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# UPDATED MINERAL RESOURCE ESTIMATE AND PRELIMINARY ECONOMIC ASSESSMENT OF THE BUCKO LAKE NICKEL PROJECT, WABOWDEN, MANITOBA

**UTM NAD83 ZONE 14N 521,890 E, 6,081,260 N**
**LONGITUDE 98º 39’ 32” W AND LATITUDE 54º 52’ 41” N**

**FOR**
**CANICKEL MINING LIMITED**

**NI 43-101 & 43-101F1**
**TECHNICAL REPORT**

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**Report 425**

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## 1.0 SUMMARY

This report was prepared by P&E Mining Consultants Inc. ("P&E") to provide a National Instrument ("NI") 43-101 Technical Report, updated Mineral Resource Estimate and Preliminary Economic Assessment ("PEA") for the nickel-copper mineralization contained at the Bucko Lake Nickel Property ("the Property") located near the Town of Wabowden, in north-central Manitoba, Canada. The Property is approximately 500 km north-northwest of the City of Winnipeg, and 110 km southwest of the City of Thompson. The Property is 100% held by CaNickel Mining Limited ("CaNickel" or the "Company") and is subject to a 2.5% Net Smelter Return ("NSR") royalty to Glencore PLC ("Glencore").

The Property contains the Bucko Lake Mine, a past-producing mine that is currently under care and maintenance. Construction of the current mineral processing facilities and initial underground workings was completed in 2008. Commissioning of the processing facilities commenced in November 2008 and was completed in January 2009. Commercial nickel production was achieved in June 2009. CaNickel assumed control of the Bucko Lake Property and satellite exploration prospects from Crowflight Minerals Incorporated through a name change in June of 2011. Full production of the mine was achieved in the first quarter of 2012, having processed 54,034 t of mineralized feed at an average grade of 1.18% Ni at a process plant recovery of 75.2% to produce 1.1 Mlb (453,590 kg) of nickel metal.

On May 11, 2012, CaNickel received a stop work order from Manitoba's Workplace Safety and Health Division to cease blasting operations until all known underground mining voids have been backfilled and the current mine plan revised to address ground control issues. In June 2012 with the deficiencies over ground conditions corrected, the stop work order was lifted. However, CaNickel decided to place the mine on care and maintenance until nickel prices improved and the Company optimized its mine plan methods. The Bucko Lake Mine currently remains under long-term care and maintenance. The Company kept the underground mine workings dewatered until July 2018, after which the mine was allowed to flood.

The Bucko Lake Mine has remained under long-term care and maintenance over the past decade due to persistently low nickel prices. With nickel prices improving in 2022, the Company commissioned this PEA to update Mineral Resources, optimize mining plan methods and underground development to address previous operational challenges, and provide an estimate of costs to restart operations.

The authors ("Authors") were assisted in the preparation of this Technical Report with geotechnical input from Knight Piésold Ltd. and paste backfill assistance from Paterson & Cooke Canada Inc.

## 1.1 PROPERTY DESCRIPTION AND LOCATION

The Bucko Lake Property is located near the Town of Wabowden, in north-central Manitoba, approximately 500 km north-northwest of the City of Winnipeg. The Property consists of four mineral leases, three surface leases and seven mining claims totalling 3,004 ha in area. Mining

Lease ML31 covers the current Mineral Resource Estimate presented in Section 14 of this Technical Report.

The Property is subject to a 2.5% NSR royalty payable to Xstrata (now Glencore), net of all charges and penalties for smelting and refining, insurance premiums, and sampling and assay charges incurred after the minerals, metals or metal concentrates have been shipped from the site. If the cash quotation from the London Metal Exchange is less than US$6.00/lb for Nickel Grade A in any month, then proceeds from this Net Smelter Return Payment do not apply.

There are no registered First Nations land claims affecting the Bucko Lake Property.

## 1.2 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Property is accessible from Manitoba Provincial Highway 6 and a network of all-weather gravel roads and seasonal trails extending from that highway. An airport with regularly scheduled flights from Winnipeg is located in the City of Thompson, 110 km to the northeast of the Property, along Highway 6. The Hudson Bay Rail Line from Winnipeg to Churchill crosses the Property and the rail line is adjacent to a major hydroelectric transmission line.

The Wabowden region has a continental climate with long, cold winters extending from October to April and short, relatively warm summers. The land is flat with outcrops and subcrops of glacially rounded rock and wet muskeg lowlands separated by stands of fir and spruce trees intermingled with alder and birch.

The Property contains the Bucko Lake Mine which consists of a 1,000 tpd processing plant, underground workings including a mine shaft and an access ramp, administration building, and tailings storage facilities.

The Town of Wabowden is located approximately 2 km from the Bucko Lake Mine, with a population of approximately 400 people. The town has electrical and telephone service, a post office, and grocery store.

CaNickel constructed a 100-person camp in 2009 in the Town of Wabowden. It will require refurbishment to be fully operational again. Power remains available to all buildings in the camp.

## 1.3 HISTORY

Exploration in the Bucko-Bowden area of the Thompson Nickel Belt commenced in the 1950s. Exploration programs, including surface diamond drill holes, were completed in the Bucko Lake, Bowden Lake, M11A and Apex areas by Consolidated Marbenor Mines Limited, Falconbridge Nickel Mines Limited, Nuinsco Resources Limited, Crowflight and CaNickel. Underground diamond drill holes have been completed at Bucko Lake.

Mineral Resource Estimates and Mineral Reserve Estimates accompanied by Technical Reports were completed on the Bucko Lake Deposit in 2000 by Roscoe Postle Associates Inc. for Nuinsco and in 2005 and 2006 by P&E for Crowflight. These Mineral Resource Estimates have, in turn, been updated by Crowflight and verified independently by P&E in 2007 and 2009. The previous updated Mineral Resource/Mineral Reserve Estimates and Technical Report were completed by CaNickel in 2012 (Griffin et al., 2012).

As noted previously, the Bucko Lake Mine was constructed in 2008 and achieved commercial production in June 2009. The mine was in operation periodically in 2010 and 2011 before being placed into care and maintenance in June 2012 due to low nickel prices. Since then, the Company's main focus has been carrying out minimal exploration work and running the care and maintenance program to safeguard assets.

## 1.4 GEOLOGICAL SETTING AND MINERALIZATION

The Bucko Lake Property is located within the Thompson Nickel Belt ("TNB"), a northeast-trending 10 to 35 km wide and 100 km long zone of reworked Archean basement gneisses and Paleoproterozoic cover rocks (Ospwagan Group). The TNB is between the Superior Province to the east and the Churchill Province to the west, in northern Manitoba. The Ospwagan metavolcanic rocks consist of pillowed and massive metabasalt flows. The nickel sulphide deposits of the TNB are genetically and spatially related to the serpentinite sills, particularly in the Ospwagan Group rocks. The present distribution is the result of re-mobilization during the complex tectono-metamorphic history of the TNB. The sulphides occur as massive and inclusion bearing sulphides on the contact between the serpentinites and the country rocks, and in the country rocks, as stringers or veins in the serpentinites and country rocks, and as interstitial grains in the serpentinites. Numerous nickel sulphide deposits have been delineated within the TNB. Generally, the TNB nickel sulphide deposits have lower contents of Cu and PGM than similar mineral deposits in Paleoproterozoic belts elsewhere.

The Bucko Lake area of the Property is underlain by Archean gneisses and Paleoproterozoic Ospwagan Group metasedimentary and ultramafic intrusive rocks. The Archean gneisses are intruded by Paleoproterozoic ultramafic sills, including the Bucko Lake Ultramafic, which hosts the Bucko Lake nickel sulphide deposit. The Bucko Lake Ultramafic sill is on the northeast flank of the Resting Lake Pluton. The footwall contact of the nickel sulphide deposit occurs in close contact with granodiorite gneiss associated with this intrusion.

Within the Bucko Lake Deposit, three main zones of nickel sulphide mineralization have been recognized: the West Limb Zone, the Hinge Zone, and the Footwall Zone. The West Limb and Hinge Zones each contain the Lower, Middle and Upper Zones of mineralization. Wide zones of lower-grade disseminated mineralization (generally >1.0% Ni) typically envelope higher grade net-textured to semi-massive sulphide layers or shoots (>3.0% Ni) within the host ultramafic intrusion. Sulphides are found along altered contacts with pegmatite dykes that cross-cut the intrusion. Mineralization consists of disseminated to net-textured sulphides, mainly pentlandite, pyrrhotite, pyrite and chalcopyrite with minor mackinawite, violarite and cubanite.

## 1.5 DEPOSIT TYPE

The Bucko Lake Deposit and its satellite deposits are magmatic sulphide deposits formed as a product of komatiitic magmatism during formation of the TNB, a segment of the Circum-Superior Craton Belt (Ciborowsky et al., 2017). Since formation, the magmatic sulphide deposits have been variably modified and remobilized during post-depositional tectonism and high-grade metamorphism of the TNB. The Bucko Lake nickel sulphide deposits (Bucko Lake, Bowden, M11A and Apex) are classified as mineralization largely hosted within serpentinized ultramafic intrusions.

## 1.6 EXPLORATION

CaNickel has not carried out any exploration on the Bucko Lake Property that is non-drilling exploration.

## 1.7 DRILLING

In total, 642 surface and underground drill holes totalling 152,328 m have been completed by Falconbridge and Crowflight/CaNickel at Bucko Lake. In addition, 153 drill holes totalling 65,653 m have been completed in the areas of the satellite deposits. Overall, 795 drill holes totalling 217,981 m have been completed on the Bucko Lake Nickel Property since 1962.

## 1.8 SAMPLE PREPARATION, ANALYSES AND SECURITY

It is the opinion of the Authors that sample preparation, security and analytical procedures for the 2004 to 2012 Bucko Lake Mine Project drill programs were adequate and that the data is of good quality and satisfactory for use in the current Mineral Resource Estimate.

## 1.9 DATA VERIFICATION

The Authors consider that there is good correlation between Ni assay values in CaNickel's database and the independent verification samples collected by the Authors and analyzed at ALS. It is the Author's opinion that the data are of good quality and appropriate for use in the current Mineral Resource Estimate.

## 1.10 MINERAL PROCESSING AND METALLURGICAL TESTING

The testing and evaluation of concentration processes (grinding and flotation) have been comprehensive for the Bucko Lake Mineral Resource and have been conducted at several different laboratories over several years. A high-grade nickel concentrate appears readily achievable by moderate grinding, rougher flotation and multi-stage flotation cleaning. Regrinding of the rougher concentrate before cleaning appears to be beneficial. No significant amount of additional metallurgical testing appears to be required.

## 1.11 MINERAL RESOURCE ESTIMATE

The updated Mineral Resource Estimate ("MRE") incorporates results from a total of 428 drill holes drilled from 1962 to 2013, of which 360 drill holes intersected the mineralization wireframes used for the MRE. Additionally, recent metal prices were incorporated into the MRE for the PEA. The MRE, with an effective date of January 13, 2023, is summarized in Table 1.1.

| **TABLE 1.1<br>MINERAL RESOURCE ESTIMATE AT 0.70% NI CUT-OFF [(1-6)]** | | | | | |
|---|---|---|---|---|---|
| **Classification** | **Tonnes (k)** | **Ni (%)** | **Ni (Mlb)** | **Cu (%)** | **Cu (Mlb)** |
| Measured | 1,753 | 1.25 | 48.32 | 0.09 | 3.40 |
| Indicated | 3,975 | 1.23 | 107.94 | 0.11 | 9.99 |
| **Measured + Indicated** | **5,727** | **1.24** | **156.26** | **0.11** | **13.39** |
| Inferred | 10,587 | 1.18 | 275.59 | 0.13 | 31.15 |

***Notes:***

1. *Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability.*
2. *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
3. *The Inferred Mineral Resource in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource. While an Inferred Mineral Resource must not be considered to be, or converted into a Mineral Reserve, it is reasonably expected that the majority of the Inferred Mineral Resource could be upgraded to an Indicated Mineral Resource with continued exploration.*
4. *The Mineral Resources in this Technical Report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions (2014) and Best Practices Guidelines (2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*
5. *Mined areas and barren pegmatite dykes were depleted from the Mineral Resource Estimate.*
6. *The 0.70% Ni cut-off grade was based on an underground long-hole method mining cost of $60/t, processing cost of $33/t, G&A cost of $12/t, Ni price of US$8.75/lb, 79% Ni process recovery, 90% smelter Ni payable, 16% mass pull, $276/dmt (dry metric tonne) smelter treatment charge, $105/wmt (wet metric tonne) concentrate freight cost, 2.5% NSR royalty, $1/t penalty charge and $3/t price participation cost.*

Mineralization domain boundaries were determined from grade boundary interpretation constrained by lithological and structural controls determined from visual inspection of drill hole cross-sections and level plans. The domain outlines were influenced by the selection of mineralized material above 0.70% Ni that demonstrated a lithological and structural zonal continuity along strike and down dip and that had a reasonable prospect of economic extraction. The minimum constrained down-hole sample length for the mineralized domain wireframes was 2.0 m. In some cases, mineralization below 0.70% Ni was included for the purpose of maintaining zonal continuity and minimum mining width. On each cross-section, polyline interpretations were digitized from drill hole to drill hole, however, were not extended more than 25 m into untested territory.  The interpreted polylines from each cross-section were wireframed into 3-Dimensional solids. The resulting solids (mineralized domains) were used for statistical analysis, grade interpolation, rock coding and Mineral Resource reporting purposes. Four mineralized domains were constructed for consideration for potential economic underground mining of the Mineral Resource Estimate.

In order to regularize the assay sampling intervals for grade interpolation, a 1.5 m compositing length was selected for the drill hole intervals that fell within the constraints of the above-mentioned Mineral Resource wireframe domains. Grade capping was investigated and applied to the 1.5 m composite values in the database within the constraining domain to ensure that the possible influence of erratic high-grade values did not bias the database. A variography analysis was undertaken as a guide to determining a grade interpolation search strategy. The Ni and Cu grade blocks in the model were interpolated with the Inverse Distance Squared method. The model block size was 2.5 m x 2.5 m x 2.5 m. The Nearest Neighbour interpolation method was utilized for validation.

The Bucko Lake Deposit is open along strike and particularly down dip, and further drilling may provide additional Mineral Resources.

## 1.12 MINING METHODS

There are no significant technical issues to prevent successful mining and processing of the nickel-copper mineralization despite the underground development challenges associated with geotechnical stability experienced during previous operations at the Bucko Lake Mine from 2009 to 2012. Optimization of mining methods and life-of-mine ("LOM") planning with cemented paste backfill hold the key to a successful mine restart. The following mine development strategies are being adopted to overcome previously known issues:

- Rehabilitate and re-use existing development where possible while avoiding stopes in historical production areas:
  - Refit and re-use the existing shaft for broken rock conveyance.
  - Rehabilitate and re-use the existing ramp for trackless equipment access.
  - Convert the existing "1,000 level" (~305 m below surface) exploration drift into new primary access on the hanging wall ("HW") side of the Deposit.

- Change access orientation to the HW from the footwall ("FW") to improve geotechnical stability of the parallel wireframed domains.

- Improve the ventilation system by relocating ventilation raises to the HW side of the Deposit using raise-bore holes from the 1,000 level to surface.

- Postpone capital development while mining previously accessed areas.

- Develop FW drifts to defer mining in low-grade areas, allowing for an early high-grade production profile.

- Alimak ventilation raises to be attached to FW drifts to facilitate bypassing of levels in a mining block versus using drop raises, allowing further postponement of lateral development.

- Situate areas of development away from weaker ultramafic contact areas. Development will be done either outside the ultramafic unit or fully inside the unit with improved ground support versus previous efforts at the mine. Intersections with the ultramafic unit, while unavoidable, will be minimized.

Mine design and planning were accomplished with the assistance of geomechanical input from Knight Piésold Ltd. based on a review of the historical mine performance, experience at similar operating mines, and empirical methods. Knight Piésold provided numerous recommendations on the PEA underground mine plan.

Paterson & Cooke Canada Inc. reviewed the paste backfill system that was previously installed at the Bucko Lake Mine. The system was installed just prior to mine suspension in 2012 and therefore was never commissioned. Recommendations were provided on rehabilitating equipment, completing the paste plant installation and future test work.

The PEA is based on an underground mine operating at a mining rate of 1,500 tpd for a mine life of 13 years. The mining method was selected to ensure maximum geotechnical stability and grade control flexibility while minimizing initial capital expenditure requirements. It is estimated to take one year of pre-production and a production ramp-up period of two years to reach the steady-state rate of 1,500 tpd. Key considerations of the underground mine design and production schedule are:

- Long-hole mining, on both transverse and longitudinal orientations, has been chosen as the main mining method with a small subset (~2% of tonnes) of cut-and-fill mining above existing workings.

- The sublevel spacing is set at 20 m (floor to floor) to allow use of top-hammer or in-the-hole drills. Mining will be carried out bottom-up in "blocks" approximately 100 to 150 m in height.

- A stope width of 12 m (along strike) was selected to limit the hydraulic radius, enhance stability and reduce cable bolting requirements.

- Cemented paste backfill will replace previous backfill practices to improve stope stability, enhance stope cycling, and to reduce the amount of tailings stored on surface.

- A modular approach to mining will be used:
    - Stopes will be segregated into high-grade (average 1.31% Ni mined grade) and low-grade (average 0.88% Ni mined grade) areas using a 1.0% Ni mined grade as the nominal split.
    - Low-grade mining areas are deferred where possible to postpone development costs and improve the production grade profile (segregation and selection done both vertically and laterally).
    - A combination of cemented paste backfill, transverse crosscuts, and top-hammer drills will allow for the extraction of low-grade stopes situated between mined-out high-grade stopes later in mine life using up-hole drilling.

- Mining will be kept above the 1,000 level until high-grade stopes in the area are depleted prior to developing a ramp to the next block to minimize CAPEX. This strategy will be repeated in consecutive blocks until the maximum mine depth of approximately 900 m below surface is reached.

- Initial production will use diesel trucks to haul material to the shaft. As the mine progresses deeper, production will use battery-powered electric trucks to limit ventilation requirements.

- Trucks will not enter FW drifts and load-haul-dump equipment will haul all material to level access re-muck bays where the trucks will be loaded. This allows smaller FW drift profiles and reduces ventilation requirements on the levels.

- Trucks will predominantly haul to the shaft and a portion of the tonnage from above the 1,000 level will be trucked up the existing ramp directly to surface.

The Bucko Lake Mine is planned to produce 6.5 Mt of mineralized material at a nominal production rate of 1,500 tpd with average grades of 1.14% Ni and 0.11% Cu over a 13-year mine life. Production will consist of 1.9 Mt from the Measured and Indicated Mineral Resource at 1.16% Ni and 0.10% Cu, plus 4.6 Mt from the Inferred Mineral Resource at 1.14% Ni and 0.12% Cu. External stope dilution is estimated to average 13% by mass over the mine life. Total contained nickel is estimated at 164 Mlb and the LOM amount of payable nickel is estimated at 101 Mlb.

## 1.13 PROCESS PLANT

The Bucko Lake process plant had been designed to process nickel-rich mineralized material from the underground Bucko Lake Mine. Upgrades to the conventional flotation plant have been envisaged to be consistent with the Company's existing permits. The current process plant design includes:

- jaw and cone crushers;
- rod and ball mills;
- flotation circuit with rougher/scavenger/cleaner cells;
- concentrate thickener, Larox pressure filter, concentrate handling facility for transport to smelter;
- paste backfill plant; and
- tailings storage facility and water reclaim.

Other than rehabilitation of existing equipment, process plant upgrades to a 1,500 tpd capacity are planned to consist of the following installations:

- a secondary cone crusher with associated screens, conveyors and dust collection;
- an expanded crushed mineralized material feed bin;
- additional flotation cells, including a column cell for the final cleaning stage;
- a rougher concentrate regrind mill; and
- modification and completion of the paste backfill plant, including the installation of vacuum filters.

Based on historical metallurgical test work and subsequent analysis, the average nickel recovery is estimated to be 79% with an average 13% Ni concentrate grade. Copper and other minor metals are payable at an additional 4% above the Ni NSR payable based on a conservative estimate of historical production information from 2009 to 2012. Concentrate production is estimated to commence at 26,000 wet tonnes in the first year of operation, subsequently averaging 42,000 wet tonnes per year in the peak Ni grade years, and 30,000 wet tonnes per year thereafter.

## 1.14 SITE INFRASTRUCTURE

Existing Bucko Lake Mine infrastructure includes a 1,000 tpd processing plant with a fine mineralized material bin, paste backfill plant, hoist and headframe, office, dry/change house trailers, compressor room, on-site drill core shack, and a tailings disposal management area. Adequate (grid) electrical supply infrastructure is already in place and currently energized. The Town of Wabowden has approximately 400 full-time residents with modest facilities for provisions, fuel and accommodations. A 100-person camp was constructed by CaNickel in the town in 2009.

The PEA envisages expansion of the tailings storage facility and water treatment plant. An interim tailings storage facility ("ITSF") was initially built before the mine achieved commercial production in 2009. The eight-hectare ("ha") ITSF contains 410,000 tonnes of tailings and is currently at full capacity. A 36.3-ha tailings storage starter cell was constructed in 2011, with a 4.3 ha decant pond. The capacity of the starter dam and pond will be increased during the pre-production period and in the first year of production, so that the facility can store 7.5 years of tailings production. Expansion of this facility will be phased over the life of the mine with periodic capacity increases to ensure adequate dam freeboard.

WSP Golder Associates Ltd. prepared a 2021 ITSF and TMA Safety Assessment Report in April 2022 (WSP Golder 2022). Visual inspections of the dams and dykes of the ITSF and tailings management area ("TMA") indicated that the structures were in good condition and were functioning as required at the time of a site visit in October 2021.

## 1.15 MARKET STUDIES AND CONTRACTS

The Authors based a US$9.84/lb base case nickel price on the two-year monthly trailing average price as of the end of November 2022. The 0.77 US$ = 1.00 CAD$ exchange rate was based on the three-year monthly trailing average rate as of the end of November 2022. Both the metal price and currency exchange rate are subject to spot market conditions. There are no metal streaming or hedging agreements in place.

Concentrate transport, smelting, refining, penalties and price participation costs are based on a sales agreement with Xstrata (now Glencore) that was established in 2007 before the mine went into production and currently remains in effect. Previous contracts for underground mining and supply of materials have been terminated. Other than the Glencore agreement there are no major contracts currently in place that would affect the Project.

## 1.16 ENVIRONMENTAL STUDIES, PERMITS AND SOCIAL OR COMMUNITY IMPACT

There are no known significant environmental liabilities at the Bucko site. To restore and upgrade the Bucko Lake Mine including a potential new access road, the existing Manitoba Environment Act License 2808 RR, issued in September 2011 under the Manitoba Environment Act, requires the submission and approval of a Notice of Alteration ("NOA"). The NOA must be reviewed and approved by the Manitoba Conservation and Climate, Environmental Approvals Branch. The NOA will include details of the Bucko Lake Nickel Project such as construction activities, timing, emission controls and waste management strategies, as well as environmental effects of the proposed Alteration. Once an NOA has been issued for the Project, and with Manitoba government approval, permit and license applications can be submitted for other specific Bucko Lake Mine revitalization-related activities such as mine dewatering and underground rehabilitation, petroleum storage, and hazardous waste management. The only federal permit or approval to be required is related to the storage and management of explosives.

A Closure Plan in a report by WSP Golder 2022 includes details on the aspects of Closure that are needed to develop an estimate of closure costs, including the cost of a seven-year post-closure monitoring program. Changes are expected if the Bucko Lake Nickel Project is significantly modified during potential operations.

## 1.17 CAPITAL COSTS

All currency in this PEA is presented in Canadian dollars unless otherwise stated. Initial capital cost estimates are relatively modest at $87M given that much of the Project infrastructure is in place (Table 1.2). This estimate includes a contingency of 15%, totalling $11M. The majority of the costs are related to underground mine rehabilitation and pre-production development, followed by process plant capacity upgrades. Sustaining capital costs over the LOM are estimated at $192M. The costs are primarily for sustained underground mine development and equipment and to incrementally increase the Tailings Management Facility capacity.

**TABLE 1.2**
**CAPITAL COSTS**

| Item | Initial Capital ($M) | Sustaining Capital ($M) |
|---|---|---|
| Site and General | 5.0 | - |
| Utilities and Services | 2.0 | - |
| Underground Mine Development | 18.1 | 73.0 |
| Underground Mining (All Other) | 28.1 | 85.0 |
| Process Plant Equipment and Buildings | 13.1 | - |
| Tailings Management Area | 4.1 | 8.8 |
| Owner's Costs | 5.0 | - |
| Contingency | 11.3 | 25.0 |
| **Total Capital Cost** | **86.7** | **191.8** |

An additional $14M is estimated for closure costs, of which the Company has already paid a $2.5M financial security bond.

## 1.18 OPERATING COSTS

The majority of operating costs have been estimated from first principles, with a minor amount of factoring from historical actual site costs, and estimates from the Author's experience at other mines. Operating costs for underground mining, processing and G&A are estimated to average $93.74/t (Table 1.3) and total $611M over the LOM.

**TABLE 1.3**
**OPERATING COSTS**

| Item | Operating Cost ($/t processed) |
|---|---|
| Underground Mining | 66.04 |
| Processing | 17.73 |
| General & Administration | 9.97 |
| **Total Unit Cost** | **93.74** |

## 1.19 FINANCIAL EVALUATION

The PEA indicates that the Project would be rehabilitated from its current "care and maintenance" status and placed into operation to produce 101 Mlb of payable nickel over a 13-year mine life.

The Project is subject to an NSR royalty of 2.5%. Total costs associated with NSR royalty payments are estimated at $32.2M over the LOM.

Cash costs over the LOM, including royalties, are estimated to average US$4.91/lb Ni. All-In Sustaining Costs ("AISC") over the LOM are estimated to average US$6.48/lb Ni and include closure costs.

At a 6% discount rate and US$9.84/lb price the after-tax NPV of the Project is estimated at $169M ($205M pre-tax), with an IRR of 30% (32% pre-tax). This results in a payback period of approximately 3.3 years. The Project NPV breaks even at a -20% nickel price of US$7.87/lb. At current spot prices at +30% nickel price of US$12.79/lb and a 6% discount rate, after-tax NPV of the Project is estimated at $376M ($510M pre-tax), with an IRR of 57% (63% pre-tax). Table 1.4 presents financial highlights of the Project.

**TABLE 1.4**
**PROJECT HIGHLIGHTS**

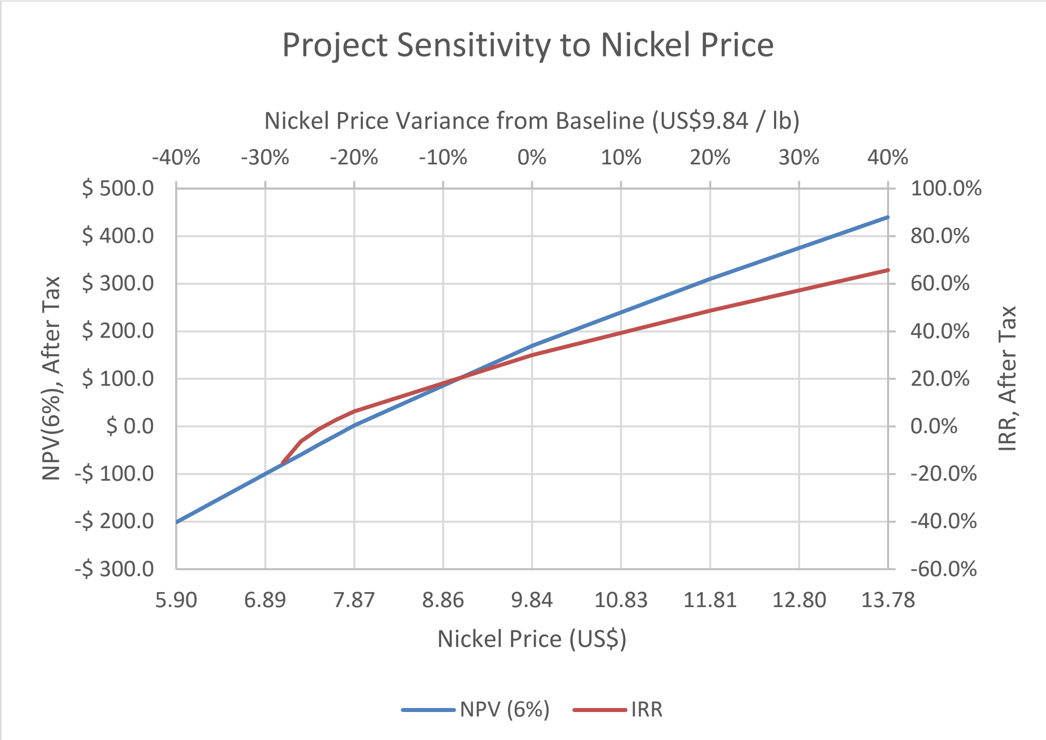
| Item | Result | |
|---|---|---|
| **General** | | |
| Nickel Price (US$/lb) | | 9.84 |
| Exchange Rate (US$:C$) | | 0.77 |
| LOM (years) | | 13.0 |
| **Production** | | |
| Total Ni Production (Mlb) | | 100.9 |
| Average Annual Ni Production (Mlb) | | 7.8 |
| **Operating Costs** | | |
| Mining Cost ($/t Mined) | | 66.04 |

**TABLE 1.4**
**PROJECT HIGHLIGHTS**

| **Item** | **Result** | |
|---|---|---|
| Processing Cost ($/t Processed) | | 17.73 |
| G&A Cost ($/t Processed) | | 9.97 |
| Total Operating Costs ($/t Processed) | | 93.74 |
| NSR Royalty (%) | | 2.50 |
| Cash Cost (US$/lb Ni) | | 4.91 |
| AISC (US$/lb Ni) | | 6.48 |
| **Capital Costs (CAPEX)** | | |
| Initial Capital ($M) | | 86.7 |
| Sustaining Capital ($M) | | 191.8 |
| Closure Costs ($M) | | 14.0 |
| **LOM Cash Flow ($M)** | | |
| Revenue from Concentrate ($M) | | 1,289.9 |
| (-) Operating Cost ($M) | | - 610.8 |
| (-) Royalties ($M) | | - 32.2 |
| (-) Closure Cost ($M) | | - 14.0 |
| (-) Capital Spending ($M) | | - 278.6 |
| Pre-Tax Cash Flow (undiscounted) ($M) | | 354.2 |
| **Financials** | **Pre-Tax** | **After-Tax** |
| NPV $_{(6\%)}$ ($M) | 205.2 | 169.4 |
| IRR (%) | 32 | 30 |
| Payback (years) | 3.3 | 3.3 |

Nickel is the primary payable metal for the Bucko Lake Mine. While copper is present in the Deposit, only a nickel concentrate stream is produced. Copper provides additional value as a bi-product credit with Co, Au, Ag, Pt and Pd at an average combined equivalent payable contribution of approximately 4% Ni payable. Figure 1.1 shows the Project NPV and IRR sensitivity to changes in nickel price.

**FIGURE 1.1 PROJECT SENSITIVITY TO NICKEL PRICE CHANGE**




Note that for Figure 1.1, the IRR function produces irrational values when no positive cash flows exist. This occurs when the nickel price is changed by more than -29% from the baseline (when nickel price falls below US$7.00/lb). This area is not plotted in the figure.

## 1.20 ADJACENT PROPERTIES

Within the Thompson Nickel Belt, various nickel mines and deposits exist. In the south part of the TNB the Manibridge Mine and the Minago Property are the best-known projects. The north part of the TNB, historically dominated by INCO (now Vale), hosts the Thompson Nickel Mine itself plus the Birchtree, Pipe No. 1 Mine, and Pipe No. 2 Open Pit Mines, the Soab Deposits, Moak Prospect, Brunne Lake Prospect, and many others. The Thompson Nickel Mine is at present the only operating mine in the TNB.

## 1.21 RISKS AND OPPORTUNITIES

Risks and opportunities have been identified for the Project. The most significant potential risk for impact on the Project is that the mine plan consists of approximately 70% Inferred Mineral Resources. Infill drilling is required to potentially convert Inferred to Indicated Mineral Resources and increase the confidence in the Mineral Resource Estimate.

Opportunities consist of a Mineral Resource that is open along strike and particularly down dip, and for operations to continue beyond the current LOM plan using Mineral Resources from multiple known satellite deposits on active Company claims. The underground mine design has been planned at 20 m sublevel spacing and it may be possible to increase the spacing, thereby reducing sustaining capital costs. Expansion of the process plant to 1,500 tpd can be achieved over the first two years of production at minimal disruption to plant operation.

## 1.22 CONCLUSIONS

Current Bucko Lake Measured and Indicated Mineral Resources using a 0.7% Ni cut-off grade are estimated at 5.7 Mt grading 1.24% Ni and 0.11% Cu for contained metal content of 156.3 Mlb of nickel and 13.4 Mlb of copper. Inferred Mineral Resources are estimated at 10.6 Mt grading 1.18% Ni and 0.13% Cu for contained metal content of 275.6 Mlb of nickel and 31.2 Mlb of copper.

The PEA indicates that the Bucko Lake Nickel Project would be rehabilitated from its current "care and maintenance" status and placed into operation at an initial capital cost of $87M to produce 101 Mlb of payable nickel over a 13-year mine life. The existing 1,000 tpd processing plant would be upgraded to 1,500 tpd. The average LOM cash cost is estimated at US$4.91/lb Ni with AISC of US$6.48/lb Ni.

This PEA indicates that the Bucko Lake Nickel Project has potential economic viability for an underground mining and processing plan. Using a base case LOM nickel price assumption of US$9.84/lb, it is estimated that the Project generates a pre-tax NPV using a discount rate of 6% of $205M and IRR of 32%. After-tax NPV is estimated at $169M and IRR of 30%, with a payback period of 3.3 years.

The Project NPV and IRR are sensitive to several factors, with the largest impacts coming from nickel price and changes to costs. Discount rate changes have minor impact to the NPV of the Project.

Opportunities exist for operations to continue beyond the current LOM plan using Mineral Resources from multiple nearby known satellite deposits on active Company claims, and the expansion of the Bucko Lake Deposit which is open along strike and down dip.

This PEA supersedes the previous Technical Report for the Project date October 19, 2012 (Griffin et al.), and Mineral Reserves are no longer declared for the Project.

## 1.23 RECOMMENDATIONS

The Authors consider that the Bucko Lake Nickel Project contains a significant nickel-copper Mineral Resource base that merits further evaluation. This PEA shows potential economic viability for an underground mining and processing plan. The plan is based on a Mineral Resource that is classified as approximately 70% Inferred and 30% Indicated. To advance the Project to the next level of study, a diamond drill program is required to convert Inferred Mineral Resources to Indicated Mineral Resources.

The recommended work program includes initial drilling from surface while the underground workings are being dewatered and rehabilitated, then drilling from underground. An advanced geotechnical study is recommended prior to undertaking a Pre-Feasibility Study.

To be able to carry out this work program the submission and approval of an NOA through the Manitoba government would need to be completed. Once an NOA has been issued for the Project, permit and license applications can be submitted for activities such as mine dewatering, underground rehabilitation, and petroleum storage.

The recommended work program is estimated to cost $9.0M including a contingency of $1.2M. The majority of the program costs are for drilling.

# 2.0 INTRODUCTION AND TERMS OF REFERENCE

## 2.1 TERMS OF REFERENCE

This Technical Report has been prepared to provide an NI 43-101 Technical Report, Updated Mineral Resource Estimate and Preliminary Economic Assessment of the existing nickel-copper mineralization at the Bucko Lake Nickel Project (the “Deposit” or the “Property” or the “Project”), located near the Town of Wabowden, in north-central Manitoba, Canada, approximately 500 km north-northwest of the City of Winnipeg, and 110 km southwest of the City of Thompson. The Project is 100% held by CaNickel Mining Limited. The Property consists of four mineral leases, three surface leases and seven mining claims totalling 3,004 ha in area.

This Technical Report was prepared by P&E Mining Consultants Inc. (“P&E”), with geotechnical input from Knight Piésold Ltd. and paste backfill assistance by Paterson & Cooke Canada Inc., at the request of Mr. Kevin Zhu, CEO of CaNickel Mining Limited (“CaNickel” or the “Company”). CaNickel is a public, TSX-V listed mining company trading under the symbol “CML”, with its head office located at: Suite 1655 - 999 West Hastings Street, Vancouver, British Columbia, Canada V6C2W2. This Technical Report has an effective date of January 13, 2023. There has been no material change to the Project between the effective date of this Technical Report and the signature date.

The Updated Mineral Resource Estimate reported herein is based on results from a total of 428 holes drilled from 1962 to 2013, and recent metal pricing, and is conformable to the “Canadian Institute of Mining, Metallurgy and Petroleum (“CIM”) Standards on Mineral Resources and Reserves – Definitions and Best Practices Guidelines” (2019), as referred to in National Instrument (“NI”) 43-101 and Form 43-101F, Standards of Disclosure for Mineral Projects (2014).

CaNickel accepts that the qualifications, expertise, experience, competence and professional reputation of P&E’s Principals and Associate Geologists and Engineers are appropriate and relevant for the preparation of this Technical Report. The Company also accepts that P&E’s Principals and Associates are members of professional bodies that are appropriate and relevant for the preparation of this Technical Report. P&E understands that this Technical Report will support the public disclosure requirements of CaNickel and will be filed on SEDAR as required under NI 43-101 disclosure regulations.

## 2.2 SITE VISITS

The Property was visited by Mr. Eugene Puritch, P.Eng., FEC, CET of P&E on February 07, 2005, to conduct data verification sampling on the existing drill core and become familiar with the physical attributes of the site. Mr. Puritch collected six drill core samples from four diamond drill holes.

The Property was recently visited by Mr. D. Gregory Robinson, P.Eng., of P&E, on June 21, 2022, with the purpose of reviewing engineering aspects of the Project and consisted of inspection of surface facilities.

## 2.3 PREVIOUS TECHNICAL REPORTS

A previous Technical Report by P&E (2005), and P&E Mineral Resource Estimates included in other Technical Reports (Micon 2006, 2007, and Crowflight 2009) are referenced in the Reference section (Section 27) of this Technical Report.

The latest Technical Report prior to this PEA was completed by Griffin et al. in 2012 and is referred to in the Reference section (Section 27) of this Technical Report.

## 2.4 SOURCES OF INFORMATION

The Authors of this Technical Report carried out a study of all relevant aspects of the available literature and documented results concerning the Project and held discussions with technical personnel from the Company regarding all pertinent aspects of the Project. The reader is referred to the sources of data, citations for which are compiled in the "References" section (Section 27) of this Technical Report, for further detail on the Project.

This Technical Report is based, in part, on internal Company reports, historical Technical Reports and maps, published government reports, Company letters, memoranda, public disclosure and public information as listed in the References (Section 27) of this Technical Report. Additional details of the topic can be found in the public filings of CaNickel on SEDAR at www.sedar.com.

All Authors in this PEA are Qualified Persons under NI 43-101. Table 2.1 presents the Authors and co-Authors of each section of the Technical Report, who acting as Qualified Persons as defined by NI 43-101, take responsibility for those sections of the Technical Report as outlined in Section 28 "Certificate of Author". The Authors acknowledge the very helpful cooperation of CaNickel's management and consultants, who addressed all data and material requests and responded openly to all questions.

**TABLE 2.1**
**REPORT AUTHORS AND CO-AUTHORS**

| Qualified Person | Employer | Sections of Technical Report |
|---|---|---|
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| Mr. Andrew Bradfield, P.Eng. | P&E Mining Consultants Inc. | 2, 3, 15, 19, 24 and co-author 1, 21, 22, 25, 26 |
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**TABLE 2.1**
**REPORT AUTHORS AND CO-AUTHORS**

| Qualified Person | Employer | Sections of Technical Report |
|---|---|---|
| Mr. Antoine Yassa, P.Geo. | P&E Mining Consultants Inc. | co-author 1, 14, 25, 26 |

## 2.5 UNITS AND CURRENCY

In this Technical Report, all currency amounts are stated in Canadian dollars ("$") unless otherwise stated. At the time of this Technical Report the 36-month trailing average exchange rate between the US dollar and the Canadian dollar is 1 US$ = 1.30 CAD$ or 1 CAD$ = 0.77 US$.

Commodity prices are typically expressed in US dollars ("US$") and will be so noted where appropriate. Quantities are generally stated in Système International d'Unités ("SI") metric units including metric tons ("tonnes", "t") and kilograms ("kg") for weight, kilometres ("km") or metres ("m") for distance, hectares ("ha") for area, grams ("g") and grams per tonne ("g/t") for precious metal grades. Nickel and copper metal values are reported in percentage ("%") and parts per billion ("ppb"). Quantities of nickel and copper are in avoirdupois pounds ("lb"). Abbreviations and terminology are summarized in Table 2.2.

Grid coordinates for maps are given in the UTM NAD83 Zone 14N or as latitude and longitude.

**TABLE 2.2**
**TERMINOLOGY AND ABBREVIATIONS**

| Abbreviation | Meaning |
|---|---|
| $ | dollar(s) |
| ° | degree(s) |
| °C | degrees Celsius |
| < | less than |
| > | greater than |
| % | percent |
| 3-D | three-dimensional |
| ABA | acid-base accounting |
| AFMAG | audio frequency magnetics |
| Ag | silver |
| AISC | all-in sustaining costs |
| ARD | acid rock drainage |
| As | arsenic |
| asl | above sea level |
| Au | gold |
| BEV | battery-electric vehicle |
| BMWi | ball mill work index |
| Bondar Clegg | Bondar Clegg and Company Ltd. |
| °C | degree Celsius |

**TABLE 2.2**
**TERMINOLOGY AND ABBREVIATIONS**

| Abbreviation | Meaning |
|---|---|
| C$ or CAD$ | Canadian dollar |
| C&F | cut-and-fill |
| CanAlaska | CanAlaska Uranium Ltd. |
| CaNickel | CaNickel Mining Limited |
| CAPEX | capital expenditure |
| CIM | Canadian Institute of Mining, Metallurgy, and Petroleum |
| cm | centimetre(s) |
| CMML | Consolidated Marbenor Mines Limited |
| CMS | cubic metre per second |
| CN | cyanide |
| Co | cobalt |
| COG | cut-off grade |
| Company, the | the CaNickel Mining Limited company that the report is written for |
| CoV | coefficient of variation |
| COV(s) | cut-off value(s) |
| CRM | certified reference material |
| Cu | copper |
| $M | dollars, millions |
| DBD | D Block Discoveries |
| dmt | dry metric tonnes |
| DSO | Deswik Stope Optimizer |
| DP | Decant Pond |
| E | east |
| EM | electromagnetic |
| EV(s) | electric vehicle(s) |
| FA | Financial Assurance |
| FAR(s) | fresh air raise(s) |
| Fe | iron |
| Flying Nickel | Flying Nickel Mining Corp. |
| ft | foot |
| FW | footwall |
| g | gram |
| G&A | general and administrative |
| g/t | grams per tonne |
| H | height |
| H:V | horizontal:vertical ratio |
| ha | hectare(s) |
| HBM&S | Hudson Bay Mining & Smelting |
| HDPE | high density polyethylene |
| HG | high-grade |
| HW | hanging wall |

**TABLE 2.2**
**TERMINOLOGY AND ABBREVIATIONS**

| Abbreviation | Meaning |
|---|---|
| ID | identification |
| $ID^2$ | inverse distance squared |
| IP | induced polarization |
| IRR | internal rate of return |
| ISO | International Organization for Standardization |
| ISO/IEC | International Organization for Standardization/International Electrotechnical Commission |
| ITH (drills) | in-the-hole (longhole drill rigs) |
| ITSF | interim tailings storage facility |
| Jumbo | electric-hydraulic powered development drill jumbo, typically with one or two drill booms |
| k | thousand(s) |
| kg | kilograms(s) |
| km | kilometre(s) |
| $km^3$ | cubic kilometres |
| KP | Knight Piésold Ltd. |
| kt | thousands of tonnes |
| kV | kilovolt |
| kVA | kilovolt amps |
| kW | kilowatt |
| kWh | kilowatt hours |
| kWh/t | kilowatt hours per tonne |
| L | litre(s) |
| L/s | litres per second |
| lb | pound (weight) |
| level | mine working level referring to the nominal elevation (m RL), eg. 4285 level (mine workings at 4285 m RL) |
| LG | low-grade |
| LH | long hole |
| LHD | load, haul and dump unit (underground loader) |
| LIMS | laboratory information management system |
| LOM | life of mine |
| M | million(s) |
| m | metre(s) |
| $m^3$ | cubic metre(s) |
| MDMER | Metal and Diamond Mining Effluent Regulations (government of Canada) |
| MgO | magnesium oxide |
| MGS | Manitoba Geological Survey |
| ML | metal leaching |
| Mlb | millions of pounds |
| mm | millimetre |

**TABLE 2.2**
**TERMINOLOGY AND ABBREVIATIONS**

| Abbreviation | Meaning |
|---|---|
| MRE | Mineral Resource Estimate |
| Mt | mega tonne or million tonnes |
| MPa | megapascals |
| MW | megawatt |
| N | north |
| N/A | not available |
| NAD | North American Datum |
| NE | northeast |
| NH3 | ammonia |
| NI | National Instrument |
| Ni | nickel |
| NiS | nickel sulfide |
| NN | nearest neighbour |
| NOA | Notice of Alteration |
| NSR | net smelter return |
| NPV | net present value |
| OMS | operation, maintenance and surveillance |
| OPEX | operating expenses |
| P&C | Paterson & Cooke Canada Inc. |
| P&E | P&E Mining Consultants Inc. |
| PAG | potential acid generation |
| Pb | lead |
| Pd | palladium |
| PEA | preliminary economic assessment |
| PF | pastefill |
| P.Eng. | Professional Engineer |
| P.Geo. | Professional Geoscientist |
| PGM | platinum group metals |
| portal | initial surface entrance prepared for ramp tunnel |
| ppb | parts per billion |
| ppm | parts per million |
| Project, the | the Bucko Lake Nickel Project |
| Property, the | the Bucko Lake Nickel Property that is the subject of this Technical Report |
| Pt | platinum |
| Q1, Q2, Q3, Q4 | first quarter, second quarter, third quarter, fourth quarter of the year |
| QA/QC | quality assurance/quality control |
| Ra-226 | radium |
| raisebore | mechanical excavation of raise, using large rotary drilling machine with reaming attachment |
| ramp | tunnel excavated in downward (upward) inclination |
| RAR(s) | return air raise(s) |

**TABLE 2.2**
**TERMINOLOGY AND ABBREVIATIONS**

| Abbreviation | Meaning |
|---|---|
| RMR | rock mass rating |
| RQD | rock quality designation |
| S | sulphur |
| SC | starter cell |
| SE | southeast |
| SEDAR | system for electronic document analysis and retrieval |
| SGS | Société Générale de Surveillance Holding S.A. |
| SRM | standard reference material |
| Std Dev | standard deviation |
| SW | southwest |
| t | metric tonne(s) |
| Technical Report | NI 43-101 Technical Report |
| TNB | Thompson Nickel Belt |
| TMA | tailings management area |
| $t/m^3$ | tonnes per cubic metre |
| tpa | tonnes per annum |
| tpd | tonnes per day |
| TSL | TSL Laboratories Inc. |
| TSS | total suspended solids |
| US$ | United States dollar(s) |
| UTM | Universal Transverse Mercator grid system |
| W | width |
| wmt | wet metric tonnes |
| WTP | water treatment plant |
| XRAL | X-Ray Assay Laboratories |
| yr | year |
| Zn | zinc |

## 3.0 RELIANCE ON OTHER EXPERTS

The Authors of this Technical Report have assumed, and relied on the fact, that all the information and existing technical documents listed in the References section of this Technical Report are accurate and complete in all material aspects. Whereas the Authors have carefully reviewed all the available information presented to us, its accuracy and completeness cannot be guaranteed. The Authors reserve the right, however will not be obligated, to revise the Technical Report and conclusions if additional information becomes known to us subsequent to the date of this Technical Report.

Copies of the tenure documents, operating licenses, permits, and work contracts were not reviewed. Information relating to tenure was reviewed by means of the public information available on the Manitoba government website at: https://web33.gov.mb.ca/mapgallery/mgm-md.html. The Authors have relied on this public information and tenure information from CaNickel and have not undertaken an independent detailed legal verification of title and ownership of the Bucko Lake Property. The Authors have not verified the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties, but have relied on, and considers that it has a reasonable basis to rely on, CaNickel to have conducted the proper legal due diligence.

The Authors have relied upon independent tax expert Mr. Wentworth Taylor, CPA, CA, President of W.H. Taylor Inc., for assistance with the taxation calculations in the financial model, as presented in section 22 of this Technical Report.

Select technical data, as noted in the Technical Report, were provided by CaNickel and the Authors have relied on the integrity of such data.

A draft copy of this Technical Report has been reviewed for factual errors by the CaNickel and the Authors have relied on CaNickel's knowledge of the Property in this regard. All statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are not false and misleading at the date of this Technical Report.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

### 4.1 LOCATION

The Bucko Lake Property is located near the Town of Wabowden in north-central Manitoba (Figures 4.1 and 4.2), approximately 500 km north-northwest of the City of Winnipeg. The centre of the Bucko Lake Property is at approximately Latitude 54° 52' 41" N and Longitude 98° 39' 32" W, or at UTM NAD 83 Zone 14N 521,890 m E and 6,081,260 m N.

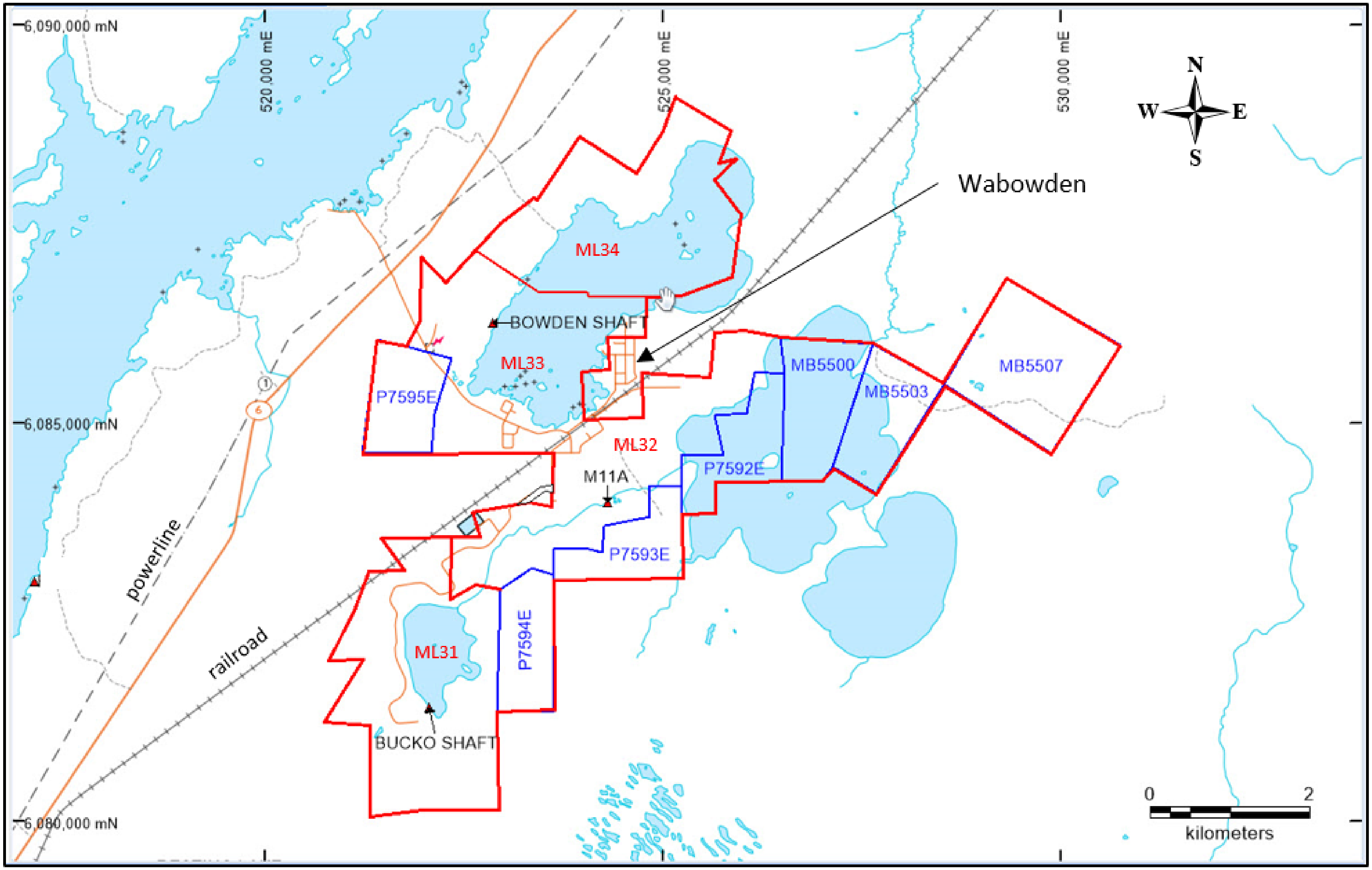
**FIGURE 4.1 BUCKO LAKE MINE PROPERTY LOCATION IN NORTH-CENTRAL MANITOBA**


***Source:*** *Google Earth (May 2022), modified by the Authors*

### 4.2 PROPERTY DESCRIPTION AND TENURE

The Bucko Lake Property consists of four mineral leases, three surface leases and seven mining claims totalling 3,004 ha in area (Figure 4.2). Summary listings of all the Property leases and claims are presented in Tables 4.1 and 4.2.

