Crawford Nickel Project Impact Statement

Summary of the Impact Statement

Prepared for:
Canada Nickel Company

November 22, 2024

Prepared by:
Stantec Consulting Ltd.

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1 Introduction

Canada Nickel Company (Canada Nickel, the Company) proposes to develop, operate, and progressively reclaim a new open pit nickel mine, known as the Crawford Nickel Project (the Project, the Crawford Project). Based on the current design, the estimated maximum rate of ore processing will be up to 120,000 tonnes per day. The current life of the mine is expected to be approximately 41 years.

Canada Nickel, headquartered in Toronto, Ontario, is a junior exploration company focused on advancing the next generation of net zero nickel projects in northeastern Ontario. Established in 2019, Canada Nickel aims to supply the critical minerals required for the global transition to a low carbon economy, while adhering to high standards of Indigenous and community engagement and environmental practices.

The Project is located within the unorganized geographic townships of Nesbitt, Crawford, Carnegie, Kidd, Beck, Lucas, Prosser, and Wark in Ontario, including portions of these townships that are considered part of the City of Timmins. The nearest larger communities are the City of Timmins (42 km to the south), the Town of Cochrane (35 km to the northeast), the Town of Smooth Rock Falls (50 km to the northwest), and the Town of Iroquois Falls (50 km to the east). First Nation reserve lands near the Project include Apitipi Anicinapek Nation (Abitibi 70) (95 km east), Flying Post First Nation (Flying Post 73) (46 km southwest), Matachewan First Nation (Matachewan 72) (85 km southeast), Mattagami First Nation (Mattagami 71) (85 km south), and Taykwa Tagamou Nation (New Post 69A) (37 km northeast).

Canada Nickel values genuine partnerships with Indigenous Nations, focusing on transparent information sharing, open dialogue, meaningful collaboration, and early and ongoing engagement. Indigenous reconciliation and community stewardship are not obligations but are core principles embedded into Canada Nickel's operations. As a responsible proponent, the Company recognizes the importance of engaging in transparent dialogue, fostering economic opportunities, and supporting long-term holistic benefits to the region and Traditional Territories in which the Project will operate.

The Project aims to responsibly and sustainably extract and process critical minerals, primarily nickel, as well as iron, chromium, cobalt, palladium, and platinum. The Project will help Canada become a key supplier of these important minerals, which are needed for many everyday products and technologies. The demand for nickel and other critical minerals is expected to grow substantially in the coming years (MENDM 2021, NRCan 2022). By 2050, the demand for minerals like nickel, iron, and cobalt could increase by up to 500% to support clean energy technologies (World Bank Group 2020). Nickel is essential to the stainless-steel, alloy, aerospace, renewable energy, and electric vehicle industries. The more nickel in a battery, the further the electric vehicle can drive on a single charge. Yet, as industry continues to promote electric vehicles on environmental grounds, manufacturers are forced to source nickel from a region where concerns related to the environment, women, and Indigenous Peoples are well documented. Currently, much of the world's nickel comes from China and Indonesia, where mining is powered through coal-fired electricity that has a substantial carbon footprint and where processing methods result in larger volumes of chemically reactive tailings (Bloomberg 2024, Stambaugh et. al 2023). Worker health and safety in this region is also a concern with multiple reports of deaths and critical injuries (Bloomberg 2024). The Project not only aims to meet the growing demand for nickel, but would reduce Canada's reliance on these foreign suppliers, making the supply chain more secure, stable,

environmentally conscious, and socially viable while simultaneously contributing to both Ontario and Canada's critical minerals strategies.

Canada Nickel is aiming to not only contribute to both Ontario and Canada's critical minerals strategies, but is also aiming to contribute to federal net-zero emissions targets for 2050 through mineral carbonation to reduce global greenhouse gas emissions. Although mineral carbonation is naturally occurring, Canada Nickel is proposing active carbonation through the Company's patent-pending In-Process Tailings Carbonation process, a groundbreaking method, that could permanently store (sequester) up to 1.3 million tonnes of CO_2 annually, transforming the Project into a large-scale carbon sink capable of producing net-zero metals. Once fully realized, this could make the Project Ontario's first permanent carbon storage sink and one of Canada's largest permanent carbon storage sinks.

The Company is committed to sustainability, with a dedicated board and community committees overseeing and providing advice on the Company's technical, environmental, and social governance practices.

The Project is subject to the federal impact assessment process under the *Impact Assessment Act* as well as several Provincial Class Environmental Assessments, including:

- Class Environmental Assessment for Provincial Transportation Facilities and Municipal Expressways
- Class Environmental Assessment for MNRF Resource Stewardship and Facility Development Projects
- Class Environmental Assessment for Activities of the Ministry of Northern Development and Mines under the *Mining Act*
- Class Environmental Assessment for Transmission Facilities

In addition to the Impact Assessment and Class Environmental Assessment requirements described above, various federal, provincial, and municipal permits and approvals will be required for the Project. This document summarizes the Impact Statement prepared according to the Tailored Impact Statement Guidelines the Impact Assessment Agency of Canada. The Impact Statement incorporates feedback from consultation and engagement with agencies, Indigenous Nations, stakeholders, and the public.

2 Project Description and Alternatives

The Project will consist of the construction, operation, and decommissioning and closure of a new open pit nickel mine and on-site processing facility, located approximately 42 km north of Timmins, Ontario. The Project will cover an area of approximately 11,785 hectares (ha) and will include the relocation of Highway 655 and an existing 500kV transmission line. Over 30 years, approximately 1,715 million tonnes of ore will be extracted at a rate of up to 240,000 tonnes per day. The Project is expected to process ore for an additional 11 years following the completion of extraction. The Project has the following key components, which are illustrated in Figure 1:

- **Open Pit**: The Project will have a large open pit divided into two zones: the Main Zone and the East Zone. The pit will be about 10 km^2 (992 ha) in size, measuring 4,400 meters (m) by 3,100 m, and up to 690 m deep.
- **Impoundment Facility**: The Impoundment Facility will be the primary material storage area, with separate storage areas for rock, sand and till, and clay. It will be about 3,150 ha, with a height ranging from 34 m to 115 m.
- **Stockpiles:** Various smaller stockpiles will be located around the site to store ore and reclamation materials, such as overburden and rock.
- **Ore Processing and Crushing Facilities**: Two Primary Crushers will feed ore to the Process Plant. These crushers will be located near the East and West Stockpiles, south and west of the Open Pit. Ore from the stockpiles will be fed into the Primary Crushers, where ore will be crushed and then fed by conveyor into the Process Plant north of Martin Lake. The Process Plant will be constructed in two phases: Phase one will process up to 60,000 tonnes of ore per day, and phase two will increase capacity to 120,000 tonnes per day. The Process Plant will produce nickel and magnetite concentrates that will be shipped by rail to a third-party off-site facility for further refinement.
- **Tailings Management Facility**: A Tailings Management Facility will be constructed south of the Open Pit to store waste materials from ore processing. The Tailings Management Facility will be approximately 2,300 ha and will store up to 495 million cubic meters (m^3) of tailings. The Tailings Management Facility will be surrounded by a dam that will be, built progressively as the tailings are deposited, as a thickened tailings cone, near the centre of the facility. The ultimate dam height vary from 9 m to 23 m.
- **Water Management System**: A Water Management System will separate contact and non-contact water. Natural flows and runoff from outside of the mine site (non-contact water) will be diverted around the mine site, while contact water, which includes runoff and groundwater that comes into contact with Project components and activities, will be collected in ditches and directed to collection ponds. Water within these ponds will either be re-used in the Process Plant or treated and released into the environment.

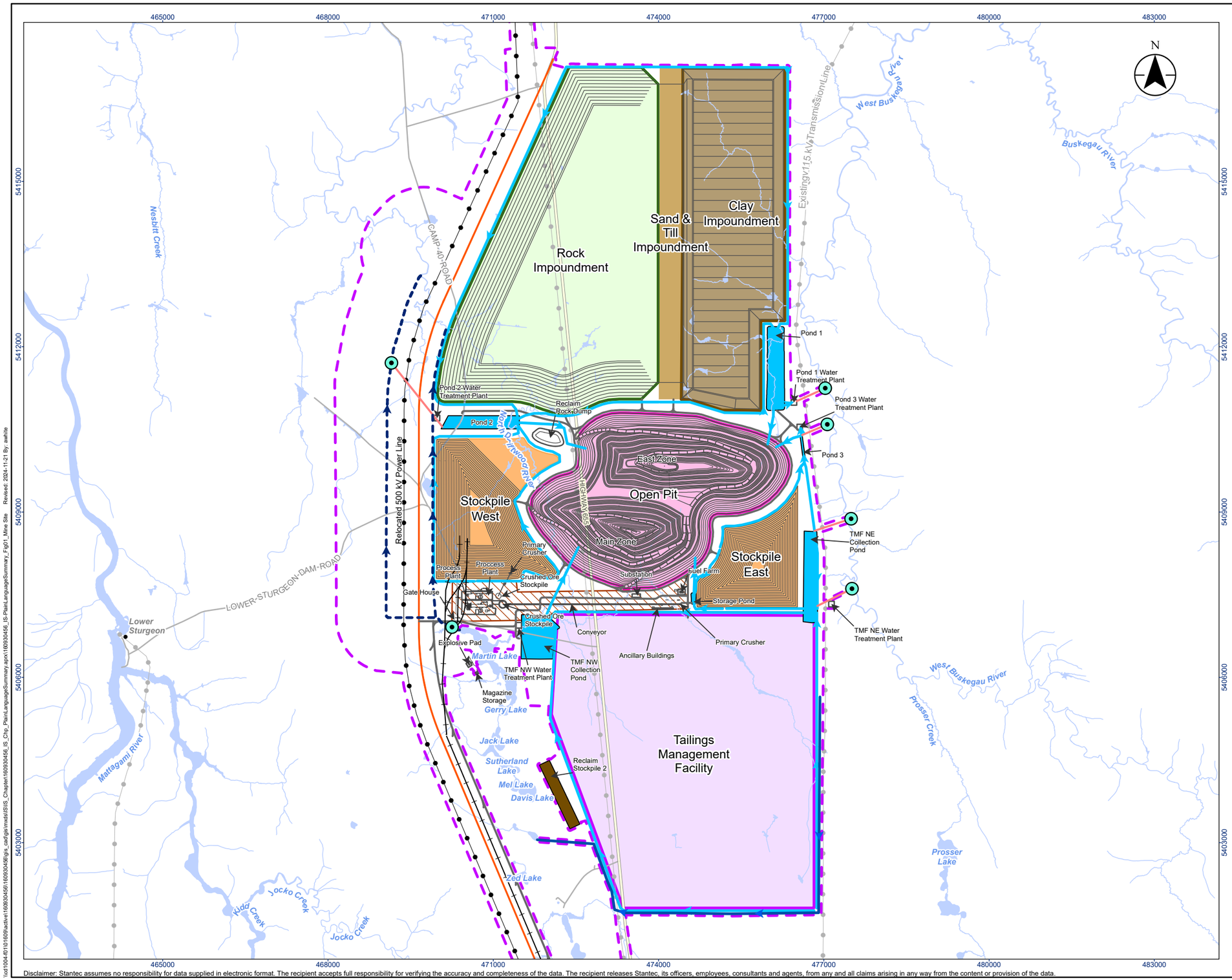
- **Other Mining Infrastructure**: To support mining activities, the Project will include various buildings (i.e., office, workshop, warehouse, medical building, fire hall, assay lab) and internal roadways, along with an explosives storage, fuel farm, power supply and distribution, and waste management.
- **Ancillary Facilities:** Other Project components that will be owned and operated by others include the construction of a 25 km long rail spur line (to be owned and operated by Ontario Northland Railway), the relocation of approximately 29 km of 500 kV transmission line (to be owned by Hydro One), and the realignment of approximately 26 km of Highway 655 (to be owned by the Ministry of Transportation). Canada Nickel proposes to construct the rail spur and highway as part of this Project, while hydro One will construct the transmission line.

Canada Nickel will use its patent-pending In-Process Tailings Carbonation process to enhance the Project's permanent carbon storage, or 'sequestration' potential, whereby carbon dioxide will be added into the tailings to permanently fix carbon dioxide in solid mineral form. Canada Nickel aims to develop the Project into an operation with carbon sequestration exceeding its greenhouse gas emissions, making the Project Ontario's first and largest (and one of Canada's largest) carbon storage facilities, storing up to 1.3 million tonnes of carbon annually during its peak period.

The Project will progress in three phases:

- **Construction Phase (3 years)**: Site preparation and building the necessary infrastructure to start mining. This includes clearing land, building roads, and setting up the Process Plant and other infrastructure.
- **Operations Phase (41 years)**
  - **Operations Phase 1 (5 years)**: Ore is extracted from the Open Pit and the Process Plant operates at 60 kilotonnes per day.
  - **Operations Phase 2 (25 years)**: Ore is extracted from the Open Pit and the Process Plant increases capacity to 120 kilotonnes per day.
  - **Operations Phase 3 (11 years)**: Ore extraction stops, but the Process Plant continues to operate using stockpiled ore at a capacity of 120 kilotonnes per day.
- **Decommissioning and Closure Phase (5 years and beyond)**
  - **Active Closure (5 years)**: This involves decommissioning of the site facilities, removing equipment and buildings, dismantling infrastructure and starting reclamation efforts.
  - **Passive Closure (100 years+)**: This involves monitoring and maintaining the site for long-term stability and environmental safety. It includes ongoing water quality monitoring, managing the pit lake as it fills, and monitoring reclamation efforts.

An assessment of alternative means considered the potential environmental, health, social, technical and economic effects of various technical and economically feasibility alternatives for carrying out the Project. A long list of alternatives for various Project components and activities was developed based on the Tailored Impact Statement Guidelines, Canada Nickel's preliminary design and feasibility work, and feedback from engagement activities. The results of the alternative means assessment are presented in Table 1, with further details regarding the relative effects of each alternative presented in the Impact Statement.



Stantec

CANADA NICKEL COMPANY

Legend

- Project Area

Base Features

- Existing Major Road
- Existing Minor Road
- Existing Transmission Line
- Watercourse
- Waterbody

Ancilliary Infrastructure

- Relocated Hwy 655
- Rail Spur Line
- Transmission Line

Proposed Project Components

- Discharge Route
- Site Road
- Non-Contact Water Channel
- Contact Water Channel
- North Driftwood Diversion Channel Alternative
- Discharge Location
- Ore Stockpile
- Open Pit
- Clay Impoundment
- Pond
- Tailings Management Facility
- Rock Impoundment
- Reclaim Stockpile
- Sand & Till Impoundment
- Process Plant Area

0 1 2 km

1:70,000 (At original document size of 11x17)

Notes

1. Coordinate System:NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.
3. The Project Components and baseline information on this figure are considered preliminary and may be further refined through the development of the Impact Statement based on feedback received from agencies, Indigenous peoples, the public, and project stakeholders.

Project Location
Timmins, Ontario

160930456 REVA
Prepared by awhite on 2024-11-21

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

Figure No.
1

Title
Project Site Plan - Mine Site

Revised: 2024-11-21 By: awhite

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Table 1 Summary of Candidate and Preferred Alternatives

Tailored Impact Statement Guidelines List of Key Project Elements	Project Component	List of Candidate Alternatives Identified for the Initial Screening	Preferred Alternative
Route or Corridor Options	Highway 655/500 kV transmission line/rail line	• C1: West of existing corridor (west of Open Pit and west of Gerry Lake) • C2: East of existing corridor (east of Open Pit and west of West Buskegau River) • C3: West of C1 (further west of Gerry Lake and closer to Mattagami River) • C4: Existing corridor ('Do Nothing')	• C1: West of existing corridor (west of Open Pit and west of Gerry Lake) with alternative C4 being implemented at the beginning of the Project until such time as Alternative C1 is operational. • Preferred since it is a shorter route and it provides access to the entirety of the Open Pit.
	Transportation of concentrate from site	• Concentrate by rail • Concentrate by truck	• Transportation of concentrate from the site by rail. • Preferred due to lower potential effects on air quality, climate change, and health, as well as reduced use of public roads.
	Transportation of freight to site	• Deliveries by rail • Deliveries by truck	• Transportation of freight to site by truck. • Preferred since deliveries are expected from multiple locations at varying times, requiring less logistical planning and on site storage.
	Site access	• SA1: Construction of new access road to Process Plant Area • SA2: Upgrades to the existing secondary road west of lake complex • SA3: Use of abandoned remnant of Highway 655 and then run west of the Tailings Management Facility	• SA1: Construction of new access road to Process Plant Area. • Preferred since this provides the shortest access to the Highway 655, which reduces potential maintenance costs.
Energy and Power Sources	On-site power supply	• Renewable energy (on-site solar or wind) • Diesel or fuel generation • Connection to the grid (transmission line) • Natural gas power plant • Small Modular Reactor	• Connection to the grid once transmission line is available, relying on diesel power generators during construction. • Preferred as the provincial grid is in close proximity, which was deemed most technically and economically viable.
Water Supply Sources	Potable water supply	• Groundwater source (within the Project Area)	• Potable water from a groundwater source within the

Tailored Impact Statement Guidelines List of Key Project Elements	Project Component	List of Candidate Alternatives Identified for the Initial Screening	Preferred Alternative
		• Surface water source (adjacent to the Project Area)	Project Area. • Preferred given reduced potential to affect surface water features and advantages related to reliability and safety.
	Process plant water supply	• Closed loop • Open loop • Combined	• Closed loop. • Preferred since lower potential of effects to surface water and aquatic habitat. Alternative is also least costly to implement.
Aggregate Supply Sources	Aggregate source	• A1: Use mined waste rock and aggregate from within the Project Area • A2: Use third-party quarries and/or pits outside of the Project Area	• A1 and A2: Use a combination of third-party pits and quarries for early site development and mined waste rock from the Project Area for the remaining of the Project.
Water Diversion Alternatives	Water diversion methods	• Diversion • Pumping • Do Nothing	• Collection and diversion of non-contact water around Project Area. • Preferred as other options were not deemed technically or economically feasible.
	North Driftwood River diversion routes	• ND1 - Diversion channel in existing watercourse valley • ND2 - Diversion channel in new perimeter valley (west side of the realigned corridor) • ND3 - Diversion channel out of Gerry Lake (Detailed Project Description [Canada Nickel 2022] alternative) • ND4 - Diversion channel in new perimeter valley (east side of the realigned corridor)	• ND2 or ND4 - Diversion channel in new perimeter valley (west or east side of the realigned highway and transmission line corridor). • Preferred given lower potential effects to surface water, vegetation, and aquatic environments.
Mining-related Activities	Mining operations	• Open Pit • Block cave (underground)	• Open Pit. • Preferred as block caving was not considered economically feasible.
	Ore process plant location	• East of relocated Highway 655 • West of relocated Highway 655	• East of relocated Highway 655. • Preferred due to ground conditions and improved connectivity to other mining infrastructure.

Tailored Impact Statement Guidelines List of Key Project Elements	Project Component	List of Candidate Alternatives Identified for the Initial Screening	Preferred Alternative
	Ore process plant design	• Ore processing methods are controlled by laboratory testing and analyses to obtain optimal recovery utilizing full scale proven technologies	• Ore processing methods are controlled by laboratory testing and analyses to obtain optimal recovery utilizing full scale proven technologies
Mine Waste Management	Impoundment facility	• MWM-1 – This alternative refers to the Impoundment Facility located north of the Open Pit. • MWM-2 – This alternative consists of the storage area located south of the Open Pit and a fraction of storage facility north of the Open Pit. • MWM-3 – This alternative consists of the storage area located west of realigned Highway 655 and the same area north of the Open Pit as described in MWM-2. • MWM-4 – This alternative refers to an area to the east of West Buskegau river.	• MWM-1 – Impoundment Facility located north of the Open Pit. • Preferred due to ground conditions, lower risk of seepage, proximity to the Open Pit, lower risk of failure of the pile, lower technical construction complexity and lower socio-economic impacts.
	Tailings management facility	• South of Open Pit with In-Pit Disposal • North of Open pit with In-Pit Disposal • South of Open Pit (All Above Ground Disposal) • North of Open Pit (All Above Ground Disposal) • North and South of Open Pit (All Above Ground Disposal) • East of the West Buskegau River with In-Pit Disposal	• The Tailings Management Facility to be located South of the Open Pit with In-Pit Disposal once mineral extraction in that zone is complete. • Preferred due to ground conditions, proximity to the Open Pit, lower impact on terrestrial habitat areas, and the relatively low socio-economic.
	Tailings management techniques to improve carbon sequestration	• Passive mineral carbonation • Active mineral carbonation (In-Process Tailings carbonation)	• Carbon sequestration will occur using both passive and active (In-Process Tailings carbonation) mineral carbonation

Tailored Impact Statement Guidelines List of Key Project Elements	Project Component	List of Candidate Alternatives Identified for the Initial Screening	Preferred Alternative
Water and Wastewater Management	Domestic sewage waste	• On-site sewage treatment plant • On-site septic systems • Sewage lagoons	• Domestic sewage will be treated on-site through either an on-site sewage treatment plant or on-site septic systems
	Water treatment technology	• Water treatment plant • Collection ponds • No treatment	• Contact water will be treated through a combination of water treatment plant(s) and collection ponds
	Effluent discharge locations - operations	• Single discharge location: Mattagami River and other locations (Detailed Project Description [Canada Nickel 2022] alternative) • Distributed (multiple) discharge locations to the North Driftwood River and West Buskegau River	• Effluent discharge will be distributed to both the North Driftwood River and West Buskegau River. • Preferred given reduced costs and ability to better match existing flow conditions.
Waste Management	Domestic and industrial waste	• Disposal within an existing licensed facility • Disposal within a new licensed facility	• Domestic and industrial waste to be transported for disposal within an existing licensed facility. • Preferred given availability of existing facilities in area.
	Hazardous waste	• Transportation to a licensed facility off-site	• Hazardous waste to be transported for disposal within an existing licensed facility. • Preferred given availability of existing facilities in area.
Suspension, Decommissioning, or Abandonment Options	Decommissioning and closure	• Closure rehabilitation (upon completion of operations) • Progressive rehabilitation	• Progressive rehabilitation to start during operations and final closure rehabilitation to start upon completion of mining operations.
Workforce Hiring, Scheduling and Accommodation Strategies	Workforce hiring	• Various hiring strategies to be used	• Various hiring strategies to be used
	Scheduling	• Three x 8-hour shifts • Two x 12-hour shifts	• Most operations employees will be scheduled in two 12-hour shifts. • Preferred as it improves efficiency and allows for continued operations.
	Accommodation strategies	• No Project accommodation • Off-site accommodation • On-site accommodation	• No Project accommodation is proposed for workers. • Preferred due to potentially lower environmental effects and reduced costs.

In some instances, the specific location and/or design of project components will be confirmed through detailed design. For example, culverts and bridges will be located and designed to reduce effects while maintaining hydrologic connectivity beneath roadways. In the case of the North Driftwood diversion channel, the alignment will similarly be confirmed during design. Both alignments are illustrated on Figure 1, with the effects predictions in the assessment based on the western alignment as it is longer and would result in greater footprint effects.

Other decisions, such as workforce hiring practices, will be made at a later date. Canada Nickel is committed to hiring first from local communities and the region, to encourage employment of Indigenous peoples, local youth, women, and under-represented populations, and to offering training opportunities to local residents.

3 Public Engagement and Consultation

Recognizing the importance of consultation and engagement, Canada Nickel engaged with various stakeholders with a potential interest in the Project, including federal and provincial government agencies, local municipalities, public interest groups, and other interested parties and members of the public. Engagement began in 2021 and will continue beyond the submission of the Impact Statement. Indigenous engagement is discussed in Section 4.

The following activities were used to consult with the various stakeholders:

- maintenance of a Project website (https://canadanickel.com/)
- emails, calls, and meetings
- public notices
- virtual and in-person Public Information Centres
- calls and meetings with government agencies, including Government Review Team calls and Technical Working Group sessions
- community committees, including an Environmental Committee, Socio Economic Committee, and Workforce Planning Committee
- newsletters
- ad-hoc meetings on specific topics

Table 2 summarizes key public concerns, comments and recommendations, and how they were addressed in the Impact Statement.

