alternative access to navigation routes that traverse the Project Development Area will be established and at closure, the existing portage route will be re-established. As there is no residual effect on navigation, a change in socioeconomic conditions from this pathway is not anticipated.

The Project Development Area will affect 0.6 percent of the total area of the eight traplines it overlaps. The area of disturbance will be minimized through the development of a compact mine site, by using existing road infrastructure where possible and co-locating the transmission line, airstrip, and mine access road. Sensory disturbances to wildlife causing their displacement will be minimized through implementation of noise mitigation measures. Access to preferred trapping locations may be affected. FMG will develop an access management strategy with local Indigenous communities to manage access along the mine access road. An alternative navigation route to maintain access between Springpole Lake and Birch Lake will be established, and the existing portage route will be re-established during closure. FMG will maintain regular communication with trapline holders SL197 and SL 200 regarding activities and opportunities to facilitate their land use activities. There will be a residual effect due to changes in trapping, and its contribution to socioeconomic conditions.

There will be no recreational activity within the mine site area during construction and operations. There will be restrictions on the use of the transmission line corridor only during construction and there will be no restrictions on Birch Lake and Springpole Lake. The remoteness of the area and the abundance of other areas in the Regional Study Area for recreation indicates that any potential effect on recreational activity will be negligible; therefore, a residual effect from changes in recreational activities is not predicted.

Country foods and their availability contribute to food security. The availability of fish, wildlife and plants as country food will not change except in the mine site area and the mine access road during construction and operations as well as along the transmission line during construction. As discussed previously, there will be limited areas where there will be no harvesting, and FMG will develop and access a management strategy to support Traditional harvesting, community land-based cultural activities and flexibility for workers to pursue Traditional Land Use activities. As a result, no residual effect from changes in food security is predicted.

Socioeconomic effects within Indigenous communities could change due to Project-related effects. It is unlikely people will move to the Indigenous communities to seek employment at the Project. Without an increase in population, additional demands on community infrastructure, services and resources will not increase due to the Project. FMG will give preference to hiring Project employees from Indigenous communities and local municipalities; it will also give preference to contracting for goods and services from the businesses in the Indigenous communities and local municipalities. The increased personal and business income will provide a positive effect on community socioeconomic conditions and not have a residual adverse effect.

There is a residual effect on Indigenous socioeconomic conditions due to effects on trapping. The reduction in the area for trapping is low and the residual effect is considered to be not significant. The effect on trapping and socioeconomic conditions apply only to Cat Lake First Nation, whose members hold the trapline areas in the mine site and mine access road vicinity.

Change in Indigenous Physical and Cultural Heritage

Project-related effects on Indigenous physical and cultural heritage could include loss or destruction; changes to the cultural value, importance of or access to physical and cultural heritage; changes to sacred, ceremonial or culturally important places, objects or things; and changes to visual aesthetics over the life of the Project.

Along the transmission line, there are six locations that are considered to have archaeological potential. These will be investigated in more detail prior to construction, and measures to mitigate effects will be developed, if necessary. The transmission line crosses Slate Falls Nation Cultural Heritage Areas and Slate Falls Nation will be provided the opportunity to identify whether there may be direct or indirect impacts on those areas prior to construction of the transmission line. Prior to construction, FMG will provide opportunities to Indigenous communities that reported Traditional Land and Resource Use in the Local Study Area to elaborate on site-specific information with the goal to refine mitigation measures. There is no residual effect on physical and cultural heritage due to loss or destruction.

Changes to the value or importance and access to physical and cultural heritage as well as changes to sacred, ceremonial or culturally important places, objects or things could be caused by Project construction disturbing the landscape as well as sensory disturbances affecting the experience of being in an area. Some heritage areas may be avoided by Indigenous people due to their proximity to the Project. Prior to construction, FMG will provide opportunities to Indigenous communities that reported Traditional Land and Resource Use in the Local Study Area to elaborate on site-specific information with the goal to refine mitigation measures. During detailed design, the transmission line route will be optimized, based on discussion with Indigenous communities, to ensure ceremonial practices can continue. As described in Section 6.19.6 , there are no residual effects on known built heritage resources or cultural heritage landscapes.

The Project will increase ambient light (at night) during construction, operations and active closure. A tree line will be preserved around the mine to diminish the amount of the mine that can be seen from the surrounding area. After closure, the co-disposal facility will remain visible above the tree line. Construction of the mine access road and a portion of the transmission line will create new linear disturbances on the landscape while the east-west portion of the transmission line will parallel an existing transmission line on the same corridor. As a result, there will be a residual effect from a change in visual aesthetics.

The residual effect due to changes in visual aesthetics will be observed by Cat Lake First Nation, whose members use the Project Development Area and Local Study Area near the mine site area and Birch Lake;

Lac Seul First Nation, whose members use Birch Lake; Mishkeegogamang Ojibway Nation, whose members use the transmission line corridor; the Northwestern Ontario Métis Community, whose citizens use Birch Lake; and Slate Falls Nation, whose members use the transmission line corridor.

The small effect on visual aesthetics will be experienced on an individual level and the Traditional Use of physical and cultural heritage resources can continue within the Regional Study Area and is considered to be not significant.

Change in Current Use of Land and Resources for Traditional Purposes

Predicted changes to the current use of lands and resources for Traditional purposes are driven by changes in the resources used, changes to access to areas of Traditional Use, and changes to the experience of conducting Traditional practices. The current use of lands and resources is discussed in more detail in Section 6.18 Traditional Land and Resource Use.

The Project will remove or alter habitat in the Project Development Area during construction and displacement of wildlife may extend into the Local Study Area. Effects on wildlife will be managed through implementation of mitigation measures for wildlife (Section 6.9). Fish will be displaced from the small portion of Springpole Lake that will be dewatered but there will be no effect on fish in Birch Lake. Effects on wildlife will not extend into operations along the transmission line. The loss of vegetation and wetland communities is less than a 1 percent change for the Regional Study Area. Plant harvesting will be affected only in the Project Development Area where it is overprinted by Project infrastructure. Vegetation will be maintained along the transmission line route.

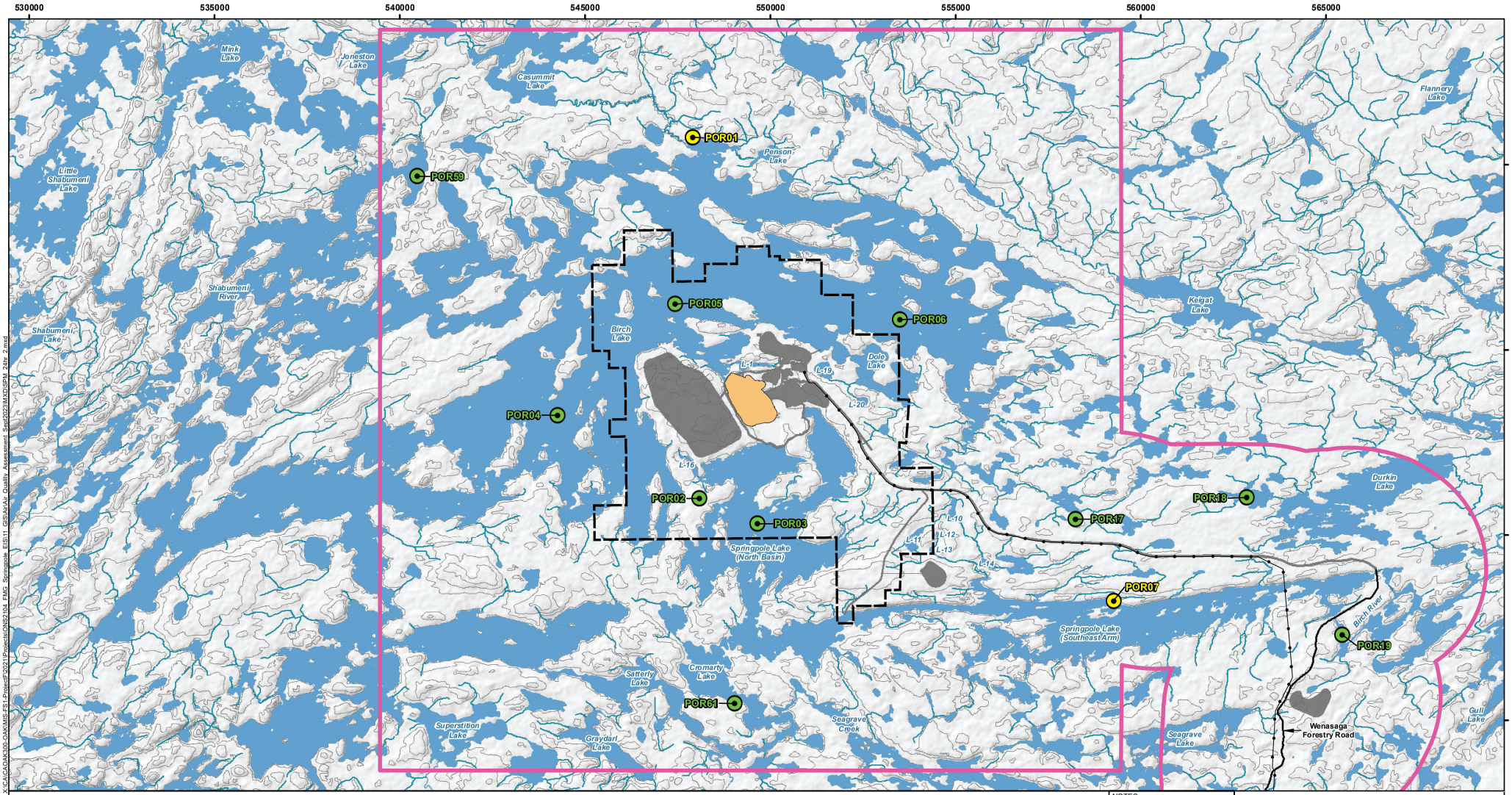
Prior to construction, FMG will provide opportunities to Indigenous communities that reported Traditional Land and Resource Use in the Local Study Area to elaborate on site-specific information with the goal to refine mitigation measures. FMG will provide opportunities to local Indigenous communities and Traditional Land and Resource Users to harvest vegetation and aquatic resources within the Project Development Area prior to construction. FMG will undertake revegetation in the mine site area, where practicable, and include input from Indigenous communities and Traditional Land and Resource Use planning documents. There will be a limited residual effect on the availability of Traditionally harvested resources in the mine site and mine access road areas during construction and operations and along the transmission line corridor during construction.

