

# **Appendix C.10**

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## **Economic Impact Assessment**

**Crawford Nickel Project  
Technical Data Report -  
Economic Impact Assessment**

September 30, 2024

Prepared for:

Canada Nickel Company



Prepared by:

Stantec Consulting Ltd.



## Limitations and Sign-off

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## Executive Summary

Canada Nickel Company (Canada Nickel) proposes to develop, operate, and progressively reclaim the Crawford Nickel Project ('the Project'), a new open pit nickel mine approximately 42 kilometres (km) north of Timmins, Ontario along Highway 655. The Project is being assessed in accordance with the *Impact Assessment Act*, 2019.

Stantec Consulting Ltd. (Stantec) has been retained by Canada Nickel to conduct an assessment of economic conditions and provide information on the economic viability of the Project. This report provides an economic impact assessment based upon a comparison of baseline economic conditions and the predicted future conditions with the Project, as summarized in the Feasibility Study (Ausenco 2023).

This Economic Impact Assessment Report has been completed to inform the Impact Statement. It has been prepared pursuant to the *Impact Assessment Act*, 2019 and in consideration of the Tailored Impact Statement Guidelines: Crawford Nickel Project (Appendix A.1 of the Impact Statement [TIS Guidelines]). As per the TIS Guidelines, the effect to economic conditions is intended to include employment, business, and the local economy.

Economic impacts of Project construction, operation, and decommissioning were estimated at the provincial level using Statistics Canada's 2018 detail level provincial input-output multipliers (derived from its interprovincial Input-Output Model (IPIOM)). The IPIOM does not provide estimates of personal income taxes, therefore, no multipliers are available. Personal income taxes were estimated by applying federal and provincial effective tax rates, based on income bracket and province, to modelled (from multipliers) labour income (per Person-year [PY] of employment) adjusted to represent personal income, as well as information provided in the Feasibility Study (Ausenco 2023). Modelled direct impacts of labour and labour income stemming from turnarounds were not estimated. Economic impacts are described in terms of direct, indirect, and induced effects.

The total capital investment for the Project is estimated at \$6,786M, which will substantially contribute to both the provincial and federal gross domestic product (GDP). The total direct GDP contributions in Ontario across the three phases is projected to be approximately \$2.9 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to reach approximately \$4.1 billion. Indirect and induced GDP contributions are also expected to substantively contribute to GDP growth, with \$281.4M indirect and \$205.4M induced impacts towards GDP in Ontario and \$526.2M indirect and \$311.7M induced impacts towards GDP in Canada.

Operational expenditures for the Project are expected to reach \$24,558M, which will also substantially contribute to both the provincial and federal GDP. The total direct GDP contributions in Ontario for the life of the mine is projected to be approximately \$12.8 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to exceed \$14 billion. Indirect and induced GDP contributions are also expected to contribute to GDP growth, with \$1.8 billion indirect and \$1.1 billion induced contributions towards GDP in Ontario and \$2.3 billion indirect and \$1.3 billion induced contributions towards GDP in Canada.

Direct, indirect, and induced labour generated from the Project is provided for the RSA and LSA based on estimates generated from the input-output model. Direct employment estimates are also provided based on the estimates generated from Canada Nickel. By 2027, it is estimated that there will be a deficit in required labour for the mining industry, and that the use of mobile workers will be required to fulfill this void. By 2037, it is estimated that there will be a potential shortfall of 23% to 30% of vacancy rates in the mining industry within the LSA.

Globally, supply and demand for nickel continues to evolve, and Canada remains competitive, ranking the sixth highest producer of nickel in the world. Several of these active nickel mines are located in Northeastern Ontario, with the proposed Project expanding the potential exports to the United States and other international markets. The Project will help address the increased demand for nickel worldwide.

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## Acronyms and Abbreviations

CFDC	Community Futures Development Corporation
DNR	Department of Natural Resources
FNETB	Far Northeast Training Board
FTE	full-time equivalent
GDP	gross domestic product
IPIOM	interprovincial Input-Output Model
LQ	Location quotients
LSA	Local Study Area
PA	Project Area
PY	person-year
RSA	Regional Study Area
TIS Guidelines	Tailored Impact Statement Guidelines
TMF	Tailings Management Facility

# 1 Introduction

Canada Nickel Company (Canada Nickel) proposes to develop, operate, and progressively reclaim the Crawford Nickel Project ('the Project'), a new open pit nickel mine and processing facility approximately 42 kilometres (km) north of Timmins, Ontario along Highway 655. The Project is being assessed in accordance with the *Impact Assessment Act, 2019*.

Stantec Consulting Ltd. (Stantec) has been retained by Canada Nickel to conduct an assessment of economic conditions and provide information on the economic viability of the Project. This report provides an economic impact assessment based on the predicted changes from baseline conditions based on the proposed Project design and corresponding proposed activities during construction, operation, and decommissioning and closure of the Project. This assessment was informed by the Project Feasibility Study (Ausenco 2023).

This Economic Impact Assessment Report has been completed to inform the Impact Statement. It has been prepared pursuant to the *Impact Assessment Act, 2019* and in consideration of the Tailored Impact Statement Guidelines: Crawford Nickel Project (Appendix A.1 of the Impact Statement [TIS Guidelines]). As per the TIS Guidelines, the effect to economic conditions is intended to include employment, business, and the local economy.

## 1.1 Study Objectives

The Economic Impact Assessment Report will inform the Impact Statement for the Project. The objectives of this study are to describe and present available information on the economic conditions within the study area, using disaggregated data for diverse subgroups where possible. Information is provided to address the baseline conditions information requirements of Section 11 (Economic Conditions) of the TIS Guidelines.

The scope of the Economic Impact Assessment Report includes the following:

- A description of the methodologies and assumptions used to estimate the economic benefits of the Project
- Project investment, including capital and operating costs
- An estimate and description of direct, indirect, and induced economic effects of the Project
- An estimate and description of direct, indirect, and induced employment created at each phase of the Project

## 1.2 Project Overview

The Project includes the development of an Open Pit, Stockpiles, two ore processing plants, and other mine related infrastructures, as well as new rail spur line and the relocation of Highway 655 and 500 kilovolt (kV) transmission line. Project components are shown on Figure A.1 in Appendix A of this report. Ore will be extracted from a single Open Pit that will be divided into an East Zone and Main Zone. The Project has a mineral reserve estimate of 1,715 million tonnes (Mt) and an expected project life of 41 years.

The Crawford Project site is located approximately 42 km north of the City of Timmins, Ontario, in the geographic townships of Crawford, Carnegie, Kidd, Lucas, Beck, Nesbitt, Wark and Prosser. A small portion of the Project extent within the geographic townships of Kidd and Wark also lies within the municipal boundary of the City of Timmins.

Based on the current Project design, the maximum rate of ore extraction will be up to 240,000 tonnes per day (tpd) during year 5 of operations and an average rate of 160,000 tpd over the life of mine. The two ore Processing Plants and associated service facilities will process run of mine ore delivered to primary crushers to produce nickel concentrate, iron concentrate, and tailings at a rate of approximately 60,000 tpd at the start of mine life, ramping up to a maximum of 120,000 tpd. In addition to nickel and iron, other metals such as cobalt, chromium, palladium and platinum are expected to be recovered from concentrate streams.

Based on the proposed processing rate and current information regarding the ore body, the current life of the proposed Project is expected to be approximately 41 years. Mining would be completed at a faster pace than milling, thus mining of ore would occur for about 30 years, then milling alone for the last 11 years.

Concentrate from the processing plants will be loaded onto rail cars and shipped via the rail spur line for refinement offsite.

## 1.3 Key Project Activities

The timing of activities and installation of Project components will occur in sequence to allow for the efficient extraction of materials. Various construction, operations, and decommissioning and closure activities are proposed throughout the life of the mine. For the purposes of the assessment, these project activities are anticipated to be advanced in three phases:

- Construction (Year -3 to Year -1)
- Operations
  - Operations phase 1 (Year 1 to Year 5); 60 kilotonnes per day (kt/d) milling capacity with ore extraction
  - Operations phase 2 (Year 5 to Year 30); 120 kt/d milling capacity with ore extraction
  - Operations phase 3 (Year 30 to Year 41); 60 kt/d milling capacity with no ore extraction

- Decommissioning and closure
  - Active closure (Year 41 to Year 46)
  - Passive closure (Year 46+)

### **1.3.1 Construction Phase**

The construction phase will include the preparation of the site up to the point at which the first Process Plant has been commissioned and is ready to commence operations. This phase will include site preparation, physical construction, pre-production, and commissioning activities. Construction is anticipated to begin in the Main Zone and East Zone, and rock extracted at this time may be crushed into aggregate using a mobile aggregate crusher for use during the construction of roads and other infrastructure, as necessary.

It is noted that additional construction will occur through the Operations Phases of the Project, and that the Operations Phase is defined by the start of ore processing

### **1.3.2 Operations Phase**

The operations phase is focused on the active processing of ore and generation of concentrate for delivery to market, specifically operation of the Process Plant(s). Due to the sequential nature of the mine operations, the operations phase of the Project has been divided into three sub-phases based on the Open Pit extraction schedule and sequential operation of the two Process Plants.

The three sub-phases of the operations phase include:

- Operations phase 1 – This phase includes the operation of the first of two Process Plants that will be operating at an ore processing capacity of approximately 60 kt/day (or 21.9 Mt/a). In Process Tailings (IPT) carbonation within the process plant may also commence if a CO<sub>2</sub> source is available. Mining operations during this phase will produce more ore than the Process Plant can process, with surplus material to be stockpiled in the East Stockpile location for future processing. Construction will continue during the phase to expand and construct the second Process Plant and other supporting mine infrastructure, including the Highway 655 realignment. Material will begin to be stored within the West Stockpile at the end of this phase.
- Operations phase 2 – This phase includes the operation of both Process Plants that will be operating at an ore processing capacity of approximately 120 kt/d (or 43.8 Mt/a), including IPT carbonation. Mining operations during this phase will produce up to 240 kt/day, which is more ore than the process plants can process. Low grade ore will continue to be stockpiled in the East and/or the West Ore Stockpiles.
- Operations phase 3 – This phase includes continuation of the operation of both Process Plants at an ore processing capacity of approximately 120 kt/d (or 43.8 Mt/a) following completion of mining operations (e.g., no further extraction of ore from the Open Pit). The Process Plants, including IPT carbonation, will continue to operate by processing the ore stockpiled during operations phase 1 and 2. As mine operations cease, there will be an opportunity for

progressive reclamation of the pit, haul routes, and other infrastructures no longer used areas of the Project site.

### **1.3.3 Decommissioning and Closure Phase**

Following the completion of ore processing, all Project operations will cease, and active closure will commence. Active closure includes the removal of buildings, structures, and other infrastructure, as well as reclamation and site stabilization activities. Once complete, the Project will then enter a passive closure phase as the pit lake fills. During this time, closure monitoring and adaptive mitigation will occur. Following pit lake filling, the Project site will be permanently closed.

Activities completed during the decommissioning and closure phase of the Project are focused on reclaiming the environments, establishing physical, chemical, and biological stability at the site, and meeting desired end land functions and uses. The Mine Development Closure Plan (refer to Appendix F of the Impact Statement for the Conceptual Closure Plan) will be updated throughout the life of the Project as necessary to reflect the environmental requirements in place at the time of closure. The Closure Plan will be prepared, refined, and implemented in accordance with the Ontario *Mining Act* and Ontario Regulation 35/24.

Progressive reclamation throughout the course of the mine life will occur, but the majority of the closure activities will commence at the cessation of mining activities and will be completed during the five year period after ore processing ceases. Ongoing closure monitoring and maintenance activities will be carried out throughout active and passive closure phases until the closure objectives have been satisfied and the Project has been moved to a closed out and abandoned status.

## 2 Study Area

For the purpose of this assessment, the spatial boundaries considered the study areas that have been selected for the potential effects on economic conditions.

### 2.1 Project Area

The **Project Area (PA)** encompasses the project footprint and is the anticipated area of physical disturbance associated with the construction, operations, and decommissioning/closure of the Project. The PA is shown on Figure A.1, Appendix A of this report.

### 2.2 Local Study Area

The **Local Study Area (LSA)** encompasses the area in which Project-related effects (direct or indirect) were predicted or measured with a level of confidence appropriate for the assessment and in which there is a reasonable expectation that the potential effects in the LSA are of public interest.