Table 2 Key Public Comments

Summary of Key Comment	How Comment was Considered in the Impact Statement
Alternatives Assessment	
Comments regarding the location of mine infrastructure and processing facilities	The mine infrastructure and processing facilities are proposed in a location based on geotechnical conditions, to reduce potential for environmental effects, and to reduce haulage distances and subsequently emissions. A detailed alternatives assessment was completed to compare and evaluate potential locations for Project components.
Alternatives with respect to reducing loss of fish habitat during the design, and location of a second processing plant	A detailed alternatives assessment was completed to compare and evaluate potential locations for Project component. Project design was further refined to reduce impacts to the Mattagami River watershed and to limit direct and indirect impacts to fish habitat. Where impacts cannot be avoided, Canada Nickel will be pursing offsetting and compensation in accordance with a *Fisheries Act* approval. The second Process Plant is located adjacent to the first Process Plant, avoiding the chain of lakes in the headwaters of the North Driftwood River and the West Buskegau River.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Geology and Geologic Hazards	
The nature of surficial geology, including mineralogy, the presence of chrysotile in rock, and applicable mitigation measures	A baseline report summarized the existing conditions for surficial geology. The most frequent surficial materials expected in both the Project Area and Local Study Area consist of glaciolacustrine (e.g. clay), followed by organics, then till. Canada Nickel has committed to several mitigation measures, which include, but are not limited to, promoting terrain stability and maintaining slope gradients, implementing an Erosion and Sediment Control Plan to reduce the potential for erosion, as well as conduct a slope stability assessment to demonstrate the long-term physical stability of the pit and facility. The amount of chrysotile in the deposit was estimated to be <2%.
Whether any geotechnical studies have been completed to date	Geotechnical studies were conducted in support of the Project. Findings from the geotechnical studies were incorporated into applicable chapters of the Impact Statement, and the studies themselves were included as appendices to the Impact Statement. The Project design has been adapted based on geotechnical considerations, including factors of safety.
The estimated range of recoveries anticipated for Canada Nickel	Details about ore extraction and concentrate production were included in the Impact Statement. Based on the current Project design, the maximum rate of ore extraction will be up to 240,000 tonnes per day and an estimated average rate of 160,000 tonnes per day over the life of mine (i.e., yearly average expressed daily based on a total of 1,715 million tonnes of ore extracted over 30 years). Over the life of mine, 8.5 million tonnes of nickel concentrate, and over 100 million tonnes of magnetite concentrate, will be produced.
Atmospheric Environment	
Concern respecting changes to air quality, including baseline conditions, emissions estimates, dispersion modelling, human receptor locations for many parameters, and presence of chrysotile, the potential effects of chrysotile in dust, measures to manage chrysotile in airborne dust (if present)	Canada Nickel conducted baseline air quality monitoring in 2021. Monitoring data was consistent with what would be expected for a remote location. An air quality assessment was completed to check for possible emission increases from the Project. Receptor locations were chosen using aerial imagery, on-site verification, and Traditional Knowledge and Land Use studies from Indigenous Nations. The assessment of potential effects on air quality analyzed contaminants of potential concern emissions inventories of point sources (e.g., stacks), mobile sources (e.g., heavy equipment) and stationary sources (e.g., large storage piles) for the Project construction and operations scenarios. Dispersion modelling was used to predict the downwind concentrations of air contaminants of potential concerns from the Project and compared these predictions to regulatory standards, objectives and guidelines for the Project alone and cumulatively. A series of mitigation measures were recommended to reduce the potential effects on air quality. Predicted residual effects for air quality are shown on contour plots.
Mitigation measures to manage changes to air quality, including the level of provincial oversight that will support compliance with air quality criteria in the Project Area and Local Study Area	The Impact Statement includes several mitigation measures that Canada Nickel will adhere to in future phases of the Project. These measures include an Air Quality Management Plan with regulatory oversight and monitoring. Canada Nickel will also obtain an Environmental Compliance Approval from the Ministry of the Environment, Conservation and Parks, which will include various conditions that Canada Nickel must meet.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Acoustic Environment	
Concern with respect to noise from traffic and equipment in the Project Area, as well as methods to monitor noise emissions to ensure safety thresholds have been met	A Noise and Vibration Assessment identified and assessed potential sources of noise from the Project. The predicted noise and vibration effects are shown on noise contour maps and vibration zones. The noise model includes Project Area traffic and equipment. Noise from the re-alignment of Hwy 655 is also assessed. A process to address noise and vibration complaints will be developed as part of the Noise and Vibration Management Plan. A follow-up and monitoring plan will include monitoring, thresholds, and adaptive management. The Impact Statement includes an overview of the preliminary monitoring plan.
Concern regarding potential effects from increased noise levels and vibration from the Project on recreational activity, including camping areas, such as Big Water Campground	The Noise and Vibration Assessment identified 13 representative receptors, including the Big Water Campgrounds. Noise from mining activities (extraction, processing) is not expected to be noticeable at the campgrounds, which are over 5 km away, and the predicted sound level is lower than the existing background sound levels. However, rail noise from the movement of concentrate by along the rail spur was considered. Noise at the Big Water Campgrounds is expected to be slightly above background sound levels but remain within limits during operations. Mitigation measures are proposed for receptors where noise levels exceed limits.
Groundwater	
How groundwater drawdown is related to Project activities	The potential for groundwater drawdown was assessed as part of the Groundwater Assessment. Groundwater drawdown is specifically related to the dewatering of the Open Pit. The groundwater drawdown, at its maximum, is predicted to be 1 m and extend up to 3.1 km east, 4 km west, 5.1 km south, and 9 km north of the Open Pit.
Surface Water	
Concern regarding the potential effects of increased levels of iron, mercury, arsenic, and cobalt in surface water due to Project activities.	A Surface Water Resources Assessment was done to identify potential changes in water quality resulting from the Project. The potential for increased levels of iron, mercury, arsenic, and cobalt was considered when selecting parameters for mine effluent discharge criteria. The predicted residual effects on surface water quality are not expected to be significant, as the effluent will meet regulatory limits at the final discharge points and will not exceed watershed management targets. The Local Study Area is expected to completely accommodate changes in surface water quality for all mine life phases.
Concern regarding the potential effects of seepage and runoff from ore, mine rock, tailings, and overburden on surface water quality	The potential for seepage and runoff was considered during the development of the Site-Wide Water Management Plan for the Project. Contact water will be collected by a series of ditches and directed to the various Collection Ponds located throughout the site. Ditches will collect surface contact water and seepage from stockpiles. The details of the Site-Wide Water Management Plan were incorporated into the Surface Water Resources Assessment. The predicted residual effects on surface water quality are not expected to be significant, as the effluent will meet regulatory limits at the final discharge points and will not exceed watershed management targets. The Local Study Area is expected to completely accommodate changes in surface water quality for all mine life phases.
Concern regarding the potential effects of effluent discharge in the Mattagami River	Based on feedback and ongoing design work, the Project design was changed to avoid any direct impacts to Mattagami River. The proposed discharge point to the Mattagami River was removed.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Understanding the water storage capacity in the water storage ponds and whether it will be necessary to discharge untreated contact water to the environment at any point, as well as drainage information across all Project phases	Details of the Collection Ponds and drainage information are presented in the Site-Wide Management Plan for the Project. The Collection Ponds will range in size from 160,000 m^3 to 2.4 million m^3. Ditches will collect surface contact water and seepage from stockpiles and return the contact water to the Collection Ponds. The site-wide water management system has been designed to manage up to the 100-year return period, 24-hour duration event. Flows up to the 10-year return period, 24-hour duration storm event will be managed in the Collection Ponds. Flows between the 10-year return period, 24-hour duration storm event and up to the 100-year return period, 24-hour duration storm event will be managed by controlled release to the Open Pit, to provide temporary storage. Flows from a flood event in excess of the 100-year return period will be directed to an emergency overflow spillway that will discharge to the receiving environment.
Concern regarding an increased risk of mercury mobilization in selected source-water intake locations	The Surface Water Resources Assessment considered the potential for release of mercury from the Project. Flooding wetlands and organic soil riparian areas could potentially release mercury, which can be absorbed by microorganisms and then increased through the food chain up to fish eaten by people and wildlife. Although mining operations are not expected to increase mercury, flooding organic soils as part of the construction of the North Driftwood Diversion Channel could raise mercury levels. Methyl mercury was assessed and the predicted methyl mercury concentration in the North Driftwood River does not exceed the guideline value (4 ng/L). The main source of process water will be recycled water from the Process Plant, water from Open Pit dewatering, and site runoff collected in the Tailings Management Facility Northwest and Northeast Collection Ponds. These intake locations are not expected to increase the risk of mercury mobilization.
Need for further information on the release of nitrogen into the aquatic environment	The potential release of nitrogen into the aquatic system was assessed in the Surface Water Resources Assessment and in the Fish and Fish Habitat Valued Component chapter of the Impact Statement. Nitrogen is transported from the Project to surface waterbodies and watercourses through atmospheric particulate deposition (falling from the air) and through water discharge points. Changes in nutrient levels (phosphorus, nitrogen) in bodies of water are assessed for their impact on eutrophication rates. Eutrophication is the increase in nutrients, particularly phosphorus, in freshwater systems, leading to higher productivity and changes in the aquatic ecosystem. This can cause a reduction in dissolved oxygen, changes in aquatic life, increased algae and cyanobacteria growth, and taste/odour issues. Project-related atmospheric nitrogen deposition is not expected to cause a substantial increase in eutrophication within the receiving waterbodies and watercourses. The use of explosives for the Open Pit can result in residual nitrogen that can be transported air to surface waterbodies and watercourses. Water discharge to the West Buskegau River is not expected to cause a substantial increase eutrophication. However, discharge to the North Driftwood River could increase eutrophication in a segment of the proposed North Driftwood Diversion Channel and will be monitored to inform adaptive management.
Various mitigation measure recommendations for water quality respecting effluent discharge, sediment control, and tailings storage facilities	Canada Nickel has included mitigation measures in the Impact Statement, such as adding seepage collection ditches to catch shallow groundwater seepage from the Tailings Management Facility, implementing an Erosion and Sediment Control Plan with proper sedimentation control measures, and creating a Site-Wide Water Management Plan to reduce environmental impact.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Vegetation, Riparian and Wetland Environment	
The location and impacts on black ash	Black ash occurrences were identified in the terrestrial baseline reports. Black ash was located in the Local Study Area but not in the Project Area. Terrestrial baseline reports include the identified locations of black ash in the associated figures. As the black ash occurrences are located more than 120 m from the Project Area, no direct or indirect Project effects are anticipated.
Impacts on rare plant species, and how these species will be preserved and/or protected	Potential impacts on rare plant species were assessed as part of the Vegetation, Riparian and Wetland Environments Valued Component chapter of the Impact Statement. An estimated 3 hectares of potential rare vegetation communities will be directly affected by Project development. Additional indirect edge effects on potential rare vegetation communities can occur outside the Project Area from changes in wind, light, and hydrology. Direct loss of vegetation communities will be offset in part by progressive reclamation during operations, and final reclamation and revegetation activities after the operations phase is complete. Canada Nickel will incorporate rare plant species, plant species at risk and species of conservation concern in reclamation planning, if and where habitat is deemed suitable.
Comments regarding the impacts of on vegetation from fugitive dust.	Potential impacts on vegetation from dust were assessed as part of the Vegetation, Riparian and Wetland Environments Valued Component chapter of the Impact Statement. Deposition of dust on vegetation has potential to affect vegetation growth by reducing physiological processes such as photosynthesis and respiration. Canada Nickel will implement dust suppression measures to reduce the generation and deposition of dust on vegetation adjacent to Project activities.
Fish and Fish Habitat	
Questions regarding the modelling approach to understand the impacts to fish and fish habitat	Potential effects of the Project on fish habitat were assessed using multiple modelling and analysis methods, including: • GIS analysis of the Project Area • Surface water model flow predictions • Habitat Evaluation Procedures • Comparison of potential water contaminants to applicable guidelines. • Comparison of predicted air-borne particulate matter, acidifying emissions, and eutrophying emission loadings into lakes, ponds and streams to applicable guidelines.
Questions regarding how fish life cycles and habitat use were considered	The Fish and Fish Habitat Valued Component chapter considered fish life cycles and corresponding habitat needs in the assessment of potential effects, which was supported by baseline characterization of spawning, foraging, migratory, and overwintering fish habitat. Depending on the areal extent of altered fish habitat, by habitat type and/or fish species life stage, as one example, would influence the characterization of the effect.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Comments respecting the potential loss of fish habitat in tributaries, lakes, and ponds that support many different fish species, including those that are culturally important to Indigenous Nations, or that support these culturally important fish species. This also includes the potential effects of fish and fish habitat from the destruction of watercourses, flow reductions in watercourses downstream of the mine, and use of waterbodies for mine waste disposal.	The Fish and Fish Habitat Valued Component chapter quantified the amount of fish habitat anticipated to be altered as a result of the Project. The Project is anticipated to result in the unavoidable harmful alteration, disruption or destruction of approximately 147 ha of fish habitat, including the loss of all headwater streams, ponds, and mainstem channel within the Project Area. Most (70%) of this habitat will be in the North Driftwood River watershed with smaller areas of affected habitat in the West Buskegau River watershed (29%) and Jocko Creek watershed (<1%). The Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada (Fisheries and Oceans Canada 2013) provides guidance on the application of a ±10% threshold limit to changes in flow relative to the natural flow regime. These threshold limits were used to assess changes within watersheds and potential effects on fish. Canada Nickel will implement offsetting measures to counterbalance these unavoidable habitat effects, including offsets in the North Driftwood Diversion Channel that will benefit fish populations in the North Driftwood River watershed.
Comments respecting the potential negative effects of the proposed diversion channel and disruption of natural flow on fish migrations, fish populations, fish life cycles, and habitat (including riparian habitat) used by fish, including lake sturgeon.	The Fish and Fish Habitat Valued Component chapter assessed the potential effects associated with the North Driftwood Diversion Channel. Construction of the North Driftwood Diversion Channel during the operations phase will involve vegetation clearing, stripping, grading of overburden and excavation, and dewatering of fish habitat in the mainstem and tributaries of the North Driftwood River within the Project Area. Increases in total suspended solids may occur due to construction and operation of the North Driftwood Diversion Channel. Loss of fish habitat associated with the infilling of the North Driftwood River may negatively affect the productivity of local fish populations by reducing the amount of available habitat for various life stages (i.e. spawning, rearing, overwintering) as well as reducing sediment transport, nutrients and/or food supply to areas of fish habitat downstream of the Project Area. However the North Driftwood Diversion Channel is proposed as a fish habitat offsetting measure. To mitigate construction related effects of the North Driftwood Diversion Channel, the channel will be constructed “in the dry” to accommodate construction, stabilization, and vegetation growth within the new channel prior to diverting flows from the North Driftwood River. Lake sturgeon were not considered in the fish habitat assessment because surveys from 2021 to 2023, including eDNA (i.e., referring to genetic material (DNA) that is collected from environmental samples, such as water, rather than directly from an organism) surveys conducted in May 2024, showed that the Project Area is not used by lake sturgeon.
Need for fish population data that corresponds to habitat potentially affected by the Project	The Impact Statement includes an overview of the baseline conditions for fish and fish habitat, with detailed baseline reports attached. The Impact Statement and appendices compile information from existing reports, provincial and federal datasets, Indigenous Knowledge provided by potentially affected Indigenous nations, and a three-year field study from 2021 to 2023.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Need for information on the current and historical distribution of lake sturgeon in the North Driftwood River and information on potential mitigation measures that may be needed to prevent impacts to lake sturgeon in the North Driftwood River	A dedicated section on lake sturgeon was included in the fish baseline report appended to the Impact Statement, outlining field survey results, habitat, and current and historical distribution in the Mattagami and North Driftwood Rivers. Based on surveys from 2021 to 2023, including eDNA surveys conducted in May 2024, the Project Area is not used by lake sturgeon. The aerial survey undertaken in May 2024 identified five barriers to upstream migration by lake sturgeon in the North Driftwood River. One of these barriers (a series of bedrock waterfalls) was identified as being 'impassable without reservation', meaning that lake sturgeon would not be able to pass upstream beyond this point, regardless of the flow conditions in the river. This barrier is 21.8 km upstream of the North Driftwood River's confluence with the Abitibi River and 63.3 km downstream of the Project Area. The North Driftwood River can therefore be excluded as a possible avenue for lake sturgeon to enter the Project Area from downstream. As a mitigation measure, the North Driftwood Diversion Channel will be constructed to divert run-off in the North Driftwood River watershed around the Project Area, reducing potential flow reductions in the North Driftwood River downstream of the Project Area.
Comments regarding the need for standard and fish and fish habitat-specific mitigation measures (including walleye spawning habitat in the North Driftwood River) and support for a plan to offset unavoidable habitat losses, including potential effects of fish relocations and methods used for fish relocations	Canada Nickel is developing a Fish Habitat Offsetting Plan to counterbalance all unavoidable losses of fish habitat in the North Driftwood River, West Buskegau River and Jocko Creek watersheds. A Conceptual Fish Habitat Offsetting Plan has been developed with input from Indigenous Nations, various agencies, provincial fisheries managers, and local stakeholders. This conceptual plan provides a suite of "in-kind" and "out-of-kind" options that will likely form the final Fish Habitat Offsetting Plan for Canada Nickel's *Fisheries Act* Authorization [paragraph 35(2)(b)] application to Fisheries and Oceans Canada. Other mitigation measures to reduce the potential for effects on fish and fish habitat were incorporated into the Fish and Fish Habitat Valued Component chapter.
Potential effects on lake sturgeon, suckers, and spawning areas in the Mattagami River from construction and operation of the effluent discharge pipeline	Based on feedback and ongoing design work, the Project design was changed to avoid any direct impacts to Mattagami River. The proposed discharge point to the Mattagami River was removed.
Birds and Bird Habitats	
Comments regarding the potential effects on migratory birds and their habitat, including habitat loss, habitat alteration or fragmentation, or disturbance due to site alteration, vegetation clearing, vehicle operation, accidents and spills, and increased noise levels and light pollution, during all Project phases	Potential effects to migratory birds and their habitat were assessed through the Birds and Bird Habitat Valued Component chapter. In general, the Project will result in the direct and indirect loss of bird habitat, which will be reduced as the Project Area is reclaimed. It is predicted that species distribution will shift to undisturbed areas around the Project, where suitable habitat is available.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Comments regarding the potential effects on Bald Eagle (including stick nests), Canada Warbler, Common Nighthawk, Olive-Sided Flycatcher, Yellow Rail, Whip-poor-will, Evening Grosbeak, Barn Swallow, Bobolink, Red-headed Woodpecker, Peregrine Falcon, Bank Swallow, geese and ducks	Potential effects to migratory birds and their habitat were assessed through the Birds and Bird Habitat Valued Component chapter. Potential effects to bird species identified by commenters were evaluated, with the exception of peregrine falcons. Suitable nesting habitat was not identified for peregrine falcons within the Local Study Area and it was not recorded during field surveys. Peregrine falcons may be present during migration. In general, while there will be a direct loss of habitat for these species within the Project Area, as well as some indirect effects, it is predicted that species distribution will shift to undisturbed areas around the Project, where suitable habitat is available.
Comments respecting bird mortality as a result of the Project	The potential for bird mortality as a result of the Project was assessed through the Birds and Bird Habitat Valued Component chapter. The increase in migratory bird mortality is due to impacts on nests and flightless birds. Avoiding vegetation clearing during the breeding bird season will reduce this risk. Birds are expected to avoid the Project Area and associated construction activity due to the high levels of disturbance (i.e., noise, human presence), which will lessen the likelihood of collisions with vehicles and construction equipment. Increased mortality risk associated with the operation of the realigned Highway 655 and relocated transmission lines is expected to be negligible given that these facilities already exist in proximity to the proposed area for relocation and no substantive increase in traffic is anticipated.
Climate Change	
Comments respecting the impact of the Project on climate change (i.e., greenhouse gas emissions), the use of diesel-fired generation during various mine phases, and whether it will be carbon neutral.	An assessment of greenhouse gas emissions and the Project's potential effect on climate change were undertaken and provided within the Impact Statement. The Project is expected to release greenhouse gas emissions but will also serve as a carbon sink. Overall, the Project will sequester more carbon dioxide equivalent than will be emitted by Project activities. During construction, power will be supplied using diesel generators until power from the grid is available. During operations, the Project will connect to the provincial electricity grid. Generators could also be used during operations, but only to provide standby power in emergency situations.
Potential Effects of the Environment on the Project	
Comments respecting the impact of extreme weather events (i.e., forest fires) on the Project	The Impact Statement evaluated how environmental conditions, including natural hazards, could affect the Project. Strategies to manage risks from extreme weather such as forest fires will be implemented throughout the life of the Project.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Health	
Comments respecting the impacts on human health from Project emissions, biophysical pathways of exposure such as air, water, food, and noise, and health impacts of effluent discharge to Mattagami River upstream of water intake structures for the town of Smooth Rock Falls.	The Human Health Risk Assessment evaluated potential health risks to human health within the Local Study Area and Regional Study Area as a result of Project-related activities during construction, operations, and decommissioning. The Human Health Risk Assessment included an evaluation of risks from changes in contaminant levels in air, soil, surface water, and country foods. The inhalation risk assessment showed that air contaminants from the Project are unlikely to exceed health-based exposure limits and toxicity reference values at locations where people stay for extended periods (including overnight stays or beyond) during Project construction or operations. Health risks from arsenic, uranium and vanadium were found in the North Driftwood River and West Buskegau River watersheds, but not in the Jocko Creek watershed. The main risk from arsenic comes from changes in surface water affecting fish and drinking water, however fish and potable water consumption and exposure to arsenic are not expected to result in unacceptable health risks. Monitoring arsenic in surface water and fish in each watershed will help track changes in exposure. Health risks from exposure of uranium and vanadium within the Local Study Area are expected to be negligible. Based on feedback and ongoing design work, the Project design was changed to avoid any direct impacts to Mattagami River. The proposed discharge point to the Mattagami River was removed, thus no impacts are projected at the Smooth Rock Falls water intake.
Impacts of health outbreaks at the Project site on limited medical capacity in the region	Measures to mitigate potential effects to services were identified in the Social Conditions Valued Component chapters. Canada Nickel will have 24/7 access to virtual physician support and a communicable disease management plan as part of a larger Health and Medical Services Plan. These measures will enable workers to confidentially inquire about signs and symptoms of infectious diseases and get treatment options. If an infectious outbreak occurs (e.g., Covid-19), Canada Nickel will follow the communicable disease management plan, including timely communication with the Porcupine Health Unit, enhanced cleaning practices, social distancing, appropriate signage, and worker screening.
Social Conditions	
Comments expressing concern about the potential social impacts of an influx of workers on transportation infrastructure	The potential change in demand for transportation infrastructure was assessed in the Social Conditions Valued Component chapter of the Impact Statement. A Traffic Impact Study was also done. To mitigate traffic disruptions during Project construction, Canada Nickel will implement standard traffic management and control procedures. The Project is expected to increase traffic on Highway 655 and through the Regional Study Area communities as employees travel to and from the Project site. However, Highway 655 and the Project access intersection can handle the additional traffic. The frequency of rail traffic to and from the Project site will be up to 4 roundtrips a day. Project materials will only move on the Project rail spur, so the impact on the local rail service will be nominal. Canada Nickel will prepare a Traffic Management Plan to address traffic staging in order to reduce delays. Canada Nickel has committed to mitigation measures to reduce changes in demand for transportation infrastructure.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Members of the public and stakeholder groups expressed concern about impacts on housing, lack of available housing, and need for low-income housing for workers (acquiring and accommodating a sufficient workforce)	The potential change in the availability of accommodations was assessed in the Social Conditions Valued Component chapter of the Impact Statement. An accommodations complex will not be developed as part of the Project because of the presence of nearby communities. Canada Nickel expects local employees to commute daily from nearby communities, which are about one hour's drive of the Project site. Some workers may choose to drive farther distances based on their preferences or circumstances. To manage accommodation issues, Canada Nickel will prioritize hiring local workers. Canada Nickel will encourage non-local Project construction workers to share rooms at temporary accommodations, including hotels and motels, as well as rental units. Canada Nickel will communicate Project requirements for accommodation to local service providers so they may prepare for periods of increased demand. Northeastern Ontario has experience hosting mining projects and their workforces. In addition, Canada Nickel plans to study accommodation options and work with third parties to provide housing for Project workers. Canada Nickel is also exploring opportunities with third parties, including Indigenous Nations and local entrepreneurs, with respect to workforce accommodations.
Members of the public and other stakeholders expressed concern about impacts to recreational trails (e.g., snowmobile trails)	The potential change in recreation was assessed in the Social Conditions Valued Component chapter of the Impact Statement. The Project will remove an east-west snowmobile trail and warming hut from the Project Area. Canada Nickel will support local snowmobile clubs in creating a bypass trail around the Project Area. No other trails will be affected.
Recommendation that public engagement include women, youth, Elders, and 2SLGBTQQIA+ people.	Canada Nickel has engaged with diverse population groups to understand their unique perspectives and socio-economic conditions. This included efforts to contact organizations which represent these populations in the Project's region and approaching such organizations at community events.
Economic Conditions	
Comments regarding impacts to the cost of living and worker retention	The potential change in business was assessed in the Economic Conditions Valued Component chapter of the Impact Statement. Project wages will likely match those in similar Ontario industries. However, the Project could increase competition for labour among local employers, raising wages and making it harder for local businesses to hire or keep workers, as Project jobs may be seen as more desirable. To manage the Project's contribution to upward pressure on wages, Canada Nickel will pay its direct workforce wages that are consistent with Ontario's mining industry. Given the size of the local workforce, the impact on local and regional businesses is expected to be low.
Comments respecting the positive economic effects from the Project, including project costs and procurement opportunities.	Based on the findings of the Economic Impact Assessment undertaken in support of the Impact Statement, over the course of three phases, the total capital investment for the Project is estimated at $6.786 billion, 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, they are projected to reach approximately $4.1 billion. Indirect and induced GDP contributions are also expected to substantively contribute to GDP growth, with $281.4 million indirect and $205.4 million induced impacts towards GDP in Ontario, and $526.2 million indirect and $311.7 million induced impacts towards GDP in Canada.

Summary of Key Comment	How Comment was Considered in the Impact Statement
	Operational expenditures for the Project are expected to reach $24.558 billion, 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, they 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.
Comments regarding the existing labour availability for the Project	An estimate of workforce availability was included in the Economic Conditions Valued Component chapter of the Impact Statement. While estimates of local and regional employment are provided, the degree to which residents of the Local Study Area and Regional Study Area secure employment with the Project depends on factors like education levels, labour force conditions, and local worker interest in the Project. The use of outside labour by contractors also affects local and regional employment levels. Based on the composition of similarly sized past mining and construction projects, it is reasonable to expect that the local labour component would not exceed 20% of the Project labour force. Therefore, the peak construction labour force of approximately 2,000 persons could be comprised of 400 local residents and 1,600 non-local workers. During operations, the peak labour force of nearly 1,400 could include 280 local residents and 1,120 employees from outside of the Local and Regional Study Areas. Considering typical work rotations for similarly sized mining and construction projects, it is likely that 75% of the labour force during construction and operations could be on-site at any one time.

Key concerns expressed by federal and provincial agencies include:

- Boreal Caribou, including:
  - Importance of baseline conditions in determining range-level recovery goals and appropriate mitigation measures (e.g., habitat compensation).
  - Influence of provincial conservation efforts, such as Abitibi River Forest Management Plan, on impacts to boreal caribou habitat.
- Fish and Fish Habitat, including:
  - Comments on methodology for baseline assessment, including quantifying fish habitat, deciding on study area, sampling effort, and monitoring plans
  - Location of fisheries sanctuary
  - Impacts to Lake sturgeon
  - Considerations for potential fish habitat offsetting measures
- Carbon Storage, including:
  - Comments on increasing the validity of Canada Nickel's Carbon Storage Plan
  - Best Available Technologies / Best Environmental Practices

  - A credible plan to achieve net-zero by 2050 that uses and builds off the Best Available Technologies / Best Environmental Practices
  - determination to describe mitigation measures that will be taken to minimize greenhouse gas emissions
- Sustainability, including:
  - Impact of the Project on Canada's efforts to reduce greenhouse gas emissions
  - Predicted greenhouse gas emissions of the Project
- Surface Water Quality, including:
  - Improve accuracy and promote clarity on methodology used to assess impacts to water quality
  - Compare quality of all effluent streams released from the site to applicable standards
  - Compare worst case scenario changes to surface water quality
  - Present predicted mixing zone extent from each final effluent discharge point to receiver
- Groundwater, including:
  - Data and information on the Main Regional Fault
  - Clarity on a proposed long-term groundwater monitoring plan
  - Comments on methodology for baseline assessment and limitations and uncertainties with limited site-specific hydraulic testing
  - Contribution of groundwater to baseflow to understand the effects to surface water flow from pit dewatering, and subsequent potential effects to fish and fish habitat
  - Request for a sensitivity analysis to quantify the uncertainty relating to the hydraulic conductivity of the clay, till, bedrock, and esker

More extensive detail about how the comments were addressed are available in the corresponding Valued Component chapters in the Impact Statement.