During construction, operation, and active closure, Traditional harvesting will not occur directly in the mine site and mine access road areas for safety reasons. FMG will develop an access management strategy to support Traditional activities along the mine access road area. Prior to construction, FMG will establish the alternative navigation route to maintain access between Springpole Lake and Birch Lake until post-closure when the existing portage has been re-established. There will be no restrictions to access on Birch Lake or Springpole Lake. There will be access restrictions along the transmission line corridor only during construction. Given the retention of vegetation along the transmission line, it is not likely that new access will be created along its route. FMG will support reasonable requests and work schedule flexibility for Indigenous employees for time off to pursue Traditional Land Use activities, during construction, operation and closure phases. There will be a residual effect on access to land and resource use areas.

There may be changes in the experience of Indigenous peoples in conducting Traditional practices due to sensory disturbances while on the land or through negative perceptions about the effect of the Project. Sensory disturbances will be managed as discussed in Section 6.26.6.4 and sensitivity levels may vary among individual land and resource users. Prior to construction, FMG will provide opportunities for affected Indigenous communities to conduct Traditional ceremonies within the Project Development Area. There will be a limited residual effect on the experience of conducting Traditional practices.

There will be a residual effect on the current use of land and resources for Traditional purposes due to changes in the availability of harvested resources, changes in access to some areas used for Traditional purposes, and changes to the experience of land users while conducting Traditional activities. The reduction in abundance of harvested species will be limited to wildlife in the mine site and mine access road area which are a small portion of the total area available for Traditional harvesting. An alternative navigation route and an access management strategy will support Traditional activities. The potential residual effect on the current use of lands and resources for Traditional purposes is considered to be **not significant**.

The residual effect due to changes in the current use of lands and resources for Traditional purposes will be observed by CLFN, who use the Project Development Area and Local Study Area near the mine site area and Birch Lake; LSFN, who use Birch Lake; MON, who use the transmission line corridor; NWOMC, who use Birch Lake; and SFN, who use the transmission line corridor.



LEGEND

- Air Quality Modelling Boundary (First Mining Gold Patents and Leases)
- Air Quality Local Study Area
- Proposed Open Pit
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Existing Road
- Watercourse
- Waterbody
- Contour (10 m intervals)

Receptors within the Air Quality Local Study Area

- Cabin/Lodge/Camp
- TLRU

Disclaimers:

- Predicted concentrations should be considered in the context of the conservative nature of the emission rate estimates (all sources active at maximum all the time, activity levels for all years at the maximum year of operations) and the conservative modelling (worst-case meteorological condition over five years of meteorological data).
- Isopleths map out the maximum concentration predicted for each averaging time at each receptor, and therefore present the worst-case scenario. The isopleths are not adjusted in the same manner that the maximum POI concentrations (tabular results) are because the anomalies do not affect all receptors. The isopleths shown may suggest an exceedance which is the result of these meteorological anomalies, but which cannot be removed from the concentration plot; concentrations in the tables rather than the concentration plots should be taken as the absolute value of each maximum predicted concentration.

NOTES:

- Topographic information extracted from LIO, MNRF.
- Receptor locations provided by First Mining Gold, July 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

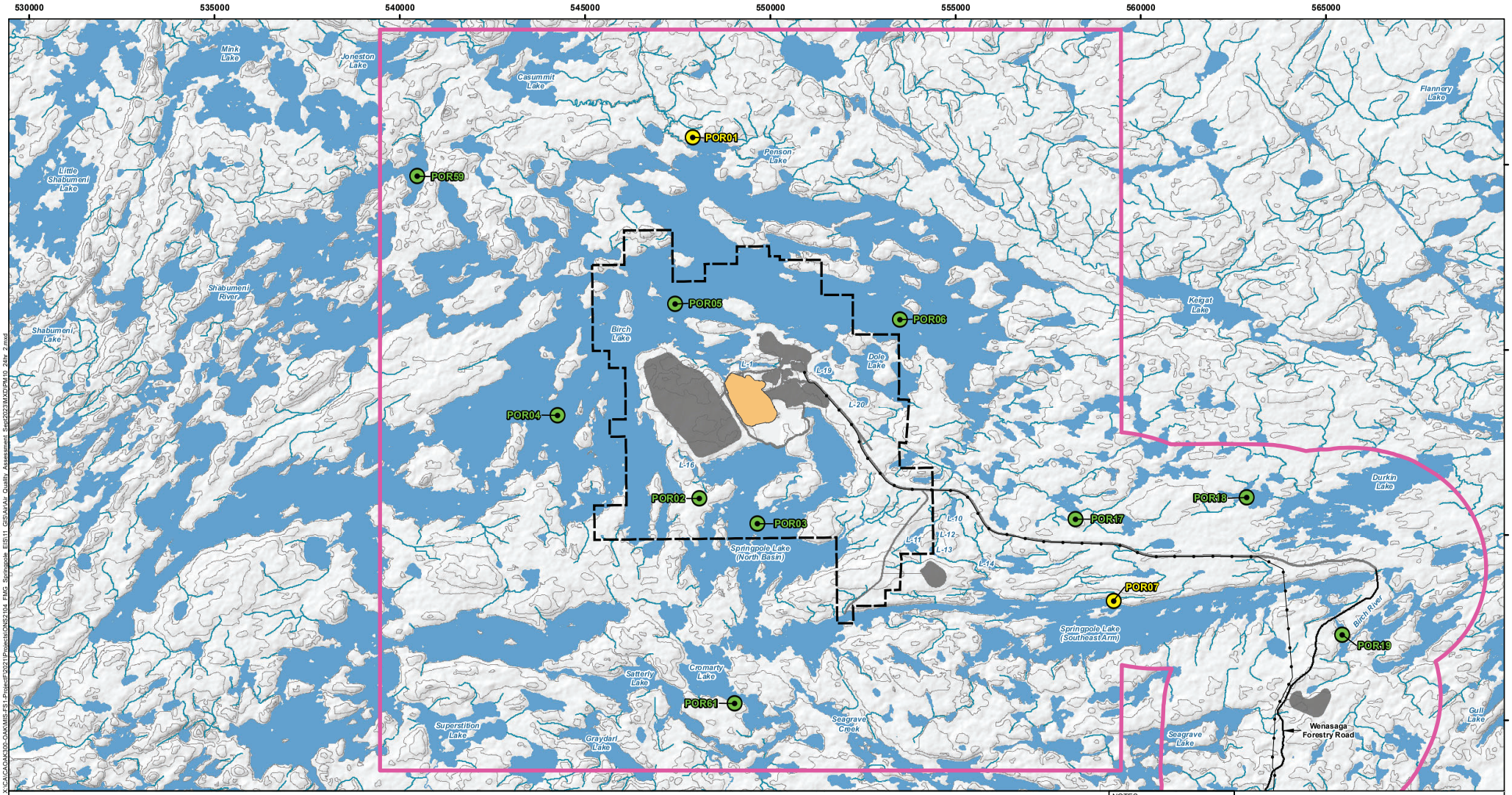
0 2.5 5 10 15 20 Kilometres

First Mining Gold | WSP

SPRINGPOLE GOLD PROJECT

Changes in Air Quality (Suspended Particulate Matter, 24-Hour Averaging Time) during Operations

PROJECT N°: ONS2104	**FIGURE: 6-1**
SCALE: 1:97,000	DATE: November 2024



LEGEND

- Air Quality Modelling Boundary (First Mining Gold Patents and Leases)
- Air Quality Local Study Area
- Proposed Open Pit
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Existing Road
- Watercourse
- Waterbody
- Contour (10 m intervals)

Receptors within the Air Quality Local Study Area

- Cabin/Lodge/Camp
- TLRU

Disclaimers:

- Predicted concentrations should be considered in the context of the conservative nature of the emission rate estimates (all sources active at maximum all the time, activity levels for all years at the maximum year of operations) and the conservative modelling (worst-case meteorological condition over five years of meteorological data).
- Isopleths map out the maximum concentration predicted for each averaging time at each receptor, and therefore present the worst-case scenario. The isopleths are not adjusted in the same manner that the maximum POI concentrations (tabular results) are because the anomalies do not affect all receptors. The isopleths shown may suggest an exceedance which is the result of these meteorological anomalies, but which cannot be removed from the concentration plot; concentrations in the tables rather than the concentration plots should be taken as the absolute value of each maximum predicted concentration.

