# *CRAWFORD NICKEL PROJECT*

# *INITIAL PROJECT DESCRIPTION*

# *PART F: PLAIN LANGUAGE SUMMARY*


Submitted to:
**Impact Assessment Agency of Canada**

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CANADA NICKEL COMPANY

## TABLE OF CONTENTS

## LIST OF TABLES



## LIST OF FIGURES

# 1.0 INTRODUCTION

This document is a plain-language summary of the Initial Project Description which has been developed for the Canada Nickel Company Crawford Nickel Project.

Canada Nickel plans to develop, operate and eventually reclaim a new open pit nickel mine with associated processing, mine waste management facilities, and related infrastructure at the Crawford Project site.

The Crawford Nickel Project ("Project") is in northeastern Ontario, approximately 43 kilometres (km) north of Timmins Ontario, Canada. The Town of Cochrane is 35 km to the northeast, the Town of Smooth Rock Falls is 36 kms northwest, and The Town of Iroquois Falls is 50 km east of the Project, as shown in Figure S.1. The property is currently bisected by provincial Highway 655 and a 500 kilovolt (kV) transmission line. The Crawford Project is located on a site with no history of mining activity but has been logged extensively in the past.

Crawford Township has been an area of interest since 1955 for many mining companies and the government investigating for minerals. Not much was known about the geology of the area until 1964 after the Kidd Creek Mine, approximately 15 km south of the Project site in Kidd Township, discovery of rich base metal deposit in 1963. This led to further exploration in Crawford Township during the 1960s, 1970s and 1980s. Spruce Ridge Resources, in partnership with Nobel Mineral exploration, then initiated exploration activities in the area in 2018 to 2019. These activities led to the foundation of Canada Nickel Company Inc, (Canada Nickel or CNC), who has taken over the exploration and the development of the Crawford project.

CNC has completed a Preliminary Economic Assessment (PEA) and has been conducting ongoing environmental baseline investigations since early 2021 in support of the Impact Assessment (IA) process.

# 2.0 PROJECT INFORMATION

## 2.1 Project Name, Sector and Location

| | |
|---|---|
| Project Name | Crawford Nickel Project (Crawford Project) |
| Sector | Mines and minerals - base metal mine |
| Location | 43 kilometres (km) north of Timmins, Ontario; see Figure S.1 |

## 2.2 Proponent

| | |
|---|---|
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# 3.0 PROJECT INFORMATION

## 3.1 Purpose and Need for Project, and Potential Benefits

The Crawford Project represents a source of nickel, iron, and cobalt intended to meet the increasing global demand from the stainless steel and lithium-ion battery markets, and to support Ontario and Canada's Critical Minerals strategies. In the move toward decarbonization of the global transportation economy, Canada Nickel is committed to the responsible and sustainable mining and processing of these important minerals and, in so doing, has the potential to support Canada's economy through job creation and positive economic impact, while improving global efforts to address climate change. In addition to job creation and its associated economic contributions to the region, the project is expected to generate new government revenue through taxation. In Ontario, taxable profit from mining is subject to a mining tax of 10% for non-remote mines, as the Crawford Project could be, and 5% for remote mines (Ontario Ministry of Finance, 2021). This is in addition to tertiary tax revenue from the Project generated from personal income, corporate taxation, and sales tax related to goods and services.

The objective of sustainable growth - economic, societal, environmental, and technological – is a core component of Canada Nickel's operating strategy and purpose, with the Crawford Project ideally positioned to meet rising global demand for accountable, dependable, sustainable nickel and iron concentrates.

## 3.2 Applicable Physical Activities Regulation Conditions

The Physical Activities Regulations (SOR/2019-285) of the Impact Assessment Act requires that if stated conditions are met, documentation (an IPD) must be provided to the IAAC to assess whether an IA is required. The following conditions of the Physical Activities Regulation may apply to the Crawford Project based on the preliminary Project design:

> *18 The construction, operation, decommissioning and abandonment of one of the following:*
>
> *(c) a new metal mine, other than a rare earth element mine, placer mine or uranium mine, with an ore production capacity of 5,000 tonnes per day (tpd) or more*
>
> *(d) a new metal mill, other than a uranium mill, with an ore input capacity of 5,000 tpd or more.*

Based on the current Project design, the maximum rate of ore processing at the Crawford Project is expected to start at 42,500 tpd for the first few years of operation before increasing to up to an anticipated 120,000 tpd for the remainder of operations. Metal ore extraction is planned at a maximum rate of up to 290,000 tpd, and a nominal rate of 143,000 tpd over the life of mine. Therefore, the life of the mine is expected to be approximately 41 years.

The Crawford Project is therefore expected to meet the conditions listed above of the Physical Activities Regulations, and Canada Nickel is therefore submitting this IPD for review by IAAC.

## 3.3 Activities, Infrastructure, Structures and Physical Works

Surface drilling programs have been ongoing for approximately three years at the Crawford Project site and are anticipated to continue to support exploration and to collect technical information for the geotechnical and hydrogeological programs. Except for a gravel exploration road and trails for drill rigs, there is currently no fixed infrastructure on site. Table 1 provides a preliminary listing of activities associated with the construction, operation, and decommissioning of the Crawford Project

### 3.3.1 Proposed Mine Facilities and Infrastructure (Designated Project)

The open pit and associated surface facilities are proposed to be placed on lands held by Canada Nickel and include an on-site plant, a tailings management facility (TMF), waste rock, overburden and low-grade ore stockpiles, water management infrastructures and a maintenance shop. A new transmission line and a new section of rail line will need to be built to supply power and material to the Project. The project will also require that Highway 655 and the 500 kV transmission line that cross the project site be relocated.

#### 3.3.1.1 Key Project Components

Key project components, based on preliminary engineering, are shown in Figure S.3. They have been arranged in a way to minimize the site footprint, and considering known environmental and human features of value. The arrangement of Project components will be optimised as engineering, technical studies and consultation progress. Key Project components are discussed below.

*Open Pit*

The deposit at the Crawford Project is planned to be mined with three immediately adjacent pits currently proposed – the Main Zone, East Zone, and West Zone. Total material to be mined consists of approximately 5,186 million tonnes (Mt), including 1,672 Mt of ore, 2,954 Mt of mine rock, and the remainder consisting of overburden to be stripped.

The approximate dimension of the three open pits, recognizing there will be some overlap of the boundaries between the zones once fully developed are:

- Main Zone open pit: dimensions of approximately 2,900 metres (m) m by 2,000 m, with a depth of approximately 690 m below ground surface (mbgs);
- East Zone open pit: approximately 3,300 m by 1,300 m; depth of approximately 615 mbgs; and
- West Zone open pit will be approximately 1,500 m by 1,500 m, with a depth of 435 mbgs.

The Main Zone underlies the current alignment of Highway 655 and the adjacent 500 kV transmission line, both of which will require realignment to allow for full development of the open pit.

*Stockpiles*

Mining at the Crawford Project will require removal of surface overburden and mine rock to access and remove the ore. Ore, mine rock, and overburden from the open pits will be stored in surface stockpiles on site. Overburden stripped during general site development will also be stockpiled on site, including for future use in site reclamation as needed.

Preliminary storage capacities of the stockpiles for the Crawford Project are as follows, subject to revision during ongoing engineering:

- Ore stockpiles: approximately 295 million cubic metres ($Mm^3$);
- Mine rock stockpiles: approximately 963 $Mm^3$ and 461 $Mm^3$; and
- Overburden and topsoil / organics stockpiles: combined approximately 318 $Mm^3$.

Waste rock stockpile#1 and low-grade stockpiles could reach up to 100m high at their maximum capacity. A run of mine ore stockpile will be established to temporarily stockpile ore to support ongoing crusher efficiency. Low grade ore stockpiles will be developed in the early years of mine production, as ore will be produced at a faster rate in the mine than the throughput of the mill, allowing for the early delivery of higher value / grade material to the mill in the early stages of the mine life.

A mine rock stockpile will be developed north of the open pit which will contain mine rock from this pit. Once the storage capacity of this primary stockpile has been reached, mine rock will be stockpiled in a second storage area located to the west of the open pit and the relocated Highway 655.

Overburden material stripped from the Main Zone open pit and other Project development areas will be stockpiled in two overburden stockpiles adjacent to the Main Zone open pit.

*Ore Processing*

The process plant and associated service facilities will process ore delivered from the open pits to primary crushers to produce nickel concentrate, iron concentrate, and tailings. Ore processing will occur at a rate of approximately 42,500 tpd at the start of mine life, increasing to a maximum of 120,000 tpd.

The proposed process encompasses several stages of typical mineral processing, including crushing and grinding of the ore, and concentration of mineral products. The concentrate will be thickened, filtered and stockpiled on site prior to being transported to third-party processing facilities located off site. Three types of concentrate would be produced, namely a low-grade nickel concentrate, a high-grade nickel concentrate, and an iron concentrate. The current estimation is that over the life of the project, 1.6 Mt of high-grade nickel concentrate would be produced, as well as 7.6 Mt of low-grade nickel concentrate, and 77 Mt of iron concentrate. These concentrates are slightly humid, dark-grey, fine to coarse grain material. At this time, there is no specific location identified or commercial agreement concluded for downstream processing. The concentrate is anticipated to be sold on the open market and transported to a processing facility under the control of a third party either in Canada or abroad.

*Tailings Storage*

Tailings are the primary by-product from processing of the Crawford Project ore. Tailings consist of ground rock and process effluents that result from the processing of ore. Canada Nickel is currently planning for tailings from the processing of the ore from the Main Zone pit to be stored in an on-surface TMF, with design details subject to further engineering study. Once the Main Zone pit has been mined out, tailings from processing the East Zone ore will be impounded within the Main Zone pit. Once the East Zone pit has been mined out, tailings from processing the West Zone ore will be impounded within the East Zone. Storage of these mine wastes within the pit will help to reduce the overall Project footprint.

On-site processing of tailings is expected to include thickening of the tailings to reduce the water content, with recovered water recycled for re-use in the process plant.

Ditching will collect runoff from the TMF for direction to collection ponds for further management.

*Buildings and Yard Areas*

The following permanent facilities are planned for the Crawford Project:

- Process plant and primary and secondary crushing system;
- Workshop, warehouse, core shack, laboratory and offices;
- Supporting buildings (e.g. security, pumphouses) and laydown areas; and
- Explosives storage facilities.

A preliminary plant site location has been identified to avoid condemnation of potential ore resources; studies are in progress to optimize placement of critical facilities within the Project footprint, including the plant, fuel storage, workshops and crushers. Fuel storage will be designed to contain / capture potential spills and prevent release to the environment. Process reagents and other chemicals used on site will be handled following all applicable handling and safety requirements as outlined by the manufacturer,

regulations, and site procedures. A workshop and warehouse will be provided on site to allow for indoor maintenance on heavy equipment.

Access and haul roads will be established within the site as needed, avoiding water crossings where feasible. Any new roads will be constructed of aggregate or mine rock, which is non-acid generating and does not show a high potential for metal leaching as preliminary baseline geochemical assessments suggest.

Explosives needed for open pit mining (and potentially for construction) will be prepared by a contractor off site and delivered to site under their care and control as required. An explosives manufacturing facility is not expected to be developed on site, due to the proximity of the site to surrounding communities. The location of any explosives-related storage facility (magazines) on site will follow all federal siting guidance.

*Domestic and Industrial Wastes*

Domestic sewage during the construction and operating phases will be treated by an appropriately sized, technically acceptable method, such as a sewage treatment plant. A different method may be used during early construction and later in the closure phase, when there are fewer people on site.

Domestic and special management / hazardous materials resulting from the construction and operation of the Crawford Project will be periodically shipped off site to appropriate facilities. A demolition landfill may be established on site for disposal of non-hazardous demolition wastes during the closure phase.

*Water Management Facilities and Drainage Works*

The open pit will collect groundwater, runoff, and direct precipitation. Canada Nickel proposes to collect minewater from the dewatering of the open pit in sumps and pump it to a primary collection pond for additional management, including for re-use as make up water for the process plant. Precipitation and surface runoff that come into contact with mine-related facilities will be collected in ditches / secondary collection ponds and also pumped to the primary collection pond. The primary collection pond and all secondary collection ponds will be designed with enough capacity to support the retention and treatment of contact water and to provide water for processing operations. Seepage from impoundments will be collected in peripherical ditches and channelled to the collection ponds. The integrated water management system will ensure that site effluent meets all regulatory requirements and can be discharged safely to the environment. If required, an effluent treatment plant may be installed for additional treatment on some of the water sources to ensure effluent quality can be reliably achieved.

Canada Nickel is investigating potential effluent discharge locations, including the Mattagami River, North Driftwood River and/or West Buskegau River, or a potential combination of watercourses. Each watercourse has different characteristics, with the Mattagami River location requiring approximately 10 km of pipeline. The final location will be selected with care to ensure that the watercourse can receive this effluent and maintain water quality standards while all related regulatory requirements are met.

Process water will be obtained primarily by recycling water in the plant, from the TMF, from site runoff and open pit minewater. Although it is not expected at this stage, if additional fresh water is required for processing and a fire water supply, it may be sourced from a local watercourse. A treatment plant for drinking water and other domestic use will be constructed on site.

*Access*

Existing Highway 655 between Timmins and Cochrane will provide direct access to the site. Since it runs through the middle of the Project site, it will need to be rerouted to allow for the full development of the

open pit. The existing Highway 655 would still be used in the first years of operations to provide direct access to the site while the new portion of Highway 655 is in construction.

An approximately 20 km rail line is needed to be constructed to allow for transport of freight to the Project site from the existing freight rail access already available in Timmins. Construction of this spur line will connect the Crawford Project site with the existing rail line that ends at Kidd Mine. At this stage, the estimation is that trains would come in and out of the site once a day or every two days. Material that would be transported by train include diesel, concentrate, explosive, acid, propane and grinding media.

Additional regional transportation includes the Timmins Victor M. Power municipal airport, which offers several daily flights to and from southern Ontario.

*Power Supply*

Power for the Crawford Project will be supplied through development of a new 230 kV transmission line from the Porcupine substation near Timmins to the Crawford Project site. Responsibility for all aspects of development and operation of this transmission line will rest with a third party named Transmission Infrastructure Partnerships (TIP1), a joint venture business of Taykwa Tagamou Nation. A preliminary route for this line is shown on Figure S.4.

A portion of the 500 kV transmission line which runs parallel to Highway 655 will be relocated west of the property along the corridor for the Highway 655 realignment (approximately 12 km length of transmission line). Responsibility for all aspects of relocation of this transmission line is owned by Hydro One.

Diesel-fired generation may be use early in the construction phase and during the closure phase when grid power is not available to site. Emergency diesel-fired generators will also be present on site, however the Project does not anticipate the use of diesel power as a standard practice once grid power is available.

*Accommodation*

An accommodations complex (or similar) is not proposed to be developed as part of the Crawford Project due to the close proximity of local communities. Canada Nickel anticipates that workers will commute daily from existing communities / residences located within about an hour drive of the Project site.

*Compensatory Aquatic Habitat*

Development of the Crawford Project is expected to overprint some tributaries to the North Driftwood River and West Buskegau River. Where feasible, these tributaries will be diverted around Project facilities. A plan for habitat compensation will be developed, consulted upon and approved by the authorities. Care will be taken to mitigate effects to aquatic resources, including direct habitat loss due to overprinting by Project facilities, and indirect impacts such as potential flow reductions.

*Aggregate Operations*

A sand and gravel deposit located within the property boundary, which has historically been used as a source of aggregate, may be utilized. The primary material to be used for site construction will be mineral wastes (overburden and mine rock) removed from the open pit area.