4 Indigenous Nations Engagement

Canada Nickel recognizes the importance of working in genuine partnership with Indigenous Nations to establish a mutually beneficial, cooperative, and productive relationship centered around transparent information sharing, open dialogue, meaningful collaboration, and early and ongoing engagement. The Project is within the boundaries of Treaty 9 (also known as the James Bay Treaty) and it is also within Métis Nation of Ontario - Region 3's area of interest.

Canada Nickel engaged with the following potentially affected Indigenous Nations throughout the Impact Statement process, as identified in the Indigenous Engagement and Partnership Plan for the Project (IAAC 2023):

- Apitipi Anicinapek Nation
- Flying Post First Nation
- Matachewan First Nation
- Mattagami First Nation
- Taykwa Tagamou Nation
- Métis Nation of Ontario – Region 3

Canada Nickel has and continues to implement a wide range of engagement activities and communication tools that vary from Nation to Nation, depending on the stage of the relationship and the specific interests of each Nation. Some examples of these activities include:

- Participation in community events, including open houses, community meetings, and events of cultural and/or social importance.
- Business Memorandums of Understanding, Impact Assessment Process Agreements, Impact Benefit Agreements /Mutual Service Agreements, and other agreements under development, signed or upcoming, as appropriate.
- Formation of committees, hiring of community liaisons, and initiation of regularly scheduled meetings, as appropriate, requested, and/or included in agreements.
- Provision of funding, support, and opportunities for participation relating to Impact Statement and several baseline study programs, including Traditional Knowledge and Land Use and Social and Economic studies, to support capacity building, information sharing, and meaningful collaboration.
- Participation in IAAC-led Technical Working Group sessions to coordinate reviews and focus on key issues associated with the Project. The Technical Working Group is composed of Indigenous Nations and select agencies, with a focus on those agencies with mandates that directly overlap with the main key regulatory concerns that are likely to be associated with the Project.
- Participation in baseline studies, including site visits, field programs, and review of baseline work plans and schedules, as appropriate, requested, and/or included in agreements (i.e., according to each Nation's interests, expectations, and/or capacity for participation).

- Provision of draft Impact Statement documents for review.
- Sharing of maps and other material to support identification by community members and Elders of culturally significant or potential archaeological sites.
- Sharing of job opportunities and contracts in advance of public posting. Future training opportunities and programs, as well as business opportunities were and will continue to be shared with an emphasis on Canada Nickel's procurement and hiring programs for members of Indigenous Nations, 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, powwows, youth programs, community events, etc.
- Community meetings led by Canada Nickel, hosted in the community when appropriate, to present parts of the Impact Statement and other Project updates, with opportunities for comprehensive question and answer periods.
- Validating the interpretation and use of Indigenous Knowledge in assessment documentation (accounted for or to be accounted for in the relevant agreements and plans for engagement).
- Information sharing by email, phone, and in-person meetings regarding proposed activities, meetings, and Project updates.

Additionally, as part of its broader public consultation efforts available to interested Indigenous Nations, information has been shared by email, community newsletters, and the Project website. Email addresses for the Vice President of Sustainability, Director of Indigenous Relations and Public Affairs, and the Community Relations and Communications Coordinator have been monitored daily with cellphone numbers provided to governance representatives and liaisons, as well. Individual and group meetings have been held and minutes are shared directly with participants following meetings. Anonymous feedback surveys, fact sheets, a summary of the Initial Project Description and the Detailed Project Description have been shared on the Project website.

Table 3 provides a summary of key concerns, comments and recommendations brought forward by potentially affected Indigenous Nations and how they were considered in the Impact Statement.

Table 3 Key Comments Shared by Indigenous Nations

Summary of Key Comment	How Comment was Considered in the Impact Statement
Geology and Geologic Hazards	
Recommendation to conduct geochemical analysis and demonstrate how runoff waste could be safely discharged to the environment.	A geochemical assessment was performed on waste rock, ore samples, tailings samples and overburden samples. A list of Parameters of Potential Concern (e.g., chloride, fluoride, nitrite, arsenic, etc.) were established to determine the daily and monthly limits of effluent discharge according to regulatory guidelines. A Conceptual Metal Leaching and Acid Rock Drainage Management Plan has also been prepared for the Project.
Soil	
Concerns that erosion and sedimentation may occur, resulting in changes to water quality.	The Impact Statement considered potential changes to soils and potential impacts as a result of soil changes. Changes in water quality and fish and fish habitats of cultural importance that may occur through erosion and sedimentation were considered in the development of mitigations and management measures and supported the assessment of issues. These will also be considered during the development of an Erosion and Sediment Control Plan, that will outline mechanisms to stabilize soil, prevent erosion, and monitor for ongoing best management practices.
Atmospheric Environment	
Concerns that mine dust and air pollution may impact plant and animal health, and quality of country foods.	An air quality assessment was done to check for possible emission increases from the Project. Receptor locations were chosen using aerial imagery, on-site verification, and Indigenous knowledge and land use studies from Indigenous Nations. Potential impacts on plant and animal health of cultural importance from dust were assessed as of the Impact Statement. Deposition of dust on vegetation has the potential to affect vegetation growth by reducing physiological processes such as photosynthesis and respiration. Canada Nickel will implement dust suppression measures to reduce the generation and deposition of dust on vegetation adjacent to Project activities.
Acoustic Environment	
Concerns that sensory disturbances will impact harvesting and cultural activities, and will affect the habitats and populations of bird, wildlife and fish. Requests to participate in determining what methodology will be used to assess changes in noise and vibration levels.	A Noise and Vibration Assessment identified and assessed potential sources of noise from the Project and considered receptor locations for harvesting and cultural activities identified through engagement with the Indigenous Nations. Noise from mining activities (extraction, processing) is not expected to be noticeable at receptors over 5 km away, and the predicted sound level is lower than the existing background sound levels. The Noise and Vibration Assessment informed the assessment of potential effects on Indigenous Interests, and although federal and provincial criteria for noise will be met, change in noise levels is predicted within the Indigenous Interests Local Study Area as noise generated through construction, operation, decommissioning, and closure activities may influence the quality of experience or required conditions that are connected to the exercise of Indigenous and/or Treaty Rights. Sensory disturbances were considered in the assessments of birds and bird habitats, wildlife and wildlife habitats, and fish and fish habitats. Changes to birds and bird habitats, wildlife and wildlife habitats, and fish and fish habitats are anticipated during operations for affected species but are anticipated to be reversible through reclamation and restoration. Mitigation measures are proposed for receptors where noise levels exceed limits.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Groundwater	
Concerns regarding changes in ground water quality due to chemical leaks.	Both a Seepage Quality Assessment and the Assessment of Groundwater Seepage (including rates and a summary of groundwater seepage quality) were completed for the Project. Groundwater seepage quality is carried out using results of acid rock drainage and metal leaching testing that included testing of rock samples, ore samples, tailings samples, and overburden samples. Groundwater seepage from the Stockpiles, Impoundment Facility, Tailings Management Facility, and groundwater flow in contact with the tailings impounded within the Open Pit has the potential to affect groundwater and surface water quality where groundwater discharges to surface water receivers. Effects on groundwater levels and the fate of groundwater in contact with the impounded tailings within the Open Pit was predicted using a groundwater flow model. Mitigation and management measures were introduced to limit potential Project effects.
Concerns for increased pressures on the water systems and a decrease in the availability of groundwater surrounding the Project Area.	Three-dimensional groundwater flow modelling was conducted in the Impact Statement to assess change in groundwater quantity. Monitoring data will be used to verify and confirm the predicted effects identified in the three-dimensional groundwater flow model and to meet regulatory requirements related to specific permits or conditions of approval.
Request for additional design information demonstrating how wastewater will be stored and monitored.	The design of the Tailings Management Facility included components to isolate tailings from surface and groundwater sources including placement of the Tailings Management Facility on surficial clay, use of a thickened tailings, perimeter dams designed with perimeter seepage collection ditches and ponds with water treatment as needed.
Surface Water	
Concerns regarding impacts to surface water quality from discharge (including groundwater discharge), runoff, or seepage.	A Surface Water Resources Assessment was done to identify potential changes in water quality resulting from the Project. The potential for increased levels of iron, mercury, arsenic, and cobalt was considered when selecting parameters for mine effluent. The predicted residual effects on surface water quality are not expected to be significant, as the effluent will meet regulatory limits at the final discharge points and will not exceed watershed management targets. The Local Study Area is expected to completely accommodate changes in surface water quality for all mine life phases. The potential for seepage and runoff was considered during the development of the Site-Wide Water Management Plan for the Project. Contact water will be collected by a series of ditches and directed to the various Collection Ponds located throughout the site. Ditches will collect surface contact water and seepage from stockpiles. The details of the Site-Wide Water Management Plan were incorporated into the Surface Water Resources Assessment. Mitigation and management measures were developed to reduce potential Project-related effects to surface water quality.
Concerns regarding the loss of natural waterbodies, including impacts to water levels and flow rates due to landscape alteration and excavation.	The Project design was modified to avoid any direct impacts to Mattagami River. Canada Nickel has included mitigation measures in the Impact Statement, such as adding seepage collection ditches to catch shallow groundwater seepage from the Tailings Management Facility, implementing an Erosion and Sediment Control Plan with proper sedimentation control measures, and creating a Site-Wide Water Management Plan to reduce environmental impact.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Concerns for impacts to harvesting rights, cultural activities, navigability, and traditional use of waterways.	The potential for impacts to Indigenous and/or Treaty Rights was assessed as part of the Indigenous Interests chapters of the Impact Statement. Navigation is possible in the Project Area on the mainstems of the North Driftwood River, and within the LSA on Jocko Creek, West Buskegau River, and a chain of lakes flowing into the North Driftwood River. Project activities that could directly affect navigation include the construction of mine components, infrastructure realignments, and infilling of navigable watercourses. Loss of or alteration of access to or through navigable waters within the Project Area will occur during construction. Navigability is being considered as the North Driftwood Channel Diversion design advances.
Vegetation, Riparian and Wetland Environments	
Concerns for impacts to wetlands and vegetation, including food and medicine plants, and other species of importance.	Potential impacts on rare plant species were assessed as part of the Vegetation, Riparian and Wetland Environments Valued Component chapter of the Impact Statement. An estimated 3 hectares of potential rare vegetation communities will be directly affected by Project development. Additional indirect edge effects on potential rare vegetation communities can occur outside the Project Area from changes in wind, light, and hydrology. Direct loss of vegetation communities will be offset in part by progressive reclamation during operations, and final reclamation and revegetation activities after the operations phase is complete. Canada Nickel will incorporate plant species at risk and species of conservation concern in reclamation planning, if and where habitat is deemed suitable.
Concerns for increased plant harvesting pressure or competition.	Potential impacts on harvesting were assessed in the Indigenous Interest chapters of the Impact Statement, including consideration for availability of harvested resources as a result of the Project. Mitigation and management measures were developed to reduce potential adverse effects due to increased competition.
Concerns for cumulative effects from forest clearing, aerial spraying and soil contamination.	Cumulative effects on vegetation as a result of physical Project activities was assessed in the Impact Statement, including consideration for clearing, spraying, and soils as a result of the Project. For example, site preparation and clearing during construction of the Project will result in a decrease of up to 2,251 ha of upland treed vegetation, which is 0.2% of the Regional Study Area. Ongoing forestry activities have had the greatest extent of disturbance to native vegetation communities and will likely continue to do so. Mitigation and management measures were developed to reduce potential adverse effects due to increased competition.
Recommendation to include Indigenous Nations in identification and monitoring for plant species of cultural, sustenance, and medicinal importance.	The identification of plant species of importance to Indigenous Nations was carried forward for the vegetation, riparian and wetland assessment and informed the assessment on Indigenous Interests in the Impact Statement. Additional consultation regarding plant species of importance to Indigenous Nations will occur for the development of the closure plan. The identification of species of importance also contributed to the design of the country foods sampling program to support the health effects assessment. The information brought forward was considered in the development of mitigation and management measures.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Fish and Fish Habitat	
Concerns for impacts to fish species of cultural importance, their habitats, spawning locations and associated traditional practices, such as fishing, food dishes and ceremonies.	The identification of fish of importance to Indigenous Nations was carried forward for the Fish and Fish Habitat assessment and informed the assessment on Indigenous Interests. A particular focus was directed to understanding existing conditions of five species, including Lake Sturgeon and pickerel (walleye) that were reported by Indigenous Nations. The Project is anticipated to result in the unavoidable harmful alteration, disruption or destruction of approximately 147 ha of fish habitat, including the loss of all headwater streams, ponds, and mainstem channel within the Project Area. Most (70%) of this habitat will be in the North Driftwood River watershed with smaller areas of affected habitat in the West Buskegau River watershed (29%) and Jocko Creek watershed (<1%). The Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada (Fisheries and Oceans Canada 2013) provides guidance on the application of a ±10% threshold limit to changes in flow relative to the natural flow regime. These threshold limits were used to assess changes within watersheds and potential effects on fish. The assessment was considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests. Canada Nickel will implement offsetting measures to counterbalance these unavoidable habitat effects, including offsets in the North Driftwood Diversion Channel that will benefit fish populations in the North Driftwood River watershed.
Concerns for impacts to fish health and loss of confidence or diminished trust in the safety of consuming fish.	Fish tissue samples were analyzed for existing metals, including methyl mercury, for consistency with water and sediment samples. This information contributed to the design of the country foods sampling program to support the health effects assessment. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Birds and Bird Habitat	
Concerns regarding impacts to birds, including migratory birds, and their habitats from sensory disturbances and land use changes.	Potential effects to migratory birds and their habitat were assessed through the Birds and Bird Habitat Valued Component chapter. In general, the Project will result in the direct and indirect loss of bird habitat, which will be reduced as the Project Area is reclaimed. It is predicted that species distribution will shift to undisturbed areas around the Project, where suitable habitat is available. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns regarding impacts of tailings and contaminated waterways on birds.	Potential effects to birds and bird health were assessed through the Birds and Bird Habitat Valued Component chapter. A change in mortality risk may result from the ingestion and/or absorption of water with potential exceedances in chemicals of potential concern (see the Health Valued Component chapter the Impact Statement. If birds drink from ponds associated with the Tailings Management Facility or feed on aquatic flora and fauna within these water features, the exposure to chemicals of potential concern could result in a change in mortality. Results of the assessment were considered in the development of mitigation and management measures and in the assessment of potential Project-related effects on Indigenous Interests.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Concerns regarding impacts of lighting on birds and nocturnal species, such as the common nighthawk.	Potential effects to birds and their habitat were assessed through the Birds and Bird Habitat Valued Component chapter. Site lighting may also cause adverse effects for local and migrating birds. For example, Common Nighthawk may also experience indirect habitat loss due to sensory disturbance; however, this species is attracted to anthropogenic light sources due to an increased availability of insect prey. Down-lighting, a technique to direct night lighting downward to reduce light effects on birds adjacent to the mine site, as well as noise and light abatement measures for machinery and buildings, will be used to reduce sensory disturbance to birds within the Local Study Area. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Wildlife and Wildlife Habitat	
Concerns for impacts to species at risk and their habitats, including boreal caribou and the Kesagami caribou range, Blanding's turtle, salamanders and native pollinators, as well as species of importance such as moose.	Potential effects on species at risk were assessed in the Wildlife and Wildlife Habitat Valued Component chapter. Species at risk were included in the assessment. For example, while there are no recent records of boreal caribou within the southern limits of the Kesagami Range, the Project is located within the range and is therefore subject to the federal Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns for impacts to wildlife habitats and resulting impacts to the exercise of harvesting rights.	Potential effects on wildlife habitat was assessed in the Wildlife and Wildlife Habitat Valued Component chapter. Species at risk were included in the assessment. This included direct effects to change in habitat (via habitat loss) and indirect effects (such as altered habitat conditions). Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns for residual and cumulative effects to animal health, and diminished trust and confidence in the safety of consuming country foods.	Changes in wildlife health are based on outcomes from the Ecological Risk Assessment where changes in contaminant pathways and exposure are identified (discussed in the Human Health and Ecological Risk Assessment). This included in the assessment of Wildlife and Wildlife Habitat and potential Project-related effects to country foods. Exposure pathways with potential to affect wildlife health include the ingestion of soil, sediment, food, or water, and through direct contact with soil, sediments, or water. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns for noise disturbances and impacts to animal behaviour as well as harvesting, and barriers or other deterrents to wildlife movements such as roads or railways.	A qualitative assessment was completed in consideration of species' sensitivity to human disturbance and seasonal movements, particularly related to sensory disturbance. For example, the assessment stated that indirect effects to habitat may result from sensory disturbances such as lighting, noise, vibrations and smells could result in reduced quality of habitat and changes in behaviour through displacement and habitat avoidance. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests, including harvesting.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Concerns for declining abundance and displacement of wildlife due to cumulative effects.	The assessment of Wildlife and Wildlife Habitat included considerations for changes to abundance as part of change in habitat, change in movement, and change in mortality risk, as a result of indirect effects (such as altered habitat conditions) and direct effects (such as habitat loss). Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns for increased wildlife collisions, resulting in injury or mortality.	The assessment of Wildlife and Wildlife Habitat included an understanding of existing conditions for wildlife injury and mortality risk, and the Project's assessment of change in mortality risk, such as risk of collisions and wildlife-human interactions. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Climate Change	
Concerns for potential changes to natural carbon sequestration.	An assessment of greenhouse gas emissions and the Project's potential effect on climate change were undertaken and provided within the Impact Statement. A plan for the Project to achieve net-zero emissions by 2050 was made by identifying ways to calculate and reduce the Project's greenhouse gas emissions for each Project phase and develop mitigation and management measures to limit the Project's total impact to climate change. The Project is expected to result in a net release of an estimated 11,135 kilotonnes carbon dioxide equivalent of greenhouse gas emissions during the Project's lifetime. The Project is expected to result in a net increase in carbon sinks, and therefore carbon sequestration potential, during the Project's lifetime with an estimated sequestration of 46,678 kilotonnes carbon dioxide equivalent during the Project's lifetime. Overall, the Project will sequester more carbon dioxide equivalent than will be emitted by Project activities. During construction, power will be supplied using diesel generators until power from the grid is available. During operations, the Project will connect to the provincial electricity grid. Generators will also be used to provide standby power in emergency situations during operations.
Recommendation to provide up-to-date climatological information and demonstrate how extreme conditions due to climate change would be incorporated into both baseline conditions and future predictions.	The assessment of the Project's contribution to climate change was completed in accordance with the Strategic Assessment of Climate Change. This includes: • calculation of net greenhouse gas emissions by year for each phase of the Project • description of the Project's main sources of greenhouse gas emissions • a Best Available Technologies / Best Environmental Practices determination to identify ways to reduce the Project's greenhouse gas emissions • a net-zero plan • an assessment of the potential for carbon capture and storage • an assessment of the impact of the Project on federal and global emissions reduction efforts • an assessment of risks to water management infrastructure • an evaluation of wind changes due to climate change and the impacts from dust • an evaluation of up-to-date climatological conditions and extreme conditions

Summary of Key Comment	How Comment was Considered in the Impact Statement
Concerns for cumulative effects on climate change and interactions with Project effects and infrastructure, such as impacts to tailings and dust dispersal from increased wind.	Concerns for cumulative effects on climate change were considered in the assessments of Air Quality and Surface Water, and the potential for the Project to cause an accidental fire and associated forest fire risk was evaluated as part of the Accidents and Malfunctions assessment. Strategies to manage risks from extreme weather will be implemented throughout the life of the Project.
Health	
Concerns for impacts to human health, including actual and perceived risks due to potential changes to air quality, sensory disturbances, and from accidents and malfunctions.	The Human Health Risk Assessment evaluated potential health risks to human health within the Local Study Area and Regional Study Area as a result of Project-related activities during construction, operations, and decommissioning. The Human Health Risk Assessment included an evaluation of risks from changes in contaminant levels in air, soil, surface water, and country foods. The inhalation risk assessment showed that air contaminants from the Project are unlikely to exceed health-based exposure limits and toxicity reference values at locations where people stay for extended periods (including overnight stays or beyond) during Project construction or operations. Health risks from arsenic, uranium and vanadium were found in the North Driftwood River and West Buskegau River watersheds, but not in the Jocko Creek watershed. The main risk from arsenic comes from changes in surface water affecting fish and drinking water. Although these risks are above targets, they are still below health guidelines. Monitoring arsenic in surface water and fish in each watershed will help track changes in exposure. Health risks from exposure of uranium and vanadium within the Local Study Area are expected to be negligible. Based on feedback and ongoing design work, the Project design was changed to avoid any direct impacts to Mattagami River. The proposed discharge point to the Mattagami River was removed. The results were considered in the development of mitigation and management measures to address potential Project-related adverse effects to human health, and further informed the assessment on Indigenous Interests.
Concerns for impacts to human health due to the consumption of contaminated country foods, disease or parasites in wildlife, and other potential effects due to a change in drinking water quality.	A Human Health Risk Assessment and Health Impact Assessment focused on biophysical and social determinants on health have been conducted that address these concerns. In the Human Health Risk Assessment an Indigenous receptor was used in modeling to account for Local Study Area and Regional Study Area nation-specific usage (e.g., country and medicinal foods and areas of use as identified by local Indigenous Nations). Chemicals associated with the construction, operations, and closure of the mine have been assessed qualitatively and/or quantitatively in the Human Health Risk Assessment. Toxicological risks associated with changes to air quality, recreational and quality have been assessed in the Human Health Risk Assessment and perceived risks associated with these potential changes are addressed in this Valued Component. The assessment of toxic substances and how they can potentially affect wild foods is addressed in the Human Health Risk Assessment and in this Valued Component. The assessment of toxic substances and how they can potentially affect food and medicinal plant quality, availability and usability is addressed in the Human Health Risk Assessment and in this Valued Component. The results of the assessment informed the Indigenous Interests chapters of the Impact Statement.