NOTES:

- Topographic information extracted from LIO, MNRF.
- Receptor locations provided by First Mining Gold, July 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

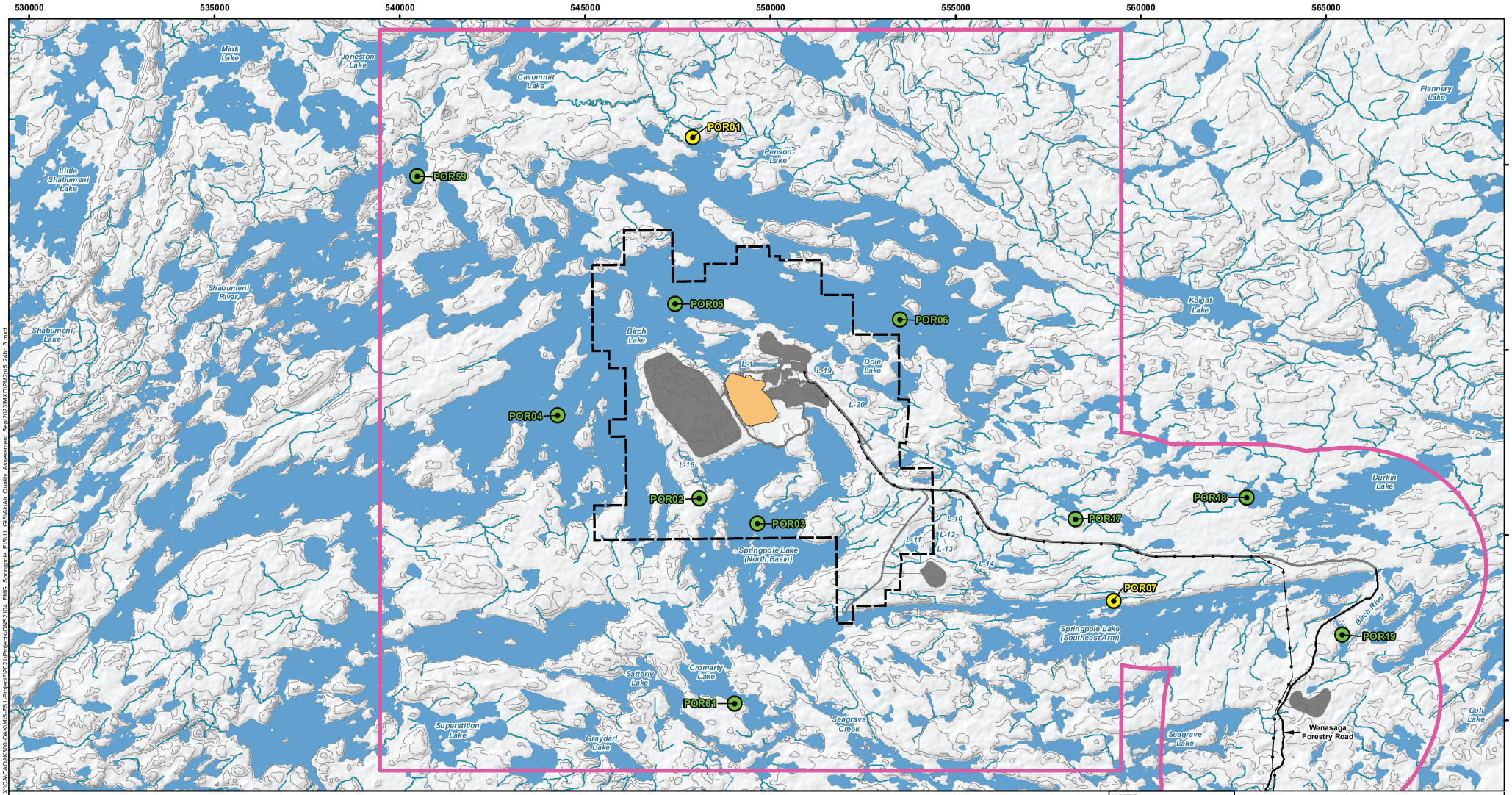
0 2.5 5 10 15 20 Kilometres

First Mining Gold | WSP

SPRINGPOLE GOLD PROJECT

Changes in Air Quality (Particulate Matter less than 10 microns, 24-Hour Averaging Time) during Operations

PROJECT N°: ONS2104	**FIGURE: 6-2**
SCALE: 1:97,000	DATE: November 2024



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LEGEND

- Air Quality Modelling Boundary (First Mining Gold Patents and Leases)
- Air Quality Local Study Area
- Proposed Open Pit
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Existing Road
- Watercourse
- Waterbody
- Contour (10 m intervals)

Receptors within the Air Quality Local Study Area

- Cabin/Lodge/Camp
- TLRU

Disclaimers:

- Predicted concentrations should be considered in the context of the conservative nature of the emission rate estimates (all sources active at maximum all the time, activity levels for all years at the maximum year of operations) and the conservative modelling (worst-case meteorological condition over five years of meteorological data).
- Isopleths map out the maximum concentration predicted for each averaging time at each receptor, and therefore present the worst-case scenario. The isopleths are not adjusted in the same manner that the maximum POI concentrations (tabular results) are because the anomalies do not affect all receptors. The isopleths shown may suggest an exceedance which is the result of these meteorological anomalies, but which cannot be removed from the concentration plot; concentrations in the tables rather than the concentration plots should be taken as the absolute value of each maximum predicted concentration.

NOTES:

- Topographic information extracted from LIO, MNRF.
- Receptor locations provided by First Mining Gold, July 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

0 2.5 5 10 15 20 Kilometres

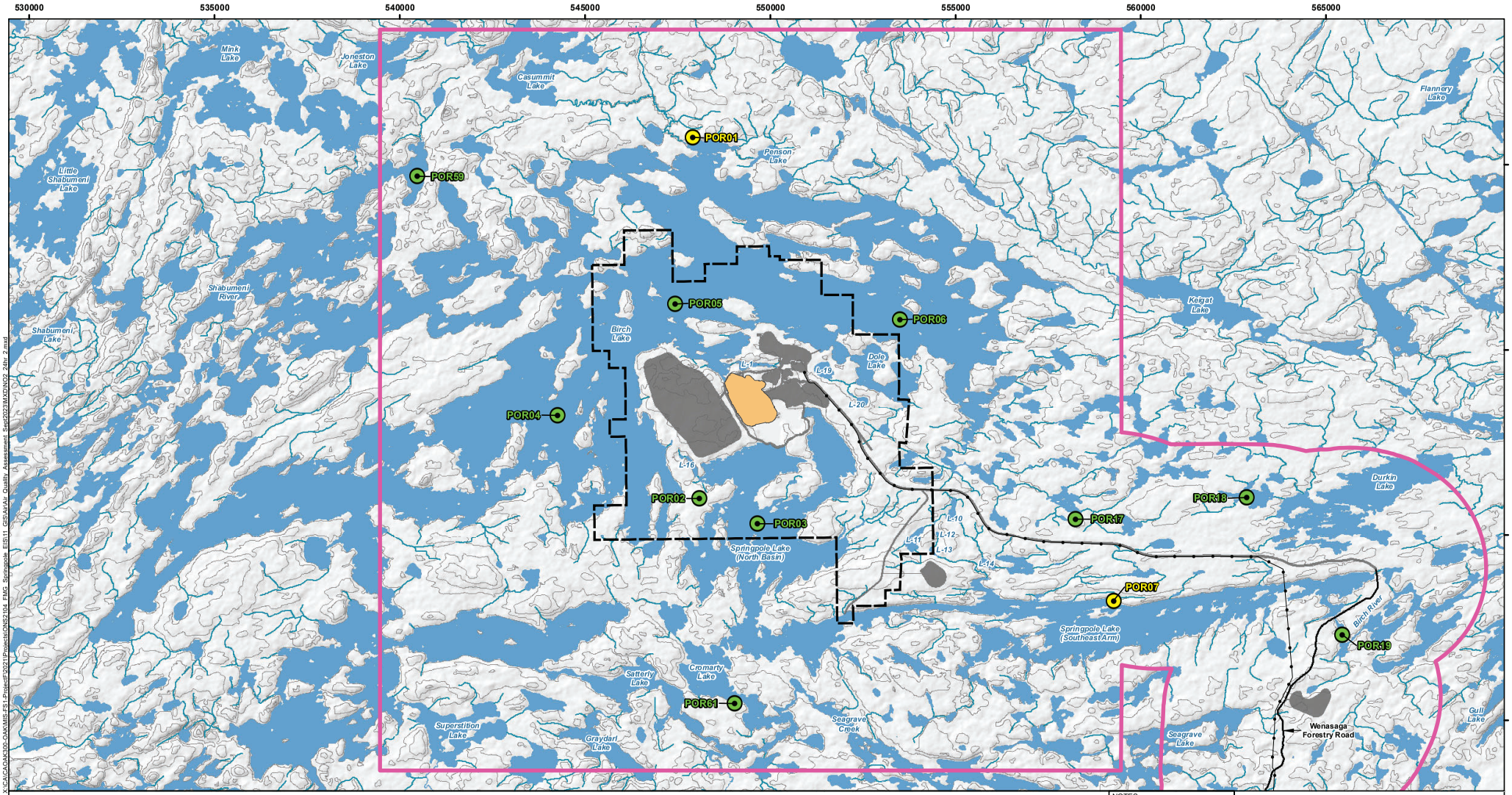
First Mining Gold

WSP

SPRINGPOLE GOLD PROJECT

Changes in Air Quality (Particulate Matter less than 2.5 microns, 24-Hour Averaging Time) during Operations

PROJECT N°: ONS2104	**FIGURE: 6-3**
SCALE: 1:97,000	DATE: November 2024



LEGEND

- Air Quality Modelling Boundary (First Mining Gold Patents and Leases)
- Air Quality Local Study Area
- Proposed Open Pit
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Existing Road
- Watercourse
- Waterbody
- Contour (10 m intervals)

Receptors within the Air Quality Local Study Area

- Cabin/Lodge/Camp
- TLRU

Disclaimers:

- Predicted concentrations should be considered in the context of the conservative nature of the emission rate estimates (all sources active at maximum all the time, activity levels for all years at the maximum year of operations) and the conservative modelling (worst-case meteorological condition over five years of meteorological data).
- Isopleths map out the maximum concentration predicted for each averaging time at each receptor, and therefore present the worst-case scenario. The isopleths are not adjusted in the same manner that the maximum POI concentrations (tabular results) are because the anomalies do not affect all receptors. The isopleths shown may suggest an exceedance which is the result of these meteorological anomalies, but which cannot be removed from the concentration plot; concentrations in the tables rather than the concentration plots should be taken as the absolute value of each maximum predicted concentration.