The LSA for the economic conditions includes the PA and the Statistics Canada subdivisions for four municipalities: the City of Timmins and the Towns of Cochrane, Iroquois Falls, and Smooth Rock Falls, as well as five First Nation reserves: Apitipi Anicinapek Nation, Flying Post First Nation, Matachewan First Nation, Mattagami First Nation, and Taykwa Tagamou First Nation. The LSA is shown on Appendix A of this report.

### 2.3 Regional Study Area

The **Regional Study Area (RSA)** includes the area within which cumulative effects on economic conditions are likely to occur, depending on the location of other past, present, or reasonably foreseeable future projects or activities.

The RSA for the economic conditions includes the Cochrane Census Division, the Timiskaming Census Division, and the Mattagami First Nation reserve. The RSA is shown on Figure A.1, Appendix A of this report.

## 3 Regulatory Setting

There are several federal and provincial regulatory requirements that may apply to the Project, including environmental assessment and other environmental permitting obligations.

### 3.1 Federal Requirements

The Project is being assessed in accordance with the *Impact Assessment Act*, 2019, which requires that the assessment include a description of the baseline for the environmental, health, social and economic conditions related to the project. The *Impact Assessment Act*, 2019, also requires a consideration of Gender Based Analysis Plus through the disaggregation of baseline data where possible.

The requirements to consider potential Project effects on economic conditions are described in section 11 of the TIS Guidelines for the Project.

### 3.2 Provincial Requirements

Components of the Project are also being assessed in accordance with the Ontario *Environmental Assessment Act*, 1990, via one or more provincial Class Environmental Assessment processes.

Ontario is divided into 11 economic regions. These regions were defined by Statistics Canada and the Ontario provincial government. The regions are used as administrative units to collect information on economy, employment, and business (e.g., the Labour Force Survey and the federal Census). The Project is located within the Northeast economic region, which is composed of the District of Cochrane.

The Growth Plan for Northern Ontario, 2011 (Ministry of Economic Development, Job Creation and Trade and Ministry of Northern Development 2011) ('the Plan') is a 25-year Plan that guides provincial decision-making and investment aimed at strengthening the economy of the north through initiatives that include stimulating new investment and entrepreneurship. The minerals sector and mining and supply services are among several priority economic sectors discussed in the Plan, with the minerals and mining supply and services sector identified as an existing and emerging priority economic sector for which northern Ontario has a distinct competitive advantage. Examples of policies specific to the growth of the minerals sector include expanding the mining supply and services industry and enabling new mining opportunities.

Key provincial agencies expected to be involved with approvals for components of the Project include:

- Ministry of Mines, with the responsibility for the orderly development of mineral resources in Ontario, including responsibility for the disposition of provincial Crown lands for mining, mine closure activities, and mining-related dams located on land as well as, the wise use of Crown resources not otherwise disposed, such as through the *Mining Act*, 1990, including natural heritage features.

- Ministry of Economic Development, Job Creation and Trade, with the responsibility of supporting a strong, innovative economy that can provide jobs and prosperity for all Ontarians, including small businesses.

### **3.3 Regional and Municipal Guidance**

Other regional and municipal policies, frameworks, organizations, and boards relevant to economic conditions have been considered in the development of the Economic Impact Assessment Report. These include:

- *Municipal Government Act*
- District and municipal development plans and strategic plans
- Regional land and resource management plans
- Far North East Training Board
- Timmins Economic Development Corporation
- Cochrane District Social Services Administration Board

## 4 Background

### 4.1 Existing Conditions

#### 4.1.1 Population

In 2021, the total population of the LSA was 52,710 (evenly split between men+<sup>1</sup> and women+<sup>2</sup>), a 1.4% decrease since 2016 (Table 4.1) (Statistics Canada 2017, 2022). All First Nations communities where data was available saw population increases between 2016 and 2021. For the RSA, total population was 109,590 (50.2% women+) in 2021, a decrease of 2.3% over 2016. In comparison, the provincial population of 14,223,940 (51.0% women+) saw a 5.5% increase since from 2016 to 2021. Approximately 16% of persons within both the LSA (8,410, of which 50.9% are women+) and RSA (17,600, of which 50.3% are women+) identified as Indigenous. Indigenous populations increased from 2016 to 2021 in the province (7.9%), the RSA (11.6%) and the LSA (18.4%).

**Table 4.1 Population Change – 2016 to 2021**

Location	Total	Men+ <sup>1</sup>	Women+ <sup>2</sup>	% Change (Total)	% Change (Men+)	% Change (Women+)
<b>Total Population</b>						
Mattagami First Nation (2023)	43	6	37	9.5%	14.3%	4.8%
Matachewan First Nation (2023)	66	33	33	7.7%	14.3%	14.3%
City of Timmins	41,145	20,555	20,590	-1.6%	-0.6%	-2.5%
Town of Iroquois Falls	4420	2210	2210	-2.7%	-1.1%	-4.3%
Apitipi Anicinapek Nation	155	85	70	6.5%	0.0%	14.3%
Town of Cochrane	5395	2695	2700	1.2%	2.6%	0.4%
Town of Smooth Rock Falls	1200	610	590	-10.8%	-11.5%	-10.2%
Flying Post First Nation (2023)	258	x	x	x	x	x
Taykwa Tagamou First Nation	130	70	60	28.0%	28.6%	25.0%
<b>LSA</b>	52,710	26,360	26,360	-1.4%	-0.4%	-2.4%
Timiskaming Census Division	31,420	15,510	15,910	-2.6%	-3.1%	-2.2%
Cochrane Census Division	77,960	38,985	38,975	-2.2%	-1.5%	-2.9%
<b>RSA</b>	109,590	54,600	54,990	-2.3%	-1.9%	-2.7%
<b>Ontario</b>	14,223,940	6,970,855	7,253,085	5.5%	5.9%	5.0%
<b>Indigenous Population<sup>3</sup></b>						
Mattagami First Nation (2023)	43	6	37	8.1%	-5.9%	15.0%
Matachewan First Nation	50	25	25	9.1%	0.0%	20.0%

<sup>1</sup> This category includes men (and/or boys), as well as some non-binary persons.

<sup>2</sup> This category includes women (and/or girls), as well as some non-binary persons.

Location	Total	Men+ <sup>1</sup>	Women+ <sup>2</sup>	% Change (Total)	% Change (Men+)	% Change (Women+)
City of Timmins	5995	2955	3,040	21.4%	23.4%	19.4%
Town of Iroquois Falls	570	295	275	3.5%	6.8%	0.0%
Apitipi Anicinapek Nation	140	70	70	0.0%	-14.3%	14.3%
Town of Cochrane	1275	610	670	18.0%	9.8%	26.1%
Town of Smooth Rock Falls	55	20	35	-75.0%	-125.0%	-71.4%
Flying Post First Nation	X	x	x	x	x	x
Taykwa Tagamou First Nation	135	70	65	30.8%	28.6%	30.8%
<b>LSA</b>	8410	4130	4280	18.4%	18.2%	18.5%
Timiskaming Census Division	2865	1415	1450	10.8%	9.5%	12.1%
Cochrane Census Division	14,550	7245	7,305	11.8%	12.3%	11.4%
<b>RSA</b>	17,600	8745	8855	11.6%	11.7%	11.5%
<b>Ontario</b>	406,595	195,100	211,495	7.9%	7.8%	8.1%

Notes:

1. This category includes men (and/or boys), as well as some non-binary persons.
2. This category includes women (and/or girls), as well as some non-binary persons.
3. Indigenous and non-Indigenous totals may not sum to equal total population counts as they are based on a 25% population sample size.

x no information available.

2021 'Total Population' and 'Indigenous Population' data from 2021 Census of the Population – Census Profile. Values shown in "Total" columns are the sum of male and female Census Subdivision (CSD) subsets taken from Statistics Canada's 2021 Census Profile (Census of the Population). Due to Statistics Canada rounding (Statistics Canada 2022) totals may not exactly align with those shown on CSD Census Profiles and may not sum across tables.

Source: Statistics Canada 2022

### 4.1.2 Labour Force

Labour force indicators for the LSA and RSA are summarized in Table 4.2. In 2021, the total size of the LSA labour force was 43,050 (50.1% women+) and the RSA labour force was 89,700 (50.2% women+) (Statistics Canada 2022). When considering the Indigenous population, the total size of the LSA labour force was 6,345 (51.9% women+) and the RSA labour force was 13,120 (50.9% women+) (Statistics Canada 2022). In 2021, the LSA total labour force participation rate<sup>3</sup> (60.1%) was lower than the RSA average (58.0%), (Statistics Canada 2022). The participation among the Indigenous population was higher in the LSA and RSA compared to the total population, as was the unemployment rate. There were minor variations in labour force participation rates observed between men+ and women+ within the LSA and RSA and overall men+ had a higher participation rate.

<sup>3</sup> The participation rate is the total labour force (employed and unemployed, combined) relative to the working-age population.

**Table 4.2 Labour Force Indicators – 2021**

Topic	LSA			RSA		
	Total	Men+ <sup>1</sup>	Women+ <sup>2</sup>	Total	Men+	Women+
<b>Total Population</b>						
Population aged 15+	43,050	21,470	21,580	89,700	44,690	45,010
In the labour force	25,865	13,670	12,195	51,985	27,470	24,515
Employed	23,595	12,595	11,000	47,350	25,085	22,265
Unemployed	2,270	1,080	1,190	4,635	2,395	2,240
Employment rate	54.8%	58.7%	51.0%	52.8%	56.1%	49.5%
Participation rate	60.1%	63.7%	56.5%	58.0%	61.5%	54.5%
Unemployment rate	8.8%	7.9%	9.8%	8.9%	8.7%	9.1%
<b>Indigenous Population<sup>3</sup></b>						
Population aged 15+	6,345	3,055	3,290	13,120	6,440	6,680
In the labour force	3,915	1,925	1,980	7,755	3,875	3,880
Employed	3,455	1,725	1,730	6,850	3,400	3,450
Unemployed	445	195	250	910	485	425
Employment rate	54.6%	56.5%	52.6%	52.2%	52.8%	51.6%
Participation rate	61.7%	63.0%	60.2%	59.2%	60.2%	58.1%
Unemployment rate	11.4%	10.1%	12.6%	11.6%	12.5%	11.0%
Notes:						
1. This category includes men (and/or boys), as well as some non-binary persons.						
2. This category includes women (and/or girls), as well as some non-binary persons.						
3. Indigenous and non-Indigenous totals may not sum to equal total population counts as they are based on a 25% population sample size.						
2021 'Total Population' and 'Indigenous Population' data from 2021 Census of the Population – Census Profile. Values shown in "Total" columns are the sum of male and female Census Subdivision (CSD) subsets taken from Statistics Canada's 2021 Census Profile (Census of the Population). Due to Statistics Canada rounding (Statistics Canada 2022) totals may not exactly align with those shown on CSD Census Profiles and may not sum across tables.						
Source: Statistics Canada 2022						

### 4.1.3 Labour Capacity

The Far Northeast Training Board (FNETB) encompasses a geographic area similar to the RSA of the Project and has developed sector-specific labour forecasts for Northeastern Ontario to better understand the labour capacity for current and projected mining projects.

Assessing the mining workforce in Northern Ontario in 2017, and accounting for the active, inactive, and prospective projects at the time, it was determined that the mining workforce requirements are expected to expand by 14% by 2027 (FNETB, 2018c). However, it is estimated that approximately 30% of the current mining workforce will be retired by 2027, leaving a 44% vacancy rate of positions needing replacements. Based on the decline of overall population in the LSA and RSA from 2016 to 2021, and the establishment of new projects not initially envisioned when the FNETB study was undertaken, the vacancy rate within northern Ontario's mining sector could exceed that predicted by the FNETB.

As of 2017, 14% of the mining workforce permanently resided outside of Northeastern Ontario. Predominant occupations of mobile mining workers included professional and physical science occupations, such as metallurgical and materials engineers (39% of the total occupational workforce), geologists, geochemists and geophysicists (26% of the total occupational workforce) and mining engineers (25% of the total occupational workforce), as well as a variety of trades and production occupations such as truck drivers (25% of the total occupational workforce) and drillers and blasters (21% of the total occupational workforce). Table 4.3 provides a breakdown of all out of region workers.