Summary of Key Comment	How Comment was Considered in the Impact Statement
	The results were considered in the development of mitigation and management measures, and further informed the assessment on Indigenous Interests.
Concerns for impacts to mental health and social well-being due to decreased access to services related to health, safety, mental health, addiction and well-being.	The potential change in services and infrastructure was assessed in the Social Conditions chapter of the Impact Statement. Effects on local services and infrastructure can result from a Project-related population increase during construction and operations, which would place additional demands on existing services and infrastructure, including health, emergency, education, recreation, and utilities. For instance, health care and emergency services may be required by Project workers, and/or because of Project-related accidents or malfunctions, increasing the potential need for medical, first responder, and fire department services. This contributed to an assessment of changes to mental health and social well-being. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns related to community safety, including increased human trafficking and crime rates, particularly in regard to discrimination and violence against women, girls and 2SLGBTQQIA+ Indigenous Peoples (Missing and Murdered Indigenous Women, Girls and Two-Spirit, Transgender and Gender Diverse – MMIWG2S+).	The Impact Statement included a specific Gender Based Analysis Plus (GBA+) assessment to address potential disproportionate residual effects on sub-populations and sub-groups, including women, Indigenous peoples, visible minorities, persons with disabilities, youth and older adults. GBA+ considerations were considered in the development of mitigation and management measures and further informed the assessment on Indigenous Interests.
Social Conditions	
Concerns for impacts to transportation infrastructure, including increased vehicle traffic and associated roadwork. Comments also for lack of reliable public transportation (e.g., buses).	The potential change in demand for transportation infrastructure was assessed in the Social Conditions Valued Component chapter of the Impact Statement. A Traffic Impact Study was also done. To mitigate traffic disruptions during Project construction, Canada Nickel will implement standard traffic management and control procedures. The Project is expected to increase traffic on Highway 655 and through the Regional Study Area communities as employees travel to and from the Project site. However, Highway 655 and the Project access intersection can handle the additional traffic. The frequency of rail traffic to and from the Project site will be up to 4 roundtrips a day. Project materials will only move on the Project rail spur, so the impact on the local rail service will be nominal. Canada Nickel will prepare a Traffic Management Plan to address traffic staging in order to reduce delays. Canada Nickel has committed to mitigation measures to reduce changes in demand for transportation infrastructure.
Concerns for changes in land use designations and increased restrictions on areas used for traditional land use practices and treaty rights.	Potential effects on change in land use designations, including the construction and operation of infrastructure ancillary to the Project (relocated Highway 655, rail spur, and relocated 500 kilovolt transmission line) was carried forward for the social conditions assessment and informed the assessment of effects on Indigenous interests in chapters of the Impact Statement. Past and present anthropogenic disturbance within the Indigenous Interests Regional Study Area (e.g., mining, aggregate extraction, water management, transportation, power, energy, and forestry), as well as land use by non-Indigenous Peoples (e.g., recreation, hunting, fishing), have also resulted in

Summary of Key Comment	How Comment was Considered in the Impact Statement
	changes to the use of lands for traditional purposes, changes in access and changes to cultural practices. Such effects that have occurred in the region due to ongoing anthropogenic disturbance and non-Indigenous land use are likely to continue to occur in the future if the Project does not proceed. The proposed locations of the corridors for facilities and infrastructure ancillary to the Project are outside of the care and control of Canada Nickel. These ancillary components will be built and/or operated by others but are included in the activities considered in the assessment of effects since they are required for the operation of the mine. Concerns expressed by Indigenous Nations regarding ancillary components will be communicated by Canada Nickel to the third-parties responsible for their construction and/or operation.
Concerns for the lack of affordable and accessible housing due to increased demand from Project workers.	The potential change in the availability of accommodations was assessed in the Social Conditions Valued Component chapter of the Impact Statement. An accommodations complex will not be developed as part of the Project because of the presence of nearby communities. Canada Nickel expects local employees to commute daily from nearby communities, which are about one hour's drive of the Project site. Some workers may choose to drive farther distances based on their preferences or circumstances. In addition, Indigenous Nations may experience disproportionate Project-related effects regarding accommodations availability compared to the general population. To manage accommodation issues, Canada Nickel will prioritize hiring local workers. Canada Nickel will encourage non-local Project construction workers to share rooms at temporary accommodations, including hotels and motels, as well as rental units. Canada Nickel will communicate Project requirements for accommodation to local service providers so they may prepare for periods of increased demand. Northeastern Ontario has experience hosting mining projects and their workforces. In addition, Canada Nickel plans to study accommodation options and work with third-parties to explore accommodation opportunities. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Concerns for increased demand on community services and infrastructure, including women's shelters, health facilities, mental health and addictions facilities, emergency services and childcare, and impacts to human health due to increased pressure on local health care systems and longer emergency response times.	An assessment of change in demand for services and infrastructure was included in the Social Conditions chapter of the Impact Statement. It determined the likelihood that Project workers may place additional demands on local health services. These potential residual effects were considered in the assessment on Indigenous Interests. Mitigation and management measures were proposed, including a Health and Medical Services Plan to manage occupational and non-occupational injuries and illnesses associated with Project staff. The Community Contributions Program has and will continue to support social, economic, health and other activities or programs for local, including Indigenous, communities. Results were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Concerns for impacts to sensory disturbances, increased competition, and other factors (such as changing land use designations and restrictions) impacting areas used for cultural practices, ceremonies and harvesting.	Sensory and visual disturbance from physical works and activities may affect nearby user's quality of experience. The areas surrounding the Project Area are used for outdoor recreation activities. Local recreational opportunities may be adversely affected. Sensory and visual disturbances will be reduced through the implementation of mitigation to reduce noise and light emissions where feasible. The presence of workers could result in an increase in competition for species harvested by hunters and trappers and fishers. Information and the assessment of Social Conditions in the Impact Statement were considered in the development of mitigation and management measures and the assessment of potential Project-related effects on Indigenous Interests.
Economics	
Recommendations for social and economic benefits for Indigenous Nations such as employment, education and training opportunities and Indigenous business contracting.	Canada Nickel recognizes the importance of working in genuine partnership with Indigenous Nations to establish a mutually beneficial, cooperative, and productive relationship centered around transparent information sharing, , open dialogue, meaningful collaboration, and early and ongoing engagement. Recommendations from the Indigenous Nations informed engagement plans and the development and ongoing negotiation of Nation-specific agreements, and the exploration of opportunities to enhance Project benefits. Considered in the development of mitigation and management measures. Further included in the assessment of potential Project-related effects on Indigenous Interests.
Archaeological and Heritage Sites and/or Features	
Concerns for potential impacts to areas of ancestral significance, ceremonial and cultural areas, and places for land-based teaching.	A Cultural Heritage Screening Report and a Stage 1 Archaeological Assessment were conducted for the baseline investigations prepared for the Impact Statement. Through engagement with Indigenous Nations, Indigenous Knowledge and Land Use studies informed the Stage 1 Archaeological Assessment, and interested Indigenous Nations were provided with draft copies of the Stage 1 Archaeological Assessment report for review and comment. Consideration for Project-related effects further informed the assessment on Indigenous Interests and the development of mitigation and management measures, including forward looking planning for the preparation and implementation of an Archaeological Resource Protection Plan and a Heritage Change Find Protocol.
Accidents and Malfunctions	
Recommendations to create measures to prevent and avoid accidents.	Feedback received contributed to the development of preventative and response measures, including those related to potential Tailings Management Facility malfunction, the release of untreated contact water, release of fuel or hazardous materials, open pit slope failure, stockpile slope failure, over blasting incident, accidental fire and water diversion failure. Further informed the assessment on Indigenous Interests, Health, Fish and Fish Habitats, Birds and Bird Habitats, and Wildlife and Wildlife Habitats.

Summary of Key Comment	How Comment was Considered in the Impact Statement
Sustainability	
Recommendation to incorporate the Seven Grandfather Teachings, the Seven Generations Forward Thinking, and the Three Pillars of Sustainability principles into the Project's assessment of sustainability.	Feedback received contributed to an understanding of sustainability teachings and principles from the perspectives of potentially affected Indigenous Nations. These concepts informed the temporal boundaries considered for the assessment of the extent to which the Project contributes to sustainability. These concepts also informed the context for the four sustainability principles considered in the assessment, informed the assessment of potential effects on Indigenous Interests, and informed the development of key mitigation measures relative to sustainability.

In addition to recommendations identified in Table 3, several Indigenous Nations have requested to be engaged for the development of management plans and monitoring plans for the Project (e.g., Construction Environmental Management Plan; Archaeological Resources Protection Plan and Heritage Chance Find Protocol; Fisheries Offsetting Plan; Site-Wide Water Management Plan; Closure Plan). As committed in the Impact Statement, Canada Nickel will continue to engage with potentially affected Indigenous Nations to consider their recommendations and input on Project decisions, including the development of management plans, as appropriate.

A comprehensive list of concerns, Indigenous Knowledge shared, and recommendations raised by the Indigenous Nations, are found in chapters 25 to 28 of the Impact Statement. Concerns and Indigenous Knowledge specific to the Valued Components considered in the Impact Statement are provided in chapters 10 to 23, chapters 29 to 31, and chapters 33 to 34, as applicable.

5 Environmental Setting

The Project is situated in the Timmins-Cochrane Mining Camp in northeastern Ontario, Canada, a region with a strong history of mining gold, nickel, zinc, and lead, and a province favourable to mining with regulations that reflect this history. Primary resource uses in the region include mining, forestry, as well as hunting, trapping, and recreation. Recreational activities include fishing, camping, outdoor trails (e.g., hiking, snowmobiling, ATV), and navigation.

The Project is located in an area well-connected by local infrastructure. The Project is bisected by Highway 655, a two-lane paved provincial highway connecting Highway 101 to Highway 11 (Trans-Canada Highway). An existing rail spur line connects Glencore's existing Kidd Mine west of Highway 655 to the Kidd Metallurgical Site to the southeast of the Project site. Other local infrastructure includes a regional transmission line (500 kV), which parallels Highway 655 and extends from the Hydro One Porcupine Transformer Station located east of Timmins. In addition, a 115 kV transmission line runs north-south along the east side of the Project. The Lower Sturgeon hydro-electric generating station is located along Mattagami River to the west of the Project site. The Timmins Municipal Airport (Timmins Victor M. Power Airport) is located 47 km (driving) from the Project site and is serviced by several daily flights to Toronto Pearson International Airport and Billy Bishop Toronto City Airport.

The terrain in the Project Area is relatively flat, with elevations ranging from 265 to 290 m above mean sea level. Most soils are very poorly to poorly drained on nearly level to very gently sloped materials.

The major watersheds in the area include the North Driftwood River and West Buskegau River, which ultimately discharge to the Abitibi River to the north, and Jocko Creek, a tributary of the Mattagami River to the west of the Project. Several small lakes are also present in the landscape.

The fish communities in the North Driftwood River, West Buskegau River, and Jocko Creek watersheds are represented by a mix of cool and cold-water fish species typical of northeastern Ontario. They include a variety of small-bodied (e.g., minnows) and large-bodied (e.g., northern pike, white sucker, yellow perch, and burbot) species. Lake sturgeon is the only aquatic species at risk in the vicinity of the Project, which is known to inhabit the Mattagami River, the Abitibi River, and the Frederick House River.

Contiguous tracts of boreal forest span the area, dominated by upland mixed forests and coniferous forests. Wetlands are the largest ecosystem category in the area, consisting of swamps, fens, and bogs. Wildlife within the ecoregion is typical of the boreal forest, including moose, northern gray wolf, Canada lynx, American black bear, American marten, beaver, snowshoe hare and red squirrel. Representative amphibians and reptiles include blue-spotted salamander, boreal chorus frog, wood frog, mink frog, midland painted turtle, and eastern garter snake.

6 Predicted Effects and Mitigation

The assessment of environmental, health, social, cultural, and economic effects focuses on Valued Components, which are the elements of the environment that could be affected by the Project and are of importance or interest to regulators, Indigenous Nations, and other potentially affected members of the public or interested parties. The methods to assess effects on Valued Components were informed by federal and provincial regulatory requirements with specific consideration of the Tailored Impact Statement Guidelines for the Crawford Nickel Project dated March 31, 2023.

For the purposes of the Impact Statement, the following Valued Components were identified:

- Geology and Geologic Hazards
- Soil
- Atmospheric Environment, including air quality and light
- Acoustic Environment, including noise and vibration
- Groundwater
- Surface Water, including surface water quantity, quality, and geochemistry
- Vegetation, Riparian and Wetland Environment, including plant species at risk
- Fish and Fish Habitat, including aquatic species at risk
- Birds and Bird Habitats, including groups of birds and species at risk
- Wildlife and Wildlife Habitat, including wildlife species at risk
- Climate Change, including greenhouse gas emissions and carbon sinks
- Health
- Social Conditions, including social conditions of Indigenous Peoples and recreation (Big Water Campground and snowmobile trails)
- Economic Conditions
- Indigenous Nations, including Indigenous physical and cultural heritage, the current use of land and resources for traditional purposes, health, social and economic conditions, and the rights of Indigenous Peoples

The assessment of effects was completed using the following general approach:

- Identifying the activities and components of the Project
- Predicting and evaluating potential changes to the environment and the likely effects on identified Valued Components
- Consider key issues raised by Indigenous Nations, agencies, scientists, Canada Nickel, stakeholders and the public
- Identifying measures to mitigate adverse environmental effects and enhance positive effects

- Determining and characterizing[1] residual effects (i.e., effects following the implementation of mitigation measures) and the extent to which adverse federal effects may be significant
- Developing follow-up and monitoring programs to verify both the accuracy of the effects assessment (predictions) and the effectiveness of mitigation measures

Mitigation measures that will avoid, eliminate, reduce, or control potential effects, including restoration and enhancement measures, were identified and described for each Valued Component.

The effects assessment methodology used in the preparation of the Impact Statement employs a precautionary, conservative approach. Conservative assumptions have been generally applied to overstate rather than understate potential adverse effects. Aspects of the Project have been examined and planned in a precautionary manner to avoid or reduce effects.

Spatial boundaries for the assessment were selected based on the geographic extent over which Project activities and their effects on Valued Components are likely to occur, as well as other ecological, technical, Indigenous knowledge, and social considerations, including:

- **Project Area**: encompasses the Project footprint and is the anticipated area of physical disturbance associated with the construction, operation, and decommissioning of the Project.
- **Local Study Area**: the area in which Project-related effects (direct or indirect) can be predicted or measured with a reasonable level of accuracy and confidence. The Local Study Areas encompasses the Project Area and are Valued Component-specific.
- **Regional Study Area**: the area that establishes the context for determining significance of Project-specific effects. It is also the area within which potential cumulative effects, the residual effects from the Project in combination with those of past, present and reasonably foreseeable projects, may extend. The Regional Study Areas encompasses the Project Area and the Valued Component-specific Local Study Areas, as appropriate.

The temporal boundaries for the assessment address the potential effects during the Project's construction, operations and decommissioning/closure phases over relevant timescales.

A summary of anticipated potential effects, mitigation measures, and predicted residual effects for each Valued Component is summarized in Sections 6.1 to 6.15 below.

[1] Characterizations of residual effects (i.e., the severity of the effects) are based on the attributes of direction, magnitude, geographic extent, timing, duration, frequency and reversibility, each of which are defined by Valued Component.

6.1 Geology and Geologic Hazards

6.1.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on the geology and geologic hazards, prior to mitigation, include:

- Change to terrain stability

Terrain stability may be affected by Project activities such as vegetation removal, soil stripping, and excavations, as well as natural processes like weathering and potential instability of newly exposed rock masses, and surface water runoff. These effects could occur during all Project phases but are most likely during the construction and operations phases.

6.1.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on terrain stability include, but are not limited to, the following:

- Applying best management practices to promote terrain stability, such as recontouring, terracing or benching.
- Maintaining slope gradients for all excavated areas and stockpiled materials throughout the duration of the Project, especially during construction activities.
- Preparing and implementing an Erosion and Sediment Control Plan, Soil Management and Rehabilitation Plan, and Site-Wide Water Management Plan.
- Conducting a slope stability assessment at closure to demonstrate the long-term physical stability of the Open Pit and the Impoundment Facility and adhering to standards/guidelines requirements for Tailings Management Facility embankments.

6.1.3 Residual Effects

Potential changes in terrain stability are mostly attributed to ground disturbance activities associated with the construction and operations phases. These activities include clearing, topsoil stripping, grading and excavating. While near-surface ground disturbances such as vegetation clearing and topsoil stripping may cause localized instabilities, they are not expected to increase overall terrain instability. This is because potential hazard scenarios will be mitigated through the implementation of the above-listed measures.

Changes in terrain are predominantly attributed to ground disturbance and the construction and operations of the Open Pit, Impoundment Facility and other stockpiles, where moderately steep to steep slopes will be created.

Soil and overburden stockpiles created during construction will continue to be maintained during operations to prevent erosion and slide hazards. Design-related mitigation measures will be applied to maintain stockpiles, aiming to prevent or limit slope erosion and reduce susceptibility to mass movements as much as possible. There are no known geological hazards in the area and through proper design potential slope failure of Project components (e.g. Open Pit, stockpiles) can be mitigated.

Table 4 summarizes the characterization of residual effects on geology and geologic hazards.

Table 4 Project Residual Effects on Geology and Geologic Hazards

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in terrain stability	C, O	A	L	PA	NS	ST	IR	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.2 Soil

6.2.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on the soil, prior to mitigation, include the following:

- Change in soil quality
- Change in soil quantity

Changes in soil quality could occur due to water erosion, compaction, mixing of different soil types, and contamination. Soil quality may change due to compaction from equipment and vehicle movement, especially in wet conditions and on fine-textured soils in areas of poor drainage. Compaction alters soil structure and porosity, affecting its suitability as a growing medium. Additionally, mixing more fertile cover soil with subsurface layers can degrade soil quality, and result in a poorer growth medium. Lastly, Changes to soil quality through fugitive dust and due to fuel or chemical spills, which can cause contamination. Fugitive dust can also affect soil quality.

Soil that is left bare has the potential to erode, which can occur due to vegetation removal or when soil is first stockpiled before being covered or stabilized. Soil quantities may be impacted by the removal and stockpiling of cover soils, that will be salvaged and stockpiled for use during reclamation.

6.2.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on soil quantity and quality include, but are not limited to, the following:

- Limiting the construction footprint (i.e., Project Area), to the extent possible, to reduce soil disturbance.
- Preparing and implementing an Erosion and Sediment Control Plan, a Spill Prevention and Contingency Plan, and an Air Quality Management Plan.
- Restricting access, clearing, and construction activities to frozen soil conditions (i.e., winter), where practical.
- Avoiding construction and rehabilitation activities during excessively wet soil conditions.
- Salvaging cover soil prior to disturbance and reusing it for reclamation to the extent practical.
- Implementing dust control measures.

6.2.3 Residual Effects

There is a predicted adverse change in soil quality and soil quantity due to soil erosion, compaction, mixing, contamination, and changes in soil cover depths. While some soil will be lost during construction, this loss will be reduced through salvage activities in preparation for progressive rehabilitation throughout the life of the mine and during reclamation. By salvaging and managing soil throughout the Project phases, potential adverse effects on soil will be reduced.

Table 5 summarizes the characterization of residual effects on soil.

Table 5 Project Residual Effects on Soil

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in soil quality	C and O	A	L-M	PA	MS	MT	IR	R
	D	A	L	PA	MS	MT	IR	R
Change to soil quantity	C, O and D	A	M	PA	MS	MT	S	IR

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.3 Atmospheric Environment

6.3.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on the atmospheric environment, prior to mitigation, include:

- Change in ambient air quality
- Change in ambient light

Potential air quality effects associated with the Project include airborne particulate matter or dust, and emissions from diesel combustion by Project equipment and vehicles. These air contaminants are collectively referred to as “contaminants of potential concern”.

During Project construction, emissions of air contaminants of potential concern may result from site preparation activities and the construction of Project infrastructure. These emissions would include

particulate and combustion gases from construction equipment, and particulate (dust) emissions from operation of heavy earth-moving equipment (including haul trucks), blasting, and wind erosion.

During Project operations, emissions of air contaminants of potential concern will result from diesel combustion by Project equipment. Particulate (dust) emissions would result from the following activities:

- Operating haul trucks and other equipment on unpaved on-site roads.
- Handling and transferring extracted ore, mine rock, and overburden.
- Stockpiling and storing ore, mine rock, and overburden.
- Conducting operations in the Open Pit (e.g., drilling, blasting, material handling, loading).
- Milling ore (e.g., crushing, grinding, concentrating).
- Further, winds blowing over storage piles, including the Impoundment Facility, erodes dust from the surface into the air.
- Active closure emissions are expected to be less than construction emissions (as no pit extraction or Tailings Management Facility construction would be occurring). The passive closure phase is expected to generate negligible air emissions.

Lighting sources from the Project construction and operations phases will include stationary lighting sources associated with buildings/infrastructure and mobile sources from the mining equipment and traffic. Stray lighting can cause light pollution which can cause adverse effects for surrounding land users, as well as wildlife.

6.3.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on ambient air quality and ambient light include, but are not limited to, the following:

- Preparing and implementing an Air Quality Management Plan and Traffic Management Plan.
- Implementing design mitigation measures such as enclosing crushers, conveyors and loading areas, equipping crushers with dust collectors, reducing haul distances, and installing a trolley-assist system in the Open Pit for haul trucks.
- Implementing mitigation measures on unpaved roads to reduce dust, such as watering.
- Acquiring mobile equipment that meet applicable Transport Canada off-road vehicle emission requirements (Tier 4 emissions standards), where feasible.
- Implementing effective and timely vehicle maintenance to keep equipment in good working condition.
- Implementing an idling policy for mobile equipment and vehicles on-site.
- Adhering to lighting design principles to limit stray lighting.
- Retaining tree cover to reduce the line-of-sight from on-site infrastructure to Highway 655.

- Design exterior lighting systems to limit light trespass and to avoid glare (i.e., lighting that targets specific areas, cut-off specifications)

- In addition to the mitigation measures above, Canada Nickel proposes to impose restrictions on overnight/prolonged stays within a buffer area surrounding the Project and at two nearby receptors. This buffer area is referred to as the Modeled Mine Boundary and is intended to reduce exposure to emissions, a practice that is often applied to mines and industrial areas.

Canada Nickel also commits to reassess the need for additional mitigation measures that may be identified through the provincial permitting process for air emissions (i.e., Environmental Compliance Approval) and detailed design, which may include:

- limiting haul truck speeds on the Open Pit ramps and the haul roads
- use of a commercially available surfactant or water additives
- where possible, maintain existing vegetation along the haul roads to act as a wind break
- select an electric haul truck fleet to replace in total or in part the main fleet required to haul material from the Open Pit during operations. At such time as a viable model in the size class(es) required is commercially available, this would likely be the preferred option for any further truck purchases over the remaining life of mine

6.3.3 Residual Effects

The predicted emissions from short-term construction and closure activities are less than emissions during operating scenarios.

Based on a conservative approach, the assessment of the potential changes in air quality due to the Project (with additional enhanced mitigation measures) predicted that maximum cumulative (Project plus background) 24-hour average Suspended Particulate Matter (SPM), particulate matter less than 10 microns (PM_{10}) ground level concentrations may infrequently be above their applicable criteria near the Modeled Mine Boundary during Project construction and operations. Maximum predicted cumulative 24-hour and annual average Benzo(a)pyrene (B(a)P) concentrations were also predicted to be above their criteria; however, the Project was only a small contributor to the maximum predicted concentrations. Additionally, the dispersion modelling predicted that nitrogen dioxide (NO_2) may be above the Canadian Ambient Air Quality Standards. It is noted that the application of additional mitigation measures will be considered during the detailed design and through the Provincial permitting process and could possibly further reduce emissions. Health affects associated with air are discussed in Section 6.12.

During construction and operations, both stationary and mobile lighting will be used, which may increase light around the Project Area. There are few light sensitive receptors in the Local Study Area, and they are well removed from the Project, shielded by forested areas that will obstruct Project lighting. With mitigation, the levels of light trespass and glare from the Project are not expected to exceed International Commission on Illumination guidelines at the identified receptor locations. Thus, no substantive adverse impacts from Project light trespass are expected at the receptors. Following decommissioning and closure, ambient lighting is expected to return to baseline conditions.

Table 6 summarizes the characterization of residual effects on the Atmospheric Environment.

Table 6 Project Residual Effects on the Atmospheric Environment

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Ambient Air Quality	O	A	H	LSA	NS	MT	IR	R
Change in Ambient Lighting	O	A	L	LSA	NS	MT	C	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.4 Acoustic Environment

6.4.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on the acoustic environment, prior to mitigation, include:

- Change in noise
- Change in vibration

Noise emissions during construction will result from activities such as site preparation, and infrastructure and mine component development. Limited blasting will also occur during construction for the initial development of the Open Pit and possibly to support the development of roads. During operations, noise will be emitted from the ore processing facilities (e.g., crushers and Process Plant) and mobile equipment (e.g., haul trucks and locomotive engines). Blasting will continue during operations to further develop the Open Pit. In the decommissioning and closure phase, noise will be emitted by machinery completing excavation and reclamation activities, albeit to a lesser degree than that expected during construction.

Noise will also be emitted from equipment constructing the Highway 655 realignment and from traffic movement along the highway.

Vibration during construction and operations is anticipated from blasting activities and the operation of equipment (mobile and stationary), with similar albeit reduced vibration from excavation and reclamation activities anticipated decommissioning and closure phase.

6.4.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on noise and vibration include, but are not limited to, the following:

- Preparing and implementing a Noise and Vibration Management Plan.
- Imposing the restrictions within the Modeled Mine Boundary and for two nearby receptors.
- Maintaining mobile equipment and vehicles in good working order.
- Where possible, placing large stationary machinery (e.g., crushers) inside buildings and below grade in the case of the primary crushers.
- Reviewing construction equipment for the Highway 655 realignment to ensure noise emissions are within the applicable Ministry of the Environment, Conservation and Parks limits. If sound levels exceed these limits, exploring noise control options for the associated equipment.

6.4.3 Residual Effects

Noise levels within the vicinity of the Project during construction and operations will increase and will exceed applicable guideline criteria and thresholds at several receptors. However, by imposing the above-noted measures, specifically the imposition of restrictions within the Modelled Mine Boundary, it is predicted that noise levels at nearby receptors can be mitigated to be compliant with applicable limits. An Environmental and Compliance Approval for noise emissions will be obtained from the Province of Ontario.

Vibration effects and blasting noise from construction and operations of the Project are not expected to exceed vibration limits at receptors.

Noise and vibration effects from decommissioning and closure phase of the Project are expected to be inconsequential compared to other phases of the Project.

Table 7 summarizes the characterization of residual effects on the Acoustic Environment.

Table 7 Project Residual Effects on the Acoustic Environment

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Noise Levels Related to Project Area Construction, Operations, and Decommissioning Activity, including Blasting	C, O, D	A	M	LSA	NS	ST, MT	R, C	R
Change in Noise Levels Related to Highway 655 Realignment Construction	C	A	L, M	LSA	NS	MT	C	R
Change in Noise Levels Related to Realigned Highway 655 Traffic	O, D	A	L, M	LSA	NS	LT	C	I
Change in Noise Levels Related to Rail Spur Line Traffic Away from the Project Area	C, O, D	A	M	LSA	NS	LT	C	R
Change in Ground Vibration Levels Related to Project Construction, Operations, and Decommissioning Activity	C, O, D	A	L	LSA	NS	ST, MT	C	R
Change in Ground Vibration Levels Related to Blasting	C, O, D	A	M	LSA	NS	ST, MT	R	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.5 Groundwater

6.5.1 Potential Effects Prior to Mitigation

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

- Change in groundwater quantity
- Change in groundwater quality

Groundwater quantity and/or flow could be affected during construction by temporary dewatering for the installation of foundations for buildings and infrastructure. Groundwater infiltration rates may also be affected by the construction of roads and initial development of various Project components. During operations, groundwater quantity and/or flow will primarily be affected by the lowering of water levels through the dewatering of the Open Pit, which may also affect local groundwater users if located within the predicted zone of influence. The resulting change in groundwater flow patterns and recharge rates may affect groundwater discharge to surface water features and wetlands.

During later phases of operations, the rehabilitation of the Tailings Management Facility may alter groundwater recharge rates and partially filling the Open Pit with tailings and water could raise the groundwater level, impacting groundwater flow patterns and discharge to surface water features and wetlands. During passive closure, as the Open Pit continues to fill, groundwater levels will slowly rise and changes to groundwater flow direction and discharge locations are expected.

Groundwater quality may be affected during construction by suspended solids in runoff from road construction activities, seepage of water from the Stockpiles, or contamination from fuel or chemical spills. During operations, groundwater seepage from the Stockpiles, Impoundment Facility, and Tailings Management Facility, as well as groundwater flow in contact with tailings in the Open Pit, has the potential to affect groundwater and surface water quality where groundwater discharges to surface water receivers, such as watercourses and wetlands. Dewatering the Open Pit will result in a change in groundwater flow, redirecting groundwater recharge originating from the Stockpiles, Impoundment Facility, and Tailings Management Facility to the Open Pit, where it can be collected and treated prior to discharge. Water quality effects during passive closure, as the Open Pit fills and groundwater levels slowly recover, are expected to reduce and may return to baseline conditions in areas away from the Open Pit.

6.5.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on groundwater quality and quantity include, but are not limited to, the following:

- Limiting the construction footprint (i.e., Project Area) to the extent possible to reduce potential reductions in groundwater recharge and limit the number of affected watersheds.