#### 3.3.1.2 Preliminary Decommissioning Approach *(Designated Project)*

Reclamation and closure of the Project will be governed by the Ontario *Mining Act* and its associated Regulations and Codes, and informed by ongoing engagement, including with Indigenous Peoples. A regulatory Closure Plan will be filed for the Crawford Project before construction, and financial assurance provided to ensure that sufficient funds are in place to carry out the decommissioning activities.

Progressive reclamation during operation will be practiced where possible. Overburden stockpile(s) developed from open pit stripping and other site construction activities will be graded and revegetated progressively during the construction and operations phases to minimize erosion.

A preliminary description of the proposed final closure measures is provided in the text that follows. The active phase of reclamation is expected to be completed within approximately three years of operations ceasing. Environmental monitoring will continue after reclamation is completed.

*Open Pit*

A portion of the tailings produced during the mine life will be stored in the mined-out Main Zone and East Zone of the pit. Natural refilling of the pit with precipitation and localized runoff will occur at the end of mine life, forming a pit lake. There is the potential that enhanced flooding could occur, such as by transferring a portion of the spring melt water into the pit at closure, with regulatory approval. The approach to refilling the pit with water will be assessed further through the relevant regulatory processes and detailed in the future regulatory Closure Plan. During pit filling, water quality will be monitored and pit slopes remaining above the final pit lake level will be reclaimed. Fencing or similar measures will be used to ensure public / wildlife safety while the pit floods to create a lake. Hydrogeological studies are in progress which will inform the final anticipated level of pit filling. Should the final elevation be high enough, and the water quality meets all regulatory requirements, it may be reconnected to the North Driftwood system to restore aquatic habitats.

*Stockpiles and TMF*

The primary potential closure concern with respect to reclamation of mine rock and tailings storage areas is the quality of runoff and seepage from the facilities. Preliminary geochemical investigations indicated that these materials do not pose a high risk of metal leaching and are not potentially acid generating. These areas will be reclaimed, reshaped as needed for stability and to reduce potential for erosion, and revegetated to improve long term aesthetics.

*Water Management Facilities*

Once dewatering of the open pit is complete and surface water no longer needs to be treated or managed on site, the surface water management system will be decommissioned. Water holding structures will be sampled to ensure acceptable water quality. Surrounding dams, berms and ditches may be breached and recontoured to allow natural drainage to the environment.

*General Site Area*

Equipment, storage tanks, machinery, pipelines, building and infrastructure waste materials generated through demolition, will be sold for re-use, or recycled as scrap metal, where reasonable. Demolition wastes and equipment wastes that cannot be sold for re-use, or scrap, will be handled according to environmental regulations at that time, and are expected to be transported to an off-site waste management facility. On site roads not required for long term monitoring will be revegetated.

*Transmission Lines, Rail Spur and Relocated Highway 655*

Any future decommissioning or decision to return to the original state for the 230 kV transmission line, the 500 kV transmission line, the rail spur and the highway 655 would be out of the care and control of Canada Nickel, and unlikely to be pursued by the owners and operators.

## 3.4 Preliminary Schedule

Canada Nickel is initiating the potential mine approvals process through submission of the Initial Project Description (IPD), in parallel with ongoing mineral exploration and engineering studies. The preliminary schedule for the Project is outlined briefly below:

| Project Phase / Activity | Timing |
|---|---|
| Engineering Studies (Feasibility) | 2021 to 2022 |
| Impact Statement and Environmental Approvals | 2022 to 2025(1) |
| Construction | 2025 to 2027(2) |
| Operation (mining) | 2027 to 2057(3) |
| Operation (milling) | 2027 to 2067 |
| Decommissioning and Closure (3) | 2067 to 2070 |
| Post-closure and Monitoring (3) | 2070+ |

(1) The environmental and social permitting duration is based on CNC's internal evaluation integrating CNC's consultant's experience, recently permitted project timelines and a realistic appreciation of IAAC's proposed impact assessment schedule. It is not based on the maximal extent of the impact assessment schedule suggested by IAAC.
(2) Relocation of Highway 655 and the 500 kV transmission line will be initiated after the main construction phase and completed after the beginning of operations (around 2032)
(3) Timing may be extended with additional viable ore resources not currently identified.

## 3.5 List of Potential Alternatives

Alternatives to the Project, and alternative means of completing the Project, are typically considered during regulatory reviews. There are no alternatives to development of the Crawford Project (such as abandoning the Project, or delaying the Project), that meet the needs of Canada Nickel, particularly given the growing interest in critical minerals for the battery and stainless-steel markets.

Alternative means of completing the Crawford Project that are technically and economically feasible will be considered during future studies and regulatory documentation. A preliminary list has been provided below, which will be subject to the results of ongoing engagement, regulatory advice, and engineering studies:

- Mine rock, overburden and organics / topsoil segregation and storage (re-use as construction and reclamation material, storage in open pit, and various stockpile locations, based on geotechnical and geochemical properties);
- Tailings storage methods and locations (conventional slurry, thickened, filtered tailings facility, various locations, and re-use as partial pit backfill);
- Tailings management techniques to improve sequestration of carbon dioxide (e.g. mechanical enhancement, air sparging);
- Water management and treatment (water re-use, applicable treatment technologies);
- Effluent discharge locations (various watercourses);
- Watercourse realignments and structures (as needed);
- Aquatic offsetting and compensation measures (to be determined through engagement activities and regulatory advice);
- Solid waste management location (existing landfill off site and/or new landfill on site);
- Domestic sewage treatment method (package treatment plant or septic tile field);
- Water supply source (surface water or groundwater);
- Aggregate supply source (develop a dedicated aggregate resource on or near the site, re-use mine rock or purchase aggregate from suppliers);
- Site access road location (connection location for Highway 655); and
- Mine decommissioning and closure methods.

There are not expected to be alternative methods that are economically viable for mining methods (constrained by orebody location, which is near-surface, orebody geometry, and land ownership and tenure); and / or for ore processing methods (controlled by laboratory testing and analyses to obtain optimal recovery utilizing full scale proven technologies).

At this stage, a single corridor encompassing the relocated highway 655, rail spur, relocated 500 kV and the new 230 kV transmission line is the preferred option. This represents the shortest route with no major crossings as the project is constrained by the Mattagami River to the West and the 115kV lines and West Buskegau River to the East.

# 4.0 LOCATION INFORMATION AND CONTEXT

## 4.1 Geographic Coordinates

The Crawford Project site is located approximately 43 km north of Timmins, Ontario, in the geographic township of Crawford. The approximate centre of the property is located at coordinates:

- Universal Transverse Mercator (UTM) 5408504N, 473380E, (NAD 83 Zone 17N); and
- Latitude / longitude 81° 21' 46" W, 48° 49' 44" N.

## 4.2 Description of Lands

The Crawford Project property is made up of patented mining claims with surface and mining rights, mineral leases with surface and mining rights, and unpatented mining claims with mining rights only. Most of the Project facilities are planned to be placed on patent mining lands having both mineral and surface rights.

## 4.3 Proximity to Residences and Communities

The Crawford Project is located in an area well-connected by regional infrastructure. There are two known seasonal-use properties situated to the east and west of the proposed TMF (Figure S.5).

The nearest large communities are the Town of Cochrane (35 km to the northeast), the City of Timmins (43 km to the south), the Town of Smooth Rock Falls (50 km to the northwest) and the Town of Iroquois Falls (50 km to the east), as seen in Figure S.1. All distances provided in this document are cross-country distances. It is expected that workers may live in these communities and commute daily to the site.

Canada Nickel is in ongoing discussions with local Indigenous Peoples to determine historic and current land and resource uses. Based on current knowledge, including documentation publicly available, Canada Nickel understands that the Crawford Project property is located on lands that may have been used previously for Traditional purposes by the members of the Taykwa Tagamou Nation, Flying Post First Nation, Matachewan First Nation, Mattagami First Nation, and Métis Nation of Ontario – Region 3(MNO).

The Crawford Project site is located within the Treaty No. 9, 1905-1906 lands. The closest Indigenous community to the Project site is Taykwa Tagamou Nation. Taykwa Tagamou Nation, a Mushkegowuk Cree Nation, signed Treaty No. 9, also known as the James Bay Treaty, in 1905 and 1906. The primary Reserve lands of the Taykwa Tagamou Nation are the 166.8 ha New Post 69A Reserve located 14 km southeast of Cochrane and 68 km northwest of Timmins. Regional Indigenous Peoples are shown in Figure S.2.

Based on research and publicly available information, Canada Nickel is aware of several land claims and/or assertions of the Indigenous Peoples that overlap or are near the site (Table 2). Canada Nickel will continue to engage with Indigenous Peoples to determine any assertions and whether they have assertions related to the Crawford Project. Through continuing engagement activities with Indigenous Peoples, Canada Nickel will determine whether the Project will affect any Indigenous land codes / Community Land Use Plans and will support the framework set out in the land code, if applicable.

## 4.4 Proximity to Federal Lands

The Crawford Project is not located near any federal lands. The closest lands under federal jurisdiction are the Taykwa Tagamou Nation Reserve lands located approximately 45 km away (straight line), southeast of Cochrane.

The Crawford Project site is located inland, and there are no related marine or port aspects for the Project.

## 4.5 Physical and Biological Environmental Setting

The Crawford Project site is located in a remote part of northeastern Ontario, with existing provincial infrastructure including the highway and transmission lines that overlap part of the site, and prior impacts from exploration or forestry operations. The primary disturbance on the site to date is related to exploration activities and engineering investigations. Canada Nickel has been conducting environmental baseline investigations associated with the Crawford Project since early 2021, which remain ongoing. Physical and biological environmental setting presented in the sections below are based on baseline studies done considering all designated project components presented in 3.3.2, apart from the southern portion of the new 230 kV transmission line (corridor from Porcupine substation to the south of Kidd Creek mine). This portion of the corridor has been added to the 2022 baseline program.

### 4.5.1 Climate, Air Quality, Noise and Light

The nearest Environment and Climate Change Canada (ECCC) climate station for which long term, current records are available is located at Timmins Victor M. Power Airport. This station is located approximately 24 km south of the site. Average monthly temperatures range from a low of -16.8°C in January to a high of 17.5°C in July. The average annual precipitation for Timmins is 834.6 mm, with 558.3 mm falling as rain and 311.3 mm as snowfall.

The 25-year wind rose for Timmins has a predominantly westerly wind direction, with an overall west-northwest direction. The highest average wind speeds occur in February, May, and November with an average annual wind speed of 3.28 m/s. Maximum monthly wind gusts ranged from 85 km/h (July) to 158 km/h (June).

There are currently no continuous air emissions from the Crawford Project site, although there may be periodic emissions associated with exploration. Baseline air quality will be influenced by existing operations at a base metal mine (located approximately 17 km south along Highway 655), traffic along Highway 655, as well as natural sources such as volatile organic emissions from vegetation, pollen or natural fires. There may be localized areas where noise emissions reflect road noises and recreational and exploration activities. The existing wilderness areas surrounding the Project site may be considered as Class 3 (a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic).

Ambient light at the site at night is currently primarily from natural sources (moon). There are no local man-made sources of existing light, although there will be light given off by the Crawford Project during the construction, operation, and closure phases, and periodically along Highway 655. Air quality, ambient light, and noise baseline studies have been initiated for the site and will continue through 2022.

### 4.5.2 Ambient Radioactivity

Not applicable to the Crawford Project.

### 4.5.3 Physiography and Geology

The Project is located in an area of gently rolling topography typical of the glaciated Canadian Shield. Site elevations range from about 265 and 290 metres above sea level (masl), with topographic relief averaging about 15 m. Low-lying ground is covered by deeper glacial till and muskeg / swamps. As with most of northern Ontario, the site is crossed by a number of minor waterbodies and tributaries to larger rivers. The Project site is located primarily between the North Driftwood River and the West Buskegau River. The site is located in an area of relatively low seismic activity.

### 4.5.4 Geochemistry

Canada Nickel has initiated geochemical assessments of anticipated mineral wastes from the Project, including both mine rock and tailings. Geochemical characterization to evaluate acid rock drainage and metal leaching (ARD/ML) characteristics of ore and waste rock is being completed in stages. The objective of the initial phase, which started in March 2021, was to gain an understating of the geochemistry of main rock types. Kinetic testing to assess the potential for metal leaching from waste rock was initiated on one sample for each rock type in October 2021. Early results from the limited test work completed to date are favourable, suggesting that acid generation and metal leaching will not be a significant concern. A more comprehensive program, including static and kinetic testing, is ongoing to confirm the initial results on the waste rock and to collect data on tailings, overburden, and low-grade ore.

### 4.5.5 Surface Water and Groundwater

*Hydrology*

All streams and rivers in the Project area are part of the Hudson Bay watershed with the Project site mainly located in the headwaters of the West Buskegau River and North Driftwood River watersheds, and a small portion of the site extending into the Jocko Creek watershed. The West Buskegau River has a total drainage area of approximately 167 $km^2$ where it crosses the Project site and drains north into the Buskegau River that ultimately drains into the Frederick House River and Abitibi River. The North Driftwood River has a total drainage area of approximately 97 $km^2$ where it crosses the Project site and drains north into the Lower Abitibi River that ultimately drains into the Abitibi River. Jocko Creek has a drainage area of approximately 116 $km^2$ at the point where it joins with Kidd Creek, which then flows into the Mattagami River.

*Surface Water Quality*

Results of water sampling collected so far in the West Buskegau River, the North Driftwood River and the Mattagami River indicate surface waters generally meet Provincial Water Quality Objectives established by the Ministry of Environment, Conservation and Parks (MECP) with conditions that are typical of natural environments in northeastern Ontario. Sampled sites are generally of neutral pH, low-to-moderate hardness, and have low concentrations of nutrients (i.e., nitrate, nitrite, ammonia), anions (e.g., chloride, sulphate), total suspended solids and total dissolved solids.

Similarly, concentrations of total and dissolved metals are very low, often at or below analytical detection limits, with results for most parameters consistently below applicable water quality guidelines for the protection of aquatic life.

*Hydrogeology*

Regional overburden is dominated by organics overlying deposits consisting of silts and clays, and till overlying bedrock. A deposit of coarse sand and gravel is located in the southwest corner of the property.

Local groundwater flow is anticipated to be similar to surface drainage. Shallow groundwater flow in the eastern portion of the site is interpreted to flow east towards the West Buskegau River while the western portion of the site is interpreted to report to the North Driftwood River, similar to surface water flow. Local groundwater flow directions will be confirmed once data from monitoring wells has been surveyed. Groundwater monitoring wells have been installed at select locations to sample groundwater quality, which will start in 2022.

### 4.5.6 Terrestrial Environment

*Flora and Vegetation Communities*

Extensive vegetation inventories were undertaken in 2021 and provincially rare plants were documented. Twenty-five distinct plant communities (upland and wetland) were recorded. Coniferous forest and swamp communities dominate the area within the Property boundary.

Of the species present, 85% are native to Ontario, and 15% are non-native species. Black Ash was recorded at two locations and is a species of conservation concern that is widespread and common but in rapid decline due to the invasive Emerald Ash Borer Beetle.

*Mammals*

Aerial surveys identified a total of six mammal species. Moose were directly observed during the surveys. Tracks of Moose, River Otter, Wolf, Lynx, American Marten and Snowshoe Hare were observed throughout the investigation area. No Woodland Caribou were observed, nor was an indication of presence from tracks or signs (cratering activity) detected in the portion of the survey area that overlaps the Kesagami Caribou Range.