**FIGURE 4.2 BUCKO LAKE PROPERTY LAND TENURE MAP**




***Source:*** *rdmaps.gov.mb.ca (January 13, 2023), modified by the Authors, coordinates in UTM NAD83 Zone 14N.*
***Notes:*** *Land record information effective January 13, 2023. Mineral Leases labelled in red; Mining Claims labelled in blue.*

All the Bucko Lake Property mineral leases and mining claims are owned 100% by CaNickel and are in good-standing as of the effective date of this Technical Report. Mining Lease ML31 covers the current Mineral Resource Estimate presented in Section 14 of this Technical Report.

**TABLE 4.1**
**BUCKO LAKE MINERAL LEASES [1]**

| Lease No. | Lease Type | Holder | Map Sheet | Area (ha)[2] |
|---|---|---|---|---|
| ML31 | Mineral Lease | CaNickel Mining Limited | 63J15SE | 534 |
| ML32 | Mineral Lease | CaNickel Mining Limited | 63J15NE, 63J15SE | 439 |
| ML33 | Mineral Lease | CaNickel Mining Limited | 63J15NE, 63J15SE | 482 |
| ML34 | Mineral Lease | CaNickel Mining Limited | 63J15NE | 495 |
| M152-SL | Surface Lease | CaNickel Mining Limited | 63J15NE, 63J15SE | 3 |
| M153-SL | Surface Lease | CaNickel Mining Limited | 63J15NE | - |
| M154-SL | Surface Lease | CaNickel Mining Limited | 63J15SE | - |
| **Total** | | | | **1,953** |

***Source:*** *http://www.rdmaps.gov.mb.ca/MapGallery_Geology.MapGallery*
***Notes:*** *[1] Land record information effective January 13, 2023.*
*[2] With the exception of 3.289 ha of ML152-SL, all surface leases are included entirely within or coincide with a Mineral Lease.*

**TABLE 4.2**
**BUCKO LAKE PROPERTY MINING CLAIMS**

| Claim ID | Claim Name | Holder | Area (ha) | Recorded | Expires |
|---|---|---|---|---|---|
| MB5500 | DEN 15 | CaNickel Mining Limited | 142 | 2004/04/13 | 2030/06/12 |
| MB5503 | DEN 18 | CaNickel Mining Limited | 132 | 2004/04/13 | 2030/06/12 |
| MB5507 | DEN 22 | CaNickel Mining Limited | 256 | 2004/04/13 | 2030/06/12 |
| P7592E | BOW 1 | CaNickel Mining Limited | 130 | 1988/04/20 | 2030/06/19 |
| P7593E | BOW 2 | CaNickel Mining Limited | 112 | 1988/04/20 | 2030/06/19 |
| P7594E | BOW 3 | CaNickel Mining Limited | 144 | 1988/04/20 | 2040/06/19 |
| P7595E | BOW 4 | CaNickel Mining Limited | 135 | 1988/04/20 | 2040/06/19 |
| **Total** | | | **1,051** | | |

***Source:*** *http://www.rdmaps.gov.mb.ca/MapGallery_Geology.MapGallery*
***Note:*** *Land record information effective January 13, 2023.*

## 4.3 MANITOBA MINERAL TENURE

In Manitoba, mineral claims have an annual work commitment of C$12.50/ha from the second to the tenth year of holding the claim. At the start of the eleventh year, the work commitment amount increases to C$25/ha. Mineral Exploration Licences ("MEL") in Manitoba are geographically divided into Zones A and B and the Bucko Lake Property is located in Zone A. MELs in the area of Zone A have minimum expenditure requirements ranging from C$1.25/ha in the first year to

C$15/ha in the sixth year of the licenced period. Field expenditures and results are submitted as a Report of Work to the Manitoba Department of Growth, Enterprise and Trade, Mineral Resources Division, Mines Branch for assessment credits. Renewal applications are submitted along with a filing fee of C$13 per claim per year. Assessment credits can be applied to the renewal of any claim within a 3,200 ha area contiguous with the claims worked.

In order to perform exploration work on the Property, CaNickel must apply for a Work Permit through Manitoba Conservation. The original application is forwarded to the regional office located in The Pas and reviewed by all government and non-government agencies that may be affected by exploration work. These include but are not limited to, Manitoba Conservation, Manitoba Parks and Recreation, the Mines Branch, and local First Nations communities. When approved, the Work Permit is processed by a Natural Resources Officer at the local Manitoba Conservation branch office in Grand Rapids and issued to CaNickel.

## 4.4 LAND AGREEMENTS

On January 31, 2007, Crowflight (precursor company to CaNickel) entered into an Agreement with Xstrata Nickel (previously Falconbridge, now Glencore) that provided it the right to earn a 100% interest in Mining Lease ML031 (which contains the Bucko Lake Deposit) and a 5.5 km area surrounding the Bucko Lake Deposit and earn 100% interest in all of the advanced-stage exploration ground previously the subject of the separate Thompson Nickel Belt South and North Agreements.

Under the terms of the Bucko Lake Deposit Lease Transfer Agreement in July 2007, Crowflight earned 100% interest in the ML31 Mining Lease, having met its expenditure commitments and completing a Feasibility Study.

CaNickel's 100% interest in ML31 is subject to a Back-in-Right now held by Glencore. If CaNickel outlines a Threshold Deposit (outside of currently known Bucko Lake Mineral Resources) exceeding 200 million pounds (90.9 million kg) of contained nickel in Measured and Indicated Reserves, Glencore would have the right to Back-In for a 50% interest and become the operator of the Threshold Deposit by paying CaNickel an amount equal to the aggregate of all direct expenditures incurred by the latter in carrying out mining operations on the Bucko Lake Lease, outside of the Bucko Lake Resource Block, prior to the date of exercise of the Back-In Right.

Under the terms of the Lease Transfer Agreement, production from the Property is subject to a 2.5% NSR royalty payable to Glencore, net of all charges and penalties for smelting and refining, freight, insurance premiums, and sampling and assay charges incurred after the minerals, metals or metal concentrates that have left the site. If the cash quotation from the London Metal Exchange is less than $6.00/lb for Nickel Grade A in any month, then proceeds from this NSR Payment would not apply.

CaNickel assumed control of the Bucko Lake Property and surrounding exploration properties from Crowflight Minerals on June 22, 2011. Trading commenced the following day on the Toronto Venture Stock Exchange ("TSX:V") under the same previous symbol CML.

The M11A, Bowden Lake and Apex Deposits are subject to the Option Agreement between Xstrata Nickel and Crowflight Minerals/CaNickel dated July 7, 2007, and further amended on November 29, 2010. The agreement payment/expenditures of US$2,500,000 for 2011 and cumulative working right payments/expenditures of US$9,700,000 were satisfied as of December 31, 2011 by CaNickel.

## 4.5 OTHER PROPERTIES

CaNickel's Halfway Lake Property is located approximately 20 km northeast of Wabowden, Manitoba. Historical drilling has been completed on the Property that intersected nickel mineralization.

## 4.6 ENVIRONMENTAL AND PERMITTING

Environmental liabilities and obligations are presented in Section 20 of this Technical Report. There are no registered First Nations land claims affecting the Bucko Lake Property area.

# 5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## 5.1 ACCESS

The Bucko Lake Property is located approximately 500 km north of the City of Winnipeg, the provincial capital of Manitoba. The Property is accessible from Provincial Highway 6 and a network of all-weather gravel roads and seasonal trails extending from the highway (Figure 5.1). Highway 6 is one of two main north-south highways in Manitoba. The all-weather gravel roads were built in 1977 and upgraded in 2008.

An airport with regularly scheduled flights from Winnipeg is located in the City of Thompson, 110 km to the northeast of the Property, along Highway 6. The Hudson Bay (Omnitrax) Rail Line from Winnipeg to Churchill crosses the Property.

## 5.2 CLIMATE

The Wabowden region has a continental climate with long, cold winters extending from October to April and short, relatively warm summers (www.weatherbase.com). The average temperature for the year in Wabowden is -2.2°C. The warmest month, on average, is July with an average temperature of 16.7°C. The coolest month on average is January, with an average temperature of -23.3°C. Annual precipitation averages 455 mm, more than half of which is snow.

The Koppen Climate Classification subtype for this climate is Continental Subarctic Climate ("Dfc").

## 5.3 INFRASTRUCTURE

The Bucko Lake Property has underground workings including a mine shaft, processing plant, administration building, and tailings storage facilities (Figures 5.2 and 5.3). The site was originally developed by Falconbridge in the 1970s. The site mining and mineral processing facilities were most recently operated by Crowflight and CaNickel intermittently between 2008 and 2012.

The Bucko Lake Property is crossed by the Hudson Bay (formerly Canadian National) Rail Line to the Town of Churchill and the rail line is adjacent to the major hydroelectric transmission line heading south along Provincial Highway 6. The City of Thompson (population 13,035; 2021 Census by Statistics Canada), 110 km to the northeast, is the closest community with major services, including healthcare and a regional airport.

The Town of Wabowden is approximately 2 km from the Bucko Lake Mine site. Wabowden is a small town of 400 people (2021 Census by Statistics Canada) with electrical and telephone service, a post office, and grocery store. Wabowden is serviced by a 5 km long all-weather road from Highway 6.

**FIGURE 5.1 BUCKO LAKE PROPERTY ACCESS**

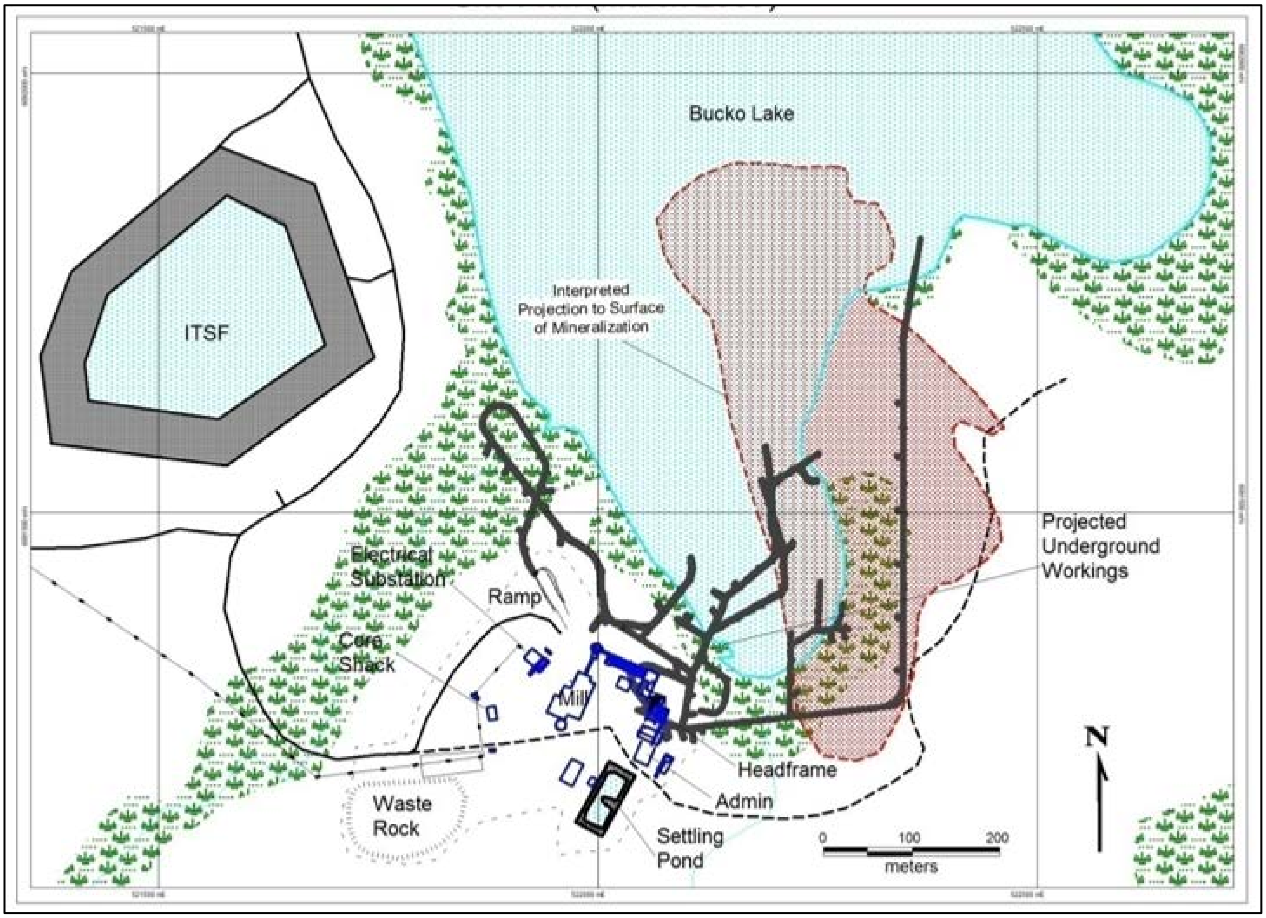

***Source:*** *Microsoft Bing (July 2022), modified by the Authors, coordinates in UTM NAD83 Zone 14N.*

## 5.4 PHYSIOGRAPHY

The land in the vicinity of the Project is flat with outcrops and subcrops of glacially rounded rock and wet muskeg lowlands separated by stands of fir and spruce trees intermingled with alder and birch. Ponds, swamps and lakes are common. The Bucko Lake Deposit is under a small lake less than 2.0 m deep. The lake does not have any cottages or inhabitants nearby and appears to be of little interest to the local populace.

Topographic relief on the Property ranges from 215 to 235 m above sea level. Lakeshores can be relatively steep, with banks up to approximately 15 m above the water level in places. Water flow from Halfway River (and Halfway Lake) is towards the northeast. Bedrock exposures are common along the lake shoreline.

## FIGURE 5.2 BUCKO LAKE MINE SITE PLAN




***Source:*** *Griffin et al. (2012)*

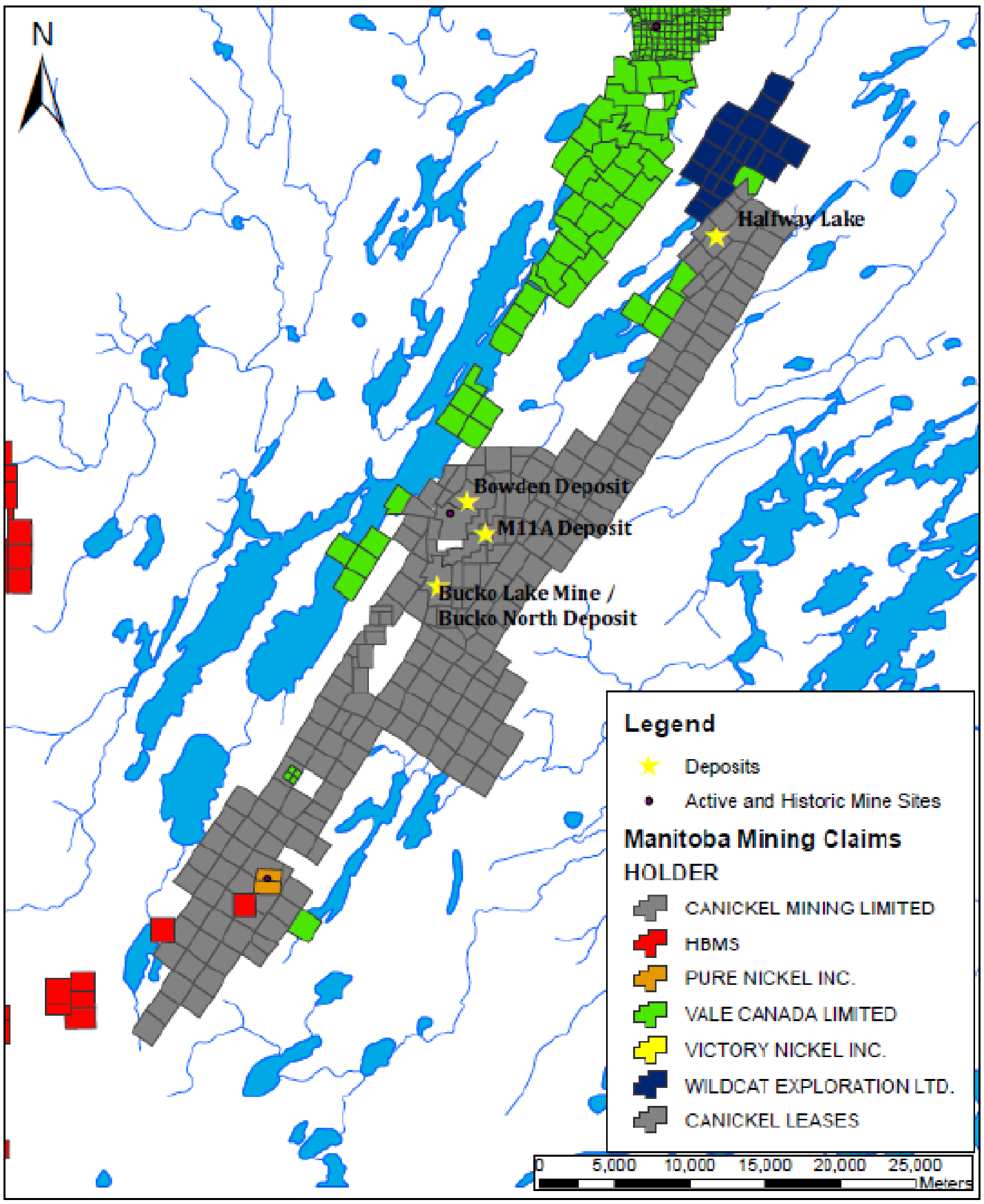
**FIGURE 5.3 BUCKO LAKE PROJECT INFRASTRUCTURE PHOTOGRAPH**

***Source:*** *Griffin et al. (2012)*

## 6.0 HISTORY

Exploration in the Bucko-Bowden area of the Thompson Nickel Belt commenced in the 1950s. Exploration programs here were completed by Consolidated Marbenor Mines Limited ("CMML"), Falconbridge Nickel Mines Limited ("Falconbridge"), Nuinsco Resources Limited ("Nuinsco"), Crowflight Minerals Corporation ("Crowflight") and CaNickel. The focus here is on historical exploration work completed in the Bucko Lake, Bowden Lake, M11A and Apex areas (Figure 6.1). Historical exploration work completed in the Halfway Lake area is not summarized here, since that Property is no longer contiguous with the Bucko Lake Property (the intervening mining claims that were owned by CaNickel expired and have not been re-staked).

**FIGURE 6.1 BUCKO-BOWDEN-HALFWAY LAKES AREA PROPERTIES AND MINING CLAIMS IN 2012**




***Source:*** *Griffin et al. (2012). Bucko Lake Mine at UTM NAD83 ZONE 14N 521,890 E, 6,081,260 N*

## 6.1 EXPLORATION HISTORY

### 6.1.1 Bucko Lake Area

#### 6.1.1.1 Falconbridge - CMML 1959–1994

CMML first acquired the lands containing the Bucko Lake Deposit in 1959. In 1961, Falconbridge drilled hole M77-B, which intersected 1.54% Ni over 6.3 m. Falconbridge optioned the Property in 1962. Subsequently, Falconbridge and CMML conducted numerous follow-up ground and airborne-based magnetic, electromagnetic, seismic refraction and induced polarization surveys on the claims.

The Bucko Lake mineralization was discovered during a 1964 drill program that tested priority geophysical targets. After completion of a 53-hole drilling program totalling 21,050 m in 1970, Falconbridge decided to go underground and explore at depth. In 1971–1972, an all-weather access road was developed and a three-compartment shaft was sunk to 356.6 m below surface in the country rock gneisses. Over 900 m of drift was developed on the 305 m (1,000 ft) level and a diamond drill program of 61 holes totalling 12,738.5 m was completed. The development was largely in the country rock gneisses, however, it cut the mineralization host ultramafic unit at the extreme south end of the Bucko Lake Deposit. In 1974, the shaft was capped, allowed to flood and the site demobilized.

Falconbridge and CMML recommenced work on the Property in 1990, when additional geophysical surveys and nine drill holes and three wedges totalling 6,880 m were completed. By late-1994, the Property had become dormant again. In total, Falconbridge and CMML completed 130 drill holes totalling 43,090.5 m. For information regarding the Falconbridge-CMML Drill hole collar information and assay intersections, readers are referred to the voluminous Appendices IV and V in Geologica (2004).

#### 6.1.1.2 Nuinsco 2000–2001

In 2000, Nuinsco conducted a due-diligence drilling program consisting of 13 drill holes totalling 4,627.5 m to confirm the continuity of nickel sulphide mineralization. They followed-up in Q1 2001 with an additional 10 drill holes totalling 2,403.6 m, for an overall total of 7,031.1 m of drilling completed. The drill collar information and assay results are presented in Table 6.1. Nuinsco contracted Roscoe Postle Associates Inc. ("RPA") for estimation of Mineral Resources on the Bucko Lake Property.

**TABLE 6.1**
**NUINSCO 2000–2001 DRILL HOLE COLLAR LOCATIONS, LENGTHS AND ORIENTATION**

| Drill Hole | Year | Easting (m)* | Northing (m)* | Elevation (m)* | Length (m) | Azimuth (deg) | Dip (deg) |
|---|---|---|---|---|---|---|---|
| N-01 | 2000 | 2,443 | 81,539 | 3,048.45 | 407 | 270 | -57 |
| N-02 | 2000 | 2,342 | 81,561 | 3,044.39 | 302 | 265 | -58 |

| **TABLE 6.1<br>NUINSCO 2000–2001 DRILL HOLE COLLAR LOCATIONS, LENGTHS AND ORIENTATION** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drill Hole** | **Year** | **Easting (m)*** | **Northing (m)*** | **Elevation (m)*** | **Length (m)** | **Azimuth (deg)** | **Dip (deg)** |
| N-03 | 2000 | 2,342 | 81,561 | 3,044.39 | 287 | 265 | -52 |
| N-04 | 2000 | 2,341 | 81,594 | 3,044.51 | 317 | 265 | -58 |
| N-05 | 2000 | 2,343 | 81,598 | 3,044.66 | 289 | 265 | -50 |
| N-06 | 2000 | 2,318 | 81,728 | 3,043.56 | 332 | 264 | -52 |
| N-07 | 2000 | 2,443 | 81,511 | 3,047.91 | 404 | 270 | -58 |
| N-08 | 2000 | 2,300 | 81,750 | 3,043.56 | 365 | 270 | -48 |
| N-09 | 2000 | 2,323 | 81,732 | 3,043.56 | 356 | 270 | -52 |
| N-10 | 2000 | 2,441 | 81,532 | 3,048.27 | 413 | 270 | -58 |
| N-11 | 2000 | 2,424 | 81,531 | 3,047.56 | 382 | 270 | -58 |
| N-12 | 2000 | 2,423 | 81,539 | 3,047.56 | 375.5 | 270 | -57 |
| N-13 | 2000 | 2,433 | 81,536 | 3,047.94 | 398 | 270 | -57 |
| N-14 | 2001 | 2,324 | 81,590 | 3,043.84 | 266 | 270 | -50 |
| N-15 | 2001 | 2,332 | 81,590 | 3,043.84 | 251 | 270 | -45 |
| N-16 | 2001 | 2,333 | 81,621 | 3,044.56 | 280 | 270 | -50 |
| N-17 | 2001 | 2,325 | 81,561 | 3,043.56 | 127.28 | 270 | -45 |
| N-18 | 2001 | 2,326 | 81,564 | 3,043.56 | 226 | 270 | -45 |
| N-19 | 2001 | 2,070 | 82,113 | 3,043.56 | 153.3 | 270 | -55 |
| N-20 | 2001 | 2,331 | 81,621 | 3,044.56 | 255 | 270 | -45 |
| N-21 | 2001 | 2,334 | 81,606 | 3,044.37 | 267 | 270 | -50 |
| N-22 | 2001 | 2,338 | 81,637 | 3,045.25 | 265 | 270 | -50 |
| N-23 | 2001 | 2,347 | 81,652 | 3,045.56 | 313 | 270 | -48 |

***Source:*** *Geologica (2004)*
***** *Local mine grid.*

#### 6.1.1.3 Crowflight 2004 to 2008

Crowflight became involved with the Property in 2004 with operating partner Falconbridge (Xstrata Nickel from 2007) and conducted surface diamond drilling. From 2004 to 2005, Crowflight completed 77 drill holes totalling 32,246 m to in-fill areas of known mineralization, expand Mineral Resources and Mineral Reserves, and obtain sample material for metallurgical testing.

In 2006, the M11A North Deposit was discovered in drilling and follow-up drill programs were completed. In 2008, Crowflight conducted underground in-fill drilling on the 1,000 ft (304.8 m) level to delineate Mineral Reserves in areas of planned initial production, and to increase the geotechnical database for ground conditions. In total, 88 drill holes totalling 14,198.2 m were completed. The collar information for the 2004 to 2008 drill holes is given in Table 6.2. The assay results for these drill holes are summarized in Tables 6.3 to 6.5.

**TABLE 6.2**
**BUCKO LAKE 2004–2008 DRILL HOLE COLLARS, LENGTH AND ORIENTATION**

| Year | Drill Hole ID | Local Mine Coordinate System | | | Length (m) | Azimuth (deg) | Dip (deg) |
|---|---|---|---|---|---|---|---|
| | | Easting (m) | Northing (m) | Elevation (m) | | | |
| 2004 | BK04-01 | 2,275.0 | 81,255.5 | 3,045.2 | 629.0 | 344.2 | -59.8 |
| 2005 | BK05-01 | 2,511.0 | 81,748.0 | 3,043.6 | 653.0 | 262.6 | -70.0 |
| 2005 | BK05-02 | 2,433.0 | 81,778.0 | 3,046.0 | 68.0 | 274.6 | -65.0 |
| 2005 | BK05-02A | 2,435.0 | 81,778.0 | 3,046.6 | 505.0 | 274.6 | -65.0 |
| 2005 | BK05-03 | 2,473.9 | 81,728.4 | 3,050.2 | 656.0 | 266.3 | -66.0 |
| 2005 | BK05-04 | 2,638.0 | 81,661.0 | 3,043.6 | 362.0 | 261.5 | -65.0 |
| 2005 | BK05-04A | 2,639.2 | 81,662.7 | 3,043.6 | 701.0 | 261.5 | -65.0 |
| 2005 | BK05-05 | 2,576.9 | 81,721.0 | 3,043.6 | 267.3 | 265.0 | -65.0 |
| 2005 | BK05-06 | 2,577.4 | 81,771.6 | 3,043.6 | 764.0 | 258.7 | -65.0 |
| 2005 | BK05-07 | 2,242.0 | 81,613.0 | 3,043.6 | 437.0 | 313.0 | -48.0 |
| 2005 | BK05-08 | 2,240.0 | 81,615.0 | 3,043.6 | 500.0 | 322.6 | -50.0 |
| 2005 | BK05-09 | 2,388.0 | 81,597.0 | 3,047.1 | 453.0 | 265.8 | -67.3 |
| 2005 | BK05-10 | 2,505.0 | 81,604.1 | 3,046.1 | 616.4 | 260.0 | -70.0 |
| 2005 | BK05-11 | 2,412.0 | 81,544.0 | 3,047.0 | 487.0 | 260.0 | -70.0 |
| 2005 | BK05-12 | 2,451.9 | 81,627.4 | 3,047.1 | 484.0 | 260.0 | -70.0 |
| 2005 | BK05-13 | 2,365.0 | 81,680.0 | 3,044.8 | 591.0 | 270.0 | -70.0 |
| 2005 | BK05-14 | 2,365.0 | 81,681.0 | 3,044.7 | 528.0 | 275.0 | -64.0 |
| 2005 | BK05-15 | 2,395.0 | 81,745.0 | 3,044.7 | 598.0 | 260.0 | -70.0 |
| 2005 | BK05-16 | 2,392.0 | 81,581.0 | 3,047.0 | 497.0 | 265.0 | -72.0 |
| 2005 | BK05-17 | 2,424.0 | 81,547.0 | 3,047.9 | 500.0 | 265.0 | -70.0 |
| 2005 | BK05-18 | 2,440.0 | 81,553.0 | 3,048.1 | 492.2 | 265.0 | -70.0 |
| 2005 | BK05-19A | 2,470.1 | 81,523.8 | 3,047.6 | 589.4 | 265.0 | -70.0 |
| 2005 | BX05-01 | 2,129.9 | 82,207.6 | 3,043.6 | 360.0 | 281.4 | -51.0 |
| 2005 | BX05-02 | 2,271.4 | 81,084.5 | 3,046.1 | 246.0 | 262.4 | -51.0 |
| 2005 | BX05-03 | 2,374.7 | 81,094.4 | 3,047.1 | 296.5 | 266.6 | -51.0 |
| 2005 | N05-12A | 2,423.0 | 81,539.0 | 3,047.0 | 427.0 | 267.6 | -57.0 |
| 2005 | N05-12B | 2,423.0 | 81,539.0 | 3,047.0 | 380.0 | 267.6 | -57.0 |
| 2005 | N05-12C | 2,423.0 | 81,539.0 | 3,047.0 | 378.0 | 267.6 | -57.0 |
| 2005 | N05-15A | 2,332.0 | 81,590.0 | 3,043.0 | 274.0 | 270.0 | -45.0 |
| 2005 | N05-15B | 2,332.0 | 81,590.0 | 3,043.0 | 252.4 | 270.0 | -45.0 |
| 2005 | N05-21A | 2,336.0 | 81,609.0 | 3,044.0 | 304.0 | 270.0 | -50.0 |
| 2005 | N05-21B | 2,336.0 | 81,609.0 | 3,044.0 | 341.0 | 270.0 | -50.0 |
| 2006 | BK06-20 | 2,528.6 | 81,502.8 | 3,045.1 | 99.0 | 265.0 | -70.0 |
| 2006 | BK06-20B | 2,519.0 | 81,502.8 | 3,045.1 | 668.0 | 265.0 | -70.0 |
| 2006 | BK06-21 | 2,508.1 | 81,563.5 | 3,046.4 | 651.0 | 265.0 | -70.0 |
| 2006 | BK06-22 | 2,507.0 | 81,482.0 | 3,045.2 | 63.0 | 265.0 | -70.0 |

**TABLE 6.2**
**BUCKO LAKE 2004–2008 DRILL HOLE COLLARS, LENGTH AND ORIENTATION**

| Year | Drill Hole ID | Local Mine Coordinate System | | | Length (m) | Azimuth (deg) | Dip (deg) |
|---|---|---|---|---|---|---|---|
| | | Easting (m) | Northing (m) | Elevation (m) | | | |
| 2006 | BK06-22A | 2,512.0 | 81,480.0 | 3,045.2 | 667.0 | 265.0 | -70.0 |
| 2006 | BK06-23 | 2,456.9 | 81,744.0 | 3,047.7 | 543.0 | 324.0 | -70.0 |
| 2006 | BK06-24 | 2,421.8 | 81,669.0 | 3,047.6 | 592.0 | 265.0 | -70.0 |
| 2006 | BK06-25 | 2,421.9 | 81,668.7 | 3,047.6 | 618.0 | 272.0 | -72.0 |
| 2006 | BK06-26 | 2,508.0 | 81,444.0 | 3,045.2 | 632.3 | 265.0 | -70.0 |
| 2006 | BK06-27 | 2,494.9 | 81,623.5 | 3,046.5 | 645.0 | 265.0 | -70.0 |
| 2006 | BK06-28 | 2,593.0 | 81,529.0 | 3,043.6 | 718.3 | 260.0 | -70.0 |
| 2006 | BK06-28B | 2,588.8 | 81,533.4 | 3,043.6 | 770.7 | 260.0 | -70.0 |
| 2006 | BK06-29 | 2,475.7 | 81,643.9 | 3,046.6 | 596.5 | 305.0 | -70.0 |
| 2006 | BK06-30 | 2,565.0 | 81,600.0 | 3,044.7 | 804.0 | 260.0 | -70.0 |
| 2006 | BK06-31 | 2,427.7 | 81,665.2 | 3,047.6 | 608.0 | 305.0 | -65.0 |
| 2006 | BK06-32 | 2,535.3 | 81,519.3 | 3,045.1 | 729.0 | 300.0 | -62.0 |
| 2006 | BK06-33 | 2,443.0 | 81,569.0 | 3,048.1 | 660.0 | 300.0 | -62.0 |
| 2006 | BK06-34 | 2,410.0 | 81,750.0 | 3,046.1 | 393.0 | 310.0 | -50.0 |
| 2006 | BK06-35 | 2,312.0 | 81,690.0 | 3,048.5 | 369.0 | 315.0 | -45.0 |
| 2006 | BK06-36 | 2,312.0 | 81,690.0 | 3,048.5 | 423.0 | 305.0 | -45.0 |
| 2006 | BK06-37 | 2,312.0 | 81,690.0 | 3,048.5 | 387.0 | 327.0 | -47.0 |
| 2006 | BK06-38 | 2,537.4 | 81,539.1 | 3,045.2 | 738.0 | 261.0 | -70.0 |
| 2006 | BK06-39 | 2,433.2 | 81,636.8 | 3,047.4 | 600.0 | 300.0 | -56.0 |
| 2006 | BK06-40 | 2,400.0 | 81,630.0 | 3,047.7 | 591.0 | 298.0 | -60.0 |
| 2006 | BX06-04 | 2,427.8 | 81,100.3 | 3,046.2 | 401.0 | 265.0 | -60.0 |
| 2006 | BX06-05 | 2,643.0 | 82,387.0 | 3,043.6 | 533.0 | 260.0 | -60.0 |
| 2006 | BX06-06 | 2,124.0 | 82,947.0 | 3,045.3 | 296.0 | 360.0 | -50.0 |
| 2006 | BX06-07 | 2,248.0 | 83,273.0 | 3,045.6 | 250.0 | 360.0 | -50.0 |
| 2006 | CP-01 | 2,138.0 | 81,817.0 | 3,043.6 | 90.0 | 0.0 | -90.0 |
| 2006 | CP-02 | 2,153.0 | 81,716.0 | 3,043.6 | 84.0 | 0.0 | -90.0 |
| 2006 | CP-03 | 2,167.0 | 81,617.0 | 3,043.6 | 60.0 | 0.0 | -90.0 |
| 2006 | CP-04 | 2,181.0 | 81,500.0 | 3,043.6 | 75.0 | 0.0 | -90.0 |
| 2007 | BK07-41 | 2,230.0 | 81,750.0 | 3,043.6 | 281.0 | 300.0 | -50.0 |
| 2007 | BK07-42 | 2,250.0 | 81,725.0 | 3,043.6 | 339.0 | 312.0 | -55.0 |
| 2007 | BK07-45 | 1,975.0 | 81,500.0 | 3,045.1 | 546.0 | 70.0 | -65.0 |
| 2007 | BK07-46 | 2,015.0 | 81,650.0 | 3,043.6 | 549.0 | 90.0 | -75.0 |
| 2008 | BUD-1 | 2,340.0 | 81,383.0 | 2,748.0 | 210.0 | 270.0 | 19.0 |
| 2008 | BUD-10 | 2,339.4 | 81,624.7 | 2,751.8 | 210.0 | 263.0 | 29.0 |
| 2008 | BUD-11 | 2,339.2 | 81,624.7 | 2,751.6 | 192.0 | 263.0 | 24.0 |
| 2008 | BUD-12 | 2,339.0 | 81,624.6 | 2,751.4 | 171.0 | 263.0 | 18.0 |
| 2008 | BUD-13 | 2,338.9 | 81,624.6 | 2,751.1 | 155.0 | 263.0 | 12.0 |

**TABLE 6.2**
**BUCKO LAKE 2004–2008 DRILL HOLE COLLARS, LENGTH AND ORIENTATION**

| Year | Drill Hole ID | Local Mine Coordinate System | | | Length (m) | Azimuth (deg) | Dip (deg) |
|---|---|---|---|---|---|---|---|
| | | Easting (m) | Northing (m) | Elevation (m) | | | |
| 2008 | BUD-14 | 2,338.6 | 81,624.6 | 2,750.8 | 150.0 | 263.0 | 5.0 |
| 2008 | BUD-15 | 2,338.5 | 81,624.6 | 2,750.5 | 146.0 | 263.0 | -1.0 |
| 2008 | BUD-16 | 2,338.6 | 81,624.8 | 2,750.3 | 147.0 | 263.0 | -8.0 |
| 2008 | BUD-17 | 2,338.6 | 81,624.8 | 2,750.2 | 147.0 | 263.0 | -15.0 |
| 2008 | BUD-18 | 2,338.6 | 81,624.8 | 2,750.0 | 153.0 | 263.0 | -24.0 |
| 2008 | BUD-19 | 2,338.7 | 81,624.8 | 2,749.9 | 159.0 | 263.0 | -30.0 |
| 2008 | BUD-2 | 2,340.0 | 81,383.0 | 2,746.0 | 170.6 | 270.0 | -16.0 |
| 2008 | BUD-20 | 2,338.7 | 81,624.8 | 2,749.8 | 162.0 | 263.0 | -37.0 |
| 2008 | BUD-21 | 2,339.3 | 81,625.4 | 2,751.6 | 213.0 | 270.0 | 31.0 |
| 2008 | BUD-22 | 2,339.2 | 81,625.4 | 2,751.4 | 198.7 | 270.0 | 22.0 |
| 2008 | BUD-23 | 2,339.0 | 81,625.4 | 2,751.0 | 240.0 | 270.0 | 18.0 |
| 2008 | BUD-24 | 2,339.0 | 81,625.4 | 2,750.7 | 171.0 | 270.0 | 10.0 |
| 2008 | BUD-25 | 2,339.0 | 81,625.6 | 2,750.5 | 162.0 | 270.0 | 5.0 |
| 2008 | BUD-26 | 2,338.8 | 81,625.4 | 2,750.4 | 240.0 | 270.0 | -7.0 |
| 2008 | BUD-27 | 2,338.7 | 81,625.4 | 2,750.2 | 153.0 | 270.0 | -13.0 |
| 2008 | BUD-28 | 2,338.7 | 81,625.4 | 2,750.1 | 150.0 | 270.0 | -20.0 |
| 2008 | BUD-29 | 2,338.8 | 81,625.4 | 2,750.0 | 153.0 | 270.0 | -27.0 |
| 2008 | BUD-3 | 2,340.0 | 81,383.0 | 2,747.0 | 173.9 | 260.0 | 0.0 |
| 2008 | BUD-30 | 2,338.8 | 81,625.4 | 2,749.8 | 197.0 | 270.0 | -33.0 |
| 2008 | BUD-31 | 2,339.0 | 81,625.4 | 2,749.3 | 173.9 | 270.0 | -46.0 |
| 2008 | BUD-32 | 2,339.4 | 81,625.5 | 2,751.8 | 203.4 | 277.0 | 24.0 |
| 2008 | BUD-33 | 2,339.5 | 81,625.5 | 2,751.5 | 195.2 | 279.0 | 20.0 |
| 2008 | BUD-34 | 2,339.1 | 81,625.5 | 2,751.4 | 186.0 | 277.0 | 15.0 |
| 2008 | BUD-35 | 2,339.1 | 81,625.5 | 2,751.1 | 180.0 | 279.0 | 11.0 |
| 2008 | BUD-36 | 2,339.1 | 81,625.5 | 2,750.9 | 167.7 | 277.0 | 7.0 |
| 2008 | BUD-37 | 2,339.0 | 81,625.6 | 2,750.6 | 156.0 | 277.0 | 2.0 |
| 2008 | BUD-38 | 2,339.7 | 81,564.4 | 2,751.6 | 198.0 | 263.0 | 29.0 |
| 2008 | BUD-39 | 2,339.6 | 81,564.4 | 2,751.3 | 180.0 | 263.0 | 25.0 |
| 2008 | BUD-4 | 2,340.0 | 81,383.0 | 2,747.0 | 171.0 | 280.0 | 0.0 |
| 2008 | BUD-40 | 2,339.4 | 81,564.4 | 2,751.1 | 174.0 | 263.0 | 19.0 |
| 2008 | BUD-41 | 2,339.3 | 81,564.4 | 2,750.9 | 156.0 | 263.0 | 11.0 |
| 2008 | BUD-42 | 2,339.1 | 81,564.3 | 2,750.7 | 144.0 | 263.0 | 7.0 |
| 2008 | BUD-43 | 2,338.9 | 81,564.6 | 2,750.3 | 135.0 | 263.0 | 0.0 |
| 2008 | BUD-44 | 2,339.7 | 81,564.9 | 2,751.5 | 210.0 | 270.0 | 30.0 |
| 2008 | BUD-45 | 2,339.6 | 81,564.9 | 2,751.4 | 201.0 | 270.0 | 25.0 |
| 2008 | BUD-46 | 2,340.2 | 81,503.8 | 2,750.7 | 168.0 | 270.0 | 32.0 |
| 2008 | BUD-47 | 2,339.9 | 81,503.9 | 2,750.5 | 156.0 | 270.0 | 27.0 |

| **TABLE 6.2<br>BUCKO LAKE 2004–2008 DRILL HOLE COLLARS, LENGTH AND ORIENTATION** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **Drill Hole ID** | **Local Mine Coordinate System** | | | **Length (m)** | **Azimuth (deg)** | **Dip (deg)** |
| | | **Easting (m)** | **Northing (m)** | **Elevation (m)** | | | |
| 2008 | BUD-48 | 2,339.8 | 81,503.9 | 2,750.3 | 147.0 | 270.0 | 22.0 |
| 2008 | BUD-49 | 2,339.5 | 81,503.8 | 2,750.1 | 135.0 | 270.0 | 17.0 |
| 2008 | BUD-5 | 2,337.0 | 81,442.0 | 2,747.0 | 192.0 | 270.0 | -18.0 |
| 2008 | BUD-50 | 2,339.4 | 81,503.9 | 2,749.8 | 126.0 | 270.0 | 9.0 |
| 2008 | BUD-51 | 2,338.9 | 81,504.2 | 2,748.9 | 183.0 | 270.0 | -10.0 |
| 2008 | BUD-52 | 2,338.9 | 81,504.2 | 2,748.6 | 171.0 | 270.0 | -20.0 |
| 2008 | BUD-53 | 2,338.9 | 81,504.2 | 2,748.4 | 131.4 | 270.0 | -30.0 |
| 2008 | BUD-54 | 2,338.8 | 81,504.2 | 2,748.0 | 142.0 | 270.0 | -39.0 |
| 2008 | BUD-55 | 2,340.6 | 81,504.1 | 2,751.1 | 156.0 | 279.0 | 38.0 |
| 2008 | BUD-56 | 2,340.5 | 81,504.2 | 2,750.9 | 171.0 | 279.0 | 34.0 |
| 2008 | BUD-57 | 2,340.5 | 81,504.2 | 2,750.8 | 158.0 | 279.0 | 30.0 |
| 2008 | BUD-58 | 2,340.4 | 81,504.2 | 2,750.6 | 153.0 | 279.0 | 25.0 |
| 2008 | BUD-59 | 2,339.7 | 81,504.4 | 2,750.3 | 141.0 | 279.0 | 19.0 |
| 2008 | BUD-6 | 2,338.0 | 81,442.0 | 2,747.0 | 117.0 | 262.0 | 0.0 |
| 2008 | BUD-60 | 2,339.5 | 81,504.5 | 2,750.0 | 132.0 | 279.0 | 13.0 |
| 2008 | BUD-61 | 2,339.2 | 81,504.6 | 2,749.5 | 122.5 | 279.0 | 5.0 |
| 2008 | BUD-62 | 2,339.1 | 81,504.6 | 2,749.1 | 120.0 | 279.0 | -5.0 |
| 2008 | BUD-63 | 2,339.1 | 81,504.6 | 2,748.8 | 126.0 | 279.0 | -15.0 |
| 2008 | BUD-64 | 2,339.1 | 81,504.4 | 2,748.5 | 132.0 | 271.0 | -25.0 |
| 2008 | BUD-65 | 2,339.1 | 81,504.5 | 2,748.3 | 144.0 | 279.0 | -35.0 |
| 2008 | BUD-66 | 2,339.2 | 81,504.5 | 2,748.0 | 159.0 | 279.0 | -41.7 |
| 2008 | BUD-67 | 2,339.2 | 81,564.8 | 2,751.0 | 231.0 | 272.0 | 14.0 |
| 2008 | BUD-68 | 2,339.1 | 81,565.0 | 2,750.6 | 159.0 | 273.0 | 6.0 |
| 2008 | BUD-69 | 2,339.8 | 81,565.0 | 2,751.6 | 204.0 | 280.0 | 27.0 |
| 2008 | BUD-7 | 2,337.0 | 81,442.0 | 2,747.0 | 129.0 | 252.0 | 0.0 |
| 2008 | BUD-70 | 2,339.7 | 81,565.0 | 2,751.3 | 195.0 | 280.0 | 22.0 |
| 2008 | BUD-71 | 2,339.5 | 81,565.0 | 2,751.1 | 174.0 | 282.0 | 16.0 |
| 2008 | BUD-72 | 2,339.2 | 81,565.1 | 2,750.8 | 159.0 | 280.0 | 10.0 |
| 2008 | BUD-73 | 2,339.1 | 81,565.2 | 2,750.5 | 150.0 | 282.0 | 3.0 |
| 2008 | BUD-74 | 2,346.5 | 81,533.7 | 2,750.7 | 177.0 | 271.0 | 22.0 |
| 2008 | BUD-75 | 2,346.4 | 81,533.7 | 2,750.5 | 165.0 | 270.0 | 18.0 |
| 2008 | BUD-76 | 2,346.1 | 81,533.7 | 2,750.0 | 153.0 | 271.0 | 8.0 |
| 2008 | BUD-77 | 2,346.0 | 81,533.8 | 2,749.9 | 252.0 | 270.0 | 4.0 |
| 2008 | BUD-78 | 2,344.7 | 81,597.5 | 2,751.4 | 201.0 | 270.0 | 27.0 |
| 2008 | BUD-79 | 2,344.4 | 81,597.5 | 2,750.8 | 165.0 | 270.0 | 15.0 |
| 2008 | BUD-8 | 2,339.6 | 81,624.7 | 2,752.2 | 244.5 | 263.0 | 37.0 |
| 2008 | BUD-80 | 2,344.3 | 81,597.5 | 2,750.2 | 222.0 | 270.0 | 2.0 |

| TABLE 6.2<br>BUCKO LAKE 2004–2008 DRILL HOLE COLLARS, LENGTH AND ORIENTATION | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **Drill Hole ID** | **Local Mine Coordinate System** | | | **Length (m)** | **Azimuth (deg)** | **Dip (deg)** |
| | | **Easting (m)** | **Northing (m)** | **Elevation (m)** | | | |
| 2008 | BUD-9 | 2,339.4 | 81,624.7 | 2,752.0 | 240.0 | 263.0 | 33.0 |
| 2008 | RAMP08-01 | 1,938.7 | 81,460.2 | 3,044.6 | 21.0 | 335.0 | -60.0 |
| 2008 | RAMP08-02 | 1,919.2 | 81,506.3 | 3,043.6 | 32.0 | 325.5 | -59.4 |
| 2008 | RAMP08-03 | 1,898.6 | 81,550.3 | 3,043.6 | 38.7 | 345.0 | -59.4 |
| 2008 | RAMP08-04 | 1,891.2 | 81,569.1 | 3,043.6 | 43.9 | 335.0 | -60.0 |
| 2008 | RAMP08-05 | 1,878.7 | 81,598.7 | 3,043.6 | 50.6 | 335.0 | -59.4 |
| 2008 | RAMP08-06 | 1,814.4 | 81,723.1 | 3,044.1 | 77.7 | 335.0 | -60.0 |
| 2008 | RAMP08-07 | 1,862.0 | 81,977.0 | 3,043.6 | 182.2 | 55.0 | -55.0 |
| 2008 | VRH-01 | 2,026.4 | 81,370.3 | 3,047.9 | 93.3 | 128.7 | -80.6 |
| **Total** | **156 holes** | | | | **45,905** | | |

***Source:*** *P&E 2009*

| TABLE 6.3<br>SIGNIFICANT ASSAY RESULTS FOR WINTER 2004–2005<br>BUCKO LAKE DEPOSIT | | | | | |
|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Length (m)** | **Ni (%)** | **Cu (%)** |
| BK04-01 | 198.5 | 201.5 | 3.0 | 1.19 | 0.07 |
| BK04-01 | 204.5 | 208.0 | 3.5 | 1.14 | 0.07 |
| BK04-01 | 210.0 | 214.0 | 4.0 | 0.95 | 0.06 |
| BK04-01 | 240.0 | 242.0 | 2.0 | 1.04 | 0.08 |
| BK04-01 | 245.0 | 250.0 | 5.0 | 1.08 | 0.06 |
| BK04-01 | 291.3 | 297.3 | 6.0 | 1.20 | 0.10 |
| BK05-01 | 590.2 | 612.3 | 22.1 | 1.01 | 0.07 |
| BK05-02A | 303.5 | 330.0 | 26.5 | 1.32 | 0.10 |
| including | 310.6 | 315.8 | 5.2 | 1.70 | 0.13 |
| including | 315.8 | 322.0 | 6.2 | 1.07 | 0.09 |
| including | 322.0 | 330.0 | 8.0 | 1.73 | 0.12 |
| and | 369.7 | 393.9 | 24.2 | 0.97 | 0.07 |
| including | 383.0 | 383.3 | 0.3 | 6.93 | 0.06 |
| BK05-03 | 521.8 | 524.7 | 2.9 | 1.23 | 0.08 |
| BK05-03 | 531.2 | 534.7 | 3.5 | 1.74 | 0.08 |
| BK05-03 | 560.4 | 569.1 | 8.7 | 1.41 | 0.07 |
| BK05-03 | 584.3 | 588.1 | 3.8 | 1.07 | 0.08 |
| BK05-03 | 591.3 | 595.2 | 3.9 | 1.29 | 0.06 |