- Lining trenches with low permeability soil (silt and clay) where they extend below the water table and pose environmental risks (draining effect) due to seepage and applying best management practices to reduce water infiltration, if needed.
- Evaluating potential impacts from increased groundwater flow if faults or fractures which act as conduits for increased flow of groundwater are encountered during advancement of the Open Pit, and implementing grouting or other measures to reduce groundwater inflow.
- Preparing and implementing an Emergency Preparedness and Response Plan, a Spill Prevention and Contingency Plan, and a Metal Leaching and Acid Rock Drainage Management Plan.
- Installing contact water collection ditches around the Stockpiles, Impoundment Facility, and Tailings Management Facility to collect seepage and groundwater recharge from these Project components.
- Progressively rehabilitating areas of the Project Area no longer in use by placing a vegetated soil cover to reduce infiltration into the Impoundment Facility and Tailings Management Facility, thereby decreasing water load and improving groundwater quality.

6.5.3 Residual Effects

The residual effects of the Project on groundwater quantity will include measurable changes in groundwater levels as a result of Open Pit dewatering, diversion of the North Driftwood River, and operation of the Tailings Management Facility. The magnitude of effects will decrease during passive closure as the Open Pit fills and groundwater levels gradually rise, reaching the predicted surface water elevation of approximately 272.5 meters above sea level. No groundwater users are known to exist within the areas affected by groundwater drawdown or mounding from the Project, so impacts on groundwater users are not anticipated.

The residual effects of the Project on groundwater quality may result in measurable changes in the concentrations of parameters in groundwater, and therefore groundwater that discharges to surface water. In addition, seepage from Project infrastructure that is not collected in perimeter ditches, and spills that may occur within the footprint of the mine, may also affect groundwater quality. However, these effects are anticipated to be limited given the travel time (approximately 275 years) for ground water to reach the nearest supply well. Contributions of changes in groundwater seepage to watercourses are considered in the prediction of effects to surface water and fish habitat.

Table 8 summarizes the characterization of residual effects on groundwater.

Table 8 Project Residual Effects on Groundwater

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Groundwater Quantity Related to Construction	C	A	M	PA	NS	ST	IR	R
Change in Groundwater Quantity Related to Open Pit	C	A	H to L	LSA/RSA	NS	LT	C	I
	O	A	H	LSA/RSA	NS	LT	C	I
	D	P	H to L	LSA/RSA	NS	LT	C	I
Change in Groundwater Quantity Related to Tailings Management Facility	O	P	H	LSA/RSA	NS	MT	C	R
Change in Groundwater Quality	C	A	L	PA	NS	ST	IR	R
	O	A	M to H	LSA/RSA	NS	LT	C	I
	D	A	M to H	LSA/RSA	NS	LT	C	I

KEY

***Project Phase*:**
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.6 Surface Water

6.6.1 Potential Effects Prior to Mitigation

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

- Change in surface water quantity

- Change in surface water quality

Surface water quantity could be altered during construction through changes to watershed areas, alterations to flow paths, runoff, evapotranspiration, evaporation, and infiltration. In addition, the creation of point source discharges and the alteration and realignment of watercourses will directly affect surface water quantity. During early operations, Project activities that could affect surface water quantity include the development of Project components, dewatering, and the installation of water management infrastructure. The collection of water in the Water Management System may also reduce flows due to water re-use and extraction. Changes in land cover could increase runoff from impervious surfaces. As the Project and the Water Management System expand, watercourses and wetlands will be overprinted, and overland flow drainage patterns will be modified. Changes in groundwater discharge to surface water features may also occur due to drawdown and seepage collection. During passive closure, reduced overland flow and surface erosion, increased evapotranspiration, and changes to groundwater seepage flows to surface water receivers may occur as the Open Pit fills. Once the pit lake reaches its discharge elevation, flows downstream of spillway outlets and groundwater seepage flows to surface water receivers may be altered.

Surface water quality may be affected during all phases of the Project by erosion, sedimentation, and contact water. Additionally, blasting activities during construction and operations have the potential to affect water quality due to blasting residuals.

6.6.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on surface water quality and quantity include, but are not limited to, the following:

- Limiting the construction footprint (i.e., Project Area) to the extent possible to limit the number of subwatersheds overprinted by the Project Area.
- Developing and implementing a Site-Wide Water Management Plan and a Metal Leaching and Acid Rock Drainage Management Plan.
- Designing the Water Management System to manage the 100-year return period, 24-hour duration storm event through the use of collection ponds and the Open Pit.
- Routinely monitoring construction areas to identify areas of potential erosion and applying appropriate erosion and sedimentation control measures in accordance with the Erosion and Sediment Control Plan.
- Maintaining haul roads, site roads, and access roads in good condition to reduce erosion, improve water flow, and manage vegetation growth within roadside ditches.
- Recycling contact water for on-site use (e.g., dust suppression, make-up water in the Process Plant), where practical.
- Collecting runoff and groundwater inflows from the Open Pit and pumping water to sedimentation ponds prior to discharge to the receiving environment.

- Designing seepage collection ditches to intercept shallow groundwater seepage from the Tailings Management Facility, ore Stockpiles, and Impoundment Facility.
- Designing contact water collection and sedimentation ponds to store local runoff on-site, with the size and residence times necessary to promote sediment removal.
- Implementing water treatment using a water treatment plant to receive discharge from the Tailings Management Facility and collection ponds, and applying proven processes to treat the water to be substantially below Metal and Diamond Mine Effluent Regulations and to meet Provincial regulatory effluent criteria prior to discharge to the environment.

6.6.3 Residual Effects

Based on guidance from the Department of Fisheries and Oceans Canada (2013) and research by others, a daily flow change of 10% was used as a screening threshold to assess how changes in flow can affect subwatersheds. No flow reductions or exceedances were predicted beyond the 10% threshold for the Jocko Creek or the West Buskegau River watersheds for any phase of the Project at the downstream extent of the hydrologic model. No days with increases to flow in exceedance of 10% were predicted for the North Driftwood River watershed at the hydrologic model outlet; however, there were 20 days during the operations phase with predicted flow reductions greater than the 10% threshold at the hydrologic model outlet. Further analysis was conducted to evaluate whether these changes may affect the aquatic ecosystem (i.e., environmental flow values) and it was concluded that the predicated flow changes would not affect ecosystem health (See Section 6.8 for additional discussion).

Lakes within the headwaters of the North Driftwood River watershed (e.g., Mel Lake, Sutherland Lake, Jack Lake, Gerry Lake, and Martin Lake) are predicted to experience water level reductions between 0.02 and 0.05 m, which is within the natural variability of these waterbodies.

Surface water quality will meet regulatory limits and guidelines at the final discharge points; however, local water quality immediately downstream of some final discharge points (within the mixing zones) will experience increases in parameters of potential concern above baseline levels and above the Provincial Water Quality Objectives and/or the Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life. For the normal operating scenario, the edge of the mixing zone is approximately 200 m to 1.2 km downstream of the final discharge points (with the exception of nitrate in the North Driftwood River that extends 3.6 km downstream). Under the regulatory (worst-case) scenario, some parameters are expected to be elevated above baseline or applicable criteria until the confluences with the Abitibi River and Frederick House River for the North Driftwood and West Buskegau Rivers, respectively, defining the edge of the mixing zone. Mixing rapidly improves once other tributaries enter the main stem of these river reaches. These changes are expected to be contained within the Local Study Area and dissipate at the edge of the mixing zone. For some parameters, effluent will be discharged at lower concentrations compared to baseline conditions (e.g., aluminum and iron). Effects of water quality on fish is discussed in Section 6.8.

The assessment of groundwater seepage from the Project into Jocko Creek and its waterbodies predicted no increases in parameters of potential concern above the regulatory objective / guidelines (Provincial Water Quality Objectives or Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic

Life value and no increase in Policy 2 parameter receiver concentration) for the regulatory and normal conditions.

Table 9 summarizes the characterization of residual effects on surface water.

Table 9 Project Residual Effects on Surface Water

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Surface Water Quantity	C	A	M	LSA	NS	MT	IR	R
	O	A	M	LSA	NS	MT	IR	R
	D	N	L	LSA	NS	LT	C	R
Change to Surface Water Quality	C	A	L	LSA	NS	MT	IR	R
	O	A	M	LSA	NS	MT	IR	R
	D	N	L	LSA	NS	LT	C	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.7 Vegetation, Riparian and Wetland Environments

6.7.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on vegetation, riparian, and wetland environments, prior to mitigation, include:

- Change in vegetation communities and species diversity
- Change in riparian form and function
- Change in wetland form and function

Clearing and site preparation activities will result in the direct removal of upland, wetland, and riparian communities, affecting the abundance and function of these communities. Vegetation clearing and site preparation could remove rare vegetation communities and plant species important to Indigenous Nations or increase the abundance of invasive plants, thereby altering species diversity or habitat fragmentation. Indirect edge effects may also occur through changes in light, moisture, and hydrology (decreased recharge / infiltration rates, changes in hydrology).

During operations, dewatering the Open Pit could cause water table drawdown, potentially altering the hydrology of vegetation communities and indirectly impacting riparian communities and wetlands. Maintenance activities during operations, such as brushing and tree removal, may continue to directly and indirectly affect vegetation communities.

Decommissioning and closure of infrastructure, along with site regrading and revegetation, could re-disturb riparian communities and wetlands near the Project footprint or cause sedimentation; however, reclamation activities have the potential to restore vegetation and wetlands to the area.

Vehicle and equipment use during all phases of the project have potential to introduce invasive plants. As well, vehicle and equipment use may cause edge effects through fugitive dust emissions.

6.7.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on vegetation, riparian, and wetland environments include, but are not limited to, the following:

- Marking clearing boundaries prior to site preparation to keep clearing activities within the designated footprint and restrict clearing to the approved Project Area.
- Adjusting limits of clearing and disturbance to avoid riparian communities, where practical.
- Avoiding or reducing clearing activities within identified areas of plant species of management concern within the Project Area, if present, where practical.
- Developing and implementing a Construction Environmental Protection and an Erosion and Sediment Control Plan.

- Implementing dust suppression measures to reduce the generation and deposition of dust on vegetation near Project activities.
- Applying industry-standard management practices to reduce the introduction or spread of invasive plant species and noxious weeds.
- Controlling vegetation to eliminate invasive plant species within the Project Area and prevent further spread, if discovered.
- Implementing progressive rehabilitation in accordance with the Mine Development Closure Plan.
- Incorporating plant species at risk, rare vegetation communities, species of conservation concern, riparian communities, wetlands, and plant species of importance to Indigenous Nations in reclamation planning, if suitable habitat is available.
- Providing Indigenous Nations time to harvest plant species of interest from within the Project Area before disturbance, if interested.
- Maintaining hydrological connectivity using appropriately sized culverts when crossing watercourses and wetlands with linear features such as roads to reduce impacts on riparian vegetation.
- Incorporating revegetation strategies, such as vegetation test plots and progressive restoration, in the Mine Development Closure Plan.

6.7.3 Residual Effects

Site preparation and clearing will result in a direct loss of approximately 11,504 ha of naturally vegetated communities, including plant species of importance to Indigenous Nations, riparian habitat (178 ha) and wetlands (8,667 ha), which includes a potential rare vegetation community (Hardwood Swamp) (3 ha). These impacts will begin during the construction phase and will continue in early phases of operations through continued construction activities (e.g., mine component expansion and Highway 655 realignment). No loss or alteration of plant species at risk or species of management concern is anticipated as a result of vegetation clearing and ground disturbance associated with the Project, as none have been identified within the Project Area.

Species richness for plant species of importance to Indigenous Nations in the Local Study Area is not expected to change as a result of Project activities, as the species that were identified are common and widely distributed in the broader region (i.e., the ecoregion) and are expected to be present and continue to persist.

Edge effects are anticipated following site clearing, the extent to which will differ according to species' habitat requirements; shade intolerant species (e.g., chokecherry and red raspberry) are likely to increase in abundance near the edge of the Project, while species requiring shade (e.g., mountain maple and balsam fir) are likely to decrease in abundance. Changes in temperature and wind (micro-climates) may also result in warmer and drier conditions in areas near new forest edges. As a result, species composition along the natural edges of the Project may change over time to adjust to different conditions.

Impacts to riparian communities and wetlands during operations are predicted to be predominantly indirect, limited to edge effects discussed above and water table drawdown from Open Pit dewatering. These changes may potentially alter species composition, diversity, and plant health.

Project activities during construction have the potential to introduce or spread invasive plant species, which could impact native plant and ecological communities. However, mitigation measures to reduce potential for introduction of invasive plant species are well understood and will be implemented as part of the Project mitigation. Should noxious weeds and/or invasive plant species be introduced to the site, standard mitigation measures to control them will be implemented.

Indirect effects, such as deposition of dust, will be the dominant effects during operations. Deposition of dust on vegetation has potential to affect vegetation growth by reducing physiological processes such as photosynthesis and respiration.

Progressive reclamation, beginning during operations and continuing into active closure, is expected to restore some vegetation, riparian, and wetland communities. With a reclamation plan in place, impacts of these environments are predicted to be positive, with the potential to re-establish rare vegetation communities in the Project Area and reverse indirect impacts from Project construction and operations.

Table 10 summarizes the characterization of residual effects on vegetation, riparian and wetland environments.

Table 10 Project Residual Effects on Vegetation, Riparian and Wetland Environments

Residual Effect	Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Vegetation Communities and Species Diversity	C, O, D	A	L	PA-LSA	NS	LT	IR	R
Change in Riparian Form and Function	C, O, D	A	L	PA-LSA	NS	ST-LT	S-C	R-IR
Change in Wetland Form and Function	C, O, D	A	M	PA-LSA	NS	ST-LT	S-C	R-IR

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.8 Fish and Fish Habitat

6.8.1 Potential Effects Prior to Mitigation

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

- Change in fish habitat
- Change in fish health, growth or survival

Clearing, site preparation, and the construction of Project infrastructure will result in the in-filling or overprinting of watercourses and waterbodies leading to the direct loss of fish habitat. The alteration of flow and drainage patterns, including the construction of diversion channels, will further affect fish habitat. The construction of watercourse crossings (e.g., bridges or culverts) has the potential to alter fish passage.

Fish health, growth and survival may be affected by various Project components and activities. Clearing and site preparation may increase sedimentation in fish-bearing waters. Discharge of mine effluent can affect water quality, including temperature. Blasting can create shock waves (e.g., instantaneous pressure changes) that can rupture internal organs and damage fish, fish eggs, or larval fish. Water intakes can trap fish (impingement) or suck them into the water system (entrainment), causing harm or death. These changes can also impact benthic invertebrate communities downstream of the Project.

Project equipment and machinery can introduce aquatic invasive species and disease to the area if not cleaned properly prior to arriving on site.

6.8.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on fish and fish habitat include, but are not limited to, the following:

- Reducing the Project footprint in the West Buskegau River and Jocko Creek watersheds to the extent possible.
- Avoiding placement of mine infrastructure in the West Buskegau River mainstem to the east and the headwater lakes of the North Driftwood River watershed (i.e., Martin, Gerry, Jack, Mel, Sutherland, Davis lakes) to the west of the Project Area.
- Constructing mine infrastructure in a progressive manner to delay alteration of fish habitat, to the extent practical.
- Constructing the North Driftwood River Diversion Channel using natural channel design principles to divert run-off in the North Driftwood River watershed around the Project Area and to reduce potential flow reductions in the North Driftwood River downstream of the Project Area.
- Developing a Fish Habitat Offsetting Plan to counterbalance all unavoidable losses of fish habitat that will be included as part the *Fisheries Act* Authorization application to Fisheries and Oceans Canada.
- Maintaining riparian buffers around fish-bearing watercourses and waterbodies within the Project Area to the extent possible.
- Installing open-bottom structures (i.e., clear-span bridges or open-bottom culverts) with abutments above the ordinary high-water mark at stream crossings of permanent fish-bearing mainstem channels.
- Installing appropriately sized closed-bottom culverts at crossings of ephemeral streams or permanent fish-bearing or non-fish-bearing tributaries of mainstem channels.
- Developing and implementing a Site-Wide Water Management Plan and a Construction Environmental Protection Plan.

6.8.3 Residual Effects

The Project will result in the loss of 147 ha of fish habitat in the North Driftwood River, West Buskegau River, and Jocko Creek watersheds, including headwater streams, ponds, and approximately 8 km of the

main channel of the North Driftwood River within the Project Area. This loss will adversely affect forage fish populations that rely on this habitat for all their life stages, as well as northern pike, white sucker, and walleye populations that reside in or rely on this habitat. These species rely on the flow, nutrients, organic debris, invertebrates, and sediment provided by these headwater areas in the North Driftwood River downstream of the Project Area. None of the potentially affected habitat is used by lake sturgeon, which is the only aquatic species at risk in proximity to the Project.

Compensation measures that Canada Nickel will implement to offset these unavoidable habitat effects include habitat creation in the North Driftwood River Diversion Channel and habitat creation, enhancement, and restoration opportunities elsewhere.

The effects of changes in flow are expected to be more noticeable in the riffle habitat than in run and pool habitats. The amount of riffle habitat in the Local Study Area is low owing to the relatively low gradient of the stream and rivers affected by the Project. The effect of changes in flow on fish habitat will be reversible once the Project stops operating, the Open Pit has filled with water, and run-off from the pit lake is draining to the North Driftwood River and West Buskegau River.

Adverse effects to fish health, growth and survival are expected to occur within the Local Study Area downstream of the Project. These effects will result from changes in water quality that would exceed applicable aquatic life guidelines and would also result in a reduction in aquatic invertebrate abundance. Specifically exceedances are predicted for nitrite, nitrate and copper. Exceedances of nitrate and nitrate are predicted during operations in the North Driftwood River within close proximity to discharge locations. Exceedances of copper are predicted based on a conservative guideline limit, however more recent guidance (e.g. the Biological Ligand Model) does not predict an exceedance related to copper. Effluent discharge will cease at the end of the Project and water quality is expected to return to conditions close to baseline after the Project ends.

Canada Nickel will require a *Fisheries Act* authorization from Fisheries and Oceans Canada. This authorization will require Canada Nickel to design and implement habitat restoration, enhancement, or creation to offset the harmful alteration, disruption or destruction (HADD) of fish habitat. There are a suite of measures available in the Local Study Area and Regional Study Area to offset the HADD that will provide benefits to the fish populations directly affected by the Project and to fish populations valued by Indigenous Nations, recreational anglers, and other stakeholders, including offsets that will benefit lake sturgeon, as outlined in the Conceptual Fish Habitat Offsetting Plan developed for the Project .

Table 11 summarizes the characterization of residual effects on fish and fish habitat.

Table 11 Project Residual Effects on Fish and Fish Habitat

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Fish Habitat	C, O, D	A	M	LSA	MS	LT	C	IR
Change in Fish Health, Growth, or Survival	C, O, D	A	M	LSA	MS	LT	C	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.9 Birds and Bird Habitats

6.9.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on birds and bird habitat, prior to mitigation, include:

- Change in bird habitat
- Change in mortality risk

Site preparation activities, including vegetation removal, stripping and grading, will result in the direct loss and alteration of bird habitat, including the removal of upland and wetland habitats in the Project Area. Site preparation activities may result in the direct mortality of eggs or flightless young birds, primarily if these activities are conducted during the bird nesting period. Additionally, Project-related traffic during construction could result in equipment and vehicle collisions with birds. Clearing of vegetation will also cause edge effects.

During operations, water management activities can cause fluctuating water levels in nearby waterbodies and wetlands, which could subsequently affect bird habitats.

Project activities during construction and operations may also cause indirect habitat loss through sensory disturbance (e.g., noise, light pollution, fugitive dust and vibrations). The increase in traffic due to ore hauling within the mine site and transportation of site personnel, materials, and supplies to the mine site along the highway could result in an increase in mortality risk for birds near the Project Area. The presence of utilities, site infrastructure, and facilities may also lead to bird mortality through migratory collisions with utility wires, poles, or buildings. Edge effects from vegetation clearing can indirectly result in bird mortality during operations through increased access by predators, nest parasites, and hunters. In the absence of mitigation, the presence of Project workers could also result in an increase in harvesting of waterfowl and gamebirds.

Although noise and activity associated with operations activities will likely deter birds from the Project, some birds may ingest or absorb chemicals from untreated water in the Water Management System or Tailings Management Facility resulting in a change in mortality risk.

Compared to the operations phase, reclamation and revegetation of the Project Area during decommissioning and closure may result in an increase in bird habitat availability and potential increases in diversity and abundance of the bird community. Some bird species may move back into areas that were abandoned during construction and operations. Following closure, habitat in the Project Area will change over time as vegetation becomes established in the disturbed areas, which will likely result in an increase in the diversity and abundance of birds. Following closure, low vegetation will establish within the Project Area and the area will be quite open. Mature forest habitat will take longer to re-establish. The Open Pit will eventually become a lake (which differs from baseline conditions) that may attract aquatic birds such as waterfowl and waterbirds.

6.9.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on bird and bird habitat include, but are not limited to, the following:

- Completing pre-disturbance surveys for applicable bird species.
- Completing vegetation clearing and site preparation activities outside the core breeding period for migratory birds (e.g., April 30 to August 20) to reduce the likelihood of disturbing or harming nests of migratory birds, to the extent practical.
- Deploying bird deterrents (e.g., noise makers, wire barricades) as necessary to discourage birds from entering on-site ponds, including the Tailings Management Facility Northeast and Northwest Collection Ponds or other Project infrastructure that could attract birds.
- Developing and implementing a Wildlife Management Plan, a Mine Development Closure and a Site-Wide Water Management Plan.
- Implementing appropriate vegetation clearing techniques to minimize impacts on features to be retained (e.g., felling trees away from adjacent lands where natural areas are to be retained/protected).
- Implementing road safety measures, such as speed limits and signage, to reduce the chance of collisions with birds.

- Installing erosion and sediment control measures prior to construction activities in areas where off-site sedimentation may impact natural features, particularly wetlands, watercourses, and waterbodies.
- Maintaining vegetation cover along the boundaries of high-activity areas (e.g., access roads) to reduce sensory (noise and visual) disturbance, where practical.
- Marking clearing boundaries prior to site preparation to keep clearing activities within the designated Project footprint. Where possible, maintaining vegetated buffers and natural vegetation around sensitive features.
- Complying with the *Migratory Birds Convention Act*, *Endangered Species Act,* Migratory Birds Regulations, and the *Fish and Wildlife Conservation Act.*
- Progressively reclaiming disturbed areas used during construction and operations.
- Tracking and reporting bird mortality including bird-vehicle collisions or collisions with equipment or Project infrastructure and developing adaptive management measures as required.
- Suspending work in areas with active nests or where nesting behaviours are observed until applicable mitigations have been implemented.
- Conducting surveys for breeding birds prior to demolishing existing buildings and infrastructure.

6.9.3 Residual Effects

Change in bird habitat during construction will primarily occur through vegetation removal, grading, and dewatering activities, which will result in the direct loss of upland (2,837 ha), wetland (8,667 ha), and aquatic (26 ha) habitats. The loss and alteration of bird habitat is predicted to result in a shift in the diversity and abundance of birds as individuals relocate to more suitable habitat outside of the Project Area. Loss of habitat during construction will primarily impact breeding migratory birds (e.g., songbirds, waterfowl) and year-round resident birds (e.g., woodpeckers, owls, grouse). Additionally, habitat for birds that migrate through or stage within the Local Study Area (e.g., waterfowl, shorebirds) will be lost, although no unique habitat features that would concentrate migrants were identified. Indirect habitat loss may occur due to sensory disturbances (i.e., noise, vibration and light), fugitive dust deposition, edge effects, and habitat fragmentation.

Project activities during the construction phase may directly increase bird mortality. The risk will be low for adult birds, because they can move away from construction activities; however, the risk will be greatest during sensitive time periods such as the breeding season, and for eggs or unfledged birds. Risk of mortality will be reduced through the application of timing windows for activities that involve vegetation removal. Increased vehicular traffic during construction could result in equipment or vehicles crushing or colliding with birds and/or birds colliding with Project-related infrastructure or equipment.

The construction of roads can increase access to the Project Area for both people and wildlife during construction, which can result in increased hunting/predator pressure. To reduce this pressure, hunting/harvesting will be prohibited on the Project site.

During operations, indirect loss of bird habitat from sensory disturbance is anticipated as a result of noise, light, and blasting. Sensory disturbance will vary during the operations phase. Noise effects are predicted to cause sensory disturbances to approximately 3,371 hectares of habitat surrounding the Project. Disturbance from blasting and ore extraction will end after operations phase 2 (Year 30). However, disturbance from processing will continue throughout operations, ending in Year 41.

Increased vehicular traffic is expected on access roads and on Highway 655, which could result in increased bird mortality. Mitigation measures will be implemented to reduce the likelihood of bird-vehicle collisions. Once the mine is in the operations phase, most birds are anticipated to avoid the mine due to loss of habitat and sensory disturbance; therefore, the likelihood of bird-vehicle collisions is expected to be low within the mine site. However, progressive reclamation during operations will result in an increase in habitat quality and quantity over time, which could increase collision risk.

A change in bird mortality risk may result from possible ingestion and/or absorption of water in the Collection Ponds or from watercourses where treated water will be discharged back to the environment. Deterrents will be used as needed to prevent birds from accessing the Collection Ponds. As discussed for construction, access routes and edge habitats created by vegetation clearing can indirectly result in bird mortality by increasing access for predators, nest parasites, and hunters. However, no additional effects are expected during operations, and hunting/harvesting will be strictly prohibited at the mine site.

During the decommissioning and closure phase, there will be a progressive increase in bird habitat as Project infrastructure is removed and vegetation re-establishes in the Project Area. Removal of Project infrastructure and other components will result in temporary noise and other sensory disturbance. The effects of light and noise on birds during decommissioning are expected to be lower than the construction phase. Following decommissioning, sensory disturbance will return to baseline conditions.

Bird habitat will increase as the Open Pit fills with water and transitions to aquatic habitat, providing suitable environments for a variety of waterbirds and waterfowl. Over time, vegetation in the Project Area will re-establish, increasing habitat for some bird species, though not to pre-construction levels. Open habitats will gradually succeed to scrub and eventually forest, changing the representative bird community as the habitats evolve. Negative impacts associated with edge effects will diminish over time during active closure and passive closure as vegetation grows and softens the transition between the Project Area and adjacent habitats.

Table 12 summarizes the characterization of residual effects on bird and bird habitat.