*Bat Surveys*

A total of 69 plots were surveyed for bat maternity roosting habitat with findings indicating that nearly all deciduous or mixed forests in the investigation area have a relatively high number of cavity trees to support bat maternity roosts. None of the locations of exposed bedrock identified through desktop mapping were assessed during field surveys as suitable overwintering habitat for bats. During bat detector surveys, the most frequently recorded species was Silver-haired Bat, followed by the Hoary Bat. No passes of Big Brown Bat could be confirmed. Although the presence of Northern Myotis could not be confirmed through studies to date, the presence of this species cannot yet be ruled out.

*Breeding Birds*

From the 81 total bird species documented during the breeding birds survey in 2021, the most abundant species were White-throated Sparrow, Swainson's Thrush, and Blue-headed Vireo. An additional 15 bird species were recorded incidentally during other investigations. Two avian species of conservation concern were documented, namely Olive-sided Flycatcher and Canada Warbler. Both are provincially designated as Special Concern in Ontario; species of conservation concern which are discussed in their own section below.

Data collected at acoustic monitoring stations specifically targeted avian species of conservation concern (Canada Warbler, Rusty Blackbird, Common Nighthawk, Eastern Whip-poor-will, Evening Grosbeak, Olive-sided Flycatcher, and Yellow Rail). The bird detector analysis did not detect any avian species of conservation concern, and no Eastern Whip-poor-will or Common Nighthawk were found during bird surveys.

*Other Birds*

Many large birds, including some raptors (i.e., hawks, eagles, osprey, falcons, vultures, and owls), Common Ravens, and herons, typically nest in large trees. These species, as well as their nests, were searched for during aerial surveys.

Nine stick nests and two Bald Eagles were recorded during targeted aerial surveys for stick nests in 2021, although none were found within the proposed development area.

*Culturally Important Species*

Canada Nickel understands that there are culturally important species to Indigenous Peoples. As such, Canada Nickel is working with Indigenous Peoples to identify these important species and will ensure they are carried through the IA, as applicable. These will be identified through engagement activities, country foods assessments, and Indigenous Knowledge studies which Canada Nickel is currently engaging with Indigenous Peoples.

### 4.5.7 Fish and Fish Habitat

Initial aquatic baseline studies were undertaken during 2021 on the Crawford Project site and nearby, including of the following watercourses and associated tributaries:

- West Buskegau River;
- North Driftwood River; and
- Mattagami River.

The studies included fish habitat and community assessments, fish collection for fish tissue analyses, and benthic invertebrate and sediment analyses.

The fish habitat within the river systems in the area of the Crawford Project is typical of northeastern Ontario, composed of channels with dense shrubby vegetation along the banks, wetland segments with ponds, as well as abundant evidence of beaver activity. Beaver dams provide some seasonal fragmentation of these watercourses; however, they do not pose year-round barriers to fish passage as demonstrated by fish presence throughout the sampled areas of the Project.

Preliminary observations from the initial baseline studies have documented the presence of 17 fish species within the investigation areas where the local fish communities are mostly represented by small bodied, forage fish species such as dace, shiners and minnows that prefer a cool water thermal regime. Some cold-water species such as Burbot are also present within these inland tributaries. Other large bodied fish species, including Northern Pike and White Sucker, are found mostly in their juvenile life stages, whereas adults of these species can be found within the larger water bodies such as Gerry Lake and Martin Lake, as well as the Mattagami River to the west of the Project.

Lake Sturgeon (*Acipenser fulvescens*), of the Southern Hudson Bay – James Bay population are listed as Special Concern under the federal *Species at Risk Act* and are known to occur within the Mattagami River which receives contributions from Jocko Creek. The baseline studies have not detected Lake Sturgeon within the study areas; however, fish population data including Lake Sturgeon data for the segment of the Mattagami River downstream of the project site (and connected habitats) will be reviewed as available.

### 4.5.8 Species of Conservation Concern

Several species of conservation concern have been identified within the study area through desktop review and field observations at the Project site and local area. These species include the following (bold indicates those observed in the field):

- **Black Ash (*Fraxinus nigra*);**
- **Bald Eagle (*Haliaeetus leucocephalus*);**
- Bank Swallow (*Riparia riparia*);
- **Canada Warbler (*Cardellina canadensis*);**
- Common Nighthawk (*Chordeiles minor*);
- **Olive-sided Flycatcher (*Contopus cooperi*);**
- Peregrine Falcon (*Falco peregrinus anatum / tundrius*);

- Yellow Rail (*Coturnicops noveboracensis*);
- Blanding's Turtle (*Emyonidea blandingii*);
- Little Brown Myotis (*Myotis lucifugus*);
- Northern Myotis (*Myotis septentrionalis*);
- Tricolored Bat (*Perimyotis subflavus*);
- Monarch (*Danaus plexippus*);
- Red-headed Woodpecker (*Melanerpes erythrocephalus*);
- Yellow-banded Bumble Bee (*Bombus terricola*); and
- Lake Sturgeon (*Acipenser fulvescens*).

Field studies initiated in 2021 have not identified the presence of Woodland Caribou in the area, although the Project is located along the southern boundary of the Kesagami Caribou Range for Woodland Caribou. This southern portion of the range has been previously impacted by human activity, most notably timber harvest and settlement, with fragmented mature coniferous forest areas remaining and, consequently, occurrence of Caribou is minimal. This southern part of the range is targeted by the MECP for restoration of habitat for Woodland Caribou as habitat function has become significantly degraded.

### 4.5.9 Marine Environment and Marine Geohazards

The Crawford Project is situated inland and will therefore have no associated marine components.

## 4.6 Social, Economic and Health Context

### 4.6.1 Site History

Crawford Township has been an area of interest since 1955, with many mining companies and government bodies investigating the area for minerals. The 1963 discovery of the rich base metal deposit in Kidd Township, now the site of the Kidd Creek Mine approximately 15 km south of the Project site, led to significant exploration in Crawford Township between the 1960s and 1970s. From 2018 to 2019, Spruce Ridge Resources partnered with Noble Mineral Exploration to continue to explore the area.

The Crown Land Use Policy Atlas identifies the Project site within land use code G1822 (Kidd Creek Complex) (Province of Ontario, n.d.). The land use codes encourage mineral exploration and development, with some limitations.

The project site is located within The Abitibi River Forest, which encompasses over 35,000 km$^2$, extending westward from the Ontario/Quebec border for 190 km to the southern limit, south of Timmins, to the northern most extent of the province's managed forest land (ARFMI, 2022). The Abitibi River Forest Management Plan identifies management objectives for maintaining and enhancing the forest ecosystem, ensuring sustainable harvest, and creating opportunities for participation by Indigenous Peoples during plan development and implementation.

There are no federal parks near the Project site. The closest provincial parks are Greenwater Provincial Park (a non-operating, natural environment park with no facilities) approximately 49 km to the north, and Kettle Lakes Park (day use and overnight camping facilities), located approximately 80 km away from the Project site (Ontario Parks, n.d.). There are several provincial Conservation Reserves in the region, including the Mahaffy Township Ground Moraine Conservation Reserve located approximately 10 km to the northwest of the Project site, and the Northern Claybelt Forest Complex Conservation Reserve, approximately 50 km to the west. Hunting and fishing activities are managed by the Ministry of Northern Development, Mines, Natural Resources and Forestry, and led by their District offices in Cochrane, Timmins, and Kirkland Lake. The Project site is located within Wildlife Management Unit 30 and falls within Fisheries Management Zone 8 (MNDNRF, 2022; MNDNRF, 2021).

### 4.6.2 Social Context

The Project is located in Crawford and Lucas Townships within the Cochrane District, and is anticipated to affect or be of interest to the City of Timmins and towns of Cochrane, Iroquois Falls and Smooth Rock Falls[1]. The Project site is located approximately 20 km from the nearest railhead. To the north of the Project site is provincial Highway 11. Parallel to Highway 655 is a major hydro transmission line; while another hydro transmission line runs parallel to the Project site, approximately 4 km east of the site. A hydro-electric generating station, Lower Sturgeon, is located along Mattagami River to the west, within the boundaries of Mahaffy Township. The Project site is accessible by Highway 655, which provides year-round access and leads directly north from Timmins to Ontario Highway 11. Supplies, such as food, fuel, lodgings and equipment required for mining and exploration work, are available in Timmins, Cochrane, Smooth Rock Falls and Iroquois Falls (Figure S.2).

The City of Timmins is readily accessed by the provincial highway network (Highway 144, Highway 655, and Highway 101), as well as by air, with several flights per day from Toronto servicing the Victor M. Power airport. In 2021, Timmins had a population of 41,145, and the median age is 42 years, which is similar to the province's median age. The city has a balanced sex ratio, and over 66% of the population is in the age group of 15 to 64 years (Statistics Canada, 2017a; Statistics Canada, 2022b). Timmins is a bilingual city, supporting recreational activities for locals and tourists, including fishing, camping, trapping, hunting, sporting events, snowmobiling, and skiing.

The Crawford Project is also close to the Town of Cochrane, which is located along Highway 11 in the Cochrane District, 63 km northeast by road from the Project site. Cochrane is also easily accessible by air and rail. Cochrane had a population of 5,390 in 2021 and the median age in the town was 44 years, with 61.5% of the population between the ages of 15 and 64 and about 21% of the population over age 65. The total population has an equal proportion of women and men (Statistics Canada, 2017a). Cochrane is also a bilingual town with local lands around Cochrane that support a number of recreational activities.

The Town of Iroquois Falls is located 112 km by road (via either Timmins or Cochrane) from the Crawford Project with a population of 4,418 in 2021. The median age is 48 years, with 61% of the population within the 15 to 64 years age group and 23% of the population in the age group of 65 and over. The overall population has an equal proportion of women and men, however, women represent a higher proportion of those aged 65 and older (Statistics Canada, 2017a). Iroquois Falls is also a bilingual town with many snowmobile and skiing trails, along with a number of other recreational venues and annual festivals.

The Town of Smooth Rock Falls is located 63 km by road from the Crawford Project. Smooth Rock Falls has a population of 1,200 in 2021. The median age in Smooth Rock Falls is 58 years, with approximately 54% of the population between the ages of 15 to 64 years old. Men represent a higher proportion of the total population of Smooth Rock Falls, except for those aged 0 to 14 where there is an equal proportion of men and women (Statistics Canada, 2017a). Smooth Rocks Falls is also a bilingual town and offers several recreational activities.

There are no First Nation Reserve lands proximal to the site (see Figure S.2; Tables 2 and 3), although the Project site is anticipated to be within the Traditional territories or operating region of several Indigenous Nations that have expressed interest in the Project:

[1] Data reported across sections 4.6.2 to 4.6.4 from Statistics Canada Census 2016 and 2022 does not provide data on non-binary gender identities, and limited utility to represent demographic and labour force data for Indigenous Nations. These will be validated during engagement.

- Taykwa Tagamou Nation, located approximately 45 km northeast from the Project site in the Cochrane District along the Abitibi River;
- Matachewan First Nation, located approximately 100 km southeast of the Project site;
- Mattagami First Nation, located approximately 115 km south along the Mattagami River;
- Flying Post First Nation, located approximately 59 km southwest of the Project site; and
- Métis Nation of Ontario – Region 3.

### 4.6.3 Economic Context

Timmins, Cochrane, Iroquois Falls, and Smooth Rock Falls are within the boundaries of Cochrane District. The primary industries include mining, healthcare and social assistance, education, construction and retail trade (Statistics Canada, 2017c).

The average weekly earnings for mining, quarrying, and oil and gas extraction in Ontario in 2021 was $1,934 which is 1.66 times the average earnings across industries (Statistics Canada, 2022). Men made up a larger proportion of the population in mining, while women made up a higher proportion of the population in health care and social assistance for all four municipalities (Statistics Canada, 2017a; Statistics Canada, 2017b; Statistics Canada, 2017c). Barriers can exist to pursuit of employment opportunities in the mining industry. The risk of sexual harassment can limit participation rates of women within certain industries (Kansake, Dumako, & Sakyi-Addo, 2021). Women faced the highest risk of sexual harassment in the mining industry, with a rate of 72 reports per 100,000 workers according to a 2011 study of sexual harassment filed with the Equal Employment Opportunity Commission (PDAC, n.d.). However, the experience of sexual harassment is not the same for all women or all men. For example, immigrant workers, who make up a large proportion of the mineral sector workforce in Canada, can face additional obstacles in reporting through potential language barriers and unfamiliarity with rights and laws against sexual harassment (PDAC, n.d.).

Through engagement activities and primary research, Canada Nickel will engage and work with communities and Indigenous Peoples to gather information on economic activities and to understand potential impacts on those activities. The economic context of Indigenous Peoples will be assessed during the impact assessment process.

### 4.6.4 Health Context

The Porcupine Health Unit (PHU) is located in northeastern Ontario, primarily serving Cochrane District and the Town of Hornepayne. The head office is located in Timmins, with eight branch offices located throughout the serviced area delivering the following programs and services: dental hygienists, speech-language pathologists, geneticists, nurse practitioners, public health nutritionists, dietitians, inspectors, public health nurses, health promoters, and outreach workers. The PHU is complemented by other medical services, such as those offered at the Timmins and District Hospital.

It has been identified by the PHU that people in the District of Cochrane and surrounding area fare better than the Provincial average on some measures of well-being, such as:

- Higher levels of a strong, or somewhat strong, sense of community belonging (73.2% PHU vs. 70.9% Ontario);
- Higher levels of self-reported physical activity during leisure time (60.9% PHU vs. 54.7% Ontario); and
- Higher compliance rates for vaccination of school-aged children (over 90% PHU).

However, in comparison to provincial averages, the residents with PHU service are experience the following challenges:

- Higher rates of population obesity (72.3% PHU vs. 61.5% Ontario), alcohol use (54.4% PHU vs. 44.4% Ontario) and smoking (27.8% PHU vs. 18.1% Ontario);
- Lower percentage of food secure households (86.5% PHU vs. 91.4% Ontario); and
- Higher rates of teenage pregnancy (2.5 times the Ontario average)

Residents within the PHU service area have a lower life expectancy with 4.4 years less for men and 4.1 years less for women. Residents also have heightened risks for potentially avoidable mortality issues e.g., deaths due to smoking, excessive drinking, or injuries (1.6 times Ontario). Residents within the PHU service area are also more likely to experience the following health events:

- Higher rates of hospitalization for conditions associated with lifestyle factors such as heart disease, diabetes, and injuries;
- Higher rates of chronic diseases such as asthma, diabetes, high blood pressure, mood and anxiety disorders; and
- Higher rates of sexually transmitted and blood-borne diseases such as chlamydia, hepatitis C, and gonorrhea (Porcupine Health Unit, 2021).

The Timmins and District Hospital is in Timmins and serves Cochrane District as well as the Temiskaming, Sudbury, and Algoma Districts and offers a number of services ranging from medical, surgical, critical care, maternity, newborn, pediatric, long-term care, and mental health services. This hospital is also a teaching hospital, helping 266 post-secondary students complete their educational requirements.

Through the services provided by the Porcupine Health Unit, Cochrane has access to their own branch of clinical services provided through regularly scheduled visits. According to the Town of Cochrane's 2018 Final Community Improvement Plan, their growth strategy prioritizes human, economic, and environmental health, focusing on the improvement of socially responsible infrastructure, such as active transportation, which have direct implications on community health and well-being (Town of Cochrane, n.d.). Cochrane and Iroquois Falls are also members of the Matheson, Iroquois Falls, and Cochrane (MIC) Groups network of hospitals, consisting of both emergency and long-term care services. The MIC Group's three hospitals, each in their respective regions, provide a variety of services to the region. Smooth Rock Falls has a hospital and Detox Centre. Services are bilingual with emergency services available 24hrs/day. There are in patient medical, palliative care, chronic care, long-term care, laboratory and radiology services as well as a heliport (Town of Smooth Rock Falls, 2022).