**Table 4.3 Mobile Mining Workers, RSA**

Occupation	2017 Workforce (#)	Out of Region Workforce (#)	Out of Region Workforce (%)
<b>Trades and Production Occupations</b>			
Underground production and development miners	1358	215	16%
Heavy equipment operations (except crane)	357	61	17%
Heavy-duty equipment mechanics	359	47	13%
Truck drivers	498	126	25%
Welders and related machine operators	250	45	18%
Drillers and blasters – surface mining, quarrying and construction	273	57	21%
<b>Professional And Physical Science Occupations</b>			
Geologist, geochemists and geophysicists	105	27	26%
Mining engineers	83	21	25%
Metallurgical and materials engineers	18	7	39%
<b>Support Workers</b>			
Asset Protection	91	39	43%
<b>Technical Occupations</b>			
Geological and mineral technologists and technicians	136	16	12%
<b>Supervisors, Coordinators, Foremen</b>			
Supervisors, mining and quarrying	212	43	20%
Source: FNETB (2018c)			

Table 4.4 identifies the projected workforce in the mining industry in occupations of interest by 2027. Occupations of interest are occupations that are in high demand, are mining industry specific, or have a high level of impact on the mining industry.

**Table 4.4 Occupations of Interest Projections, RSA**

Occupation	2017 Workforce	2027 Required Workforce	Net Change 2017-2027	Cumulative Retirements 2017-2027	2027 Workforce Deficit
<b>Trades and Production Occupations</b>					
Underground production and development miners	1358	1486	128	269	(397)
Construction millwrights and industrial mechanics (except textile)	374	727	353	86	(439)
Heavy equipment operations (except crane)	357	376	19	193	(212)
Industrial electricians	169	209	40	58	(98)
Central control and process operators, mineral and metal processing	133	129	(4)	25	(21)
Heavy-duty equipment mechanics	359	459	100	129	(229)
Truck drivers	498	655	157	179	(336)
Welders and related machine operators	250	290	40	97	(137)
Drillers and blasters – surface mining, quarrying and construction	273	305	32	66	(98)
<b>Professional And Physical Science Occupations</b>					
Geologist, geochemists and geophysicists	105	132	27	17	(54)
Metallurgical and materials engineers	18	15	(3)	4	(1)
Chemists	5	18	13	1	(14)
<b>Support Workers</b>					
Asset Protection	91	220	129	0	(129)
<b>Supervisors, Coordinators, Foremen</b>					
Supervisors, mineral and metal processing	80	56	(24)	34	(10)
Supervisors, mining and quarrying	212	226	14	88	(102)
Contractors and supervisors, mechanic trades	93	86	(7)	19	(12)
Source: FNETB (2018c)					

Following up to these mining workforce projections, FNETB compiled workforce projects across all sectors by Community Futures Development Corporation (CFDC) area from 2016 to 2036 (FNETB, 2018a; 2018b). The geographic area of the Venture Centre CFDC and the North Claybelt CFDC aligns with the LSA of the Project.

A combination of retirement of current workers as well as the outmigration of younger workers and their pursuit of different occupations impacts the capacity of local labour for the Project. Between 47% to 53% of current workers residing within the LSA employed in occupations of interest for the Project will be of retirement age within the next 20 years. In addition, the workforce aged 15-24 and 25-39 are predominantly employed in occupations outside of the mining industry and/or relocating outside the LSA (FNETB, 2018a). This reflects a potential shortfall of 23% to 30% vacancy rates in the mining industry within the LSA by 2037.

It should be noted that the FNETB workforce projections were completed in 2017 and may not necessarily address a thorough representation of the labour capacity at the time of the Project. As an example, it did not consider Canada Nickel's Project, nor did it account for mine closures in the RSA that have evolved since 2017. As such, the availability of labour to supply the demands of the Project will differ than what is provided in these reports based on the current mining activity in the LSA and RSA.

While youth outmigration may impact the labour capacity in the region, a recent focus on youth outmigration in Northern Ontario has suggested this trend may change (Ouellet and Lefebvre 2022). Survey respondents indicated the value they have on the North, highlighting the nature and nature-based activities in particular. As such, the research suggests that youth outmigration will likely experience a boomerang concept, where youth will move out of their communities after graduating high school for different experiences, but have a desire to settle down in Northern Ontario (Ouellet and Lefebvre 2022).

#### **4.1.4 Location Quotient**

Location quotients (LQ) provide a measure of the intensity of employment in a given sector in a region (i.e., the LSA or RSA) relative to the level of employment in that sector to a reference region (i.e., the Province), and are commonly used to assess the labour capacity and concentration of economic activities in a smaller area relative to an overarching region. Critical values for the LQ analysis are as follows:

- LQ > 1.0 – the LSA or RSA has a higher intensity of employment in the given sector relative to Ontario
- LQ = 1.0 – the LSA or RSA has the same intensity of employment in the given sector relative to Ontario
- LQ < 1.0 – the LSA or RSA has a lower intensity of employment in the given sector relative to Ontario

Where the LQ is greater than 1.25, the LSA can be considered to have a concentration of economic activity in the specific sector relative to the RSA and may be an indication that the local economy is specialized in this sector and/or has capacity to support development in this sector. Conversely, an LQ of less than 1.0 may suggest that the LSA does not have the capacity to support development in this sector.

**Table 4.5 Labour Force Population Aged 15 Years and Over by Sector, Location Quotients, 2021**

Sector	Total Population		Indigenous Population	
	LSA	RSA	LSA	RSA
Forestry, fishing, mining, quarrying, oil and gas	43.81	25.89	7.32	5.74
Construction	1.29	0.95	0.75	0.71
Manufacturing	0.57	0.62	0.55	0.56
Transportation and Warehousing	1.37	0.94	1.18	1.11
Professional, scientific and technical services	0.67	0.38	0.81	0.59

Source: Labour information from Statistics Canada 2022

Table 4.5 provides the LQ for the LSA and RSA for both the total and Indigenous populations relative to Ontario in sectors areas related to the Project (using information provided by Statistics Canada). For the LSA and RSA in both the total and Indigenous populations, there is a much higher proportion of workers employed in the forestry, fishing, mining, quarrying, oil and gas sectors compared to Ontario overall. As discussed in Section 3.5.2.2, Northern Ontario consists of most of the mining activity in the province, and the makeup of the workforce is reflected of the concentration of this sector within these geographies. For the LSA, transportation and warehousing (LQ value of 1.37) and construction (LQ value of 1.29) has a higher-than-average intensity of employment relative to Ontario. In addition, the Indigenous population in the LSA and RSA has a higher intensity of employment in transportation and warehousing, compared to Ontario, with LQ values of 1.18 and 1.11, respectively. In all other sectors in the LSA and RSA for both the total and Indigenous populations, the workforce would not be considered specialized, and that the labour capacity for these sectors would be considered low.

#### 4.1.5 Average Wages for Select Sectors

Table 4.6 provides a summary of average gross hourly wages (2022) for Ontario workers in sectors likely to supply direct labour to the Project. Average annual wages were applied to three scenarios to estimate average annual employment. As calculated, estimated annual wages under scenario one is based on full-time employment and 2,100 person-hours per year (no overtime); scenario two is based on 12-hour workdays and a two-week on / two-week off work schedule (overtime after 40 hours per week); and scenario 3 is based on 10-hour workdays and a three-week on / one-week off work schedule (overtime after 40 hours per week).

**Table 4.6 Provincial Wages in Select Sectors, Average – 2022**

Industry	Average Hourly Wage	Scenario 1 – Annual Wage (based on 2,100 hrs/year)	Scenario 2 – Annual Wage (based on 12-hour 2x2 work schedule) <sup>1</sup>	Scenario 3 – Annual Wage (based on 10-hour 3x1 work schedule) <sup>1</sup>
Forestry, fishing, mining, quarrying, oil and gas	\$42.65	\$89,565	\$117,866	\$152,893
Construction	\$30.71	\$64,491	\$84,869	\$110,090

Manufacturing	\$28.55	\$59,955	\$78,900	\$102,347
Transportation and Warehousing	\$27.82	\$58,422	\$76,883	\$99,730
Professional, scientific and technical services	\$28.52	\$59,892	\$78,817	\$102,239
Note: 1 Assumes overtime payments beyond 40 hours per week; rounded down to nearest thousand. Source: Statistics Canada 2023				

#### 4.1.6 Nickel Production

##### 4.1.6.1 National and International Context

Canada is ranked sixth in the world for nickel production, with approximately 134,000 tonnes of nickel production in 2021 and exports of nickel and nickel-based products valued at \$4.7 billion during the same period. Stainless steel dominates the global usage of nickel, making up 68% of total use, with 11% of global nickel used for batteries, 7% used for non-ferrous alloys, and 6% used for electroplating (Wood Mackenzie, 2021). Quebec, Ontario, Newfoundland and Labrador, and Manitoba are Canada's primary producers of nickel. Despite the usage of nickel globally, mine production of nickel in Canada has been decreasing in recent years. The decrease from 2020 can be attributed to a labour disruption in Sudbury, Ontario, and mining delays in Labrador (Natural Resources Canada, 2023b). Changes in Canadian nickel production is provided in Figure A.2, Appendix A of this report.

Nickel production continues to grow in other international markets, reaching an estimated global production of 2.8 million tonnes, representing a 10% increase from 2020 to 2021. As identified in Table 4.7, the world's largest producer of nickel was Indonesia with 1 million tonnes produced in 2021, or 37.0% of global production. This is followed by the Philippines with 370,000 tonnes or 13.7% of global production, and Russia with 250,000 tonnes or 9.3% of global production.

**Table 4.7 World Mine Production of Nickel, by Country, 2021 (p)**

Ranking	Country	Thousand tonnes	Percentage of total
1	Indonesia	1,000	37.0%
2	Philippines	370	13.7%
3	Russia	250	9.3%
4	New Caledonia	190	7.0%
5	Australia	160	5.9%
6	Canada	134	4.8%
7	China	120	4.4%

Ranking	Country	Thousand tonnes	Percentage of total
8	Brazil	100	3.7%
9	United States	18	0.7%
-	Other Countries	410	15.2%
<b>Total (rounded)</b>		<b>2,750</b>	<b>100.0%</b>
Notes: 2021 (p) = predicted Source: U.S. Geological Survey, 2022			

In 2021, Canada’s exports of nickel and nickel-based products were valued at \$4.7 billion, with imports valued at \$927.0 million. 99,000 tonnes of the exports were unwrought nickel valued at \$2.3 billion, 43% of which was imported by the United States, 13% to China, 10% to the Netherlands, 9% to Belgium, and the remainder to 20 other countries (Natural Resources Canada, 2023b).

#### 4.1.6.2 Ontario Context

The mining industry is an economic contributor to the Province of Ontario, which is predominantly concentrated in Northern Ontario. In 2022, Ontario’s mining industry produced approximately \$13.5 billion in minerals, which accounted for 22% of Canada’s total production value. Mining in Ontario contributed to an estimated \$8.0 billion in gross domestic product (GDP) in 2021, \$2.9 billion of which was in wages and salaries. It is estimated that approximately 77% of Ontario’s mining GDP contributions stay inside the province. There is approximately 31,000 direct and 47,000 indirect jobs associated with mineral processing and mining supply and services in Ontario (Ontario Mining Association, 2022).

There are 35 total active mines in Ontario; 27 metal mines and 8 other major industrial operations. Metal mine operations include gold, iron, platinum, as well as other base metals, with the major industrial operations focusing on commodities such as salt, talc and gypsum. Ten of the active mines are located within or near the RSA (nine metal mines and one major industrial operation) (Ontario Mining Association, 2023). A map of these mines in relation to proximity to the Project is provided in Figure A.2.

In addition to active mines near the Project, mineral exploration continues to occur in Ontario. Mineral exploration is a key indicator of the long-term viability of the mining industry as it may lead to the discovery and subsequent development of mineral deposits (DNR 2022a). In general, mineral exploration is highly dependent on commodity prices (DNR 2022b). This relationship is illustrated in Figure A.4 where a positive correlation is observed between mineral and metal commodity prices and expenditures on mineral exploration in ON between 2018 and 2022. There is a trend that as the price of the commodity increases, the exploration and deposit appraisals have increased, reaching an all-time high in 2022 valued at \$989 million, which is nearly double the value in 2019 which was \$523 million (BOC, 2022; Natural Resources Canada, 2023a).