Table 12 Project Residual Effects on Bird and Bird Habitat

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Bird Habitat	C	A	L-M	LSA	NS-HS	ST/LT	C	R/I
	O	A	L	LSA	NS-HS	MT/LT	C	R
	D	P	L	LSA	NS-HS	ST-LT	C	R
Change in Mortality Risk	C	A	L	LSA	NS-HS	MT	IR	R
	O	A	L	LSA	NS-HS	MT	IR	R
	D	A	L	LSA	NS-HS	ST	IR	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.10 Wildlife and Wildlife Habitat

6.10.1 Potential Effects Prior to Mitigation

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

- Change in habitat
- Change in wildlife movement
- Change in mortality risk
- Change in wildlife health

During construction, site preparation and earthworks activities will remove habitat, cause habitat fragmentation and result in edge effects. Sensory effects, such as light, noise, vibrations and smells may

further reduce habitat suitability and quality. Construction of roads, power and distribution lines, rail spur, and other Project components may inhibit and alter movement patterns and predator-prey dynamics. The increase in human presence may lead to more human-wildlife interactions, resulting in wildlife mortalities through encounters with equipment, vehicle collisions, interactions with infrastructure, and destruction of wildlife residences.

Activities during construction, operations, and/or decommissioning and closure of the Project could increase the risk of wildlife exposure to contaminants, including air emissions, water pollutants, and other chemicals (e.g. fuels) stored and used on site. Exposure pathways with potential to affect wildlife health include ingestion or direct contact.

Some construction activities are expected to continue into the operations phase of the Project, bringing similar effects as previously described. However, the primary impact during operations will be from Open Pit dewatering, which is predicted to cause water table drawdown affecting wetland and riparian habitat in areas surrounding the Project Area.

Progressive reclamation during the operations phase is expected to restore habitat, allowing wildlife to return to the area. As the site is reclaimed, vegetation will be established, reintroducing habitat for various species. During the Project's transition to passive closure, habitat will continue to regenerate. Habitat structure and characteristics may influence wildlife behaviour, movement patterns and the abundance and distribution of populations based on predator-prey dynamics and access for hunting and trapping.

6.10.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on wildlife and wildlife habitat include, but are not limited to, the following:

- Completing pre-disturbance surveys during the appropriate timing windows for target species and/or sensitive habitats, where necessary.
- Considering wildlife-friendly road and railway design principles and features, such as signage, adapting crossings (e.g., culverts) to allow small wildlife passage, and speed limits, where relevant and practical.
- Fulfilling requirements under the *Endangered Species Act* and *Fish and Wildlife Conservation Act*, including obtaining an Overall Benefit Permit, if required, and subsequent permit conditions such as compensation plans.
- Developing and implementing a Construction Environmental Protection Plan, a Wildlife Management Plan, Site-Wide Water Management Plan, a Spill Management and Contingency Plan, a Waste Management Plan, an Air Quality Management Plan, and an Erosion and Sediment Control Plan.
- Developing protocols and implementing awareness training to educate Project personnel on measures to take in the event of potential wildlife encounters and reduce risk of human-wildlife conflict.

- Implementing appropriate vegetation clearing techniques to reduce impacts on features to be retained (e.g., felling trees away from adjacent lands where natural areas are to be retained/protected).
- Implementing measures to deter or exclude wildlife, where feasible.
- Implementing progressive reclamation of the mine site and/or any temporarily disturbed areas.
- Incorporating mitigation measures relating to potential Project-related effects on boreal caribou.
- Limiting the construction footprint (i.e., Project Area) to the extent possible and restricting clearing to the approved Project Area.
- Maintaining vegetated buffers around sensitive features and retaining natural vegetation, to the extent practical.
- Maintaining vegetation cover along the boundaries of high activity areas (e.g., access roads) to reduce sensory effects such as noise and visual disturbances, where practical.
- Adhering to applicable timing requirements for the removal of Blanding's turtle habitat.
- Preventing the growth of trees and shrubs and maintaining low-growing vegetation around the Tailings Management Facility and Collection Ponds until reclamation activities are underway.
- Prohibiting Project personnel from hunting and bringing firearms to the site while working to limit competition for wildlife.
- Implementing mitigation for lighting to reduce sensory disturbance to wildlife.
- Maintaining hydrological connectivity using appropriate features such as properly placed and sized culverts.

6.10.3 Residual Effects

Direct habitat loss for wildlife will primarily occur during the construction phase because of land clearing and land conversion. It is anticipated that over the course of the Project construction and early operations, approximately 11,785 hectares of wildlife habitat will be removed. However, these losses are planned to occur incrementally over an 18-year period allowing species time to adapt and find alternative habitats in the broader area. Rehabilitation of the Project Area will occur progressively and during decommissioning and closure reducing this direct loss.

Project activities are also predicted to influence the movement patterns of wildlife through changes to the landscape. Less mobile species, such as amphibians, will be more affected than those that are mobile, like mammals. While some species, such as moose and black bear may prefer edge habitats on the fringe of the Project, others may avoid the area. These edge areas are more open and may attract predator species such as fox and coyotes.

Sensory disturbances (e.g., noise and light) are predicted to degrade the quality of habitat adjacent to the Project. Project noise is predicted to be heard by wildlife up to 6 km from the Project during operations. While some wildlife, such as reptiles, are generally less sensitive to noise others, such as bats, are likely avoid the Project Area. Nocturnal species will also be affected by artificial light.

Collisions with equipment and vehicles, interactions with infrastructure, and destruction of wildlife residences will peak during construction, continuing into operations, decommissioning and closure. Human-wildlife interactions are also likely to increase, especially if there are animal attractants such as food waste, which may also increase as animals become accustomed to having people in the area. Black bears, in particular, are known as a species that can be of concern if waste is not properly stored and disposed. Fugitive dust, air emissions, and contaminants discharged in surface water, sediments, soils, are expected throughout all Project phases but are predicted to have negligible affect on wildlife health.

Table 13 summarizes the characterization of residual effects on wildlife and wildlife habitat.

Table 13 Project Residual Effects on Wildlife and Wildlife Habitat

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Habitat	C	A	L/H	PA/ LSA	HS	MT/LT	C	R
	O	A	L	PA/ LSA	HS	MT/LT	IR/C	R
	D	P	L	PA/ LSA	HS	ST	C	R
Change in Movement	C	A	N/L/M	PA/ LSA/RSA	HS	LT	C	R
	O	A	N/L	PA/ LSA/RSA	HS	LT	C	R
	D	A/P	N/L	PA/ LSA/RSA	HS	LT	C	R
Change in Mortality Risk	C	A	N/L/M	PA/ LSA	HS	LT	C	IR/R
	O	A	N/L/M	PA/ LSA	HS	LT	IR	IR/R
	D	A	N/L/M	PA/ LSA	HS	LT	IR	IR/R
Change in Wildlife Health	C	A	N	PA/ LSA	NS/MS/HS	LT	C	R
	O	A	N	PA/ LSA	NS/MS/HS	LT	C	R
	D	A/P	N	PA/ LSA	NS/MS/HS	LT	C	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
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Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.11 Climate Change

6.11.1 Potential Effects Prior to Mitigation

The potential environmental effects of the Project on climate change, prior to mitigation, include:

- Change in release of greenhouse gas
- Change in carbon sinks

Direct greenhouse gas emissions from the Project include equipment and vehicle emissions, portable site lighting, blasting, and changes in land use. Indirect greenhouse gas emissions will come from the generation of energy from external sources, such as grid electricity. These emissions will occur during the construction, operations and decommissioning phases of the Project. Emissions associated with the operation of the rail spur line for the third-party operations for transporting product concentrate were also calculated and were considered negligible (0.6% of the predicted Project greenhouse gas emissions).

Land disturbance and passive and active carbonation processes can change carbon sinks. Land clearing activities, including the removal of vegetation and soils, will reduce carbon sequestration in the Project Area; however, progressive reclamation of the land during Project operations and decommissioning will enhance carbon storage (sequestration). Further, mineral carbonation involves reactions between certain minerals that can be found in rocks and CO_2, resulting in permanent CO_2 storage in solid form as carbonates. The Project deposit contains this kind of mineral, allowing CO_2 sequestration.

Two types of process will allow the Project to sequester CO_2:

- Passive mineral carbonation between minerals in mined material and atmospheric CO_2 is expected to occur at two stages in the Project's mining process: during mining and milling, and in mine tailings after discharge to the Tailings Management Facility.
- Active carbonation is also expected through Canada Nickel's novel In-Process Tailings Carbonation process to harness the natural mineral sequestration capabilities of host rock to actively capture concentrated CO_2. In this process, tailings generated by the milling process are conditioned with concentrated CO_2 after thickening and before discharge to the Tailings Management Facility

Although mineral carbonation is naturally occurring, the active carbonation Canada Nickel is undertaking through the In-Process Tailings Carbonation process is a groundbreaking method, as it is one of the only known methods to permanently sequester up to 1.3 million tonnes of carbon dioxide annually, transforming the Crawford Project into a large-scale carbon sink capable of producing net-zero metals. Once fully realized at full production, this would make the Project Ontario's largest, and only, permanent carbon storage sink and one of Canada's largest permanent carbon storage sinks, as well.

6.11.2 Mitigation Measures

The key mitigation measure to avoid or reduce Project related effects on climate change is the development and implementation of a detailed net-zero plan, including a Best Available Technology / Best Environmental Practice analysis that considers the following:

- Biomass chipping and spreading
- Merchantable timber recovery
- Passive mineral carbonation
- In-Process Tailings carbonation
- Site remediation and land reclamation
- Vehicle and equipment idling policy
- Vehicle and equipment optimal sizing
- Vehicle and equipment regular maintenance
- Traffic Management Plan
- Strategic site design to reduce haulage distances
- Use of trolley assist haulage
- Use of electric vehicles and equipment
- Use of autonomous vehicles

In addition, Canada Nickel will implement measures to reduce vehicles emissions (idling policy, Tier 4 emissions standards, where feasible) and equipment emissions, as well as implement design measures to reduce emissions, including installing a trolley-assist system on pit ramps to reduce diesel emissions.

6.11.3 Residual Effects

The Project is expected to release a net total of 11,135 kilotonnes of carbon dioxide equivalent in greenhouse gas emissions over the Project's lifetime. However, the Project will also increase carbon sinks, leading to an estimated sequestration of 46,678 kilotonnes carbon dioxide equivalent. Overall, the Project will sequester more carbon dioxide equivalent than it emits.

Table 14 summarizes the characterization of residual effects on climate change.

Table 14 Project Residual Effects on Climate Change

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in release of greenhouse gas	C, O, D (Net)	A	M	G	NS	LT	IR	I
Change in carbon sinks	C, O, D (Net)	P	H	G	NS	LT	IR	R

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
G: Global

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
LT: Long-term

Frequency:
S: Single event
IR: Irregular event
R: Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.12 Health

6.12.1 Potential Effects Prior to Mitigation

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

- Change in physical health
- Change in mental health and social wellbeing
- Change in community safety

The Project may affect physical health by actual or perceived changes in environmental health, food security, and country food availability and accessibility. A rise in infectious diseases may result with an increased number of people within the region. Employment conditions may also affect physical health through irregular shift work, which can lead to fatigue related injuries, and potentially to other factors such as stress, isolation, and boredom and change in chronic illness.

Mental health and social wellbeing could be affected by actual or perceived Project-related changes in environmental quality (e.g. changes to air, water, soil, food), which could alter the way people consume country foods, affecting food security (i.e., from increased noise or decreased visual quality as result of the Project). This could lead to behavioural and biological changes and coping mechanisms. The physical presence of the Project could change traditional land use, reduce opportunities for knowledge transmission, and cultural continuity, thereby affecting mental health and social wellbeing.

Project-related population growth and employment of temporary workers from out of region may increase competition for food harvesting, changes in cost of living, and changes to the family unit that may affect mental health and social wellbeing. Employment conditions, from temporary and long-term employees (from construction and operations phases), may have a positive or negative effect on mental health and social wellbeing through behavioural changes and coping mechanisms. Positive effects include reducing stress related to household financial strain and positively influencing household food security, however lower-income households struggling to afford sufficient and nutritious food to feed their families.

Changes in community safety are directly and indirectly linked to changes in physical health and changes in mental health and social wellbeing as, in some cases, resource development is associated with adverse community safety due to increases in crime. However, these effects are often associated with remote mine projects, those with worker camps, and those associated with boom town communities. Community safety may also be affected by Project-related increases in traffic and changes in traffic movement which would increase the relative risk of an accident or increase response times in the event of an emergency.

Conversely, full-time employees during operations are anticipated to become part of the community which provides several important benefits that contribute to positive mental health and social well-being related to community safety, such as fostering a sense of belonging and mutual support. Employment and living wages are known to reduce the stress and desperation that can lead to criminal activities. Access to health care (through Canada Nickel and the communities where people reside) can also lead to safer communities. An increase in traffic and change in traffic movement could increase the relative risk of an accident or increase response times in the event of an emergency).

6.12.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project related effects on health include, but are not limited to, the following:

- Limit the construction footprint (i.e., Project Area) to the extent possible to reduce the potential for reductions in groundwater recharge and limit the number of watersheds and subwatersheds overprinted by the Project Area.
- Install contact water collection ditches around the Stockpiles, Impoundment Facility, and Tailings Management Facility to collect toe seepage and groundwater recharge from these Project components.

- Treat water effluents prior to discharge to the receiving environment, as required, to meet regulatory criteria including an Environmental Compliance Approval issued by the Ministry of the Environment, Conservation, and Parks as well as criteria developed through the receiving watercourse Assimilative Capacity Study, in addition to the Metal and Diamond Mining Effluent Regulations.
- Impose restrictions on overnight/prolonged stays within a buffer area surrounding the Project and at two nearby receptors. This buffer area is referred to as the Modeled Mine Boundary and is intended to reduce exposure to emissions, a practice that is often applied to mines and industrial areas.
- Design exterior lighting systems to limit light trespass and to avoid glare (i.e., lighting that targets specific areas, cut-off specifications).
- Prohibit Project personnel from hunting, fishing, and bringing firearms and fishing gear to the site, while working to limit competition for wildlife and fish species.
- Undertaking rehabilitation activities in consideration of desired end land uses in the preparation of the Mine Development Closure Plan.
- Working with local municipalities on housing availability to inform a housing strategy for the area that encourages workers to move permanently to the area.
- Conducting a detailed Project accommodation study based on workforce requirements and developing an Accommodations Management Plan.
- Committing to on-going discussions with third parties, including Indigenous Nations, to explore opportunities for providing accommodations in the region to support housing needs during Project construction and operations phases.
- Hiring from local communities and the region, depending on the availability of qualified applicants.
- Providing security at the site and implementing several workplace policies that will limit adverse behaviours in the community.

6.12.3 Residual Effects

Project-related contaminants in air are not predicted to be greater than the applicable health-based exposure limits and toxicity reference values at locations where people are expected to be present for extended periods of time (including overnight stays or beyond). For some contaminants, where any increase in exposure could result in increased risk of adverse health effects (e.g., $PM_{2.5}$), mitigations will be implemented to reduce emissions and monitoring will be undertaken to evaluate exposures.

For the North Driftwood Diversion Channel, changes in methyl mercury concentration in angling fish compared to baseline conditions are expected to be low (approximately 4%). As such, this change in concentration is not expected to markedly increase potential exposures to methyl mercury through fish consumption. In addition, Project-related activities, including the re-alignment of the North Driftwood River, are not expected to result in increased concentrations of mercury in the environment.

Actual or perceived changes in food quality, land use, and aesthetics could lead to reductions in country food availability and accessibility that may affect physical health through diet and nutritional changes. These changes could also lead to changes in physical health due to reduced recreational experiences.

Project-related population growth and employment of temporary workers (mainly from the construction phase) from outside of the region may increase competition for Indigenous food harvesting, increase transmission of infectious diseases, and increase the cost of living.

Increased housing rental rates could lead to the most vulnerable populations experiencing higher financial pressures, who may have to make difficult decisions about the quality and quantity of food they can afford, which puts them at risk for food insecurity. However, it is expected that independent accommodation providers in the region will provide accommodations for temporary workers as they have for other large projects that will reduce such potential effects.

The Project is anticipated to result in positive effects on employment, business, and the economy. Increased employment is expected to have positive effects on Indigenous unemployment rates by increasing income levels for Indigenous individuals (and families) who secure employment with the Project. Employment through the Project will provide valuable employment experience that can be leveraged by Indigenous workers to secure employment with other projects/employers following completion of Project-related work. Increased employment rates are linked to better states of health. Project-related employment may reduce financial-related pressures due to employment income, which may bring some families out of food and housing insecurity.

The presence of the Project workforce during construction and operations may result in positive effects on services and infrastructure because the workforce will contribute economically to the Local Study Area/Regional Study Area (through property and income taxes) representing a potential expansion of municipal tax bases. This in turn may help pay for service providers to re-size appropriately for the increased population.

Table 15 summarizes the characterization of residual effects on health.

Table 15 Project Residual Effects on Health

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in physical health	C/O/D	P/A/N	L/M	LSA/RSA	N/A	ST/MT	IR/R	R
Change in mental health and social well-being	C/O/D	P/A/N	L/M	LSA/RSA	N/A	ST/MT	IR/R	R
Change in community safety	C/O/D	P/A/N	L/M	RSA	N/A	ST/MT	IR/R	R

KEY

Project Phase:
C: Construction
O: Operation
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Irregular event
R: Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.13 Social Conditions

6.13.1 Potential Effects Prior to Mitigation

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

- Change in demand for services and infrastructure
- Change in accommodation availability
- Change in demand for transportation infrastructure

- Change in land use designations and private property
- Change in recreation
- Change in resource use

The Project is expected to increase the population in the Local Study Area, which could place additional demands on local housing, municipal and provincial services, and infrastructure, such as health and emergency services, policing services, power, water, sewer and waste services. The transportation of Project goods, services, and workers will lead to additional use of existing transportation infrastructure. Increased traffic on local roads could lead to longer travel times and affect road conditions.

Project construction will restrict access and remove potential recreational areas within the Project Area. Project operations may disturb recreational land and resource users due to sensory impacts on people and wildlife. Access to traplines, bear management areas, and bait harvesting areas may be restricted or altered.

Navigable waterways, such as the mainstems of the North Driftwood River, may be altered through in-filling, relocation, and construction of Project components, which could interfere with the ability to navigate.

6.13.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects on social conditions include, but are not limited to, the following:

- Hiring from local communities and the region, depending on the availability of qualified applicants.
- Working with local municipalities on housing availability to inform a housing strategy for the area that encourages workers to move permanently to the area.
- Supporting training, education, and scholarship programs to improve employment opportunities, including participation in local training networks targeted at diverse groups such as Indigenous Nations, local youth, and subgroups, such as the Indigenous Skills and Employment Training Program.
- Adapting work schedules and crew rotations when practical to reduce the number of non-local workers needing accommodations at any one time.
- Developing and implementing a Health and Medical Services Plan to manage occupational and non-occupational injuries and illness.
- Implementing policies, procedures, and training programs to mitigate adverse effects on services and infrastructure, including:
  - Health and Safety Policy
  - Local Procurement Policy
  - Code of Business Conduct and Ethics
  - Workplace Violence, Harassment and Discrimination Policy

  - Diversity, Equity, and Inclusion
  - Fit for Duty, including Drug and Alcohol Policy
  - Cultural Awareness Training
- Conducting a detailed Project accommodation study based on workforce requirements and developing an Accommodations Management Plan.
- Committing to on-going discussions with third parties, including Indigenous Nations, to explore opportunities for providing accommodations in the region to support housing needs during Project construction and operations phases.
- Communicating Project needs to local accommodation providers, including hotels, motels, and bed-and-breakfasts, to help secure rooms for construction workers.
- Developing and implementing a Traffic Management Plan.
- Using existing roads, trails and Right of Way to access the Project Area, to the extent practical.
- Maintaining access to the Lower Sturgeon Dam Road and Camp 40.
- Installing signage around the Project Area to alert land users of the presence of the Project and its facilities.
- Engaging with municipal authorities and provincial Crown land use permit holders to address potential conflicts, disturbances, or access restrictions to municipal and Crown land use areas.
- Undertaking rehabilitation activities in consideration of desired end land uses in the preparation of the Mine Development Closure Plan.
- Providing in-kind support to local snowmobile clubs for the loss of a snowmobile trail and warming hut or re-establishing a snowmobile trail bypass around the Project Area.
- Realigning the North Driftwood River to maintain navigation from a series of chain lakes west of the Tailings Management Facility to downstream of the Project Area.
- Communicating Project activities, locations, and timing throughout construction, operations, and decommissioning and closure to affected land and recreational users, interest groups, and local authorities via email, newsletter, or posting on Canada Nickel's website or other appropriate means.
- Obtaining approvals or exemptions under the *Canada Navigable Waters Act* for permanent works affecting navigable waters and following conditions specified in approvals and other directives for an exemption that apply to the Project.
- Engaging with local resource users (commercial hunters, trappers, bait harvesters) and Ministry of Natural Resources Regional Officials to address potential conflicts, disturbances, or access restrictions to commercial hunting, trapping, and bait fishing areas in the Project Area, and availability of wildlife and bait fish resources.
- Obtaining necessary patent mining claims, mineral leases, and unpatented mining claims (provincial Crown lands) in areas overlapped by the Project.

- Increasing flexibility in work schedules to enable the continued participation of Indigenous employees in traditional and cultural activities.

Further, in addition to the above, Canada Nickel will implement a number of other key mitigation measures to manage disproportionate effects on members of identified sub-populations, including:

- Providing security at the site and implementing several workplace policies that will limit adverse behaviours in the community.
- Participating 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.
- Engaging potentially affected Indigenous Nations and establishing agreements to support present and future engagement and participation in the Project, including negotiations for long-term agreements to implement measures to protect the environment and opportunities for Nations to participate in the benefits of the Project through business, and training, and financial compensation.
- Implementing an internal Whistleblower Program for employee feedback and communication of concerns, as well as an external feedback mechanism to capture Project-related comments and concerns from community members.
- Participating in the “Equal by 30” initiative aimed at increasing benefits to women and accelerating gender equality and diversity to close the gender gap by 2030.

6.13.3 Residual Effects

Canada Nickel anticipates that workers will commute from communities within about an hour’s drive of the Project site, though some workers may travel from further away. While Canada Nickel aims to hire primarily from local and Indigenous Nations, workers from outside the region may be needed to meet workforce demands. It is estimated that there will be insufficient skilled labour within the region, requiring some of Canada Nickel’s workforce to move to the area, either temporarily or permanently.

This increase in workers will place more demand on local services and infrastructure. However, the Project may improve access to local services and infrastructure if upgrades are made to meet Project-related demands (e.g., recreation facilities). The Project could have positive local effects if the demand for accommodations leads to more permanent and temporary housing. The Project workforce will contribute to the local economy through property and income taxes, potentially expanding municipal tax bases. This, in turn, may help fund service providers to adjust for the increased population.

From a housing perspective, Canada Nickel is exploring opportunities with Indigenous partners and local entrepreneurs to develop workforce accommodations. In addition, surrounding communities have developed plans to increase housing availability, which will help mitigate the Project’s impact on housing if those projects proceed.

Canada Nickel acknowledges that members of vulnerable groups may be more adversely affected by increased demands to accommodations, services, and infrastructure. The Project is committed to

reducing adverse effects to vulnerable groups, to the extent possible. A community feedback tool or process will be implemented to receive and address community concerns and complaints.

During operations, changes in travel time along the realigned section of Highway 655 are expected to be negligible (i.e., increase of less than five minutes from current conditions). A Traffic Management Plan will be developed that outlines measures and strategies to reduce traffic delays associated with construction. Canada Nickel will continue to communicate with local communities and service providers about scheduling to help them prepare for potential increases in transportation demand.

The Project is predicted to remove an east-west snowmobile trail and associated warming hut. Canada Nickel will provide in-kind support to local snowmobile clubs for the loss the trail and warming hut or establish a snowmobile trail bypass around the Project Area.

The Project is predicted to overlap with 15 km of waterways and waterbodies that are likely navigable (i.e., the North Driftwood River), with an additional 25 km where navigation is uncertain (i.e., lower tributaries to the North Driftwood and West Buskegau Rivers). Some of these impacts will be addressed through the construction of the North Driftwood Diversion Channel. Canada Nickel will obtain Transport Canada's Navigation Protection approvals, as required.

Residual effects on recreational and commercial land and resource use include direct loss of areas within the Project Area. Sensory disturbance may also affect wildlife resources and recreational/commercial users.

Table 16 summarizes the characterization of residual effects on social conditions.

Table 16 Project Residual Effects on Social Conditions

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in demand for services and infrastructure	C/O	A	L	LSA/RSA	NS	ST-MT	C	R
Change in accommodation availability	C/O	A	M	LSA/RSA	NS	ST-MT	C	R
Change in demand for transportation infrastructure	C/O	A	L	LSA/RSA	NS	ST-MT	C	R
Change in land use designations and private property	C/O/D	A	L	LSA	NS	ST-LT	IR/C	R/I
Change in recreation	C/O/D	A	L-M	LSA	MS-HS	ST-LT	IR/C	R/I

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in resource use	C/O/D	A	L-M	LSA	NS	ST-LT	IR/C	R/I

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.14 Economic Conditions

6.14.1 Potential Effects Prior to Mitigation

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

- Change in employment
- Change in business
- Change in provincial economy

The Project will create jobs and business opportunities, both directly and indirectly, which will boost the regional economy during all phases of the Project. The number of jobs from the Project will vary throughout its lifecycle, peaking during the construction phase and being lowest during decommissioning. After decommissioning, Project-related jobs will cease as the mine site is rehabilitated. It is acknowledged that not everyone may benefit equally from these job opportunities.

Project expenditures on materials, equipment, and services could result in both positive and adverse effects on business. Positive effects include increased business revenue, which can support capital investment and hiring, thereby increasing capabilities and capacity among local businesses. Spending of income by direct and indirect workers contributes to positive effects on local businesses, primarily within the service sector, resulting in induced employment effects. Adverse effects include labour drawdown

(i.e., workers leave current employers to secure employment with the Project due to wage differentials or a desire to work on the Project) and wage inflation (i.e., to attract and retain workers local employers may increase compensation paid to workers).