NOTES:

- Topographic information extracted from LIO, MNRF.
- Receptor locations provided by First Mining Gold, July 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

0 2.5 5 10 15 20 Kilometres

First Mining Gold

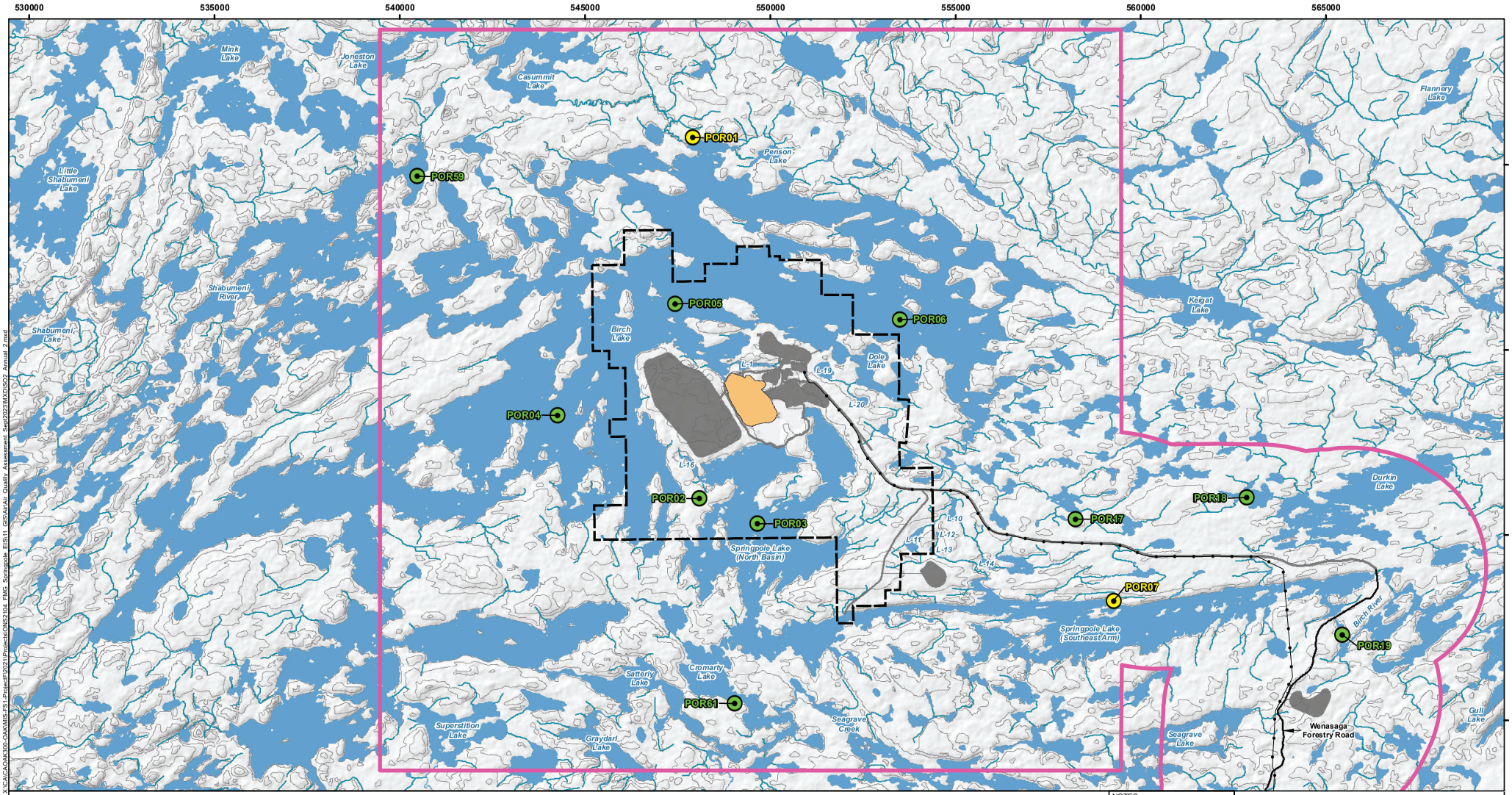
wsp

SPRINGPOLE GOLD PROJECT

Changes in Air Quality (Nitrogen Dioxide, 1-Hour Averaging Time) during Operations

PROJECT N°: ONS2104 | **FIGURE: 6-4**

SCALE: 1:97,000 | DATE: November 2024



LEGEND

- Air Quality Modelling Boundary (First Mining Gold Patents and Leases)
- Air Quality Local Study Area
- Proposed Open Pit
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Existing Road
- Watercourse
- Waterbody
- Contour (10 m intervals)

Receptors within the Air Quality Local Study Area

- Cabin/Lodge/Camp
- TLRU

Disclaimers:

- Predicted concentrations should be considered in the context of the conservative nature of the emission rate estimates (all sources active at maximum all the time, activity levels for all years at the maximum year of operations) and the conservative modelling (worst-case meteorological condition over five years of meteorological data).
- Isopleths map out the maximum concentration predicted for each averaging time at each receptor, and therefore present the worst-case scenario. The isopleths are not adjusted in the same manner that the maximum POI concentrations (tabular results) are because the anomalies do not affect all receptors. The isopleths shown may suggest an exceedance which is the result of these meteorological anomalies, but which cannot be removed from the concentration plot; concentrations in the tables rather than the concentration plots should be taken as the absolute value of each maximum predicted concentration.

NOTES:

- Topographic information extracted from LIO, MNRF.
- Receptor locations provided by First Mining Gold, July 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

0 2.5 5 10 15 20 Kilometres

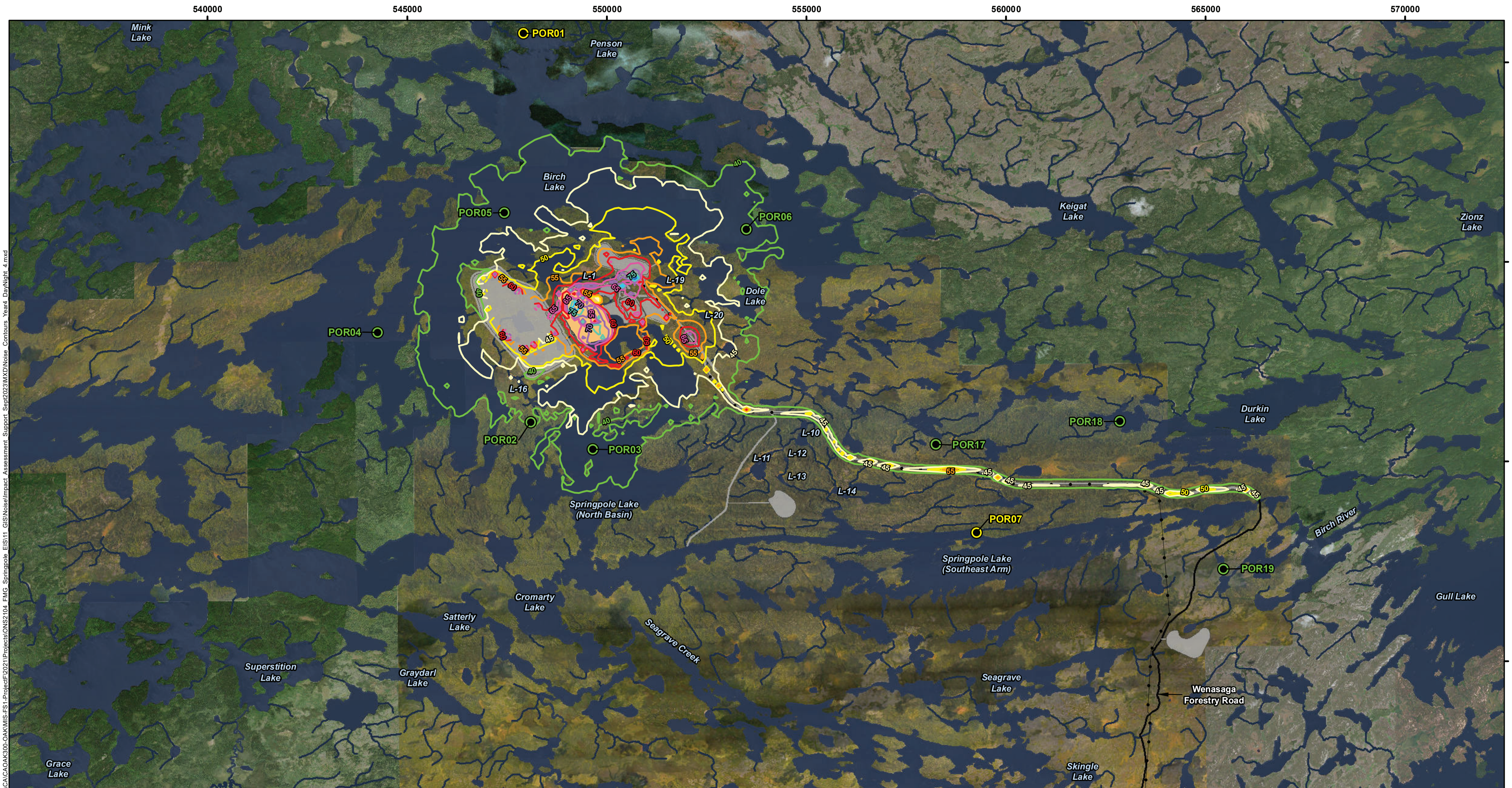
FIRST MINING GOLD

WSP

SPRINGPOLE GOLD PROJECT

Changes in Air Quality (Sulphur Dioxide, 1-hour Averaging Time) during Operations

PROJECT N°: ONS2104	**FIGURE: 6-5**
SCALE: 1:97,000	DATE: November 2024



LEGEND

- Proposed Open Pit
- Proposed Dike
- Proposed 230 kV Transmission Line
- Other Proposed Mine Feature
- Watercourse
- Waterbody
- Existing Road

Points of Reception

- Cabin/Lodge/Camp
- TLRU

Noise Contours

- >= 40 dBA
- >= 45 dBA
- >= 50 dBA
- >= 55 dBA
- >= 60 dBA
- >= 65 dBA
- >= 70 dBA
- >= 75 dBA
- >= 80 dBA
- >= 85 dBA

0 2.5 5 10 15 20 Kilometres

NOTES:
- Topographic information extracted from LIO, MNRF.
- Aerial imagery of proposed mine site area provided by First Mining Gold, 2020, surrounding aerial imagery extracted from ESRI basemaps.
- Sensitive Receptor locations provided by First Mining Gold, June 2021.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-31344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.