**TABLE 6.3**
**SIGNIFICANT ASSAY RESULTS FOR WINTER 2004–2005**
**BUCKO LAKE DEPOSIT**

| Drill Hole ID | From (m) | To (m) | Length (m) | Ni (%) | Cu (%) |
|---|---|---|---|---|---|
| BK05-03 | 600.9 | 605.5 | 4.6 | 1.20 | 0.16 |
| BK05-04A | 615.4 | 618.6 | 3.2 | 1.43 | 0.08 |
| BK05-04A | 629.1 | 647.5 | 18.4 | 1.18 | 0.09 |
| BK05-04A | 652.3 | 660.5 | 8.2 | 1.21 | 0.94 |
| BK05-05 | drill hole abandoned | | | | |
| BK05-06 | 630.4 | 633.8 | 3.4 | 1.05 | 0.10 |
| BK05-07 | 149.8 | 177.5 | 27.7 | 0.81 | 0.07 |
| including | 153.8 | 165.0 | 11.2 | 1.09 | 0.10 |
| | 260.0 | 268.0 | 8.0 | 0.92 | 0.05 |
| BK05-08 | 181.9 | 196.1 | 14.2 | 1.02 | 0.08 |
| | 251.5 | 254.0 | 2.5 | 0.90 | 0.06 |
| BX05-01 | no significant results | | | | |
| BX05-02 | 157.3 | 162.8 | 5.5 | 1.13 | 0.09 |
| BX05-03 | 254.9 | 257.8 | 2.9 | 0.91 | 0.04 |

***Source:*** *P&E (2005)*

**TABLE 6.4**
**SIGNIFICANT ASSAY RESULTS BUCKO LAKE DEPOSIT,**
**SUMMER 2005 DRILL PROGRAM**

| Drill Hole ID | From (m) | To (m) | Core Length (m) | Ni (%) | Cu (%) | Pd+Pt (g/t) |
|---|---|---|---|---|---|---|
| BK05-09 | 321.2 | 377.2 | 56.0 | 1.98 | 0.13 | 0.55 |
| including | 357.3 | 371.3 | 14.0 | 4.44 | 0.16 | 0.98 |
| including | 341.1 | 349.0 | 7.9 | 1.72 | 0.17 | 0.42 |
| BK05-10 | 532.9 | 537.9 | 5.0 | 1.62 | 0.10 | 0.28 |
| and | 568.0 | 576.0 | 8.0 | 1.20 | 0.05 | 0.26 |
| including | 568.0 | 572.0 | 4.0 | 1.53 | 0..06 | 0.36 |
| BK05-11 | 346.0 | 366.7 | 20.7 | 3.28 | 0.25 | 1.05 |
| including | 350.0 | 366.7 | 16.7 | 3.82 | 0.29 | 1.22 |
| including | 355.0 | 366.7 | 11.7 | 5.11 | 0.40 | 1.62 |
| BK05-12 | 427.0 | 430.0 | 3.0 | 1.28 | 0.11 | 0.39 |
| and | 459.0 | 464.0 | 5.0 | 1.60 | 0.12 | 0.57 |
| BK05-13 | 403.6 | 410.0 | 6.4 | 1.56 | 0.22 | 1.21 |
| including | 407.9 | 410.0 | 2.1 | 2.00 | 0.15 | 2.29 |
| and | 439.1 | 448.0 | 8.9 | 1.79 | 0.20 | 0.94 |

| **Table 6.4<br>Significant Assay Results Bucko Lake Deposit,<br>Summer 2005 Drill Program** | | | | | | |
|---|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Core Length (m)** | **Ni (%)** | **Cu (%)** | **Pd+Pt (g/t)** |
| including | 439.1 | 443.0 | 3.9 | 1.94 | 0.20 | 1.00 |
| and | 445.0 | 448.0 | 3.0 | 2.00 | 0.25 | 1.16 |
| BK05-14 | 360.0 | 367.2 | 7.2 | 2.25 | 0.22 | 0.77 |
| and | 390.0 | 397.6 | 7.6 | 1.61 | 0.20 | 0.95 |
| including | 393.0 | 397.6 | 4.6 | 2.03 | 0.26 | 1.27 |
| BK05-15 | abandoned due to technical difficulties | | | | | |
| BK05-16 | 407.7 | 422.9 | 15.2 | 2.05 | 0.30 | 0.67 |
| including | 419.1 | 422.9 | 3.8 | 3.46 | 0.17 | 0.98 |
| BK05-17 | 368.7 | 392.0 | 23.3 | 2.89 | 0.11 | 0.78 |
| including | 377.0 | 386.6 | 9.6 | 5.25 | 0.15 | 1.19 |
| and | 415.4 | 429.2 | 13.8 | 1.67 | 0.14 | 0.61 |
| BK05-18 | 397.0 | 410.0 | 13.0 | 2.27 | 0.19 | 0.43 |
| including | 403.7 | 410.0 | 6.3 | 2.92 | 0.27 | 0.58 |

***Source:*** *P&E 2005*

| **Table 6.5<br>Bucko Lake 2008 Underground Drill Program<br>Highlight Intersections** | | | | | |
|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Core Length (m)*** | **Core Length (ft)** | **Ni (%)** |
| BUD-1 | 64.42 | 70.00 | 5.58 | 18.31 | 0.98 |
| BUD-1 | 77.43 | 84.85 | 7.42 | 24.34 | 1.07 |
| BUD-1 | 92.81 | 99.20 | 6.39 | 20.96 | 1.14 |
| BUD-2 | 58.82 | 66.50 | 7.68 | 25.20 | 1.08 |
| BUD-2 | 71.41 | 75.60 | 4.19 | 13.75 | 1.08 |
| BUD-2 | 80.30 | 83.30 | 3.00 | 9.84 | 0.89 |
| BUD-3 | 61.68 | 65.72 | 4.04 | 13.25 | 0.90 |
| BUD-3 | 73.95 | 78.50 | 4.55 | 14.93 | 1.06 |
| BUD-3 | 73.95 | 82.64 | 8.69 | 28.51 | 0.91 |
| BUD-4 | 53.31 | 66.50 | 13.19 | 43.27 | 0.83 |
| BUD-4 | 78.50 | 86.00 | 7.50 | 24.61 | 0.87 |
| BUD-5 | 55.69 | 58.00 | 2.31 | 7.58 | 1.14 |
| BUD-6 | 78.00 | 79.35 | 1.35 | 4.43 | 1.03 |

**TABLE 6.5**
**BUCKO LAKE 2008 UNDERGROUND DRILL PROGRAM**
**HIGHLIGHT INTERSECTIONS**

| Drill Hole ID | From (m) | To (m) | Core Length (m)* | Core Length (ft) | Ni (%) |
|---|---|---|---|---|---|
| BUD-7 | 87.20 | 90.29 | 3.09 | 10.14 | 1.06 |
| BUD-8 | 166.88 | 170.33 | 3.45 | 11.32 | 2.17 |
| BUD-8 | 193.00 | 202.27 | 9.27 | 30.41 | 2.82 |
| BUD-8 | 204.50 | 207.48 | 2.98 | 9.78 | 0.82 |
| BUD-9 | 135.71 | 147.84 | 12.13 | 39.80 | 1.44 |
| BUD-9 | 172.82 | 177.80 | 4.98 | 16.34 | 1.97 |
| BUD-9 | 182.80 | 186.00 | 3.20 | 10.50 | 1.37 |
| BUD-10 | 134.80 | 141.00 | 6.20 | 20.34 | 1.55 |
| BUD-11 | 109.49 | 115.75 | 6.26 | 20.54 | 1.13 |
| BUD-11 | 126.50 | 133.09 | 6.59 | 21.62 | 1.36 |
| BUD-12 | 96.89 | 101.57 | 4.68 | 15.35 | 2.56 |
| BUD-12 | 96.89 | 114.95 | 18.06 | 59.25 | 1.43 |
| BUD-12 | 122.54 | 130.62 | 8.08 | 26.51 | 1.34 |
| BUD-12 | 146.73 | 152.41 | 5.68 | 18.64 | 1.18 |
| BUD-13 | 99.84 | 127.50 | 27.66 | 90.75 | 1.64 |
| BUD-14 | 80.27 | 88.50 | 8.23 | 27.00 | 3.08 |
| BUD-14 | 100.36 | 112.00 | 11.64 | 38.19 | 1.48 |
| BUD-14 | 116.50 | 122.48 | 5.98 | 19.62 | 1.51 |
| BUD-14 | 135.90 | 139.08 | 3.18 | 10.43 | 1.90 |
| BUD-15 | 81.57 | 88.39 | 6.82 | 22.38 | 0.66 |
| BUD-16 | 82.31 | 87.00 | 4.69 | 15.39 | 0.93 |
| BUD-16 | 111.18 | 114.83 | 3.65 | 11.98 | 1.66 |
| BUD-16 | 120.00 | 123.26 | 3.26 | 10.70 | 1.22 |
| BUD-17 | 79.61 | 85.28 | 5.67 | 18.60 | 1.26 |
| BUD-17 | 90.50 | 100.00 | 9.50 | 31.17 | 0.99 |
| BUD-17 | 120.52 | 124.73 | 4.21 | 13.81 | 1.86 |
| BUD-18 | 84.50 | 88.05 | 3.55 | 11.65 | 1.07 |
| BUD-18 | 98.50 | 102.00 | 3.50 | 11.48 | 1.14 |
| BUD-18 | 122.56 | 127.77 | 5.21 | 17.09 | 2.12 |
| BUD-19 | 94.54 | 110.20 | 15.66 | 51.38 | 1.14 |
| BUD-19 | 124.56 | 138.48 | 13.92 | 45.67 | 2.65 |
| BUD-20 | 101.27 | 118.77 | 17.50 | 57.41 | 1.25 |
| BUD-20 | 133.29 | 138.05 | 4.76 | 15.62 | 1.76 |
| BUD-21 | 112.61 | 121.44 | 8.83 | 28.97 | 0.87 |
| BUD-21 | 162.22 | 177.59 | 15.37 | 50.43 | 3.01 |

**TABLE 6.5**
**BUCKO LAKE 2008 UNDERGROUND DRILL PROGRAM**
**HIGHLIGHT INTERSECTIONS**

| Drill Hole ID | From (m) | To (m) | Core Length (m)* | Core Length (ft) | Ni (%) |
|---|---|---|---|---|---|
| BUD-21 | 186.66 | 198.90 | 12.24 | 40.16 | 1.10 |
| BUD-22 | 113.74 | 117.43 | 3.69 | 12.11 | 0.76 |
| BUD-22 | 153.11 | 156.84 | 3.73 | 12.24 | 0.71 |
| BUD-23 | 150.00 | 157.91 | 7.91 | 25.95 | 1.11 |
| BUD-24 | 82.05 | 87.00 | 4.95 | 16.24 | 0.83 |
| BUD-24 | 113.00 | 118.00 | 5.00 | 16.40 | 1.05 |
| BUD-24 | 139.00 | 143.50 | 4.50 | 14.76 | 1.15 |
| BUD-25 | 111.71 | 115.56 | 3.85 | 12.63 | 1.13 |
| BUD-26 | 91.00 | 94.04 | 3.04 | 9.97 | 1.43 |
| BUD-26 | 96.07 | 105.92 | 9.85 | 32.32 | 0.83 |
| BUD-27 | 83.86 | 101.09 | 17.23 | 56.53 | 0.79 |
| BUD-27 | 111.20 | 118.57 | 7.37 | 24.18 | 1.27 |
| BUD-28 | 110.00 | 113.00 | 3.00 | 9.84 | 0.85 |
| BUD-29 | 91.06 | 98.30 | 7.24 | 23.75 | 1.21 |
| BUD-29 | 105.45 | 116.57 | 11.12 | 36.48 | 1.56 |
| BUD-29 | 123.92 | 128.67 | 4.75 | 15.58 | 0.97 |
| BUD-30 | 71.76 | 75.00 | 3.24 | 10.63 | 1.28 |
| BUD-30 | 92.34 | 107.00 | 14.66 | 48.10 | 1.20 |
| BUD-30 | 110.19 | 119.63 | 9.44 | 30.97 | 1.64 |
| BUD-30 | 132.87 | 136.50 | 3.63 | 11.91 | 1.58 |
| BUD-31 | 73.95 | 76.98 | 3.03 | 9.94 | 1.36 |
| BUD-31 | 89.24 | 93.35 | 4.11 | 13.48 | 1.48 |
| BUD-31 | 110.85 | 115.18 | 4.33 | 14.21 | 1.32 |
| BUD-31 | 149.81 | 153.48 | 3.67 | 12.04 | 1.29 |
| including | 135.61 | 145.38 | 9.77 | 32.05 | 1.76 |
| BUD-32 | 136.65 | 140.62 | 3.97 | 13.02 | 2.40 |
| BUD-32 | 160.00 | 164.80 | 4.80 | 15.75 | 1.11 |
| BUD-32 | 170.00 | 178.36 | 8.36 | 27.43 | 1.47 |
| BUD-33 | 106.15 | 110.18 | 4.03 | 13.22 | 0.89 |
| BUD-33 | 128.03 | 131.33 | 3.30 | 10.83 | 1.15 |
| BUD-33 | 138.93 | 146.50 | 7.57 | 24.84 | 1.17 |
| BUD-33 | 152.58 | 157.71 | 5.13 | 16.83 | 1.75 |
| BUD-34 | 140.23 | 150.11 | 9.88 | 32.41 | 2.19 |
| BUD-34 | 153.74 | 158.75 | 5.01 | 16.44 | 1.17 |
| BUD-35 | 110.04 | 117.80 | 7.76 | 25.46 | 1.01 |

**TABLE 6.5**
**BUCKO LAKE 2008 UNDERGROUND DRILL PROGRAM**
**HIGHLIGHT INTERSECTIONS**

| Drill Hole ID | From (m) | To (m) | Core Length (m)* | Core Length (ft) | Ni (%) |
|---|---|---|---|---|---|
| BUD-35 | 135.00 | 146.95 | 11.95 | 39.21 | 1.84 |
| BUD-36 | 85.56 | 88.87 | 3.31 | 10.86 | 1.01 |
| BUD-36 | 104.24 | 108.30 | 4.06 | 13.32 | 0.90 |
| BUD-36 | 133.50 | 137.20 | 3.70 | 12.14 | 1.12 |
| BUD-37 | 80.46 | 84.65 | 4.19 | 13.75 | 0.90 |
| BUD-37 | 102.32 | 108.29 | 5.97 | 19.59 | 1.47 |
| BUD-37 | 123.05 | 129.68 | 6.63 | 21.75 | 0.97 |
| BUD-38 | 108.18 | 121.79 | 13.61 | 44.65 | 1.52 |
| BUD-38 | 146.53 | 154.73 | 8.20 | 26.90 | 0.92 |
| BUD-39 | 98.00 | 100.68 | 2.68 | 8.79 | 2.03 |
| BUD-39 | 108.30 | 116.40 | 8.10 | 26.57 | 9.01 |
| BUD-40 | 121.48 | 126.93 | 5.45 | 17.88 | 1.32 |
| BUD-41 | 93.28 | 105.92 | 12.64 | 41.47 | 2.32 |
| BUD-42 | 85.27 | 89.11 | 3.84 | 12.60 | 1.35 |
| BUD-42 | 93.59 | 99.31 | 5.72 | 18.77 | 4.97 |
| BUD-42 | 110.48 | 121.43 | 10.95 | 35.93 | 1.61 |
| BUD-43 | 77.22 | 96.27 | 19.05 | 62.50 | 2.08 |
| BUD-44 | 100.47 | 130.64 | 30.17 | 98.98 | 1.36 |
| including | 124.24 | 130.64 | 6.40 | 21.00 | 2.35 |
| BUD-44 | 142.00 | 145.47 | 3.47 | 11.38 | 0.98 |
| BUD-44 | 159.26 | 163.63 | 4.37 | 14.34 | 3.54 |
| BUD-45 | 99.33 | 111.66 | 12.33 | 40.45 | 1.27 |
| BUD-45 | 119.89 | 121.97 | 2.08 | 6.82 | 1.35 |
| BUD-45 | 136.82 | 142.10 | 5.28 | 17.32 | 1.81 |
| BUD-45 | 147.75 | 150.19 | 2.44 | 8.01 | 1.32 |
| BUD-46 | 122.22 | 125.35 | 3.13 | 10.27 | 2.44 |
| BUD-47 | 101.51 | 108.11 | 6.60 | 21.65 | 2.08 |
| BUD-48 | 89.56 | 93.00 | 3.44 | 11.29 | 2.16 |
| BUD-48 | 96.73 | 101.43 | 4.70 | 15.42 | 1.24 |
| BUD-48 | 123.07 | 126.10 | 3.03 | 9.94 | 4.88 |
| BUD-49 | 82.28 | 85.32 | 3.04 | 9.97 | 2.22 |
| BUD-49 | 102.00 | 105.33 | 3.33 | 10.93 | 1.47 |
| BUD-50 | 73.00 | 76.35 | 3.35 | 10.99 | 4.09 |
| BUD-50 | 79.00 | 82.50 | 3.50 | 11.48 | 1.09 |
| BUD-50 | 100.21 | 105.00 | 4.79 | 15.72 | 3.02 |

**TABLE 6.5**
**BUCKO LAKE 2008 UNDERGROUND DRILL PROGRAM**
**HIGHLIGHT INTERSECTIONS**

| Drill Hole ID | From (m) | To (m) | Core Length (m)* | Core Length (ft) | Ni (%) |
|---|---|---|---|---|---|
| BUD-51 | 67.74 | 74.06 | 6.32 | 20.73 | 0.97 |
| BUD-52 | 64.00 | 70.32 | 6.32 | 20.73 | 1.35 |
| BUD-53 | 63.32 | 76.14 | 12.82 | 42.06 | 1.43 |
| BUD-54 | 67.38 | 75.00 | 7.62 | 25.00 | 1.11 |
| BUD-55 | 141.00 | 144.69 | 3.69 | 12.11 | 0.73 |
| BUD-56 | 131.51 | 139.13 | 7.62 | 25.00 | 0.98 |
| BUD-56 | 155.00 | 158.44 | 3.44 | 11.29 | 1.25 |
| BUD-57 | 115.39 | 120.63 | 5.24 | 17.19 | 1.20 |
| BUD-58 | 127.50 | 130.90 | 3.40 | 11.15 | 1.01 |
| BUD-59 | 97.53 | 101.38 | 3.85 | 12.63 | 1.87 |
| BUD-60 | 81.00 | 84.04 | 3.04 | 9.97 | 0.73 |
| BUD-61 | 73.44 | 76.74 | 3.30 | 10.83 | 1.14 |
| BUD-62 | 69.64 | 74.83 | 5.19 | 17.03 | 0.73 |
| BUD-62 | 99.04 | 104.00 | 4.96 | 16.27 | 0.76 |
| BUD-63 | 67.87 | 71.52 | 3.65 | 11.98 | 1.97 |
| BUD-64 | 63.77 | 73.46 | 9.69 | 31.79 | 2.15 |
| BUD-65 | 66.27 | 70.74 | 4.47 | 14.67 | 1.06 |
| BUD-66 | 71.51 | 80.41 | 8.90 | 29.20 | 1.50 |
| BUD-67 | 66.35 | 72.68 | 6.33 | 20.77 | 1.06 |
| BUD-67 | 79.36 | 84.89 | 5.53 | 18.14 | 1.15 |
| BUD-67 | 88.73 | 109.39 | 20.66 | 67.78 | 1.59 |
| BUD-67 | 125.30 | 131.75 | 6.45 | 21.16 | 1.26 |
| BUD-68 | 64.40 | 72.44 | 8.04 | 26.38 | 1.11 |
| BUD-68 | 77.33 | 105.96 | 28.63 | 93.93 | 1.68 |
| BUD-68 | 118.85 | 124.12 | 5.27 | 17.29 | 1.16 |
| BUD-69 | 89.58 | 97.42 | 7.84 | 25.72 | 4.00 |
| BUD-69 | 118.77 | 126.46 | 7.69 | 25.23 | 1.03 |
| BUD-69 | 131.49 | 140.50 | 9.01 | 29.56 | 1.22 |
| BUD-69 | 140.50 | 159.85 | 19.35 | 63.48 | 4.42 |
| BUD-69 | 174.58 | 180.58 | 6.00 | 19.69 | 1.24 |
| BUD-70 | 82.65 | 87.26 | 4.61 | 15.12 | 3.19 |
| BUD-70 | 106.77 | 111.00 | 4.23 | 13.88 | 1.06 |
| BUD-70 | 118.00 | 123.33 | 5.33 | 17.49 | 1.24 |
| BUD-70 | 144.45 | 152.23 | 7.78 | 25.52 | 1.69 |
| BUD-70 | 153.57 | 164.00 | 10.43 | 34.22 | 3.38 |

| TABLE 6.5<br>BUCKO LAKE 2008 UNDERGROUND DRILL PROGRAM<br>HIGHLIGHT INTERSECTIONS | | | | | |
|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Core Length (m)*** | **Core Length (ft)** | **Ni (%)** |
| BUD-70 | 169.75 | 173.38 | 3.63 | 11.91 | 0.97 |
| BUD-71 | 72.32 | 77.80 | 5.48 | 17.98 | 2.20 |
| BUD-71 | 95.24 | 99.78 | 4.54 | 14.90 | 1.73 |
| BUD-71 | 115.78 | 133.00 | 17.22 | 56.50 | 1.84 |
| BUD-71 | 143.56 | 147.23 | 3.67 | 12.04 | 3.13 |
| BUD-72 | 104.14 | 113.00 | 8.86 | 29.07 | 1.34 |
| BUD-72 | 115.60 | 121.70 | 6.10 | 20.01 | 1.81 |
| BUD-72 | 126.95 | 137.75 | 10.80 | 35.43 | 2.78 |
| including | 129.00 | 134.76 | 5.76 | 18.90 | 4.00 |
| BUD-73 | 95.55 | 109.05 | 13.50 | 44.29 | 1.19 |
| BUD-73 | 118.00 | 122.72 | 4.72 | 15.49 | 1.89 |
| BUD-73 | 129.00 | 131.68 | 2.68 | 8.79 | 1.52 |
| BUD-74 | 104.48 | 108.86 | 4.38 | 14.37 | 0.83 |
| BUD-75 | 100.21 | 101.86 | 1.65 | 5.41 | 2.50 |
| BUD-76 | 83.84 | 93.00 | 9.16 | 30.05 | 1.73 |
| BUD-77 | 83.78 | 93.34 | 9.56 | 31.36 | 7.87 |
| including | 89.96 | 93.34 | 3.38 | 11.09 | 17.59 |
| BUD-78 | 130.50 | 144.00 | 13.50 | 44.29 | 1.09 |
| BUD-78 | 150.00 | 154.50 | 4.50 | 14.76 | 1.23 |
| BUD-78 | 160.10 | 174.00 | 13.90 | 45.60 | 5.04 |
| including | 161.29 | 164.47 | 3.18 | 10.43 | 7.12 |
| including | 165.86 | 172.54 | 6.68 | 21.92 | 5.95 |
| BUD-79 | 105.00 | 109.38 | 4.38 | 14.37 | 1.35 |
| BUD-79 | 121.31 | 129.50 | 8.19 | 26.87 | 1.29 |
| BUD-79 | 157.25 | 160.77 | 3.52 | 11.55 | 1.58 |
| BUD-80 | 93.00 | 109.55 | 16.55 | 54.30 | 1.10 |
| BUD-80 | 123.22 | 128.64 | 5.42 | 17.78 | 5.57 |
| BUD-80 | 131.74 | 137.00 | 5.26 | 17.26 | 1.26 |

***Source:*** *P&E (2009)*

***** *True widths at Bucko were not estimated, due to the complex interplay between primary disseminated and remobilized vein style mineralization and local structural deformation. Lack of resolution of individual vein orientations was considered normal in this style of nickel sulphide mineralization.*

### 6.1.2 Bowden Lake Area

The Bowden Lake Area has been explored since the 1950s (Figure 6.2). In the 1960s and early 1970s, a total of 67 drill holes were completed on the M11A property by CMML and Falconbridge. During this period, Falconbridge also conducted a variety of ground magnetic, AFMAG EM, and IP surveys. This work resulted in the discovery of the Bucko Lake, Bowden Lake, and initial M11A (or Discovery) Deposits. By the mid-1970s, historical mineral resource estimates had been internally established by Falconbridge for each of these three zones. In 1976, due to low nickel prices and operational problems at the Manibridge Mine, Falconbridge ceased exploration and development activities in Manitoba.

In 1990, Falconbridge recommenced exploration of the area with additional ground geophysical surveys, digital compilation of historical drill logs, and re-assessment of historical Mineral Resources. In 1991, several drill holes were completed to test targets located east of the Bucko Lake Deposit. In 1992, Falconbridge applied for and was granted mining leases 31, 32, 33, and 34. In 2004, Falconbridge optioned approximately 580 $km^2$ of its exploration properties in the Thompson Nickel Belt to Crowflight.

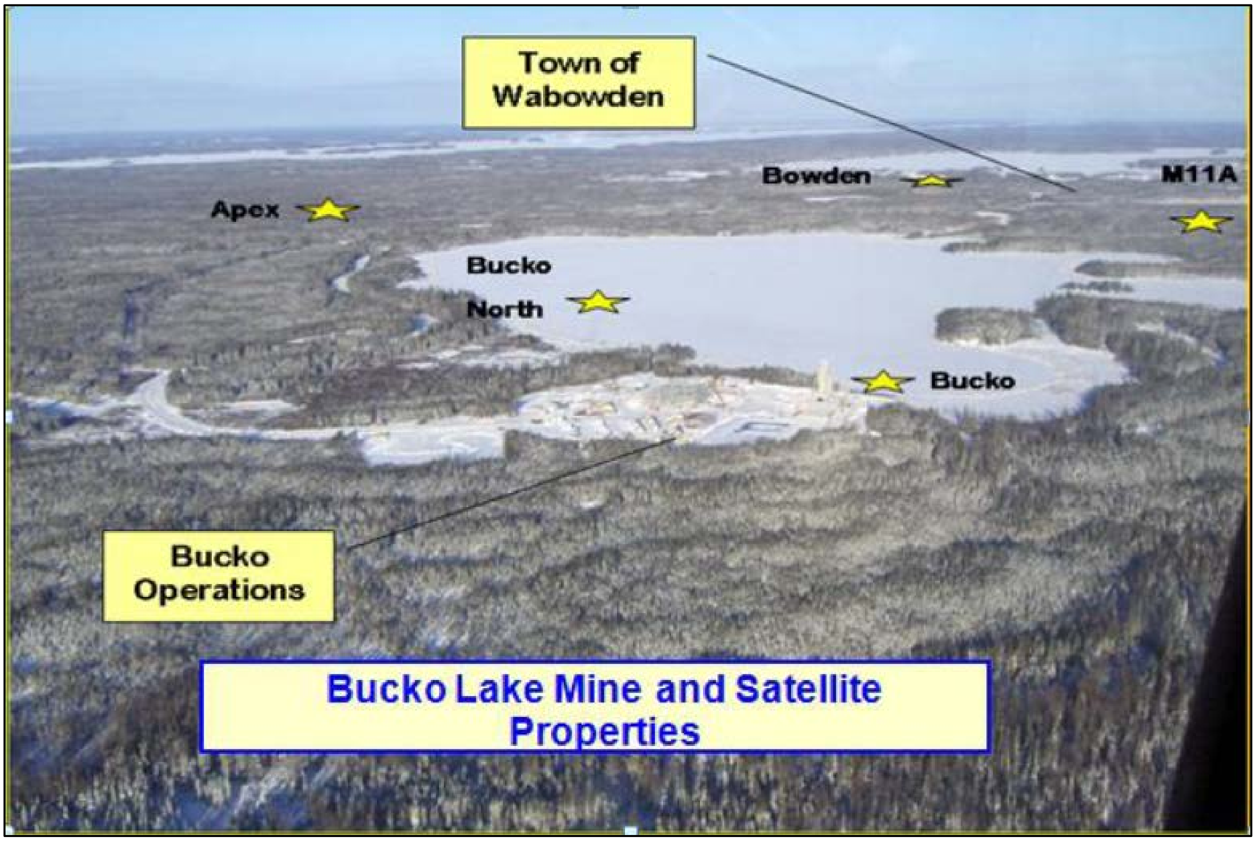
Since 2004, Crowflight and Falconbridge jointly explored portions of the optioned Property, undertaking exploration drilling programs in 2005, 2006, 2007, 2008, and 2009–2010. This drilling discovered new mineralized zones, referred to as the Apex and M11A North Deposits, and resulted in further definition of the historical Mineral Resources at the M11A and Bowden Lake Deposits. An historical Inferred Mineral Resource Estimate for Bowden Lake was included in Griffins *et al.* (2012).

In 2006, four drill holes were completed at Bowden Lake and the results are summarized below:

- **Drill Hole W11106-01:** 0.91% Ni over 11.38 m (including 1.67% Ni over 0.46 m);
- **Drill Hole W11106-02:** 0.79% Ni over 14.97 m (including 2.39% Ni over 0.73 m);
- **Drill Hole W11106-03:** 0.76% Ni over 7.60 m; and
- **Drill Hole W11106-04:** 1.65% Ni over 0.33 m and 1.34% Ni over 0.75 m.

During the 2007 winter program, four drill holes were completed for a total of 1,655.7 m. An additional drill hole totalling 465 m was added in April 2007. During the 2008 winter drilling program, six drill holes were completed for a total of 2,033.1 m. Exploration diamond drilling intersected what was interpreted to be a new zone of nickel sulphide mineralization located beneath the M11A North Deposit. Drill hole M08-03 intersected 1.30% Ni over 26.7 m, including 3.06% Ni over 5.76 m. Drilling continued at the M11A Deposit between 2009 and 2012. Drilling of the Apex Prospect in 2008 yielded no significant intercepts, which downgraded the potential of the investigated geophysical targets. Generally, additional Mineral Resource expansion potential remains at depth.

**FIGURE 6.2 BUCKO LAKE SATELLITE DEPOSITS LOCATION**




***Source:*** *Griffin et al. (2012)*

## 6.2 HISTORICAL MINERAL RESOURCE/RESERVE ESTIMATES

Since discovery of mineralization at Bucko Lake in 1964, numerous historical Mineral Resource/Reserve studies were completed. Prior to 2001, most were completed as part of in-house studies undertaken by Falconbridge looking at options to exploit the Deposit at various cut-offs and mining scenarios. The historical Mineral Resource estimates for the Bucko Lake Deposit are summarized below in Table 6.6.

***The historical Mineral Resource estimates summarized in Table 6.6 are historical in nature and, as such, are based on prior data and reports prepared by previous operators and are not in compliance with NI 43-101. A Qualified Person has not done the work necessary to verify the historical estimates as current estimates under NI 43-101, and the estimates should not be relied upon. There can be no assurance that any of the historical Mineral Resources, in whole or in part, will ever become economically viable. They are listed for information and historical reference purposes only, since they demonstrate the development history of the Bucko Lake Deposit. CaNickel is not treating the historical estimates as current Mineral Resources or Mineral Reserves. The Company has completed the necessary work to establish a current Mineral Resource on the Bucko Lake Property as presented in Section 14 of this Technical Report.***

**TABLE 6.6**
**BUCKO LAKE HISTORICAL MINERAL RESOURCES 1968 TO 2000**

| Cut-off Ni (%) | Density ($t/m^3$) | Hinge Zone Included | Year | Estimated By | Surface Drill Holes | UG Drill Holes | Elevation From (m) | Elevation To (m) | Tonnes (M) | Ni (%) | Cu (%) | Contained Ni (t) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.50 | 2.7 | partly | 1968 | C. Coats | 25 | | 2,469 | 2,941 | 27.1 | 0.8 | --- | 211,669 | |
| 1.00 | 2.7 | partly | 1968 | C. Coats | 25 | | 2,469 | 2,941 | 9.2 | 1.2 | --- | 111,885 | |
| 0.70 | 2.7 | partly | 1972 | P. Mattinen | 25 | 61 | 2,477 | 2,987 | 7.5 | 1.40 | 0.10 | 103,845 | |
| 1.10 | 2.7 | partly | 1972 | P. Mattinen | 25 | 61 | 2,477 | 2,987 | 4.2 | 1.7 | 0.1 | 72,566 | |
| 1.50 | 3.2 | partly | 1972 | P. Mattinen | 25 | 61 | 2,477 | 2,987 | 2.6 | 2.2 | 0.2 | 57,003 | |
| 1.00 | 2.7 | no | 1976 | H.J. Coats | --- | 61 | 2,438 | 2,926 | 9.1 | 1.2 | | 108,647 | some speculative inventory |
| 1.00 | 2.8 | no | 1976 | H.J. Coats | | 61 | 2,560 | 2,865 | 2.1 | 1.9 | | 38,887 | |
| 1.00 | 2.8 | no | 1981 | H.J. Coats | | 61 | 2,560 | 2,865 | 3.1 | 1.8 | | 56,646 | some speculative inventory |
| 1.00 | 2.8 | partly | 1990 | L. Wigglesworth | | 61 | 2,560 | 2,865 | 1.54 | 2.3 | 0.2 | 35,688 | 22.4% external dilution added |
| 1.00 | 2.8 | yes | 1990 | Derweduwen | 6 | 61 | 2,286 | 2,865 | 6.5 | 1.50 | 0.10 | 97,138 | 20% dilution at zero grade added |
| 1.50 | 2.8 | yes | 1990 | Derweduwen | 6 | 61 | 2,286 | 2,865 | 2.5 | 2.2 | 0.2 | 56,186 | |
| 0.70 | 2.8 | yes | 1990 | Derweduwen | 6 | 61 | 2,286 | 2,865 | 9.7 | 1.1 | 0.1 | 107,824 | |
| --- | 2.7 | yes | 1991 | Derweduwen | | 61 | 2,591 | 2,987 | 32.9 | 0.6 | 0.1 | 210,689 | total ultramafic |
| 0.50 | --- | yes | 1991 | P.J. Chornoby | | 61 | 2,560 | 2,865 | 13.4 | 1.00 | --- | 134,000 | open pit |
| 0.50 | --- | yes | 1992 | HBM&S | | 61 | 2,560 | 2,865 | 12.1 | 0.9 | | 121,000 | open pit |
| 1.50 | 2.8 | partly | 1999 | L. Wigglesworth | 16 (+) | 61 | 2,216 | 2,865 | 1.8 | 2.3 | | 40,800 | |

***Source:*** *Crowflight (2009)*

Falconbridge (1994) stated: "reserves in the open pit are assumed to be as defined in the HBM&S report of 1992, which means 13,341,141 tons @ 0.91% Ni, including 10% dilution. This calculation was based on a 0.5% Ni cut-off grade. It was pointed out that these open pit "reserves" were based on only a few holes and that considerable additional drilling would be required prior to any production decision. Underground ore reserves were based on the 1990 calculation by Jack Derweduwen".

The Derweduwen (1990) historical underground reserve estimate was calculated based on a 1.5% Ni cut-off grade. The reserves were estimated at 2,768,730 tons @ 2.23% Ni and included 20% dilution at a zero grade. Since part of this tonnage was included in the open pit outline, a breakdown was calculated in January 1994 to determine the portion of these reserves below the pit bottom. The final result for the underground reserves was 822,717 tons @ 2.34% Ni undiluted. Dilution was estimated to be 15% and should have a grade of 0.5% Ni, which means that total underground mine tonnage was 946,125 tons @ 2.1% Ni (Falconbridge, 1994).

## 6.3 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

Historical Mineral Resource Estimates and Mineral Reserve Estimates, accompanied by Technical Reports, have been completed on the Bucko Lake Deposit in 2000 by Roscoe Postle Associates Inc. ("RPA") for Nuinsco and in 2005 and 2006 by P&E for Crowflight. These Mineral Resource Estimates have, in turn, been updated by Crowflight and verified independently by P&E in 2007 and 2009. The previous updated Mineral Resource/Mineral Reserve Estimates and Technical Report were completed by CaNickel (Griffin *et al.*, 2012). All these updates are presented and summarized below. ***Note, however, that all these Mineral Resource and Mineral Reserve Estimates for the Bucko Lake Deposit are historical estimates that are superseded by the current Mineral Resource Estimate presented in Section 14 of this Technical Report.***

### 6.3.1 RPA Mineral Resource Estimate 2000

RPA was retained by Nuinsco to estimate the nickel mineral resources of the Bucko Lake Property (RPA, 2000). RPA classified the Mineral Resources of the Bucko Lake Deposit in accordance with the definitions provided in the September 1996 publication "Mineral Resource/Reserve Classification: Categories, Definitions and Guidelines, prepared by the Ad Hoc Committee on Mineral Resource Classification of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM). However, the RPA estimate was developed from longitudinal projection polygons.

Specifically, RPA classified the Bucko Lake Deposit mineral resource into Indicated and Inferred resource classifications, based on the number of drill hole intersections per polygon and the spacing of the intersections. Two or more intersections within a polygon were generally classified as indicated. Multiple intersection polygons generally had drill holes spaced at ±50 m or less. Most of the drilling was on approximate 50 m centres. Generally, the mineralized polygons exhibited reasonable continuity considering the 50 m spacing. RPA utilized a cut-off grade of 1.5% Ni and a minimum horizontal thickness of 3.0 m. These were the values used by Wrigglesworth in his 1999 historical mineral resource estimate. For its diluted mineral resource estimate, RPA used 20% dilution at wall rock grade. The RPA 2000 undiluted and diluted mineral resource estimates of the Bucko Lake Nickel Deposit are presented in Table 6.7.

| TABLE 6.7<br>RPA 2000 UNDILUTED AND DILUTED MINERAL RESOURCE ESTIMATES AT 1.5% NI CUT-OFF GRADE | | | | | |
|---|---|---|---|---|---|
| **Level** | **Horizontal Thickness (m)** | **Indicated Resource** | | **Inferred Resource** | |
| | | **Tonnes (t)** | **Ni (%)** | **Tonnes (t)** | **Ni (%)** |
| **RPA Undiluted Mineral Resource Estimate May 2000** | | | | | |
| 400-600 | 4.7 | 57,000 | 2.16 | 35,000 | 2.06 |
| 600-1000 | 5.8 | 554,000 | 2.96 | 151,000 | 2.05 |
| 1000-1600 | 6.5 | 439,000 | 2.51 | 140,000 | 2.34 |
| <1600 | 7.3 | 169,000 | 2.62 | 129,000 | 2.23 |
| **Total** | | **1,218,000** | **2.71** | **455,000** | **2.23** |
| | | | | | |
| **RPA Diluted Mineral Resource Estimate May 2000 (20% Dilution at Wall Rock Grade)** | | | | | |
| 400-600 | 5.7 | 68,000 | 1.90 | 42,000 | 1.80 |
| 600-1000 | 7.0 | 664,000 | 2.60 | 1,891,000 | 1.80 |
| 1000-1600 | 7.8 | 526,000 | 2.20 | 169,000 | 2.20 |
| <1600 | 8.8 | 203,000 | 2.30 | 155,000 | 2.00 |
| **Total** | **7.4** | **1,461,000** | **2.36** | **547,000** | **1.99** |

***Source:*** *P&E (2007)*

The RPA mineral resource estimate was audited by Geologica Groupe-Conseil ("Geologica") in 2004. Geologica agreed with the estimation methodology chosen and the classification of the results by RPA. Although the classification of mineral resources used by RPA does conform to NI 43-101, Geologica recommended that a block model based Mineral Resource would improve the mine planning and scheduling process.

### 6.3.2 Micon 2004 Scoping Study

Micon was contracted by Crowflight in 2004 to complete a scoping study of the Bucko Lake Project based on the RPA mineral resource estimate. Micon (2004) used the RPA Indicated resources as audited by Geologica (2004) as the basis for their study. Micon added 20% waste rock dilution at wall rock grade (0.6% Ni) adjacent to the mineralization and a mining recovery factor of 90%. The Micon (2004) diluted Mineral Resources (referred to as conceptual reserves), are presented in Table 6.8, which they utilized as the basis for determining the potential for the Bucko Lake Project.

| TABLE 6.8<br>MICON 2004 DILUTED MINERAL RESOURCE ESTIMATE (AFTER RPA, 2000) | | |
|---|---|---|
| **Description** | **Tonnes (t)** | **Ni (%)** |
| **Conceptual Reserve Estimate** | | |
| Indicated Resources | 1,218,000 | 2.71 |
| Dilution: 20% at wall rock grade | 243,600 | 0.60 |
| Diluted Resource | 141,600 | 2.36 |
| Recovered Diluted Resource @ 90% Mining Recovery | 1,315,400 | 2.36 |

***Source:*** *Micon (2004)*

### 6.3.3 P&E 2005 Mineral Resource Estimates

P&E incorporated the drill hole data, from the Crowflight 2004 and 2005 drilling programs, into its 2005 updated Mineral Resource Estimate of the Bucko Lake Deposit. P&E also audited the historical Falconbridge drill database in 2005 for Crowflight and found it to be accurate with respect to position, geology and assay information. Furthermore, information from this historical database was found to reconcile well with information from the more recent Crowflight drilling programs and underground mapping, including several breakthrough holes identified in 2008 on the 1,000 ft (304.8 m) mining level.

The P&E 2005 Mineral Resource Estimate utilized conventional statistical analysis and grade interpolation via Gemcom™ modelling to create model blocks within interpreted 3-D solid domains that were coded with Ni and Cu grades, bulk density estimates, and classified into either Indicated or Inferred Mineral Resources. The results of the updated Mineral Resource Estimate are presented in Tables 6.9 and 6.10.

| TABLE 6.9<br>P&E 2005 MINERAL RESOURCE ESTIMATE<br>AT 1.1% NI CUT-OFF GRADE | | | | | |
|---|---|---|---|---|---|
| **Classification** | **Tonnes (t)** | **Ni (%)** | **Ni (Mlb)** | **Cu (%)** | **Cu (Mlb)** |
| Indicated | 4,695,000 | 1.58 | 163.5 | 0.12 | 12.4 |
| Inferred | 5,804,000 | 1.42 | 181.7 | 0.09 | 11.5 |

***Source:*** *P&E (2005)*

| TABLE 6.10<br>P&E 2005 MINERAL RESOURCE ESTIMATE<br>SENSITIVITY TO NI CUT-OFF GRADE | | | | | | |
|---|---|---|---|---|---|---|
| **Cut-off Ni (%)** | **Indicated** | | | **Inferred** | | |
| | **Tonnes (t)** | **Ni (%)** | **Cu (%)** | **Tonnes (t)** | **Ni (%)** | **Cu (%)** |
| 1.90 | 905,000 | 2.53 | 0.17 | 609,000 | 2.23 | 0.11 |
| 1.70 | 1,265,000 | 2.32 | 0.16 | 940,000 | 2.07 | 0.11 |
| 1.50 | 1,816,000 | 1.00 | 0.15 | 1,551,000 | 1.88 | 0.11 |
| 1.30 | 2,817,000 | 1.85 | 0.13 | 2,917,000 | 1.65 | 0.10 |
| 1.10 | 4,695,000 | 1.58 | 0.12 | 5,804,000 | 1.42 | 0.09 |

***Source:*** *P&E (2005)*

### 6.3.4 Micon 2006 Mineral Resource/Reserves

The Micon 2006 Feasibility Study used the P&E updated Mineral Resources at a 1.5% Ni cut-off grade (see Table 6.10 above). The life-of-mine Mineral Reserves at a cut-off grade of 1.5% Ni were estimated at 1,685,000 tonnes grading 1.92% Ni and 0.14% copper diluted (Table 6.11). The cut-off grade was calculated utilizing estimated total operating costs of C$80/t, a nickel process recovery of 80%, a nickel price of US$4.00, and an exchange rate of C$1.22 to the US$.

| TABLE 6.11<br>MICON 2006 MINERAL RESERVES | |
|---|---|
| **Parameter** | **Values** |
| Probable Reserves (tonnes) | 1,685,000 |
| | |
| Average Reserves Grade[1] | |
| Nickel (%) | 1.92 |
| Copper (%) | 0.14 |
| Cobalt (%) | 0.024 |
| Platinum (g/t) | 0.159 |
| Palladium (g/t) | 0.379 |
| Gold (g/t) | 0.026 |
| | |
| Production Rate (ore tpa) | 365,000 |
| Mine Life (years) | 5 |

***Source:*** *Micon (2006)*

*[1] The nickel and copper grades are included in the block model; the other metal grades are estimated based on ratio calculations using various metallurgical composite samples taken from the mineralized zones.*

### 6.3.5 Micon 2007 Updated Mineral Resources/Reserves

For the Micon 2007 Updated Feasibility Study, the P&E 2005 Mineral Resource Estimate was updated in 2007 by P&E using the results from 2006 drilling program. This Mineral Resource Estimate and its sensitivity to Ni cut-off grade are presented in Tables 6.12 and 6.13.

**TABLE 6.12**
**P&E 2007 UPDATED MINERAL RESOURCE ESTIMATE AT 1.1% NI CUT-OFF GRADE**

| Classification | Tonnes (t) | Ni (%) | Ni (Mlb) | Cu (%) | Cu (Mlb) |
|---|---|---|---|---|---|
| Indicated | 4,925,000 | 1.62 | 175.9 | 0.11 | 11.9 |
| Inferred | 2,614,000 | 1.67 | 96.2 | 0.11 | 6.3 |

***Source:*** *P&E (2007)*

**TABLE 6.13**
**P&E 2007 UPDATED MINERAL RESOURCE ESTIMATE SENSITIVITY TO NI CUT-OFF GRADE**

| Cut-off Ni (%) | Indicated | | | Inferred | | |
|---|---|---|---|---|---|---|
| | Tonnes (t) | Ni (%) | Cu (%) | Tonnes (t) | Ni (%) | Cu (%) |
| 2.0 | 839,319 | 2.75 | 0.18 | 602,264 | 2.79 | 0.13 |
| 1.8 | 1,166,434 | 2.51 | 0.16 | 692,731 | 2.67 | 0.13 |
| 1.6 | 1,674,339 | 2.26 | 0.15 | 906,432 | 2.44 | 0.12 |
| 1.4 | 2,496,397 | 2.01 | 0.14 | 1,166,922 | 2.23 | 0.12 |
| 1.2 | 3,927,602 | 1.75 | 0.12 | 1,911,901 | 1.86 | 0.11 |
| 1.0 | 6,227,685 | 1.50 | 0.11 | 3,734,351 | 1.48 | 0.10 |

***Source:*** *P&E (2007)*

The Bucko Lake Mineral Reserve was derived from the mineable portion of the 2,496,397 t Indicated Mineral Resource grading 2.01% Ni as defined by a cut-off grade of 1.4% Ni. A summary of the Mineral Reserves is presented in Table 6.14.

**TABLE 6.14**
**MARCH 2007 MINERAL RESERVES**

| Parameter | Value |
|---|---|
| Probable Reserves (tonnes) | 2,395,834 |
| | |
| Average Reserves Grade [1] | |
| Nickel (%) | 1.84 |
| Copper (%) | 0.104 |

| TABLE 6.14<br>MARCH 2007 MINERAL RESERVES | |
|---|---|
| **Parameter** | **Value** |
| Cobalt (%) | 0.023 |
| Platinum (g/t) | 0.153 |
| Palladium (g/t) | 0.363 |
| Gold (g/t) | 0.025 |
| | |
| Production Rate (ore tpa) | 365,000 |
| Mine Life (years) | 8.0 |

***Source:*** *Micon (2007)*
*[1] The nickel and copper grades are included in the block model; the other metal grades are estimated based on ratio calculations using various metallurgical composite samples taken from the mineralized zones.*

### 6.3.6 Crowflight 2008 Updated Mineral Resources/Reserves

Activities in 2008 resulted in a review of the Bucko Lake Project with the objective of optimizing future production. Repayment of debt, updated operating and capital costs, and additional drilling were considered from the standpoint of their impact on Project economics. The review led to an updated production scenario based on extraction of 1,000 tpd from a Mineral Reserve at a 1.25% Ni cut-off. The December 2008 updated Mineral Reserve and Mineral Resource Statement is presented in Table 6.15.

**TABLE 6.15**
**2008 UPDATED MINERAL RESERVES AND MINERAL RESOURCES [1]**

| Classification | Cut-off Grade | Tonnes (t) | Ni (%) | Contained Nickel (lb) |
|---|---|---|---|---|
| Proven Reserves* | 1.25% | 359,273 | 1.63 | 12,912,810 |
| Probable Reserves* | 1.25% | 3,349,120 | 1.44 | 105,321,276 |
| **Total Reserves** | **1.25%** | **3,708,393** | **1.45** | **118,234,086** |
| | | | | |
| Measured Resources | 1.00% | 495,076 | 1.48 | 16,156,310 |
| Indicated Resources | 1.00% | 2,264,063 | 1.53 | 76,927,383 |
| **Total Measured and Indicated Resources** | **1.00%** | **2,759,139** | **1.53** | **93,083,693** |
| | | | | |
| Inferred Resources | 1.00% | 5,467,840 | 1.34 | 161,558,268 |
| **Total Inferred Resources** | **1.00%** | **5,467,840** | **1.34** | **161,558,268** |

***Source:*** *Crowflight (2009)*
*[1] Mineral Resources are reported exclusive of Mineral Reserves*

** Proven and Probable Mineral Reserves determined from Measured and Indicated Resources utilizing a 1.25% Ni cut-off. The 2008 Mineral Reserves were calculated using a US$6.00/lb long-term nickel price based on a conservative outlook, which considers the 3-year trailing average nickel spot price.*

The Mineral Resources were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM"), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council December 11, 2005.

### 6.3.7 CaNickel 2012 Updated Mineral Resources/Reserves

On March 25, 2010, Crowflight updated the block model with new drill hole information, and updated Mineral Reserves and Mineral Resources (CaNickel, 2012). In March of 2012, CaNickel updated the block model by depleting surveyed actual mined areas between March 25, 2010 to March 31, 2012 from the model, and the remaining Mineral Reserve and Mineral Resources with Ni cut-off grades were reported as of April 1, 2012 (Table 6.16).