A primary economic driver for the regional economy in Northern Ontario is the mining industry, and the potential of accessing critical minerals that the federal government has highlighted will assist with the transition of a greener economy. The provincial government and regional stakeholders are working to enhance road access to the north by investing approximately \$1 billion in infrastructure upgrades to allow year-round access to northern communities and mine sites while allowing supply chain connections to

other Ontario industries as well as manufacturers located in the south (Ontario Ministry of Finance, 2023). Canada's Critical Minerals Strategy identifies actions to move forward in the mining industry by supporting economic growth, promoting climate action, advancing relationships with Indigenous groups, establishing more resilient communities and availing of international markets (Natural Resources Canada, 2022). Ontario has since followed suit, where they released their own critical minerals strategy for the next five years, focusing on economic growth by fostering developing in the mining industry in Northern Ontario (Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022). The provincial government supports the potential of mining development in the north by covering up to \$200,000 in eligible costs for mineral exploration and development per project. They are also working on updating their regulatory process to reduce the administrative burden with mining and mineral development as a means to enhance the regional economy in Northern Ontario (Ontario Ministry of Finance, 2023).

Located in the Cochrane District mining camp, the Project can support these Federal and Provincial critical mineral initiatives, to be a reliable, leading producer of the critical minerals needed to secure North America's sustainable manufacturing supply chains. The Project is well positioned with an approximate 12-hour drive from Canada's main automotive industry and cross-border location to the United States of America's automotive and stainless-steel industries.

Nickel concentrate that would be produced by the Project is expected to be sold into the North American battery production chain and the magnetite concentrate is expected to be sold to a steel melt shop as a primary feed for steel production in North America. Other markets may be identified as the Project progresses into development and operations.

## 5 Methods

### 5.1 Desktop Review and Data Sources

Secondary sources of information were used to describe existing conditions in the LSA and RSA. Secondary information included government sources (Statistics Canada, Government of Ontario), publicly available data and literature, as well as previously prepared information (e.g., reports, studies) submitted to Canada Nickel by Indigenous groups and local communities.

Much of this chapter relies on government databases, including Census data from Statistics Canada. Statistics Canada regularly suppresses (e.g., selectively does not disclose) survey information to protect the identity of individuals and to address data quality issues. The 2021 Census of the Population (Census), which is used in this section is subject, in part, to such data suppression.

Information provided in the Feasibility Study (Ausenco 2023) provided estimates on capital and operational expenditures, in addition to estimates on the market price for nickel and is reflected in this report. Appendix A provided additional Information regarding the economic feasibility of the Project.

### 5.2 Primary Research

While baseline data predominantly came from secondary sources, Canada Nickel has formed a Socio-Economic Committee (formerly the Community Contributions and Local Procurement Committee) with social, economic, and municipal representatives from the Project's surrounding communities. The Committee's mandate is to identify and discuss potential social, economic, and health impacts related to the Project in order to jointly define and implement potential solutions. Information provided through the committee meetings were included in this report.

### 5.3 Analytical Assessment Techniques

Economic impacts of Project construction, operations, and decommissioning were estimated at the provincial level using Statistics Canada's 2018 detail level provincial input-output multipliers (derived from its interprovincial Input-Output Model [IPIOM]). The IPIOM does not provide estimates of personal income taxes, therefore, no multipliers are available. Personal income taxes were estimated by applying federal and provincial effective tax rates, based on income bracket and province, to modelled (from multipliers) labour income (per Person-year [PY] of employment) adjusted to represent personal income. Estimates of annual corporate income tax are not provided. Modelled direct impacts of labour and labour income stemming from turnarounds were not estimated.

There are limitations in the use of input-output modelling, particularly as it relates to local and regional impacts. Given Statistics Canada does not provide regional or local multiples, impacts on the RSA and LSA were estimated through customized location quotients based on available provincial level information, including employment, labour, and GDP coefficients.

## Economic Impact Assessment

### 5 Methods

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Economic impacts are described in terms of direct, indirect, and induced effects, where:

- Direct effects result from labour, materials, and services demand from the Proponents and its contractors during Project construction and operations (e.g., labour, project management)
- Indirect effects result from contractor expenditures on goods and services (e.g., employment with 34 suppliers/manufacturers of materials used during construction)
- Induced effects result from spending by direct and indirect workers on consumer goods and services (e.g., restaurant servers, retail positions)

## 6 Economic Impact Assessment

### 6.1 Construction

The capital expenditures estimate includes costs such as local infrastructure upgrades, open pit mine development, ore Processing Plant, the TMF, high-voltage substation and power supply infrastructure, offices, maintenance shops and utilities, as provided in the Feasibility Study (Ausenco 2023). The estimate conforms to Class 3 guidelines for a Feasibility Study (Ausenco 2023) level estimate with a  $\pm 15\%$  accuracy according to the Association of the Advancement of Cost Engineering International. Most costs have a base date of Q4 2022, except for mining, tailings management, and water management costs, which have a base date of Q2 2023.

The following items were not considered in the cost estimate:

- financing charge
- residual value of temporary equipment and facilities
- environmental approvals
- further project studies
- force majeure events
- future scope changes
- special incentives (e.g., schedule, safety, or others)
- strikes or other work stoppages
- management reserve above the project contingency included
- foreign exchange exposure
- land acquisition.

Costs are generally grouped into three categories:

1. Initial Capital – initial project development, with a mill throughput of 60 kt/d
2. Expansion Capital – all costs from the completion of initial development through the expansion of throughput to 120 kt/d, planned for Year 4
3. Sustaining Capital – all costs subsequent to completion of the expansion

Table 6.1 identifies the capital expenditures planned for these three phases. The initial capital investment is projected to be \$2,556 C\$M, the expansion capital investment is projected at \$2,105 C\$M, and the sustaining capital investment is projected at \$1,950 C\$M. Closure costs of C\$175M are incurred throughout all three phases bringing the total capital investment to \$6,786 C\$M.

**Table 6.1 Capital Expenditures (C\$M) for the Project by Phase**

Activity	Initial Capital (C\$M)	Expansion Capital (C\$M)	Sustaining Capital (C\$M)	Closure Costs (C\$M)	Total Capital (C\$M)
Mining	657	552	1,715	<b>175</b>	2,924
Process	902	914	0		1,816
Utilities	46	40	0		86
Tailings and Water Management	129	111	136		375
On-Site Infrastructure	120	67	97		284
Off-Site Infrastructure	150	56	0		205
Indirect Costs	244	174	0		418
Owner's Costs	65	0	0		65
Contingency	244	191	0		435
Total Capital	2,556	2,105	1,950		6,786
Total Investment	<b>2,556</b>	<b>2,105</b>	<b>1,950</b>		<b>6,786</b>
Source: Ausenco (2023)					

Mining makes up the largest investment of capital in the Project. Mining capital costs include site preparation, stripping, fleet, buildings and mechanical infrastructure, electrical infrastructure, and trolley assist. Process activities including crushing, grinding, floatation, and mineral separation to begin the magnetic recovery and concentrate filtration. Utilities involve costs associated with powering the facility during construction. Tailings and water management feature involve all of the associated activities with establishing infrastructure required for the management of water within the site. On site infrastructure predominantly includes site preparation work as well as the development of additional ancillary buildings, whereas off-site infrastructure involves investments in transportation and the transmission line. For the purposes of the Feasibility Study (Ausenco 2023), indirect costs predominantly involve the establishment of temporary infrastructure and equipment, such as first aid centres, temporary roads, temporary utilities, as well as engineering procurement, and construction management. Owner's costs are administrative costs associated with the construction of the Project. The contingency allowance is provided to reflect the accuracy of the estimate based on 10% of the total engineering complete.

Table 6.2 presents the estimated direct, indirect, and induced economic and employment impacts as a result of the capital expenditures of the Project. The model assumes that 60.8% of expenditures will be conducted in Ontario, 24.7% of expenditures will be conducted in other parts of Canada, and the remaining 14.5% will take place outside of Canada.

**Table 6.2 Direct, indirect, and included impacts, capital expenditures, Canada**

Type	Initial Capital (C\$M)			Expansion Capital (C\$M)			Sustaining Capital (C\$M)		
	Direct	Indirect	Induced	Direct	Indirect	Induced	Direct	Indirect	Induced
<b>Ontario</b>									
Output	947.9	189.4	115.1	891.3	178.1	108.2	1,042.7	208.3	126.6
GDP	717.3	92.6	67.6	674.5	87.0	63.5	789.1	101.8	74.3
Labour Income	303.4	59.6	31.4	285.3	56.0	29.5	333.7	65.5	34.5
Employment (PY)	4,247	1,192	705	3,993	1,121	663	4,672	1,311	775
Imports	64.7	21.3	23.1	60.8	20.0	21.7	71.2	23.4	25.4
Exports	159.4	0.0	0.0	149.9	0.0	0.0	175.3	0.0	0.0
<b>Other Canada</b>									
Output	385.1	104.9	60.9	362.1	98.7	57.3	423.6	115.4	67.0
GDP	262.5	80.5	34.9	246.8	75.7	32.9	288.8	88.5	38.4
Labour Income	101.3	52.8	16.5	95.3	49.7	15.5	111.4	58.1	18.1
Employment (PY)	1,395	922	364	1,312	867	343	1,535	1,014	401
Imports	32.5	6.1	11.4	30.6	5.8	10.7	35.8	6.7	12.6
Exports	35.4	0.0	0.0	33.3	0.0	0.0	38.9	0.0	0.0
<b>Total Canada</b>									
Output	1,332.9	294.3	176.0	1,253.4	276.7	165.5	1,466.3	323.7	193.6
GDP	979.8	173.1	102.5	921.4	162.7	96.4	1,077.9	190.4	112.8
Labour Income	404.7	112.4	47.9	380.5	105.7	45.0	445.2	123.6	52.7
Employment (PY)	5,642	2,113	1,069	5,305	1,987	1,005	6,206	2,325	1,176
Imports	97.2	27.4	34.5	91.4	25.8	32.5	107.0	30.1	38.0
Exports	194.8	0.0	0.0	183.2	0.0	0.0	214.3	0.0	0.0

The Project is projected to provide a substantial contribution to both the provincial and federal GDP. The total direct GDP contributions in Ontario across the three phases is projected to be approximately \$2.9 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to reach approximately \$4.1 billion. Indirect and induced GDP contributions are also expected to substantively contribute to GDP growth, with \$281.4M indirect and \$205.4M induced impacts towards GDP in Ontario and \$526.2M indirect and \$311.7M induced impacts towards GDP in Canada.

Substantive labour income is also anticipated to be generated from the capital expenditures. Income generated from all three phases directly from the Project is expected to reach \$922.4M in Ontario and \$1.2B in all of Canada. Labour income also has high indirect impacts (\$270.2M in Ontario and \$341.7M in Canada) as does induced labour income (\$95.4M in Ontario and \$145.6M in Canada).

The labour income is derived from the number of PY of employment that the Project is expected to generate. In Ontario, across all three phases, the Project is expected to directly generate 12,912 PY of employment. In comparison, across Canada that number is expected to rise to 17,153. Indirect employment generated from the Project in Ontario is projected to 3,624 PY and up to 6,425 PY in Canada. The Project is projected to generate 2,143 PY of induced employment in Ontario and 3,250 PY in all of Canada.

## 6.2 Operations

The operating cost estimate is composed of mining, tailings/water management, processing, and general and administrative costs. Operations are subdivided into three phases:

- Phase 1 covers the initial 42 months of operations when the nameplate capacity of the plant will be 60 kt/d
- Phase 2 covers the following 26 ½ years of operations when nameplate capacity of the plant will be 120 kt/d and feed will predominantly come from the pits
- Phase 3 covers the final 11 ¼ years of operations when nameplate capacity of the plant will be 120 kt/d and feed will be entirely sourced from low-grade stockpiles on surface

**Table 6.3 Operational Expenditures (C\$M) for the Project**

Activity	Operations (C\$M)
Mining	10,792
Tailings and Water Management	380
Process	11,698
General and Administrative Costs	1,688
Total Investment	24,558
Source: Ausenco (2023)	

As identified in Table 6.3, processing makes up the largest operational expense in the Project. The mining costs are associated with activities such as drilling and blasting, loading, hauling, revegetation, and other ongoing maintenance. Tailings and water management feature are all of the activities associated with operating the TMF and the water treatment plant. Process operating costs include areas such as labour, power, consumables, maintenance materials, mobile equipment, and laboratory and assays. General and administrative costs are based upon the level of service required for the size of the operation, which include transporting employees to the site, providing personal protective equipment, as well as other administrative services, including information technology, finance, security, and cleaning.