Datum: NAD83
Projection: UTM Zone 15N

FIRST MINING GOLD | WSP

SPRINGPOLE GOLD PROJECT

Changes in Sound Levels during Year 4 of Operations

PROJECT Nº: ONS2104	FIGURE: 6-6
SCALE: 1:90,000	DATE: November 2024

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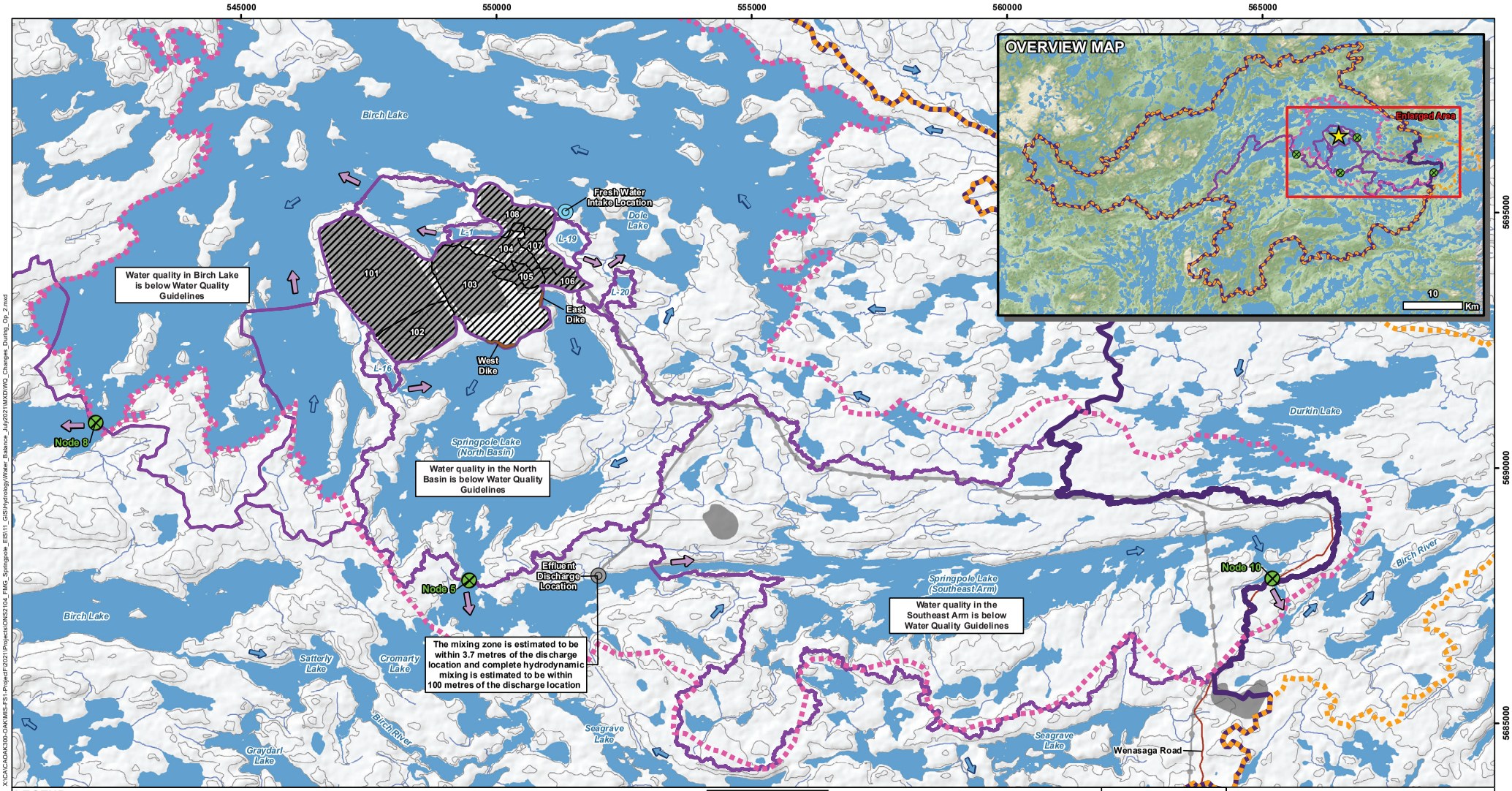

X:\CA\CAOAK300-OAKMIS-FS1-Project\F2021\Projects\ONS2104_FMG_Springpole_EIS\11_GIS\Hydrology\Water Balance_July2021MKD\WQ_Changes_During_Op_2.mxd

LEGEND

- Local Study Area for Surface Water Systems
- Regional Study Area for Surface Water Systems
- Fresh Water Intake Location
- Effluent Discharge Location
- Proposed Mine Feature
- Dike
- Existing Road
- Contour (10 m intervals)
- Watercourse
- Waterbody
- Flow Direction
- Watershed Outlet Flow Direction
- Assessed Water Quality will be Indiscernible from Background Conditions
- Watershed to Springpole Lake Oulet (Node 10)*
- Subwatershed*
- Project Watersheds (Labelled with ID)

0 1 2 4 6 8 10 Kilometres

Node Watershed Areas
(natural/undisturbed watershed areas, excluding the Project footprint)

ID	Area (km^2)
Node 1	0.3
Node 2	0.5
Node 3	0.3
Node 4	0.4
Node 5	24.9
Node 6	2.8
Node 7	9.1
Node 8	758.3
Node 9	1308.7
Node 10	1361.7

NOTES:
- Topographic information extracted from LIO, MNRF.
- Watershed delineations based on data provided by Aquaspheara, data obtained through the Ontario Flow Assessment Tool (OFAT) and LiDAR provided by First Mining Gold, 2020.
- Proposed site plan provided by Ausenco, drawing number 104496-GX-03000-01344-003, Rev 1. 26 June 2023 and modified by WSP July 2023.
- 230 kV transmission line provided by First Mining Gold, April 2024.
* Natural/undisturbed watershed areas, excluding the Project footprint

Datum: NAD83
Projection: UTM Zone 15N

First Mining Gold | WSP

SPRINGPOLE GOLD PROJECT

Changes in Concentrations of Water Quality Parameters during Operations at Model Nodes

PROJECT N°: ONS2104 | **FIGURE: 6-7**

SCALE: 1:70,000 | DATE: November 2024

7.0 CUMULATIVE EFFECTS ASSESSMENT

The potential for cumulative effects arises when the residual effects of a proposed project overlap spatially and/or temporally and interact with the same valued components that are affected by the residual effects of other past, present and known future projects or physical activities. For the Project, a 200 kilometre distance from the Project centroid was considered conservative and appropriate. This distance coincided with the largest geographic study area used to assess Project effects, specifically the socioeconomic Local Study Area, which included Dryden at a distance of approximately 190 kilometres. Accordingly, this distance would encompass all other study areas used in the effects assessment.

A total of 79 present and known future projects and physical activities were identified that may overlap with the Project. These included mining and exploration activities, community developments, energy developments, forestry and forestry-related operations, aggregate extraction, and operation and maintenance of transportation infrastructure.

A cumulative effects assessment was conducted for Project VCs that were predicted to have a residual effect and which overlap spatially and/or temporally with residual effects of other present and future projects and physical activities on the same VC. For those VCs that met both of those requirements, technically and economically feasible design features and mitigations measures for the Project were applied. These measures are expected to avoid or limit the Project's contribution to cumulative effects.

No cumulative effect was required for Project VCs where there was no spatial or temporal overlap with effects from the Project and present and known future projects and physical activities. This included air quality, groundwater, surface water quality, fish and fish habitat, commercial land and resource use, outdoor recreation, and local and regional infrastructure and services.

No cumulative effect was required for Project VCs where there was negligible spatial or temporal overlap with effects from the Project and present and known future projects and physical activities. This included noise and vibration.

Cumulative effects assessments were conducted for vegetation communities and wetlands and wildlife and wildlife habitat and, specifically, for Boreal Caribou, Wolverine, bats and SAR birds. It was determined that the viability of vegetation communities and wetlands were not threatened due to their abundance and cumulative effects were not significant. For wildlife and wildlife habitat and the specific species assessed, it was determined the cumulative residual effect of wildlife habitat loss on long-term viability, abundance and/or distribution of wildlife or the availability of their habitats is predicted to be not significant.

Projects effects on the local and regional economy are positive and a cumulative effects assessment was not required.

As there are no Project-related adverse effects predicted from the Project on built, cultural and archaeological resources, a cumulative effects assessment is not required.

The effects of historical and existing projects on climate change are already included in provincial and federal emission levels. The effects of future development in the region would be considered through the appropriate GHG policy, regulations and legislation and the continued ability for Canada to reach climate change commitments in the form of emission reduction targets. Therefore, a cumulative effects assessment on GHG emissions is not required.

8.0 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The potentially consequential natural hazards identified for the Project consisted of extreme weather conditions (high winds, extreme temperatures, extreme temperature fluctuations, and severe snowstorms), major precipitation events, seismic events and forest fires.