**TABLE 6.16**
**STATEMENT OF THE 2012 UPDATED MINERAL RESERVES AND RESOURCES FOR THE BUCKO LAKE MINE AND ITS SATELLITE DEPOSITS**

| Deposit | Cut-off Ni Grade (%) | Tonnes[1] (t) | Ni (%) | Contained Ni (lb) | Contained Ni (kg) |
|---|---|---|---|---|---|
| **Bucko Lake Mine** | | | | | |
| Proven Reserves* | 1.25 | 616,000 | 1.43 | 19,402,000 | 8,801,000 |
| Probable Reserves* | 1.25 | 1,994,000 | 1.44 | 63,129,000 | 28,635,000 |
| **Total Reserves** | **1.25** | **2,610,000** | **1.43** | **82,531,000** | **37,436,000** |
| | | | | | |
| Measured Resources** | 1.00 | 751,000 | 1.37 | 22,680,000 | 10,288,000 |
| Indicated Resources** | 1.00 | 2,845,000 | 1.28 | 80,059,000 | 36,315,000 |
| **Total Measured & Indicated** | **1.00** | **3,596,000** | **1.30** | **102,739,000** | **46,602,000** |
| Inferred Resources*** | 1.00 | 5,043,000 | 1.41 | 156,887,000 | 71,164,000 |
| | | | | | |
| **Satellite Deposits** | | | | | |
| **M11A Project** | | | | | |
| Indicated Resources** | 1.00 | 800,000 | 1.17 | 20,639,000 | 9,362,000 |
| Inferred Resources*** | 1.00 | 525,000 | 1.11 | 12,850,000 | 5,829,000 |
| | | | | | |
| **Apex Prospect** | | | | | |
| Inferred Resources*** | 1.00 | 41,000 | 1.19 | 1,076,000 | 488,000 |
| | | | | | |
| **Bowden Prospect** | | | | | |
| Inferred Resources*** | 1.00 | 2,044,000 | 1.16 | 52,281,000 | 23,715,000 |

| **TABLE 6.16**<br>**STATEMENT OF THE 2012 UPDATED MINERAL RESERVES AND RESOURCES FOR THE BUCKO LAKE MINE AND ITS SATELLITE DEPOSITS** | | | | | |
|---|---|---|---|---|---|
| **Deposit** | **Cut-off Ni Grade (%)** | **Tonnes[1] (t)** | **Ni (%)** | **Contained Ni (lb)** | **Contained Ni (kg)** |
| | | | | | |
| **Halfway Lake Prospect** [2] | | | | | |
| Inferred Resources*** | 1.00 | 900,000 | 1.20 | 23,814,000 | 10,802,000 |
| | | | | | |
| **Total Satellite Inferred*** ** | **1.00** | **3,510,000** | **1.16** | **90,021,000** | **40,834,000** |

***Source:*** *CaNickel (2012)*
***Notes:***
** Proven and Probable Reserves determined from Measured and Indicated Mineral Resources utilizing a 1.25% Ni cut-off with a 15% margin incorporated into the cut-off grade evaluation. 2012 Reserves were calculated utilizing US$8.50/lb long-term nickel price based on the 3-year trailing average nickel spot price and 2012 historical Bucko Lake Mine, Mill and G&A operating costs, plant recoveries, and smelting charges.*
*** Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing or other relevant issues.*
**** The quality and grade of reported Inferred Mineral Resources in this estimation are conceptual in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated or Measured Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated or Measured Mineral Resource category.*
*[1] Rounded to nearest 1,000 t.*
*[2] As of the effective date of this current Technical Report, the Halfway Lake Deposit Property is not contiguous with the Bucko Lake Property. The CaNickel mining claims that historically connected the two Properties were allowed to expire and have not been re-staked.*

The 2012 updated Mineral Resources and Reserves for the Bucko Lake Mine were independently audited in May of 2012, with a mine site visit from May 13 to May 16, 2012, by Mr. Paul L. Martin, BS Mine Eng., P. Eng., Consulting Professional Mining Engineer and Qualified Person for the Project in accordance with the Canadian Institute of Mining, Metal and Petroleum (“CIM”) definition and standards regarding Mineral Resources and Reserves. Mr. Martin concluded that the methodology employed initially by Crowflight for Mineral Reserve and Mineral Resource estimation and currently by CaNickel’s engineers and geologists (classical geostatistical block modelling using inverse distance squared, restricting volumes based on mine plan solids) was consistent with industry standards.

## 6.4 PAST PRODUCTION

Crowflight completed construction of the Bucko Lake Mine and mineral processing facilities and commenced nickel production from the 1,000 ft (304.8 m) mining level in 2008. Commissioning of the processing facilities commenced in November 2008 and was completed in January 2009.

Crowflight achieved commercial nickel production in June 2009. Operations were intermittent from 2009 to 2012 due to geotechnical stability issues. CaNickel assumed control of the Bucko

Lake Property and satellite exploration prospects from Crowflight through a name change in June of 2011. Full production of the mine was achieved in the first quarter of 2012, having mined 72,256 tonnes of mineralized material and processed 76,650 tonnes to produce 1,437,510 lb (652,043 kg) of nickel metal. During this time, CaNickel also completed construction of Phase 1 of the tailings management area. The month of March 2012 saw a milestone as the process plant achieved a record recovery rate of 79.1% Ni (Table 6.17).

**TABLE 6.17**
**HISTORICAL BUCKO LAKE MINE PRODUCTION**

| Year | Mined (t) | Processed (t) | Grade (Ni %) | Recovery (%) | Produced (lb Ni) | Payable (lb Ni) |
|---|---|---|---|---|---|---|
| 2009 | 135,931 | 124,970 | 1.00 | 55.52 | 1,382,606 | 1,152,697 |
| 2010 | 131,884 | 131,884 | 1.23 | 69.00 | 2,476,116 | 2,125,202 |
| 2011 | 107,451 | 102,069 | 1.18 | 61.00 | 1,631,916 | 1,363,534 |
| 2012 | 72,256 | 76,650 | 1.12 | 75.65 | 1,437,510 | 1,445,523 |
| **Total** | **447,522** | **435,573** | **1.13** | **64.43** | **6,928,148** | **6,086,956** |

***Source:*** *Crowflight and CaNickel Corporate Financial Reports from 2009-2012*

On May 11, 2012, CaNickel received a stop work order from Manitoba's Workplace Safety and Health Division to cease blasting operations until all known voids have been backfilled and the current mining plan revised to address ground control issues. In June 2012, with the deficiencies over ground conditions corrected, the stop work order was lifted. However, CaNickel decided to place the mine on a care and maintenance status until nickel prices improved and the Company optimized its mine plan. The Bucko Lake Mine has remained under long-term care and maintenance since 2012. The Company kept the underground mine workings dewatered until July 2018, after which the mine was allowed to flood.

# 7.0 GEOLOGICAL SETTING AND MINERALIZATION

## 7.1 REGIONAL GEOLOGY

The Bucko Lake Property is located within the Thompson Nickel Belt ("TNB"), a northeast-trending 10 to 35 km wide and 100 km long zone of reworked Archean basement gneisses and Paleoproterozoic cover rocks (Ospwagan Group) between the Superior Province to the east and the Churchill Province to the west, in northern Manitoba (Figure 7.1) (Hulbert *et al.*, 2005; Scoates *et al.*, 2017). Strong gravity and magnetic expressions allow delineation of the TNB and permit tracing it beneath Paleozoic platformal cover rocks to the south (Layton-Matthews *et al.*, 2007). The Ospwagan Group consists of metasedimentary, metavolcanic and ultramafic rocks, and felsic plutons. The Ospwagan metasedimentary, metavolcanic and ultramafic rocks are associated with the nickel sulphide deposits (Figure 7.2), mainly in the west part of the TNB.

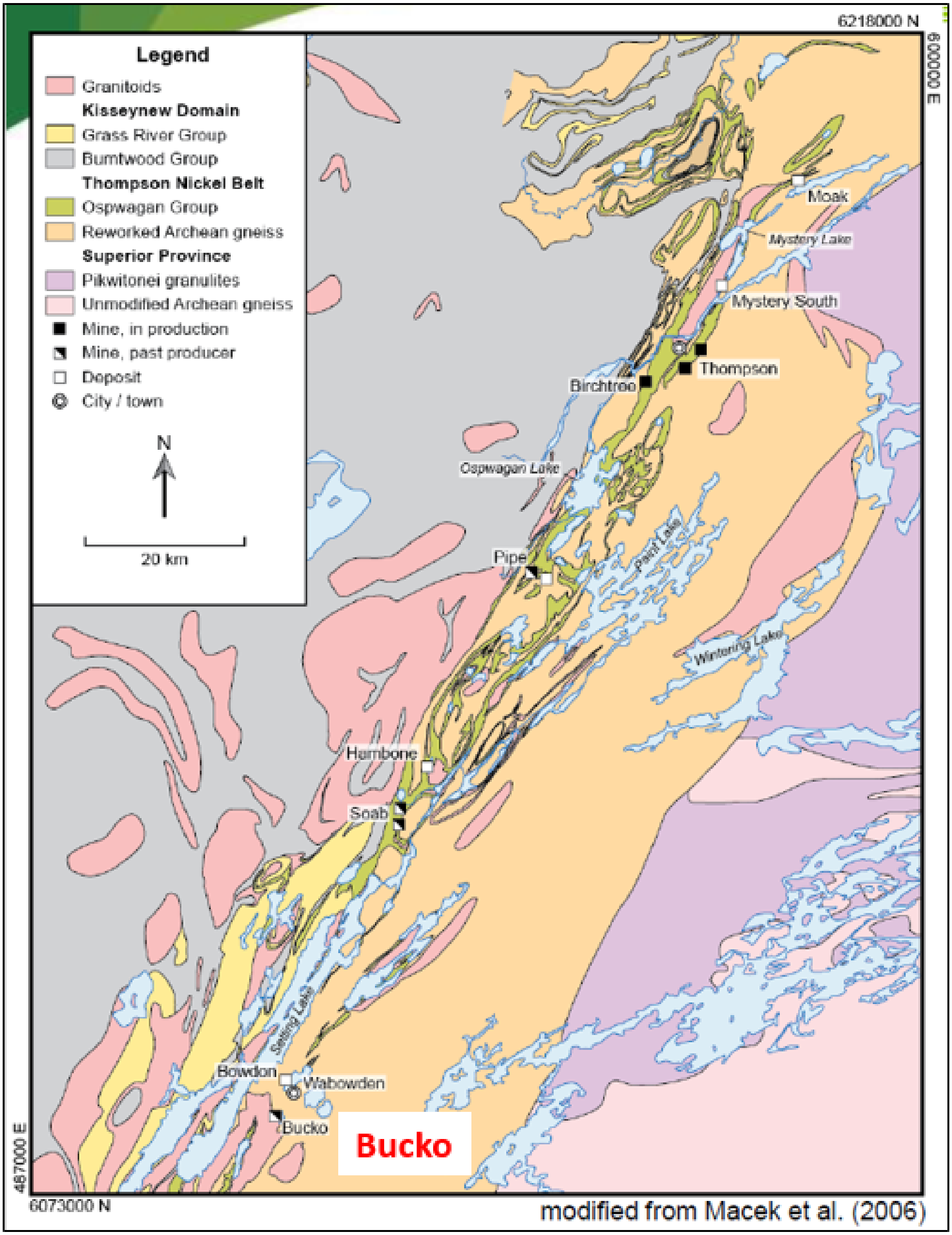
The Ospwagan metavolcanic rocks consist of pillowed and massive metabasalt flows. They are recrystallized to amphibolites and primary depositional textures are not preserved. Magnesium metabasalt and minor ultramafic flows are also associated with these flows. Field relationships suggest that the metavolcanic rocks are coeval with the metasedimentary rocks. The ultramafic rocks occur as serpentinites and ultramafic amphibolites. The serpentinites occur as sheet-like or lenticular concordant bodies in the reworked Archean gneisses and Ospwagan Group rocks and range from dunite to peridotite in composition. The ultramafic amphibolites also occur as lenticular concordant bodies in these Archean and Proterozoic rocks. The general character of the ultramafic rocks suggest that they originally intruded as sills early in, or prior to, the Hudsonian Orogeny (Layton-Matthews *et al.*, 2007; MGS, 2017a).

The TNB has a very complex tectonic and metamorphic history (Bleeker, 1990b; Zwanig, 2005; Lightfoot *et al.*, 2017). At least four phases of deformation have been recognized, involving major folding events and active shear zones (Figure 7.3). An earlier folding event produced tight sub-horizontal plunging synclinal structures; and a subsequent cross-folding event produced sub-vertically plunging folds. The reworked basement gneisses underwent earlier prograde Archean granulite facies regional metamorphism and subsequent pervasive retrograde Proterozoic amphibolites facies regional metamorphism (Figure 7.4).

The nickel sulphide deposits of the TNB are genetically and spatially related to the serpentinite sills, particularly in the Ospwagan Group rocks. The present distribution is the result of re-mobilization during the complex tectono-metamorphic history of the TNB. The sulphides occur as massive and inclusion bearing sulphides on the contact between the serpentinites and the country rocks and in the country rocks, as stringers or veins in the serpentinites and country rocks, and interstitial grains in the serpentinites.

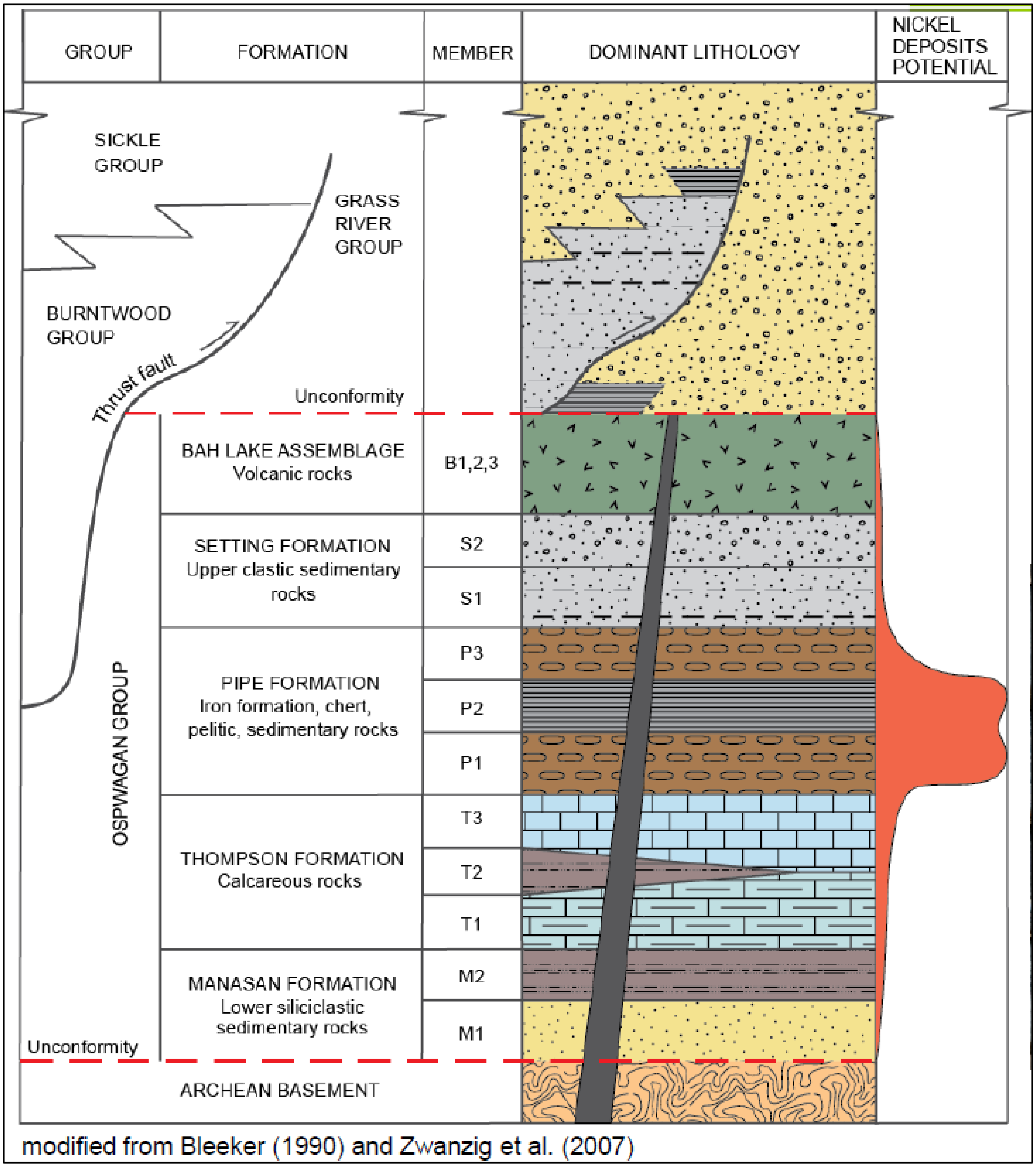
The TNB has produced over 4 billion pounds (1.8 billion kg) of nickel metal since the early 1960s (source www.vale.com website). In addition to Bucko Lake, past producers include the Thompson Open Pit, Birchtree, Pipe, Soab, and Manibridge Deposits (see Figure 7.1). Numerous additional nickel sulphide deposits have been delineated, however, not mined (e.g., Franchuk *et al.*, 2016). Generally, the TNB nickel sulphide deposits have lower contents of Cu and PGM than similar mineral deposits in Paleoproterozoic belts elsewhere. Presently, the largest nickel producer in the area is Vale at its Thompson underground mine.

**FIGURE 7.1 BUCKO LAKE DEPOSIT REGIONAL GEOLOGIC SETTING**



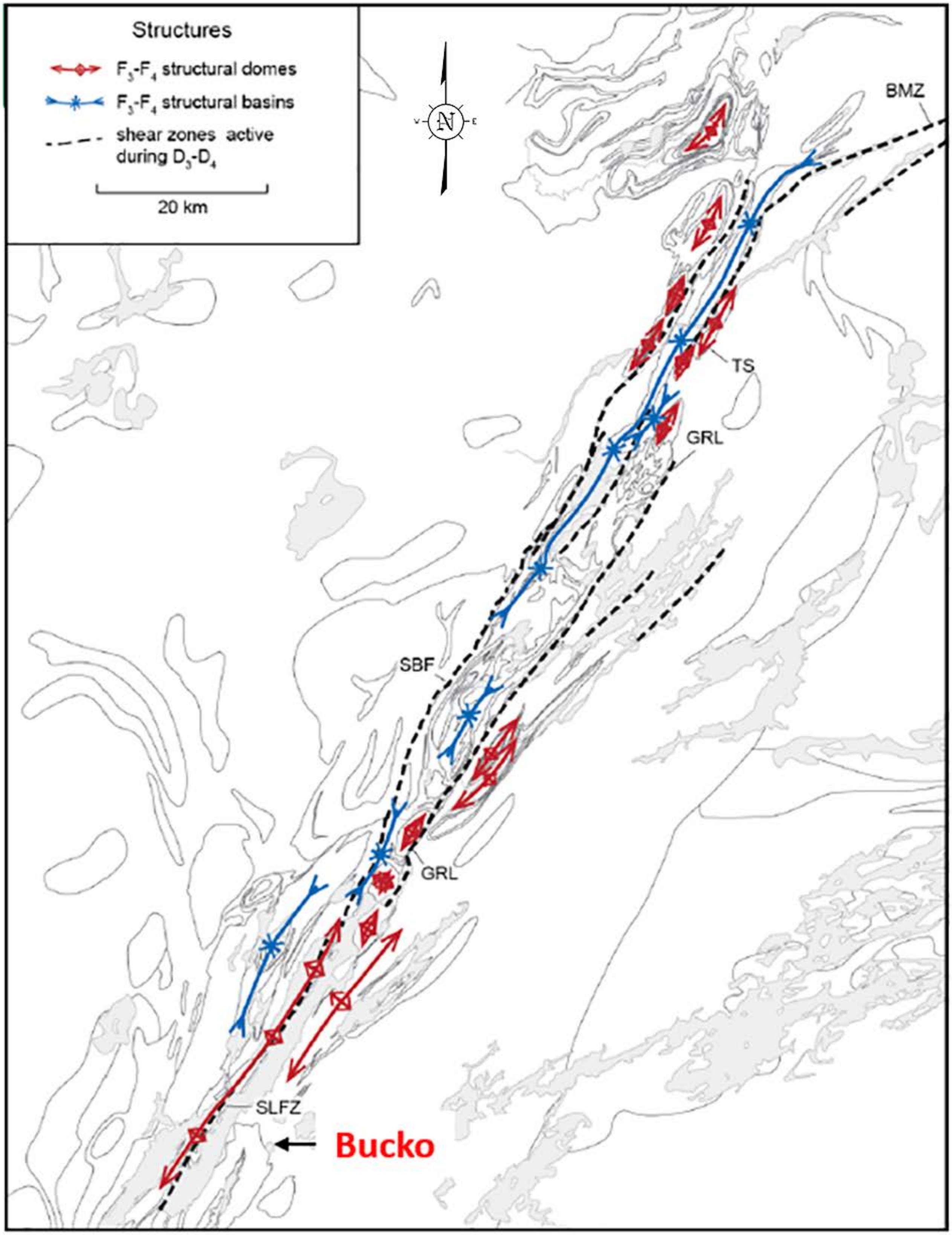

***Source:*** *MGS (2017a)*

**FIGURE 7.2 TNB REGIONAL STRATIGRAPHIC COLUMN**



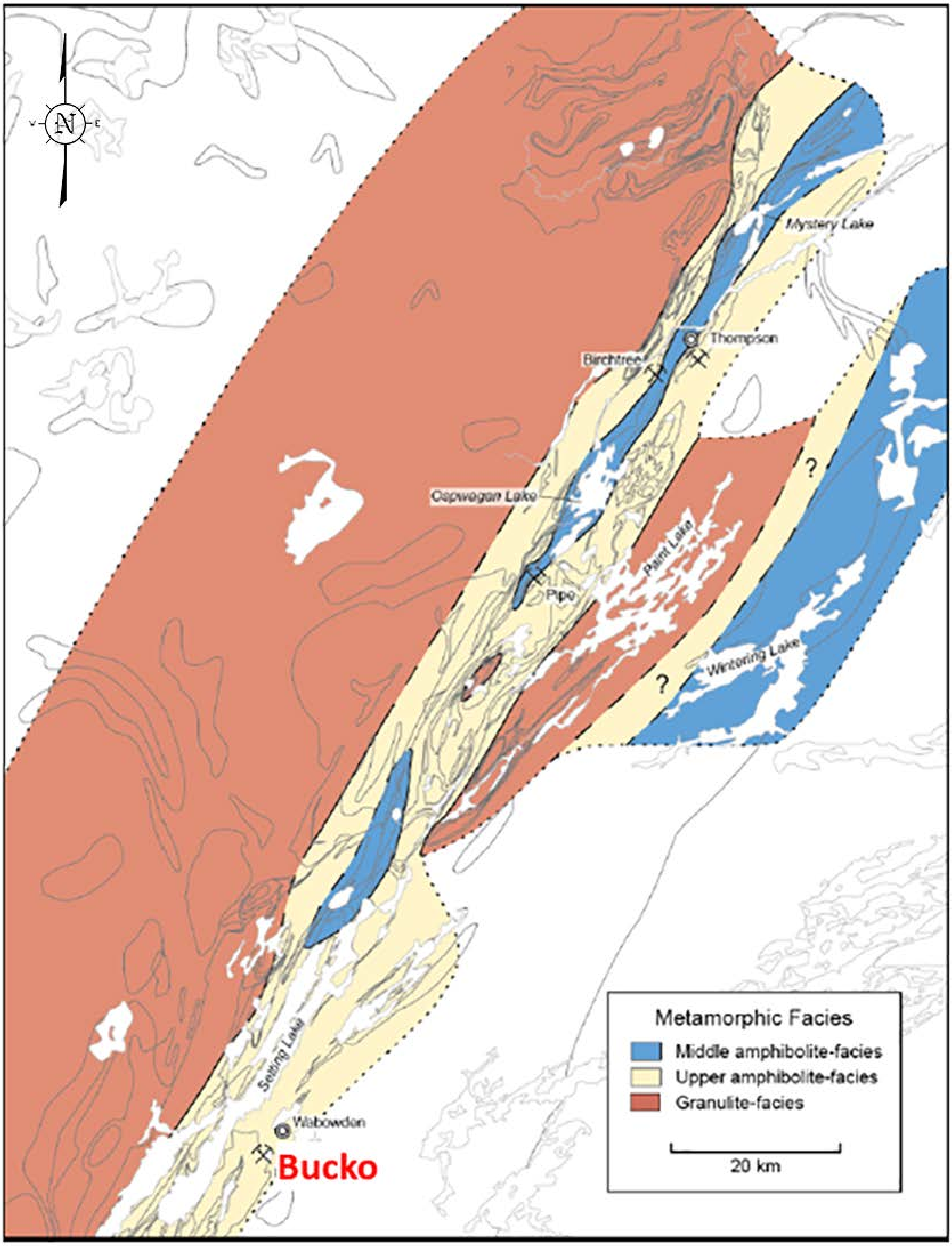

***Source:*** *MGS (2017a)*

**FIGURE 7.3 TNB STRUCTURAL GEOLOGY**




***Source:*** *MGS (2017b)*

## FIGURE 7.4 TNB REGIONAL METAMORPHIC GEOLOGY




***Source:*** *MGS (2017b)*

## 7.2 LOCAL GEOLOGY

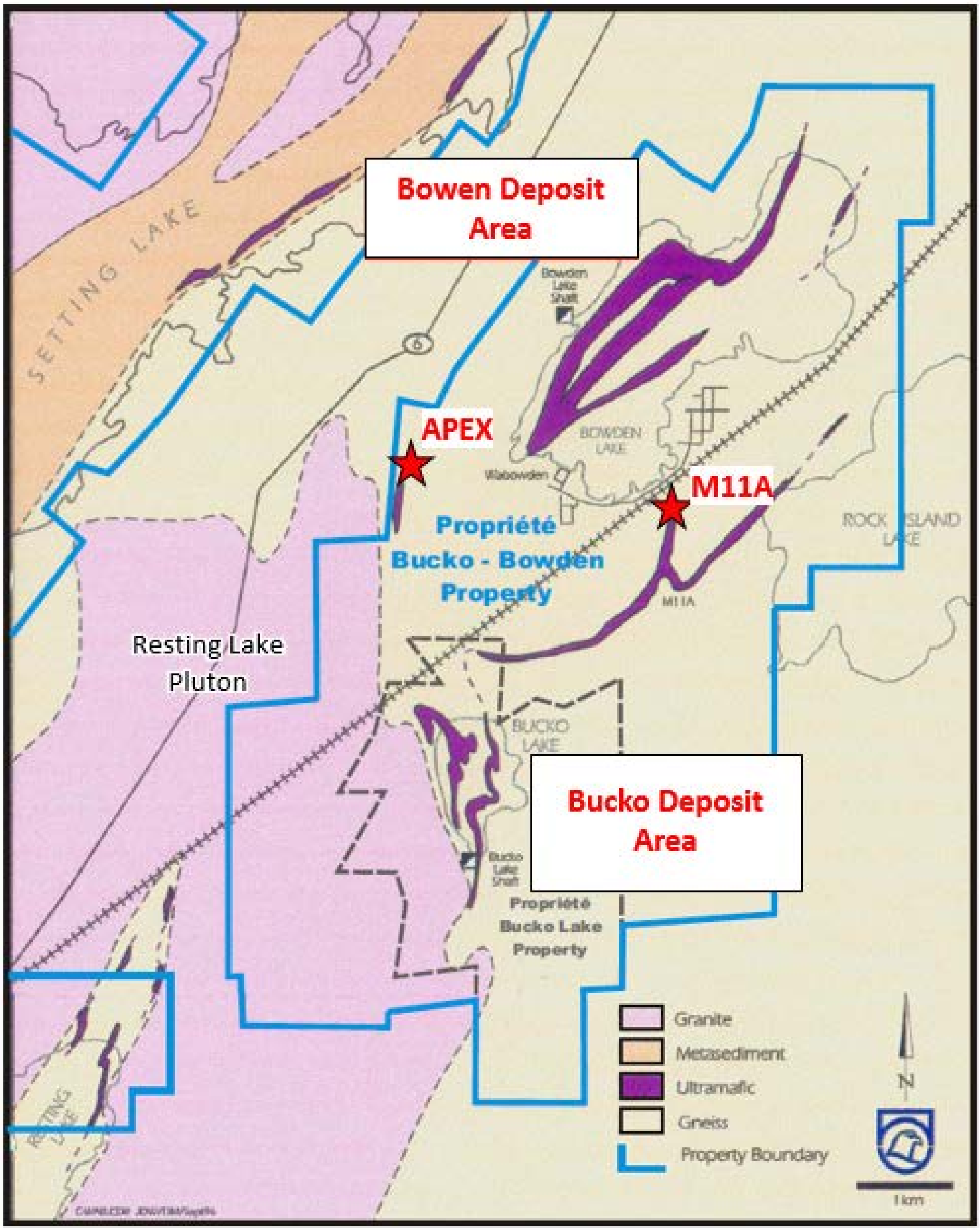
The Bucko Lake area of the Property is underlain by Archean gneisses and Paleoproterozoic Ospwagan Group metasedimentary and ultramafic intrusive rocks (Figure 7.5). The Archean gneisses are intruded by Paleoproterozoic ultramafic sills, including the Bucko Lake Ultramafic, which hosts the Bucko Lake nickel sulphide deposit. The Bucko Lake Ultramafic sill is on the northeast flank of the Resting Lake Pluton. The footwall contact of the nickel sulphide deposit occurs in close contact with granodiorite gneiss associated with this intrusion.

The Bucko Lake Ultramafic sill is mainly composed of metamorphosed peridotite and dunite with smaller amounts of olivine orthopyroxenite, poikilitic harzburgite, orthopyroxenite and amphibole-bearing peridotite. This sill has been interpreted to be a hook-shaped body 800 m long and dips 75° to 80° east. It is approximately 20 m wide at the south end and gradually increases to >150 m wide at the north end, where it wraps around the nose of a synformal fold structure that plunges steeply to the south.

Contacts of the ultramafic bodies with the surrounding country rocks are generally obscured by alteration, shearing or late-stage pegmatite dykes. Blocks of plagioclase amphibolite gneiss occur in the northern part of the ultramafic sill. The larger xenoliths occur within a distinct bulge or keel in the footwall of the ultramafics adjacent to the Hinge Zone. These blocks appear to be xenoliths of country rock incorporated into the sill during emplacement.

The Bucko Lake Ultramafic Sill has undergone two stages of metasomatic alteration (Good and Naldrett, 1993). The first phase was serpentinization of the olivine, with concurrent alteration of orthopyroxene to anthophyllite, tremolite and phlogopite. The second stage of alteration was superimposed on the serpentinized ultramafics and occurs as envelopes around pegmatite dykes and fractures. The envelopes range from cm to m wide and consist of an outer zone of talc and tremolite, a central zone of fibrous tremolite, and an inner zone of phlogopite and minor anthophyllite.

**FIGURE 7.5 BUCKO LAKE LOCAL GEOLOGY**




***Source:*** *P&E (2007)*
***Description:*** *Geology based on historical mapping by Falconbridge.*
*Legend: Gneiss = Archean, Metasediment = Ospwagan Group;*
*Ultramafic = mineralized intrusions.*

## 7.3 DEPOSIT GEOLOGY AND MINERALIZATION

Within the Bucko Lake Deposit, three main zones of nickel sulphide mineralization have been recognized:

1. The West Limb Zone or western limb of the fold structure. The Lower, Middle, and Upper Zones follow interpreted continuity in elevated mineralization between drill hole intercepts through corresponding portions of the Bucko Lake Intrusion. Two corridors of elevated nickel within this area are referred to as the North and South trends;

2. The Hinge Zone occupies the "hinge" area between the western and eastern fold limbs and represents the northernmost portion of the Deposit and consists of three zones of mineralization interpreted to be folded extensions to the Lower, Middle, and Upper Zones observed on the West Limb; and

3. The Footwall Zone represents a recently discovered mineralized horizon that was intersected during the course of infill drilling and driving footwall development on the 1,000 ft (304.8 m) level in 2008. This Zone is interpreted to ties within mineralization intersected by historical exploration drill holes near the southern limit of drilling on the 1,400 ft (426.7 m) level.

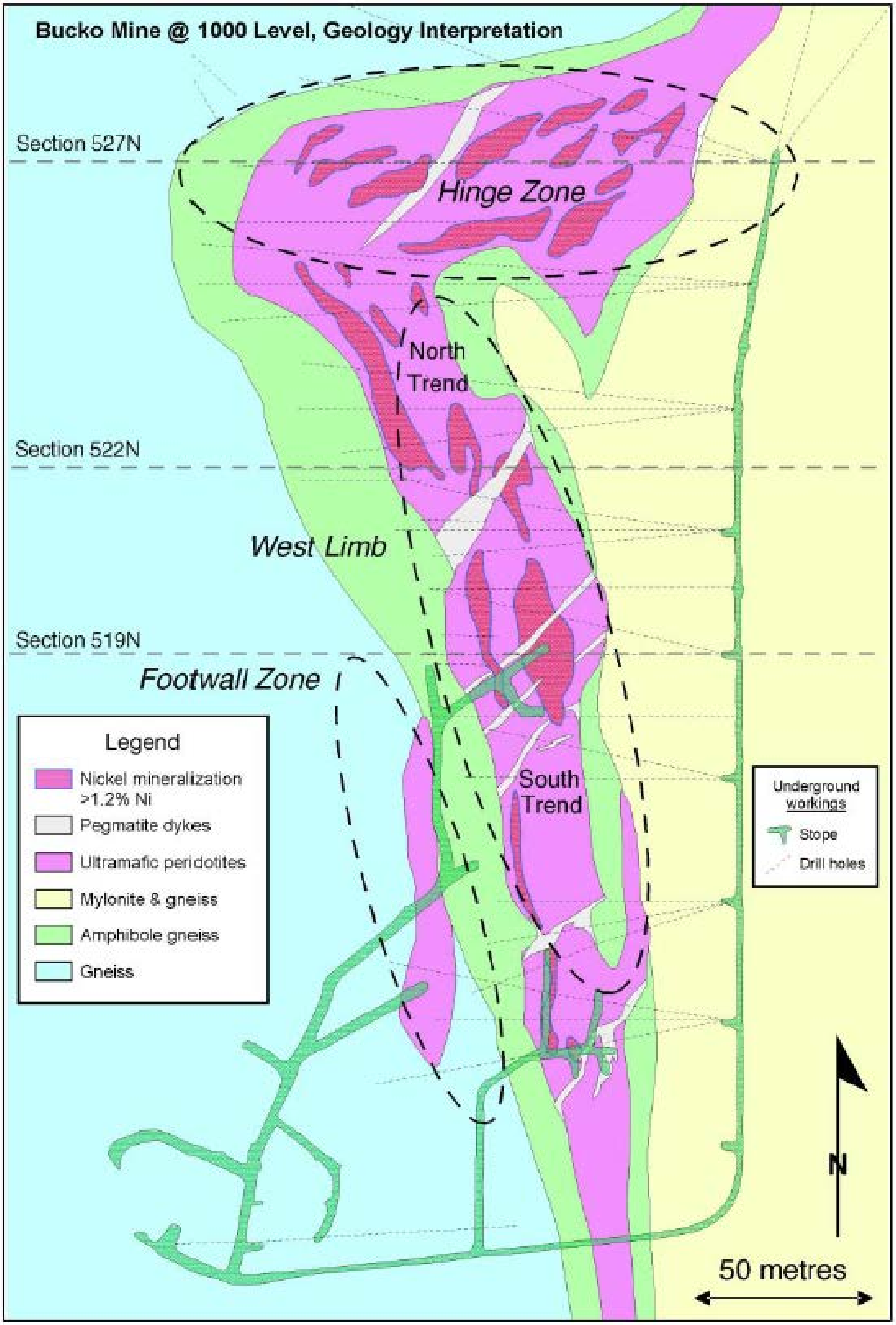
These mineralized zones at Bucko Lake are shown in Figures 7.6 to 7.9.

Wide zones of lower-grade disseminated mineralization (generally >1.0% Ni) typically envelope higher grade net-textured to semi-massive sulphide layers or shoots (>3.0% Ni) within the host ultramafic intrusion. The overall appearance is one of a brecciated mass with sub-angular breccia fragments of mineralization rimmed with a mass of altered tremolite. This 'breccia' creates unequal breakage and subsequent weakness in unsupported faces.

A network of remobilized sulphide veinlets range in size from mm to m and are associated with a fracture-controlled talc/tremolite/phlogopite/anthophyllite alteration network that overprints the intrusion. Sulphides are found along altered contacts with pegmatite dykes that cross cut the intrusion. The styles of mineralization as mapped underground are represented in Figure 7.10.

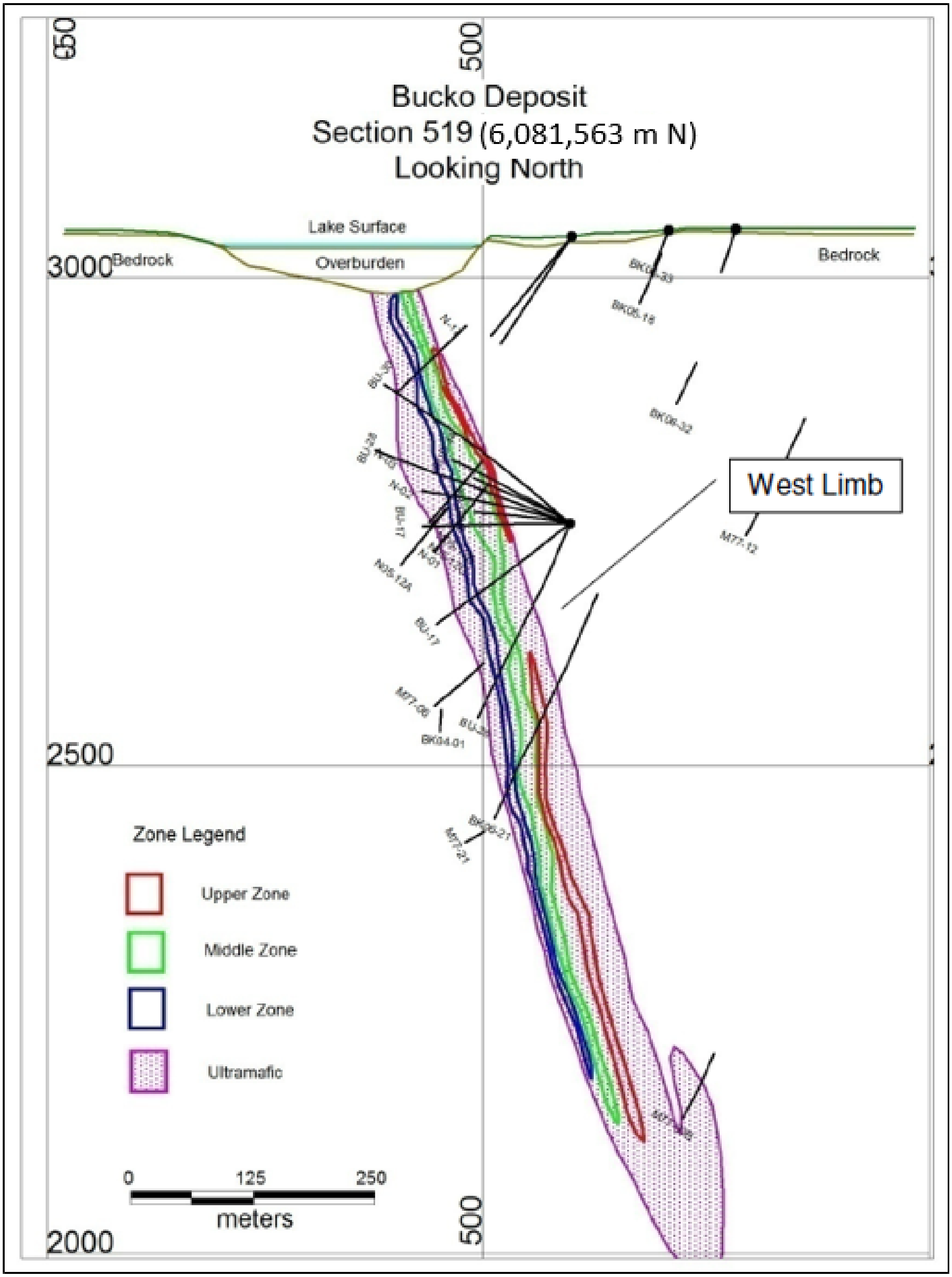
Mineralization consists of disseminated to net-textured sulphides, mainly pentlandite, pyrrhotite, pyrite and chalcopyrite with minor mackinawite, violarite and cubanite. The massive sulphides from Bucko Lake, like those from the Thompson 1D Deposit, have the highest Ni/Co ratios among the TNB deposits (>100) (CAMIRO, 2004). Given that the Ni contents in the pentlandites from the Bucko Lake and Thompson 1D Deposits are in the same range as the other TNB deposits, the high Ni/Co ratios can be attributed to relatively lower Co abundances in the two Deposits. The lower Co abundances could reflect low magmatic Co contents. However, given the extent of deformation in the Thompson 1D Deposit, it is possible that the 1D pentlandites lost Co due to deformation. The Bucko pentlandites are also deformed and may have lost Co as a result.

**FIGURE 7.6 BUCKO LAKE DEPOSIT 1,000 FT LEVEL INTERPRETED GEOLOGY**



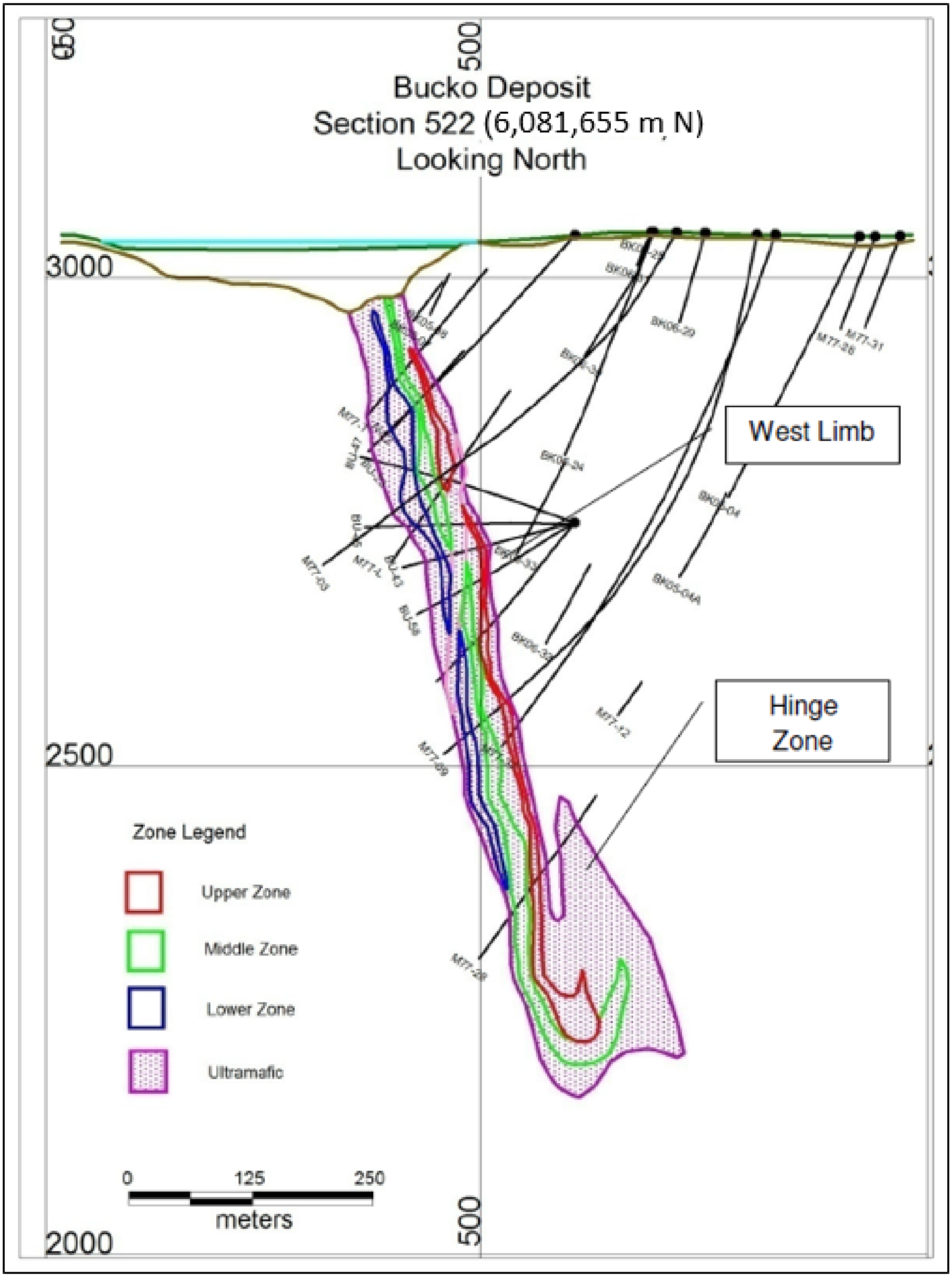

***Source:*** *Griffin et al. (2012)*

FIGURE 7.7 BUCKO LAKE CROSS-SECTIONAL PROJECTION 519 N



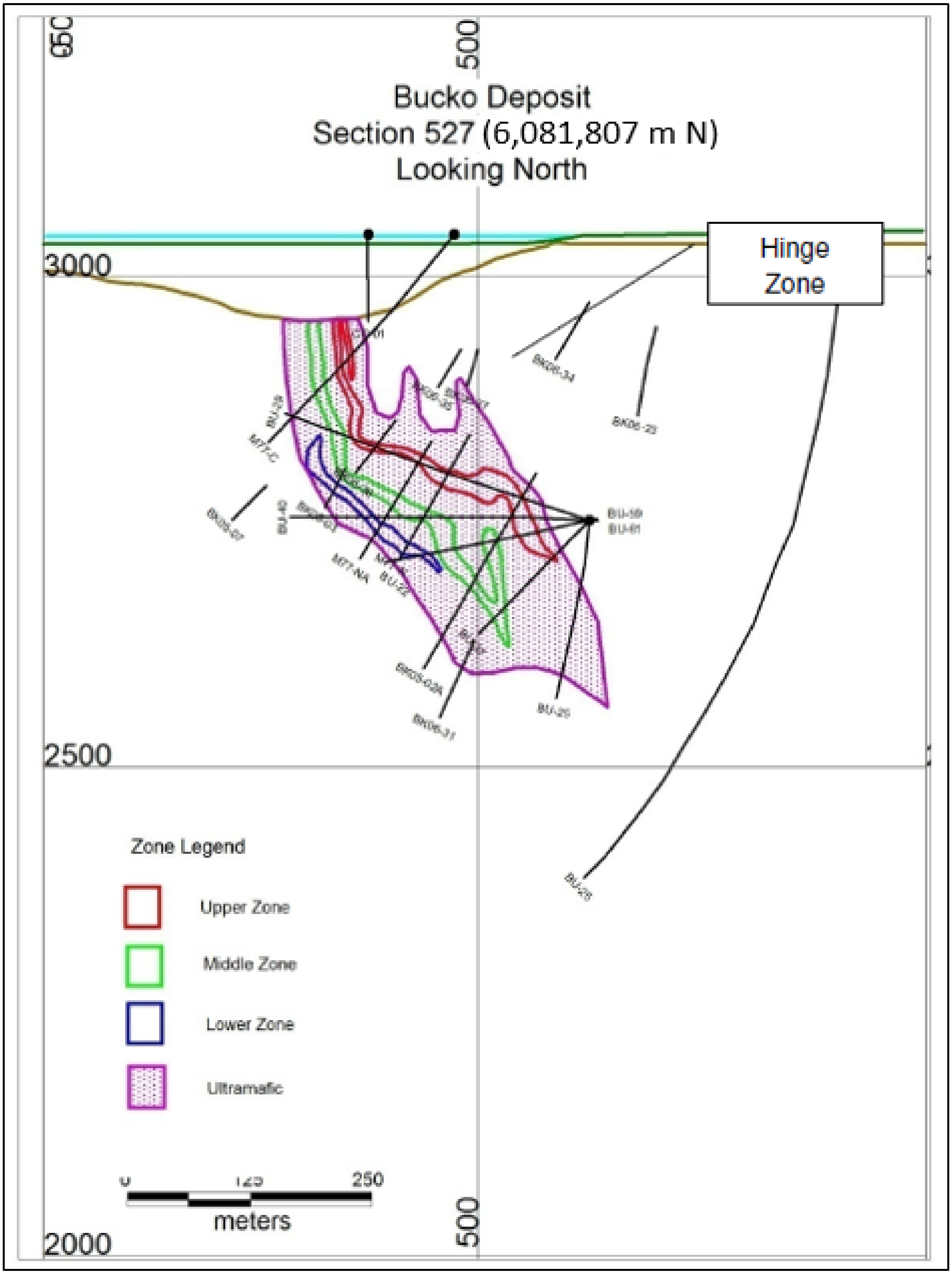

***Source:*** *Crowflight (2009), modified by the Authors (July 2022).*

**FIGURE 7.8 BUCKO LAKE CROSS-SECTIONAL PROJECTION 522 N**



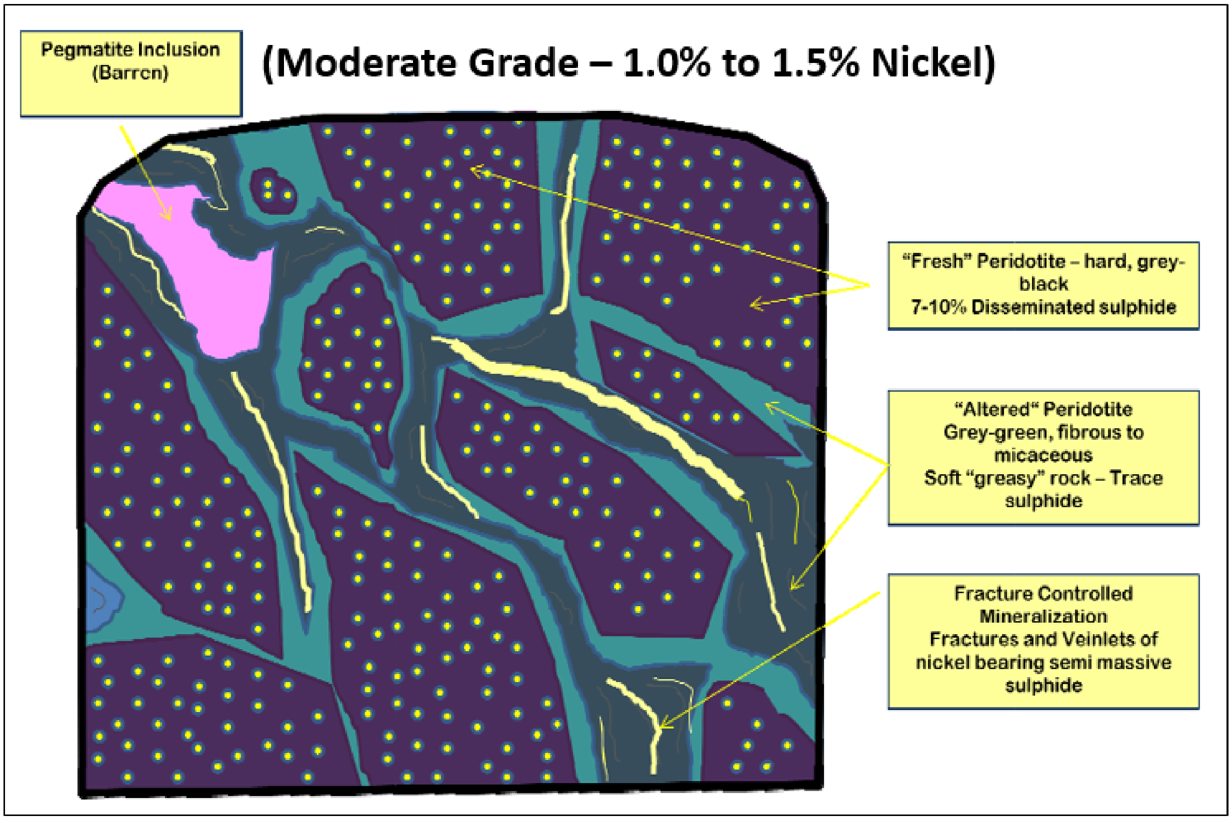

***Source:*** *Crowflight (2009), modified by the Authors (July 2022).*

**FIGURE 7.9 BUCKO LAKE CROSS-SECTIONAL PROJECTION 527 N**




***Source:*** *Crowflight (2009), modified by the Authors (July 2022).*

**FIGURE 7.10 BUCKO LAKE STYLES OF NICKEL SULPHIDE MINERALIZATION**




***Source:*** *Crowflight (2009), modified by the Authors (July 2022).*
***Note:*** *Yellow = massive and disseminated nickel sulphide mineralization underground at Bucko Lake.*

At Bucko Lake, primary disseminated nickel sulphide mineralization is typical of that in komatiitic dunite-associated deposits (Good and Naldrett, 1993). Mobilized sulphides occur in amphibolite xenoliths, sheared granitic pegmatite dykes and sheared peridotite, and are subdivided into two types: 1) early xenolith-hosted sulphides and 2) later stringer sulphides. The abundance of PGM, Au, Cu and Ni in primary sulphides is apparently unaffected by serpentinization and amphibolite-grade metamorphism, however, Cu and Au were lost during the metasomatic alteration adjacent to granitic pegmatite dykes. The composition of the xenolith-hosted mobilized sulphides is similar to that of the primary sulphides. However, the stringer sulphides are relatively enriched in Cu and depleted in Ni and Ir.