Project spending will result in overall increased economic activity in the Local Study Area and Regional Study Area and will also contribute to provincial and federal government revenues through royalty payments and taxation on production, labour, goods, and services.

6.14.2 Mitigation Measures

Key mitigation measures to avoid or reduce Project-related effects to economic conditions include, but are not limited to, the following:

- Hiring qualified applicants from the region.
- Working with local schools and training centers to align course curricula with Project needs, where possible, and exploring opportunities to support training, education, and scholarship programs.
- Developing a Diversity, Equity, and Inclusion Policy to promote equality in hiring, operations, and procurement.
- Continuing to engage local Indigenous Nations and develop long-term agreements (e.g., Impact Benefit Agreement, Mutual Support Agreements), as appropriate.
- Raising awareness and implementing policies to support under-represented populations.

6.14.3 Residual Effects

The residual effects of the Project on economic conditions will result in an average of approximately 708 jobs over the life of the mine, with a forecasted maximum of 1,998 Full-Time Equivalent positions during construction. It is estimated that there could be a shortfall of 23% to 30% in trained mining workers from the region, and mobile workers will be required. Canada Nickel continues to work with local schools and training centers to develop a regional workforce. There is also potential for workers from other regional mining operations to join the Project, especially as those operations wind down.

From a labour income perspective, it is estimated that the Project will provide direct income in the range of $1.2 billion, with an additional $341 million in indirect labour income across Canada.

From a Gross Domestic Profit (e.g. the total value of goods and services being produced) perspective, the Project is projected to contribute up to $18.4 billion across Ontario and $21.5 billion across Canada over the life of the Project. This would include expenditures by Canada Nickel as well as other businesses (indirect) and those related to consumer spending (induced).

It is acknowledged that the positive effects of the Project are expected to be unevenly distributed among the labour force, given that the current mining labour force in the area is comprised of a higher percentage of non-Indigenous men than other subpopulations. Canada Nickel's gender equity and diversity policies prioritize local hiring, focusing on hiring members of Indigenous Nations, women, and

youth. This aims to boost employment among underrepresented populations and reduce wage inequality between men, women, and Indigenous populations.

Table 17 summarizes the characterization of residual effects on economic conditions.

Table 17 Project Residual Effects on Economic Conditions

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change in Employment	C	P	H	LSA / RSA	NS	ST	C	R
	O	P	H	LSA / RSA	NS	MT	C	R
	D	A	M	LSA / RSA	NS	ST	C	IR
Change in Business	C	P / A	M	LSA / RSA	NS	ST	C	R
	O	P / A	H	LSA / RSA	NS	MT	C	R
	D	P / A	M	LSA / RSA	NS	ST	C	IR
Change in Provincial Economy	C	P	M	LSA / RSA	NS	ST	C	R
	O	P	M	LSA / RSA	NS	MT	C	R
	D	A	M	LSA / RSA	NS	ST	C	IR

KEY

Project Phase:
C: Construction
O: Operations
D: Decommissioning and closure

Direction:
P: Positive
A: Adverse
N: Neutral

Magnitude:
N: Negligible
L: Low
M: Moderate
H: High

Geographic Extent:
PA: Project Area
LSA: Local Study Area
RSA: Regional Study Area

Timing:
NS: No sensitivity
MS: Moderate sensitivity
HS: High sensitivity

Duration:
ST: Short-term
MT: Medium-term
LT: Long-term

Frequency:
S: Single event
IR: Multiple Irregular event
R: Multiple Regular event
C: Continuous

Reversibility:
R: Reversible
I: Irreversible

N/A: Not applicable

6.15 Indigenous Interests

6.15.1 Potential Effects Prior to Mitigation

An assessment of potential Project-related effects on Indigenous Interests was conducted for the following six Indigenous Nations that make up the Crown Consultation list for the Project:

- Apitipi Anicinapek Nation
- Flying Post First Nation
- Matachewan First Nation
- Mattagami First Nation
- Taykwa Tagamou Nation
- Métis Nation of Ontario – Region 3

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

- Change to Indigenous or Treaty Rights (including lands and resource use)
- Change to Indigenous Physical and Cultural Heritage
- Change to Indigenous Governance, Health, Social, and Economic Conditions

The assessment applied a conservative approach, recognizing that an absence of information regarding Indigenous Interests does not necessarily represent an absence of the exercise or practice of Indigenous and/or Treaty Rights. As such, the assessment assumes that Indigenous Interests have the potential to occur on accessible lands and waters within Project assessment areas that overlap with each Nation's Treaty lands and/or areas of interest.

All phases of the Project (construction, operation, decommissioning and closure) are anticipated to affect Indigenous Interests. Potential changes may occur through multiple pathways including, but not limited to:

- Biophysical effects (e.g., on aquatic resources)
- Access to lands and waters (e.g., changes in land use designations, barriers or restrictions)
- Cultural/experiential effects (e.g., the presence of industrial activity disrupting peaceful enjoyment)
- Socio-economic effects (e.g., presence and demands of Project workforce)

Canada Nickel recognizes that because of the location of the Project in the Traditional Territories and/or areas of interests of the Indigenous Nations (as provided by the Indigenous Nations), some effects, such as alteration to the current use of lands and resources may affect the Indigenous Nations disproportionately in comparison with the non-Indigenous population. For example, Elders, Indigenous youth, Indigenous women, low-income Indigenous families, and other sub-groups of Indigenous Peoples may experience disproportionate adverse effects on community services and infrastructure compared to the general population due to existing constraints regarding lack of affordable housing, childcare options, food security, increased cases of substance abuse, gender-based violence, sexual assault, and other

safety concerns (including Missing and Murdered Indigenous Women and Girls). Canada Nickel aims to reduce the differential effects on Indigenous sub-groups through the mitigation and enhancement measures described throughout the Impact Statement, including the development and implementation of cultural awareness training, a feedback process to hear concerns from residents and members of vulnerable groups, and agreements currently in negotiation with Indigenous Nations.

6.15.2 Mitigation Measures

In addition to the mitigation measures presented in Sections 6.1 to 6.14 key mitigation measures to avoid or reduce Project related effects to Indigenous Interests include, but are not limited to, the following:

- Canada Nickel has provided resources to support the full participation of Indigenous Nations in the assessment process through the formation of various Nation-specific agreements and ongoing negotiations for forward-looking Nation-specific agreements for the Project. The specific content of these agreements is considered confidential; however, the key purpose of these agreements is a commitment by Canada Nickel to facilitate early and ongoing effective, efficient, and streamlined engagement with the Indigenous Nations relating to regulatory permitting, approval processes, and other environmental matters associated with the Project, throughout the life of the Project.
- Supporting the Indigenous Nations with the preparation of Nation-led studies for the Project (e.g., Socio-economic studies, Traditional Knowledge and Land Use studies).
- Exploring opportunities for the Indigenous Nations to participate in the economic benefits of the Project through business, training, and financial compensation.
- The development and implementation of measures to protect and monitor the environment for ongoing and future use by the Indigenous Nations.

Canada Nickel recognizes the importance of working in genuine partnership with Indigenous Nations to establish a mutually beneficial, cooperative, and productive relationship centered around transparent information sharing, open dialogue, meaningful collaboration, and early and ongoing engagement.

As committed in the Impact Statement, Canada Nickel will continue to engage Indigenous Nations to understand and mitigate the Project's impact on their Indigenous Interests, explore opportunities to enhance Project benefits, and consider their recommendations and input on Project decisions, including the development of management plans and offsetting (e.g., Construction Environmental Protection Plan, Archaeological Resources Protection Plan and Heritage Chance Find Protocol, Fisheries Offsetting Plan; Closure Plan). Throughout this ongoing collaboration, and through the development of Nation-specific agreements (Impact Benefit Agreements or Mutual Support Agreements), Canada Nickel aims to foster a positive long-term relationship with the Indigenous Nations throughout the life of the Project.

6.15.3 Residual Effects

The Project is likely to result in adverse residual effects on Indigenous and Treaty Rights and Indigenous Physical and Cultural Heritage during all Project phases. Environmental changes are expected to occur, as well as changes for access to land and waters, and changes to cultural/experiential values within and

near the Project Area. Since the effects are primarily tied to Project activities (e.g., restricted/controlled access; clearing and grading; construction and operational noise; presence of Project workers), it is anticipated that these effects will be reversible once progressive reclamation and revegetation activities are complete. Consideration of these effects, including site access, are being considered in the agreements under negotiation with the Indigenous Nation's and will include the conditions for Indigenous Nations to access select areas in and near the Project Area for the exercise of Indigenous and/or Treaty Rights.

Changes in social and economic conditions are also expected to result in residual effects that vary depending on the Indigenous Nation and in relation to Indigenous sub-groups. Positive residual effects are largely connected to Nation-specific agreements and Indigenous-centered mitigation and enhancement measures identified for social and economic conditions during all Project phases. This includes the involvement of Indigenous Nations in the development of Project plans (e.g., Construction Environmental Protection Plan; Archaeological Resources Protection Plan; Fisheries Offsetting Plan; Closure Plan), and ongoing conversations and planning for the involvement of Indigenous Nations in monitoring programs. Future generations may also benefit through site rehabilitation and restoration efforts following the decommissioning and closure of the mine.

If the Project results in the increased construction of new permanent and temporary housing, the Project workforce may contribute to the local economy through property and income taxes and, in turn, help to pay for the expansion of community services and infrastructure in the region. The presence of the Project may therefore create positive effects for members of Indigenous nations who reside in Timmins or Cochrane if potential demands on accommodations result in efforts to increase the stock of permanent and temporary housing. The Project is also anticipated to result in positive effects on Indigenous employment, business, and the economy during all Project phases due to mitigation measures and agreements with potentially affected Indigenous Nations specifically aimed at increasing the economic participation of their membership and businesses.

Table 18 summarizes the characterization of residual effects on Indigenous interests.

Table 18 Project Residual Effects on Indigenous Interests

Residual Effect	Residual Effects Characterization							
	Project Phase	Direction	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility
Change to Indigenous or Treaty Rights	C/O/D	A	M	PA/MMB/ LSA	A	ST/MT	MIR /MRE	R
Change to Indigenous Physical and Cultural Heritage	C/O/D	A	L	PA/MMB/ LSA	A	ST/MT	MIR /MRE	R
Change to Indigenous Governance, Health,	C/O/D	A/P	L	PA/MMB/ LSA	A	ST/MT	MIR /MRE	R

Social and Economic Conditions								

KEY

Project Phase:	***Geographic Extent:***	***Frequency:***
C: Construction	*PA: Project Area*	*S: Single event*
O: Operations	*LSA: Local Study Area*	*MIR: Multiple irregular event*
D: Decommissioning and closure	*MMB: Modelled Mine Boundary*	*MRE: Multiple regular event*
Direction:	*RSA: Regional Study Area*	*C: Continuous*
P: Positive	***Timing:***	***Reversibility:***
A: Adverse	NA: Not Applicable	*R: Reversible*
N: Neutral	A: Applicable	*IR: Irreversible*
Magnitude:	***Duration:***	
N: Negligible	*ST: Short-term*	*N/A: Not applicable*
L: Low	*MT: Medium-term*	
M: Moderate	*LT: Long-term*	
H: High		

7 Cumulative Effects Assessment

The cumulative effects assessment identifies and assesses Project residual adverse effects that may interact with the effects of other past, present, and reasonably foreseeable future physical activities.

The approach used for conducting the cumulative effects assessment for the Project is informed by the *Policy Framework for Assessing Cumulative Effects Under the Impact Assessment Act* (IAAC 2023) and the Tailored Impact Statement Guidelines.

Two conditions must be met to initiate an assessment of cumulative effects on a Valued Component:

- the Project is assessed as having adverse residual effects on a Valued Component
- the adverse residual effects from the Project overlap spatially and temporally with residual effects of other physical activities on a Valued Component

To complete the cumulative effects assessment, a Project Inclusion List has been developed to identify the past, present and future physical activities that may interact cumulatively with the effects of the Project, which are illustrated on Figure 2. The following types of physical activities were considered:

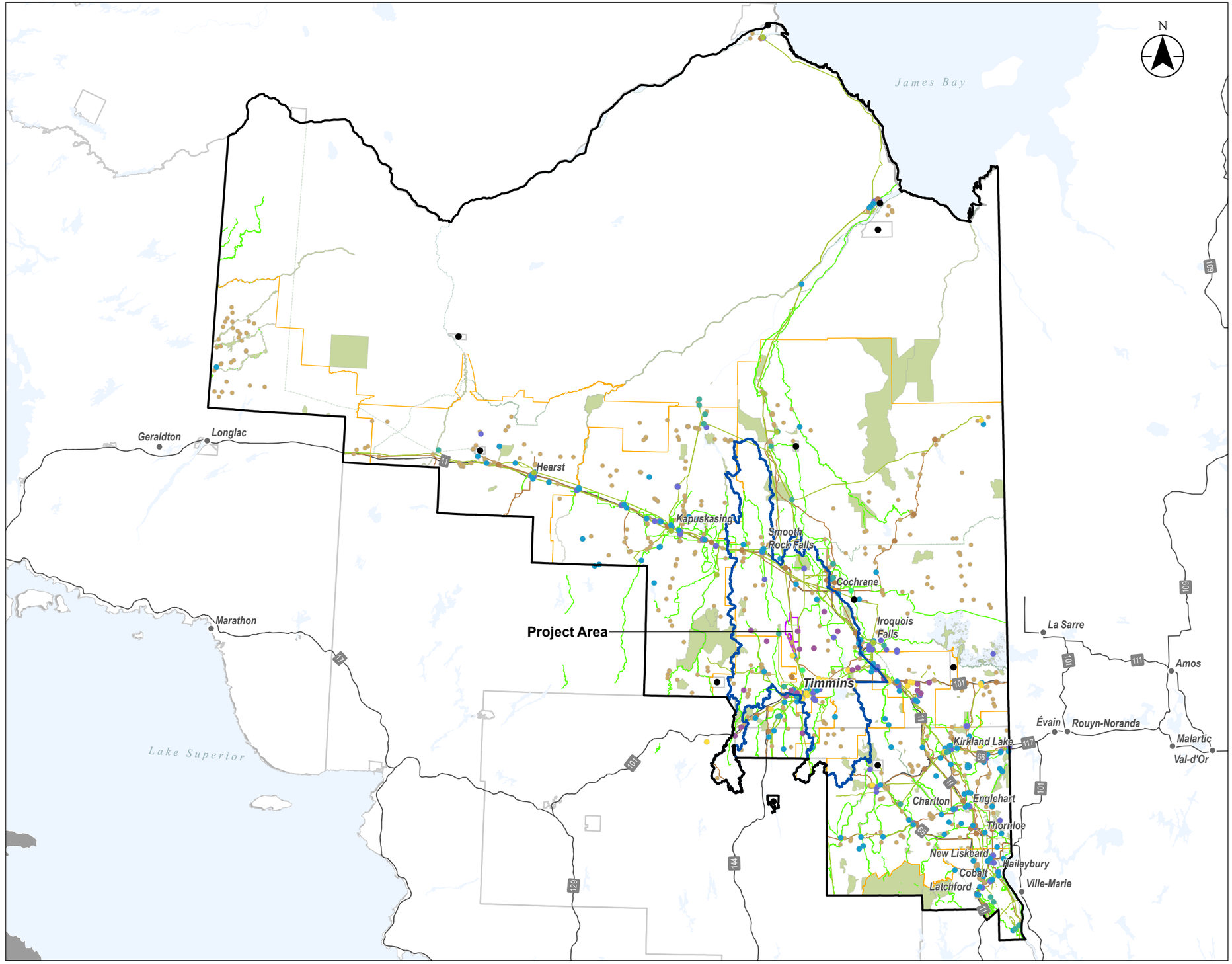
- Mining: mines and exploration activities
- Aggregate Extraction: pits and quarries
- Community Development: First Nation reserves, urban areas, landfills, water and wastewater treatment, and other community services
- Water Management: non-electric dams
- Transportation: airports, highways, and railways
- Power: hydroelectric dams, solar power, natural gas, and transmission lines
- Energy: pipelines and local distribution systems
- Forestry: managed forests, sawmills, and paper mills
- Agriculture: agricultural conversion and operation
- Recreation: conservation areas, parks and campgrounds, and snowmobile trails
- Hunting and Fishing Activities

Based on a review of available information, the following future physical activities have the potential to act cumulatively with the Project and were carried through the cumulative effects assessment:

- Mining
  - North Timmins Gold Project – Bradshaw Mine
  - Upper Beaver Gold Project
  - Detour Lake Gold Mine Expansion

  - Fox Mining Complex Expansion Project
  - ERO: 019-8122 - Permit to take water renewal
  - Other mine-related physical activities (e.g., mineral exploration permits)
- Transportation
  - Highway 652 Extension to Highway 11
  - Northlander Passenger Train Expansion of Service
  - Other transportation-related physical activities (e.g., road rehabilitation, bridge and culvert replacement)
- Power
  - Transmission Infrastructure Partnership-1
  - Wawa to Porcupine Transmission Line

Table 19 summarizes the cumulative effects specific to the Valued Components for which cumulative effects are predicted.



Stantec

CANADA NICKEL COMPANY

Legend

- Project Area
- Limit of all RSAa
- Limit of Biophysical RSAs

Past, Present, and Future Physical Activities

- Aggregate Extraction
- Community Development
- Energy
- Exploration
- Forestry
- Mining
- Power
- Recreation
- Transportation
- Water Management
- First Nation Reserve and Urban Area
- Energy
- Recreation
- Transportation
- Forest Management Unit
- Hunting and Fishing Activities
- Recreation

Base Features

- Major Roads
- Waterbody

0 50 100 km

1:2,500,000 (At original document size of 11x17)

Notes

1. Coordinate System:NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2023.

Project Location
Timmins, Ontario

160930456 REVA
Prepared by awhite on 2024-11-21

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

Figure No.
2

Title
Past, Present, and Future Physical Activities

\\cd1004-f01\01609\active\160930456\160930456\gis_cad\gis\mxds\ISIS_Chapter\160930456_IS_Chp_PaintLanguageSummary2.aprx\160930456_IS_PaintLanguageSummary_Fig02_PhysicalActivities Revised: 2024-11-21 By: awhite

Table 19 Summary of Cumulative Effects Assessment

Valued Component	Residual Cumulative Effect
Atmospheric Environment	• Cumulative effects are anticipated where emissions from the Project may combine with emissions from other physical activities to influence ambient atmospheric conditions. • While negligible contributions are expected from some activities, the Bradshaw Mine is anticipated to result in similar types of effects, albeit of a lesser magnitude, on ambient air quality to those predicted for the Project. • Given the approximate distance between the projects, cumulative interactions will likely result in moderate increases in ambient air quality levels.
Groundwater	• Cumulative effects are anticipated where impacts to groundwater quality or quantity may combine with similar effects from other physical activities, such as drawdown from water takings or contamination from discharge. • While the few other physical activities occurring in proximity to the Project have limited potential to interact with groundwater, the Bradshaw Mine is considered to potentially interact from a groundwater perspective, specifically in the West Buskegau River watershed where both the Project and Bradshaw Mine are located. The Bradshaw Mine is expected to result in similar types of effects, albeit of a lesser magnitude to those predicted for the Project due to groundwater drawdown associated with dewatering. • Other mineral exploration activities are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially. • Groundwater drawdown associated with the dewatering of the underground workings for the Bradshaw Mine may extend into the area of predicted water table mounding associated with the proposed Tailings Management Facility or within the area of water table drawdown associated with dewatering of the Open Pit for the Crawford Project (although such an interaction is unlikely given the distance between these projects). • While the timing of proposed development of the Bradshaw Mine is unknown, it is assumed that potential effects on groundwater could have a spatial overlap with the effects of the Project within the West Buskegau River watershed; the degree to which depends on the future Bradshaw mine's water management plans and discharge points. • The extent and magnitude of cumulative effects to groundwater quantity and quality may range from low to high as details on the water management and timing of the Bradshaw Mine are unknown.
Surface Water	• Cumulative effects are anticipated where impacts to surface water quality or quantity may combine with effects from other physical activities, such as through activities that affect erosion, discharge, or changes in runoff or infiltration. • Some physical activities may result in a temporary disturbance to water quality or flow, while others may result in long-term changes or changes that overlap temporally with the Project. • The Bradshaw Mine is anticipated to result in similar types of effects, albeit of a lesser magnitude, to those predicted for the Project. The Bradshaw Mine may also use the West Buskegau River as a water supply. • Other physical activities are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially. • Project changes in surface water quality and quantity are predicted to extend into the West Buskegau River watershed, which could act cumulatively with the Bradshaw Mine. • While the timing of proposed development of the Bradshaw Mine is unknown, it is assumed that potential effects on surface water quality and quantity could have a spatial overlap with the effects of the Project within the West Buskegau River watershed. The degree of these potential cumulative effects depends on the future Bradshaw mine's water management plans, which includes discharge through a wetland to the West Buskegau River.

Valued Component	Residual Cumulative Effect
	• The extent and magnitude of cumulative effects to surface water between the Projects is considered moderate as the mitigation measures for the Bradshaw Mine are expected to be similar to those that have been proposed for the Project to protect water quality and quantity.
Vegetation, Riparian and Wetland Environments	• Cumulative effects are anticipated where impacts to vegetation communities or species may combine with effects from other physical activities, such as through the removal of native forests, riparian areas, or wetlands. • While negligible contributions are expected from some activities, transmission lines are expected to disturb native vegetation communities as a result of clearing within the right-of-way. Further, modification of existing vegetation communities is anticipated through planned harvesting of timber. • Other physical activities are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially. • Approximately 103,064 ha (9.6%) of the Vegetation Regional Study Area is planned to be modified in the future by harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the Project Area are currently proposed for future harvesting, a total of 114,849 ha (10.7%) within the Vegetation Regional Study Area will be disturbed.
Fish and Fish Habitat	• Cumulative effects are anticipated where impacts to fish habitat, fish health, growth and survival may combine with effects from other physical activities, such as through activities that directly remove or alter habitat, impact ability for fish passage, change water quality, or affect the ability of fish to survive. • Due to impacts on water quality or quantity, as well as impacts during construction, the Bradshaw Mine, various mine exploration projects, the Transmission Infrastructure Partnerships-1 transmission line, and various transportation-related projects have the potential to interact cumulatively with the Project. • The Bradshaw Mine is anticipated to have similar effects on water quality and quantity, albeit of a lesser magnitude, within the West Buskegau River watershed. Further, it is expected that the Bradshaw Mine will implement mitigation measures to protect fish habitat and fish health and/or offset fish habitat. Fisheries and Oceans Canada confirmed that the Bradshaw Mine could avoid serious harm to fish habitat by following standard mitigation measures. • Other physical activities are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially. • As such, the extent and magnitude of cumulative effects to fish and fish habitat is considered low to moderate. • No cumulative effects on any species at risk, including Lake Sturgeon, are anticipated.
Birds and Bird Habitat	• Cumulative effects are anticipated where impacts to bird habitat or species may combine with effects from other physical activities, such as through habitat loss and/or alteration and indirect effects through sensory disturbance and edge effects. • While negligible contributions are expected from some activities, transmission lines are expected to disturb bird habitat through clearing of vegetation from within the right-of-way. Further, indirect effects on birds due to disturbance from activities associated with the Bradshaw Mine are expected. • Modification of existing vegetation communities is anticipated through planned harvesting of timber during forestry activities. Approximately 44,143 ha (10.1%) of the Bird Regional Study Area is planned to be modified in the future from proposed harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the Project Area are currently proposed for future harvesting, a total of 55,928 ha (12.8%) within the Bird Regional Study Area will be disturbed. Other physical activities are considered to have a short-term, smaller-scale

Valued Component	Residual Cumulative Effect
	disturbance and effects at a regional scale are predicted to be limited temporally and spatially.
Wildlife and Wildlife Habitat	• Cumulative effects are anticipated where impacts to wildlife habitat or species may combine with effects from other physical activities, such as through habitat loss and/or alteration, increased risk of mortality, the creation of barriers to movement, and indirect effects through sensory disturbance and edge effects. • While negligible contributions are expected from some activities, transmission lines are expected to disturb wildlife habitat through clearing of trees from within the right-of-way. Further, indirect effects on wildlife due to disturbance from activities associated with the Bradshaw Mine are expected. • Modification of existing vegetation communities is anticipated through planned harvesting of timber during forestry activities. Approximately 44,143 ha (10.1%) of the Wildlife Regional Study Area is planned to be modified in the future from proposed harvesting activities. In consideration of the additional 11,785 ha of land to be disturbed as a result of this Project, noting that none of the areas within the Project Area are currently proposed for future harvesting, a total of 55,928 ha (12.8%) within the Wildlife Regional Study Area will be disturbed. • Other physical activities are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially.
Health	• Cumulative effects are anticipated where impacts to physical health, mental health and social wellbeing, and community safety may combine with effects from other physical activities to result in changes in environmental quality, land use, population dynamics, and employment conditions. • While negligible contributions are expected from some activities, the Bradshaw Mine is anticipated to result in similar, albeit of a lesser magnitude, types of effects on ambient air quality and surface water quality compared to those predicted for the Project. • Other mineral exploration activities, as well as other activities that result in emissions to the air or water, are considered to have a short-term, smaller-scale disturbance and effects at a regional scale are predicted to be limited temporally and spatially. • Transportation projects, including the expansion of the Northlander Passenger Train or road upgrades, are proposed to maintain or improve infrastructure and therefore accessibility for area residents and will not likely result in substantial changes to vegetation, thereby preserving the local environment and reducing stress on residents.
Social Conditions	• Cumulative effects are anticipated where increases in the demand for services, infrastructure, and land and resource use from the Project may combine with other physical activities to influence the social conditions in the area as a result of population increases, increased transportation demand, increased demand for accommodations, or restrictions on access. • Future mineral exploration activities and mine development, including the Bradshaw Mine, have similar effects, albeit of a lesser magnitude, as those arising from the Project, including localized impacts on land and resource use activities (e.g., hunting and trapping) due to disturbance or restrictions on access. • Future mineral exploration and development may have large workforces that may place additional demands on local services, infrastructure, and housing; however, they will only act cumulatively with the Project if they overlap temporally during construction or operation. • Current and future road development in the Regional Study Area will most likely have positive cumulative effects on transportation, because road improvements would increase the capacity of local roads and maintain or improve current road conditions in the Regional Study Area. • Project effects are predicted to act cumulatively on resource use and recreational activities due to noise, damage to areas and sites, change in access, loss of wildlife habitat and

Valued Component	Residual Cumulative Effect
	removal of areas from the resource base such that they would no longer be available for resource use and recreational activities. However, it is anticipated that there is sufficient area within the Regional Study Area for these activities to occur in the future. • Residual cumulative effects are predicted to be low to moderate in magnitude.
Economic Conditions	• Positive economic effects are predicted when employment and other expenditures have direct, indirect, and induced beneficial effects on employment, income, business activity, and government tax revenues. However, adverse economic effects may occur when the labour, goods, and services required exceeds the existing capacity, leading to supply issues and cost increases (e.g., wage and price inflation). • All identified past, present and future physical activities have the potential to interact cumulatively with the Project. • Positive residual effects in terms of increased opportunities for employment are anticipated during construction and operations; however, it is estimated that there will be a deficit in required labour for the mining industry by 2027 with a potential shortfall of 23% to 30% of vacancy rates in the mining industry within the Regional Study Area. This increased demand is expected to be filled by workers from outside of the region. • Increased demand for labour is predicted to result in increased competition for labour and upward pressure on wages, particularly from future mineral development and exploration. • While increased wages will benefit employees, cumulative adverse effects on businesses will be of moderate magnitude in the Regional Study Area.
Indigenous Interests	• Cumulative effects on Indigenous and/or Treaty Rights are completed in consideration of the history and predicted trajectory of anthropogenic disturbance and land use in the region, including cumulative effects on Indigenous Interests resulting from various rulings, acts, policies, and laws implemented over more than the last 150 years. • The Project occurs in an area that has been altered by ongoing anthropogenic disturbance including forestry, mining, power generation, agriculture, and linear development including roads and transmission line corridors. • Activities on the landscape have and will continue to affect the quality, quantity, or distribution of resources involved in or required for the exercise of Indigenous and/or Treaty Rights by reducing habitat availability and suitability, increasing mortality risk for culturally important wildlife and fish species, and reducing or altering vegetation communities relied upon for Indigenous land and resource use in the region. • While the areas of Crown land to be disturbed represent a small proportion in the region and some current use activities could continue to be conducted within the region, certain practices and related knowledge are often rooted in specific places that have important cultural and spiritual associations that are not readily transferable to other locations. • Residual effects of past, present, and future physical activities combined with the predicted residual effects of the Project are anticipated to be irreversible for Indigenous governance and decision making capacities regarding the Project Area, and for members of the Indigenous Nations who have already experienced alienation and dispossession from harvesting areas and physical and cultural heritage sites in the region, as these experiences are likely to increase in the future rather than decrease and require regional initiatives and programs to be addressed.