It is anticipated that potential effects from environmental hazards can largely be addressed through engineering design and compliance with codes and standards that provide sufficient margins of safety to prevent damage to Project infrastructure. This would include incorporation of prevention measures that would minimize the probability of the hazard from occurring and control measures that would mitigate the severity of a potential effect, should it occur.

There are no environmental components that are anticipated to result in a substantial change to the Project schedule, a long-term interruption in service, damage to Project infrastructure causing a significant environmental effect or an increased safety risk, or damage to Project infrastructure requiring repairs that cannot be technically or economically implemented, for any phase of the Project.

The potential risks associated with natural hazards and future climate change will continue to be considered in future engineering and design as a part of the continual improvement process and through implementation of adaptive management.

9.0 ACCIDENTS AND MALFUNCTIONS

All aspects of the Project have been designed to meet or exceed applicable safety and environmental regulations. Professional engineering designs and mitigation controls have been integrated in the Project from the earliest planning stages.

The risk of accidents and malfunctions will be reduced and mitigated through design, administrative controls, and adoption of safety measures. The proposed Project design was optimized to minimize the possibility of accidents and malfunctions so that the effects, should they occur, would be responded to with a minimum of danger to people and potential effects on the environment. The assessment of the risk associated with potential accidents and malfunctions considered the likelihood of occurrence and the consequence of occurrence. It was concluded that the residual risk ranking of the potential accidents or malfunctions was very low to low and could be effectively managed through application of engineering standards, best practices and management activities.

A description of the proactive design and operational safeguards, along with the contingency and emergency response measures, is provided below for key considerations:

- **Open pit slope stability:** The majority of the open pit will be developed in rock that is characterized as being of good to very good rock mass quality, and the geotechnical conditions are well understood. Follow-up routine analysis will occur during operations as the pit development advances to monitor slope performance. The design of the open pit will be continuously refined by qualified geotechnical and mine engineers during operations to confirm the pit design continues to meet or exceed industry standards for stability. Geotechnical monitoring of the open pit wall stability will be directed by qualified geotechnical engineers.
- **Dike stability:** Fundamental engineering considerations were evaluated for the dikes, such as the constructability, deformation compatibility with the surrounding soil, acceptable strain, effectiveness in maintaining continuity, and performance on seepage control. Dike slopes are constructed of materials that are resistant to erosion from precipitation and/or wave action. The dike design includes a grout curtain and seepage cut-off wall that will be developed into the underlying foundation to facilitate hydraulic cut-off / isolation and minimize seepage from Springpole Lake; this grout curtain also increases the stability of the dikes. The design is supported by geotechnical investigations of subsurface conditions and will be constructed to withstand the inflow design flow of a probable maximum flood and maximum credible earthquake (1:10,000-year event), as required by the Canadian Dam Association and *Lakes and Rivers Improvement Act* requirements. Geotechnical and dike safety inspections will be conducted at regular intervals by a qualified geotechnical engineer, meeting or exceeding all regulatory requirements.
- **Co-disposal facility dam stability:** Extensive geotechnical investigations have been undertaken in connection with the proposed co-disposal facility foundation conditions, and they show that the major portion of co-disposal facility dams will be constructed on a robust bedrock foundation, with remaining portions being constructed mainly on areas of shallow overburden amenable to construction preparation. In addition to highly favourable geotechnical characteristics, the bedrock foundation uniformity across the co-disposal facility footprint provides highly effective mitigation for seepage management and capture. The co-disposal facility will be designed to meet the factors of safety required by regulatory agencies for long-term, static loading conditions, as well as pseudo-static loading conditions. The co-disposal facility will be designed applying design criteria for the highest hazard classification with a design earthquake of 1:10,000-year event. The Project includes having a qualified geotechnical engineer dedicated to the design, supervision, and safe construction and operation of the co-disposal facility. In addition, an Independent Geotechnical

and Tailings Review Board has proactively been established for the Project to provide independent oversight on the design, construction, operation, performance and closure planning for the co-disposal facility, with the objective of long-term safety and environmental protection. The co-disposal facility layout provides a minimum setback of 120 m from waterways, providing additional allowance for environmental contingency measures.

- **Passive water management system:** The water management system design uses standard engineering criteria for ditches, water storage ponds and any necessary emergency spillway. Storage ponds and water management structures have enough capacity to withstand both the environmental design flood and the inflow design flood without discharge of untreated water to the environment. Designs and locations for perimeter ditching and ponds consider distances from nearby infrastructure and natural waterbodies and maintain setbacks from these features. In the event of a disruption of a ditch or bermed pond, an emergency repair will occur immediately. Appropriate spill control equipment will be kept at the Project at all times.
- **Active water management system:** The tailings will be hydraulically conveyed through a high-density polyethylene tailings pipeline for final deposition in the north and south cell of the co-disposal facility. The pipeline will be double walled and placed within ditching that drains to a lined safety pond. The tailings piping system is designed for immediate automatic shutdown to protect against leaks and pipeline breaks. FMG will develop a safety and surveillance plan that includes active pipelines being inspected each shift during the operations phase. A spill prevention and response plan will also be developed to address onsite spill scenarios, including prevention, contingency planning and reporting practices for the timely and effective response to potential pipeline spills.
- **Explosives accidents:** Explosives handling and storage are highly regulated in Canada and compliance is mandatory. Any onsite explosives manufacturing area or explosives storage magazines will be located in accordance with the regulatory guidelines. The transportation of explosives will be required to comply with regulatory requirements. The Project will use an experienced explosives company to manage all aspects of explosives shipments, storage and use. The mine site emergency response team will be trained in response measures associated with the use of explosives.
- **Vehicular accidents:** All shipments will follow regulatory requirements, including the *Transportation of Dangerous Goods Act*. Accidents on the trucking route will be minimized by following operational procedures such as regular maintenance of fuel trucks, adherence to speed limits, adherence to national trucking hour limits, requirements for drivers to meet all applicable regulatory requirements and maintenance of a supply of emergency response equipment. Emergency and spill response procedures will be established and are expected to include the following: medical response, notification, containment of spill, removal of spill, treatment of affected environment, monitoring of environment and learning from the accident.
- **Cyanide spill during transportation:** Transportation of cyanide will follow all applicable regulatory requirements for transportation of dangerous goods. The Project will also adopt cyanide transportation recommendations by the International Cyanide Management Institute, as defined by the International Cyanide Management Code. Administrative and operational controls include, but are not limited to, complying with all applicable regulatory requirements, having licensed vehicles and drivers trained in transportation of dangerous goods, and using appropriate transportation containers. In addition, companies contracted to provide these materials will have an emergency response plan.

10.0 SUMMARY OF BENEFITS

The Project is expected to have a significant and net positive effect on community and social benefit locally through training, work experience and related business experience during the Project construction, operation and closure phases. The skills gained are anticipated to be transferable to other economic sectors to further support the regional economy after the decommissioning and closure of the Project.

This positive effect will cascade to the provincial economy as a result of Project expenditures, and will stimulate the economy, creating jobs and income across Ontario, particularly northwestern Ontario.

During the approximately 17.5 years from construction through active closure, the Project will increase gross domestic product by $7.6 billion through direct, indirect and induced effects. This is equivalent to an average of just over $430 million per year. The Project will also create 43,880 person-years of employment (including direct, indirect and induced effects) in Canada during construction, operations and active closure. The labour force capacity will be enhanced through employment-related training and skills development as well as experience gained through employment, which will support future opportunities in the region after operations cease.

Development of the Project will provide opportunities for local and regional businesses to participate in the Project and increase business income. These opportunities may lead to the creation of new businesses or the expansion of existing businesses. Local and regional government revenues will increase, from which investments can be made in health and social services and community infrastructure. The Project will result in infrastructure enhancements, which could be beneficial to the region, including potentially after the Project closes, if the enhancements are retained. For example, the transmission line provides potential long-term sustainable opportunities for local Indigenous communities. FMG will pursue discussions with the local Indigenous communities during the life of mine to explore opportunities to leverage the power infrastructure for long-term community benefits.

With over 24 million ounces of silver, the Springpole Project would be the most significant silver producer in Ontario and secure a domestic supply for over 10 years when industrial silver demand is projected to continue to rise with electric vehicle manufacturing and other green energy applications.

Gold and silver are required for many applications, including for use as a monetary exchange medium; for art, jewelry and tableware; for electronic devices such as computers, cellular phones and televisions; and for medical equipment and devices as well as specialized medical treatments. The strong global demand for gold and silver cannot be fully met by the recycling of metals already produced, which means there is a need for additional mining and processing of ore containing these metals.

The Project also has important critical mineral potential, hosting considerable amounts of tellurium. Tellurium holds critical importance across multiple high-tech sectors, particularly within electronics, renewable energy and catalysis. As a pivotal mineral in the transition toward clean energy, approximately 40 percent of its current production is dedicated to the manufacture of photovoltaic cells. Additionally, tellurium is used in thermoelectric production, highlighting its essential role in energy efficient technologies.

11.0 FOLLOW-UP AND MONITORING PROGRAMS

The Follow-up and Monitoring Framework supports the overall environmental management for the Project, and it applies to all phases of the Project. The Follow-up and Monitoring Program is implemented as part of the framework to verify predicted effects, evaluate the effectiveness of mitigation, and to measure compliance with permit conditions and statutory requirements. Monitoring is used to address uncertainties associated with effects predictions, identify any unanticipated effects, and provide input into corrective actions or adaptive management to limit those effects. Collectively, these actions improve the overall environmental performance of the Project.

FMG is committed to the development of environmental policies and procedures, so the Project is carried out in a manner that is protective of the environment. In accordance with the Environmental Impact Statement Guidelines, the detailed monitoring program may be finalized after the Environmental Assessment process in consideration of comments provided by government, Indigenous communities and other interested parties. The Impact Assessment Agency of Canada will consider appropriate monitoring and follow-up program measures in the development of enforceable conditions for the Environmental Assessment Decision Statement. Similarly, the Province requires monitoring to verify the predicted environmental effects, and to determine if additional mitigation measures are needed.