Through engagement activities and primary research, Canada Nickel will engage and work with Indigenous Peoples to gather information on health of Indigenous Peoples, including social determinants of health and community well-being, and how the Indigenous Peoples define these aspects. The Impact Statement will include a health impact assessment that examines the health and well-being of Indigenous Peoples and will use a gender-based framework to assess potential impacts. Canada Nickel will be completing additional primary research to understand community-specific plans that support improving well-being. This may include research with nearby municipalities, Indigenous Peoples, healthcare providers, and diverse population groups.

# 5.0 FEDERAL, PROVINCIAL, INDIGENOUS AND MUNICIPAL INVOLVEMENT AND EFFECTS

## 5.1 Federal Funding

There is no anticipated federal funding for the Crawford Project.

## 5.2 Federal Lands Needed

There are no federal lands required to carry out the Project, including Reserve lands.

## 5.3 Federal, Provincial and Municipal Environmental Approvals

A number of environmental approvals will be required at both the federal and provincial levels to allow for development of the Crawford Project. A summary of these approvals is provided in Tables 4 and 5.

### 5.3.1 Federal

In addition to the potential requirement for completion of an IA for the *Impact Assessment Act*, the Crawford Project may require federal approvals related to the *Fisheries Act*, *Canada Navigable Waters Act*, and *Aeronautics Act*, pending additional regulatory guidance. Fisheries and Oceans Canada (DFO), ECCC, Transport Canada and NRCan have a broad range of responsibilities, and are the federal departments primarily involved with approvals under the above statutes.

Table 4 provides a preliminary list of federal environmental approvals that could potentially be required for the Crawford Project. Others may arise through consultation with federal agencies.

### 5.3.2 Provincial

The Crawford Project may require completion of one or more provincial environmental assessment (EA) processes for the Ontario *Environmental Assessment Act*, depending on the final Project design. An EA can be required for the disposition of Crown resources (Class EA for Resource Stewardship and Facility Development Projects); by the provision of grid power to the site / relocation of the existing transmission line, for the relocation of Highway 655.

The Ontario *Mining Act*, *Ontario Water Resources Act*, *Environmental Protection Act*, *Lakes and Rivers Improvement Act*, *Public Lands Act* and the *Ontario Heritage Act* contain associated regulations, guidelines and policies stipulating those relevant aspects of the natural and/or human use environments are to be protected against undue disturbance from industrial and other sources, except as provided through the granting of permits, approvals and authorizations.

Two primary provincial agencies are expected to be involved with approvals for the Crawford Project:

- MNDMNRF has a responsibility to ensure the orderly development of mineral resources in Ontario, including responsibilities for the disposition of Crown lands for mining, and primary responsibility for mine closure activities and approval for mining-related dams located on land; as well as, the wise use of Crown resources, including natural heritage features; and
- The MECP grants permits and approvals that address Project aspects related to soil, water and air (including sound)quality and quantity, waste management, and Species at Risk.

The Ministry of Tourism, Culture and Sport (MTCS) may also be involved with permitting of Project components, although no permits are expected to be issued. MTCS provides confirmation that appropriate archeological studies and mitigation, if required, have been completed for the Project.

The Ontario Energy Board has responsibility for energy-related approvals, including approval to construct transmission lines, and operates as an adjudicative tribunal, carrying out its regulatory function through oral or written public hearings.

Table 5 provides a preliminary listing of the provincial environmental approvals that are expected to be required to construct, operate and close the Crawford Project site based on the preliminary Project design.

There are no facilities planned in the Province of Québec, and no transboundary effects from the Crawford Project are anticipated with Québec or the USA.

### 5.3.3 Municipal

The Project is located outside all municipal boundaries. As such, there are no municipal approvals expected to be required to support the Project.

## 6.0 POTENTIAL EFFECTS OF THE PROJECT

Effects which may arise from development of the Crawford Project are presented in Table 6 and Table 7.

Table 6 presents potential effects which may be subject to regulation under various federal environmental instruments, including the *Fisheries Act*, the *Migratory Birds Convention Act, 1994*, and the *Species at Risk Act*.

Table 7 presents a preliminary listing of additional potential environmental and socio-economic effects which may arise from development of the Crawford Project.

These tables are preliminary and may be revised as a result of ongoing engagement activities, as well as the comprehensive effects assessment that will be completed as part of the IA process, if required.

### 6.1 Changes to the Marine Environment

The Crawford Project is located inland, therefore this aspect is not applicable.

### 6.2 Changes to Fish and Fish Habitat, Aquatic Plants and Migratory Birds

A preliminary listing of changes to the following that may result from the construction, operation and closure of the Crawford Project associated with the following legislation is provided in Table 6:

- Fish and fish habitat as defined in subsection 2(1) of the *Fisheries Act*, through the overprinting of local watercourses and potential downstream flow reductions; and
- Migratory birds, as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*, through the overprinting of terrestrial habitat which may support parts of the life cycle of affected species.

The timing of construction activities will be arranged in accordance with the appropriate freshwater fisheries timing and breeding bird windows for the Project area, unless otherwise approved by the applicable regulatory agency. Preliminary Project construction scheduling is currently in development.

As the Project is located inland, there are no associated ports or other marine facilities, and there will not be any risk associated with the introduction of aquatic invasive species arising from ballast water discharge, ship wash, or other similar activities.

There are no effects expected to federal fish Species at Risk as defined in subsection 2(1) of the *Species at Risk Act* (marine plants), as none are known or expected to be present within the immediately adjacent watercourses based on the environmental baseline studies completed to date and published information.[2] Lake Sturgeon are known to occur within the Mattagami River which receives contributions Jocko Creek. Potential mine-related impacts to the Jocko Creek and to the ultimate receiver (Mattagami River) are not expected, and as such, no effects to Lake Sturgeon are anticipated.

There are no effects expected to other marine organisms such as sea turtles, marine benthic organisms or shellfish, or coral.

Water takings during construction and operations will comply with applicable guidance from DFO to avoid entrainment and impingement of fish.

[2] Associated engagement relating to aquatics and terrestrial studies is provided in Appendix A, pages A2, A3, A12, and A17, and Appendix C, page A23, A24, and A25.

Water will not be used for cooling purposes, and as such there will be no effects arising from the discharge of heated effluent.

Water from lakes located upstream from the Crawford project will be diverted, if possible, and reconnected to the North Driftwood River downstream from the project.

### 6.3 Potential Changes to the Environment on Federal Lands or Lands Outside Ontario

There are no federal lands near the Crawford Project site, and no development is planned to occur on federal lands. The Crawford Project is not expected to result in changes to federal lands, including Reserve lands.

The Crawford Project is not of a scale or location that could result in changes to the environment outside of Ontario or Canada.

### 6.4 Potential Effects to Indigenous Peoples – Heritage, Traditional Lands and Other

Canada Nickel acknowledges that the Crawford Project may result in effects to Indigenous Peoples and their culture, Treaty rights, and Traditional and current land uses. These effects could include potential changes to land access, loss of Traditional lands and ability to hunt, fish, gather and/or trap, as well as the ability to practice their culture. These potential effects will be investigated through the environmental approvals process for the Project, including during the IA process, if required, and ongoing engagement activities.

There is the potential that structures, sites or objects that are of historical, archaeological, paleontological or architectural significance to Indigenous Peoples could be affected by the Crawford Project, if present within the development area. None are currently known to be present but may be identified through ongoing engagement with potentially impacted Indigenous Peoples and the Project engineering and design process.

So far, desktop studies have identified potential areas of higher archeological potential, mostly on the banks of the different watercourses located in the project area. An archeological field program is planned in 2022 to confirm the presence or absence of archeological features.

In addition, the area comprising the project footprint shown on Figure S.3 can be considered as an estimation of lands that would no longer be accessible for traditional land use. To address this, the site layout has been developed trying to reduce the footprint as much as possible.

Note that the background research, information gathering, and Checklist for the Project identified one potential cultural heritage landscape and two properties in the study area with buildings or structures 40 or more years old:

- The Mattagami River, used as a transportation route during the post-contact period and likely also utilized throughout the pre-contact period by Indigenous Nations
- Lower Sturgeon Generating Station, built 1923
- Kidd Mine, began operations in 1964

However, none of these are predicted to be directly or indirectly impacted by the Project.

### 6.5 Potential Effects to Indigenous Peoples – Social, Economic and Health Conditions

Canada Nickel is engaging with Indigenous Peoples to determine the potential impacts to health, social and economic conditions which may arise as a result of development of the Crawford Project.

Canada Nickel believes that the Crawford Project can provide an overall positive benefit to Indigenous Peoples, particularly regarding economic opportunities and the associated outcomes arising from improvements in economic circumstances. Key initiatives to support this effect opportunities for employment, commerce, and contributions programs. Engagement with Indigenous Peoples throughout the assessment will help Canada Nickel understand the needs of diverse population groups to potentially help enhance employment opportunities through strategic, targeted programs.

Canada Nickel acknowledges the potential for impacts to Indigenous Peoples, including diverse population groups (such as Indigenous women, youth, elders) and localized effects to individuals or groups of individuals who may exercise Traditional land use rights in the area, connected with development of the Crawford Project. Potential impacts will be assessed in the Impact Statement, and may include:

- The effect of developments on historic and current lands and resource uses, and ways of life / culture;
- Human health related to Project emissions (effluent, air quality and noise);
- Changes to community well-being;
- Contribution to cumulative effects already being experienced in the region; and
- Impacts to physical and social infrastructure in the region, including road safety, availability of social services, increased pressure on recreational facilities, etc.

These potential effects will be determined through ongoing engagement activities and the environmental approvals process for the mine. Canada Nickel is engaging with Indigenous Peoples to develop Indigenous Traditional Knowledge and Land Use studies to document the socio-economic baseline and to understand the culture and history of Indigenous Peoples within the local and regional area of the Crawford Project. Information gathered through the Indigenous Traditional Knowledge studies will be used to inform baseline conditions and mitigation measures. Traditional Knowledge will be validated with Indigenous Peoples to ensure information is captured and used appropriately.

### 6.6 Estimate of Greenhouse Gas Emissions

An initial estimate of net greenhouse gas emissions associated with the Crawford Project has been developed. The primary sources of greenhouse gas emissions are expected to arise from: diesel combustion in mobile equipment, blasting in the open pit, processing of ore, and indirect emissions from purchased grid power.

As adjusted to the most recent mining plan, total direct emissions (Scope 1) have been estimated at an average of 5,600 kilotonne of carbon dioxide over a 41-year life of the Project and indirect emissions (Scope 2) are estimated at an average of 1,200 kt of carbon dioxide over the 41-year life of the Project. At this stage, no carbon sink has been considered, including the potential of the tailings and the waste rock to absorb carbon dioxide.

#### 6.6.1 Mineral Carbonation of the Crawford tailings

The tailings and waste rock produced by the Crawford Project spontaneously and permanently capture carbon dioxide when exposed to the atmosphere. Canada Nickel is developing processes anticipated to optimize the carbon capture potential of the Project to offset Project emissions. Though some degree of carbon capture will occur regardless of additional actions taken by Canada Nickel, research and development around methods for enhanced carbon capture at the Crawford Project is ongoing at this stage, leaving results for total potential carbon capture unconfirmed. Therefore, no carbon capture is included in the estimation of net emissions. However, Canada Nickel is actively reassessing the potential

to include carbon capture in the net emissions calculation. Globally, Canada Nickel is working towards developing the Crawford Project as a potentially carbon negative mining operation.

## 6.7 Wastes and Emissions

A brief summary of the types of wastes and emissions that may be generated from the Crawford Project, in the air, in or on water, and in or on land, during the construction, operation, closure phase of the Project is provided in Table 8.

### 6.7.1 Atmospheric Emissions

*Air Emissions*

Air emissions for the Crawford Project will largely be derived from fugitive sources, with additional smaller quantities derived from point sources.

Fugitive dust can be expected to be released from:

- Drilling and blasting operations;
- Loading and offloading of overburden, mine rock and ore;
- Vehicle and heavy equipment travel; and
- Wind entrainment from the TMF / stockpiles and other exposed earth materials.

Due to the presence of chrysotile within the deposit, quantification of chrysotile will be completed and, if required, programs developed for managing chrysotile in airborne dust.

Suspended particulate from conveyors and crushing equipment is expected to be the primary point source emission for the Crawford Project. Measures will be taken to minimize dust creation at the plant site including during crushing, and to utilize dust collection devices where practical. Additional dust control will be installed if needed.

Diesel fuel combustion, such as in vehicle and heavy equipment during all Project phases will release particulates, sulphur dioxide, and nitrogen oxides from the combustion of fuel. Nitrogen gases, carbon dioxide and other trace gases will also be released from explosives usage.

General dust control for vehicle and heavy equipment travel will be implemented to minimize airborne dust generation from roads on site.

*Greenhouse Gas Emissions*

Greenhouse gas emissions will be derived principally from diesel fuel combustion in heavy equipment operation. Grid power will be used to meet Project stationary equipment power demands, thereby reducing direct greenhouse gas emissions at the site. Greenhouse gas emissions associated with other fuel sources such as propane and gasoline are expected to be minor.

*Noise Emissions*

Noise source modeling will be carried out to ensure that noise and noise related effects and mitigation are fully considered during engineering design.

The principal man-made noise sources during the operation of the Crawford Project are expected to be from the operation of heavy equipment during site construction and handling of mine materials (mine trucks, shovels, loaders, etc.). Plant site operations, including crushing and grinding operations, will be enclosed and emissions are expected to be minor in comparison to open air noise sources. Blasting from open pit operations will also contribute to noise emissions. Blasts are expected to occur at a maximum rate of once per day, with a very limited duration of one to two minutes.

During the mine construction and closure phases, there will be additional heavy equipment operation that will contribute to noise emissions.

### 6.7.2 Liquid Discharges

*Minewater and Surface Contact Waters*

Contact water on the site, coming from direct precipitation and groundwater inflows, will be collected using ditches and sumps. It will then be directed to a system of collection and sedimentation ponds for management. Modelling will be completed to assess the quantity of water to be managed, which will be used in the design of the water management facilities on site.

More specifically, mine water, including both direct precipitation and groundwater inflows into the pit, will potentially contain:

- Suspended solids from general mining and earthmoving activities;
- Ammonia residuals from ammonia-based explosives; and
- Residual hydrocarbons from heavy equipment operation.

The majority of site runoff (contact water other than mine water) is not anticipated to pose a water quality concern. Runoff from the ore, mine rock and overburden stockpiles may contain suspended solids as well as some level of dissolved metals (ore, tailings and mine rock only). Although preliminary geochemistry results suggest very low dissolved metals concentration, the monitoring of water quality would cover a wide range of parameters, likely including arsenic, copper, lead, nickel, zinc, selenium, mercury, chromium, cobalt, and iron.

Contact water will be used as the primary freshwater supply to the process plant. If required, excess water will be discharged to the environment. A water management plan is currently being developed to ensure that excess water meets all regulatory requirements and can be discharged to the environment. A treatment plant will be established, if required. The discharge location has not been determined yet but will be selected to ensure there is sufficient assimilative capacity in the receiving watercourse.

*Process Plant and Tailings Water*

Excess process plant water, including water resulting from tailings thickening, is expected to contain metals and residual processing reagent products. Effluent may be treated within the plant and recycled in the process or may be directed to a sedimentation pond. All effluent discharged from the site will be managed and treated such that it will meet regulatory requirements.