No additional mitigation measures are proposed to mitigate the Project's contribution to cumulative effects.

8 Significance of Adverse Federal Effects

Following the Tailored Impact Statement Guidelines, the Impact Statement characterized the extent of significance for "adverse federal effects" (i.e., adverse effects within federal jurisdiction and any direct or incidental effects). These effects were defined by the *Impact Assessment Act*, and through guidance provided by the Impact Assessment Agency of Canada. Based on the predicted residual effects from the Project (see Section 6), and the definition of adverse federal effects, the extent of significance was determined for the following Valued Components:

- Fish and fish, including any aquatic Species at Risk.
- Migratory birds, including any migratory bird species subject to *Species at Risk Act*.
- Health, as it pertains to the health of Indigenous Peoples.
- Social and economic conditions of Indigenous Peoples, including physical and cultural heritage, current use of lands and resources for traditional purposes, any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or the social or economic conditions on reserve.
- Wetlands, as they may be impacted through a *Fisheries Act* Authorization or Authorization under the Metal and Diamond Mining Effluent Regulations.
- Navigable waters, as they may be impacted through approvals and/or exemptions under the *Canadian Navigable Waters Act.*

For each of these adverse effects, the extent of significance was characterized as negligible / low, moderate, or high, the results of which are summarized in Table 20. These characterizations of the extent of significance were as follows:

- **Negligible[2] or Low**: Effects are likely to be negligible or minor in scale if they are negligible or low in magnitude, of short duration, infrequent, small in spatial extent, reversible or readily avoided, and generate few or minor impacts in social or ecological contexts. Mitigation measures will allow baseline conditions to remain largely unchanged.
- **Moderate**: Effects are likely to be medium in scale if they are moderate in magnitude, of moderate duration, occasionally frequent, possibly or partially reversible, and to generate a moderate level of impacts in social or ecological contexts. Mitigation measures may not fully eliminate, reduce, control or offset effects but should enable affected communities to maintain economic and social well-being, and should prevent the diminishment or loss of key components of the environment and its ecological functioning.
- **High**: Effects are likely to be severe in scale if they are high in magnitude, permanent/long-term, frequent, irreversible, and over a large spatial extent or within an area of exclusive/preferred

[2]A "negligible" effect does not mean "no effect" but that an effect is sufficiently small to likely not result in a noticeable change to the valued component. However, in the context of cumulative effects, a negligible effect may be important in understanding regional effects as a whole. For example, while an effect may be negligible on its own, it may be amplified if other physical activities affect the same valued component.

Indigenous use or of ecological/environmental sensitivity. High levels of impacts in social or ecological contexts are expected. There is a high degree of uncertainty of the effectiveness of mitigation measures, or mitigation measures are unable to fully address effects such that Valued Components are diminished or lost.

Table 20 Extent of Significance of Adverse Federal Effects

Adverse Federal Effects	Extent of Significance	Explanation
Vegetation, Riparian, and Wetland Environments		
Change in direct fish habitat wetlands	Moderate	• The majority of direct fish habitat wetland loss will occur during construction as a result of stripping, grading, and other construction activities and will continue through operations; however, progressive restoration will reverse a portion of the habitat loss beginning in operations, and habitat within the Local Study Area that was lost due to disturbance is expected to return to baseline conditions following decommissioning and closure. • Direct fish habitat and wetland loss is limited to the Project Area, with indirect effects extending some distance into the Local Study Area and is not predicted to threaten the long-term viability and quality of wetlands in the Regional Study Area.
Fish and Fish Habitat		
Change in fish habitat	Moderate	• The effects of changes in flow are expected to be more noticeable in the riffle habitat and limited to low-flow periods, will be of moderate magnitude, continuous and long-term (lasting for the duration of the Project), and reversible, with flows returning close to baseline following the end of the Project. • Adverse effects to fish habitat are not anticipated to extend spatially beyond the Local Study Area downstream of the Project.
Change in fish health, growth, or survival	Moderate	• Adverse effects to fish health, growth, and survival will result from changes in water quality and possible reduction in aquatic invertebrate abundance. • The effects will be of moderate magnitude, long-term and continuous, as there will be ongoing effluent discharge for the duration of the Project, and reversible, as effluent discharge will cease at the end of the Project and water quality would be expected to return to conditions close to baseline following decommissioning and closure.
Birds and Bird Habitat		
Change in migratory bird habitat	Moderate	• Most of the habitat loss for all bird groups will occur during construction as a result of stripping, grading, and other construction activities and will continue through operations; however, progressive restoration will reverse a portion of the habitat loss beginning in operations, and habitat within the Local Study Area that was lost due to disturbance

Adverse Federal Effects	Extent of Significance	Explanation
		is expected to return to baseline conditions following decommissioning and closure. • The magnitude of change in migratory bird habitat during construction is anticipated to be moderate for forest birds, marsh birds and raptors and low for other bird species groups. • For all species guilds and species, the suitable habitat remaining within the Regional Study Area ranges from 94% to 99%.
Change in species at risk habitat	Canada Warbler – Moderate Bank Swallow, Barn Swallow, and Eastern Whip-poor-will – Negligible / Low	• There will be a direct loss of 3% of the available Canada Warbler habitat within the Regional Study Area, plus indirect loss due to sensory disturbance during construction, operations and decommissioning and closure; however, changes in abundance and distribution of Canada Warblers in the Local Study Area is not expected because sufficient habitat is expected to be available in the Regional Study Area. • Barn Swallow and Bank Swallow have not been observed within the Project Area or Local Study Area, and no suitable habitat was documented. • Eastern Whip-poor-will was not documented in the Project Area or Local Study Area during targeted surveys, so if present, would likely only occur at a low density.
Change in mortality	Negligible / Low	• Through mitigation including avoidance of vegetation clearing during the breeding bird season, the likelihood of increased bird mortality is reduced, and it is expected that birds will avoid the Project Area and associated construction activity due to the high levels of disturbance (i.e., noise, human presence) and due to the loss of suitable habitat. • Increased mortality risk associated with the operation of the relocated highway and transmission lines is expected to be negligible given that these facilities previously existed in proximity to the relocated alignment and no substantive increase in traffic is anticipated.
Navigable Waters		
Changes to navigation	Moderate	• Navigable waters potentially used for recreation will be removed or altered within the Project Area. • The removal of watercourses where navigation was characterized as ‘uncertain’ within the Project Area, including the downstream reaches of tributaries to the North Driftwood and West Buskegau Rivers, will occur during construction. • Navigation along the North Driftwood River will be maintained throughout the Project, and the revised channel alignment will be designed so that the North Driftwood River remains navigable around the Project during operations.

Adverse Federal Effects	Extent of Significance	Explanation
Health		
Changes to Indigenous health	Low/ moderate	• While Project-related contaminants in the air are not likely to be greater than the applicable health-based exposure limits and toxicity reference values at locations where people are expected to be present for extended periods of time (including overnight stays or beyond), some identified contaminants are non-threshold contaminants, meaning any increase in exposure could result in increased risk of adverse health effects (e.g., $PM_{2.5}$). • Project-related activities are not expected to result in increased concentrations of mercury in the environment or risks associated with methyl mercury exposures due to the consumption of fish. • Actual and perceived changes in food quality, land use and aesthetics could lead to reductions in country food availability and accessibility. • Indigenous peoples may experience higher financial pressures and increased risk of food insecurity as a result of increased demand on housing and financial pressures, which could affect the mental health and social wellbeing of Indigenous peoples, although effects will be reduced through increased housing supply by independent accommodation providers in the region. • Project-related population growth and employment of temporary workers (mainly from the construction phase) from outside of the region is not anticipated to affect community safety of Indigenous peoples. • Overall for the effects pathways evaluated changes may be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions.
Indigenous Interests		
Changes to the current use of lands and resources for traditional purposes	Low to Moderate	• Changes to the current use of lands and resources for traditional purposes are predicted within the Project Area through changes in access, sensory conditions (e.g., noise levels), the removal of vegetation, wetland areas, wildlife and fish habitat, and changes to species of cultural importance, including country foods. However, the Project is not expected to create a change or disruption that widely reduces or restricts current use of lands and resources for traditional purposes within and beyond the Local and Regional Study Areas. • Site access and continued engagement are key elements considered in the agreements under negotiation with the Indigenous Nations and will include the conditions for Indigenous Nations to access select areas within and near the Project

Adverse Federal Effects	Extent of Significance	Explanation
		Area for the exercise of Indigenous and Treaty Rights.
Changes to any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	Negligible	• Changes to any structure, site or thing that is of historical, archaeological, paleontological or architectural significance are not anticipated within the Project Area as no historical, archaeological, paleontological, or architecturally significant sites have been identified within the Project Area to date. • A Stage 2 Archaeological Assessment will be conducted prior to construction within areas identified through the Stage 1 Archaeological Assessment as having archaeological potential, and any sites (if present), will be subject to the requirements of the Ontario Ministry of Citizenship and Multiculturalism. • The Project will have an Archaeological Resource Protection Plan and a Heritage Chance Find Protocol that will be developed through engagement with the Indigenous Nations.
Changes to physical and cultural heritage	Low to Moderate	• Intangible physical and cultural heritage (e.g., storied places; named places; sacred sites) if present within or in proximity to the Project Area may be affected due to clearing activities and changes in access and sensory conditions. While the areas of Crown land to be disturbed represent a small proportion in the Local and Regional Study Areas, certain practices and related knowledge are often rooted in specific places that have important cultural and spiritual associations that are not readily transferable to other locations. Negotiations regarding site access are underway and will include the conditions for Indigenous Nations to access select areas within and near the Project Area, including areas that may be connected to their physical and cultural heritage.
Changes to Indigenous social conditions	Low to moderate	• Indigenous health conditions may be affected through changes to the availability of wildlife, fish, and plants that are harvested for country foods/medicinal purposes and through potential and perceived changes to these resources in the Project Area and in the Local and Regional Study Areas. • Changes to demand on services and infrastructure, accommodation availability, and transportation infrastructure are expected to occur within the Local and Regional Study Areas, (e.g., the City of Timmins and the Towns of Cochrane, Iroquois Falls, and Smooth Rock Falls) throughout construction and operations. • Changes to Indigenous employment, business, and economy are anticipated both on and off-reserve during all Project phases. Adverse effects on regional business (including Indigenous businesses) are predicted due to Project wages

Adverse Federal Effects	Extent of Significance	Explanation
		being greater than existing conditions, albeit consistent with wages in the mining industry, and due to the potential for Project employment to be deemed more desirable than other forms of employment in the Local and Regional Study Areas.

For each of these cumulative adverse federal effects, the extent of significance was similarly characterized as negligible / low, moderate, or high, the results of which are summarized as follows:

- **Change in Direct Fish Habitat Wetlands** – The Project will result in a net loss of 115 ha of wetlands supporting fish habitat, which is a small proportion (0.03%) of the wetlands that will remain within the Vegetation Regional Study Area (413,785 ha). Where effects on fish habitat are predicted as a result of future projects, these will be subject to fish habitat protection and/or offsetting requirements set out by the applicable regulator (e.g., Fisheries and Oceans Canada). As such, if all past, present and future physical activities proceed, residual cumulative effects on fish-bearing wetlands are predicted to be of low significance.
- **Change in Fish Habitat and in Fish Health, Growth, or Survival** – Fish habitat offsets will be implemented to compensate for Project-related residual effects to fish and fish habitat, including fish populations valued by Indigenous nations, recreational anglers, and other stakeholders. Residual effects from other physical activities do not threaten the long-term persistence or viability of an aquatic species, including species at risk, and would be subject to fish habitat protection and/or offsetting requirements set out by the applicable regulator (e.g., Fisheries and Oceans Canada). As such, if all past, present and future physical activities proceed, residual cumulative effects on fish and fish habitat are predicted to be of moderate significance.
- **Change in Birds and Bird Habitat** – Cumulative residual effects may result in alteration or loss of bird habitat within the Regional Study Area but are not expected to threaten the long-term persistence or viability of migratory birds within the Regional Study Area. Approximately 44,143 ha (10.1%) of the Bird Regional Study Area is planned to be modified in the future from proposed harvesting activities, relative to 55,928 ha (12.8%) with the Project. As such, if all past, present, and future physical activities proceed, residual cumulative effects on birds and bird habitat are predicted to be of moderate significance.
- **Change in Indigenous Health** – Cumulative residual effects are anticipated to be largely unchanged from baseline conditions or reduced but not eliminated compared to baseline conditions. As such, if all past, present, and future foreseeable projects proceed, cumulative residual effects on physical health, mental health, and social wellbeing of Indigenous Peoples and community safety are predicted to be of low or moderate significance.
- **Change in Navigable Waters** – The Project is predicted to result in residual effects to non-scheduled navigable waters, including the loss of ‘uncertain’ navigable waters and alterations to the North Driftwood River. As such, if all past, present and future foreseeable projects proceed, cumulative residual effects on navigable waters are predicted to be of moderate significance.

- **Change in Indigenous Interests** – Cumulative residual effects will result in direct changes (e.g., alteration of native vegetation, bird, wildlife, fish habitats; change in access) and indirect changes (e.g., sensory disturbance, necessary conditions) to the current use of lands and resources for traditional purposes, Indigenous physical and cultural heritage, and associated changes to the health, social, or economic conditions of Indigenous Peoples (e.g., decision making); however, the areas of Crown land to be disturbed represent a small proportion in the Indigenous Interests Regional Study Area. Cumulative residual effects on Indigenous Interests are reduced with consideration for Project design, specific mitigation, enhancement, and restoration measures, including measures identified by the potentially affected Indigenous Nations that will be formalized through the agreements currently being negotiated between Canada Nickel and the Indigenous Nations, and commitments to collaborate with interested Indigenous Nations throughout the Project's lifespan. As such, if all past, present, and future foreseeable projects proceed, cumulative residual effects on Indigenous Interests are predicted to be of low to moderate significance.

9 Effects of the Environment on the Project

The Impact Statement looked at how environmental conditions, like weather and natural events, could adversely impact the Project. These conditions include precipitation (short and long duration rainfall, snow, freezing rain, drought), air temperature (extreme heat, extreme cold), high winds and wind gust, wildfires (including wildfire smoke), and lightning. The assessment considers historical weather data and future climate projections to understand how conditions may change over time.

Potential effects from the environment, including climate risks, were and will continue to be considered throughout the life of the Project, from early planning and design through operations to closure and post-closure activities and monitoring. Strategies to manage risk include:

- Resilient design that implements engineering standards and practices that account for predicted changes in climate.
- Development and implementation of proactive adaptation and active operations and maintenance management practices, including Standard Operating Procedures and emergency response measures.
- Development and implementation of follow-up and monitoring programs to monitor the physical stability of project infrastructure and the success of revegetation efforts during reclamation. These programs will include adaptive management measures.

Specific mitigation measures proposed to address potential impacts from environmental hazards include:

- Considering the use of climate adjusted design criteria in mine design to develop an elevated level of resilience to extreme temperatures.
- Developing and implementing a Site-Wide Water Management Plan designed to manage major storm event (100-year return period, 24-hour duration storm event) adjusted for climate change.
- Implementing progressive rehabilitation during operations to limit runoff and erosion during extreme precipitation events and reduce potential sources of dust during high winds.
- Considering the impacts of loading from freezing rain accumulation on the design of transmission lines and trolley-assist system wires and supporting infrastructure.
- Maintaining sufficient back-up generator power to limit adverse effects to the Project and the environment during extended power outages.
- Developing a site-wide health and safety policy for working during electrical storms.
- Maintaining on-site fire prevention and suppression systems (i.e., adequate water supply, sprinklers, fire extinguishers, and other firefighting equipment) to respond to fires.
- Developing an Emergency Preparedness Response Plan for implementation during environmental events, such as wildfires or floods.

10 Accidents and Malfunctions

Accidents and malfunctions are events that occur outside the normal planned function or activity of the Project. These Project-related unplanned events may be caused by technological malfunctions, human error, or exceptional natural events (e.g., flooding, earthquake, forest fire) and have the potential to affect the environment. Through good planning and design and the adoption of safety measures, the risks of accidents and malfunctions can be prevented, reduced, or controlled. An Emergency Preparedness and Response Plan will be developed to help mitigate the effects of accidents or malfunctions should they occur.

The Impact Statement identified and assessed plausible accident or malfunction scenarios that could occur during Project phases that may result in impacts to the environment and assessed the risk and effects of such events. Plausible worst-case scenarios were developed for the following:

- a malfunction of the Tailings Management Facility causing a release of tailings
- a malfunction of the Water Management System causing a release of untreated contact water
- a release of Fuel or Hazardous Materials
- an Open Pit slope failure
- a Stockpile slope failure
- an over blasting incident
- an accidental fire
- a water diversion failure

Preventative measures proposed to reduce the likelihood of potential accidents and malfunctions and the severity of consequences should an accident or malfunction occur include the following:

- using accepted standard management practices for health, safety, and environmental management for carrying-out the Project while controlling permitted or allowable releases to the environment and consequently limit effects
- maintaining equipment in good working order and implementing careful maintenance and monitoring of all equipment
- storing fuel and hazardous chemicals in confined areas, with perimeter protection, and implementing fueling procedures to reduce the potential for human error
- removing vegetation around Project infrastructure and incorporating fire suppression and response measures
- maintaining a supply of emergency response equipment, including spill pans, absorbent material, and Safety Data Sheets
- developing and applying procedures and training aimed at safe operation of the Project that reduce or prevent the potential conditions that may lead to accidents or malfunctions

- providing training in operational procedures and emergency response procedures, including safety measures, to reduce or prevent accidents or malfunctions
- developing and implementing an Emergency Preparedness and Response Plan

Based on the implementation of preventative measures, the likelihood of each scenario occurring and the severity of consequences of that specific accident or malfunction scenario are summarized in Table 21.

Table 21 Summary of Accidents or Malfunctions Risk Analysis

Accident/Malfunction	Likelihood of Event	Severity of Consequences of Event	Risk
Tailings Management Facility Malfunction	Very Low	Moderate	Low
Release of Untreated Contact Water	Low	Low	Low
Release of Fuel or Hazardous Materials	Low	Low	Low
Stockpile Slope Failure	Low	Low	Low
Accidental Fire	Very Low	Moderate	Low
Water Diversion Failure	Very Low	Low	Negligible

Key

Potential likelihood of an event occurring:

- Very Low: Not expected to occur during the life of the Project, with no or limited previous examples of occurrence in similar projects.
- Low: Limited potential to occur in exceptional circumstances during the life of the Project with limited but consistent occurrence in some similar projects.
- Moderate: May occur during the life of the Project, with an established trend of occurrence in most similar projects.
- High: Expected to occur during the life of the Project, with frequent occurrence in similar projects.
- Very High: Almost certain to occur during the life of the Project.

Severity of consequences of an event:

- Very Low: Localized effect, readily remediated, recovery within a few weeks or months.
- Low: Localized effect, predictably remediated, recovery within the life of the Project.
- Moderate: Widespread effect, predictably remediated, recovery within the life of the Project.
- High: Widespread effect, uncertain remediation, may not be recoverable within the life of the Project.
- Very High: Widespread effect, unlikely to be completely remediated, not recoverable within the life of the Project.

11 Sustainability and Climate Change Commitments

In accordance with the Tailored Impact Statement Guidelines, the Impact Statement assessed the Project's contribution to sustainability and describes how the Project has applied the following four principles:

- consider the interconnectedness and interdependence of human-ecological systems
- consider the well-being of present and future generations
- consider positive effects and reduce adverse negative effects
- apply the precautionary principle and consider uncertainty and risk of irreversible harm

The Project aims to provide domestically sourced nickel, a critical mineral, to North America with a lower carbon footprint than current global practices. Canada Nickel is committed to constructing and operating the Project in a manner that reduces adverse effects and enhances positive ones. Adaptive management will be used in follow-up programs to address uncertainties associated with the effectiveness of mitigation measures and predicted effects, making necessary adjustments.

By delivering lasting benefits while mitigating adverse effects, the Project is likely to result in opportunities for positive contributions to Indigenous Nations and local communities. This includes agreements and the creation of jobs and economic opportunities. The Project aims to provide long-term benefits to the regional economy while balancing environmental protection and social well-being without compromising the needs of future generations.

The Impact Statement also described how the Project could impact the ability of the Canadian Government to meet their environmental obligations and climate change commitments. The Project would not hinder, and in some cases would support, obligations related to biodiversity, species recovery, and migratory birds. Contributions include the Impact Assessment process, Indigenous Nation engagement, and species recovery programs. The Project will also participate in federal greenhouse gas reporting programs and support Canada's Net-Zero emissions by 2050 targets.

12 Follow-Up Programs

Follow-up programs are proposed to verify the accuracy of the impact assessment and evaluate the effectiveness of mitigation measures. These programs are an effective way to address uncertainty with predicted effects and/or to implement adaptive management. Adaptive management is a means to iteratively assess, design, implement, monitor, evaluate, and adjust the Project where uncertainty is high and adaptive management is technically feasible.

The follow-up programs proposed to be developed and implemented for this Project include:

- Tailings Management Facility Dam Stability Follow-up Program
- Soil Depth and Quality Follow-up Program
- Air Quality Follow-up Program
- Acoustic Follow-up Program
- Groundwater Follow-up Program
- Surface Water Follow-up Program
- Vegetation Follow-up Program
- Fish and Fish Habitat Follow-up Program
- Birds and Bird Habitat Follow-up Program
- Wildlife and Wildlife Habitat Follow-up Program

Each of these follow-up programs will be developed in consultation with relevant authorities and interested Indigenous Nations, as appropriate.

13 Conclusion

Through an understanding of baseline conditions, consideration of Project design, and mitigation measures, the potential effects of the Project on environmental, health, social, cultural, and economic conditions will be avoided, reduced, restored, or compensated for through the implementation of the Project. The Impact Statement determined that for adverse effects within federal jurisdiction, adverse residual environmental effects were of low to moderate significance during all phases of the Project.

Canada Nickel is committed to implementing the mitigation measures proposed throughout the Impact Statement and to implement the proposed follow-up and monitoring programs to verify the accuracy of the predicted effects and effectiveness of mitigation measures. Where warranted, Canada Nickel is also committed to implement appropriate adaptive management measures to reduce environmental, health, social, cultural, and economic impacts of the Project.

Canada Nickel will continue to engage with potentially affected Indigenous Nations and continue to focus on its genuine partnerships through transparent information sharing, open dialogue, meaningful collaboration, and early and ongoing engagement. Canada Nickel remains committed to continuing active consultation with the public and relevant stakeholder organizations following submission of the Impact Statement related to the Project as it progresses throughout the next phases.

Indigenous reconciliation and community stewardship are not obligations but are core principles embedded into Canada Nickel's operations. As a responsible proponent, the Company recognizes the importance of engaging in transparent dialogue, fostering economic opportunities, and supporting long-term holistic benefits to the region and Traditional Territories in which the Project operates.

Further, Canada Nickel is committed to advancing the Project in a responsible and sustainable manner to extract and process critical minerals, as can be seen through the Company's novel In-Process Tailings Carbonation process; a groundbreaking method that enhances naturally occurring mineral carbonation, transforming the Project into a large-scale carbon sink capable of producing net-zero metals. Through the Company's In-Process Tailings Carbonation process, the Project is estimated to be able to capture and store over 1.3 million tonnes of carbon annually, which would make it Ontario's only permanent carbon storage sink and one of Canada's largest permanent carbon storage sinks, while supporting the Government of Ontario and the Government of Canada in their ambitious critical minerals strategies and federal emissions targets.

As Canada Nickel moves forward with the Project, its social purpose will continue to guide the Company:

We originate materials to responsibly power the energy transition.

14 References

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