Adaptive management is a planned and systematic process for continuously improving environmental knowledge over time and adjusting management practices and approaches by learning from the outcomes. Adaptive management provides a structured approach to decision making and allows for flexibility to accommodate new circumstances, adjust monitoring, implement new mitigation or modify existing mitigation measures during the lifespan of the Project. As new information becomes available that allows verification of environmental effects and determination of the efficacy of the implemented mitigation measures, there will be a process to improve monitoring and management programs in response. Actions stemming from adaptive management may include more intensive or focused monitoring, specific studies to better understand a particular change in measurement indicators and associated environmental effects, improved or modified Project design, experimental treatments at small scales prior to full-scale implementation, or additional mitigation measures.

FMG will work with Environment Committee(s) made up of members of local Indigenous communities. The Environment Committee(s) provides a non-exclusive pathway for continued and constructive, transparent dialogue, interaction and information sharing between FMG and the leadership and members of local Indigenous communities. In addition, community environmental monitors will be invited to participate in data collection, and Indigenous community input will be considered in the development and implementation of environmental monitoring plans.

Monitoring and follow-up programs will occur during the construction, operations and closure phases of the Project. The programs will be used to verify the effects prediction and the effectiveness of the mitigation measures. A summary of each programs follows:

- **Air quality:** The monitoring of air quality will include the implementation of a dust management plan, the monthly collection of dustfall during construction and operation phases and periodic scans of dust samples for metals. In addition, nitrogen dioxide and sulphur dioxide will be monitored. The weather station will continue to be operated on site during construction and operation phases. The air quality monitoring stations, locations and equipment will be described in an air quality monitoring plan.

- **Noise and vibration:** The monitoring of noise and vibration will include the measurement of sound levels at the two representative locations positioned north and south of the Project mine site, with the exact locations determined prior to carrying out monitoring and subject to the requirements of regulatory agencies. Hourly sound measurements will be recorded, and audio samples will also be recorded based on trigger levels, depending on the applicable criteria at the selected point of reception. Monitoring results will be analyzed, processed and compared to the Environmental Assessment predictions, regulatory approval requirements and sound guidelines.

  Vibration monitoring will be required to confirm compliance with limits for protection of fish habitat during spawning season. A blasting management plan will be prepared prior to construction by a qualified blasting contractor, and where blasting occurs within the vicinity of a fish-bearing waterbody, a detailed blast design will be developed to comply with federal blasting guidelines.

- **Greenhouse gases:** The monitoring of greenhouse gases will include the calculatation and annual reporting in accordance with Ontario's Regulation 390/18 and the federal Greenhouse Gas Reporting Program. Fuel consumption and relevant operational parameters will be tracked for the purpose of quantifying greenhouse gases emissions for the annual inventory.

- **Groundwater:** The monitoring of groundwater will leverage the numerous field investigations that have been conducted over the period of 2019 to 2023, resulting in an extensive dataset to support hydrogeological monitoring for the Project. Groundwater monitoring locations are geographically distributed fairly uniformly across the site, but they are focused around the perimeter of the co-disposal facility. There are currently 39 existing wells and vibrating wire piezometers in the vicinity of the co-disposal facility / open pit area, excluding monitoring wells bordering the southeast margin of Springpole Lake, remote from the co-disposal facility / open pit area. The final selection of wells that will be carried through to the monitoring phase will be determined during the provincial permitting process.

  The average annual groundwater inflow rate to the open pit will be calculated for each year, based on dry-period pit dewatering rates (minimum three estimates per year, separated at minimum by one-month periods), to confirm model-predicted groundwater inflow rates. Confirmation of the simulated groundwater dewatering cone will be determined from annual groundwater monitoring well water level data, determined from a subset of monitoring wells positioned around the co-disposal facility / open pit. The groundwater model will be periodically updated at approximately three-year intervals to allow for model calibration against measured and observed monitoring results.

  In addition, groundwater samples will be collected from select groundwater quality monitoring wells positioned around the co-disposal facility and the ore and mine rock stockpiles; they will be analyzed for physical-water parameters, major and minor ions, total metals and dissolved metals. Water quality samples of groundwater will be collected at quarterly intervals during the open water period (i.e., three samples per year) from each monitoring well.

  Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active closure phases of the Project.

- **Surface water quality and quantity:** The requirements of surface water quantity monitoring are expected to be included in provincial approvals issued by the Ministry of the Environment, Conservation and Parks pursuant to the *Ontario Water Resources Act*. Surface water quality monitoring requirements are anticipated to include monitoring of effluent quality as well as quality of peripheral and receiving waters and are anticipated to be included in provincial approvals pursuant to the *Ontario Water*

Resources Act, as well as federal requirements pursuant to the Metal and Diamond Mining Effluent Regulations. Details of the terms and conditions of provincial approvals, including monitoring methods, reporting and remedial actions, will be determined by the Ministry of the Environment, Conservation and Parks with due consideration given to other provincial and federal approvals and authorizations.

The hydrometric monitoring program consists of four flow monitoring stations and six lake level monitoring stations. Water levels will be measured continually using pressure transducer data loggers, with data downloads to occur monthly or quarterly depending on data needs and permit conditions. Where flow measurements are required, manual flow measurements will be completed per Water Survey of Canada standards and carried out on an ongoing basis, as needed—sufficient to develop and maintain an accurate flow rating curve. Updated water level and flow statistics will be developed, including monthly and annual averages for lake water levels and flows along with time plot trends and return period statistics for varying return periods.

Water quality sampling rates and parameters will be specified in the regulatory approval conditions. Final effluent quality sampling frequencies are expected to include weekly sampling for pH, total suspended solids and total cyanide, as applicable, with weekly, monthly and quarterly sampling for other parameters, as applicable. The list of parameters will vary depending on the effluent type and source, and in the case of the central water storage pond (via the effluent treatment plant), on the Project phase (construction or operations). Receiving and peripheral water sampling stations will be sampled monthly, with bottom and profile samples, where applicable, to be undertaken quarterly, or as defined in regulatory approvals. Monitored parameters included in the monthly samples are expected to include pH, total suspended solids, total dissolved solids, hardness, conductivity, dissolved organic carbon, sulphate, total phosphate, nitrate, nitrite, total and unionized ammonia and temperature along with additional cations and anions, a suite of metals. Cyanide species will also be sampled at applicable stations once ore processing commences.

Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active reclamation phases of the Project. Additional reporting mechanisms will be prescribed in provincial and federal environmental approvals.

- **Fish and fish habitat:** The monitoring program for fish and fish habitat would be developed in accordance with the Metal and Diamond Mining Effluent Regulations for environmental effects monitoring, the federal *Fisheries Act* and the provincial environmental compliance approvals. The environmental effects monitoring studies will evaluate the potential effects of treated effluent release in the aquatic receiving environment. Environmental effects monitoring studies are designed to detect and measure changes in aquatic ecosystems and may include biological monitoring studies to determine if mine effluent is affecting fish, fish habitat or the use of fisheries resources.

  An extensive baseline aquatic resources dataset, based on multiple years and multiple seasons of investigation since 2009, will support the monitoring of aquatic resources and includes aquatic habitat mapping, fisheries community surveys, water and sediment sampling, benthic invertebrate community surveys, spawning surveys and fish tissue sampling.

  Project environmental staff (or designates) will monitor construction and implementation of the final Fish Habitat Offset and Compensation Plan to confirm that the measures and standards described are implemented as proposed. Monitoring will be reported to DFO in as-constructed reports provided within 12 months of the work being completed. The as-constructed monitoring will require multiple reports to reflect some of the measures being constructed at the beginning of the Project, with others

completed during operations and closure. Documentation will be maintained to demonstrate effective implementation and function of the avoidance and mitigation measures, with summaries provided in the as-constructed report(s). The FHOCP performance monitoring, which includes a lake-wide broadscale monitoring program, will be assessed using fish species presence, fish biomass and density as well as fish abundance for the enhancement areas. Direct sampling of fish tissues for metals concentrations will be conducted concurrently within the program, one year after start of construction, and every three years thereafter, until the start of the closure phase or cessation of mining activity, and sampling may be required during or beyond the closure phase or cessation of mining activity.

A site-specific blasting assessment has been developed for the Project that meets the Fisheries and Oceans Canada criteria, or alternative values derived in consultation with DFO. As part of the assessment, the allowable explosive loading per delay has been calculated based on the closest distance to the nearest waterbodies. Regular tracking and recording of blasting procedures will be conducted to confirm that fish protection measures defined in the blasting assessment are carried out.

The key components of the fish and fish habitat monitoring program, in connection with treated effluent discharges to the receiving environment, are expected to include water and sediment quality, benthic invertebrates and fish. Monitoring for water and sediment quality is described above. Monitoring stations for benthic invertebrates and fish would be strategically located within each sampled waterbody to capture any potential effects in receiving waters. These stations would be co-located with water and sediment quality sampling stations. The final study design for the environmental monitoring plan would be determined through the permitting process and detailed planning, which would include consultation and engagement with regulatory agencies and local Indigenous communities. Project-specific final effluent parameter concentrations, along with acute and chronic testing requirements, will be specified in the provincial environmental compliance approval.

Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active reclamation phases of the Project. Additional reporting mechanisms will be prescribed in provincial and federal environmental approvals.