*Domestic Sewage*

Domestic sewage waste will be limited at the Crawford Project as there will not be an accommodations complex at the site. Waste will be generated from washroom facilities in the office and administrative complex as well as the mine dry. During the construction and operations phases domestic sewage will be treated by an appropriately-sized method, such as a sewage treatment plant. Effluent meeting regulatory requirements will be either directed to a sedimentation pond or discharged to the environment.

### 6.7.3 Solid Wastes

*Domestic Waste*

Domestic wastes produced at the Project site during all Project phases are anticipated to include the following:

- Food waste;
- Clothing;

- Scrap metal;
- Glass;
- Plastic; and
- Fibrous material (wood and paper).

These materials are expected to be transported off site for management according to regulations. Canada Nickel will evaluate the feasibility of segregating waste streams (domestic waste, recyclable materials) and available facilities in order to reduce the amount of material directed to a landfill.

*Special Management Waste*

Special management wastes at the site are expected to include:

- Vehicle maintenance wastes (waste petroleum products, waste glycol, and packaging);
- Petroleum contaminated soil (in case of a spill);
- Waste explosives; and
- Biomedical waste.

Special management wastes produced during the construction, operations, and closure phases of the Crawford Project will be stored indoors and/or in sealed containers in an area with secondary containment until they can be transported to an appropriately licensed facility off site.

*Demolition Waste*

Salvageable machinery, equipment and other materials will be dismantled and taken off site for sale or re-use if economically feasible. A dedicated non-hazardous landfill may be developed on site during the closure phase for storage of demolition wastes, such as concrete, wallboard and similar materials.

## 6.8 Land and Resource Use

### 6.8.1 Residential Land Use

There are no residential properties situated in the area to be developed by the Crawford Project and therefore there are no anticipated effects to residential land use.

### 6.8.2 Agriculture

There are no agricultural properties situated in the area to be developed by the Crawford Project and therefore there are no anticipated effects to agricultural land use, including effects to livestock health and productivity.

### 6.8.3 Viewscapes

Highway 655 between Timmins and Cochrane will be re-routed around Project components, as it currently runs through the area which will become the open pit. Mine rock stockpiles, which will rise up to 100 m above the generally low-relief terrain in the area, will be visible from the re-routed highway, which will rise up to 100 m above the generally low-relief terrain in the area. With no permanent residents in the area, this change is considered as a brief duration for traffic through the immediate area of the Crawford Project and is not anticipated to have any effect on the well-being of residents of the surrounding communities.

### 6.8.4 Tourism

There are snowmobile trails located in proximity to the project. Through communications to date with local snowmobile clubs, it is determined that some trails may require relocation for the construction and

operation of the project. These trails are planned for relocation off-season to reduce interruptions to participant activities.

Based on information available through online tourism and municipal platforms as well as the 2022-2023 Forest Management Plan, there are no designated canoe routes, hiking or biking trails, ATV trails, outfitters, outdoor experiences, tours, provincial parks or other resource-based tourism activities, aside from the snowmobile trails, situated in the area to be developed by the Crawford Project. As such, there are no anticipated effects to the aforementioned tourism activities.

### 6.8.5 Traffic

A potential increase in the traffic volume is expected on highway 655 due to the commuting of the workforce needed at site. There is a potential effect on travel time, and also on the durability of the road pavement.

## 6.9 Community Well-Being

### 6.9.1 Effects to Language

The workforce for the Crawford Project is expected to largely be drawn from the surrounding communities and therefore there is no expected to be an anticipated effect on language in the region arising from the development of the Crawford Project.

### 6.9.2 Employment Opportunities

Canada Nickel will place an emphasis on hiring Indigenous Peoples and from local communities to the extent possible for meeting anticipated workforce demands. Canada Nickel is working with local training, education, immigration, and recruitment institutes to begin early planning to meet project workforce requirements. Relating to these institutions, particularly those for education and training, this collaboration includes review of available programs, potential development of new programs, and support from Canada Nickel in developing or enhancing the relevant programs where necessary, supplied through letters of support, provision of subject matter expertise, etc.

Canada Nickel is committed to Diversity and Inclusion in its hiring and day-to-day operations, and has discussed with education and training partners, as well as knowledgeable local organizations such as Keepers of the Circle, the Stardust Alliance, and the Rural Northern Immigration Pilot, the importance of emphasizing opportunities for those groups underrepresented in the labour market, including but not limited to youth and Indigenous women. Canada Nickel has and will continue to participate in events centered around raising awareness in underrepresented groups of opportunities in mining and encouraging engagement in local training programs already tailored to managing diverse, unique needs and access requirements (see the Far Northeast Training Boards Youth in Mining campaign and the upcoming Stardust Festival, intended to create opportunities for visible minorities to get involved in science, technology, engineering and math careers and education).

Canada Nickel's own programs for training and hiring, as well as more formalized partnerships with local institutions, will be further developed at a date closer to project initiation.

### 6.9.3 Taxation and Infrastructure

With an increased population resulting from new mine operations, there is a potential for strain on existing infrastructure (Pembina institute, 2008). However, the province accrues tax revenue from mining, which can be used to offset some of this potential added strain. In 2020, mining contributed to $7.5 billion dollars of Ontario's gross domestic product of which approximately 73% stayed in Ontario according to

the Ontario Mining Association (Ontario Mining Association, 2021). Ontario taxes non-remote mines at 10% of annual operator's profit that exceeds $500,000 (Ministry of Finance, 2022). In addition, 1.5% of royalties were collected by the government of Ontario from mining in the previous decade (Celli, 2015). The province is also able to recover tertiary tax dollars through personal income tax generated from a mine's active labour force. Tertiary tax dollars also include those generated from corporate taxation and Ontario's harmonized sales tax at 13%, a portion of which currently offsets infrastructure needs that may experience additional burden such as healthcare and transportation. The province proposes expenditures to grow from $174.1 billion in 2021–22 to $188.1 billion in 2024–25, primarily to support services including health care, education and other critical investments (Ministry of Finance, Ontario, 2022, p. 8).

### 6.9.4 Barriers to Employment

Given that the average cost of childcare in Ontario as of 2018 was $11,500 per child, per annum, the average income earner in municipalities and townships would spend between 17-19% of their income on childcare (Statistics Canada, 2017a). Furthermore, there are 23 childcare services in Timmins but 2 each in Cochrane and Iroquois Falls, and 1 in Smooth Rock Falls (Porcupine Health Unit, n.d.). A combination of affordability issues and accessibility have disproportionately negative effects on women, whose work hours decrease more than men with the presence of a child in the household (Moyser, Women and Paid Work, 2017).

### 6.9.5 Substance Abuse

Residents within the catchment area of the Porcupine Health Unit (which includes the project study area) experience significantly higher rates of illicit drug use compared to Ontario (50.6% PHU versus 39.8% Ontario average). In addition, an influx of male transient workers for employment in mining is correlated with increased rates of drug and alcohol consumption (Brown, 2003; Cullen, n.d.; Goldenberg, Shoveller, Koehoorn, & Ostry, 2010). Given that there are nine (9) health care facilities in the study area, with one (1) specializing in substance abuse detoxification within Smooth Rock Falls, there is an increased risk to overwhelming current health care infrastructure (Porcupine Health Unit, 2022). Potential mitigation measures could include workplace policies to discourage alcohol and drug abuse and support rehabilitation through drug testing and employee assistance programs designed to support treatment of workers with substance abuse problems (Lee, 2020).

## 6.10 Overview of Potential Environmental Effects

Tables 6 and 7 provide an overview of changes to the environment and preliminary assessment of the potential effects of the Crawford Project.

Cumulative effects will be assessed in the Impact Statement in accordance with IAAC guidance, if required. The *Impact Assessment Act* requires that cumulative effects be considered that are likely to result from the designated Project in combination with other physical activities that have been or will be carried out. For the Crawford Project, it is anticipated this would include cumulative effects associated with the ongoing exploration program. Cumulative effects may also arise from other projects in the area, including Kidd Mine, which discharges effluent to Kidd Creek and ultimately the Mattagami River, as well as Gowest Gold North Timmins Gold Project which discharges effluent to the West Buskegau River.

# 7.0 SUMMARY OF ENGAGEMENT WITH STAKEHOLDERS

## 7.1 Overview

Canada Nickel was created at the end of 2019 and listed on the TSX Venture Exchange in early 2020. Initial discussions with Project stakeholders began in June 2021, with the most recent engagement program for the Initial Project Description occurring in May and June 2022.

## 7.2 Engagement with Stakeholders

Various means of communication have been established, or are in the process of full development, to initiate and maintain dialogue between Canada Nickel and the surrounding communities and stakeholders of the Crawford Project.

- Completion of preliminary project introduction meetings, project baseline meetings, and initial project description meetings;
- Distribution of feedback surveys;
- Information sharing by email regarding proposed activities, meetings, and Project updates;
- Newsletters (published quarterly, with the first issue released in October 2021);
- Project website with a community specific page (www.canadanickel.com/sustainability), which includes general Project information, Project documents (including publicly available meeting reports, Project studies, and summarized factsheets, as they become available), and an inquiry submission form;
- An email address dedicated to community relations (administered daily by the Community Relations and Communications Coordinator);
- Individual and group meetings (held primarily virtually during the COVID-19 Pandemic) with stakeholders;
- Meeting reports produced by the consulting firm Transfert Environnement et Société following scheduled meetings, distributed to participants for validation, and shared on Project website;
- Anonymous feedback surveys to collect stakeholder feedback on various subjects (the summary results of the feedback surveys were shared during early meetings and used in the development of the Project's Preliminary Engagement Plan);
- Factsheet summarizing the federal Impact Assessment (IA) Process and how Canada Nickel will integrate it into the Project's engagement process, made available at the Timmins Office and on the Project website;
- Factsheet summarizing the Project's Preliminary Economic Assessment, made available at the Timmins Office;
- Summary document for the IPD, made available on the Project website and distributed to public meeting registrants and to interested communities;
- Formation of a Community Contributions and Procurement Committee, consisting of select stakeholders (chosen by demonstrated interest or expertise) and focused on the implementation of informed strategies and policies concerning procurement and contributions. Meetings held quarterly;
- A plan to establish thematic committees regarding environmental impacts and labour and training; and,
- Letters posted to known cabins, hunting blinds, and other evidence of activity on all Canada Nickel properties inviting the user(s) to contact Canada Nickel for information on exploration activities and safe coordination of property use.

*Stakeholder Contacts*

The following is a list of all stakeholders have met with Canada Nickel prior to and during preparation of the Initial Project Description (note that this list is not comprehensive of all groups contacted by Canada Nickel with an offer for further engagement):

- City of Timmins
- Cochrane District Social Planning Council
- Cochrane District Social Services Administration Board
- Far Northeast Training Board
- Friends of the Porcupine River Watershed
- Mattagami Region Conservation Authority
- Northern College
- Porcupine Health Unit
- Timmins Chamber of Commerce
- Timmins Community Development Committee
- Timmins Economic Development Corporation
- Timmins Snowmobile Club
- Town of Cochrane
- Town of Iroquois Falls
- Abitibi Institute
- Living Space Timmins
- Cochrane Local Citizens Committee
- Timmins Local Citizens Committee
- NORCAT
- Polar Bear Riders (Cochrane) Snowmobile Club
- Workplace Safety North – Ontario Mine Rescue
- Town of Smooth Rock Falls
- Cochrane Board of Trade
- Keepers of the Circle
- Mattagami Region Source Protection Committee
- Arctic Riders of Smooth Rock Falls
- Timmins Downtown Association (BIA)
- Timmins ATV Club
- Northglen Community
- Big Water Campground
- Nature and Outdoor Tourism Ontario

## 7.3 Main Issues

Discussion opportunities held during, and feedback surveys distributed after, the preliminary engagement meetings held in June, July, and September 2021 were the primary methods for collecting stakeholder feedback related to Project issues and concerns, in addition to separate introductory meetings held prior to the IPD engagement meetings.

Points of interest varied between stakeholder groups, often corresponding to the groups' primary activities or focus. Economic related concerns included: the equitable distribution of economic opportunities between the four primary communities (City of Timmins, Town of Iroquois Falls, Town of

Smooth Rock Falls and Town of Cochrane) relating to both contributions and procurement, addressed through the formation of the Community Contributions and Procurement Committee; and future potential for strategic partnerships, supply chains, and local development opportunities. Workforce availability and early planning for the Project's labour and training requirements was also discussed, to be addressed through early conversations with training and education partners and the formation of the Labour and Training Committee.

Environmental comments related primarily to watershed and waterbody quality and flow, tailings management strategies, the physical footprint of a large-scale open pit mine, and gaining a better understanding of Canada Nickel's pursuit of a net zero carbon emission mining operation. Canada Nickel plans to form a diverse Environmental Impacts Committee to discuss Project impacts, community concerns and suggestions, and proposed mitigation measures.

Additional topics included the logistics of relocating Highway 655, suggestions for meeting the Project's power requirements, the construction and operation timeline, proactive engagement with Indigenous Peoples, and the potential impacts of the Project on housing availability, as well as approaches that can be taken to mitigate or eliminate these concerns.

## 7.4 Plan for Future Engagement

As Canada Nickel plans to continue to engage with the local communities, it is possible that the list of stakeholders expands as the Project progresses. It is Canada Nickel's intention to maintain proactive engagement with stakeholders throughout all stages of the Project. Future engagement activities planned at present include the communication means listed above, and information sharing and discussions with the surrounding communities via virtual and/or in-person public meetings, office hours, and participation at community events.

## 7.5 Summary of Engagement with Indigenous Peoples

### 7.5.1 Engagement with Indigenous Peoples

Canada Nickel will work in partnership with Indigenous Peoples to establish a mutually beneficial, cooperative, and productive relationship centred around transparent information sharing, respectful engagement, open dialogue, and meaningful partnerships. The following list shows Indigenous Peoples that have specific interest in the Project and with whom Canada Nickel has engaged with prior to and during preparation of this IPD, and will continue to engage with for the remainder of the Crawford Project's Impact Assessment process:

- Taykwa Tagamou Nation;
- Flying Post First Nation;
- Matachewan First Nation;
- Mattagami First Nation; and
- Métis Nation of Ontario - Region 3 (MNO).

Canada Nickel conducted a number of information sharing and engagement activities with Indigenous communities. In addition to those activities mentioned for Stakeholder Engagement, which also apply to Indigenous Engagement, Canada Nickel community specific activities include:

- Participation in community events, including open houses and community meetings;
- Exploration, MOU, IBA, and other agreements as relevant under development, signed, or upcoming with the appropriate communities;
- Formation of committees, hiring of community liaisons/coordinators, and initiation of regularly scheduled meetings, as appropriate, requested, and/or included in agreements

- Participation in baseline studies, including site visits, accompanying consultants, and review of work plans and schedules, as appropriate, requested, and/or included in agreements;
- Provision of draft impact documents for review, such as sharing of the draft Initial Project Description prior to formal submission;
- Provision of funding, support, and opportunities for participation relating to the Impact Assessment and a number of baseline study programs, including Traditional Knowledge and Land Use, to support capacity building and meaningful collaboration;
- Sharing of job opportunities and contracts. Future training opportunities and programs, job postings, and business opportunities will also be shared, with an emphasis in Canada Nickel's procurement and hiring programs placed upon Indigenous Peoples, Indigenous owned businesses, and joint ventures;
- Regular reporting of environmental incidents and activities;
- Sponsorship and contributions to community activities and organizations, including support provided to date for sporting events/teams, POW WOWs, etc.;
- Community meetings led by Canada Nickel, hosted in the community when appropriate, to present the Initial Project Description and provide opportunity for a comprehensive question and answer period

To note, Canada Nickel's engagement with Matachewan First Nation, Mattagami First Nation, and Flying Post First Nation is regularly supported by the Wabun Tribal Council.