## 7.4 ADDITIONAL DEPOSITS/PROSPECTS OF INTEREST

The Bowden Lake, M11A and Apex Deposits are not included in the updated Mineral Resource Estimates described in Section 14 of this Technical Report (see Figure 7.5). Nevertheless, these three Deposits could be considered targets for future drilling and Mineral Resource updates. The geology of each of these three Deposits is summarized below.

### 7.4.1 Bowden Lake Deposit

The Bowden Lake Deposit is located under Bowden Lake adjacent to the Town of Wabowden, approximately 4 km north-northeast of the Bucko Lake Mine. Geologically, the Bowden Lake area is underlain by Archean gneisses and Opswagan Group (Manasan Formation) metasedimentary rocks that host mineralized ultramafic rocks. The western portion of this area is underlain by an amphibole quartz monzonite, considered to be an extension of the Resting Lake Pluton. The full extent of the Opswagan Group metasedimentary rocks in this area is poorly understood.

The Bowden Nickel Deposit occurs within a faulted, folded and pegmatite intruded, altered ultramafic-mafic complex within the mafic to felsic gneisses. The Deposit consists of a large number of variable-size, elongate lenticular disseminated sulphide bodies extending over a strike length of >2.5 km. These sulphide bodies all occur within ultramafic sills, however, they show no consistent relationship to either structural footwall or hanging wall contacts.

The nickel mineralization occurs as sulphide disseminations interstitial to metasomatized olivine grains. Net-textured sulphides have also been observed locally in the ultramafics. The sulphides consist mainly of pyrrhotite, pentlandite, pyrite, chalcopyrite and mackinawite with minor violarite and millerite. Stringer-type mineralization is present in proximity to the pegmatites and consists of hydrothermally remobilized veins and veinlets. This stringer mineralization generally consists of semi-massive pyrrhotite, pentlandite, pyrite and chalcopyrite.

In 2005, Xstrata Nickel completed seven drill holes from the surface of Bowden Lake to further evaluate the trend of elevated nickel content. The 2007 Crowflight Mineral Resource Estimate incorporated 66 drill holes completed historically and the seven drill holes completed in 2005 into its updated Mineral Resource Estimates. Bowden Lake Deposit was included in the 2012 updated Mineral Resource Estimates (Griffin *et al.,* 2012).

### 7.4.2 M11A Deposit

The M11A Deposit was discovered by Falconbridge during the 1970s and is located 2 km northeast of the Bucko Lake Mine. The M11A Deposit is an elongate, lenticular disseminated sulphide body hosted in an ultramafic body. The M11A mineralized body strikes over 500 m at N050° prior to splitting into two bodies (north-northeast and east) over 250 m. The horizontal thickness varies from 6 to 120 m.

The main M11A mineralized body consists of several small lenses of higher-grade nickel sulphide mineralization within larger disseminations of lower-grade nickel sulphides. The M11A area has three mineralized zones, referred to as M11A North, M11A South and M11A Central. The higher-grade nickel zone M11A North was discovered in 2006 and was subject to drilling by Crowflight and Xstrata in 2006 and 2007 and CaNickel between 2010 and 2012. M11A was included in the 2012 updated Mineral Resource Estimates (Griffin *et al.*, 2012). The M11A Deposit remains open to expansion by drilling at depth and along strike.

### 7.4.3 Apex Prospect

The Apex Prospect was discovered by Crowflight and Xstrata Nickel in 2006, approximately 3 km north of the Bucko Lake Mine. The Inferred Mineral Resource presented in Section 6 is based on 13 holes totalling 4,263 m that were drilled in 2006 and 2007. The Apex Prospect drilling in 2008 yielded no significant intercepts, which downgraded the potential of the investigated geophysical targets. Apex was included in the 2012 updated Mineral Resource Estimates (Griffin *et al.*, 2012). The Prospect retains exploration potential for expansion at depth.

## 8.0 DEPOSIT TYPES

The Bucko Lake Deposit and its satellite deposits are magmatic sulphide deposits formed as a product of komatiitic magmatism during formation of the TNB, a segment of the Circum-Superior Craton Belt (Ciborowsky *et al.*, 2017) (Figures 8.1 and 8.2). Since formation, the magmatic sulphide deposits have been variably modified and remobilized during post-depositional tectonism and high-grade metamorphism of the TNB (Figure 8.3).

Three types of nickel sulphide deposits are recognized in the TNB (Lightfoot *et al.,* 2017):

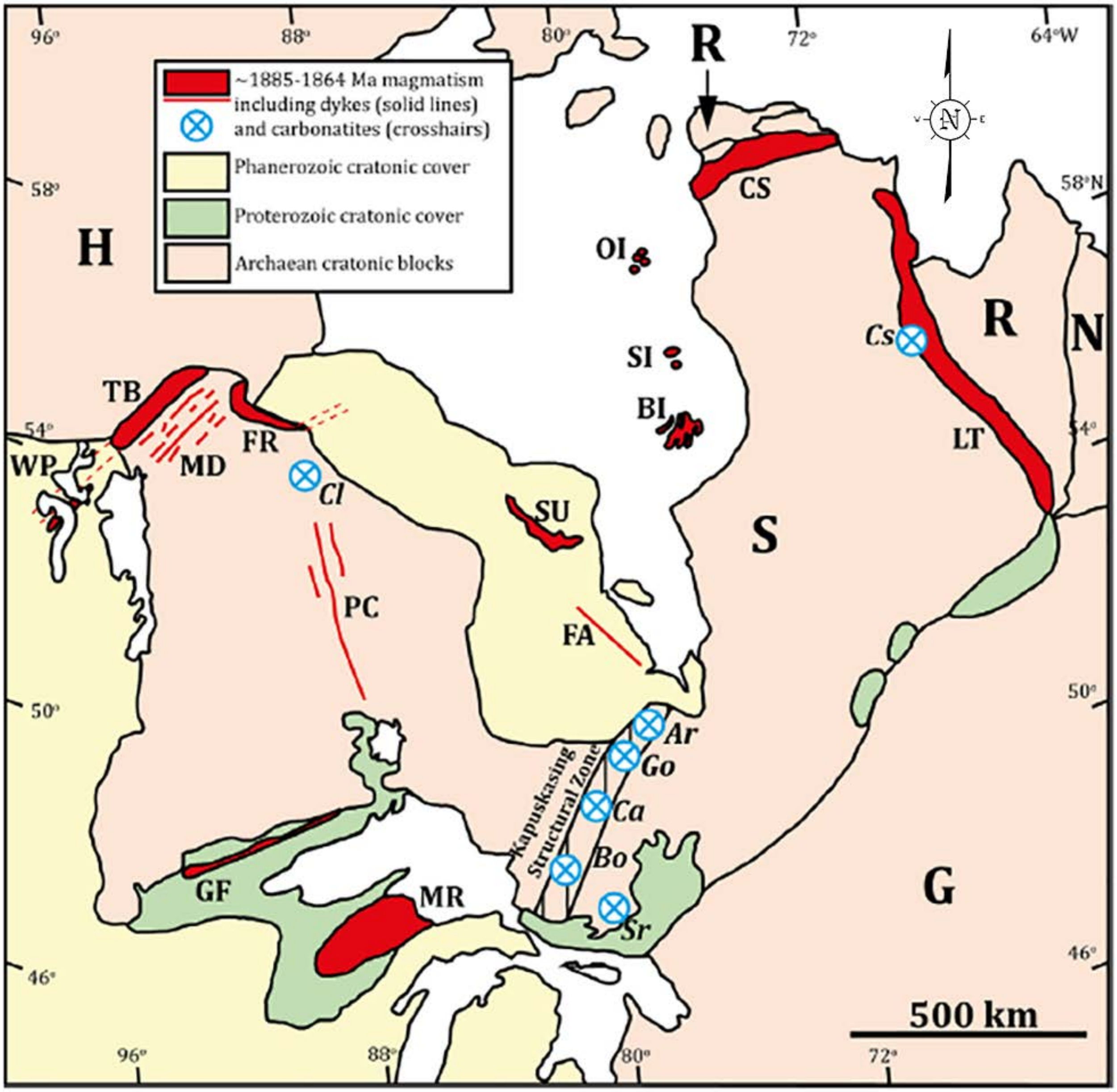
1. Metasedimentary rock-hosted mineralization, as represented by the Thompson Mine Deposits. This mineralization tends to be massive sulphides, inclusion-bearing sulphide and banded sulphide schist. Massive sulphides consist of pyrrhotite with trains of pentlandite "eyes" up to several cm in size and are very rich in pentlandite and poor in chalcopyrite. Most of this type of mineralization contains inclusions of country rock. Its very high-grade and large size (2.3% Ni and 150 Mt; Layton-Matthews *et al.*, 2007) makes the Thompson Deposit the predominant nickel sulphide deposit in the TNB;

2. Mineralization associated with ultramafic bodies and adjacent metasedimentary rocks, as represented by the Birchtree Deposits. The Birchtree Deposits are typically associated with serpentinized ultramafic boudins, however, they are also locally developed in pressure shadows associated with more competent ultramafic bodies within the metasedimentary succession that hosts the ultramafic bodies. Birchtree consists of brecciated semi-massive to massive, structurally remobilized nickel sulphide mineralization associated with brecciated terminations of mineralized ultramafic intrusions; and

3. Mineralization largely hosted within serpentinized ultramafic intrusions. Such deposits tend to be large-tonnage, low-grade deposits, and may contain smaller, higher-grade massive sulphide to semi-massive sulphide cores within larger, lower-grade disseminated sulphide halo. The host serpentinite may occur within the Ospwagan metasedimentary units (e.g., the Pipe Mine) or the Archean gneiss units (e.g., Bucko Lake Mine). Note, however, that the ultramafic intrusions previously interpreted to be intruding the Archean basement (Bucko) have been re-interpreted to be intruding migmatitic and granulite-facies paragneisses of the lower Ospwagan Group (CAMIRO, 2004).

In this classification scheme, the Bucko Lake nickel sulphide deposits (Bucko Lake, Bowden, M11A and Apex) are classified as Type 3 deposits. However, the effects of overprinting deformation and metamorphism on the original stratigraphic relationships, depositional rock textures, and magmatic sulphide compositions remain to be comprehensively studied and understood.

### FIGURE 8.1 LOCATION OF THE TNB IN THE CIRCUM-SUPERIOR CRATON BELT




***Source:*** *Ciborowsky et al. (2017).*

***Notes:*** *TB = Thompson Belt; CS = Cape Smith Belt, LT = Labrador Trough (all Paleoproterozoic); S = Superior Province (Archean craton)*

## **FIGURE 8.2** PROCESSES LEADING TO FORMATION OF A MAGMATIC NICKEL SULPHIDE DEPOSIT

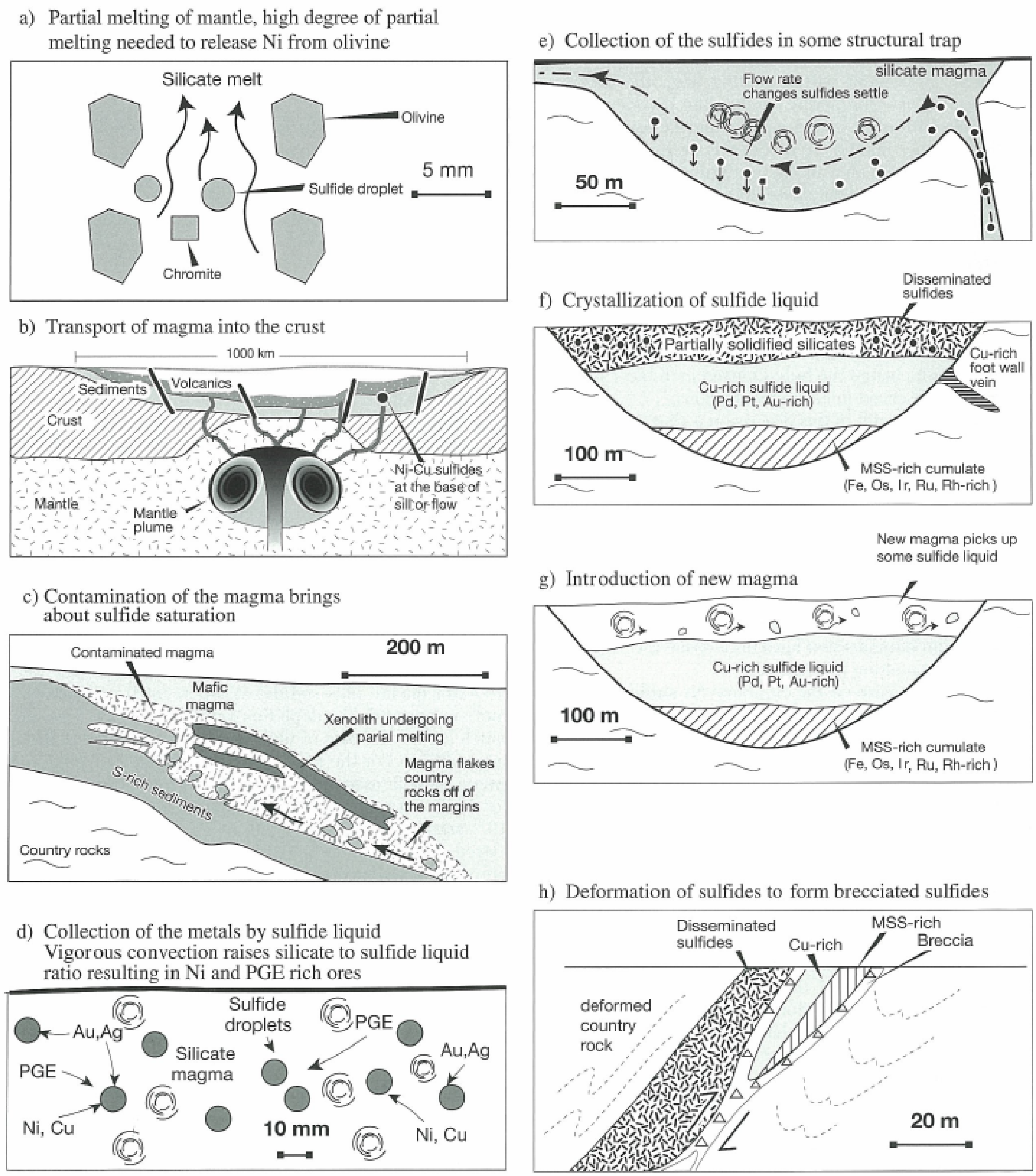
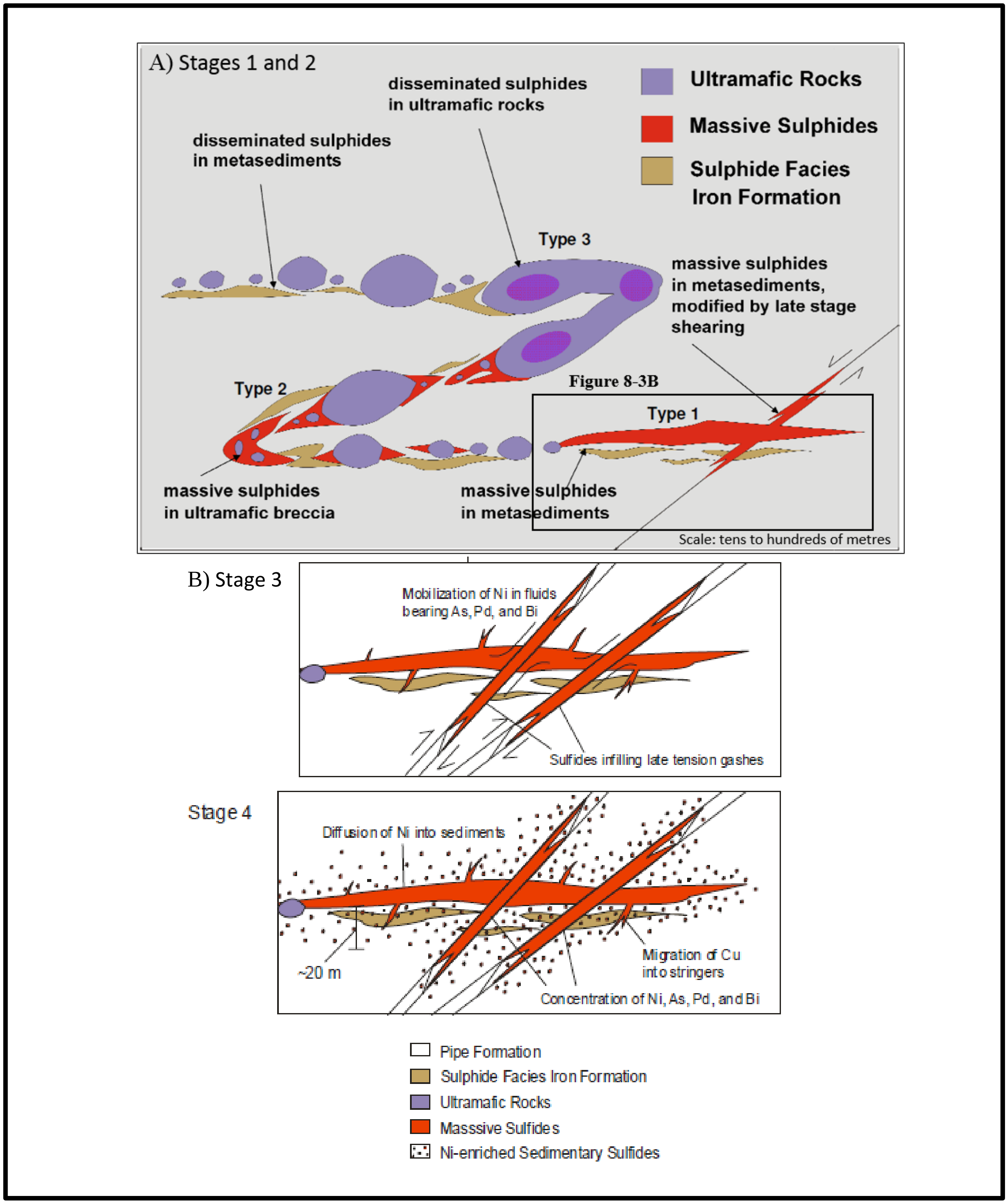



FIG. 16. Cartoon outlining the processes that lead to the formation of a Ni sulfide ore deposit. a. The mantle melts to release Ni from olivine and PGE from sulfides. b. Magma is transferred to the crust along crust penetrating faults. c. Sulfur is added to the magma from sediments to bring about saturation of a sulfide liquid. d. The sulfide droplets assimilate chalcophile metals. e. The droplets are transported by the magma until the magma flow slows such that they collect at the base of the intrusion or flow. f. The sulfide liquid undergoes crystal fractionation to produce an mss cumulate and a Cu-rich liquid that can be injected into the footwall. g. In some cases there may be a new injection of magma and the Cu sulfide liquid may be entrained and moved to a new site collection site. h. Deformation concentrates in the incompetent sulfides, resulting in sulfides being displaced from their parent body, possibly as breccias.

***Source:*** *Barnes and Lightfoot (2005).*

**FIGURE 8.3 A-B MAGMATIC NIS DEPOSIT STYLES AND MODIFICATION IN THE TNB**




***Sources:*** *Crowflight. (2009); see also Bleeker (1990), CAMIRO (2004) and Layton-Matthews et al. (2007).*

***Description:*** *Mineral deposit model representing the history of post-magmatic modification of TNB nickel sulphide deposits in four stages.* ***Stage 1****: magmatic emplacement;* ***Stage 2****: Folding and stretching of the magmatic sulphides and boudinage of the ultramafic bodies during high-grade metamorphism (>600°C) during dextral movement* ***Stage 3****: Late-stage ductile-brittle deformation of the sulphides; and* ***Stage 4****: cooling of the sulphides following high-temperature metamorphism, resulting in diffusion of Ni and precious metals into the metasedimentary rocks and migration of Cu and precious metals into late stage tension gashes, producing a halo of disseminated-stringer mineralization around the massive sulphide bodies.*

# 9.0 EXPLORATION

CaNickel has not conducted any exploration that is non-drilling exploration on the Bucko Lake Property. The drilling programs completed by CaNickel are summarized in Section 10 of this Technical Report.

## 10.0 DRILLING

## 10.1 INTRODUCTION

The total amount of drilling at the Bucko Lake Mine Deposit and its satellite deposits is summarized in Table 10.1. The locations of the satellite nickel sulphide deposits M11A, Bowden Lake and Apex relative to Bucko Lake are shown in Figure 10.1. Note that Bucko North is located north and adjacent to the Bucko Lake Mine Deposit.

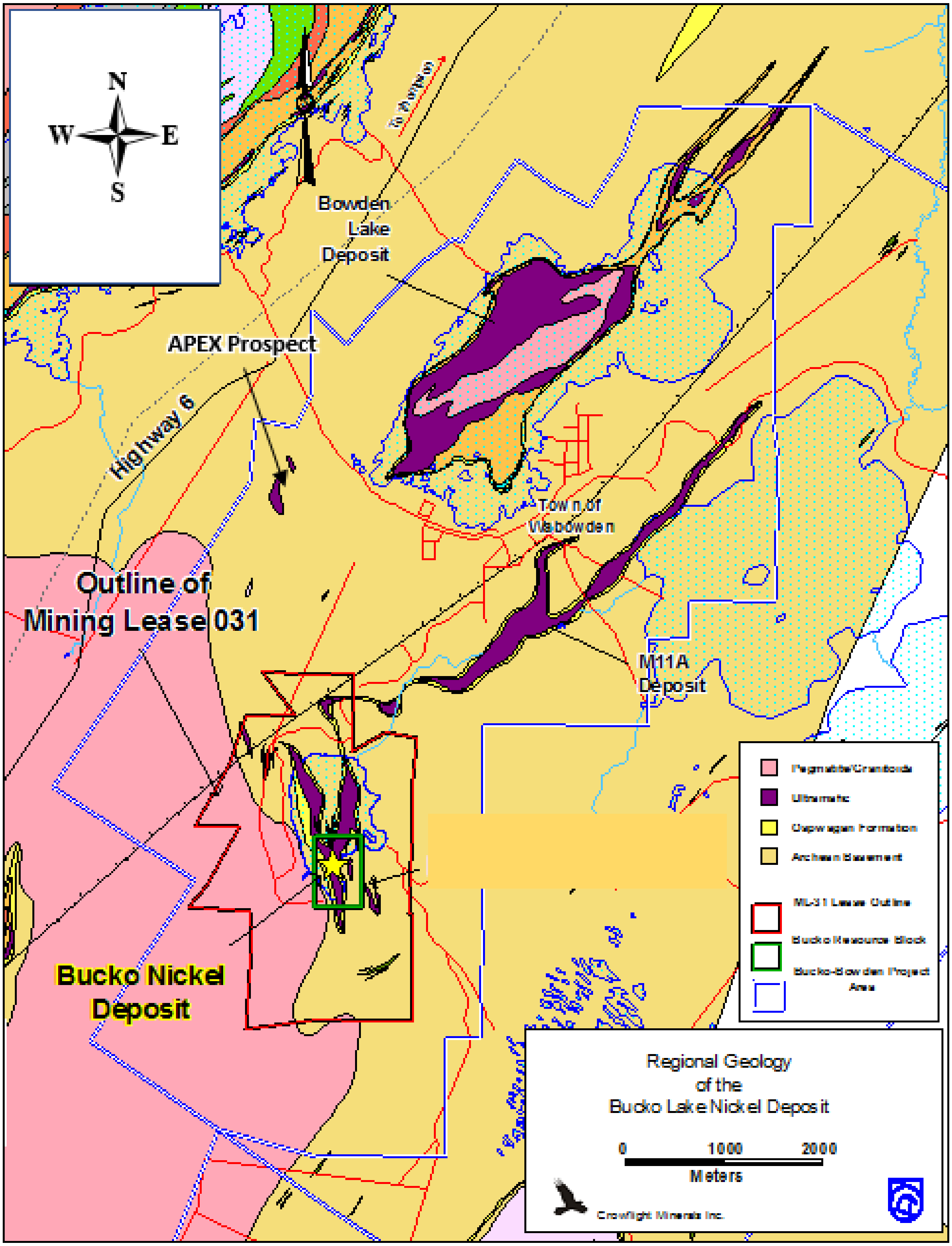
**TABLE 10.1**
**SUMMARY OF DRILLING BUCKO LAKE AND SATELLITE DEPOSITS SINCE 1960S**

| Company | Years | Property | Metres Drilled | Number of Drill Holes |
|---|---|---|---|---|
| Falconbridge/Crowflight | 1962 to 2008 | Bucko Lake | 101,174 | 340 |
| CaNickel/Crowflight | 2009 to 2011 | Bucko Lake | 42,471 | 285 |
| CaNickel | 2013 | Bucko North | 8,683 | 17 |
| **Subtotal** | | **Bucko Lake** | **152,328** | **642** |
| | | | | |
| CaNickel/Crowflight | 2005 to 2012 | M11A | 34,900 | 75 |
| Crowflight | 2007 to 2008 | Apex | 4,263 | 13 |
| Falconbridge/Crowflight | 1960 to 2005 | Bowden Lake | 23,412 | 61 |
| CaNickel | 2013 | Bowden Lake | 3,078 | 4 |
| **Subtotal** | | **Satellite Deposits** | **65,653** | **153** |
| | | | | |
| **Grand Total** | | | **217,981** | **795** |

***Source:*** *Griffin et al. (2012) and CaNickel (press release dated September 23, 2013).*

In total, 642 surface and underground drill holes totalling 152,328 m have been completed by Falconbridge and Crowflight/CaNickel at Bucko Lake. In addition, 153 drill holes, totalling 65,653 m, have been completed in the areas of the satellite deposits. Overall, 795 drill holes, totalling 217,981 m, have been completed on the Bucko Lake Property since 1962. A listing of diamond drill companies, drill core sizes, and downhole deviation survey tools utilized by Crowflight is presented in Table 10.2.

**FIGURE 10.1** **LOCATION OF THE BUCKO LAKE MINE DEPOSIT AND ITS SATELLITE DEPOSITS ON THE BUCKO LAKE PROPERTY**




***Source:*** *Griffin et al. (2012)*

| TABLE 10.2<br>BUCKO LAKE DRILLING COMPANIES CONTRACTED BY CROWFLIGHT | | | | | |
|---|---|---|---|---|---|
| **Contractor/Type** | **Period** | **No. of Drill Holes** | **Length (m)** | **Drill Hole Size** | **Survey Tool** |
| **Surface** | | | | | |
| Major Drilling | 2004–2005 | 32 | 14,637 | NQ | Maxibor |
| Forage Orbit | 2006–2007 | 37 | 17,070 | NQ | Reflex EZ-Shot |
| More Core | 2008 | 8 | 539 | BQ | FLEXIT |
| | | | | | |
| **Underground** | | | | | |
| Boart Longyear | 2008 | 80 | 13,659 | BQ | FLEXIT |

## 10.2 CORE DRILLING, LOGGING AND SAMPLING PROCEDURES

The information below on the CanNickel/Crowflight drilling, logging and sampling procedures is taken largely from Griffin *et al.* (2012).

The drilling at Bucko Lake was completed from surface and underground collar locations, whereas only surface drilling has been completed at M11A, Bowden Lake and Bucko North. Surface drilling typically consists of NQ-size (47.6 mm) drill core holes and underground drilling consists of BQ-size (36.5 mm) core holes. The collar positions of the majority of the Crowflight/CaNickel surface drill holes have been surveyed by DGPS and recorded as UTM coordinates using the NAD 83 Zone 14N projection.

The drill hole collar positions were subsequently converted to a local mine coordinate system utilizing an orthographic projection system based on an assigned shaft elevation of 304.8 m. The eastings and nothings were translated without rotation by subtracting 520,000 m from the UTM Easting and 6,000,000 from the UTM Northing. This local grid system was utilized for surface and underground engineering design and Mineral Resource modeling. Underground drill hole collars were spotted and aligned prior to completion utilizing standard underground survey methods and located again following completion of drilling at each set-up.

All down-hole surveys were completed at 30 m intervals utilizing an electronic single shot survey instrument (such as Reflex EZ-Shot or Flex-it), which accurately measures azimuth, inclination, magnetic tool face angle, gravity roll angle, magnetic field strength and temperature. Azimuths from the survey tool were based on measurements of magnetic field strength. Due to the presence of magnetic minerals in the sulphide mineralization, a careful review of all magnetic field strength data was necessary to ensure removal of inaccurate azimuth readings from the database. During 2011 and 2012, a number of drill holes were re-surveyed using a Reflex Maxibor instrument.

All drill core was logged either at the Bucko Lake Mine on-site core facility or at CaNickel's exploration core shack in Wabowden, and subsequently stored in a secure facility in Wabowden. Drill core was logged directly into a secure SQL server-based drill database utilizing software developed for use in conjunction with Amine, the Company's standard engineering design software platform. The Amine logging software ensured the application of standard codes for rock types, minerals, alteration and structure.

Geotechnical logging to determine core recovery, RQD and other parameters was completed on-site by a geo-technician following the procedures of Golder Associates Ltd. for determining rock mass rating ("RMR") for the rock types encountered at Bucko and M11A. All logging information was uploaded to a central drill database located at site, where it was accessed and utilized for geological interpretation and engineering design purposes.

After logging, marking and tagging, and before sampling, the drill core was photographed first dry, and then wet. The photographs were stored on CaNickel's central server on-site. Access to the server and the drill hole database is limited to authorized geology personnel only.

The drill core sampling done by Crowflight from 2004 to 2008 followed protocols developed by Falconbridge and was written-up in a document entitled "Thompson Nickel Belt South – Diamond Drill Standard Procedures, an adaptation of the El Morrow Protocol Generic Drill Site Standard Operating Procedures (Noranda) and the Raglan Diamond Drill Standard Procedures Manual." Under this protocol, drill core intervals do not overlap geological contacts or changes in concentration of mineralization. Average drill core recovery was 95% in mineralized zones. Zones of poor core recovery tend to occur in areas cut by structure and alteration.

Casings were left in the completed drill holes and capped. Collar locations were marked by a stake affixed with aluminum tags containing drill hole number, depth, azimuth, and dip. Underground holes were plugged and marked with metal tags containing the drill hole name information.

## 10.3 2011–2013 DRILLING PROGRAMS

The drilling program results for Crowflight/CaNickel in 2011–2013 are summarized below. This information is summarized from CaNickel press releases available under the Company profile on SEDAR (www.sedar.com). The 2011–2012 drilling program targets were the M11A area to the northeast and the Bowden Lake Deposit to the north-northeast of the Bucko Lake Mine, respectively. The 2013 drilling target was Bucko North, north of the main Bucko Lake Deposit (see Figure 6.2).

### 10.3.1 M11A Area Drilling

In 2011, Crowflight budgeted C$3M for exploration expenditures, including 12,000 m of surface diamond drilling. The drilling program was planned to upgrade the Mineral Resource and assess the economic potential of the M11A Deposit area, through infill drilling of the mineralized zones and expanding the Deposit size along strike to the northeast, southwest and down-dip.

The winter phase of the drilling program consisted of 12 drill holes totalling 5,202 m, with 1,548 samples assayed from 11 of the drill holes. Assay result highlights for 2011 drill holes M11-01 to M11-12 are listed in Table 10.3. (Note that Table 10.3 also includes assay results for the 2012 drill holes).

| TABLE 10.3<br>CANICKEL 2011–2012 DRILL RESULTS FOR M11A NORTH DEPOSIT | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** | **Cu (%)** | **Pt (g/t)** | **Pd (g/t)** |
| M11-01 | 379.5 | 385.25 | 5.75 | 0.80 | 0.06 | 0.07 | 0.36 |
| and | 416.52 | 426.50 | 9.98 | 2.35 | 0.16 | 0.33 | 0.50 |
| M11-02 | 297.44 | 302.20 | 4.76 | 1.25 | 0.15 | 0.12 | 0.34 |
| and | 354.13 | 362.33 | 8.20 | 1.33 | 0.04 | 0.06 | 0.18 |
| M11-03 | 272.70 | 278.10 | 5.40 | 1.53 | 0.15 | 0.06 | 0.31 |
| and | 306.55 | 316.40 | 9.85 | 0.71 | 0.06 | 0.07 | 0.13 |
| M11-04 | lost hole @ 371 m depth - no significant intercepts | | | | | | |
| M11-04B | 336.05 | 350.64 | 14.59 | 0.92 | 0.06 | 0.11 | 0.20 |
| and | 356.14 | 363.35 | 7.21 | 1.02 | 0.09 | 0.11 | 0.23 |
| and | 371.98 | 379.60 | 7.62 | 1.45 | 0.14 | 0.16 | 0.30 |
| M11-05 | 244.45 | 245.40 | 0.95 | 3.09 | 0.04 | 0.22 | 0.51 |
| M11-06 | 228.55 | 231.50 | 2.95 | 0.85 | 0.04 | 0.08 | 0.14 |
| M11-07 | 372.30 | 387.15 | 14.85 | 1.19 | 0.07 | 0.05 | 0.16 |
| including | 378.60 | 380.00 | 1.40 | 7.44 | 0.17 | 0.09 | 0.91 |
| and | 466.60 | 473.00 | 6.40 | 1.80 | 0.09 | 0.08 | 0.28 |
| M11-08 | 314.25 | 328.50 | 14.25 | 1.60 | 0.08 | 0.05 | 0.15 |
| including | 321.40 | 328.50 | 7.10 | 2.58 | 0.1 | 0.08 | 0.26 |
| M11-09 | 372.94 | 383.37 | 10.43 | 0.92 | 0.06 | 0.08 | 0.16 |
| and | 398.92 | 417.80 | 18.88 | 1.00 | 0.07 | 0.1 | 0.22 |
| M11-10 | 269.90 | 284.30 | 14.40 | 0.78 | 0.04 | 0.08 | 0.16 |
| and | 344.20 | 355.00 | 10.80 | 0.63 | 0.05 | 0.06 | 0.13 |
| M11-11 | 274.05 | 295.17 | 21.12 | 0.98 | 0.05 | 0.05 | 0.12 |
| including | 285.10 | 292.17 | 7.07 | 1.55 | 0.07 | 0.06 | 0.25 |
| M12-01 | 554.10 | 568.60 | 14.50 | 0.60 | 0.03 | 0.04 | 0.10 |
| including | 567.60 | 568.60 | 1.00 | 1.02 | ----- | ----- | ----- |
| M12-02 | 568.00 | 575.30 | 7.30 | 2.59 | 0.20 | 0.23 | 0.55 |
| and | 594.40 | 595.30 | 0.90 | 1.41 | ----- | ----- | ----- |
| M12-03 | 445.50 | 470.20 | 24.70 | 1.18 | 0.04 | 0.08 | 0.21 |
| including | 468.05 | 469.05 | 1.00 | 10.25 | ----- | ----- | ----- |
| and | 515.60 | 524.30 | 8.70 | 0.95 | 0.07 | 0.06 | 0.20 |
| including | 515.60 | 518.60 | 3.00 | 1.66 | ----- | ----- | ----- |
| including | 517.00 | 518.60 | 1.30 | 2.40 | ----- | ----- | ----- |
| M12-03 | 523.00 | 524.30 | 1.30 | 1.05 | ----- | ----- | ----- |
| M12-03 | 537.10 | 538.10 | 0.90 | 1.56 | ----- | ----- | ----- |
| M12-03 | 548.30 | 549.10 | 0.80 | 2.89 | ----- | ----- | ----- |
| M12-04 | 525.90 | 528.90 | 3.00 | 1.49 | ----- | ----- | ----- |

| **TABLE 10.3**<br>**CANICKEL 2011–2012 DRILL RESULTS FOR M11A NORTH DEPOSIT** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** | **Cu (%)** | **Pt (g/t)** | **Pd (g/t)** |
| including | 526.65 | 527.85 | 1.20 | 1.07 | ----- | ----- | ----- |
| M12-05 | 461.30 | 463.60 | 2.30 | 1.26 | ----- | ----- | ----- |
| M12-05 | 474.00 | 474.90 | 0.90 | 1.20 | ----- | ----- | ----- |
| M12-06 | 530.30 | 531.40 | 1.10 | 4.43 | ----- | ----- | ----- |
| M12-07 | 369.90 | 370.70 | 0.80 | 1.08 | ----- | ----- | ----- |
| M12-07 | 461.00 | 466.20 | 5.30 | 2.24 | ----- | ----- | ----- |
| including | 462.45 | 465.00 | 2.55 | 3.03 | ----- | ----- | ----- |
| M12-07 | 472.40 | 475.40 | 3.00 | 1.47 | ----- | ----- | ----- |
| M12-08 | 490.40 | 494.20 | 3.80 | 3.23 | ----- | ----- | ----- |
| M12-08 | 491.90 | 492.80 | 0.90 | 12.6 | ----- | ----- | ----- |
| M12-08 | 517.40 | 520.60 | 3.30 | 2.17 | ----- | ----- | ----- |
| M12-08 | 518.35 | 519.10 | 0.75 | 7.22 | ----- | ----- | ----- |
| M12-08 | 575.00 | 585.40 | 10.40 | 1.20 | ----- | ----- | ----- |
| M12-09 | 418.50 | 419.30 | 0.80 | 1.21 | ----- | ----- | ----- |
| M12-09 | 427.00 | 439.80 | 12.90 | 1.21 | ----- | ----- | ----- |
| including | 427.80 | 431.00 | 3.20 | 2.15 | ----- | ----- | ----- |
| including | 438.05 | 439.80 | 1.75 | 1.64 | ----- | ----- | ----- |
| M12-09 | 440.50 | 453.4 | 12.9 | 1.17 | ----- | ----- | ----- |
| including | 444.80 | 446.15 | 1.35 | 3.45 | ----- | ----- | ----- |
| M12-09 | 465.90 | 467.40 | 1.50 | 1.60 | ----- | ----- | ----- |
| M12-09 | 473.90 | 475.20 | 1.30 | 1.07 | ----- | ----- | ----- |
| M12-09 | 476.40 | 477.30 | 0.90 | 1.98 | ----- | ----- | ----- |
| M12-09 | 492.40 | 494.30 | 1.90 | 2.73 | ----- | ----- | ----- |
| including | 492.40 | 493.30 | 0.90 | 4.16 | ----- | ----- | ----- |
| M12-09 | 516.10 | 516.90 | 0.90 | 1.72 | ----- | ----- | ----- |
| M12-09 | 519.00 | 519.90 | 0.90 | 1.02 | ----- | ----- | ----- |
| M12-09 | 534.60 | 535.80 | 1.20 | 1.37 | ----- | ----- | ----- |
| M12-10 | 421.80 | 422.80 | 1.00 | 1.05 | ----- | ----- | ----- |
| M12-10 | 425.80 | 430.30 | 4.50 | 1.19 | ----- | ----- | ----- |
| M12-10 | 433.40 | 434.90 | 1.50 | 1.05 | ----- | ----- | ----- |
| M12-10 | 497.80 | 498.50 | 0.70 | 3.15 | ----- | ----- | ----- |
| M12-10 | 504.20 | 504.80 | 0.60 | 1.23 | ----- | ----- | ----- |
| M12-11 | 452.10 | 453.90 | 1.80 | 2.37 | ----- | ----- | ----- |
| including | 452.10 | 452.85 | 0.75 | 3.75 | ----- | ----- | ----- |
| M12-11 | 468.00 | 469.50 | 1.40 | 1.10 | ----- | ----- | ----- |
| M12-11 | 497.70 | 500.20 | 2.60 | 0.88 | ----- | ----- | ----- |

| **TABLE 10.3** **CANICKEL 2011–2012 DRILL RESULTS FOR M11A NORTH DEPOSIT** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** | **Cu (%)** | **Pt (g/t)** | **Pd (g/t)** |
| M12-11 | 505.70 | 507.00 | 1.30 | 1.06 | ----- | ----- | ----- |
| M12-12 | 403.70 | 404.50 | 0.80 | 4.90 | ----- | ----- | ----- |
| M12-12 | 425.60 | 429.10 | 3.50 | 0.96 | ----- | ----- | ----- |
| M12-12 | 431.80 | 433.80 | 2.00 | 1.14 | ----- | ----- | ----- |

***Sources:*** *CaNickel press releases (July 29, 2011; March 5, 2012; September 6, 2012).*
***Note:*** *Intersection intervals reported are core lengths; actual true widths were unknown at the time, however, downhole intervals are generally 70% to 80% of core length.*

These 2011 drill hole assay results demonstrate that the M11A North Deposit can be extended to depth and to the northeast and southwest. Currently, the Deposit appears to be linked to the mineralization intersected in previous (Crowflight) drill hole M09-17, with several intervals of potentially mineable widths and grades (see Section 6). Drill hole M11-08 with 14.25 m grading 1.60% nickel and drill hole M11-07 with 14.85 m grading 1.19% nickel, and an additional intersection of 6.40 m grading 1.80% nickel, extended the Deposit to the northeast. The drill hole M11-01 intersection of 2.35% Ni over 9.98 m extends high-grade mineralization in previous drill holes M08-03 and M09-12 farther at depth.

The 2012 winter phase of the M11A area drill program was planned to extend the Deposit to depth and along strike and provide further definition of the known mineralization. 12 drill holes (M12-01 to M12-12) totalling 7,157 m were completed and 1,519 samples assayed. A listing of assay interval highlights is included in Table 10.3. Work completed through April 2012 resulted in improved definition of the mineralization in the previous Inferred Mineral Resource Estimate of the M11A Prospect and demonstrated that the mineralization remains open to expansion by drilling at depth.

### 10.3.2 Bowden Lake Drilling

The winter 2012–2013 surface drill program focused on the Bowden Lake Deposit. Four diamond drill holes were completed totalling 3,078 m and 669 samples were assayed. Assay interval highlights are listed in Table 10.4.

| **TABLE 10.4** **CANICKEL 2012 DRILL RESULTS FOR BOWDEN LAKE DEPOSIT** | | | | |
|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** |
| BD12-01 | 348.00 | 349.80 | 1.80 | 0.52 |
| BD12-01 | 353.60 | 356.60 | 3.00 | 0.52 |

**TABLE 10.4**
**CANICKEL 2012 DRILL RESULTS FOR**
**BOWDEN LAKE DEPOSIT**

| Drill Hole ID | From (m) | To (m) | Drill Core Length (m) | Ni (%) |
|---|---|---|---|---|
| BD12-01 | 406.60 | 409.60 | 3.00 | 0.54 |
| BD12-01 | 470.00 | 475.90 | 5.90 | 0.68 |
| BD12-01 | 484.10 | 489.70 | 5.60 | 0.63 |
| BD12-01 | 577.30 | 586.30 | 9.00 | 0.57 |
| BD12-01 | 590.50 | 601.00 | 10.50 | 0.69 |
| BD12-01 | 627.50 | 642.00 | 14.50 | 0.60 |
| BD12-01 | 647.20 | 649.20 | 2.00 | 0.61 |
| BD12-02 | 491.20 | 493.30 | 2.10 | 0.50 |
| BD12-02 | 499.80 | 502.80 | 3.00 | 0.62 |
| BD12-02 | 506.60 | 510.50 | 3.90 | 0.54 |
| BD12-02 | 514.00 | 516.40 | 2.40 | 0.53 |
| BD12-02 | 519.50 | 522.20 | 2.70 | 0.56 |
| BD12-02 | 549.50 | 553.90 | 4.40 | 0.50 |
| BD12-02 | 556.90 | 563.00 | 6.10 | 0.50 |
| BD12-02 | 565.40 | 570.80 | 5.40 | 0.54 |
| BD12-02 | 575.50 | 580.00 | 4.50 | 0.56 |
| BD12-02 | 595.50 | 600.00 | 4.50 | 0.70 |
| BD12-02 | 659.50 | 666.50 | 7.00 | 0.61 |
| BD12-02 | 672.40 | 675.00 | 2.70 | 0.50 |
| BD12-03 | 505.40 | 508.40 | 3.00 | 0.60 |
| BD12-03 | 635.50 | 638.50 | 3.00 | 0.55 |
| BD12-03 | 679.50 | 684.00 | 4.50 | 0.53 |
| BD12-03 | 745.00 | 747.70 | 2.70 | 0.65 |
| BD12-03 | 773.00 | 776.00 | 3.00 | 0.60 |
| BD12-03 | 778.40 | 780.40 | 2.00 | 0.51 |
| BD12-03 | 791.50 | 794.50 | 3.00 | 0.60 |
| BD12-03 | 803.30 | 805.30 | 2.00 | 0.54 |
| BD12-03 | 825.50 | 828.50 | 3.00 | 0.58 |
| BD12-03 | 831.50 | 846.50 | 15.00 | 0.60 |
| BD12-03 | 850.00 | 853.00 | 3.00 | 0.70 |
| BD12-03 | 856.80 | 861.20 | 4.40 | 0.73 |
| BD12-03 | 864.20 | 874.40 | 10.20 | 0.94 |
| BD12-03 | 881.50 | 892.00 | 10.50 | 0.99 |
| Including | 884.60 | 890.50 | 6.00 | 1.17 |
| BD12-04 | 561.70 | 564.20 | 2.50 | 0.51 |
| BD12-04 | 582.00 | 585.00 | 3.00 | 0.63 |

| TABLE 10.4<br>CANICKEL 2012 DRILL RESULTS FOR<br>BOWDEN LAKE DEPOSIT | | | | |
|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** |
| BD12-04 | 592.00 | 595.00 | 3.00 | 0.52 |
| BD12-04 | 598.00 | 602.50 | 4.50 | 0.51 |
| BD12-04 | 609.30 | 611.80 | 2.50 | 0.53 |
| BD12-04 | 620.30 | 623.30 | 3.00 | 0.54 |
| BD12-04 | 629.20 | 635.10 | 5.90 | 0.53 |
| BD12-04 | 749.30 | 758.20 | 8.90 | 0.66 |
| BD12-04 | 776.30 | 780.30 | 4.00 | 0.52 |

***Source:*** *CaNickel (press release dated July 12, 2013).*
***Note:*** *Intersection intervals reported are core lengths; actual true widths were unknown at the time, however, downhole intervals are generally 70% to 80% of core length.*

### 10.3.3 Bucko North Area

An additional target for the 2013 winter drilling program was the Bucko North area, located north of the Bucko Lake Deposit. The drilling program consisted of 17 surface diamond drill holes totalling 8,682 m, and 1,033 samples (including 41 QA/QC samples) were assayed. Assay interval highlights are listed in Table 10.5.

| TABLE 10.5<br>CANICKEL 2013 ASSAY RESULTS FOR BUCKO NORTH<br>DRILLING | | | | |
|---|---|---|---|---|
| **Drill Hole ID** | **From (m)** | **To (m)** | **Drill Core Length (m)** | **Ni (%)** |
| BK13-01 | 267.80 | 306.80 | 39.00 | 0.29 |
| BK13-01 | 417.70 | 431.10 | 13.40 | 0.40 |
| BK13-02 | 200.70 | 258.60 | 57.90 | 0.25 |
| including | 218.30 | 231.80 | 13.50 | 0.36 |
| BK13-04 | 216.30 | 256.00 | 39.70 | 0.24 |
| BK13-08 | 351.40 | 357.40 | 6.00 | 1.04 |
| BK13-08 | 373.70 | 380.10 | 6.40 | 1.28 |
| BK13-08 | 390.80 | 393.80 | 3.00 | 1.41 |
| BK13-10 | 278.50 | 289.60 | 11.10 | 0.47 |
| BK13-13 | 706.00 | 733.00 | 27.00 | 1.05 |

***Source:*** *CaNickel (press release dated September 23, 2013)*
***Note:*** *All drill intercepts reported are core length and may not be indicative of the true width of mineralization.*

The interpreted northern extension of the Bucko Lake ultramafic sill, host to the high-grade nickel sulphide mineralization at the Bucko Lake Mine, was intersected in 14 of the 17 drill holes completed. Individual intersections of ultramafic peridotite ranged from 0.3 to 113 m (drill hole BK13-13) in drill core length, with assays of up to 1.05% Ni over 27 m from 706 m downhole.

## 11.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

The following section discusses sampling carried out by Falconbridge/Crowflight (2004 to 2008) and Crowflight/CaNickel (2009 to 2012) at the Bucko Lake Mine, inclusive of sampling carried out at the Bucko Lake Mine, and satellite deposits: M11A, Apex and Bowden Lake. Drilling carried out at Bucko Lake North in 2013 has not been reviewed by the Authors and is therefore not discussed here.

## 11.1 SAMPLE PREPARATION AND SECURITY

### 11.1.1 Historical

Historical sampling of drill core as conducted by Falconbridge in the pre-1994 period and more recently (2000) by Nuinsco has been commented upon by RPA (2000), Micon (2001) and Geologica (2004).

Roscoe Postle and Associates ("RPA") reported that "The Falconbridge holes appear to have been sampled at approximately 1.5 m (5 ft) spacing unless there was a geologic reason for a shorter sample" and that the "M-77 series of surface holes and the BU series of underground holes have both been assayed for nickel and copper." The Falconbridge holes were not sampled for PGEs.

Micon (2001) conducted some statistical analysis on the Nuinsco sampling noting that Nuinsco instituted a program of check assaying in which the pulps and rejects for 50 drill core samples originally assayed by TSL Laboratories Inc. ("TSL") were re-assayed by Lakefield Research Limited ("Lakefield Research"). The samples were selected to cover a range of assay values from 0.01 to 5.77% Ni and were taken from seven runs of consecutive samples.

While, overall, the 50 check analyses were similar to the original TSL analyses, a more detailed comparison of TSL results to Lakefield Research results revealed some differences, with the average variance for each pair of samples at approximately 3.50%. The entire set of 50 pulp check samples as assayed by TSL have slightly higher values than Lakefield Research assays. For the subset of samples > 1.5% Ni, the TSL values have an average variance for each pair of samples of approximately 2.33%.

Geologica (2004) concluded that Nuinsco and Falconbridge have sampled the drill holes on the basis of lithological and mineralogical criteria with sample intervals varying from 0.30 to 3.04 m in length. Geologica found that logging was reasonable and to industry standard. Sample descriptions were also found to be reasonably representative. The drill core was sawn prior to sampling and samples were assayed for nickel by TSL in Saskatoon. Copper and PGE assays were not performed.

### 11.1.2 Falconbridge/Crowflight (2004–2008)

The drill core sampling method applied by Crowflight from 2004 to 2008 follows procedure as set forth in Falconbridge's Thompson Nickel Belt South Diamond Drill Standard Procedures, an adaptation of the El Morro Protocol, the Noranda Generic Drill Site Standard Operating Procedures and the Raglan Diamond Drill Standard Procedures Manual.

The distribution of sulphide mineralization sometimes necessitated the use of multiple overlapping criteria to determine sample intervals, due to the complex history of metamorphism and deformation of the Bucko-Bowden area. As much as possible, samples did not overlap distinct sulphide, lithology or alteration domains. All sulphide-bearing ultramafic rock was assayed.

Drill core sample lengths ranged from 0.3 to 1.5 m. Where numerous narrow (<0.3 m) intersections of different rock type occurred, sample intervals were based on the dominance of one rock type over the other. In situations where more than one alteration type occurred over narrow intervals, the sample limits were based on the most dominant alteration. Sample intervals in drill core with <10% sulphide content were based on fluctuations of ±3 to 5% sulphide, on fluctuations of ±5 to 8% sulphide in drill core with 10 to 30% sulphide content, and fluctuations of ±10 to 20% sulphide in drill core >30% sulphide content. Wing samples were also taken up hole and down hole from the sulphide zone.