- **Vegetation communities and wetlands:** The monitoring of vegetation communities and wetlands will use the existing data that have been collected on site since 2012. The program will include an invasive species management plan that will be implemented for the Project to prevent, detect and control (i.e., remove) prohibited, noxious and nuisance weed species. Surveillance would be completed to identify and manage new occurrences of species designated as prohibited, noxious and nuisance weeds within the mine site. In addition, monitoring requirements for reclamation would be outlined in the closure plan and would include details on reclamation treatments to be used during revegetation, schedules for the frequency of monitoring and action levels where adaptive management may be required. Post-reclamation wetland surveys would be conducted to understand if reclaimed wetlands (if any) are achieving similar functions. Furthermore, revegetation trials will occur during the operations phase to evaluate and optimize the revegetation strategy for closure. In addition, planned revegetation trials during life of mine will improve the effectiveness of rehabilitation and revegetation efforts. The closure plan will assist in revising or adding mitigation measures to facilitate successful long-term reclamation and establishment of vegetation communities and provision of functional wildlife habitat.

  Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active reclamation phases of the Project. Additional reporting mechanisms will be prescribed in provincial and federal environmental approvals.

- **Wildlife and wildlife habitat:** The monitoring of wildlife, including species at risk, will include breeding bird surveys, autonomous recording units for crepuscular bird surveys, bat maternity roost habitat surveys, large mammal aerial surveys and Wolverine run pole stations.

  The existing baseline studies included breeding bird surveys to describe abundance, distribution and life stages of birds and their habitat that are found, or are likely to be found, in the Project area. These surveys were conducted at 21 locations (areas) in 2021 and 13 locations (areas) in 2022, representing both impact and reference areas. In addition, crepuscular bird surveys conducted during baseline investigations followed provincial and federal monitoring protocols; they were completed in the active period for crepuscular birds (June 15 to July 15) around full moons. Autonomous recording units were also used in 2021 and 2022. Bat surveys included maternity Roost Habitat Surveys, Hibernacula Surveys and autonomous recording unit detection; they focused on mature mixed and deciduous forested areas as well as specific ecosites as likely providing suitable maternity roosting habitat. Fifty-three bat survey locations (22 in 2021, 12 in 2022 and 19 in 2023), with a total of 167 survey plots, were completed. The large mammal winter aerial survey program was first set up in 2021 and adjusted subsequently in 2022 and 2023. Wolverine baseline studies used a combined hair snag / camera run pole station design established within the Project Local Study rea, with stations set up at a rate of 1 trap per100 square kilometres hexagonal unit. Within these hexagonal units, run poles were preferentially set up within habitats most likely to be associated with Wolverine denning and movement. In total, 25 run pole stations were deployed within the Local Study Area.

  Breeding bird surveys: These surveys will be conducted at a minimum of 40 locations (areas), consistent with a mix of areas surveyed in 2021 and 2022. This will include locations associated with the Project Area (10 areas), and the transmission line (10 areas), road routes (10 areas) and reference areas (10 areas). Two teams of two observers each (four observers total) will complete surveys at different breeding bird areas each day. At each location, between 8- and 12-point count locations will be visited. Depending on helicopter logistics, most of these locations will be surveyed twice, once on each of the two breeding bird site visits. Surveys will generally be completed within five hours after sunrise. Surveys will be conducted for 10 minutes at each station and all birds heard or observed will be recorded at distance intervals of 0 to 50 metres, 50 to 100 metres and greater than 100 metres from the observer. In addition, birds will be recorded at duration intervals of 0 to 3 minutes, 3 to 5 minutes and 5 to 10 minutes. Each bird will be recorded once and mapped on the field data sheets to limit duplication. Point count stations will be located a minimum of 300 metres apart. Bird densities will be modelled from point count survey data taking into consideration temporal, climatic and habitat covariates, following methodologies used during the baseline studies. The average density for each species will be modelled across target habitats and compared with baseline values, taking into consideration the power to detect a change from the baseline condition.

  Autonomous recording units for crepuscular bird surveys: Autonomous recording units are the recommended recording method, given the limited all-season road access and direction from Environment and Climate Change Canada, as they allow for deployment and detection of species in areas and during times when point counts could be difficult, unsafe or impracticable for human observers to conduct. Autonomous recording units will be placed in the same areas as those used for Breeding Bird Surveys, including areas where Eastern Whip-poor-will and Common Nighthawk were noted during baseline studies. Data from autonomous recording units will be analyzed using an automated classifier to detect avian vocalizations within the recordings and classifying them to species. Data analysis will consist of estimating relative abundance based on the level of singing activity from autonomous recording unit recorders, using a stepwise model.

Bat and maternity roost habitat surveys: The same survey and analytical methods will be used to inform the follow-up and monitoring program for bats as was used during the baseline studies. These methods include the surveillenace of several circular plots with evidence of cavities, loose bark or cracks. Typically, five plots will be completed at each site. Maturity roost detector surveys will be deployed to detect nocturnal bat activity during the maternity period in June and early July. The detectors will be deployed in the same locations as those used in 2023 and include the deployment of single bat detectors at 30 survey sites. They will record nocturnal bat activity from 30 minutes before sunset to 30 minutes after sunrise. All recordings will be initially filtered and a subset of the recordings will also be classified manually. An emphasis will be placed on identifying species at risk bat species. Continued bat hibernacula surveys during the program will be restricted to the Cliff 1 site.

Large mammal aerial surveys: The monitoring program for large mammals will use aerial surveys carried out annually using the 2023 study area boundary and methods, with flight lines spaced at 2 kilometre intervals oriented in an east-west direction. The surveys will be undertaken in mid-winter (targeting February). A three-person crew configuration (plus pilot) will be used, with a minimum of two experienced / provincially approved biologists covering each side of the helicopter and a third biologist with navigation / data recording / observation experience. All observations (and tracks) will be recorded using a handheld GPS and the Avenza Maps application. Observed Caribou and Moose encountered during the surveys will be classified with respect to sex and age categories using physical attributes and behaviour (within group association). Numbers of calves, adult females, adult males and unclassified individuals will be recorded. Sign (e.g., number of track sets, beaver lodges) and observations of Wolf, Wolverine and other furbearers, including Otter, Beaver, and Marten, will also be opportunistically recorded.

Wolverine run pole stations: The monitoring program for Wolverine will employ the same approach and method used for the baseline studies. This includes the use of a combined hair snag / camera run pole station design, with stations set up at a rate of 1 trap per 100 square kilometre hexagonal unit. Within these hexagonal units, run poles in 25 stations will be preferentially set up within habitats most likely to be associated with Wolverine denning and movement. Photographs and hair samples will be collected at the run pole stations and used to identify individual Wolverine, with hair samples being analyzed by Wildlife Genetics International, using DNA extraction methodologies.

Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active reclamation phases of the Project. Additional reporting mechanisms will be prescribed in provincial and federal environmental approvals.

- **Built heritage resources and cultural heritage landscapes:** The monitoring of built heritage resources and cultural heritage landscapes will include maintaining a record of all cultural heritage resources known to occur in the vicinity of planned Project developments; maintaining an active dialogue with Indigenous community representatives; enlisting the services of a trained archaeologist during the conduct of major construction works to support FMG, as needed; enlisting the services of Elders or other cultural advisors in the event that archaeological or cultural heritage resources are encountered; and conducting a post-construction assessment of the state of known cultural heritage sites in the vicinity of Project activities / structures to confirm the integrity of such resources. Any notable archaeological or cultural heritage finds will be reported according to regulatory requirements at the time. Monitoring results will be provided annually to the parties with an interest in the follow-up and monitoring program during the construction, operation and active reclamation phases of the Project.

12.0 CONCLUSIONS

The Springpole Gold Project provides an important major development opportunity for an underserviced region of northwestern Ontario. The Project has the ability to deliver new infrastructure, training and skills development, new high-paying jobs, sustainable development, critical mineral potential, economic diversification and uplift to the region and beyond. FMG is committed to developing the Project in a responsible manner that contributes to a healthy environment and prosperous economy, supporting the well-being and goals of local and Indigenous communities.

A variety of environmental protection, mitigation and management measures have been incorporated into planning, design, construction, operation and ultimate closure of the Project. The engineering design of the Project incorporates climate change considerations, and Project components and infrastructure are being designed to manage variable weather events.

Development of the Project will increase local and regional employment, business opportunities, and government revenues, which, collectively, could enhance health and social services and community infrastructure and services. The Project will also increase the labour force capacity to support future opportunities in the region after operations cease; it will bring about infrastructure enhancements that should benefit the community after the Project closes, if they are retained.

Considering the precautionary approach and using conservative assumptions, there is a high level of confidence that the effects on valued components have not been underestimated. The follow-up and monitoring program will be implemented to verify predicted effects, evaluate the effectiveness of mitigation and measure compliance with future permit and authorization conditions. Modifications to follow-up and monitoring programs may occur as a result of applying an adaptive management approach over all phases of the Project (construction, operations, and decommissioning and closure). Adaptive management is a planned and systematic approach to improving knowledge over time through an iterative process that provides the information required to increase confidence to make decisions that reduce uncertainty and improve risk management outcomes. Environment Committee(s) are proposed to be established where there is interest from local Indigenous communities to facilitate information sharing and adaptive management for the Project.

Considering the Project designs and mitigation measures, no significant adverse environmental effects were predicted for the Project or for the Project in combination with other projects. This demonstrates that the Project will be developed, operated and decommissioned in a sustainable manner that is protective and respectful of the environment and people. The environmental information and dataset compiled to date for the Project region in combination with ongoing and future studies will provide an invaluable dataset supporting long-term environmental management for all aspects of the ecosystem at a scale broader than the Project. The Project represents a substantial and consistent resource for meeting growing global demand and is aligned with provincial and federal environmental obligations and commitments with respect to climate change. The Project also has important critical mineral potential, hosting considerable tellurium, which will be further evaluated during the life of mine. In addition to being consistent with national environmental objectives and commitments, the proposed Project will generate socioeconomic benefits and opportunities for local and Indigenous communities, Ontario and Canada, including increased direct, indirect and induced employment, tax and royalty revenue.