Canada Nickel has provided introductory, notification of project letters to a number of Indigenous communities identified by the Impact Assessment Agency of Canada as having potential interest in the project, with some preliminary conversations occurring with Wahgoshig First Nation and no responses received from the remaining communities to date. These communities are as follows:

- La Premiere Nation Abitibiwinni
- Kebaowek First Nation
- Kitcisakik Anishinabeg
- Kitigan Zibi Anishinabeg
- Nation Anishnabe de Lac Simon
- Long Point First Nation
- Algonquins of Barriere Lake
- Timiskaming First Nation
- Wolf Lake First Nation
- Wahgoshig First Nation

Preliminary, informal contact has occurred with the Cree Nation Government, who were also identified by IAAC. Canada Nickel is awaiting a response.

### 7.5.2 Main Issues

All comments and concerns voiced by Indigenous Peoples will be taken into consideration during Project design and implementation.

The main topics discussed to date are:

- Training and employment opportunities, in particular opportunities for women and youth (to be addressed, in part, through discussion with, where appropriate, the community IA Coordinators, IA committee and coordinator training, community training, retention, and recruitment coordinators, local training institutes, Keepers of the Circle, Apatisiwin Training and Employment, and other avenues appropriate to specific communities);

- Capacity building as it relates to participation in business opportunities;
- Involvement in environmental and impact assessment studies;
- Environmental topics, relating to transparent reporting, potential impacts to water quality and aquatic species, and potential impacts to wildlife from site activities ;
- Project impacts on practices, activities, and ways of life, including trap lines, fishing, and hunting; and,
- Discretionary sharing of Traditional Knowledge.

### 7.5.3 Plans for Future Engagement

Canada Nickel intends to continue engagement activities with interested Indigenous Peoples, with an emphasis on open, respectful dialogue, clear communication channels, and meaningful participation. A specific plan for future engagement in connection with the IA process will be designed and reviewed with Indigenous Peoples and IAAC at an appropriate time.

Main topics and objectives of future engagement activities, to occur alongside those activities already outlined above, are:

- Involvement of Indigenous Peoples in the environmental baseline studies process according to each community or group's interests, expectations, and capacity for participation
- To validate with Indigenous Peoples the interpretation and use of Traditional Knowledge in IA documentation (accounted for or to be accounted for in the relevant Agreement and plans for engagement);
- To confirm and validate with Indigenous Peoples the engagement activities planned for communities and to adjust activities and methods of engagement according to feedback and government and community COVID-19 pandemic restrictions; and,
- Information sharing by email regarding proposed activities, meetings, and Project updates.

These activities are in addition to those global communication strategies outlined in Section 7.2, including the Project website.

## 7.6 Regional Studies / Assessments

There are no other applicable regional studies / assessments. There are no regional studies or Regional Assessments close to the location of the proposed Project, including any Regional Assessment carried out under the *Impact Assessment Act,* or by any jurisdiction including by or on behalf of an Indigenous governing body, where the study or plan is available to the public.

## 7.7 Strategic Assessments

This IPD has considered the Strategic Assessment of Climate Change as developed by Environment and Climate Change Canada (ECCC), including assessment of net greenhouse gas emissions associated with the Project (see Section 6.6).

There are no other known applicable strategic assessments.

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**Table 1: Preliminary List of Activities for the Crawford Project**

| Construction Phase | Operations Phase | Decommissioning and Closure Phase |
|---|---|---|
| Continuation and completion of engineering studies | Development and implementation of environmental protection and monitoring plan(s) for operation | Development and implementation of environmental protection and monitoring plan(s) for closure |
| Corporate decision to proceed | Ongoing engagement and consultation | Ongoing engagement and consultation |
| Development and implementation of environmental protection and monitoring plan(s) for construction | Overburden and mine rock extracted from the open pit will be either stockpiled or used for progressive reclamation | Remove mine equipment and allow open pit to flood |
| Ongoing engagement and consultation | Ore will be extracted from the open pit, and will be either temporarily stockpiled, or will be transported directly to the primary crusher | Removal of reagents and chemicals for proper disposal |
| Application for, and receipt of environment-related permits | Sized ore will be processed to recover metals in the same processing facility, and produce concentrate that will be periodically shipped off site for sale | Potential establishment of on-site demolition landfill for inert waste, and/or contracts for demolition waste removal |
| Hiring of individuals and contractors, and procurement of material and equipment | Tailings produced from processing Main Zone ore will be stored in a surface facility which will expand as needed | Demolish facilities as no longer needed with waste disposed of in accordance with all regulatory requirements |
| Mitigation for heritage resources and other effects, if / as needed | Once the Main Zone is mined out and mining has moved to the East Zone, tailings will be stored in the Main Zone pit | Investigate and remediate residual ground with spillage if any, such as near liquid fuel storage areas |
| Construction of rail spur line | Progressive reclamation will occur for Project components when no longer needed / depleted | Remove site power infrastructure when no longer needed |
| Upgrade of local access roads to site and installation of culverts / bridges as needed | Progressive reclamation of the open pit slopes and studies to ensure long term success of pit lake | Break up concrete, scarify compacted grounds etc. to establish free drainage |
| Additional land clearing and implementation of erosion and sediment control measures | Ongoing management and treatment of waters for discharge of excess waters that meet regulatory requirements | Regrade areas (plant site, stockpiles, TMF) as needed for long term stability and establish final surface drainage |
| Excavation and grading as needed | Ongoing management of chemicals and wastes, including remediation of any incidental spillage during operations | Place a growth material over affected areas (including TMF, plant site, overburden piles) as needed to ensure long term vegetation success |
| Movement of construction materials to site | Environmental monitoring and reporting, as applicable | Environmental monitoring and reporting, as applicable |
| Construction of new site facilities | Follow up environmental studies | Revocation of approvals to operate when no longer required |
| Development of aquatic habitat offset and compensation features as needed | Periodic updates / amendments of the Closure Plan as needed to reflect changes to the Project and site activities | If appropriate, connect the flooded open pit to the local drainage system once the flooded pit lake quality meets regulatory requirements |
| Construction of diversion of local watercourses and stabilization | Expansion of mine waste management facilities as mine development proceeds | Return of reclamation financial assurance |
| Stripping of overburden and initiation of open pit mine development | Rail transportation of material to and from the site | |
| Establishment of water management and treatment works, including ponds, pipelines and treatment facilities | | |
| Environmental monitoring and reporting | | |
| Relocation of Highway 655 (will be initiated after the main construction phase and completed after the beginning of operations (around 2032)) | | |
| Construction of 230 kV transmission line | | |
| Relocation of 500 kV transmission line (Project scheduling may allow to be deferred to late in the construction phase or early operations phase) | | |

**Table 2: Land Claims and Assertions of Indigenous Peoples**

| Indigenous Peoples | Claim and Assertions |
|---|---|
| Taykwa Tagamou Nation | No known claims and assertions. |
| Matachewan First Nation | In 2009, Matachewan First Nation filed a Treaty Land Entitlement claim indicating that the Nation did not receive all the land it was entitled to under Treaty #9 (1906). It is understood from the federal government that this claim has been settled. |
| Mattagami First Nation | Mattagami First Nation Traditional Territory – to be validated during consultation. |
| Flying Post First Nation | In 2020, there was final settlement of a 115-year-old land claim due to a shortfall of land as a result of James Bay Treaty (Treaty #9). |
| Métis Nation of Ontario – Region 3 | Métis assert a right to harvest in large areas of Ontario. The government has accommodated Métis rights on a regional basis within the Métis harvesting territories identified by the Métis Nation of Ontario. An interim agreement between the Métis Nation of Ontario and the Ontario government recognizes the Métis Nation of Ontario's Harvester Card system. On April 30, 2018, the Métis Nation of Ontario and Ontario signed a new Framework Agreement on Métis Harvesting that advanced the recognition of Métis' rights in Ontario. |

*Sources: (Queen's Printer for Ontario, 2020; Metis Nation of Ontario, 2021; Matachewan First Nation, n.d.)*

**Table 3: Additional Information Regarding Indigenous Peoples**

| Indigenous Peoples | Description |
|---|---|
| Taykwa Tagamou Nation | Taykwa Tagamou Nation is located in Cochrane District, along the Abitibi River. There are two reserves: New Post 69 and New Post 69A. They are a signatory to Treaty No. 9 and are members of the Mushkegowuk Council and Nishnawbe Aski Nation (Nishnawbe Aski Nation, n.d.; CIRNAC, 2021a).<br>The registered population of Taykwa Tagamou Nation as reported to Crown-Indigenous and Northern Affairs Canada (CIRNAC) as of June 2022 is 661, with 143 individuals (22% of the population) registered on Own Reserve, 16 on Other Reserves, 1 registered on No Band Crown Land, and 501 (76%) living Off Reserve (CIRNAC, 2022a). In comparison, the 2016 Census indicates a total on-reserve population of 90, which is a 20% increase from data reported in 2006. The gender breakdown in 2016 was almost equally split, with the majority of the population within the 15 to 64 age group. As of the 2016 Census, the median age of the population was approximately 26 years, while men had a median age of 27 and women of 23 (Statistics Canada, 2018a). |
| Matachewan First Nation | Matachewan First Nation is located approximately 30 km southeast of the Town of Matachewan, Ontario and about 60 km west of Kirkland Lake off Highway 66. Matachewan First Nation is a signatory to Treaty No. 9, signed by Matachewan First Nation on June 19, 1906 (Matachewan First Nation, n.d.). Matachewan First Nation is a member of the Wabun Tribal Council and the Nishnawbe Aski Nation (Nishnawbe Aski Nation, n.d.; CIRNAC, 2021b).<br>The registered population of Matachewan First Nation as reported to CIRNAC as of June 2022 is 981, with 51 individuals registered on Own Reserve (5% of the population), 3 individuals registered on Other Reserves, 3 individuals registered on Own Crown Land, 3 individuals registered on No Band Crown Land, and 94% (921) registered Off Reserve (CIRNAC, 2022b). In comparison, the 2016 Census indicates a total on-reserve population of 60 individuals, which is a 20% decrease from data reported in 2006. The gender breakdown in 2016 was equally split, with the majority of the population within the 15 to 64 age group. As per the 2016 Census, the median age of the population was approximately 37 years, while men had a median age of 37 years and women of 35 years (Statistics Canada, 2018b). |
| Mattagami First Nation | Mattagami First Nation is located approximately 20 kilometres northeast of Gogama and is accessible by road five kilometres from Highway 144. Mattagami First Nation is a signatory to |

| Indigenous Peoples | Description |
|---|---|
| | Treaty No. 9, signed by Mattagami First Nation on July 7, 1906. Mattagami First Nation is a member of the Wabun Tribal Council and the Nishnawbe Aski Nation (Nishnawbe Aski Nation, n.d.; CIRNAC, 2021b).<br>The registered population of Mattagami First Nation as reported to CIRNAC as of June 2022 is 650, with 167 individuals registered on Own Reserve (25.7% of the population), 6 individuals registered on Other Reserves, 6 individuals registered on No Band Crown Land, and 72.5% (471) registered Off Reserve (CIRNAC, 2022d). In comparison, the 2016 Census indicates a total on-reserve population of 190, which did not change from the data reported in the 2006 Census estimate. The overall population gender ratio in 2016 was balanced, with majority of the population within the 15 to 64 age group. As per the 2016 Census, the median age of the population was approximately 30 years, while men had a median age of 28 years and women of 31 years (Statistics Canada, 2018c). |
| Flying Post First Nation | The reserve lands of Flying Post First Nation resulting from the signing of Treaty #9 in 1905, 1906 and adhesions in 1929 and 1930, are located approximately 75 km north-west of Timmins (Wabun Tribal Council, 2020). Flying Post First Nation is a member of the Wabun Tribal Council and the Nishnawbe Aski Nation (Nishnawbe Aski Nation, n.d.; CIRNAC, 2021b). Most of the First Nation members live near Nipigon because of the poor land on reserve (Wabun Tribal Council, 2020). The registered population of Flying Post is 304 people, most of whom are registered Off Reserve. There is one person registered and living on reserve land (CIRNAC, 2022e). |
| Métis Nation of Ontario (MNO) – Region 3 | The Crawford Nickel project site is located within Region 3, as defined by the Métis Nation of Ontario (MNO). The Métis Nation of Ontario has a province-wide governance structure and is a Governing Member of the Métis National Council. The MNO exists to represent and advance the interests of the Métis Peoples of Ontario. The Métis Nation of Ontario has a Consultation Agreement with the Ontario Government signed on July 31, 2015, that establishes a consultation process with members represented by Métis Nation of Ontario to consult on proposed actions and decisions that may impact asserted or established Indigenous rights (Métis Nation of Ontario, n.d.). Although demographic information specific to Ontario Region 3 Métis is currently unavailable, there are 120,585 self—identifying Métis people in Ontario, which notes a 40% increase from 2011 and an increase of 64% since 2006 (MIRR, n.d., p. 8). |

**Table 4: Preliminary List of Potential Federal Approvals**

| Department | Act, Approval and Project-related Activities |
|---|---|
| ECCC | *Fisheries Act*, Schedule 2 Listing (Metal and Diamond Mining Effluent Regulations):<br>- Storage of potentially deleterious mineral waste covering minor tributaries that are frequented by fish<br>- An alternative assessment for mineral waste disposal in the prescribed format could be required along with an approved fish habitat compensation plan |
| DFO | *Fisheries Act*, Authorization for Harmful Alteration, Disruption or Destruction of Fish Habitat or Death of Fish by means other than Fishing:<br>- Direct impacts to fish habitat including overprinting of waterbodies and construction of structures in waterbodies / watercourses<br>- Indirect impacts to fish habitat, including flow reductions<br>- An approved fisheries offset plan will be required |
| NAV Canada | *Aeronautics Act,* Land Use Clearance:<br>- Construction of tall structures, use of cranes, transmission line towers. |
| Transport Canada | *Aeronautics Act,* aeronautical obstruction clearance Canadian Aviation Regulations (SOR/96-433)<br>- Marking and lighting for structures that could interfere with aeronautical navigation. |
| Transport Canada | *Canada Navigable Waters Act,* approval under the Navigation Protection Program:<br>- Alteration of navigable waters and crossing of navigable waters with infrastructure<br>- Diversion of unscheduled watercourse to provide for safe mining |

Note: Although not expected, a federal Species at Risk Act permit could be required, pending the results of ongoing environmental baseline investigations.