Drill core samples were prepared onsite by Crowflight employees at secure drill core handling facilities in Wabowden. NQ drill core from surface drilling and select BQTK drill core from underground drilling were sawn in half by diamond saw. One half of the sawn drill core was sent for geochemical analysis and the remaining half returned to the drill core box for storage. The majority of samples taken from BQTK drill core from underground infill drilling were whole-sampled after being photographed. Certified Reference Material ("CRM"), blanks and duplicates were inserted into the drill core sampling sequence. Drill core samples were bagged with tags inserted and the individual sample bags were then placed into larger rice sacks. The rice sacks were then stacked onto pallets and bound in shrink-wrap before being transported to a laboratory for preparation and geochemical analysis by Gardewine North of Thompson, MB.

Drill core boxes were stored in racks or cross-stacked at the Wabowden drill core storage area.

### 11.1.3 Crowflight/CaNickel (2009–2012)

All Bucko and M11A drill core was logged either at the Bucko Lake Mine on-site drill core facility or at CaNickel's exploration core shack in Wabowden, and then stored in a secure facility in Wabowden. Drill core was logged directly into a secure SQL server-based drill database using software developed for use in conjunction with Amine, the Company's current standard engineering design software platform. The Amine logging software ensures the use of standard codes for rock types, minerals, alteration and structure.

Geotechnical logging to determine drill core recovery, RQD and other parameters was completed onsite by a geo-technician following the procedures of Golder Associates Ltd., for the purposes of determining rock mass rating ("RMR") for the rock types encountered at Bucko and M11A. All logging information was uploaded to a central drill hole database located onsite where it was accessed and utilized for geological interpretation and engineering design use.

After logging, marking, and tagging, but before sampling, the drill core was photographed dry, then wet. The photographs were stored on CaNickel's central server onsite. Access to the server and the drill database is limited to Company-authorized geology personnel only.

CaNickel prepared its drill core samples at the Company's secure drill core facilities in Wabowden. The samples consisted of NQ sized (47.6 mm) diamond drill core for most surface drill holes and smaller BQ sized drill core (36.5 mm) from underground drilling. The NQ drill core from surface drilling was split in half using a diamond blade rock saw, whereas the smaller BQ drill core from underground infill (definition) drilling was mainly whole-sampled after it has been logged and photographed. Only a couple of samples from each drill section were selected to split in the 2007 to 2009 underground definition drilling program. Drill core was stored in racks or cross-stacked at the Bucko Lake Mine. Samples were bagged with identification tags, bundled together in rice sacks on shrink-wrap bound pallets, and shipped to independent accredited commercial laboratories for preparation and subsequent analysis.

## 11.2 SAMPLE ANALYSES AND SECURITY

All drill core samples from Falconbridge's, Crowflight's and CaNickel's 2004 to 2012 drilling programs have been sent to ALS Chemex (now known as ALS Minerals ("ALS")) in Thunder Bay, Ontario, for preparation and from there to ALS in Vancouver, BC, for analysis. ALS is independent of CaNickel and has developed and implemented strategically designed processes and a global quality management system at each of its locations. The global quality program includes internal and external inter-laboratory test programs and regularly scheduled internal audits that meet all requirements of ISO/IEC 17025:2017 and ISO 9001:2015. All ALS geochemical hub laboratories are accredited to ISO/IEC 17025:2017 for specific analytical procedures.

Samples received at the ALS preparation facility in Thunder Bay are verified against the submittal forms and weighed, and their subsequent preparation progress is then tracked and monitored by the Laboratory Information Management System ("LIMS"). The entire sample is crushed in a jaw crusher to 75% passing –10 mesh (2 mm). Sieve tests are completed periodically to monitor grain size variation. Drill core samples are split in a riffle splitter to achieve a 200 to 225 g split. The sample splits are pulverized using a ring mill for approximately two minutes to achieve 85% passing –200 mesh. The pulp is sealed in paper envelopes affixed with a digital label and shipped via courier to the ALS analytical laboratory in Vancouver. A confirmation of shipping, including submittal form number, number of samples, and waybill number is emailed from the sample preparation laboratory to the CaNickel Quality Assurance and Quality Control ("QA/QC") geologist.

At the ALS analytical facility in Vancouver, the sample pulps are again verified against the submittal form, logged as 'received' into the LIMS, and then posted to the laboratory's secure website, where their progress may be monitored by authorized staff. For Ni, Cu, Co, Pb, Zn, Fe and S, 0.2 g of the pulp is fused with 2.6 g of sodium peroxide at 650°C. The resulting melt is cooled and dissolved in dilute nitric acid. The solution is analyzed by Inductively Coupled Plasma – Atomic Emission Spectrometry ("ICP-AES") and the results corrected for spectral interference. Calibration solutions for the ICP-AES must be prepared in a similar fashion to achieve matrix matching. Detection limits are 0.01% for both Ni and Cu, and 0.001% for Co.

Analyses for Au, Pt and Pd are carried out by fire assay with ICP-AES finish. Prepared samples are fused with a mixture of lead oxide, sodium carbonate and borax silica, in quarter with 6 mg of gold-free silver and then coupled to yield a precious metal bead. The bead is digested for two minutes at high power microwave in dilute nitric acid. The solution is cooled, and hydrochloric acid is added. The solution is digested for an additional two minutes at half power by microwave. The digestion solution is then cooled, diluted in 4 ml with 2% hydrochloric acid, homogenized and then analyzed for Au, Pt and Pd by ICP-AES.

## 11.3 QUALITY ASSURANCE/QUALITY CONTROL REVIEW

### 11.3.1 Falconbridge/Crowflight/CaNickel Drilling (2004–2012)

As set by the Noranda Inc./Falconbridge Limited Drill Core Sampling and Analysis Protocol (version 2.0), at least one CRM and one blank were inserted per 40 samples. During the later phases of drilling at the Property, CRMs were inserted at an increased rate of one per 25 samples. During the 2004–2012 drill programs a total of 14,643 samples were collected, including core samples, CRMs and drill core blanks.

Analytical results were periodically reviewed and appropriate action taken when problems were detected (as outlined in the Noranda QA/QC protocol). Data review identified QA/QC issues, including data entry errors at the lab or in the field, lab error, sample misallocation, and CRM and blank performance failures that fell outside of the accepted limits of the QC sample calculated mean value ± 2 standard deviations. Failures were summarized in a “Table of Failures”, identifying the QC sample type, sample number, lab work order number, issue, action taken and the outcome, once the investigation has been concluded. If particular QC sample failures warranted confirmation analyses, select samples were rerun to ensure data accuracy and this action was also signified in the “Table of Failures”.

#### 11.3.1.1 Certified Reference Material

A number of different internal CRMs, representing a range of grades found within the deposits, were utilized throughout 2004 to 2012 drilling at the Project: including the EXS-1a, EXS-3a, ENS-3a, RAG-1A, RAG-2A and RAG-3A CRMs. Attempts were made to submit CRMs with similar grades to surrounding drill core samples. QA/QC results were periodically reviewed and appropriate action taken when problems were detected as outlined in the Noranda QA/QC protocol.

The internal CRMs were made for the Laval Exploration Group in January 2000 and were mixed from rocks obtained from the Raglan Mine in Laval, QC. Round Robin assaying was undertaken by several labs, including Lakefield Research, Bondar Clegg and Company Ltd. (“Bondar Clegg”), TSL and X-Ray Assay Laboratories (“XRAL”), with 20 sub-samples of material submitted for testing to establish mean and standard deviation values for nickel, copper, cobalt, sulphur, platinum and palladium. The calculated means and ± 2 standard deviations for each element are listed in Table 11.1.

Lakefield Research of Ontario (acquired by Société Générale de Surveillance Holding S.A. (“SGS”) in 2001), provided testing and research services to the minerals and metals sector, especially in metallurgical, mineralogical, and environmental fields, with laboratories in Canada, Brazil, Chile, Australia, South Africa and the U.S.

Bondar Clegg, acquired by ALS in 2001, was established in 1962 and was a major provider of analytical services to the mineral industry, with laboratory facilities in Canada, the USA, Mexico, Ecuador, Peru, Brazil, Bolivia, Chile and Argentina.

TSL (serviced by SRC Geoanalytical Laboratories from December 2021) was in continuous operation from 1981 until December 2021, with a quality system conforming to requirements of ISO/IEC Standard 17025 guidelines, and participates in the Proficiency Testing program sponsored by the Canadian Certified Reference Materials Project. The lab qualified for the Certificates of Laboratory Proficiency since the program's inception in 1997.

XRAL was founded in 1954 to exploit the multi-element capabilities of newly developed X-Ray fluorescence instruments and was purchased by the SGS Group in 1988.

**TABLE 11.1**
**SUMMARY OF CERTIFIED REFERENCE MATERIALS USED AT BUCKO LAKE MINE**

| CRM Name | Element | Mean | Standard Deviation | Mean +2 Std Dev | Mean -2 Std Dev |
|---|---|---|---|---|---|
| EXS-1a | Ni (ppm) | 2373.9 | 127.3 | 2628.5 | 2119.3 |
| EXS-1a | Cu (ppm) | 748.0 | 40.5 | 829.0 | 667.0 |
| EXS-1a | Co (ppm) | 91.8 | 9.8 | 111.4 | 70.5 |
| EXS-1a | S (%) | 0.630 | 0.023 | 0.676 | 0.584 |
| EXS-1a | Pt (ppb) | 71.5 | 8.5 | 88.5 | 54.5 |
| EXS-1a | Pd (ppb) | 191.2 | 6.2 | 203.6 | 178.8 |
| EXS-3a | Ni (ppm) | 7929.8 | 367.1 | 8664.0 | 7194.0 |
| EXS-3a | Cu (ppm) | 1947.3 | 147.3 | 2241.9 | 1653.1 |
| EXS-3a | Co (ppm) | 221.0 | 16.0 | 252.9 | 189.0 |
| EXS-3a | S (%) | 1.940 | 0.075 | 2.090 | 1.800 |
| EXS-3a | Pt (ppb) | 158.0 | 15.1 | 188.2 | 127.8 |
| EXS-3a | Pd (ppb) | 528.6 | 31.4 | 591.3 | 465.9 |
| ENS-3a | Ni (ppm) | 2028.0 | 23.0 | 2074.0 | 1982.0 |
| ENS-3a | Cu (ppm) | 812.0 | 8.5 | 829.0 | 794.0 |
| ENS-3a | Co (ppm) | 38.0 | 1.5 | 41.0 | 36.0 |
| ENS-3a | S (%) | 5.563 | 0.328 | 6.219 | 4.906 |
| ENS-3a | Pt (ppb) | 668.0 | 113.0 | 894.0 | 443.0 |
| ENS-3a | Pd (ppb) | 1538.0 | 126.0 | 1790.0 | 1286.0 |
| RAG-2a | Ni (%) | 1.084 | 0.046 | 1.223 | 0.991 |
| RAG-2a | Cu (%) | 0.274 | 0.012 | 0.299 | 0.250 |
| RAG-2a | Co (%) | 0.029 | 0.002 | 0.033 | 0.026 |
| RAG-2a | S (%) | 4.269 | 0.185 | 4.639 | 3.899 |
| RAG-2a | Pt (ppm) | 0.271 | 0.033 | 0.336 | 0.206 |

| TABLE 11.1<br>SUMMARY OF CERTIFIED REFERENCE MATERIALS USED AT BUCKO LAKE MINE | | | | | |
|---|---|---|---|---|---|
| **CRM Name** | **Element** | **Mean** | **Standard Deviation** | **Mean +2 Std Dev** | **Mean -2 Std Dev** |
| RAG-2a | Pd (ppm) | 0.633 | 0.052 | 0.737 | 0.528 |
| RAG-3a | Ni (%) | 3.115 | 0.102 | 3.319 | 2.910 |
| RAG-3a | Cu (%) | 0.889 | 0.030 | 0.949 | 0.829 |
| RAG-3a | Co (%) | 0.064 | 0.004 | 0.072 | 0.057 |
| RAG-3a | S (%) | 10.190 | 0.417 | 11.025 | 9.357 |
| RAG-3a | Pt (ppm) | 0.541 | 0.055 | 0.651 | 0.432 |
| RAG-3a | Pd (ppm) | 1.483 | 0.134 | 1.751 | 1.215 |

***Source:*** *Modified from the Authors (2005) & Lane et al (2012)*
***Note:*** *CRM = certified reference material, Std Dev = standard deviation.*

#### 11.3.1.2 Blank Material

The blank material used at the Project originated from NQ diamond drill core pieces from the Bucko Lake Mine composed of barren material. Low metal contents were confirmed through previous drilling and/or confirmation testing of multiple representative samples at ALS. Blank results were periodically reviewed and appropriate action taken when problems were detected as discussed previously in Section 11.3.1.

## 11.4 CONCLUSION

It is the opinion of the Authors that sample preparation, security and analytical procedures for the Bucko Lake Mine Project 2004 to 2012 drill programs were adequate and that the data is of good quality and satisfactory for use in the current Mineral Resource Estimate.

# 12.0 DATA VERIFICATION

## 12.1 DRILL HOLE DATABASE

### 12.1.1 2005 Database Verification

Verification of assay data entry was performed on 1,229 assay intervals for Ni. A few minor data errors were observed and subsequently corrected, with the overall impact on the database considered negligible. The 1,229 intervals were verified with original assay laboratory certificates from TSL of Saskatoon, Saskatchewan and ALS of Vancouver, B.C. The verified assays represent 40.1% of the data used for the 2005 Mineral Resource Estimate and approximately 12.2% of the entire 2005 database.

Approximately 99% of Nuinsco's 2000/2001 assay data and Falconbridge's/Crowflight's 2004/2005 assay data were verified. All other assaying (underground and 1977 drilling) was performed by Falconbridge, with assay certificates not available for review and extremely limited amounts of drill core. Due to the generally consistent interception of mineralization by these drill holes within the Mineral Resource domains outlined by the more recent verified drilling and the reputability of Falconbridge as operator, the data was considered to be acceptable.

### 12.1.2 2009 Database Verification

A total of 19,591 assay results were contained in the updated 2009 database and verification of all additional 2007–2008 drilling program assay data was completed. A total of 22 errors were observed and subsequently corrected in the data, with the overall impact to the database considered negligible.

Approximately 99% of Nuinsco's 2000/2001 assay data and 100% of Falconbridge's/ Crowflight's 2004 to 2008 assay data have been verified, representing approximately 68% of the total 2009 database.

## 12.2 P&E SITE VISITS AND INDEPENDENT SAMPLING

### 12.2.1 2005 Site Visit and Independent Sampling

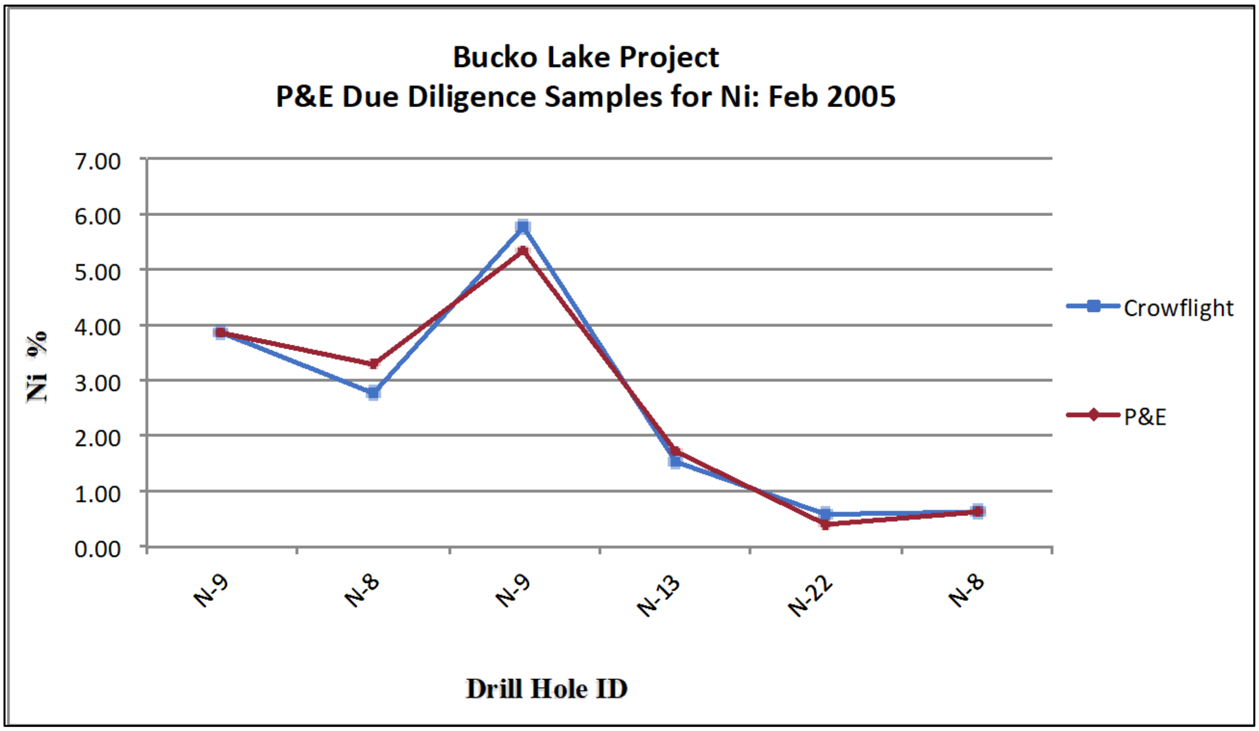
The Bucko Lake Nickel Property was visited by Mr. Eugene Puritch, P.Eng., FEC, CET of P&E on February 07, 2005, to conduct data verification sampling on the existing drill core and become familiar with the physical attributes of the site. Mr. Puritch collected six drill core samples from four diamond drill holes. An attempt was made to sample intervals from a variety of low and high-grade material. Samples were collected by taking a quarter drill core, with the other quarter core remaining in the drill core box. The samples were then documented, bagged, and sealed with fiber tape and were hand delivered to ALS in Don Mills, Ontario. At no time, prior to the time of sampling, were any employees or other associates of Crowflight advised as to the location or identification of any of the samples to be collected by Mr. Puritch. All samples remained with Mr. Puritch until submission to ALS.

Samples at ALS were analyzed for Ni, Cu, Au, Pt and Pd, with bulk density determinations made on all samples.

ALS has developed and implemented strategically designed processes and a global quality management system at each of its locations. The global quality program includes internal and external inter-laboratory test programs and regularly scheduled internal audits that meet all requirements of ISO/IEC 17025:2017 and ISO 9001:2015. All ALS geochemical hub laboratories are accredited to ISO/IEC 17025:2017 for specific analytical procedures.

Results of the Bucko Lake Mine 2005 site visit verification samples for Ni are presented in Figure 12.1.

**FIGURE 12.1 RESULTS OF FEBRUARY 2005 NI VERIFICATION SAMPLING BY P&E**




***Source:*** *Modified from P&E (2005)*

The Authors consider that there is good correlation between Ni assay values in Canickel's database and the independent verification samples collected by the Authors and analyzed at ALS. It is the Author's opinion that the data are of good quality and appropriate for use in the current Mineral Resource Estimate.

### 12.2.2 2022 Site Visit

The Bucko Lake Nickel Project was visited by Mr. D. Gregory Robinson, P.Eng., of P&E, on June 21, 2022, to review engineering aspects of the Project and consisted of inspection of surface facilities.

## 12.3 OTHER SITE VISITS AND INDEPENDENT SAMPLING

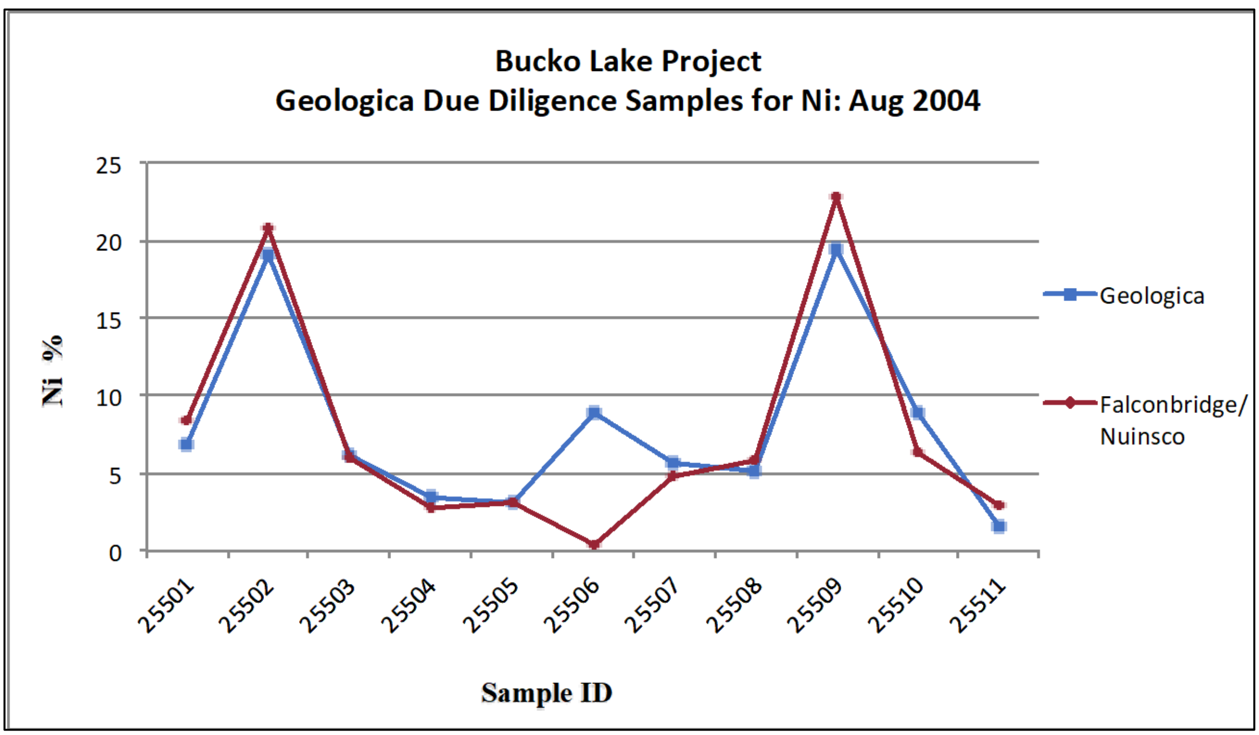
The following section summarizes other site visits and independent sampling carried out at the Property. The Authors cannot verify the authenticity of this information, however, they have no reason to regard the information as unreliable.

### 12.3.1 Geologica Site Visit and Independent Sampling

A.J. Beauregard, P. Geol., and Qualified Person for Geologica, completed a site visit to the Property in August 2004, at which time a verification sampling program and review of Nuinsco's and Falconbridge's drill core were conducted. Drill core samples (11 in total) were collected from the remaining half of archived drill core from Nuinsco's 2000 drilling. These samples were collected, kept secure and shipped to ALS in Vancouver. Sample preparation, analytical procedures and assay results are outlined in detail within the Geologica (2004) report.

In summary, a correlation coefficient of 91% was calculated between the Geologica and Falconbridge-Nuinsco samples, and the results of the Geologica (2004) verification sampling indicate that correlation between original and second half drill core sampling is acceptable (Figure 12.2).

**FIGURE 12.2 COMPARISON OF NI ASSAY RESULTS BETWEEN FALCONBRIDGE-NUINSCO SAMPLES VERSUS GEOLOGICA SAMPLES**




***Source:*** *Modified from P&E (2005)*

In the opinion of Geologica, the results indicate that the laboratory utilized consistent methodology with good reproducibility. The correlation coefficient between nickel and cobalt values was 98%

while a coefficient of 77% was found between nickel and platinum values. Based on the significant PGE assay results Geologica (2004) recommended that all future drill core samples be systematically assayed for PGEs.

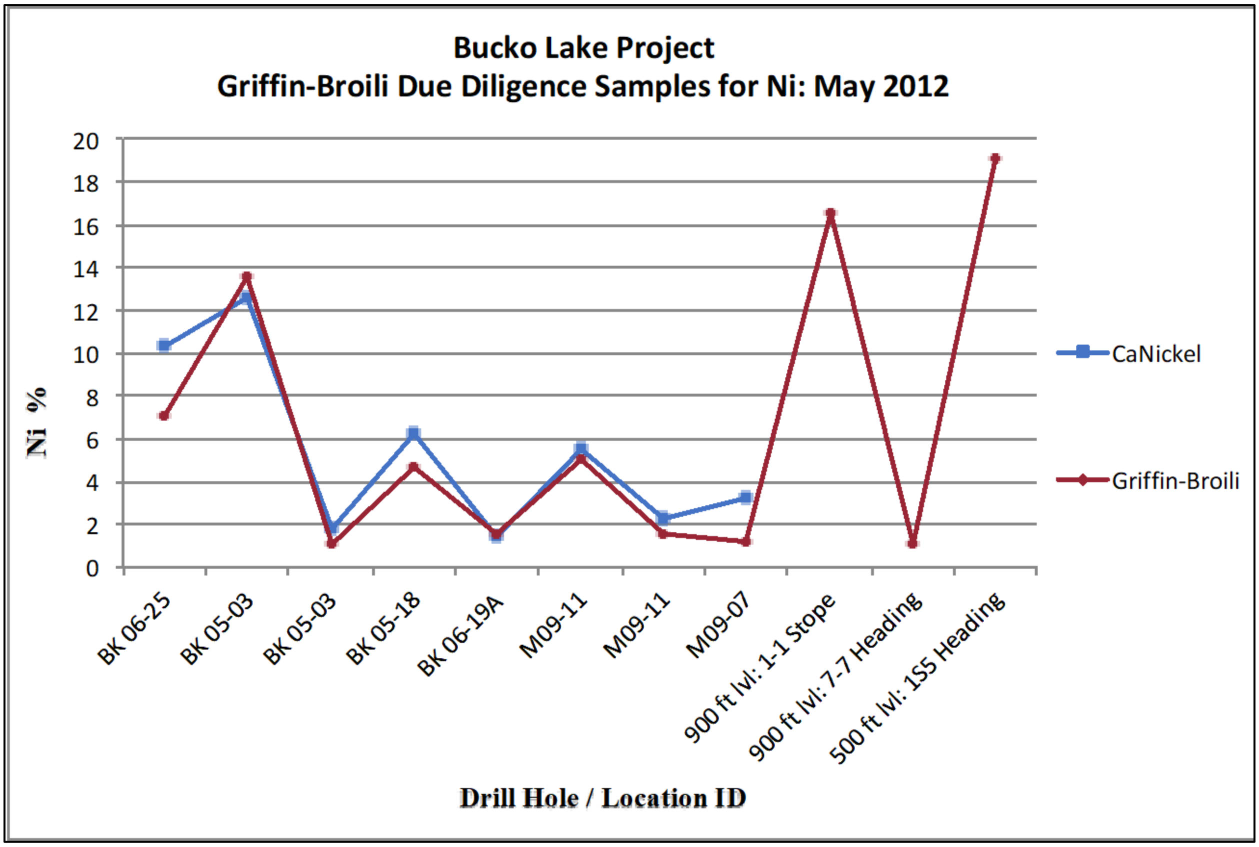
### 12.3.2 Griffin, Martin and Broili Site Visits and Independent Sampling

Independent consultants, Mr. Lane A. Griffin, P. Geo., Mr. Paul L. Martin, P. Eng., and Mr. Chris C. Broili, P. Geo., prepared a technical report for CaNickel in 2012, updating the Mineral Resources and Reserves for the Bucko Lake Nickel Project. Messrs Griffin, Martin and Broili visited the Bucko Lake Mine area and M11A properties for a period of six, four and seven days respectively, from May 9 to May 15, 2012. Lane et al. (2012) reported that surface and underground data were reviewed in detail, numerous surface outcrops were examined, and samples of representative drill core and underground workings were collected for independent verification assays. Outcrop locations were verified with a GPS, documented with a digital camera, and compared with corresponding database entries and map postings.

The 2012 Bucko Lake Mine Technical Report details that verification samples were collected, secured and sent directly to the ActLabs laboratory in Ancaster, ON, for preparation and analysis, by Messrs Griffin and Broili and that at no time were any employees or associates of CaNickel advised in advance as to the location or identification of the samples to be collected. Verification sampling comprised five replicate drill core samples from the Bucko Lake Mine area and three from the M11A Property. Three samples (not replicate samples) containing very coarse-grained mineralization were also collected from underground workings at Bucko Lake Mine. A certified standard was also included with the verification samples to monitor accuracy at the Actlabs laboratory.

Results of the Bucko Lake Mine 2012 site visit verification samples for Ni, carried out by Messrs Griffin and Broili, are presented in Figure 12.3.

**FIGURE 12.3 RESULTS OF MAY 2012 NI VERIFICATION SAMPLING BY GRIFFIN AND BROILI**




***Source:*** *Modified from Lane, et al. (2012)*

Messrs Griffin, Martin and Broili reported that they were satisfied that the available Bucko Lake Nickel Project data had been sufficiently verified and that the data were adequately reliable for the purposes of the 2012 NI 43-101 Bucko Lake Mine Technical Report.

# 13.0 RECOVERY METHODS

## 13.1 BACKGROUND

In 2008, Crowflight, the Bucko Lake Mineral Resource owner at the time, commissioned Micon International to design a 1,000 tpd processing facility. The design was based on the results of detailed mineralogical and processing test work available at that time. A nickel sulphide concentrate would be produced and shipped to a Sudbury, Ontario smelter.

Several metallurgical testing campaigns were conducted on samples of Bucko Lake mineralized material over a number of years.

The earliest tests included 1969 tests by the Swedish Royal Institute's Mineral Processing Division which produced a 17.1% Ni concentrate at 76.5% recovery from a 0.77% Ni composite sample.

Test results from a 1975 program at Lakefield Research (now SGS-Lakefield) from a 2.53% Ni sample produced a concentrate containing 15.7% Ni at a recovery of 84.4%. The MgO content was very high at 11.64%, well in excess of a nominal 6% smelter feed limit.

A significant amount of test work was completed in the 1960s and 1970s by Lakefield Research. Additional test work was completed by G&T Metallurgical between 2006 and 2007.

The early test results indicated that there was a significant feed-grade recovery relationship and suggested that the regrinding of rougher flotation concentrate was beneficial. In 1994 Falconbridge concluded that Bucko ultramafic mineralized material was finely disseminated, and a rougher flotation grind should be around $P_{85}$ 75 µm (200 Mesh) and the concentrate regrind should be $P_{85}$ 40 µm (325 to 400 Mesh).

## 13.2 2005 TO 2006 METALLURGICAL TEST WORK

From 2005 to 2007, metallurgical test programs were conducted by G&T Metallurgical Laboratories, Kamloops, British Columbia ("G&T"). The metallurgical process design for the Bucko mill was based on the results of these G&T test programs. Between November 2006 and later in 2007, metallurgical samples representing three major types of mineralization were received by G&T. The purpose of this specific test program was to optimize certain processing parameters and to further investigate the effect of different mineral types of mineralization on the metallurgical performance.

The 2005 composite sample represented upper, middle and lower zones of the Bucko Lake Mine Mineral Resource.

A mineralogical examination of a composite sample of the three zones indicated that the sulphides were liberated from the gangue minerals at a moderately coarse grind of 100 µm; however, the pentlandite, the sole nickel mineral, was only 45% liberated from other minerals. This strongly suggested that a coarse grind size for rougher flotation followed by a fine regrind of a rougher concentrate accompanied with strong hydrophobic mineral (talc, etc.) rejection would be an appropriate concentration strategy.

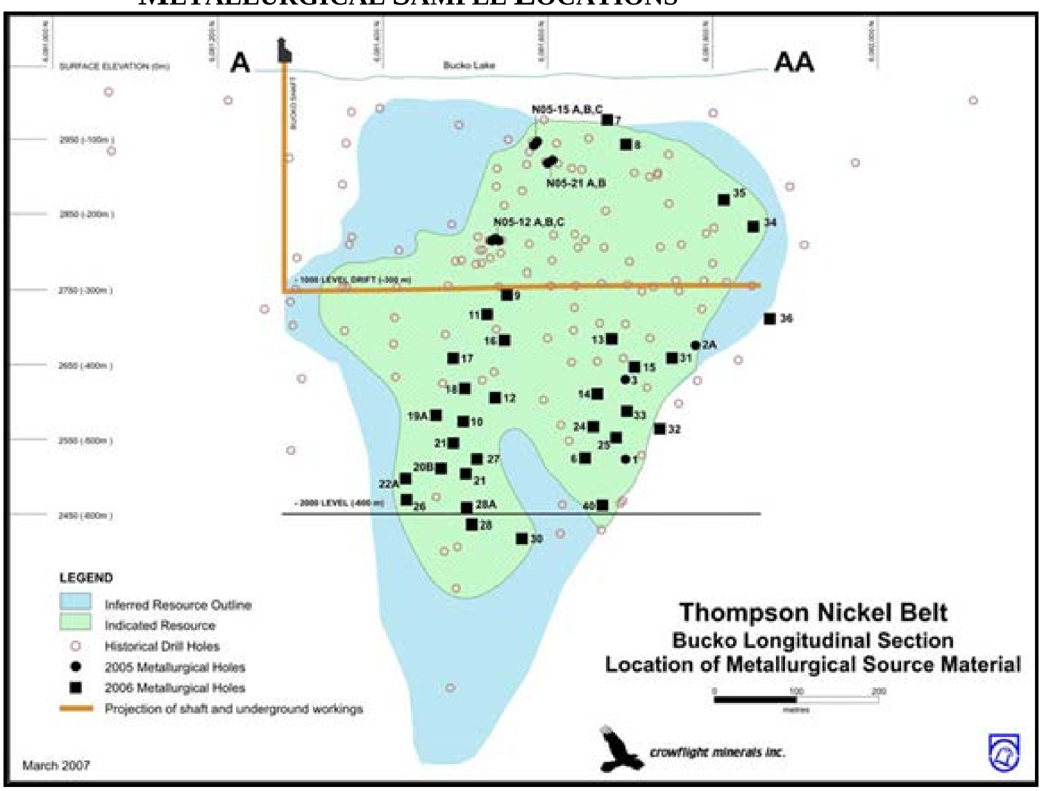
The important mineralogical aspects of the Bucko Lake Mine Mineral Resource include:

- Pentlandite is the most abundant sulphide mineral followed by pyrrhotite, pyrite and chalcopyrite;
- The pentlandite was generally observed as friable grains, often containing blades of pyrrhotite and "blebs" of pyrite;
- Pyrrhotite occurs in variable habitats, occasionally with pentlandite exsolution "flames"; and
- The most abundant gangue mineral is serpentine. Others are micas, chlorite, talc and carbonate.

## 13.3 2006 TO 2007 G&T TEST WORK PROGRAM

The 2006 sample was comprised of 160 half drill core intervals representing three zones of mineralized rock, weighing in total 380 kg. This composite sample was considered to be more representative than the previous sample prepared for the earlier (2005) program, due to the greater number of samples taken and the greater spatial distribution of samples throughout the Mineral Resource. Figure 13.1 shows the Bucko Lake Deposit Mineral Resource and the drill and metallurgical sample locations for both the 2005 and 2006/07 metallurgical test programs.

**FIGURE 13.1 LONGITUDINAL PROJECTION SHOWING THE HISTORICAL 2005, 2006 METALLURGICAL SAMPLE LOCATIONS**




***Source:*** *Micon, Bucko Lake Feasibility Study (2007)*

The mineralized material types, grades, percentages of total and general mineral content are summarized in Table 13.1.

**TABLE 13.1**
**2006/07 METALLURGICAL SAMPLES**

| Type | Description | Mineralization | Ni (%) | % of Total | Comments |
|---|---|---|---|---|---|
| Type 1 | Unaltered peridotite | Finely disseminated pentlandite in pyroxene and serpentine | 2.05 | 75 | |
| Type 2 | Altered Peridotite | Talc/tremolite/micas | 1.94 | 18 | Negative flotation effect |
| Type 3 | Pegmatite | Fracture deposited pentlandite | 1.27 | 7 | |

Preliminary concentration results related to mineralization types, based on single batch tests are shown in Table 13.2. Reasonably good nickel grades and process recoveries were achieved, however, the MgO content in the concentrate was higher than desired in Type 2 and 3 concentrates.

**TABLE 13.2**
**METALLURGICAL RESULTS BY RESOURCE TYPE**

| Type | Feed Ni (%) | Flotation Concentrate | | | Comments |
|---|---|---|---|---|---|
| | | Ni (%) | Recovery Ni (%) | MgO (%) | |
| Composite | 1.69 | 20.7 | 86 | 4.5 | Good recovery, grade |
| Type 1 | 1.64 | 17.6 | 86 | 5.8 | |
| Type 2 | 1.42 | 17.1 | 83 | 6.5 | Excess MgO |
| Type 3 | 1.26 | 15.2 | 86 | 6.7 | Excess MgO |

### 13.3.1 Locked-Cycle Tests

Nine locked-cycle concentration tests were performed in the metallurgical composite prepared proportionally from the material listed in Table 13.2. The data arising from the tests are extensive and have been analysed in detail in a previous Technical Report[1]. The reported test work analyses are considered by the current Authors to be somewhat misleading since the test conditions were subject to many variables, particularly reagent mixes, however, the results can be summarized as follows:

- Nickel concentrate grade and recovery maximize at 16% Ni and 85% recovery;

[1] Micon Technical Report, March 2007, for Crowflight Minerals, Table 16.9

- MgO content in the concentrate are inversely related to Ni grade of concentrate; to minimize MgO content to 6%, recovery is diminished to 80%;

- Regrinding of a rougher concentrate improves Ni concentrate grade and recovery;

- Copper and cobalt recoveries are independent of Ni recovery; and

- Precious metal recoveries are generally less than 35% and are independent of Ni recovery.

Estimates of recoveries, metal and sulphur content are summarized in Table 13.3 for a range of MgO impurity.

**TABLE 13.3**
**ESTIMATED CONCENTRATE RECOVERIES AND GRADES FOR A RANGE OF MGO CONTENT**

| MgO | Ni | | Cu | | Co | | S | Fe | Pt | Pd | Rh | Au |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % | % | Rec. | % | Rec. | % | Rec. | % | % | g/t | g/t | g/t | g/t |
| 4 | 19.6 | 69.7 | 1.70 | 75.7 | 0.24 | 61 | 27 | 33 | 0.90 | 1.50 | 0.15 | 0.14 |
| 6 | 18.1 | 79.5 | 1.45 | 79.4 | 0.22 | 67 | 26 | 26 | 0.83 | 1.38 | 0.14 | 0.13 |
| 8 | 16.6 | 83.5 | 1.27 | 81.0 | 0.21 | 70 | 25 | 23 | 0.76 | 1.27 | 0.13 | 0.12 |

***Source:*** *Micon Technical Report, March 2007, Table 16.11*

## 13.4 OTHER TEST RESULTS

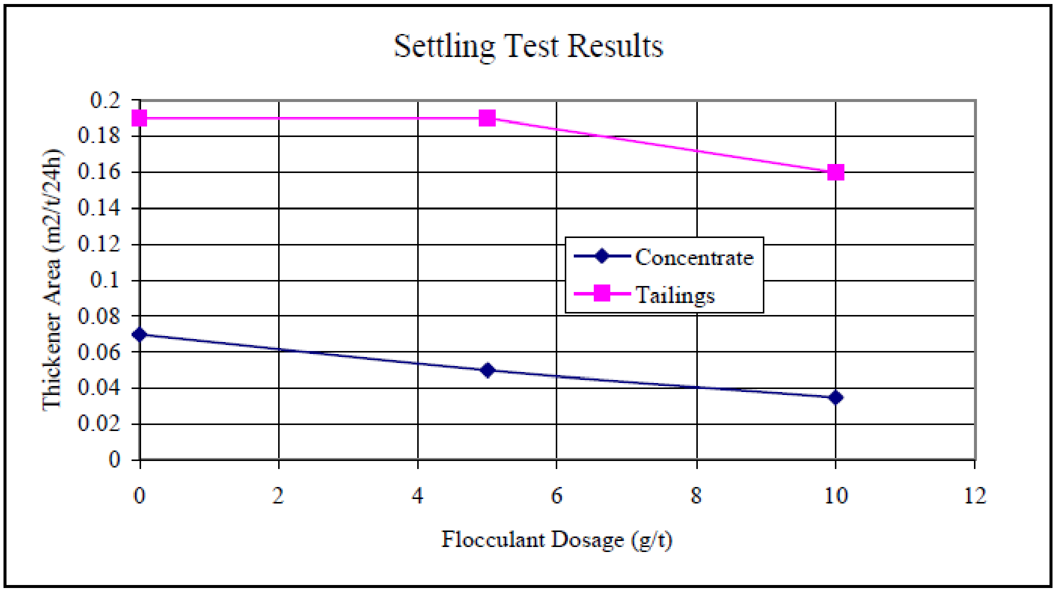
### 13.4.1 Grinding Tests

Abrasion and Bond Work Indices for a Bucko composite were determined by Hazen Research to be 0.0815 for the Abrasion Index ("AI"), and 13.9 and 19.1 kWh/t for rod and ball mill indices, respectively. The AI and rod mill index can be considered to be lower than average, while the Ball Mill Work Index ("BMWi") is indicated to be higher than average. The high BMWi value appears anomalous, given the soft mineral matrix.

### 13.4.2 Concentrate Dewatering and Slurry Settling

Rougher flotation tailings and cleaner concentrates were subject to flocculent-aided settling tests. Both the tailings and the concentrate indicated a small to moderate thickener size of 0.16 $m^2$/t/24h for tailings and 0.04 $m^2$/t/24h for cleaner concentrate. The results with varying flocculent additions are shown in Figure 13.2.

**FIGURE 13.2 CONCENTRATE AND TAILINGS SETTLING TEST RESULTS**




Concentrate filtration tests were conducted using a vacuum belt filter simulation procedure. A moisture content of 12% was reported, however, vacuum filter operation is less than optimal for mineral concentrates. It is more appropriate to employ pressure filtration since a lower moisture content, e.g., <10%, is critical for long range shipping and this can be achieved by pressure filtration.

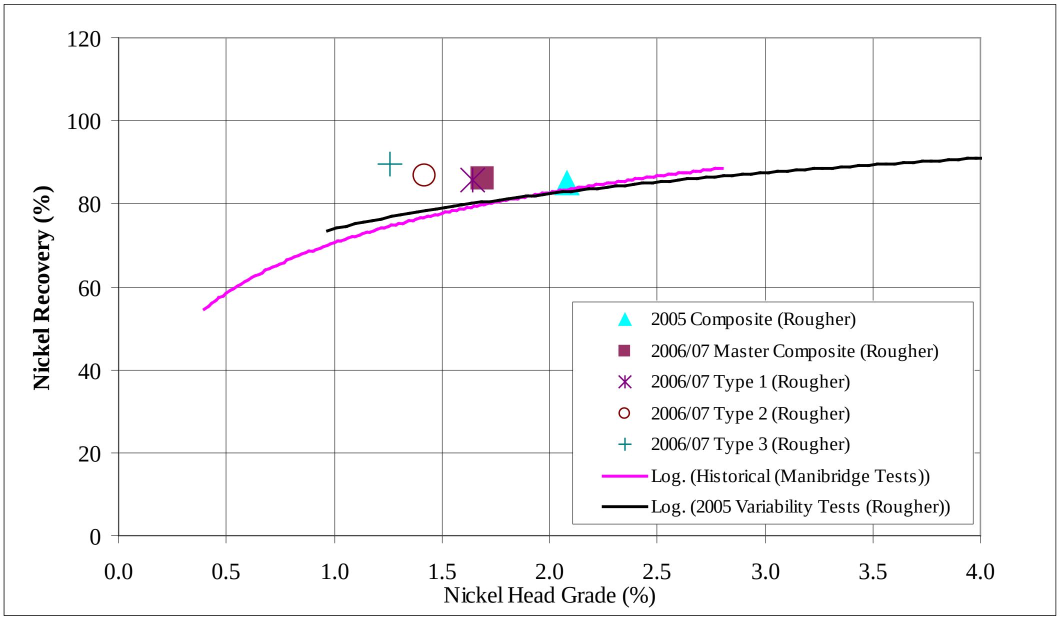
### 13.4.3 Concentrate Pyrophoric Risk

A sample of concentrate was tested to assess self-heating and the potential for spontaneous combustion and showed no tendency for either characteristic. Due to the periodic association of the nickel mineralization with pyrrhotite, a normally pyrophoric mineral, routine concentrate evaluation during processing would be appropriate.

## 13.5 TEST WORK SUMMARY AND PROCESS FUNDAMENTALS

The testing and evaluation of concentration processes (grinding and flotation) have been comprehensive for the Bucko Lake Mineral Resource and have been conducted at several laboratories over several years. A high-grade nickel concentrate appears readily achievable by moderate grinding, rougher flotation and multi-stage flotation cleaning. Regrinding of the rougher concentrate before cleaning appears to be beneficial. A concise summary of nickel recovery versus feed grade is shown in Figure 13.3. As noted above, the rejection of MgO containing minerals (e.g., talc, serpentine) to obtain a concentrate containing less than 6% MgO, may reduce nickel recovery to approximately 80%. (Included, for reference only, in Figure 13.3 are graphically represented data from tests of Manibridge mineralized material also in the Thompson Nickel Belt 30 km south of Bucko Lake).

**FIGURE 13.3 HISTORICAL BUCKO TEST RECOVERIES VERSUS HEAD GRADE**




No significant amount of additional metallurgical testing appears to be required.

# 14.0 MINERAL RESOURCE ESTIMATES

## 14.1 INTRODUCTION

The purpose of this Technical Report section is to update the Mineral Resource Estimate for the Bucko Lake Mine Deposit in Manitoba of CaNickel Mining Limited ("CaNickel"). The previous Mineral Resource Estimate on the Bucko Lake Mine Deposit disclosed on October 19, 2012, was prepared with 285 surface and underground diamond drill holes. This update incorporated drill holes completed after the previous Mineral Resource Estimate and recent metal prices were incorporated into an estimate for potential underground mining study.

The Mineral Resource Estimate presented herein is reported in accordance with the Canadian Securities Administrators' National Instrument 43-101 (2014) and has been estimated in conformity with the generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines (2019). Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the Mineral Resource will be converted into a Mineral Reserve. Confidence in the estimate of the Inferred Mineral Resource is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent Mineral Resource Estimates.

This current Mineral Resource Estimate was based on information and data supplied by CaNickel, and was undertaken by Yungang Wu, P.Geo., Antoine Yassa, P.Geo., and Eugene Puritch, P.Eng., FEC, CET of P&E Mining Consultants Inc. of Brampton, Ontario. All are independent Qualified Persons as defined under NI 43-101. The effective date of this Mineral Resource Estimate is January 13, 2023.

## 14.2 PREVIOUS MINERAL RESOURCE ESTIMATE

A previous public Mineral Resource Estimate for the Bucko Lake Mine Deposit dated October 19, 2012, at a cut-off grade of 1.0% Ni for potential underground mining is presented in Table 14.1. This previous Mineral Resource Estimate is superseded by the current Mineral Resource Estimate reported herein.

**Table 14.1**
**Mineral Resource Estimate October 19, 2012**

| Classification | Cut-off Ni (%) | Tonnes (k) | Ni (%) | Ni (Mlb) | Cu (%) | Cu (Mlb) |
|---|---|---|---|---|---|---|
| Measured | 1.0 | 751 | 1.37 | 22.68 | 0.11 | 1.82 |
| Indicated | 1.0 | 2,845 | 1.28 | 80.06 | 0.11 | 6.90 |
| **Measured + Indicated** | **1.0** | **3,596** | **1.30** | **102.74** | **0.11** | **8.72** |
| Inferred | 1.0 | 5,043 | 1.41 | 156.90 | 0.11 | 12.23 |

## 14.3 DATABASE

All drilling data were provided in the form of Excel data files by CaNickel. The GEOVIA GEMS™ V6.8.4 database for this Mineral Resource Estimate, compiled by the Authors, consisted of 428 surface and underground drill holes totalling 114,836 m, of which 31 drill holes totalling 5,724 m had no assays and were not utilized for this Mineral Resource Estimate. A total of 360 drill holes intersected the mineralization wireframes used for the Mineral Resource Estimate (see Table 14.2). Surface and underground drill hole plans are shown in Appendix A.

**TABLE 14.2**
**DRILL HOLE DATABASE SUMMARY**

| Data Type | Number of Drill Holes | Drill Hole Length (m) | Number of Drill Holes Intersecting Wireframes | Length* of Drill Holes Intersecting Wireframes (m) | Number of No Assay Drill Holes |
|---|---|---|---|---|---|
| Surface Drill Holes | 162 | 69,050 | 102 | 51,417 | 29 |
| Underground Drill Holes | 266 | 45,786 | 258 | 44,929 | 2 |
| **Total Drill Holes** | **428** | **114,836** | **360** | **96,346** | **31** |

***Note:* * *entire length of hole.***

The drill hole database contained assays for Ni and Cu and other lesser elements of non-economic importance as well as bulk density. The basic statistics of all Ni and Cu raw assays are presented in Table 14.3.

**TABLE 14.3**
**ASSAY DATABASE SUMMARY**

| Variable | Ni | Cu |
|---|---|---|
| Number of Samples | 27,982 | 27,982 |
| Minimum Value % | 0.00 | 0.00 |
| Maximum Value % | 22.90 | 10.00 |
| Mean % | 0.66 | 0.05 |
| Median % | 0.39 | 0.02 |
| Variance | 1.29 | 0.02 |
| Standard Deviation | 1.14 | 0.16 |
| Coefficient of Variation | 1.72 | 2.87 |
| Skewness | 8.05 | 20.25 |
| Kurtosis | 102.81 | 825.74 |

***Note:*** *Ni =Nickel, Cu = copper.*

All drill hole survey and assay values are expressed in metric units. The drill hole coordinates are in a local, metric, mine grid.

## 14.4 DATA VERIFICATION

Approximately 99% of Nuinsco's 2000/2001 assay data and 100% of Falconbridge's/Crowflight's 2004 to 2008 assay data were verified, representing approximately 68% of the total 2009 database. Verification of 19,591 assay results contained in the 2009 database was completed. A total of 22 errors were observed and subsequently corrected in the data, with the overall impact to the database considered negligible.

The Authors also validated the Mineral Resource database by checking for inconsistencies in analytical units, duplicate entries, interval, length or distance values less than or equal to zero, blank or zero-value assay results, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, survey and missing interval and coordinate fields. No errors were identified in the database. The Authors believe that the supplied database is suitable for Mineral Resource estimation.

## 14.5 DOMAIN INTERPRETATION

Mineralization domain wireframes were modified and updated from the previous 3-D models which were used for the previous Mineral Resource Estimate. The domain boundaries were determined from grade boundary interpretation constrained by lithological and structural controls determined from visual inspection of drill hole cross-sections and level plans. The outlines were influenced by the selection of mineralized material above 0.70% Ni that demonstrated a lithological and structural zonal continuity along strike and down dip and that had a reasonable prospect of economic extraction.

The minimum constrained sample length for the wireframes was 2.0 m. In some cases, mineralization below 0.70% Ni was included for the purpose of maintaining zonal continuity and minimum mining width. On each cross-section, polyline interpretations were digitized from drill hole to drill hole, however, were not extended more than 25 m into untested territory. The interpreted polylines from each cross-section were wireframed into 3-D solids. The resulting solids (domains) were used for statistical analysis, grade interpolation, rock coding and Mineral Resource reporting purposes. Four mineralization domains were constructed for consideration for potential underground mining of the Mineral Resource Estimate. The 3-D domains are presented in Appendix B.

The topographic and overburden surfaces, lithology solids of an ultramafic envelope, pegmatite dykes, and historical underground workings were provided by CaNickel. The Authors did not validate these wireframes. The mineralization domains were interpreted inside the ultramafic envelope and clipped to the overburden surface. Barren pegmatite dykes cross cutting the mineralization were depleted for block model reporting.