Table 6.4 features the projected direct, indirect, and induced economic and employment impacts as a result of the operational expenditures of the Project. The model assumes that 65.1% of expenditures will be conducted in Ontario, 7.9% of expenditures will be conducted in other parts of Canada, and the remaining 27.1% will take place outside of Canada. These ratios were established based on a complete review of the cost estimate and assessment of most likely service, material, consumable or equipment provider available provincially and/or nationally.

**Table 6.4 Direct, indirect, and included impacts, operational expenditures (C\$M), Canada, life of mine.**

Type	Direct	Indirect	Induced
<b>Ontario</b>			
Output	15,739.2	3,342.4	1,856.7
GDP	12,850.4	1,796.2	1,091.0
Labour Income	1,759.8	1,161.6	506.5
Employment (PY)	16,377	17,805	11,375
Imports	440.5	349.6	373.4
Exports	839.7	0.0	0.0
<b>Other Canada</b>			
Output	1,910.0	491.3	287.9
GDP	1,297.6	523.3	165.1
Labour Income	324.2	52.8	77.8
Employment (PY)	2,435	2,056	1,723
Imports	95.2	10.8	53.9
Exports	610.4	0.0	0.0
<b>Total Canada</b>			
Output	17,649.2	3,833.8	2,144.5
GDP	14,148.0	2,319.5	1,256.1
Labour Income	2,084.0	1,214.4	584.3
Employment (PY)	18,812	19,861	13,099
Imports	535.7	360.4	427.3
Exports	1,450.1	0.0	0.0

Operations from the Project will also contribute to both the provincial and federal GDP. The total direct GDP contributions in Ontario for the life of the mine is projected to be approximately \$12.8 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to exceed \$14 billion. Indirect and induced GDP contributions are also expected to contribute to GDP growth, with approximately \$1.8 billion indirect and \$1.1 billion induced contributions towards GDP in Ontario and \$2.3 billion indirect and \$1.3 billion induced contributions towards GDP in Canada.

Labour income is also anticipated to be generated from the operational expenditures. Income generated directly from the life of the mine is expected to exceed \$1.5 billion in Ontario and \$2.0 billion in all of Canada. The labour income is derived from the number of PY of employment that the Project is expected to generate.

Table 6.5 provides the direct, indirect and induced impacts that are expected as a result of corporate and personal income, as well as sales and mining taxation from the Project. Wage and benefits were estimated based on the best available information provided by Canada Nickel and are comparable to the average wages in Ontario in relevant sectors as identified in Table 4.5 as well as in the Timmins area as per a salary wage and benefits survey completed by Lincoln Strategic International.

**Table 6.5 Direct, indirect, and induced impacts from taxation from operational expenditures (C\$M), Canada, life of mine.**

Type	Direct (estimate)	Indirect (model)	Induced (model)
Federal income tax	4,172	121	53
Federal sales tax (modelled)	13	312	8
Provincial income tax	2,781	73	37
Provincial sales tax (modelled)	19	455	11
Ontario Mining Tax	2,474	-	-
Clean Technology Manufacturing ICT	(1,142)	-	-

Federal income taxation (at 15%) is expected to generate a positive economic benefit throughout the Project, with estimates expected to exceed over \$4 billion throughout operations. In addition, provincial income taxation (at 10%) will generate nearly \$3 billion for the province of Ontario. This includes a 1.5% deduction from the general income tax rate which is eligible for the mining sector. In addition, the Ontario Mining Tax is applied at a rate of 10% on resource projects. For this Project, it is estimated that approximately \$2.5 billion will be spent in the Ontario Mining Tax throughout operations.

While both provincial and federal sales tax are expected to be low for direct contributions from the Project, it is expected that indirectly, a total of \$320 million will be generated from indirect and induced federal sales tax and \$466 million will be generated from indirect and induced provincial sales tax throughout operations.

It is assumed that Canada Nickel would be eligible for the Clean Technology Manufacturing tax credit that was announced in the 2023 federal budget. This credit, which applies to capital invested in the plant and equipment necessary for the production of critical minerals, provides a refund of 30% on eligible expenditures until 2031, and ramps down until it is phased out in 2035. The total value of this credit is estimated to be \$1.1 billion.

### 6.3 Decommissioning and Closure

The closure cost estimate makes provision for the following:

- Decommissioning of the Process Plant and infrastructure
- Reclamation and revegetation of disturbed areas, including Impoundment Facility, Stockpiles and the TMF, as well as the footprint of infrastructure and buildings located in the PA
- Ongoing monitoring to confirm (1) run-off from the decommissioned site is on track to meet post-mining land use objectives; (2) Open Pit, TMF, and Impoundment Facility slopes are

geotechnically stable; and (3) effects to receiving environment and aquatic communities are being managed costs associated with the placement of a closure bond

Closure costs would be expended as the various infrastructure are closed. For example, impoundment of tailings in the TMF is completed in Year 17, at which time impoundment transitions to the mined out portions of the Open Pit and closure of the TMF commences. However, a bond to cover closure expenses must be placed prior to this time. The current approach is for the bond to be updated in five-year increments. The bond amount must satisfy requirements to decommission and reclaim all activities that will be performed during that five-year window, along with the cumulative amount of previous five-year windows less any actual closure expenditures.

As summarized in Table 6.6, closure expenditures will total C\$175 million; however, with the reclamation work performed in a progressive manner before ultimate closure of the Process Plant in Year 42, the peak bond amount is C\$91 million.

**Table 6.6 Closure expenses for the Project**

<b>Activity</b>	<b>Total (C\$M)</b>
Decommissioning – Phase 1 Process Infrastructure	24
Decommissioning – Phase 2 Process Infrastructure	21
Reclamation	84
Monitoring	13
Finance Charges	33
<b>Total Closure Costs</b>	<b>175</b>
Source: Ausenco 2023	

The decommissioning and closure phase is broken into two areas: active closure and passive closure. During active closure mine infrastructure, building and equipment will be demolished and removed. Post-closure monitoring will also commence. During passive closure, post-closure monitoring costs include work related to the monitoring and reclamation of the PA, including site maintenance, surface and groundwater monitoring, as well as other safety expenses. Monitoring costs account for a 100-year post-closure period and apply a 4% discount rate beginning in the first year of closure.

## 6.4 Local and Regional Employment

The expected average number of staff and full-time equivalents (FTEs) for each Project phase is summarized as follows:

- Construction – An average of 449 FTEs (maximum 1,998 FTEs)
- Phase 1 operations – An average of 1,200 FTEs (maximum 1,290 FTEs)
- Phase 2 operations – An average of 850 FTEs (maximum 1,371 FTEs)
- Phase 3 operations – An average of 300 FTEs (maximum 334 FTEs)

During the operations phase, ore extraction and processing will operate 24-hours a day, seven days a week, 365 days a year. This will be achieved by employing four rotating crews that work 12-hours shifts and on average 42-hours a week. A compliment of office, environmental and other support staff will work a more traditional five-day per week schedule or similar.

The Project will have a peak workforce of 1,998 FTEs and an average of 708 FTEs over the life of the mine. The peak labour force during operations is expected during Year 6 (operations phase 2) when construction (e.g., clay stripping) is still occurring in conjunction with ore extraction. The workforce at this time will include a mixture of staff working on preparing the pits, ore extraction, management, and maintenance activities.

Because not every construction worker will be actively working across the construction phase, as well as the number of years the Project is in operation, it is worthwhile to compare construction and operations labour forces by person years. It is estimated the total number of person hours for 449 FTEs average would be approximately 942,900 person-hours per year at an industry average 2,100 hours per year. Across a 30-month construction period, this amounts to 2.36 million person-hours.

The operation and maintenance of Project facilities will be a constant undertaking, with workers employed full-time through the life of the Project. It is estimated that a 1,200 FTEs average during Phase 1 for a period of 42 months requires 8.82-million-person hours. Phase 2, which estimates an average of 850 FTEs over 318 months (26.5 years), requires 47.3-million-person hours. The final phase, Phase 3, estimates an average of 300 FTEs over the remaining 135 months of operations, which requires 7.09-million-person hours.

Employment forecasts for decommissioning were not available at the time of the study.

**Table 6.7 Direct, Indirect, and Induced Labour (Person Year) Generated from the Project.**

<b>Geography</b>	<b>Impact</b>	<b>Construction</b>	<b>Operations</b>
Total Canada	<i>Direct (modelled)</i>	17,153	18,812
	<i>Direct (estimate)</i>	3,996	30,100
	<i>Indirect</i>	6,425	19,861
	<i>Induced</i>	3,520	13,099
Ontario	<i>Direct (modelled)</i>	12,912	16,377
	<i>Direct (estimate)</i>	2,997	26,187
	<i>Indirect</i>	3,644	17,805
	<i>Induced</i>	2,143	11,375
RSA	<i>Direct (modelled)</i>	9,684	14,248
	<i>Direct (estimate)</i>	2,248	22,783
	<i>Indirect</i>	2,733	15,490
	<i>Induced</i>	1,607	9,896

<b>Geography</b>	<b>Impact</b>	<b>Construction</b>	<b>Operations</b>
LSA	<i>Direct (modelled)</i>	7,263	12,396
	<i>Direct (estimate)</i>	1,686	19,821
	<i>Indirect</i>	2,050	13,476
	<i>Induced</i>	1,205	8,610

Table 6.7 shows the direct, indirect, and induced labour generated from the Project in the RSA and LSA based on estimates generated from the input-output model. Direct employment estimates are also provided based on the estimates generated from Canada Nickel and converted into PY. It is expected that the estimates provided by Canada Nickel are a more accurate representation of the labour required for the Project given the extensive Project planning to date, while the modelled labour numbers were generated based on assigning numbers from the input-output model. It is estimated that direct, indirect, and induced labour will be generated across Canada, however, there will be substantial labour required for Project-based activities in the LSA and RSA during both construction and operations.

Table 4.3 and Table 4.4 highlight workforce projections for the mining industry in the RSA, which do not include the forecasted labour required for the Project. By 2027, it is estimated that there will be a deficit in required labour for the mining industry, and that the use of mobile workers will be required to fulfill this void. By 2037, it is estimated that there will be a potential shortfall of 23% to 30% of vacancy rates in the mining industry within the LSA. As identified by the LQ analysis in Table 3.5, both the LSA and the RSA has a strong specialization in the mining industry, which has potential to continue catering to the increased demand in the job market. However, given the size of the labour force within the LSA and RSA, it is likely that the vacancy rates will continue to increase beyond 30%, and that the incorporation of mitigation and enhancement measures to fulfill the labour required for the Project will be needed.

The total operational labour averages 96 employees for Phase 1 and 168 for Phases 1 and 2. Salaries were provided by Canada Nickel, who performed a salary survey for each expected role. Canada Nickel also confirmed the specific benefits and bonuses to be allocated.

## 7 Conclusions

Economic impacts of Project construction, operations, and decommissioning were estimated at the provincial level using Statistics Canada's 2018 detail level provincial input-output multipliers (derived from its IPIOM). The IPIOM does not provide estimates of personal income taxes, therefore, no multipliers are available. Personal income taxes were estimated by applying federal and provincial effective tax rates, based on income bracket and province, to modelled (from multipliers) labour income (per Person-year [PY] of employment) adjusted to represent personal income, as well as information provided in the Feasibility Study (Ausenco 2023). Modelled direct impacts of labour and labour income stemming from turnarounds were not estimated. Economic impacts are described in terms of direct, indirect, and induced effects.

Over the course of three phases, the total capital investment for the Project is estimated at \$6,786M, which will substantially contribute to both the provincial and federal GDP. The total direct GDP contributions in Ontario across the three phases is projected to be approximately \$2.9 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to reach approximately \$4.1 billion. Indirect and induced GDP contributions are also expected to substantively contribute to GDP growth, with \$281.4M indirect and \$205.4M induced impacts towards GDP in Ontario and \$526.2M indirect and \$311.7M induced impacts towards GDP in Canada.

Operational expenditures for the Project are expected to reach \$24,558M, which will also substantially contribute to both the provincial and federal GDP. The total direct GDP contributions in Ontario for the life of the mine is projected to be approximately \$12.8 billion. When considering the direct GDP contributions for all of Canada, the GDP contributions are projected to exceed \$14 billion. Indirect and induced GDP contributions are also expected to contribute to GDP growth, with \$1.8 billion indirect and \$1.1 billion induced contributions towards GDP in Ontario and \$2.3 billion indirect and \$1.3 billion induced contributions towards GDP in Canada.