**Table 5: Preliminary List of Potential Provincial Approvals**

| Ministry | Act, Approval and Project-related Activities |
|---|---|
| MNDMNRF | *Mining Act*, Closure Plan:<br>– Progressive reclamation and final closure of the site<br>– Construction of dams above the high water mark of watercourses if any |
| | Ontario *Environmental Assessment Act*, Class EA(s) for Resource Stewardship and Facility Development Projects:<br>– Based on the preliminary Project design, the Crawford Project is expected to require completion of this Class Environmental Assessment, subject to regulatory confirmation. |
| | *Public Lands Act* or *Lakes and Rivers Improvement Act*, Work Permits [new]:<br>– Construction of facilities on Crown land including below the high water mark of waterbodies / watercourses |
| | *Public Lands Act*, Land Use Permit:<br>– Temporary land tenure for facilities off the mining lease if required |
| | *Crown Forest Sustainability Act*, Permit to Remove (Cutting Permit):<br>– For cutting of merchantable timber for site development |
| | *Fish and Wildlife Conservation Act*, Permit to Collect Fish for Scientific Purpose:<br>– Potential fish transfer during construction<br>– Fisheries investigations during construction, operation and closure<br>– Authority to remove beavers and/or beaver dams |
| | *Aggregate Resources Act*:<br>– If the proposed field investigations are successful in finding an appropriate resource, Canada Nickel may pursue an aggregate resource permit to provide a source of aggregate to support the mine construction and operation |
| MECP | *Ontario Water Resources Act*, Permit to Take Water:<br>– Dewatering activities in support of construction and longer term mine dewatering<br>– Fresh water supply |
| | *Environmental Protection Act*, Environmental Compliance Approval for Domestic Sewage: Grey water, sewage, etc. |
| | *Environmental Protection Act*, Environmental Compliance Approval for Air and Noise: Atmospheric emissions from Project |
| | *Environmental Protection Act*, Environmental Compliance Approval for establishment of a waste disposal site, if required |
| | Site-wide stormwater control study approved by MECP |
| | Ontario *Environmental Assessment Act*, Class EA(s) for Minor Transmission Facilities: Based on the preliminary Project design, the Crawford Project is expected to require completion of this Class Environmental Assessment, based on the anticipated length of the line (greater than 2 km length) in comparison to the Electricity Projects Regulation. |
| | *Endangered Species Act*, Overall Benefit Agreement to address impacts to habitat for species at risk. |

**Table 6: Preliminary List of Changes to the Environment Under Federal Jurisdiction**

| Environmental Component | Project Phase | Potential Source of Effect | Potential Change to the Environment | Preliminary Area of Influence |
|---|---|---|---|---|
| Fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act* | Construction | • Diversion of non-contact waterbodies / watercourses, (including lakes west of the tailings management facility, in the North Driftwood watershed<br>• Installation of temporary and permanent infrastructure<br>• Uncontrolled spill | • Alteration, disruption and destruction of fish and benthic fauna habitat<br>• Change to the natural surface water flow pattern<br>• Surface water quality alteration | • Project footprint<br>• Downstream flow reductions (North Driftwood River) |
| | Operations | • Water management and treatment<br>• Uncontrolled spill | • Surface water quality alteration | • Project Footprint<br>• Downstream flow reductions (North Driftwood River)<br>• Short mixing zone downstream of effluent discharge point |
| | Closure | • Site reclamation and closure<br>• Uncontrolled spill | • Surface water quality alteration (improvement) | • Project Footprint<br>• Downstream flow reductions (North Driftwood River)Short mixing zone downstream of effluent discharge point |
| Migratory birds, as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994* | Construction | • Clearing of habitat to allow for site construction<br>• Installation of permanent facilities<br>• Additional vehicle traffic | • Habitat loss<br>• Disturbance of species<br>• Increased risk of collision or mortality | • Project footprint<br>• Potential limited distance from project footprint due to localized noise effects<br>• Project roads |
| | Operations | • Operation of permanent facilities<br>• Additional vehicle traffic | • Disturbance of species<br>• Increased risk of collision or mortality | • Project footprint<br>• Potential limited distance from project footprint due to localized noise effects<br>• Project roads |
| | Closure | • Site reclamation and closure | • Habitat redevelopment | • Project footprint |

**Table 7: Preliminary Summary of Potential Environmental Effects**

| Environmental Component | Potential Effect (Preliminary) | Proposed Mitigation (Preliminary) | Project Phase | | | Preliminary Area of Influence |
|---|---|---|---|---|---|---|
| | | | Construction | Operation | Closure | |
| Air Quality, Greenhouse Gases, Noise and Light | • Air emissions (point source at the plant or diffuse from roads and blasting) have the potential to generate dust or products of petroleum hydrocarbon combustion that could potentially affect human health, and plant and animal health.<br>• Due to the presence of chrysotile within the formation, there is a potential that airborne dust from the mining operations and the TMF might contain chrysotile.<br>• Noise emissions from the Project have the potential to disturb other area users although the site is remote from residences<br>• Greenhouse gas emissions from Project have the potential to contribute to global carbon dioxide ($CO_2$) emissions and the associated phenomenon of climate change<br>• Operation of an industrial facility will require provision of continuous localized and appropriately aimed lighting to ensure effective operations and the safety of workers and others which will result in an increase in the ambient light at the Project site and a localized glow off-site<br>• Impacts on how and where Indigenous Peoples' Rights are exercised | • Provincial regulatory requirements will be met for on-site emissions and air quality at the property boundary<br>• An assessment will be made on the quantity of chrysotile in the orebody. Asbestos safety will be a consideration in site design as needed. Canada Nickel has decided not to use chrysotile bearing material for road surface building.<br>• Provincial regulatory criteria will be met for on-site emissions and at surrounding noise sensitive locations (i.e., points of reception)<br>• Development and implementation of Project specific Air Quality and Noise Best Management Practice (BMP) Plans<br>• Water sprays will be used to control dust emissions from haul roads and construction areas, and best management practices will be followed for dust control during operations<br>• Measures to be used to reduce sound emission effects on other area land users and wildlife, and are expected to include maintaining tree screens around work as practical<br>• Other sound reduction measures to be employed are expected to include maintaining equipment in good working order and utilizing efficient mufflers to reduce sound emissions at source<br>• Development of a compact overall site as practical will reduces haulage / transportation distances for greater fuel economy and reduce greenhouse gas emissions<br>• Usage of electric trolley-assist for mining trucks and electric shovels to reduce fuel consumption and greenhouse gas emissions.<br>• Assessing the different options to optimize carbon capture from waste rock and tailings, and consider the implementation of the best alternatives.<br>• Maintaining equipment and vehicles in good working order also improves fuel combustion efficiency<br>• Care will be taken to ensure lights are appropriately aimed to minimize off-site disturbance | X | X | X | • Project footprint and area up to approximately 10 km from centroid of open pit |
| Local waterbodies / watercourses | • Project development will overprint watercourses, including small creeks and beaver ponds in the North Driftwood and West Buskegau watersheds, and have the potential to reduce downstream flow<br>• Vibration (such as from explosives use) may disturb aquatics species<br>• An intake / discharge location is proposed (to be determined) which has the potential for habitat disturbance and may affect water quality and flows<br>• One or more crossings may be needed which has the potential for aquatic habitat disturbance<br>• Uncontrolled spills (diesel, hydraulic oil, untreated water)<br>• Impacts on how and where Indigenous Peoples' Rights are exercised | • Efforts will be made to develop to limit the overprinting of watercourses, where feasible<br>• The tailings management strategy will aim to maximize tailings impounded in the pits, to reduce the footprint of the tailings impoundment at surface<br>• Effluent discharge to the environment will meet all federal and provincial regulatory requirements<br>• Effluent discharge location will be analyzed and consulted upon to ensure the acceptability and to limit overall impacts<br>• Water from waterbodies located upstream from the Project will be diverted to a downstream water body within the same catchment, if feasible<br>• In-water structures will be designed to avoid effects to fish, as reasonable<br>• Design will be realized to contain spills in storage and high-risk areas<br>• Intervention plans will be developed in case of uncontrolled spills<br>• Compensatory plan for aquatic habitat, which will be consulted upon and approved through a rigorous federal process, will be provided to mitigate effects on aquatic resources including habitat loss | X | X | X | • Project Footprint<br>• Downstream flow reductions (North Driftwood River) |
| Groundwater System | • Open pit dewatering will affect the local groundwater levels and may affect surface water flows<br>• Groundwater quality could be affected by the seepage from the impoundments at surface and in the pit<br>• Risk that groundwater could be affected by spills and fuel storage | • Modelling investigations will fully assess potential effects, to support mitigation if needed<br>• Groundwater levels will return after the open pit re-fills with water at closure<br>• Geochemistry program on mine rock and tailings will help assess the potential for metal leaching over time<br>• Design of fuel storage areas will be realized to contain spills and prevent leaks<br>• Intervention plans will be developed in case of uncontrolled spills | X | X | X | • Project footprint<br>• Area adjacent to project footprint affected by drawdown cone from pit dewatering (est. 1-2 km) |

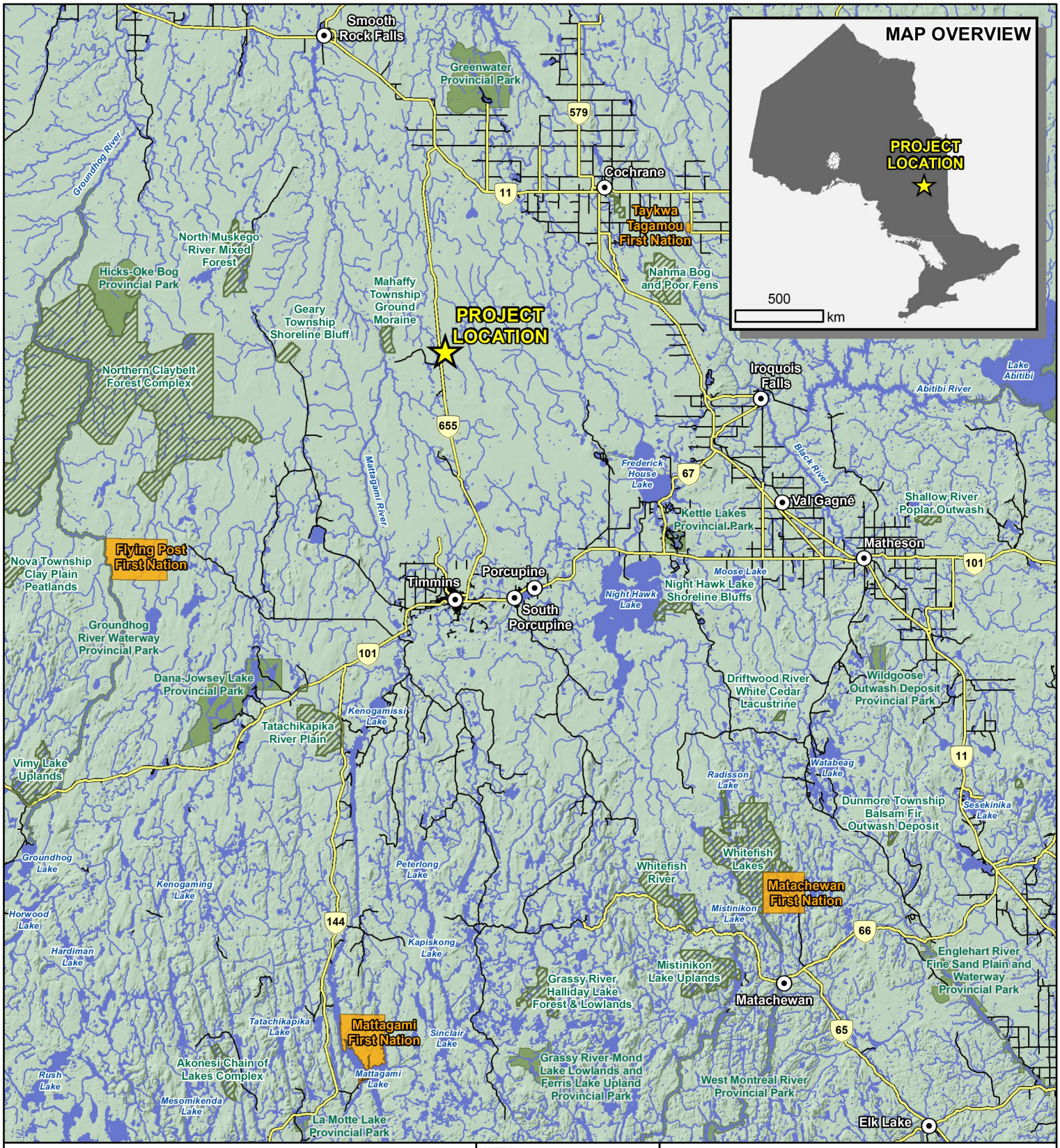
| Environmental Component | Potential Effect (Preliminary) | Proposed Mitigation (Preliminary) | Project Phase | | | Preliminary Area of Influence |
|---|---|---|---|---|---|---|
| | | | Construction | Operation | Closure | |
| Natural Vegetation and Wildlife | • Mine site and related infrastructure development if any, will displace existing terrestrial habitat<br>• Wildlife may be affected by site activities and disturbances, including noise<br>• Mine site development may displace existing terrestrial habitat for species of conservation concern, including Species at Risk, if present<br>• Impacts on how and where Indigenous Peoples' Rights are exercised | • Efforts will be made to develop a compact site as practical for the new mine to limit disturbance to new areas as reasonable<br>• Tree clearing will be avoided during the bird nesting season<br>• The site will be reclaimed after mining ends to support future productive habitat<br>• If Species at Risk or associated habitat are present, an Overall Benefits Agreement and associated compensation measures will be negotiated with the province, if appropriate | X | X | | • Project footprint<br>• Potential limited distance from project footprint due to localized noise effects<br>• Project roads |
| Hunting, Fishing and Tourism | • Limited effect as the mine is to be located on an active exploration program site, where access is controlled / restricted for safety of workers.<br>• There will be a more extensive disruption to the local experience in the immediate vicinity of the site from the larger scale mining operation<br>• There is no anticipated effect to known tourism activities, aside from potential relocation of one snowmobile trail | • Canada Nickel intends to continue work with the Project stakeholders to mitigate potential localized effects during the operation<br>• Hunting will continue to be restricted on the Project site in order to ensure the safety of workers and others<br>• Impacted snowmobile trails will be relocated as necessary and in collaboration with the appropriate snowmobile club | X | X | X | • Project footprint<br>• Potential limited distance from project footprint due to localized noise effects |
| Commercial Operations | • Could limit access to people and resources for other operations and industries; could potentially draw local people back to the area for jobs | • No mitigation measures are proposed other than to optimize economic benefits to the local and regional economies, including to local Indigenous Peoples as reasonable | X | X | X | • N/A |
| Traditional use of lands and resources | • Effects on spiritual relationships and connection with the environment<br>• Effects on locations of sentimental, Traditional and heritage value<br>• Effects on Traditional use of lands and resources as sites of value and interest to Indigenous Peoples<br>• Effects on cultural practices<br>• Changes to land and resources resulting in effect on exercising rights | • Ongoing engagement with Indigenous Peoples to mitigate potential effects<br>• Archeological Stage 2 field campaign to identify potential archeological features of interest | X | X | X | • Project footprint |
| Indigenous / Public Health and Safety | • All regulatory requirements will be met, although there will be release of air contaminants associated with processing operations, fuel combustion and fugitive dust; and release of contaminants in mill and mine water effluents, and from stockpile drainage<br>• Effects on Indigenous women's safety<br>• Effects on Indigenous women, youth, elders, etc.<br>• Changes to community safety, well-being, and health<br>• Changes to Indigenous Peoples' safety, well-being, and health<br>• Increased risk of vehicle collision due to increased traffic<br>• Increased concerns regarding risk to human health (air emissions, water quality, tailings dam failure, diesel and chemicals storage and transportation, stress) | • Canada Nickel will work with communities and local Indigenous Peoples with an aim of helping ensure the Project will provide an overall positive benefit<br>• Traffic management and awareness will reduce potential for accidents on public roads; design changes may also be incorporated in the highway re-routing, such as turn lanes(s)<br>• Regulatory requirements will be met for all potential emissions/releases that could impact air or water quality<br>• Design, construction, operation, and maintenance and decommissioning of tailings management facility, diesel storage, chemical storage based on all applicable criteria and international best practice<br>• Canada Nickel will work collaboratively with community and Indigenous representatives to address social and health concerns that could arise as a biproduct of the Project's development and operation | X | X | X | • N/A |

| Environmental Component | Potential Effect (Preliminary) | Proposed Mitigation (Preliminary) | Project Phase | | | Preliminary Area of Influence |
|---|---|---|---|---|---|---|
| | | | Construction | Operation | Closure | |
| Socio-economics | • Benefits including employment and procurement opportunities<br>• Benefits for education and training opportunities<br>• Effects on healthcare services and providers<br>• Effects on traffic due to mine personnel commuting to site<br>• Pressure on local housing and effects to vulnerable populations | • Canada Nickel will work with local Indigenous Peoples and Non-Indigenous communities with an aim of helping ensure the Project will provide a positive benefit<br>• Canada Nickel intends to implement an extensive community contribution program designed in collaboration with relevant local stakeholders to specifically address local needs and challenges.<br>• Canada Nickel has made, and will continue to make, contributions to support social, economic, health, and other activities/programs for specific Indigenous communities<br>• Canada Nickel is working with local training, education, and recruitment institutes to begin early planning for project workforce requirements. This includes review of available programs, potential development of new programs, and support from Canada Nickel in developing or enhancing the relevant programs (done through letters of support, provision of subject matter expertise, etc.) | X | X | X | • Regional municipalities, Reserve lands |
| Physical and cultural heritage | • No anticipated effect to known archaeology site<br>• Effects to cultural heritage to be determined | • Archaeological studies are ongoing and no cultural heritage features or artefacts have been identified in proposed development areas so far<br>• Archeological field campaign to identify potential archeological features of interest.<br>• Measures will be put in place to identify any as yet undetected features or artefacts during construction | X | X | X | • Project footprint |
| Identified structures or sites * | • No effect expected, pending determination of diversion routing / water levels | • None expected to be required<br>• Archeological field campaign to identify potential archeological features of interest. | N/A | N/A | N/A | • N/A |