## 14.6 ROCK CODE DETERMINATION

A unique rock code was assigned to each wireframe in the Mineral Resource model as presented in Table 14.4.

| **TABLE 14.4**<br>**ROCK CODES USED FOR THE**<br>**MINERAL RESOURCE ESTIMATE** | | |
|---|---|---|
| **Domain** | **Rock Code** | **Volume ($m^3$)** |
| Lower | 100 | 2,165,305 |
| Middle | 200 | 3,071,834 |
| Upper | 300 | 2,109,978 |
| Footwall | 400 | 438,697 |
| Air | 0 | |
| Overburden | 10 | waste |
| Ultramafic | 40 | waste |
| Pegmatite | 50 | waste |
| Country rock | 99 | waste |

## 14.7 WIREFRAME CONSTRAINED ASSAYS

Wireframe constrained assays were back coded in the assay database with rock codes that were derived from intersections of the mineralization solids and drill holes. The basic statistics of mineralization wireframe constrained assays are presented in Table 14.5.

| **TABLE 14.5**<br>**BASIC STATISTICS OF ALL CONSTRAINED ASSAYS** | | | |
|---|---|---|---|
| **Variable** | **Ni** | **Cu** | **Sample Length (m)** |
| Number of Samples | 10,726 | 10,726 | 10,726 |
| Minimum Value % | 0.00 | 0.00 | 0.14 |
| Maximum Value % | 22.90 | 4.51 | 4.88 |
| Mean % | 1.22 | 0.10 | 1.14 |
| Median % | 0.89 | 0.06 | 1.17 |
| Variance | 2.61 | 0.04 | 0.18 |
| Standard Deviation | 1.62 | 0.19 | 0.42 |
| Coefficient of Variation | 1.32 | 1.95 | 0.37 |
| Skewness | 5.94 | 9.17 | 0.21 |
| Kurtosis | 53.31 | 134.78 | 4.64 |

***Note:*** *Ni =Nickel Cu = Copper.*

## 14.8 COMPOSITING

In order to regularize the assay sampling intervals for grade interpolation, a 1.5 m compositing length was selected for the drill hole intervals that fell within the constraints of the above-mentioned Mineral Resource wireframe domains. The composites were calculated utilizing bulk density weighing for Ni and Cu over 1.5 m lengths starting at the first point of intersection between the drill holes and the hanging wall of the 3-D zonal constraint. The compositing process was halted upon the drill hole exiting from the footwall of the aforementioned constraint. Un-assayed intervals were assigned background values of 0.01% for both Ni and Cu. If the last composite interval was less than 0.5 m, the composite length was adjusted to make all composite intervals of equal length within the domain. The resulting composite lengths ranged from 1.13 to 2.22 m. This process would not introduce any short sample bias in the grade interpolation process. The constrained composite data were extracted to a point file for a grade capping analysis. The composite statistics are summarized in Table 14.6.

**TABLE 14.6**
**COMPOSITE/CAP COMPOSITE SUMMARY STATISTICS**

| Variable | Ni_Comp (%) | Ni_Cap (%) | Cu_Comp (%) | Cu_Cap (%) | Composite Length (m) |
|---|---|---|---|---|---|
| Number of Samples | 8,413 | 8,413 | 8,413 | 8,413 | 8,413 |
| Minimum Value | 0.00 | 0.00 | 0.00 | 0.00 | 1.13 |
| Maximum Value | 21.14 | 15.00 | 2.55 | 2.00 | 2.22 |
| Mean | 1.15 | 1.14 | 0.09 | 0.09 | 1.50 |
| Median | 0.90 | 0.90 | 0.06 | 0.06 | 1.50 |
| Variance | 1.64 | 1.48 | 0.02 | 0.02 | 0.00 |
| Standard Deviation | 1.28 | 1.21 | 0.15 | 0.14 | 0.07 |
| Coefficient of Variation | 1.12 | 1.06 | 1.62 | 1.56 | 0.05 |
| Skewness | 6.08 | 5.09 | 6.85 | 6.10 | 1.23 |
| Kurtosis | 62.74 | 42.93 | 70.34 | 54.16 | 21.67 |

***Note:*** *Ni_Comp = nickel composite, Cu_Comp = copper composite, Ni_Cap = capped nickel composite, Cu_Cap = capped copper composite.*

## 14.9 GRADE CAPPING

Grade capping was investigated on the 1.5 m composite values in the database within the constraining domain to ensure that the possible influence of erratic high-grade values did not bias the database. Log-normal histograms and log-probability plots for Ni and Cu composites were generated for each mineralized domain and the selected resulting graphs are exhibited in Appendix C. The grade capping values are detailed in Table 14.7. The capped composite statistics are summarized above in Table 14.6. The capped composites were utilized to develop variograms and for block model grade interpolation.

**TABLE 14.7**
**GRADE CAPPING VALUES**

| Domain | Element | Total No. of Composites | Capping Value | No. of Capped Composites | Mean of Composites | Mean of Capped Composites | CoV of Composites | CoV of Capped Composites | Capping Percentile |
|---|---|---|---|---|---|---|---|---|---|
| Lower | Ni | 2,788 | 9.0 | 4 | 1.27 | 1.27 | 0.90 | 0.88 | 99.9 |
| | Cu | 2,788 | 1.5 | 7 | 0.11 | 0.11 | 1.55 | 1.45 | 99.7 |
| Middle | Ni | 3,371 | 15.0 | 8 | 1.21 | 1.20 | 1.30 | 1.23 | 99.8 |
| | Cu | 3,371 | 2.0 | 3 | 0.09 | 0.09 | 1.69 | 1.67 | 99.9 |
| Upper | Ni | 2,217 | 10.0 | 1 | 0.90 | 0.90 | 0.92 | 0.89 | 100.0 |
| | Cu | 2,217 | No cap | 0 | 0.07 | 0.07 | 1.41 | 1.41 | 100.0 |
| Footwall | Ni | 37 | No cap | 0 | 1.04 | 1.04 | 0.72 | 0.72 | 100.0 |
| | Cu | 37 | No cap | 0 | 0.07 | 0.07 | 0.58 | 0.58 | 100.0 |

***Note:*** *Ni = nickel, Cu = copper, CoV=Coefficient of Variation.*

## 14.10 VARIOGRAPHY

A variography analysis was undertaken as a guide to determining a grade interpolation search strategy. Directional variograms were attempted using the Ni composites. Selected variograms are attached in Appendix D.

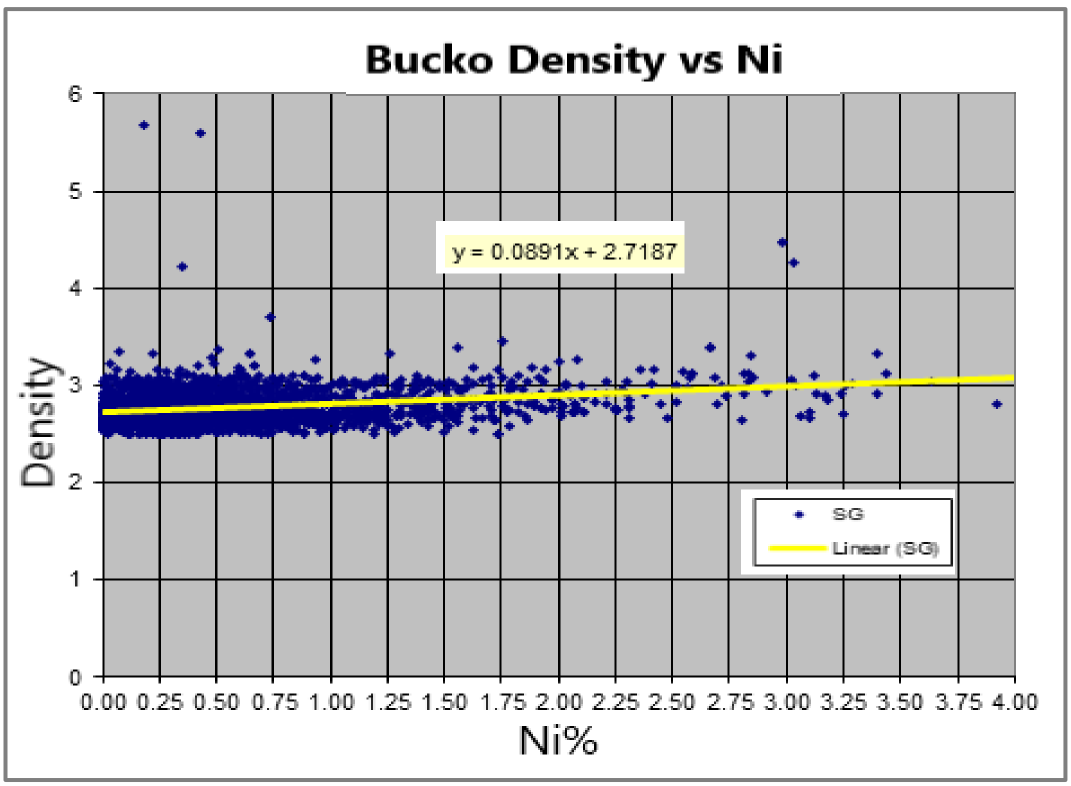
Continuity ellipses based on the observed ranges were subsequently generated and utilized as the basis for estimation search ranges, distance weighting calculations and Mineral Resource classification criteria.

## 14.11 BULK DENSITY

This Technical Report section has been excerpted from the 2012 Technical Report.

A total of 2,830 bulk density measurements were taken from core samples collected in 2006, and test work performed by ALS Chemex of Mississauga, Ontario in 2006. The relationship between sulphur and nickel content established a positive linear correlation between the level of mineralization and observed bulk density. Based on this relationship, a regression equation was utilized to assign a modelled bulk density value to those assay samples in the database where no bulk density measurements had been taken. Figure 14.1 depicts this relationship and presents the formula used to populate the historical assay database with representative bulk density values.

**FIGURE 14.1 BULK DENSITY-NI REGRESSION**




***Note:*** *Sourced from 2012 Technical Report. The Author who established the correlation is also a Qualified Person of this Technical Report section.*

A capping analysis for bulk density was undertaken and the resulting Lower, Middle and Upper domains were respectively capped at 3.9, 4.2 and 3.6 t/m$^3$.

## 14.12 BLOCK MODELLING

The Bucko block model was constructed using GEOVIA GEMS™ V6.8.4 modelling software. The block model origin and block size are presented in Table 14.8. The block model consists of separate model attributes for estimated grades of Ni and Cu, rock type (mineralization domains), volume percent, bulk density and classification.

**TABLE 14.8**
**BLOCK MODEL DEFINITION**

| Direction | Origin | No. of Blocks | Block Size (m) |
|---|---|---|---|
| X | 2,030 | 106 | 2.5 |
| Y | 81,050 | 100 | 2.5 |
| Z | 3,050 | 210 | 2.5 |
| Rotation | No rotation | | |

***Note:*** *Origin for a block model in GEMS™ represents the coordinate of the outer edge of the block with minimum X and Y, and maximum Z.*

All blocks in the rock type model were initially assigned a waste rock code of 99, corresponding to the surrounding country rocks. The mineralized domain was used to code all blocks within the rock type block model that contain 0.01% or greater volume within the domain. These blocks were assigned rock codes as presented in Table 14.4. The overburden and topographic surfaces were subsequently utilized to assign rock codes 10 and 0, corresponding to overburden and air respectively, and to all blocks 50% or greater above the surfaces.

A volume percent block model was set up to accurately represent the volume and subsequent tonnage that was occupied by each block inside the constraining wireframe domain. As a result, the domain boundary was properly represented by the volume percent model ability to measure individual infinitely variable block inclusion percentages within that domain. The minimum percentage of the mineralized block was set to 0.01%. The pegmatites and historical underground workings were depleted from the volume percent model.

The Ni and Cu grade blocks were interpolated with Inverse Distance Squared ("ID$^2$"). Nearest Neighbour ("NN") was utilized for validation. Multiple passes were executed for the grade interpolation to progressively capture the sample points to avoid over-smoothing and preserve local grade variability. Search ranges and directions were based on the variograms. Grade blocks were interpolated using the parameters in Table 14.9.

| TABLE 14.9<br>BLOCK MODEL INTERPOLATION PARAMETERS | | | | | | |
|---|---|---|---|---|---|---|
| **Pass** | **Major Range (m)** | **Semi-major Range (m)** | **Minor Range (m)** | **Max No. of Samples per Drill Hole** | **Min No. of Samples** | **Max No. of Samples** |
| I | 20 | 15 | 10 | 2 | 5 | 12 |
| II | 35 | 25 | 15 | 2 | 3 | 12 |
| III | 210 | 150 | 90 | 2 | 1 | 12 |

Selected cross-sections and plans of the Ni grade blocks are presented in Appendix E.

Bulk density was also interpolated with the same parameters used for Ni.

## 14.13 MINERAL RESOURCE CLASSIFICATION

It is the opinion of the Authors that all the drilling, assaying and exploration work on the Bucko Lake Mine Deposit support this Mineral Resource Estimate and are sufficient to indicate a reasonable potential for economic extraction, and thus qualify it as a Mineral Resource under the CIM definition standards. The Mineral Resource was classified as Measured, Indicated and Inferred based on the geological interpretation, variogram performance and drill hole spacing. The Measured Mineral Resource was assigned to the blocks interpolated with the Pass I in Table 14.9, which used at least five composites from a minimum of three drill holes; Indicated Mineral Resource was assigned to the blocks interpolated with the Pass II, which used at least three composites from a minimum of two drill holes; and Inferred Mineral Resources were assigned to all remaining grade populated blocks within the mineralized domain. The classifications have been adjusted on a longitudinal projection to reasonably reflect the distribution of each class. Selected classification block cross-sections and plans are attached in Appendix F.

## 14.14 NSR CUT-OFF CALCULATION

The Bucko Lake Mine Mineral Resource Estimate was derived from applying Ni cut-off grades to the block models and reporting the resulting tonnes and grades for potentially mineable areas. The following parameters were used to calculate the Ni grade that determine the underground potentially economically extractable portions of the constrained mineralization.

### NSR Cut-off Grade Calculation

| | |
|---|---|
| US$:CAD$ Exchange Rate | 0.78 |
| Ni Price | US$8.75/lb (Avg. of approx. Mar 31/22 two-year trailing average and long-term consensus forecast) |
| Ni Process Recovery | 79% |
| Ni Smelter Payable | 90% |
| | |
| Mass Pull | 16% |

| | |
|---|---|
| Smelter treatment | C$276/t |
| Moisture content | 8% |
| Concentrate freight | C$105/t |
| NSR Royalty | 2.5% |
| Bi-product credit | 4.0% payable Ni |
| Penalty charges for MgO | C$1/t |
| Price participation fees | C$3/t |
| | |
| Underground Mining Cost | C$60/t |
| Processing Cost | C$33/t |
| G&A | C$12/t |

The Ni cut-off grade for potential underground mining is calculated as 0.70%.

## 14.15 MINERAL RESOURCE ESTIMATE

The resulting Mineral Resource Estimate as of the effective date of this Technical Report is tabulated in Table 14.10. The mineralization of the Bucko Lake Mine Deposit is considered to be potentially amenable to underground economic extraction.

**TABLE 14.10**
**MINERAL RESOURCE ESTIMATE (1-5) AT CUT-OFF 0.70% NI**

| Classification | Tonnes (k) | Ni (%) | Ni (Mlb) | Cu (%) | Cu (Mlb) |
|---|---|---|---|---|---|
| Measured | 1,753 | 1.25 | 48.32 | 0.09 | 3.40 |
| Indicated | 3,975 | 1.23 | 107.94 | 0.11 | 9.99 |
| **Meas + Ind** | **5,727** | **1.24** | **156.26** | **0.11** | **13.39** |
| Inferred | 10,587 | 1.18 | 275.59 | 0.13 | 31.15 |

***Notes.***

1. *Mineral Resources, which are not Mineral Reserves, do not have demonstrated economic viability.*
2. *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
3. *The Inferred Mineral Resource in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could be upgraded to an Indicated Mineral Resource with continued exploration.*
4. *The Mineral Resources in this report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions (2014) and Best Practices Guidelines (2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council.*
5. *Mined areas and barren pegmatite dykes were depleted from the Mineral Resource Estimate.*
6. *The 0.70% Ni cut-off grade was based on an underground long-hole method mining cost of $60/t, processing cost of $33/t, G&A cost of $12/t, Ni price of US$8.75/lb, 79% Ni process recovery, 90% smelter Ni payable, 16% mass pull, $276/dmt (dry metric tonne) smelter treatment charge, $105/wmt (wet metric tonne) concentrate freight cost, 2.5% NSR royalty, $1/t penalty charge and $3/t price participation cost.*

Mineral Resource Estimates are sensitive to the selection of a reporting Ni cut-off grade and are demonstrated in Table 14.11.

**TABLE 14.11**
**MINERAL RESOURCE ESTIMATE SENSITIVITY**

| Classification | Cut-off Ni (%) | Tonnes (k) | Ni (%) | Ni (Mlb) | Cu (%) | Cu (Mlb) |
|---|---|---|---|---|---|---|
| Measured | 5 | 9 | 6.39 | 1.24 | 0.26 | 0.05 |
| | 4 | 20 | 5.27 | 2.31 | 0.25 | 0.11 |
| | 3 | 47 | 4.20 | 4.37 | 0.24 | 0.24 |
| | 2 | 156 | 2.93 | 10.06 | 0.18 | 0.62 |
| | 1.5 | 341 | 2.27 | 17.04 | 0.15 | 1.13 |
| | 1.0 | 986 | 1.56 | 34.00 | 0.11 | 2.39 |
| | **0.7** | **1,753** | **1.25** | **48.32** | **0.09** | **3.40** |
| Indicated | 5 | 12 | 6.16 | 1.57 | 0.62 | 0.16 |
| | 4 | 24 | 5.26 | 2.80 | 0.48 | 0.26 |
| | 3 | 75 | 3.99 | 6.56 | 0.35 | 0.57 |
| | 2 | 294 | 2.80 | 18.12 | 0.23 | 1.47 |
| | 1.5 | 720 | 2.15 | 34.06 | 0.18 | 2.80 |
| | 1.0 | 2,385 | 1.48 | 78.04 | 0.13 | 7.10 |
| | **0.7** | **3,975** | **1.23** | **107.94** | **0.11** | **9.99** |
| Inferred | 5 | 16 | 6.29 | 2.27 | 0.81 | 0.29 |
| | 4 | 41 | 5.17 | 4.67 | 0.66 | 0.60 |
| | 3 | 127 | 3.94 | 11.01 | 0.46 | 1.29 |
| | 2 | 636 | 2.72 | 38.15 | 0.25 | 3.47 |
| | 1.5 | 1,450 | 2.15 | 68.61 | 0.19 | 6.06 |
| | 1.0 | 6,184 | 1.41 | 192.27 | 0.15 | 21.12 |
| | **0.7** | **10,587** | **1.18** | **275.59** | **0.13** | **31.15** |

## 14.16 CONFIRMATION OF ESTIMATE

The block model was validated using a number of industry standard methods including visual and statistical methods.

- Visual examination of composites and block grades on successive plans and cross-sections were performed on-screen to confirm that the block models correctly reflect the distribution of composite grades. The review of grade estimation parameters included:
  - Number of composites used for grade estimation;
  - Number of drill holes used for grade estimation;
  - Number of interpolation passes used to estimate grade;
  - Mean value of the composites used;

- Mean distance to sample used;
- Actual distance to closest point; and
- Grade of true closest point.

- A comparison of mean grades of composites with the block model is presented in Table 14.12.

| TABLE 14.12<br>AVERAGE GRADE COMPARISON<br>OF COMPOSITES WITH BLOCK MODEL | |
|---|---|
| **Data Type** | **Ni (%)** |
| Composites | 1.15 |
| Capped Composites | 1.14 |
| Block Model $ID^2$ | 1.08 |
| Block Model NN | 1.13 |

***Notes:*** ***$ID^2$=*** *block model grades were interpolated with Inverse Distance Squared*
***NN=*** *block model grades were interpolated using Nearest Neighbour.*

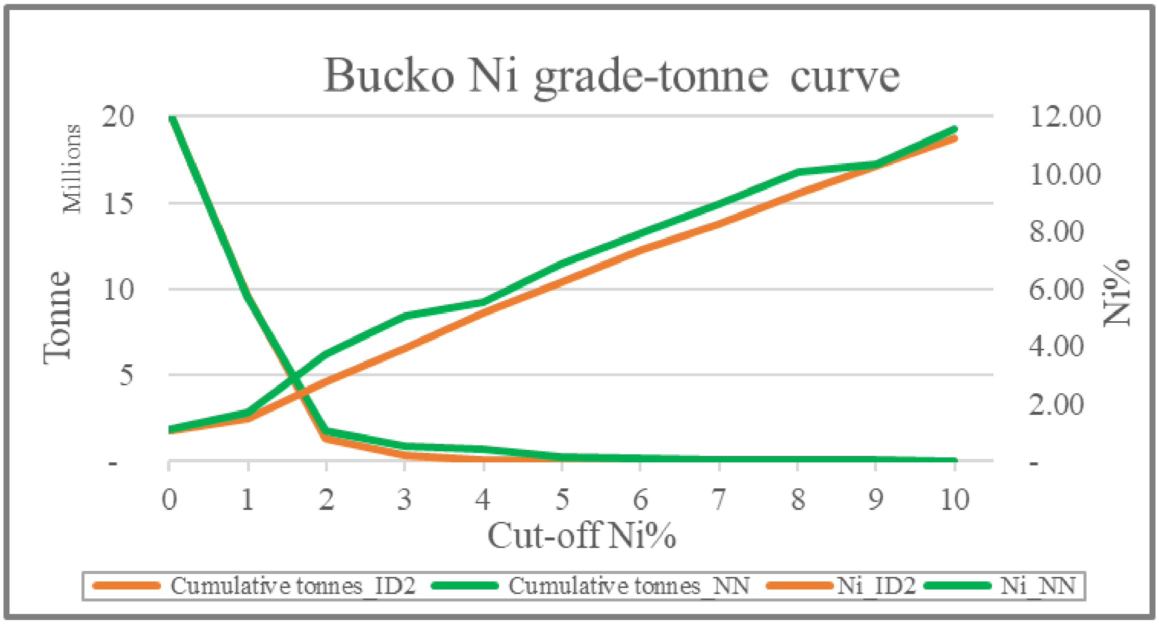
The comparisons above show the average grades of Ni block models were lower than that of composites used for the grade estimations. These were most likely due to smoothing by the grade interpolation process. The block model values will be more representative than the composites due to 3-D spatial distribution characteristics of the block models.

- A volumetric comparison was undertaken with the block model volume versus the geometric calculated volume of the domain solids and the differences are shown in Table 14.13.

| TABLE 14.13<br>VOLUME COMPARISON OF BLOCK MODEL<br>WITH GEOMETRIC SOLIDS | |
|---|---|
| Geometric Volume of Wireframes | 7,785,814 $m^3$ |
| Block Model Volume | 7,761,725 $m^3$ |
| Difference % | 0.3% |

- A comparison of the grade-tonnage curve of the Ni grade model of three main domains (Lower, Middle and Upper) interpolated with Inverse Distance Squared (“$ID^2$”) and Nearest Neighbour (“NN”) on a global Mineral Resource basis are presented in Figure 14.2.

**FIGURE 14.2 NI GRADE-TONNAGE CURVE FOR ID$^2$ AND NN INTERPOLATION**




- Ni local trends of three main domains (Lower, Middle and Upper) were evaluated by comparing the ID$^2$ and NN estimate against the composites. As shown in Figures 14.3 to 14.5, Ni grade interpolations with ID$^2$ and NN agreed well.

**FIGURE 14.3 NI GRADE SWATH EASTING PLOT**

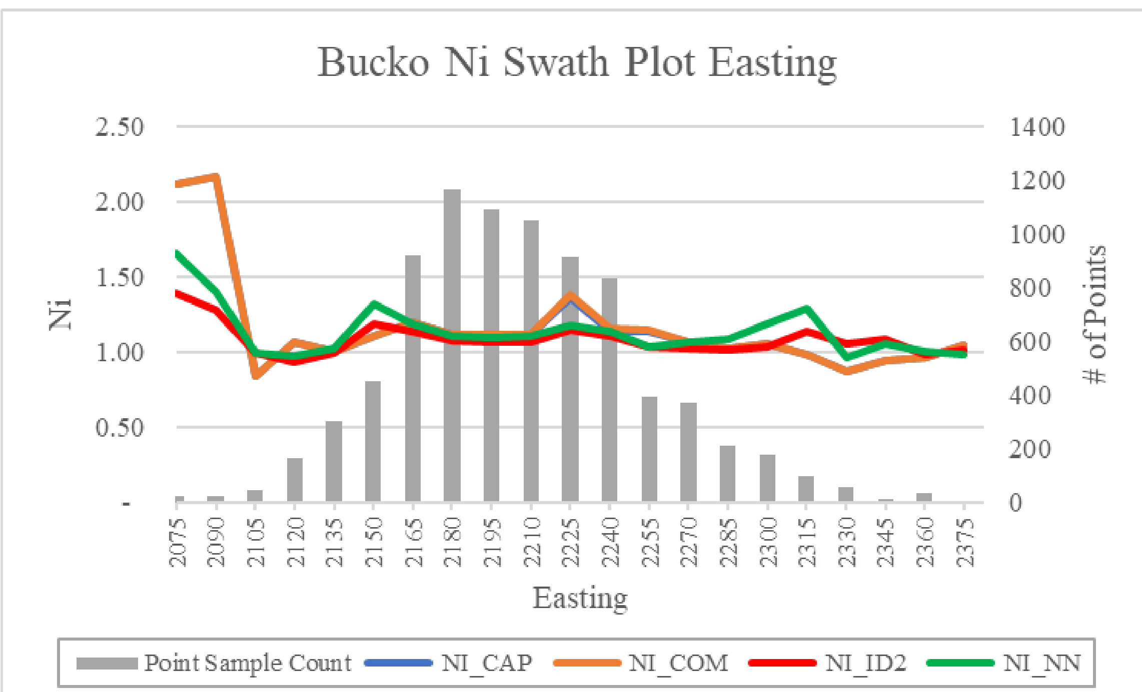


**FIGURE 14.4 NI GRADE SWATH NORTHING PLOT**

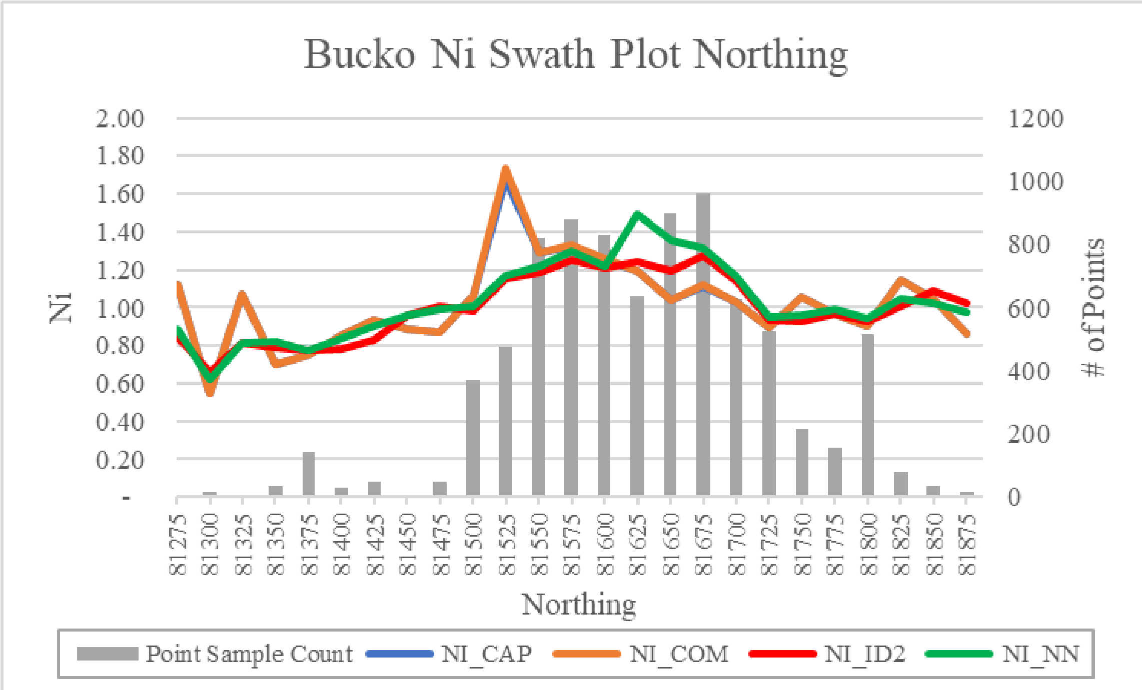
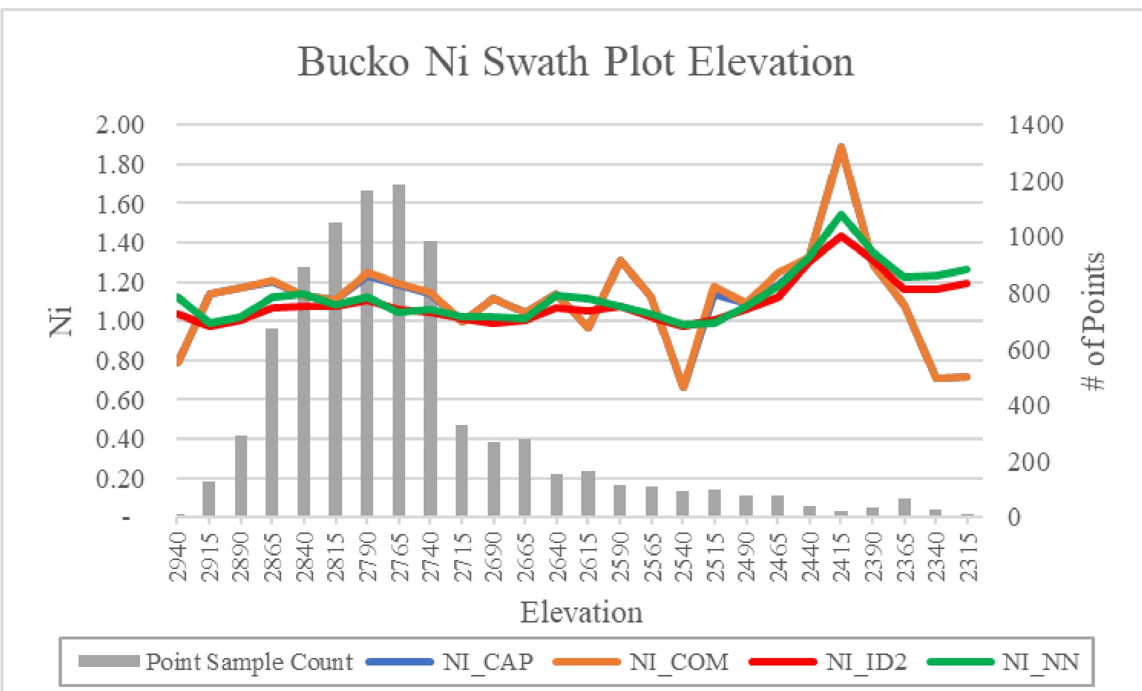



**FIGURE 14.5 NI GRADE SWATH ELEVATION PLOT**



# 15.0 MINERAL RESERVE ESTIMATES

There is no Mineral Reserve Estimate stated for the Bucko Lake Nickel Project. This section does not apply to this Technical Report.

## 16.0 MINING METHODS

The Bucko Lake Mine Deposit consists of four sub-vertical mineralized zones (Upper, Middle, Lower and Footwall) of varying extents, as shown in Figure 16.1. The zones extend to a maximum depth of ~920 m below surface, and vary in size, with the Footwall structure being significantly smaller than the other three. A northwest-southeast trending fold intersects the Upper, Middle, and Lower Zones to the northeast of previously mined areas. This fold is transected by a historical exploration track drift at the "1,000 level" (~305 m below surface). Multiple pegmatite dykes cross-cut the mineralized zones. These pegmatites are most extensively mapped in the existing workings within 300 m of surface. Exploration drill holes have intersected pegmatites at depths of ~500 m below surface.

Historical mining on the site progressed to a depth of ~305 m below surface utilizing a combination of Cut-and-Fill ("C&F") and Long Hole ("LH") mining, with pumped backfill at varying nominal cement quantities. LH mining was utilized between 260 and 305 m below surface, with C&F mining used above that horizon (130 to 240 m below surface). No mining northeast of the fold was undertaken during historical operations. The area between 240 and 260 m below surface was not mined, however, groundfalls in stopes below have unravelled into this area.

Evaluation of both C&F and LH methods have shown that both have potential applications for future mining at the site. Oversized excavations and ineffective backfilling at the site resulted in falls of ground and contributed to the eventual suspension of the mine, however, the methods themselves do not pose any fatal flaws to future mining provided that design, mining, and backfilling procedures are properly followed and proper QA/QC controls for backfill manufacture and placement are implemented. As a result, both C&F mining and LH mining with Pastefill ("PF") are proposed for use at the Bucko Lake Mine. The PF utilizes two different nominal cement contents (2.5% or 5.5% binder by mass) depending on whether adjacent mining (exposure in a wall) is required, or whether undermining (exposure in the back) will be required. These cement contents are derived from the Author's work with other mines and should be verified through strength testing in future studies.

The vast majority of mining (approximately 98% of tonnes) will utilize LH mining with PF, while a small portion will use overhand C&F mining with PF. C&F mining will only be implemented in a small zone above the existing old workings between 50 and 120 m from surface (see Figure 16.2).

**FIGURE 16.1 BUCKO LAKE NICKEL PROJECT MINERALIZED ZONES**

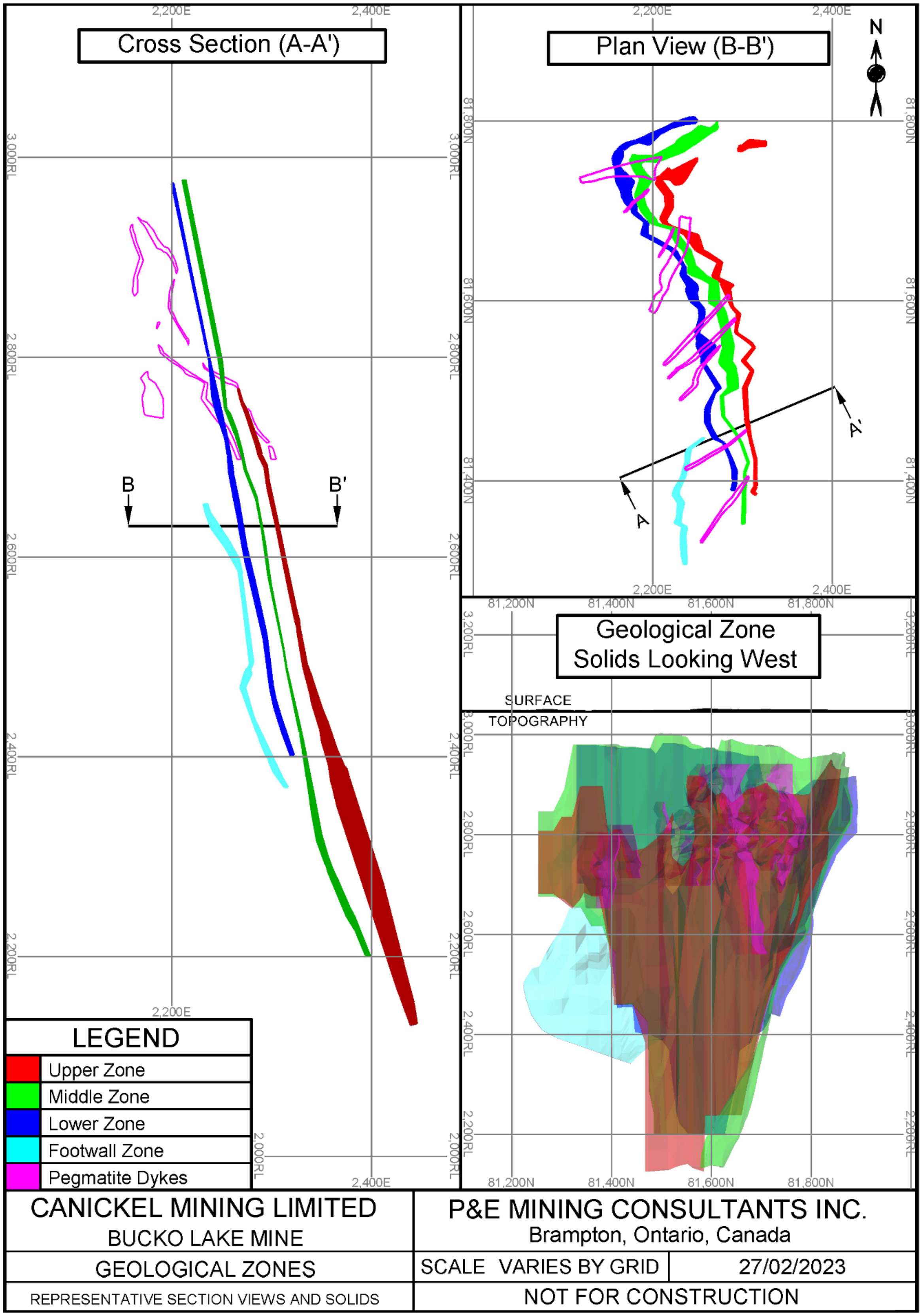
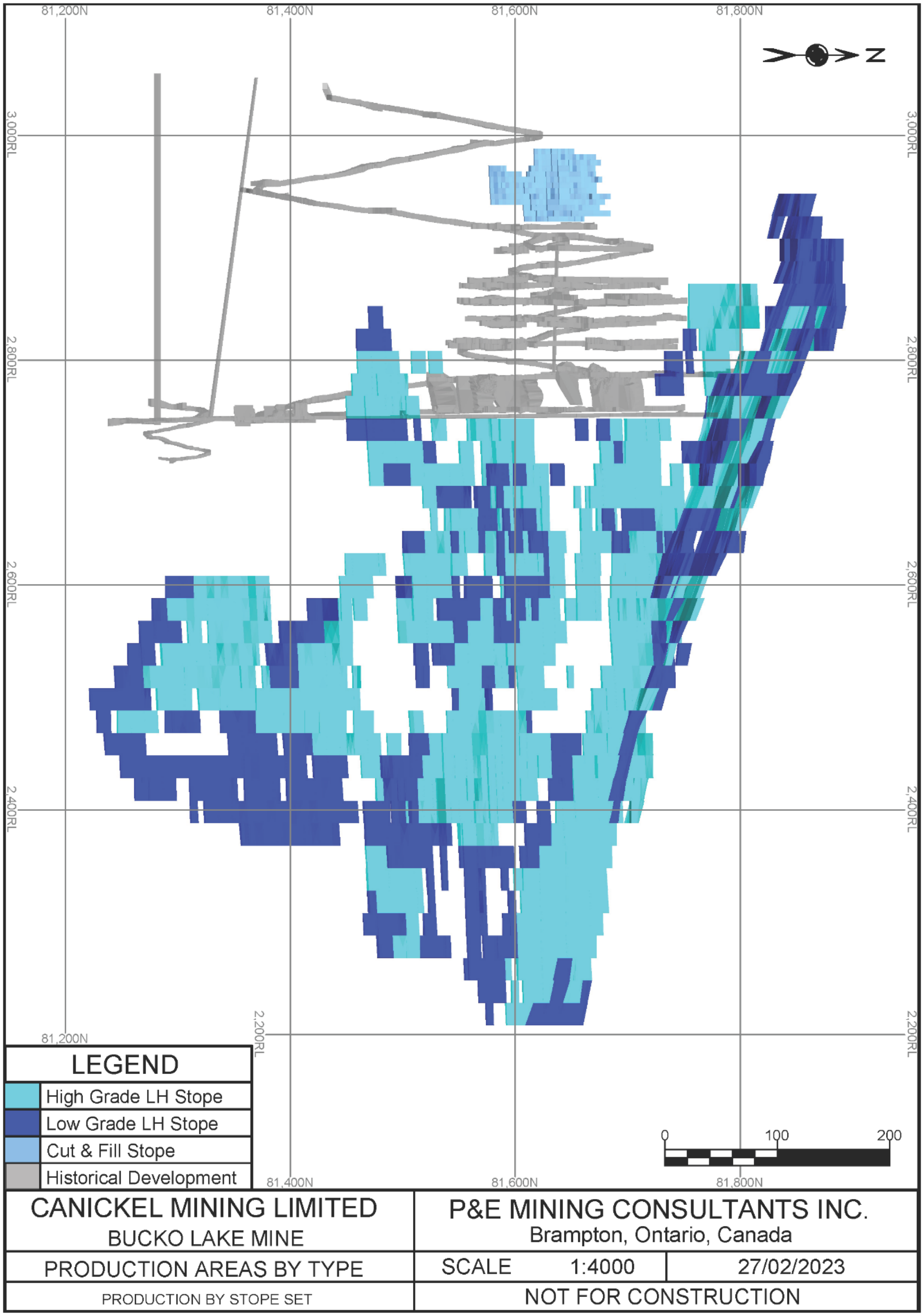


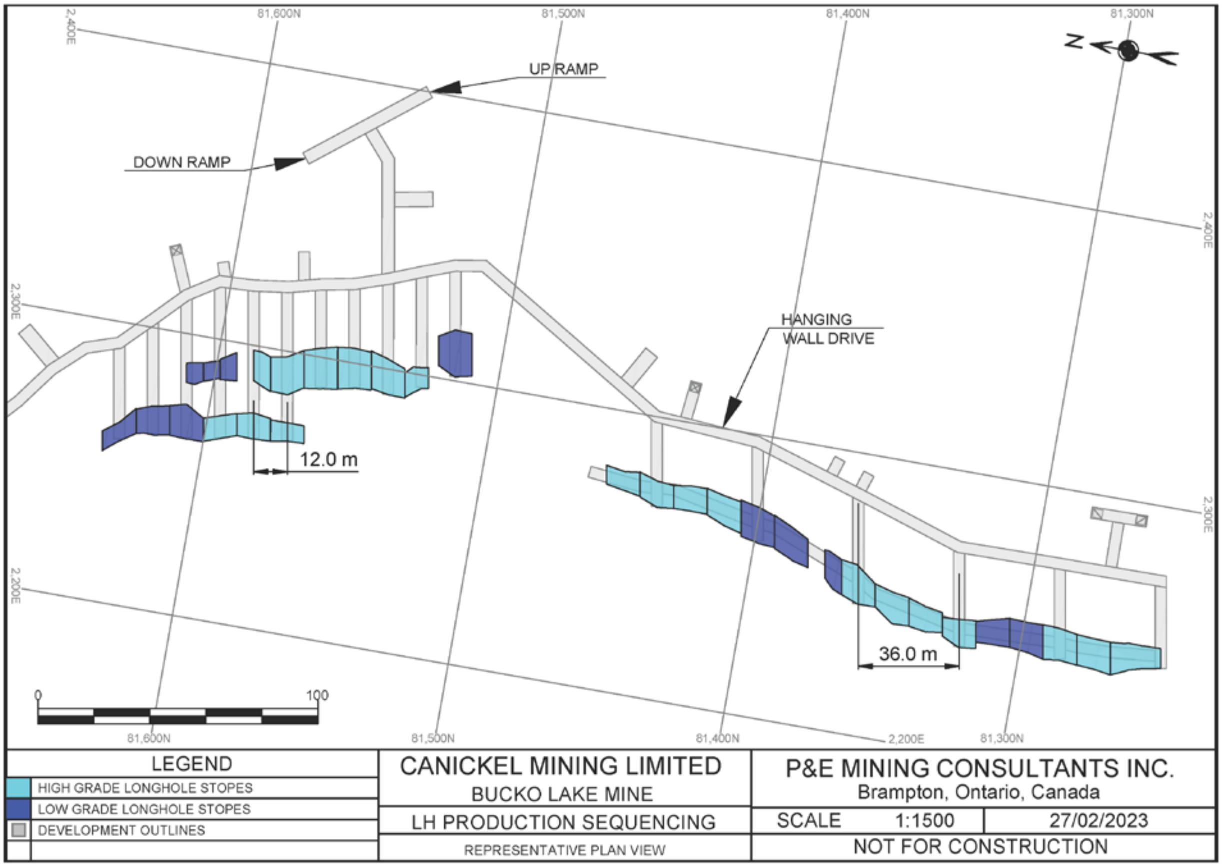
**FIGURE 16.2 PROPOSED MINING METHODS**



C&F mining was selected in this area due to the reduced strike of economic mineralization, the increased grade of the mineralization, and the ability to extract the area early in the mine life with the same equipment used for development elsewhere in the mine. C&F mining uses attack ramps on a nominal 25 m vertical spacing with 5 m high cuts. Parallel cuts at the same elevation will be used where necessary to maximize mineral extraction, with the initial cut being backfilled and cured prior to any adjacent cuts being opened. Access will be from the Hanging Wall ("HW") side, with cuts progressing from the Footwall ("FW") to the HW where multiple parallel cuts are used. Two lenses of mineralization will be extracted (from the Lower and Middle structures), providing a maximum of four active faces in an active cut. A maximum of three C&F levels will be active in any period, with a minimum sill pillar of 20 m thickness maintained between active mining cuts. Total C&F mining over the LOM is approximately 140 kt.

LH mining with PF is the dominant method for the Bucko Lake Mine. A small portion of tonnes will be extracted from areas adjacent to historical workings (approximately 4% of total LH tonnes) between 175 and 305 m below surface, however, the majority of LH production will come from virgin mining areas (see Figure 16.2 for further details). In all cases, level spacing is at 20 m and maximum stope span is 12 m (along strike) to minimize geotechnical risks (see Section 16.3 for further details). Throughout the mine, waste drifts are driven in the HW on a nominal 20 m offset to the stopes to improve grade selectivity (by allowing lower-grade stopes to be bypassed and extracted later in the mine life) and increase available active faces versus on-vein longitudinal mining. In areas where a single economic lens exists, transverse accesses are driven on 36 m centres and mining progresses in a longitudinal fashion between the accesses. In areas where multiple economic lenses exist in parallel, transverse drifts are driven on 12 m centres. Mining progresses from the FW towards the HW to improve geotechnical response. A maximum of one stope is operational in any transverse access at any point in time: only once the backfill has cured to sufficient strength will the next stope on the access be excavated. Figure 16.3 provides an example of the sequencing of LH stopes on a level. Total LH production over LOM is approximately 6.38 Mt.

**FIGURE 16.3 LONG HOLE PRODUCTION PLANNED FROM VIRGIN MINING AREAS**




LH mining is divided into two phases: High-Grade ("HG") and Low-Grade ("LG"), with a nominal 1.0% Ni cut-off grade between the two groups. HG stopes on a level are extracted first, with LG stopes extracted later in the mine life (see Figure 16.2). The majority of HG stopes are extracted using downhole drilling, with a minority requiring upholes when mining the top level of a mining block (mining under an artificial sill pillar). LG stopes are approximately evenly split between mining with upholes or downholes, as many LG areas will have no access to the overcut during extraction due to sequencing or positioning relative to artificial sill pillars. For stopes where no overcut access is readily available, reamed drill holes from nearby development on the overcut level will be used to allow pumping of PF into the stope for backfill. For the purposes of this PEA, all stopes are planned to be backfilled after extraction.

Blasted material is transported from LH stopes back out to remuck bays in the HW drift or level access by 10 t-class Load-Haul-Dump ("LHD") machines prior to being rehandled into a truck at the level access. Broken material passes and chutes were evaluated and discarded as uneconomic versus on-level loading. Trucks will haul via the ramp and through a truck bypass level 305 m below surface to dump at the shaft loading pocket, where 16 t skips will be used to hoist the material over the remaining distance to surface. For some of the planned tonnage it will be more efficient to truck haul directly to surface, and this material will be dumped on a ROM pad for rehandle into the crusher system. A grizzly and rockbreaker will be installed at the shaft loading pocket to handle oversize material. The shaft will also be used as a secondary egress and a services supply path.

Services for the site include ventilation, electrical supply, dewatering, backfill, and compressed air. During the initial dewatering and rehabilitation of old workings, both the shaft and the ramp will be used to supply services. Once deepening of the mine begins, services will be provided down raises located closer to the new mining areas. Escapeways will be provided in ventilation raises, and PF delivery boreholes will be drilled into each mining area as necessary. Since the climate at the Bucko site includes significant periods of freezing temperatures, electric mine air heaters will be installed to keep the underground intake air at a nominal 2°C during the winter months to prevent freezing of water and compressed air lines and improve the working environment. Section 16.9 provides further details on UG services.

Mining and development will be carried out by Company personnel. Since the site was previously active, some appropriate underground machinery is available. Additionally, it is anticipated that complementary units from a used fleet currently owned by a major Company shareholder can be acquired and rebuilt where necessary to provide the backbone of the initial development and production fleet for the mine. While it will be necessary to supplement this machinery with newly-acquired units, these sources will provide a significant portion of the initial site fleet. Further details on the fleet strategy are provided in Section 16.10.

Processing will be performed on-site at the process plant, and tailings will be incorporated into the PF as much as possible to reduce surface tailings storage requirements while maintaining the required properties of the PF to ensure safe and sustainable mining.

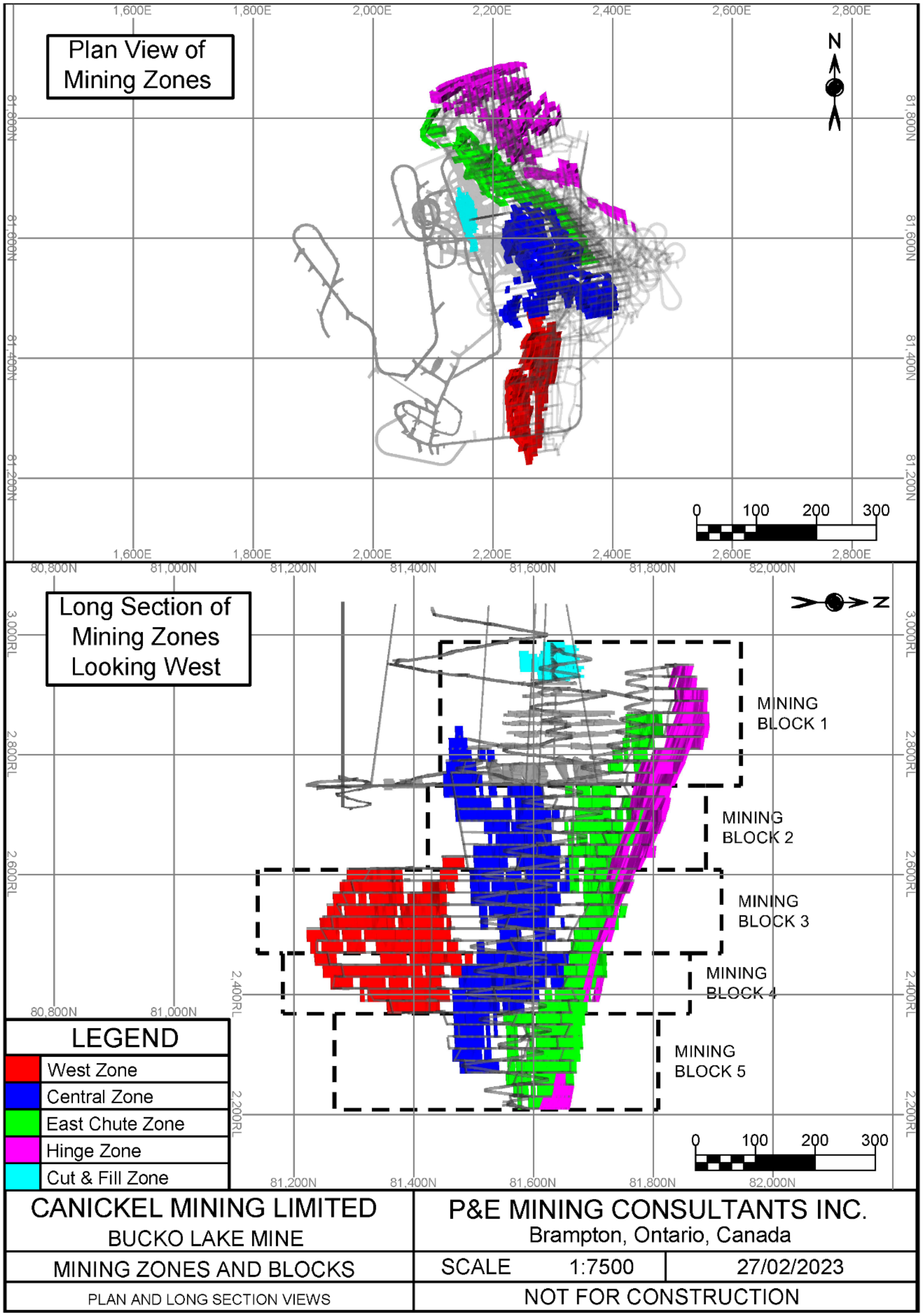
The Bucko Lake Mine is expected to produce a total of 6.52 Mt of process plant feed over a 13-year mine life, with an average metal content of 1.14% Ni. It is expected to operate for 352 days per year at a daily rate of 1,500 tpd, for a nominal yearly production rate of 528 ktpa. The first eight years of mine life comprise the HG portion of the schedule and average 1.30% Ni, while the remaining five years of LG production average 0.91% Ni.