Direct, indirect, and induced labour generated from the Project is provided for the RSA and LSA based on estimates generated from the input-output model. Direct employment estimates are also provided based on the estimates generated from Canada Nickel and are included. By 2027, it is estimated that there will be a deficit in required labour for the mining industry, and that the use of mobile workers will be required to fulfill this void. By 2037, it is estimated that there will be a potential shortfall of 23% to 30% of vacancy rates in the mining industry within the LSA.

Globally, supply and demand for nickel continues to evolve, and Canada remains competitive, ranking the sixth highest producer of nickel in the world. Several of these active nickel mines are located in Northeastern Ontario, with the proposed Project expanding the potential exports to the United States and other international markets. The Project will help address the increased demand for nickel worldwide.

## 8 References

- Ausenco (Ausenco Engineering Canada ULC). 2023. Crawford Nickel Sulphide Project NI 43-101 Technical Report and Feasibility Study. Retrieved November 24, 2023, from [https://canadanickel.com/wp-content/uploads/2023/11/Crawford-NI-43-101-FINAL-REPORT\\_Nov24\\_R2.pdf](https://canadanickel.com/wp-content/uploads/2023/11/Crawford-NI-43-101-FINAL-REPORT_Nov24_R2.pdf).
- BOC (Bank of Canada). 2022. Annual Bank of Canada Commodity Price Index. Available online: <https://www.bankofcanada.ca/rates/price-indexes/bcpi>
- Canada Nickel Company. 2022. Detailed Project Description Crawford Nickel Project. Available at: <https://iaac-aeic.gc.ca/050/documents/p83857/145854E.pdf>.
- City of Timmins. 2023. Timmins Victor M. Power Airport. Available at: [https://www.timmins.ca/our\\_services/timmins\\_victor\\_m\\_\\_power\\_airport](https://www.timmins.ca/our_services/timmins_victor_m__power_airport)
- DNR (Department of Natural Resources). 2022a. Mining Industry Average Employment. Available online: [https://www.geosurv.gov.nl.ca/minesen/avg\\_employment/](https://www.geosurv.gov.nl.ca/minesen/avg_employment/)
- DNR (Department of Natural Resources). 2022b. Active Exploration Companies. Available online: [https://www.geosurv.gov.nl.ca/minesen/mineral\\_exploration/](https://www.geosurv.gov.nl.ca/minesen/mineral_exploration/)
- FNETB (Far Northeast Training Board). 2018a. Local Labour Market Forecast 2016-2036 Part One. Prepared by the Far Northeast Training Board.
- FNETB. 2018b. Local Labour Market Forecast 2016-2036 Part Two. Prepared by the Far Northeast Training Board.
- FNETB. 2018c. Mining sector employment and hiring forecast 2017-2027. Prepared by the Far Northeast Training Board.
- Ministry of Economic Development, Job Creation and Trade and Ministry of Northern Development. 2011. Growth Plan for Northern Ontario. Available online: <https://www.ontario.ca/document/growth-plan-northern-ontario>.
- Natural Resources Canada. 2022. The Canadian Critical Minerals Strategy. Available online: <https://www.canada.ca/content/dam/nrcan-rncan/site/critical-minerals/Critical-minerals-strategyDec09.pdf>
- Natural Resources Canada. 2023a. Federal-Provincial/Territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. Available online: <https://mmsd.nrcan-rncan.gc.ca/expl-expl/ExploTable.aspx?FileT=102022&Lang=en>

## Economic Impact Assessment

### 8 References

September 30, 2024

Natural Resources Canada. 2023b. Canadian Mine Production of Nickel, 2012-2021 (p). Available at: <https://natural-resources.canada.ca/our-natural-resources/minerals-mining/minerals-metals-facts/nickel-facts/20519>

Ontario Mining Association. 2022. State of the Ontario Mining Sector. Available at: [https://oma.on.ca/en/ontario-mining/2022\\_OMA\\_Economic\\_Research\\_Report.pdf](https://oma.on.ca/en/ontario-mining/2022_OMA_Economic_Research_Report.pdf)

Ontario Mining Association. 2023. Ontario Mining Operations 2023. Available at: <https://oma.on.ca/en/ontario-mining/Map.aspx>

Ontario Ministry of Finance. 2023. Budget 2023. Available at: <https://budget.ontario.ca/2023/>

Ouellet, A., and Lefebvre, M. 2022. A Reason to Stay: Retaining Youth in Northern Ontario. Northern Policy Institute.

Statistics Canada. 2022. Census Profile. 2021 Census. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 30, 2022. Available at: <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E>

Statistics Canada. 2023. Employee Wages by Industry, Annual. Statistics Canada table no. 14-10-0064-01. Ottawa. Released January 6, 2023. Available at: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410006401>

Statistics Canada. 2017. Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. Available at: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E>

Town of Iroquois Falls. 2017. Town of Iroquois Falls Economic Development Strategic Plan. Prepared by EDP Consulting.

Town of Smooth Rock Falls. 2015. Smooth Rock Falls Planning Area 2013-14 Official Plan. Prepared by J.L. Richards & Associates Limited. Smooth Rock Falls, ON.

U.S. Geological Survey. 2022. Mineral Commodity Summaries. Available at: <https://natural-resources.canada.ca/our-natural-resources/minerals-mining/minerals-metals-facts/nickel-facts/20519>

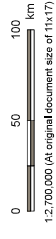
Wood Mackenzie. 2021. Nickel, global uses, 2021. Available at: <https://natural-resources.canada.ca/our-natural-resources/minerals-mining/minerals-metals-facts/nickel-facts/20519>

# Appendices

# Appendix A      Figures



- Legend**
- Project Location
  - Local Study Area
  - Regional Study Area
  - Major Road
  - Waterbody



**Notes**

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base feature projection: under license with the Ontario Ministry of Natural Resources and Forestry & Forest Practices for Ontario, 2023.

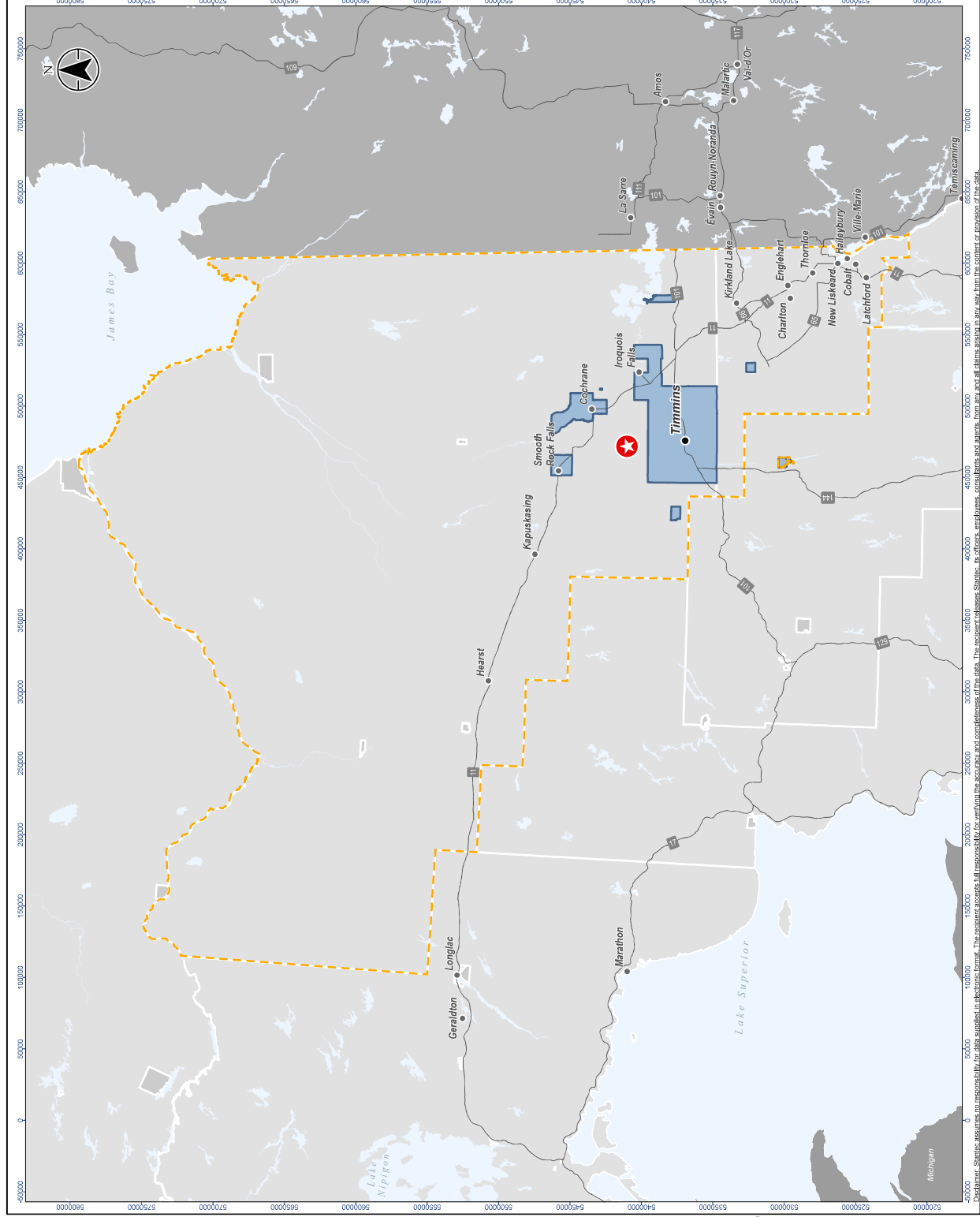


Client/Project:  
Canada Nickel Company (CNC)  
Crawford Nickel Project

Project Location:  
Timmins, Ontario

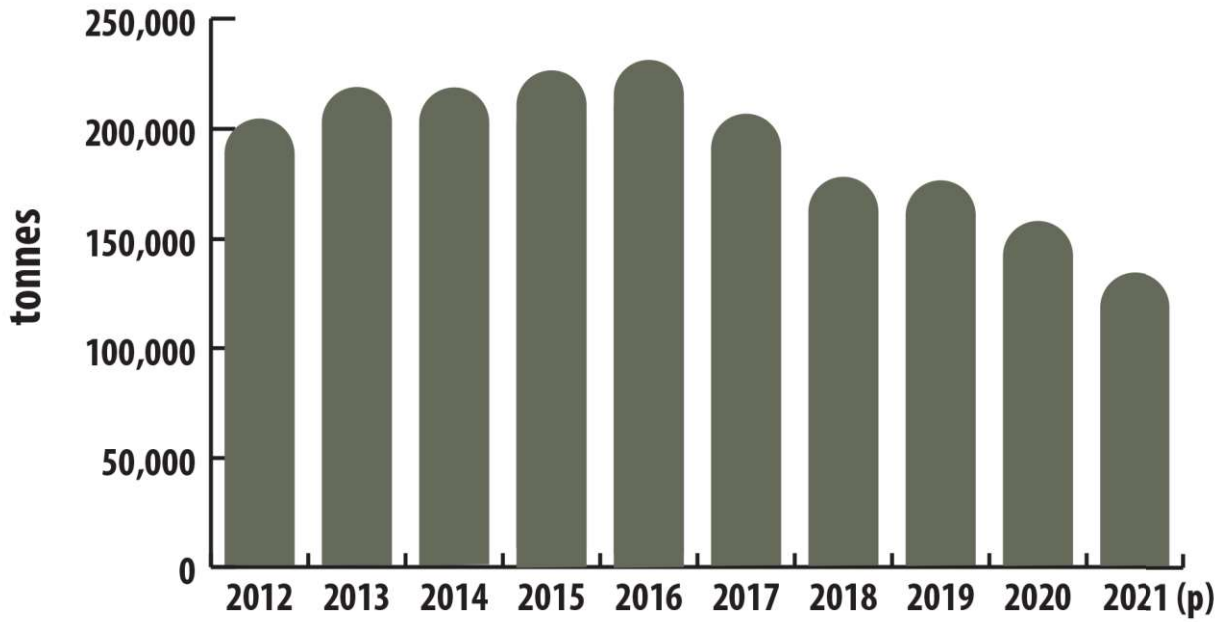
Figure No.  
**A.1**

**Economic Conditions Local Study Area and Regional Study Area**



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Figure A.2 Canadian mine production of nickel, 2012 – 2021 (p)



Notes: 2021 (p) = predicted.