*Note:*
** Structures or sites of historical, archaeological, palaeontological or architectural significance.*

**Table 8: Preliminary Listing of Types of Wastes or Emissions**

| Environmental Component | Project Phase | Anticipated Waste or Emission |
|---|---|---|
| In the air | Construction | • Dust emissions<br>• Emissions from machinery and equipment<br>• Noise<br>• Light |
| | Operations | • Dust emissions<br>• Emissions from machinery and equipment<br>• Noise<br>• Light |
| | Closure | • Dust emissions<br>• Emissions from machinery and equipment including greenhouse gases<br>• Noise<br>• Light |
| In or on land | Construction | • Domestic solid waste<br>• Regulated and non-regulated, industrial solid and liquid waste<br>• Mineral waste (overburden and mine rock)<br>• Vibration |
| | Operations | • Domestic solid waste<br>• Regulated and non-regulated, industrial solid and liquid waste<br>• Mineral waste (overburden, mine rock and tailings)<br>• Vibration |
| | Closure | • Domestic solid waste<br>• Regulated and non-regulated, industrial solid and liquid waste |
| In or on water | Construction | • Treated contact runoff<br>• Treated domestic sewage |
| | Operations | • Treated contact runoff and effluent<br>• Treated domestic sewage |
| | Closure | • Treated contact runoff and effluent<br>• Treated domestic sewage |

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## LEGEND

- Project Location
- First Nation Reserve
- Town / Community
- Conservation Reserve
- Provincial Park
- Local Street
- Highway
- Watercourse
- Waterbody

NOTES:
- Topographic map information extracted from Land Information Ontario (NDMNRF), Queen's Printer for Ontario, 2019/2020.

0 5 10 20 30 40 50 Kilometres

Datum: NAD83
Projection: UTM Zone 17N

N W E S

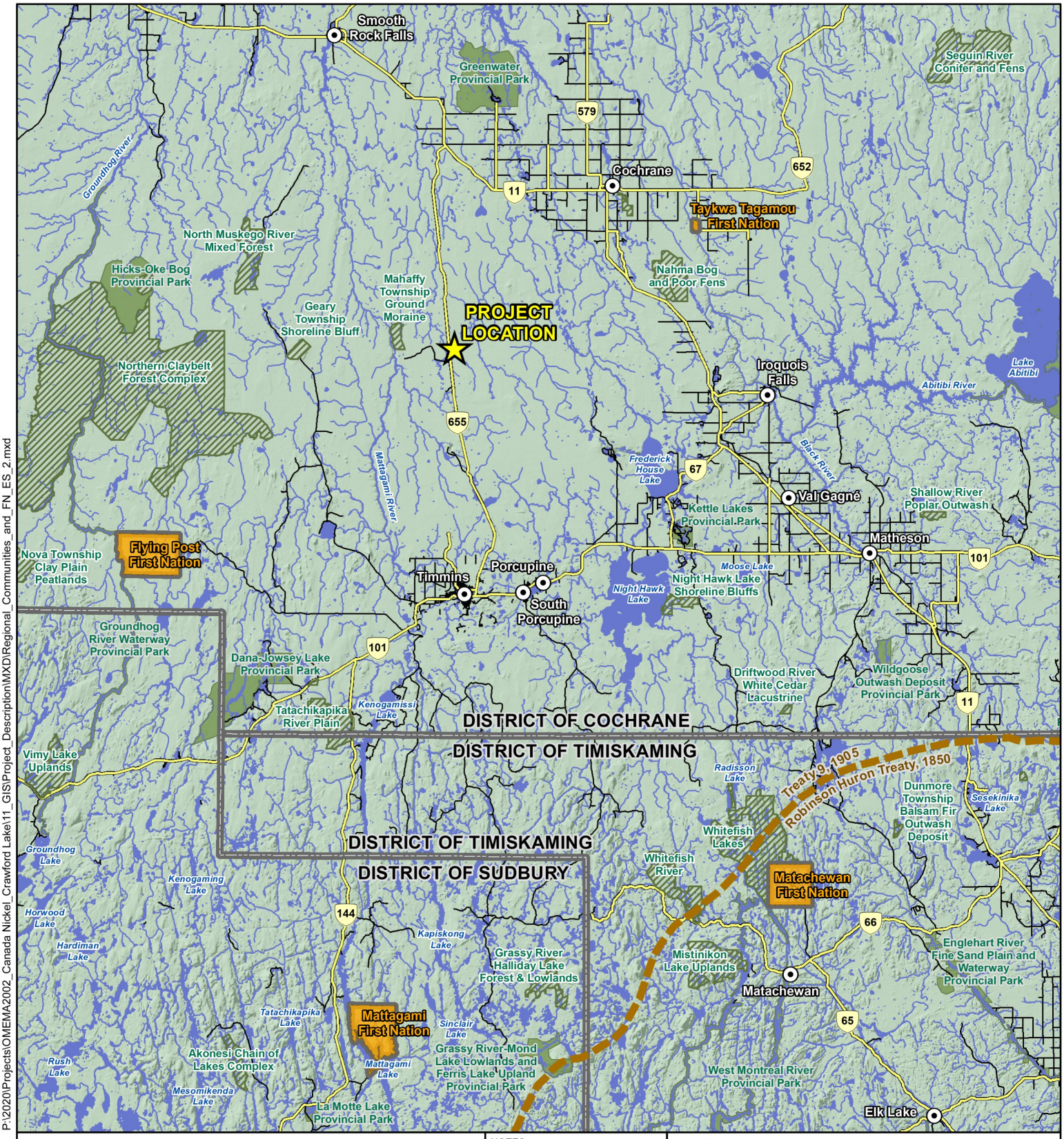
CANADA NICKEL COMPANY

wood.

# CRAWFORD NICKEL PROJECT

## Project Location

| | |
|---|---|
| PROJECT N°:OMEMA2002 | **FIGURE: S.1** |
| SCALE: 1:830,000 | DATE: July 2022 |

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## LEGEND

- Project Location
- First Nation Reserve
- First Nation Treaty Boundary (historical)
- Town / Community
- Upper Tier Municipal Boundary
- Conservation Reserve
- Provincial Park
- Local Street
- Highway
- Watercourse
- Waterbody

NOTES:
- Topographic map information extracted from Land Information Ontario (NDMNRF), Queen's Printer for Ontario, 2019/2020
- First Nation Treaty Boundaries (historic) extracted from "Historic First Nations Treaties in Canada - GIS dataset of pre 1930 treaty boundaries", 2000, Global Forest Watch Canada.

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wood.

# CRAWFORD NICKEL PROJECT

## Local Communities and First Nations

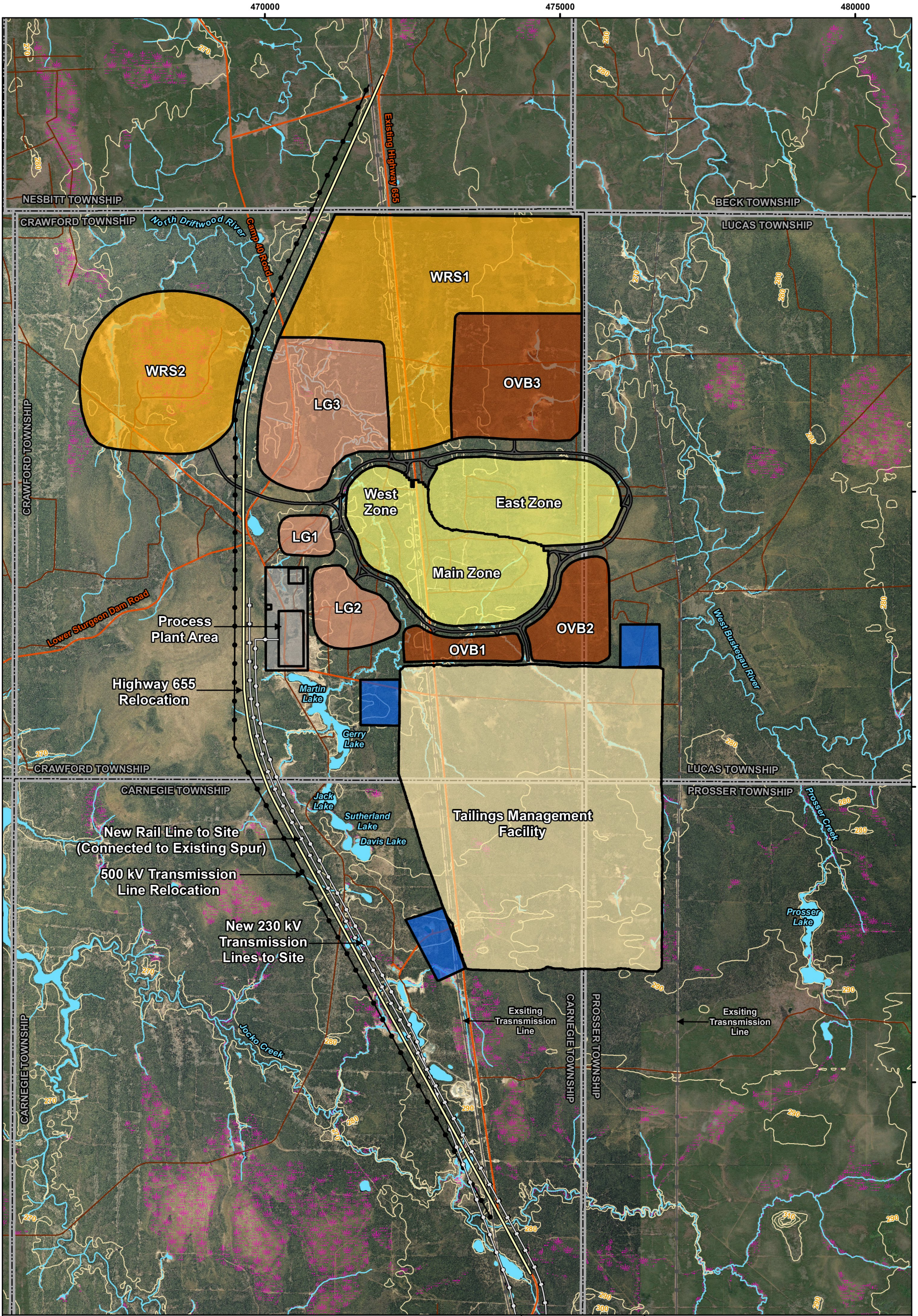
Datum: NAD83
Projection: UTM Zone 17N

0 5 10 20 30 40 50 Kilometres

N W E S

PROJECT N°:OMEMA2002 | **FIGURE: S.2**

SCALE: 1:830,000 | DATE: July 2022

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## LEGEND

- Township Boundary
- Existing Transmission Line
- Existing Primary Road / Highway
- Secondary Road (resource road)
- Contours (10 m interval)
- Waterbody
- Watercourse
- Low-lying Area

### Site Plan Features

- Open Pit
- Access/Haul Road
- Tailings Management Facility
- Pond
- Waste Rock Stockpile (WRS)
- Overburden Stockpile (OVB)
- Low Grade Ore Stockpile (LG)
- Process Plant Area
- New Rail Line to Site
- New 230 kV Transmission Line to Site
- Highway 655 Relocation
- 500 kV Transmission Line Relocation

0 0.5 1 2 3 4 5 Kilometres

NOTES:
- Topographic map information extracted from Land Information Ontario (MNRF), Queen's Printer for Ontario, 2019/2020
- Preliminary site plan data extracted from Canada Nickel Company, April 5, 2022.
- Aerial imagery provided by CNC, scene date, summer 2021 and ESRI online mapping service, 2019.

Datum: NAD83
Projection: UTM Zone 17N

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# CRAWFORD NICKEL PROJECT

## Preliminary Site Plan Layout

PROJECT N°:OMEMA2002 | **FIGURE: S.3**

SCALE: 1:60,000 | DATE: July 2022

470000 480000 490000 500000

5410000 5400000 5390000 5380000 5370000

PROJECT LOCATION

KIDD CREEK MINE

TIMMINS

D501P: 500 kV

D2H: 115 kV

P91G: 230 kV

655

101

101

North Driftwood River

Mattagami River

Gerry Lake

Prosser Creek

Prosser Lake

West Buskegau River

Buskegau River

Crawfish Lake

Frederick House River

Nerandeau Lake

Kidd Creek

Jocko Creek

Macdiarmid Creek

Feldman Lake

Gowanmarsh Lake

Gowanmarsh Creek

North Procupine River

Bigwater Lake

Rota Lake

Porcupine River

Little Goose Lake

Murphy Creek

Bell Creek

Three Nations Lake

Night Hawk Lake

Pearl Lake

Porcupine Lake

Simpson Lake

Waterhen Lake

Redstone River

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## LEGEND

- Project Location
- Watercourse
- Waterbody

**Existing Infrastructure**

- Airport
- Transmission Station (115 kV, 230 kV, 500 kV)
- Transmission Line
- Railway
- Highway
- Secondary / Local Road
- Resource / Recreation Road

**Planned Infrastructure**

- 230 kV Transmission Line to Site
- New Rail Line to Site
- Highway 655 Relocation
- 500 kV Transmission Line Relocation

NOTES:
- Aerial imagery provided by ESRI online mapping service.
- Topographic map information extracted from Land Information Ontario (MNRF), Queen's Printer for Ontario, 2019/2020

Datum: NAD83
Projection: UTM Zone 17N

0 2.5 5 10 15 20 Kilometres

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**CRAWFORD NICKEL PROJECT**

**Regional Existing and Planned Infrastructure**

PROJECT N°: OMEMA2002 **FIGURE: S.4**

SCALE: 1:150,000 DATE: July 2022