Source: Natural Resources Canada, 2023b



- Legend**
- Project Location
  - Local Study Area
  - Regional Study Area
  - Operating Mine Site - Metal
  - Operating Mine Site - Non-metal



**Notes**

1. Coordinate System NAD 1983 UTM Zone 17N
2. Base feature provided under license with the Ontario Ministry of Natural Resources and Forestry by the Premier of Ontario, 2022.



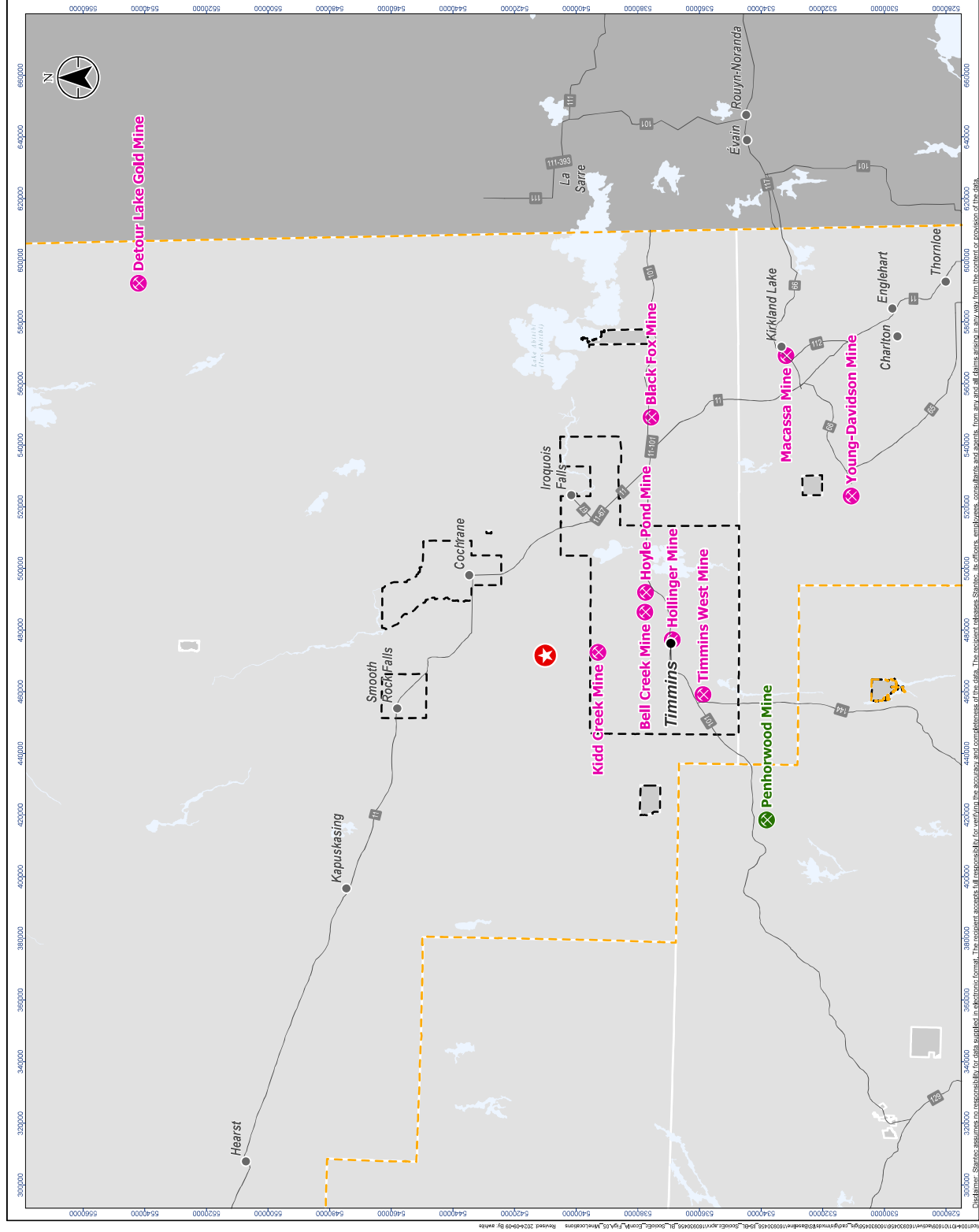
Project Location  
Timmins, Ontario

1803045F REV1  
Prepared by awhite on 2024-05-09

Client/Owner  
Canada Nickel Company (CNC)  
Crawford Nickel Project

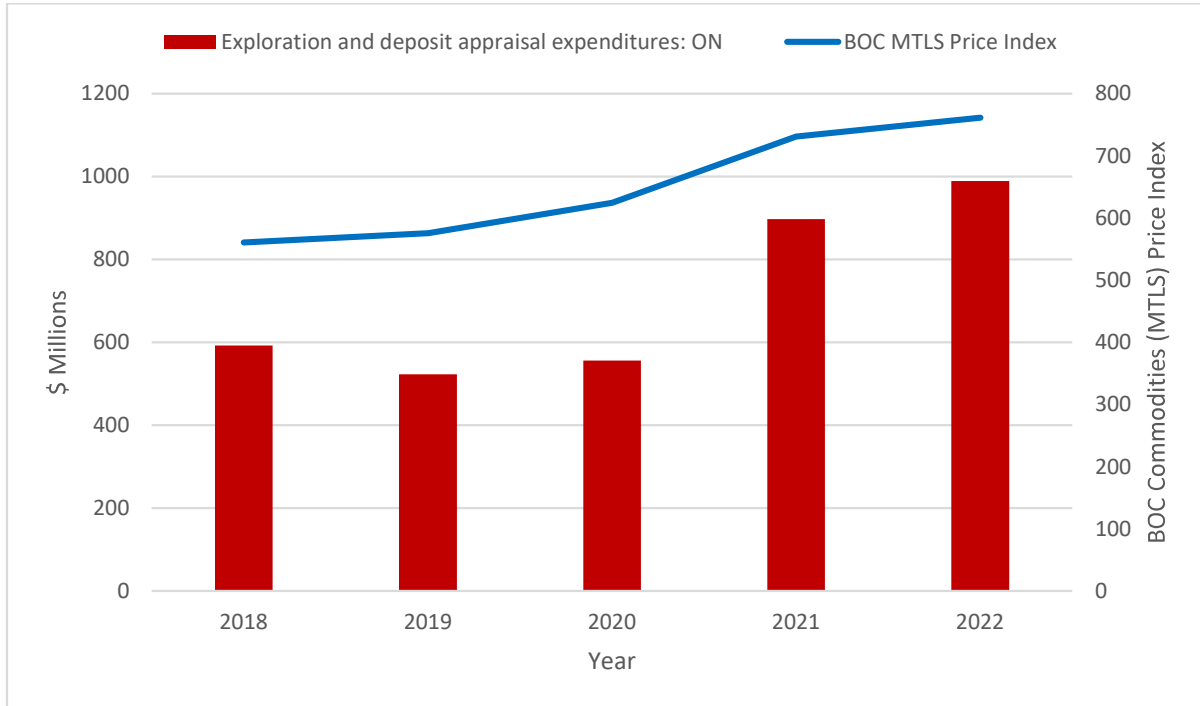
Figure No.  
**A.3**

**Title**  
**Active Mines Near the Project**



1803045F REV1  
 Prepared by awhite on 2024-05-09  
 Client/Owner: Canada Nickel Company (CNC), Crawford Nickel Project  
 Figure No.: A.3  
 Title: Active Mines Near the Project  
 Notes:  
 1. Coordinate System NAD 1983 UTM Zone 17N  
 2. Base feature provided under license with the Ontario Ministry of Natural Resources and Forestry by the Premier of Ontario, 2022.  
 Scale bar: 0, 25, 50 km  
 Legend:  
 Project Location (Red star)  
 Local Study Area (Dashed black line)  
 Regional Study Area (Dashed orange line)  
 Operating Mine Site - Metal (Pink circle with X)  
 Operating Mine Site - Non-metal (Green circle with X)

Figure A.4 ON Mineral Exploration and Deposit Appraisal Expenditures and Bank of Canada (BOC) Metals Commodity Price



# Appendix B Economic Feasibility

## **B.1 Economic Viability**

A baseline of key inputs and assumptions were generated when determining the economic viability of the Project. Prices for goods and services were obtained in Q2 2023 and have been escalated specific to the mining industry using the reported Canadian producer price index (PPI) for the sector. Other prices in Canadian dollars have been escalated using the consumer price index (CPI). Similarly, prices obtained in United States dollars prior to the cost basis date are all specific to the mining industry and have been escalated according to the reported US PPI for the sector (Ausenco 2023).

Labour costs were estimated based on the organizational structure for the development, with wages and benefits based on existing mining operations in the Timmins region of Ontario (Lincoln Strategic International, 2023).

Assumptions for energy usage were also made to determine the net benefits of the Project. The forecast life-of-mine average total price for electricity, taking account of charges for consumption and demand, is C\$75/MWh. Fuel prices are based on an assumed oil price (Brent) of \$70/bbl. Carbon taxes on diesel and gasoline consumed will rise to C\$1.31 and \$1.30/litre, respectively, by the end of the Project.

The project life project can be subdivided into the following periods:

- Construction for a period of 30 months.
- Phase 1 at a nominal concentrator throughput of 60 kt/d/ for a period of 42 months (3.5 years).
- Phase 2 at a nominal concentrator throughput of 120 kt/d and the bulk of ore being provided from the operating pits for a period of 318 months (26.5 years).
- Phase 3 is the final 135 months of operation after the pits have been depleted. The mill will continue to operate at a nominal concentrator throughput of 120 kt/d and be fed entirely from low-grade stockpiles.

A third party holds the rights to receive a 5% interest in the net profits (the NPI royalty) from Crawford. This royalty can be bought down to 2.5% for C\$2 million.

## **B.2 Methodologies**

The Feasibility Study (Ausenco 2023) incorporated various methodologies and assumptions with respect to estimating the economic benefits of the Project. According to the long-term outlook from Fastmarkets in September 2023, primary nickel demand will rise at a compounded annual growth rate (CAGR) of 4.9% between 2022 and 2033, which is driven by growth in the stainless steel and battery sectors. Demand from the stainless-steel sector will grow at a CAGR of 3.2% over the forecast period (requiring an additional 838 kt of nickel required by 2033) with demand for batteries growing at a CAGR of 14.2% over the forecast period. Estimates on pricing for the mineral products associated with the Project are provided in Table B.1.

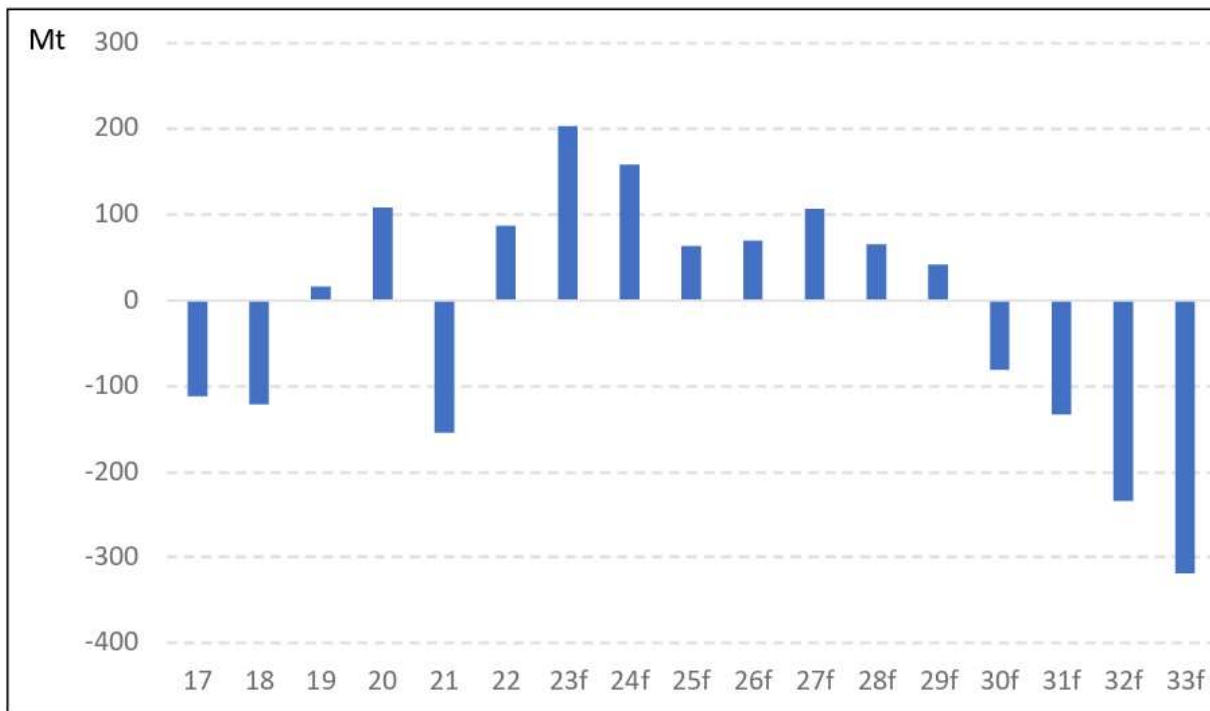
**Table B.1 Pricing assumptions in 2023 real terms (Feasibility report).**

Metal	Units	Long-Term	Payability	Source
Ni Concentrate	US\$/t (US\$/lb)	21,000 (9.53)	91%	Fastmarkets, company estimate
Ni-Fe Concentrate	US\$/t (US\$/lb)	21,000 (9.53)	91%	Fastmarkets, company estimate
Iron Scrap	US\$/t	325	50%	Fastmarkets, company estimate
Chromium	US\$/lb	1.75	65%	Fastmarkets
Cobalt	US\$/t (\$/lb)	40,000 (18.14)	60%	Analyst consensus <sup>1</sup>
Platinum <sup>3</sup>	US\$/oz	1,150	1 g/t deduction	Analyst consensus <sup>2</sup>
Palladium <sup>3</sup>	US\$/oz	1,350	1 g/t deduction	Analyst consensus <sup>2</sup>

Notes: 1. Aggregate of 14 analyst estimates, dated August 2023. 2. Aggregate of 17 analyst estimates, dated August 2023. 3. Payability based on 1 g/t combined Pt + Pd deduction. Resultant life-of-mine average payability is 76.2% and 75.2% for Pt and Pd, respectively.

According to Fastmarkets, the global nickel supply will keep pace with demand in the short to medium term, leading to an oversupplied market. In the longer term, a lack of new projects will result in deficits beginning in 2030 and widening to in excess of 300 kt annually by 2033, as identified in Figure B.1.

**Figure B.1 Nickel Market Balance**



Source: Fastmarkets, 2023.

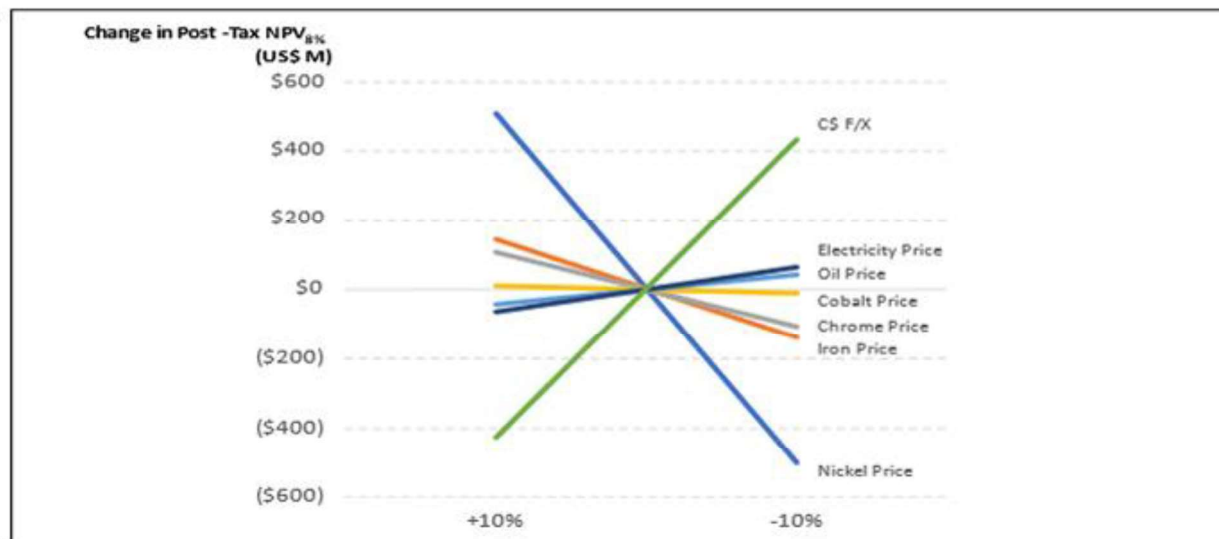
Canada Nickel notes that the United States is fully dependent on imports of finished nickel products. As a result, CRU reports that in 2022, premia for various nickel products in the US market range up to \$2,000 per tonne higher than for the same products in Asian or European markets (FS).

## B.3 Sensitivity Analysis

A sensitivity analysis of the Project was conducted to address the macro-economic factors that are outside Canada Nickel's ability to control, which include prices for the key metals that will be produced, price for energy that will be consumed, as well as the exchange rate of the Canadian dollar.

Figure A.2 highlights the that the net present value (NPV) is most sensitive to the price of nickel, with a 10% change in prices having an impact of  $\pm$  \$506 million, or 20% of the base case NPV and therefore 2.0x greater than the variation in price. The NPV is also highly sensitive to the Canadian dollar exchange rate, at 1.7x. The NPV is 50% more sensitive to variation in the iron price, at 0.6x than chromium (0.4x). Similarly, the NPV is 50% more sensitive to changes in the electricity price at 0.3x more than the oil price at 0.2x. The NPV is relatively insensitive to variation in cobalt prices (0.05x).

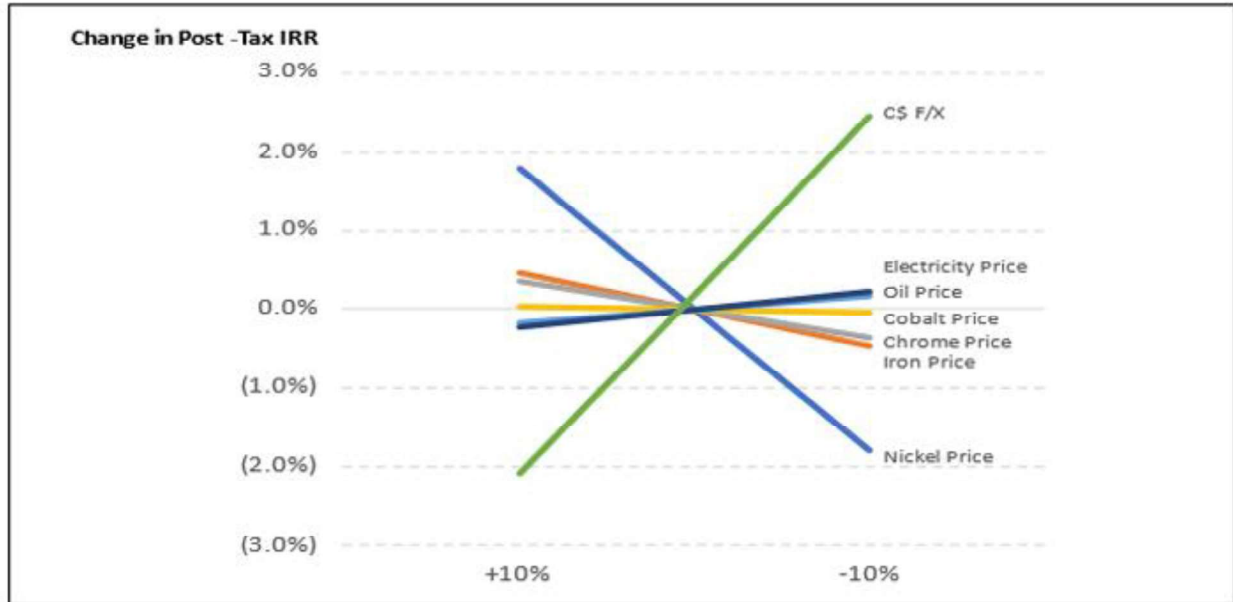
**Figure B.2 Canada Nickel Macroeconomic Sensitivities – NPV**



Source: Canada Nickel, 2023.

Figure A.3 shows that the sensitivity of the internal rate of return (IRR) to variation in macroeconomic factors exhibits the same overall trend as for the NPV, with a key difference being the reversal of ranking for nickel prices and exchange rate. A 10% variation in exchange rate leads to a +2.4% / -2.1% change in IRR, the average of which is 1.3x the base case value. This can be compared to the  $\pm$  1.8% change in IRR resulting from a 10% change in nickel price (1.0x the base case value). The ranking of the remaining macroeconomic elements is unchanged, though the spread between the impact of variance in electricity and oil price reduces from 50% (seen with NPV) to 20%.

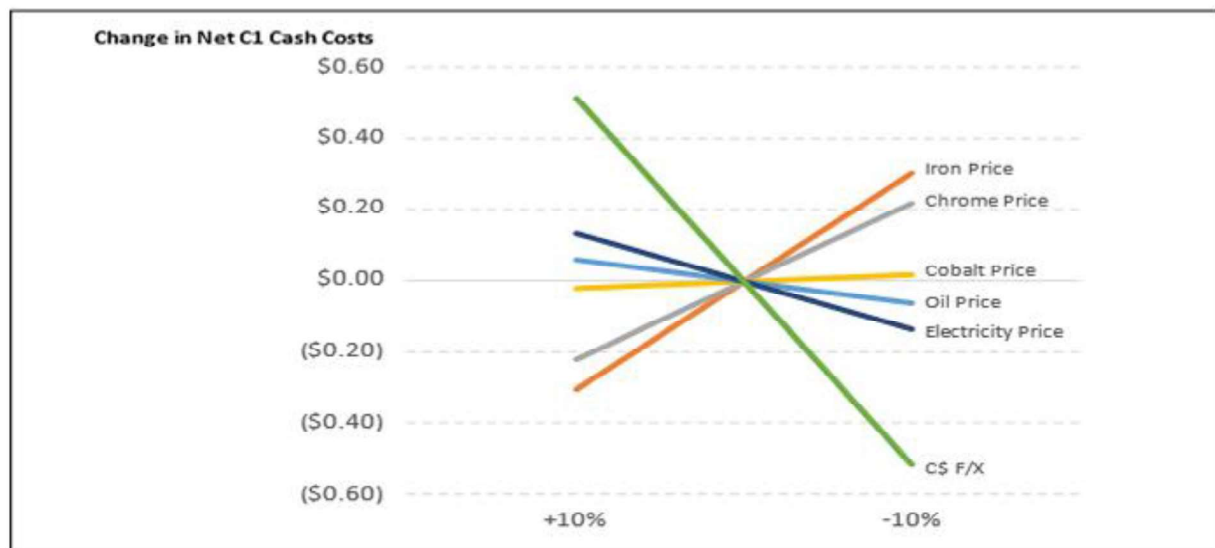
Figure B.3 Canada Nickel Macroeconomic Sensitivities – IRR



Source: Canada Nickel, 2023.

When considering cash costs, Figure A.4 excludes nickel prices but includes other metal prices as they influence the quantum of byproduct credit. The overall ranking remains unchanged from the NPV and IRR graphs, though the change in net C1 costs resulting from a 10% change in electricity prices is \$0.14/lb, more than 2x the impact from change in oil prices.

Figure B.4 Canada Nickel Macroeconomic Sensitivities – Net C1 Cash Costs



Source: Canada Nickel, 2023.

## **B.4 Risk**

Potential risks were also incorporated into the methodologies and assumptions of the Project. A contingency allowance was included in the Project to ensure the success of the Project by providing for the various uncertainties. Due to uncertainties at the time the capital estimate is developed (either in terms of the level of engineering definition, the basis of the estimate, or the schedule development), it is essential the estimate includes a provision to cover risk from these uncertainties.

Environmental considerations identified to date are not expected to pose risks or uncertainties related to the mineral exploration and/or resource, reserve estimates, or projected economic outcomes for the Project. Canada Nickel is actively engaging with stakeholders and local Indigenous communities and has established memoranda of understanding with local First Nations to support their engagement and participation in the Project, which also sets the basis to negotiate an Impact Benefit Agreement for the mine. These negotiations are ongoing.