## 16.1 NOMENCLATURE OF MINING ZONES

Due to the multiple mineralized structures in the Bucko Lake Mine and the ability to selectively bypass or target tonnes using the HW drifts, the portion of the mine utilizing LH mining has been divided vertically into 5 mining blocks (1 to 5) and laterally into 4 zones (West, Core, East Chute, Hinge), as shown in Figure 16.4. This segregation allows for an increased number of active faces, for capital development to be delayed, and for improved grades earlier in the mining schedule.

The portion of the mine utilizing C&F mining is referred to as the C&F zone and is entirely contained within Block 1.

**FIGURE 16.4 FIVE MINING BLOCKS AND FOUR ZONES FOR LONG HOLE MINING**



## 16.2 DESIGN METHODOLOGY AND CUT-OFF VALUE

The initial design of the underground mining complex was driven by the following parameters:

- LH mining as the primary extraction method, with C&F mining as an alternate if needed.
- Cemented PF as backfill to ensure tight-filling and maximize backfill competency for adjacent mining operations.
- Nominal 20 m high level spacing to allow maximum control of stope walls, and allow for accurate drilling using both upholes or downholes.
- Maximum 12 m strike length LH stopes as specified by Knight Piésold to minimize hydraulic radius and reduce geotechnical risks.
- Maximum C&F opening of 5 m wide x 5 m high.
- Transverse access to maximize available faces and facilitate grade selectivity.
- Access to the mineralized structures from the HW side.
- Nominal 20 m offset of the HW drift to the mineralization.
- Systematic installation of long support for LH mining.
- $90/t OPEX cost.
- Initial multi-variable analysis of tonnes, cut-off grades and mining rates, using:
    - Deswik Stope Optimizer ("DSO") automated diluted overbroken stope generation at Cut-Off Values ("COVs") from 0.5 to 1.4% Ni in 0.1% Ni increments.
    - Preliminary production rate estimates by Long's modification to Taylor's Rule (Long, 2009) based on recoverable diluted tonnage (varies from 1,000–3,000 tpd).
    - An NSR of CAD$143.74 per percent nickel.
    - 92% recovery and 5% additional backfill dilution on diluted overbroken stopes.
- Trade-off studies were performed to determine:
    - Optimum transport method (shaft, ramp, or combination).
    - Feasibility of shaft deepening (none, full depth, or partial depth).
    - Cost-benefit of longitudinal versus transverse mining access.
    - Cost-benefit of C&F versus LH mining in smaller, isolated areas above historical workings.
    - Feasibility of segregating HG stopes from LG stopes.
    - Feasibility of returning to mined-out areas to extract low-grade tonnes adjacent to backfilled workings.
    - CAPEX impact of acquiring new equipment versus used equipment for initial fleet.

The majority of mining targets exist below the historical workings on a significant offset from the existing shaft. Analysis of shaft deepening showed that, while feasible, it did not provide an economic benefit to the Project. The existing shaft, however, can be rehabilitated and used to improve the economics of material transport over the final 305 vertical metres of travel, and reduce the truck cycle time. Additionally, the process plant was determined to support an expansion of throughput up to ~1,500 tpd, limiting any scenarios relying on economics of scale. Finally, it was determined that the historical ramp was sufficiently large for the purposes of reuse for future mining, with suitable rehabilitation.

Iteration of the Hill-of-Value analysis using a ramp-access mine below the existing historical workings, coupled with material hoisting in the area of the historical workings, indicated a Project with a cut-off value ("COV") of 1.15% Ni generated the best financial outcomes. Additionally, cost estimation indicated that an all-in OPEX cost (inclusive of mining, processing and G&A) of $100/t (equivalent to 0.70% Ni Marginal COV) was appropriate. Therefore, a final stope set was generated that used 1.15% Ni COV to generate the HG stope subset, and then integrated stopes generated by a 0.9% COV adjacent to existing HG stopes to generate the LG stope subset. The 0.9% Ni COV was derived from the 0.70% Ni COV plus a 0.20% margin for improved economics. This final set of stopes was evaluated and shown to have improved Project economics versus the pure HG scenario at 1.15% COV. Due to geotechnical and accessibility considerations based on expected sequencing, small portions of the HG and LG subsets were integrated into their opposite groups to maximize total tonnage extraction.

Economic evaluation of areas above the historical workings indicated that the cost of developing ramps and levels for LH mining exceeded the costs of mining these areas using C&F methods. Therefore, C&F mining was planned in these areas.

The analysis mentioned above results in a mine plan comprised of 98% LH and 2% C&F, utilizing trackless mining and leveraging synergies with existing infrastructure to produce 1,500 tpd over a 13-year mine life. All significant CAPEX infrastructure is located outside of ultramafic host rock in the gneiss unit for improved geotechnical stability.

## 16.3 GEOLOGICAL AND GEOTECHNICAL CONSIDERATIONS

Two specialist firms were retained to evaluate the geotechnical implications of future mining at the Bucko site in light of issues experienced during historical operations. Paterson & Cooke Canada Inc. ("P&C") were retained to evaluate the existing and proposed backfill systems, and Knight Piésold Ltd. ("KP") were retained to evaluate the site geotechnical parameters and provide inputs on stope sizing, ground support, mine sequencing and optimal progression of mining fronts to minimize risk and prevent a recurrence of issues experienced during historical operations. KP also provided recommendations on paste backfill strengths.

### 16.3.1 Historical Ground Condition Issues

On May 11, 2012, CaNickel received a stop work order from Manitoba's Workplace Safety and Health Division to cease blasting operations until all known voids had been backfilled and the current mining plan revised to correct ground condition issues. In June 2012, the ground control deficiencies were corrected and the stop work order was lifted; however, it was decided by

CaNickel to place the mine on care and maintenance status until such time that weak nickel prices improved and the Company optimized its mine plan methods.

### 16.3.2 Mine Design Inputs

An excerpt from the KP report "Bucko Lake Mine - PEA Geomechanical Design Input" is as follows:

The Mineral Resource model was updated by the Authors in June 2022. Geomechanical input was provided for the PEA design based on the review of the historical mine performance, experience at similar operating mines, and empirical methods. Key recommendations are listed below.

- **Long Hole Stope Sizing:** A strike length of 12 m and HW to FW span of 8 to 12 m, depending on rock mass quality. A sub-level spacing of 20 m was specified by the Authors.

- **Cut and Fill Stope Sizing:** Maximum stope size of 4 to 5 m wide by 5 m high. Larger HW-FW spans can be managed with multiple cuts. Tight filling will be required to maintain the stability of the stopes.

- **Ground Support:** The existing ground support standards were updated. In addition to primary support, long hole stopes will require long support.

- **Sequencing:** The PEA design involves mining the high-grade stopes first, followed by the low-grade stopes. The interactions between the high and low-grade stopes are complex due to the geometry of the mineralized bodies. Sequencing will require a detailed evaluation in the next level of design.

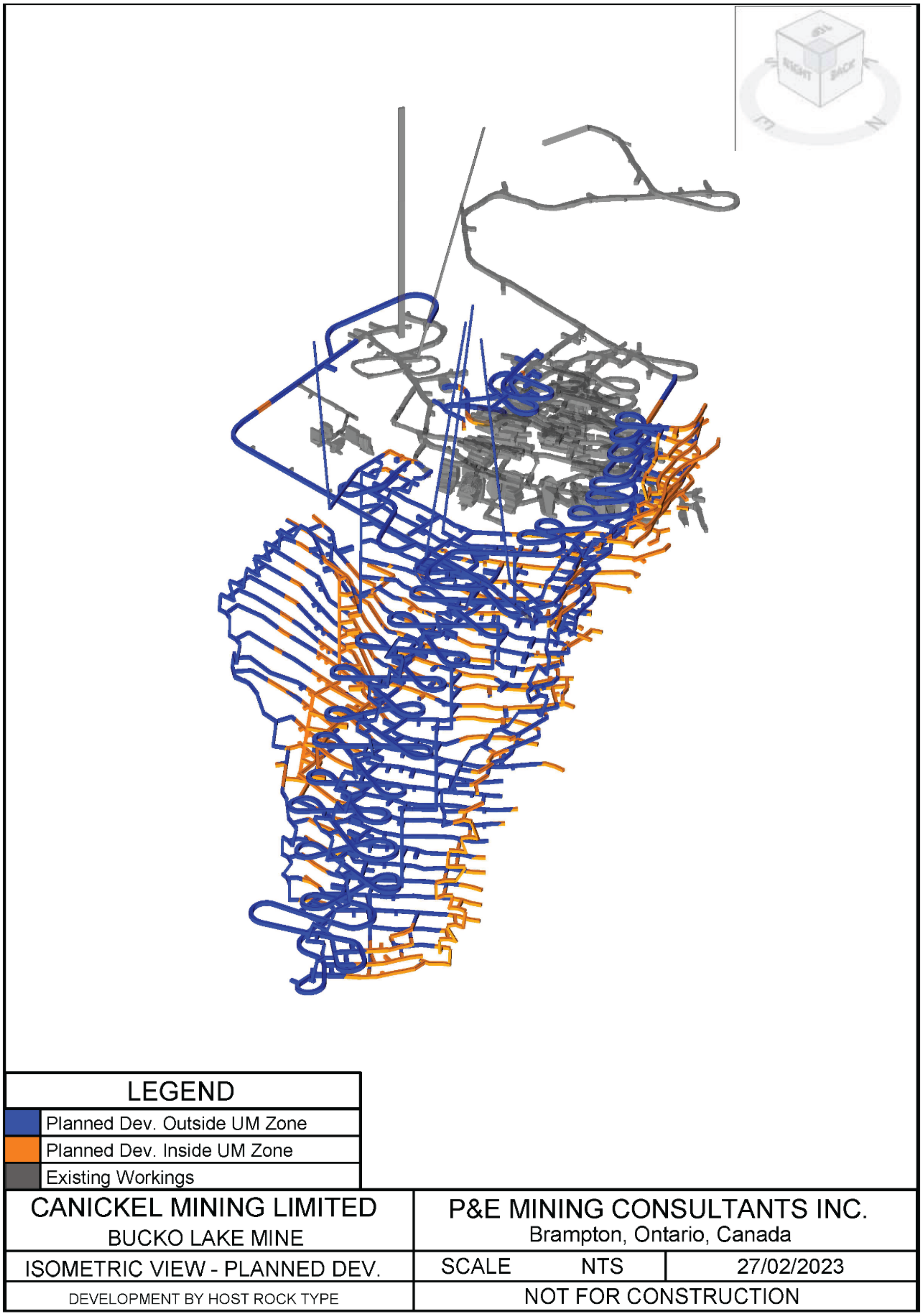
- **Inter-Lode Pillars:** Where stopes can be mined FW to HW, a 7 m inter-lode pillar between the stopes is expected to be achievable and is believed to be a suitable thickness for a PEA.

- **Hanging Wall Drift Offset:** The HW drift should be offset from the mineralization at least 20 m and, where possible, should be located in the Gneiss at least 5 m away from the lithology contact.

- **Shaft Extension:** Extending the current shaft another 300 m is expected to be reasonable given that it is expected to stay within the higher quality Gneiss. Additional information in the next level of design will be required to confirm the feasibility of the extension.

Figure 16.5 shows the positioning of mine development relative to the Ultramafic/Gneiss contact, and the rerouting of access to the HW side of the Deposit for future mining relative to the historical access from the FW side. Development areas are to be situated away from weaker ultramafic contact areas. Development will be done either outside the ultramafic unit or fully inside the unit with improved ground support versus previous efforts at the mine. Intersections with the ultramafic unit, while unavoidable, will be minimized.

**FIGURE 16.5 PLANNED MINE DEVELOPMENT**



### 16.3.3 Sequencing

#### 16.3.3.1 Direction of Mining

KP provided the following guidance on the direction of mining:

- FW-to-HW progression both within a single stope and where there are multiple parallel lenses being mined.
- Endeavour to mine middle-out of any group of stopes to prevent stress concentration.

#### 16.3.3.2 High-Grade Versus Low-Grade Stopes

KP provided the following guidance with regards to mining HG and LG stope sets:

- High-grading and then returning to extract low-grade stopes later is conceptually feasible.
- Due to the complex interactions between stopes, further work is necessary at later levels of study to better evaluate the impacts of the proposed sequencing.
- In one area in the middle of the mine (mining blocks 2 and 3 in the Core area) it is recommended not to return to mine the low-grade stopes. This results in the loss of 167 kt grading 0.88% Ni diluted and recovered.
- Reduced recovery is to be expected from LG stopes versus HG stopes (reduced from 92.5% to 90% in production schedule).

### 16.3.4 Backfill

#### 16.3.4.1 Historical Backfill Infrastructure and Operations

Historical operations used pumped backfill, however, no filtration of tails was used, only cycloning. This produced an input tails slurry of approximately 60% solids by mass and resulted in a product that required the addition of dry sand to offset the water content to make suitable backfill. Paste characteristics were achieved with a 35 to 50% sand/tailings blend, however, addition of unfiltered tails beyond 50% by mass would add excessive water and create a product more similar to hydraulic fill than paste. The addition of sand to the paste product also created a coarse paste product with poor strength performance characteristics, and a higher rate of wear on distribution piping. The backfill reportedly performed adequately when implemented in a proper and timely fashion, however, anecdotal evidence suggests there were considerable variances in backfill quality depending on date, location, and extraction method.

Existing infrastructure at the backfill plant installed in 2012 includes:

- A 170 $m^3$/h mixer.
- A 6 $m^3$ paste hopper.

- A Putzmeister S-tube pump capable of 12–60 $m^3$/h.
- 38 $m^3$ sand/aggregate storage.
- 34 $m^3$ slurry storage.
- 120 $m^3$ cement storage silo.
- 4 $m^3$ cement feeder scale.
- Boreholes to the underground.

Existing infrastructure will be used where appropriate and augmented with new infrastructure where necessary.

#### 16.3.4.2 Future Infrastructure and Operations

P&C has noted that the most recent rheologic work available to review was from 2011 and it did not address the possibility of filtering the tails for improved quality of paste. Additionally, they noted several deficiencies in the general design of the existing backfill plant, including:

- Inadequate pipe supports requiring additional welding and structural support.
- Lack of flushing attachments downstream of the pump.
- Lack of high-pressure washing system for the mixer, hopper and pump.
- Omission of manual sampling ports.
- Sub-optimal "passive sock" cement weight hopper design.
- Poor hopper drainage piping and valve work design.
- Missing pressure sensors.
- Incomplete or missing PLC programming.
- Plugged borehole from surface to ~130 m below surface.

Previous test work attempted to target a 0.7 MPa strength at three days, which P&C considers to be higher than necessary. For the purposes of this PEA, a target of 1.0 MPa after 28 days has been selected. Test work indicates that a binder content of 5% cement by mass and a 76/24 blend of fine sand and cyclone tailings would achieve this, however, P&C notes that no work on blends of dewatered tailings or other combinations of tails and aggregates has been completed, and further dewatering of the tails is expected to improve paste performance and reduce or eliminate the need for sand addition.

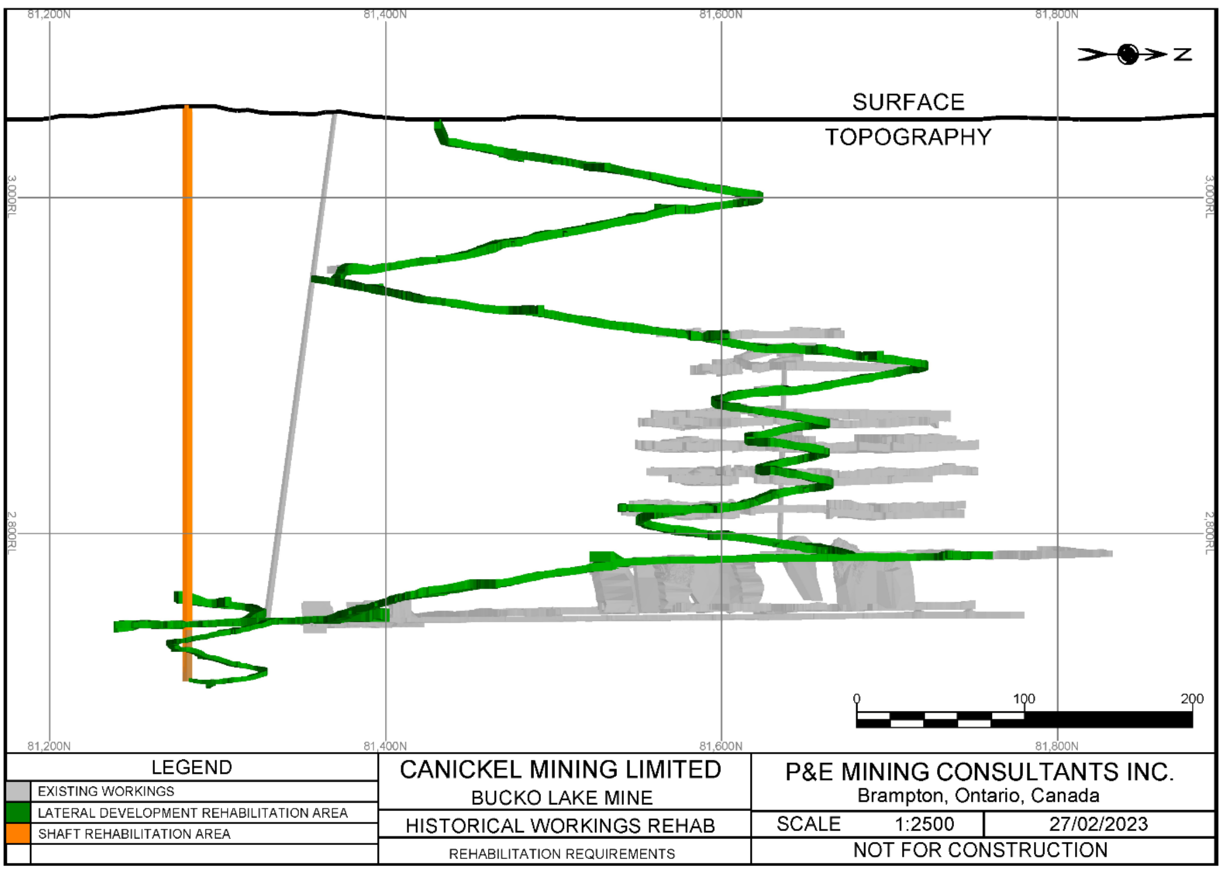
The PF plant will be rehabilitated and upgraded prior to the commencement of mining, utilizing as many of the existing components as possible. P&C views the existing components as generally oversized for the required flow rates, with the Putzmeister pump being the limiting factor. The pump is capable of supplying ~50 $m^3$ (100 t) per hour, well in excess of the expected mining rate of 535 $m^3$/d. A 102 mm diameter supply pipe would be sufficient to maintain suitable paste flow speeds.

Given the limited data available, the Authors have chosen to assume binder contents of 5.5% binder by mass for stopes that will eventually be undercut, and 2.5% binder by mass for stopes where only sidewalls will be exposed. For stopes where no adjacent mining will occur, it is assumed that rockfill or PF with a minimal cement content will be used for backfill. These binder contents are derived from experience with PF at other operations and will need to be confirmed by future strength test work. The Authors have specified a supply and reticulation system using 102 mm diameter pipe. Where boreholes are used to supply paste from surface to the underground, they will be reamed larger, and the annulus between the walls and 102 mm pipe fully grouted. For stopes where overcut access is not readily available, drill holes reamed to 152 mm diameter will be driven to provide sufficient diameter to insert 102 mm HDPE pipe into the stope for backfilling, using the annulus to vent air displaced by the fill.

## 16.4 HISTORICAL WORKINGS CONSIDERATIONS

Significant historical workings exist at the Bucko Lake Mine. A portion of these workings, mainly the ramp and shaft, and segments of existing levels, will be rehabilitated and used in the mine plan, as shown in Figure 16.6. The mine is currently flooded to the portal collar and will require dewatering prior to inspection of the condition of underground workings. Experience from other sites suggest that complete submersion of workings is generally preferable to damp and open conditions for preservation of shaft timbers and ground support; however, for the purposes of this PEA, it is assumed that rehabilitation to the underground shaft and ramp will be required.

**FIGURE 16.6 PLANNED MINE DEVELOPMENT OF OLD WORKINGS**




### 16.4.1 Shaft and Vertical Development

A historical two-conveyance shaft (nominally 7.2 m W x 3.3 m L) with a services/manway compartment extends to a depth of 340 m below surface, with a loading pocket installed approximately 15 to 20 m from the shaft bottom. Site inspections indicate that the headframe area is in good condition, and previous camera surveys indicate that the shaft is in good condition in the inspected areas. The hoist will be recommissioned and used to inspect and rehabilitate the shaft timbers once dewatering is completed. The existing loading pocket will be recommissioned and utilized for hoisting of material once mining recommences.

In addition to the shaft, there is a ventilation raise (nominally 2.8 m diameter) extending from surface to 305 m below surface. This ventilation raise is assumed to be in good condition and will be inspected by camera survey for clarification. The raise will be used to provide initial ventilation during development of the truck bypass on the 1,000 level.

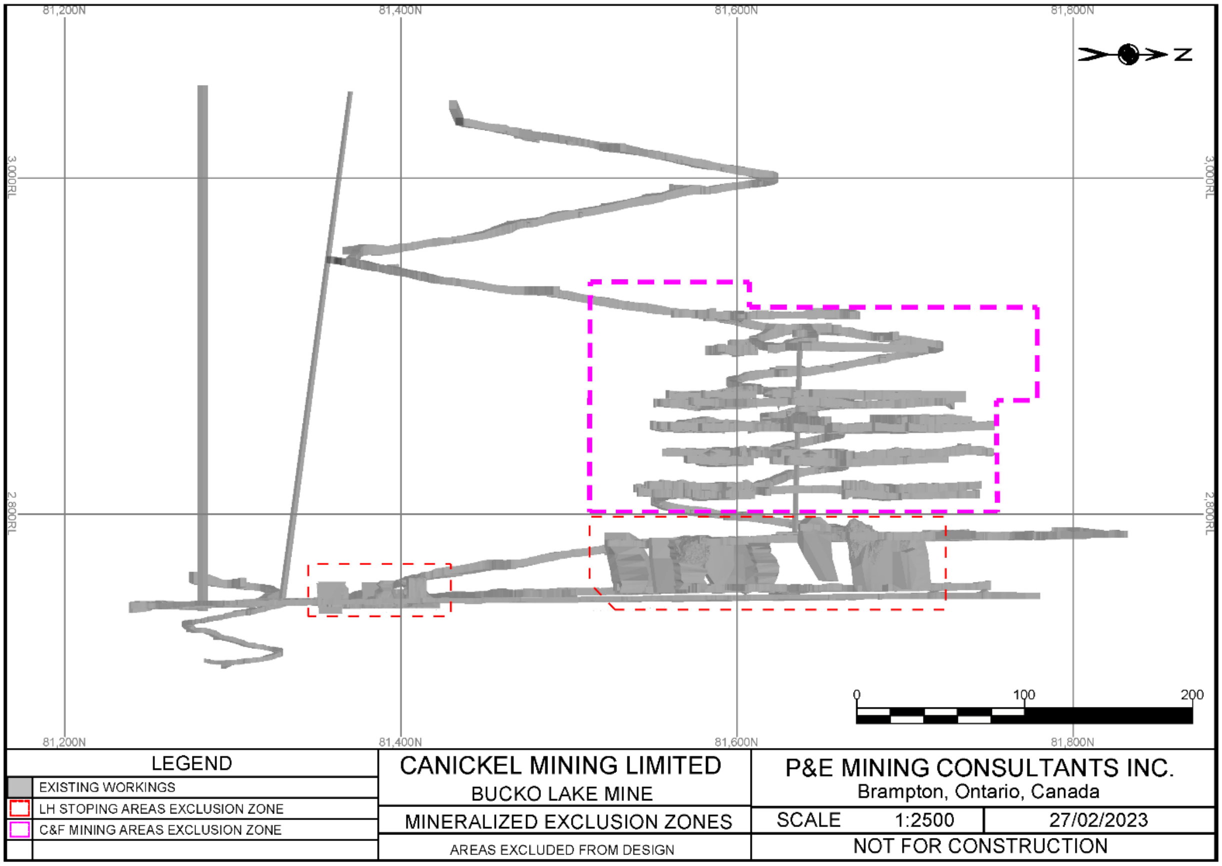
### 16.4.2 Ramp and Lateral Development

Ramp access (nominally 4.5 m W x 4.5 m H) extends from surface to shaft bottom. Eight levels were developed, spaced from 20 to 30 m (75 to 100 ft) apart, between 130 to 305 m below surface. The ramp and its associated infrastructure (remuck bays, sumps, electrical bays, etc.) will be rehabilitated over its entire extent as dewatering of the mine progresses. Portions of existing levels at depths of 130 m and 260 m below surface will be rehabilitated to provide access to future mining areas, as will all lateral development related to accessing the shaft bottom, loading pocket, and existing vent raise. A total of 5,200 m of lateral development will be rehabilitated prior to the commencement of new development operations. It is assumed that full replacement of ground support and services infrastructure will be necessary in 50% of all locations.

### 16.4.3 Exclusion Zones

Records of excavations from historical LH mining cannot be sufficiently relied upon at the present time to permit mining adjacent to these areas. Therefore, the Authors have placed an exclusion zone around mineralization in the footprint of previous LH excavations until probe drilling and cavity surveying can confirm their current extents. Evaluation of the previous C&F excavation data indicates that it is largely complete, however, there are questions around the structural integrity of the pillars between C&F stopes. Therefore, no mining is planned in the sill pillar areas between historical C&F stopes. Mining is planned above existing historical openings where the virgin rock thickness above previous mining areas is sufficient (nominally 20 m or more). Significant mineralization exists within these exclusion zones, and has been excluded from the mining plan. Figure 16.7 shows the areas excluded from the mine plan due to these limitations. Eventual mining in the exclusion zones may be possible with sufficient analysis and engineering work once operations are resumed, but that possibility is not included in this analysis.

**FIGURE 16.7 PLANNED MINE DEVELOPMENT EXCLUDED WORKINGS**




### 16.4.4 Dewatering and Rehabilitation

Since the historical workings are currently flooded, dewatering will be necessary prior to rehabilitation of the required access areas. Therefore, a large dewatering pump will be installed in the historical shaft to draw down the water level rapidly. This pump will use 152 mm diameter pipe to move 43 L/s of water during the initial dewatering process, based on an 86 L/s maximum flow and a duty cycle of approximately 50% to allow for periodically advancing the pumping system.

As the water level is reduced, ramp and shaft rehabilitation will lag the water level slightly, allowing dewatering and rehabilitation to proceed in parallel. Current estimates of the volume of the underground workings, excluding stopes, is approximately 170,000 $m^3$. At the projected dewatering rate, and accounting for 10 L/s inflow, dewatering operations will take approximately two months. As existing stopes will contain some water, and there are portions of the mine that do not drain to the shaft, the Authors have estimated that dewatering of the historical workings will take approximately three months. Initial dewatering operations will rapidly exceed the rate of rehabilitation in the ramp until historical production levels are dewatered, at which point rehabilitation will likely proceed faster than dewatering. It is expected that the entire dewatering and rehabilitation process will take approximately three to four months.

## 16.5 DEVELOPMENT

Development at the Bucko Lake Mine includes expansion of historical workings (slashing) as well as new development in virgin rock.

### 16.5.1 Vertical Development

Vertical development at the Bucko Lake Mine will use a combination of drop raises, Alimak raises and raisebored raises, depending on the location and length of the development. Table 16.1 shows the nominal dimensions and linear metres of development by vertical development profile and method.

**TABLE 16.1**
**VERTICAL DEVELOPMENT**

| Method | Development Profile | Quantity (m) |
|---|---|---|
| Raisebore | 3.0 m diameter | 1,181 |
| Alimak | 3.0 m W x 3.0 m L | 946 |
| Drop Raise | 3.0 m W x 3.0 m L | 1,831 |
| **Total** | | **3,959** |

***Note:*** *W = width, L = length.*

### 16.5.2 Lateral Development

Standard mechanized lateral development practices will be used at the Bucko Lake Mine. Table 16.2 shows the nominal dimensions and linear metres by lateral development profile.

**TABLE 16.2**
**LATERAL DEVELOPMENT**

| Type | Purpose | Profile | Quantity (m) |
|---|---|---|---|
| Full-Face Development | Ramp | 5.0 m W x 5.0 m H | 6,575 |
| | Truck Bypass | | 249 |
| | Level Access | 4.5 m W x 4.7 m H | 1,805 |
| | Remuck Bays | 5.3 m W x 6.0 m H | 1,163 |
| | Hanging Wall Drifts | 4.0 m W x 4.0 m H | 12,701 |
| | Vent Accesses | | 5,348 |
| | Sumps | | 432 |
| | Electrical Bays | | 722 |
| | Crosscuts | | 39,747 |
| | Pump Stations | 4.0 m W x 5.0 m H | 140 |
| | Attack Ramps | | 188 |
| | **Subtotal** | | **69,071** |

| **TABLE 16.2<br>LATERAL DEVELOPMENT** | | | |
|---|---|---|---|
| **Type** | **Purpose** | **Profile** | **Quantity (m)** |
| Slashed Development | Attack Ramps | 4.0 m W x 5.0 m H | 473 |
| | 1,000 Level Slashing | 5.0 m W x 5.0 m H | 705 |
| | **Subtotal** | | **1,178** |
| **All** | **Total** | | **70,248** |

***Note:*** *W = width, H = height.*

#### 16.5.2.1 Full-Face Development

Full-face development is used in most of the lateral development. This development uses a standard "Dice Five" burn cut to generate void for the blast. Larger diameter (76 mm) holes are drilled in the corners and centre of a 1 m x 1 m grid to generate an initial void, and subsequent holes are slashed into the void. The dominant free face is the open face of the drift.

#### 16.5.2.2 Slashing in Old Workings

An existing exploration drift on the 1,000 level (305 m below surface) provides access to the HW side of the Deposit from the shaft area. This drift will be expanded from its current 2.5 m W x 3.0 m H dimensions to dimensions of 5.0 m W x 5.0 m H to support truck haulage from future mining areas to a truck bypass that will lead to the shaft dump. Slashing will be done around the walls and back, leaving only the original floor of the drift in place, with the free face of the blast being into the existing opening, which allows for more efficient blasting and rapid development rates. Approximately 1% of all lateral development in the underground is slashed lateral development.

#### 16.5.2.3 Attack Ramp Slashing for C&F Mining

Attack ramps are driven at a maximum 20% grade. The initial full-face ramp is driven from the access to the bottom of the stope and is in use until mining and backfilling on the bottom cut of the stope is complete. At this point, services are stripped and the back is slashed downwards to excavate the next ramp in the sequence. Void from the previous attack ramp is used to improve blasting productivity. A portion of the blasted material from the slash will be removed due to the swelling of the broken rock while the remainder is used as a working floor for the ramp to the next cut in sequence. Less than 1% of lateral development in the underground is comprised of slashed attack ramps.

## 16.6 PRODUCTION

Production mining at the Bucko Lake Mine uses LH and overhand C&F mining with cemented PF. The mine production rate is nominally 528 ktpa, with daily rates of 1,500 tpd expected for 352 days/year. The backfill plant will be sized for a nominal production rate of 45 $m^3$/h of PF. Average daily PF demand over a year is approximately 535 $m^3$/d.

### 16.6.1 Mining

The vast majority of mining (98% of total tonnes) uses transverse-access LH mining with PF. A small minority of mined tonnes uses overhand C&F mining with PF. Backfilling of LH stopes with uncemented development waste can be utilized on an opportunistic basis in a small minority of stopes where self-supporting backfill is not required. This practice, however, does not form a significant portion of planned operations.

#### 16.6.1.1 LH Areas

LH mining is used in all areas below the existing workings, in the unmined Hinge area northeast of existing workings, and in two specific areas in Mining Block 1 adjacent to existing workings (see Figure 16.2). The majority of LH mining utilizes downholes drilled from an overcut to an undercut, with the remainder using blind upholes. All LH stopes utilize nominal 76 mm diameter production drill holes to decrease overbreak and provide better blasting control. All blasting utilizes pumped emulsion explosives due to the wet conditions of the mine and the improved ability to load upholes.

Prior to production mining, a crosscut will be driven on the undercut from the HW drift to the furthest extent of targeted mineralization. A perpendicular crosscut will then be driven along strike of the mineralization to provide a drilling access in the sill. In the case of downhole drilled stopes, this process will be repeated in the overcut. Long support will be installed from the sill drift as necessary prior to the commencement of production drilling. Where multiple mineralized lenses exist in parallel, initial access crosscuts will be driven on 12 m centres. Where only a single mineralized lens exists, accesses will be driven on 36 m centres and multiple stopes will be recovered on retreat from a single access. Stopes will be standardized at 12 m maximum length along strike.

Downhole stopes utilize a standard “Dice-5” type slot raise cut, with relief holes reamed to 152 mm, while uphole stopes utilize a large-diameter canister reamer (“V30”) for improved raise blasting reliability. After the initial raise is taken, the slot will be opened to the width of the stope for a length of approximately 3 m. The remainder of the stope will be blasted in a single blast once broken rock from the slot is extracted. This process is the same for both uphole and downhole blasting.

Once the stope is excavated, a backfill retention wall will be constructed in the undercut drawpoint and backfill will be pumped into the excavation via the overcut. In the case of downhole stopes, this will be from piping in the crosscut access. In the case of uphole stopes, this will be through reamed drill holes drilled to the top of the void from the nearest accessible development. Backfill will be allowed to cure for a minimum of 28 days prior to exposure to adjacent mining.

Due to the planned mine sequence, undercutting of previously backfilled stopes later in mine life is necessary. All stopes that will eventually be undercut (approximately 19% of all LH tonnes) will utilize PF at a 5.5% binder content by mass. When undercutting exposes PF in the back of a LH stope, all drilling and basting will utilize upholes from the level below, and all excavating will be done remotely, to prevent personnel from working beneath exposed backfill.

#### 16.6.1.2 C&F Areas

Overhand (upward-progressing) C&F mining with cemented PF is used in an isolated area above historical workings (see Figure 16.2). It was selected for this area due to proximity to existing historical C&F mining, improved selectivity of high-grade material, minimal supporting development versus LH mining methods (no HW drift required), and the ability to use the development mining fleet for production operations while the LH mining fleet is mobilizing. C&F mining comprises approximately 2% of total mined tonnes at the Bucko Lake Mine and occurs in the first two years of production only.

This method uses an Attack Ramp driven perpendicular to the mineralized zones to access a Cut (5 m H section) of the stope. Standard development practices are used to excavate drifts nominally perpendicular to the attack ramp, following the strike of the mineralization. In situations where the mineralized zone is wider than 5 m, the initial drift will be backfilled and allowed to cure prior to excavating a second opening adjacent to the first to maximize extraction of the lens. Where multiple lenses are accessed on a single Cut, as long as sufficient pillar distance between the parallel lenses is maintained, more than one production drift can be accessed from a single Attack Ramp. Once the mineralized material in a Cut is exhausted, any existing openings are backfilled with PF prior to accessing the next Cut. It is possible to fill the existing attack ramp with PF up to the level of the next Cut if desired, however, this increases the time required to excavate the next attack ramp. For the purposes of this PEA it is assumed that a fill wall will be constructed to retain the PF in the production area and prevent backfilling of the Attack Ramp. The first two Cuts of any C&F stope that will eventually be undermined will be filled with high-strength PF at 5.5% binder by mass, and the first Cut will also have a “sill mat”, comprised of screen laid on the floor and pinned to the walls, installed prior to filling to improve the quality of the back of the eventual undercut. All other backfilled C&F voids will utilize low-strength PF at 2.5% binder by mass.

To access the next Cut, the Attack Ramp is stripped of services and slashed down into the void of the existing opening. Any material beyond what is necessary to create a running floor is excavated from the Attack Ramp, and then the mining and filling processes repeat until the entire stope is excavated. On the final cut, PF will be exposed in the back once the Attack Ramp is completed. This is the only time during mining operations that personnel will be working under exposed fill. The use of sill mats, bolting of the PF with expandable bolts, high-strength PF, and proper QA/QC minimizes the risk in these situations. Many operations around the world use these methods to operate safely and successfully.

### 16.6.2 Mining Loss

Mining loss is the portion of a planned excavation that is drilled and blasted, but not excavated. This can happen due to poor drilling or blasting practices, poor drawpoint geometries, or geotechnical issues requiring early evacuation from the stoping area. For the Bucko Lake Mine, C&F mining areas are expected to have the least mining loss, as operators and geologists are able to see the mineralized extents during operations. Blind uphole LH operations are expected to have the most mining loss, as blasting will be less reliable. Table 16.3 below shows the anticipated mining loss by mining method.

| **TABLE 16.3**<br>**MINING LOSS BY METHOD** | |
|---|---|
| **Method** | **Planned Mining Loss (%)** |
| Overhand C&F | 5.0 |
| LH Downholes | 7.5 |
| LH Upholes | 10.0 |

Average mining loss of blasted mineralized material in the underground is estimated at 8.4%, for an overall mining recovery of 91.6%.

### 16.6.3 Dilution

Dilution, either internal (from deliberate inclusion in a mining shape) or external (incidental as a result of overbreak or poor drilling/blasting practices) adds additional tonnes below COV to a mining plan. Additional external dilution is also incurred as a result of backfill dilution (from endwall overbreak into filled stopes, or from floor gouging or poor fill wall locations). Estimation of external sidewall dilution from blasting overbreak in the Bucko Lake Mine is based on a percentage of additional unmineralized material being added to the stopes, which varies by mining method. Table 16.4 shows the additional percentage of unmineralized material added to each stope dependent on its mining method. C&F mining incurs the least amount of dilution, as it has the most controlled blasting and operator control, while LH upholes has the most dilution, as holes are drilled blind and multiple walls (back, and one or both sidewalls) will be exposed to backfill.

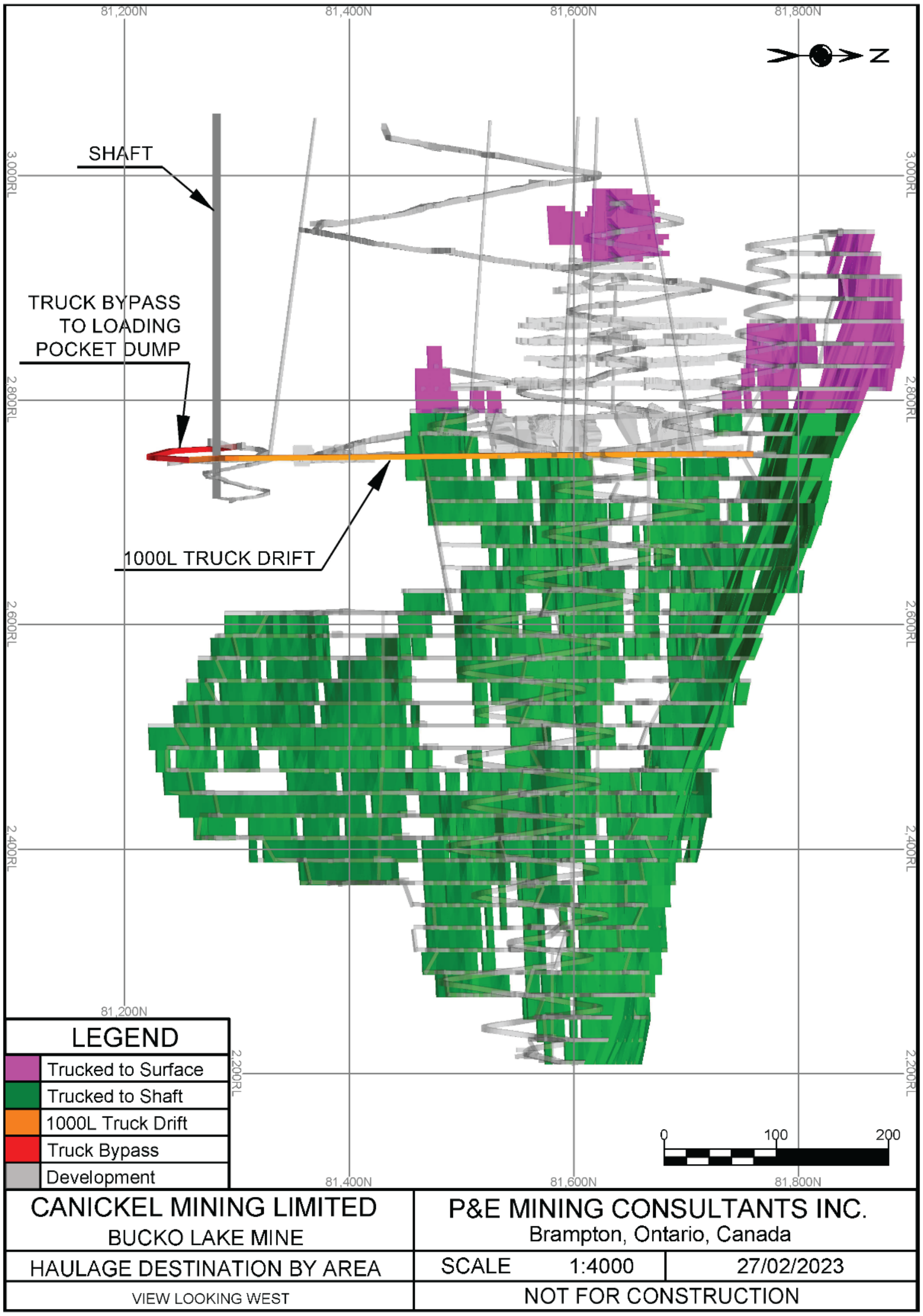
| **TABLE 16.4**<br>**EXTERNAL DILUTION BY METHOD** | |
|---|---|
| **Method** | **External Dilution (%)** |
| Overhand C&F | 6.0 |
| LH Downholes | 12.0 |
| LH Upholes | 15.0 |

LH dilution factors for the Bucko Lake Mine are elevated versus generic benchmark values due to the expected poor quality of the ground, even with the addition of long support. The weighted average external dilution of stopes at the Bucko Lake Mine is estimated at 13.2% by mass.

## 16.7 MATERIAL HANDLING

The Bucko Lake Mine has considerable lateral and vertical extents. Extending the shaft was evaluated versus truck haulage to the existing shaft, and truck haulage was found to be more economic. A similar trade-off was performed for passes and bins versus on-level loading, and on-level loading by LHD was found to be more economic. Therefore, the mine was designed to use truck haulage in cooperation with shaft hoisting for the majority of tonnes, with a small subset of tonnes (C&F mining areas and the top portion of the Hinge Zone) being more economic to truck haul directly to the portal. Figure 16.8 shows the approximate location of tonnes being hauled directly to surface versus tonnes hauled to the shaft.

**FIGURE 16.8 PROPOSED MINING HAULAGE PLAN**



Existing truck access to the shaft is from the FW of the Deposit, and a new truck bypass will be constructed to optimize access from the HW side. This bypass includes slashing 705 m of the existing 1,000 level exploration drift to support Battery-Electric Vehicle (“BEV”) trucks in the 50 t-class, and the development of 249 m of new access ramp to the existing truck dump. A new grizzly and pedestal rockbreaker will be installed over the existing dump. Oversize blasting is not envisioned at the shaft since significant oversize can be loaded back into trucks and hauled to surface if necessary prior to secondary blasting.

Existing infrastructure on surface includes a truck dump and previously operational headframe that will be sufficient to handle material coming from the shaft or trucks into the crushing system or to the waste rock stream once it reaches surface.

## 16.8 BACKFILL

Backfill for the Bucko Lake Mine will be cemented PF comprised of a combination of binder and filtered tailings. Previous test work indicates that the existing backfill plant on site will need upgrading as detailed in Section 16.3.4.2. Once these upgrades are complete, the plant is expected to produce in a minimum of two PF recipes:

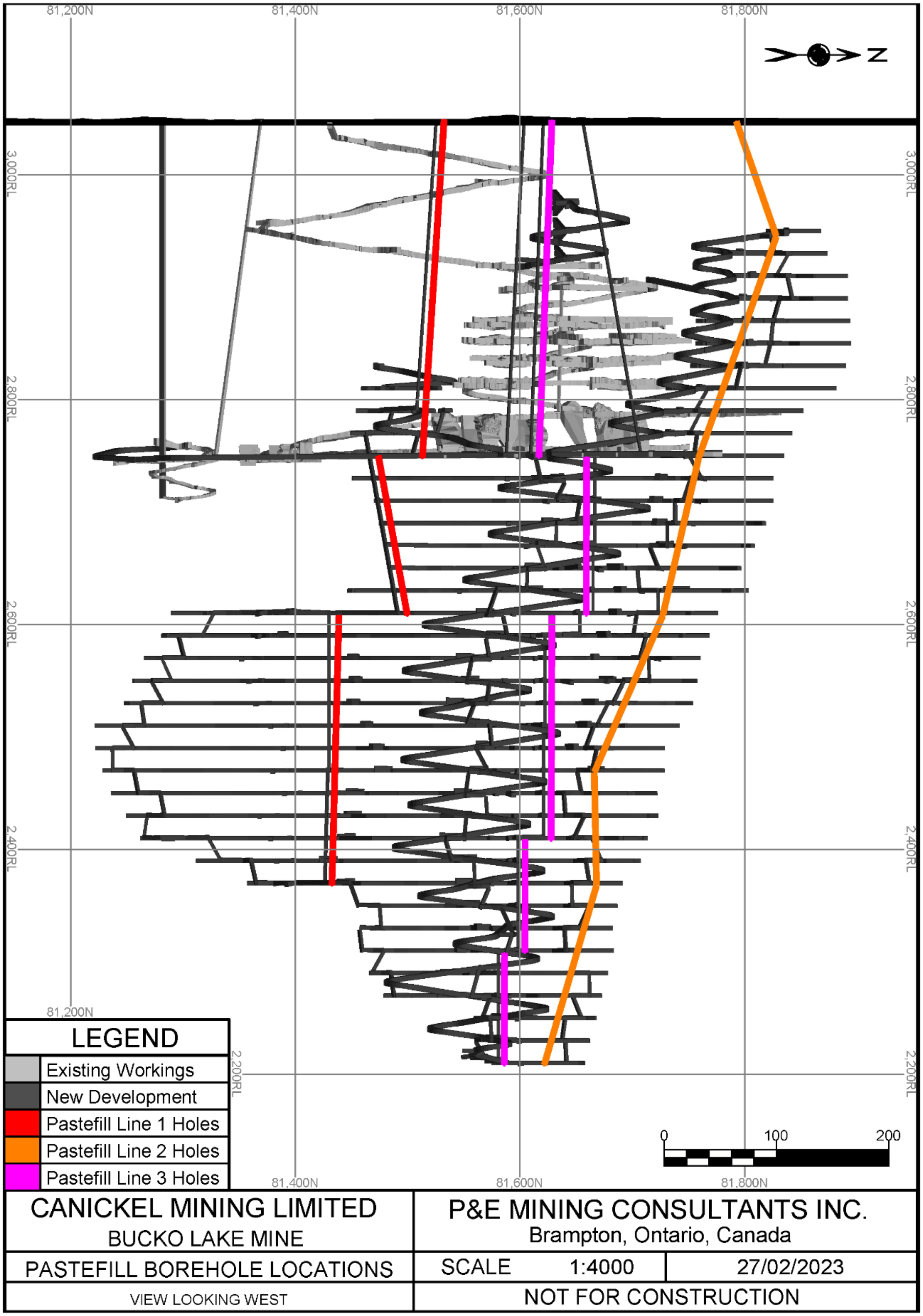
- High-strength PF, suitable for eventual undermining, at a binder content of 5.5% by mass, and a strength meeting or exceeding 1,500 kPa.

- Low-strength PF, suitable for eventual exposure in a wall, at a binder content of 2.5% by mass, and a strength meeting or exceeding 250 kPa.

It is likely that a third, minimum-strength, recipe will also be utilized to backfill low-grade LH stopes to provide a working floor for the level above. This recipe will have a minimum binder content, however, for the purposes of this PEA, all calculations have assumed a minimum of 2.5% binder by mass. For isolated stopes, development waste can be used opportunistically as backfill where self-supporting backfill is not required.

PF will be generated in the plant and pumped using the Putzmeister pump to the various mining areas. It is expected that initial supply lines will utilize new boreholes from surface to the C&F mining areas, and that new boreholes will be drilled in the same manner and at the same time as the pilot holes for the raisebored vent raises to service the new mining fronts there. A total of six boreholes from surface are planned (three primary, three spare). Boreholes will be 152 mm diameter and will be lined with 102 mm diameter pipe with the annulus fully grouted. As each new mining block is opened, four boreholes (three primary, one spare) will be extended from existing infrastructure to the bottom of the block to supply backfill to the areas. Figure 16.9 shows the positions of the PF boreholes.

**FIGURE 16.9 PROPOSED PASTEFILL BOREHOLES PLAN**



The PF distribution system will use 102 mm diameter pipe. All piping in the HW drifts will be steel, while HDPE pipe of the same diameter will be used in the stopes. The PF plant utilization is less than 50% (demand is expected to average 535 $m^3$/d over the LOM and the plant can produce and pump in excess of 50 $m^3$/h if required). When filling a stope, a fill retention wall will be constructed in the drawpoint to prevent flow of the PF out of the stope. Fill bulkheads will be constructed of commercial fill wall kits comprised of a steel frame to which mesh and shotcrete will be applied. Cure time to 1 MPa is expected to be 28 days.

Due to the limited nature of existing paste test work, the Authors recommend further detailed work on properties, recipes and strengths of PF in future studies.

## 16.9 MINE SERVICES

Services at the Bucko Lake Mine will include ventilation, electrical, dewatering, and a small compressed air system. To limit the size of the compressed air system, electro-hydraulic drills have been selected, and mobile compressors used where major draws are expected (large-diameter slot reaming, for example). Figure 16.10 shows the compressed air and electrical system line diagrams, while Figure 16.11 shows the dewatering system and Figure 16.12 shows the ventilation system.

**FIGURE 16.10 PROPOSED COMPRESSED AIR AND ELECTRICAL SYSTEM PLAN**

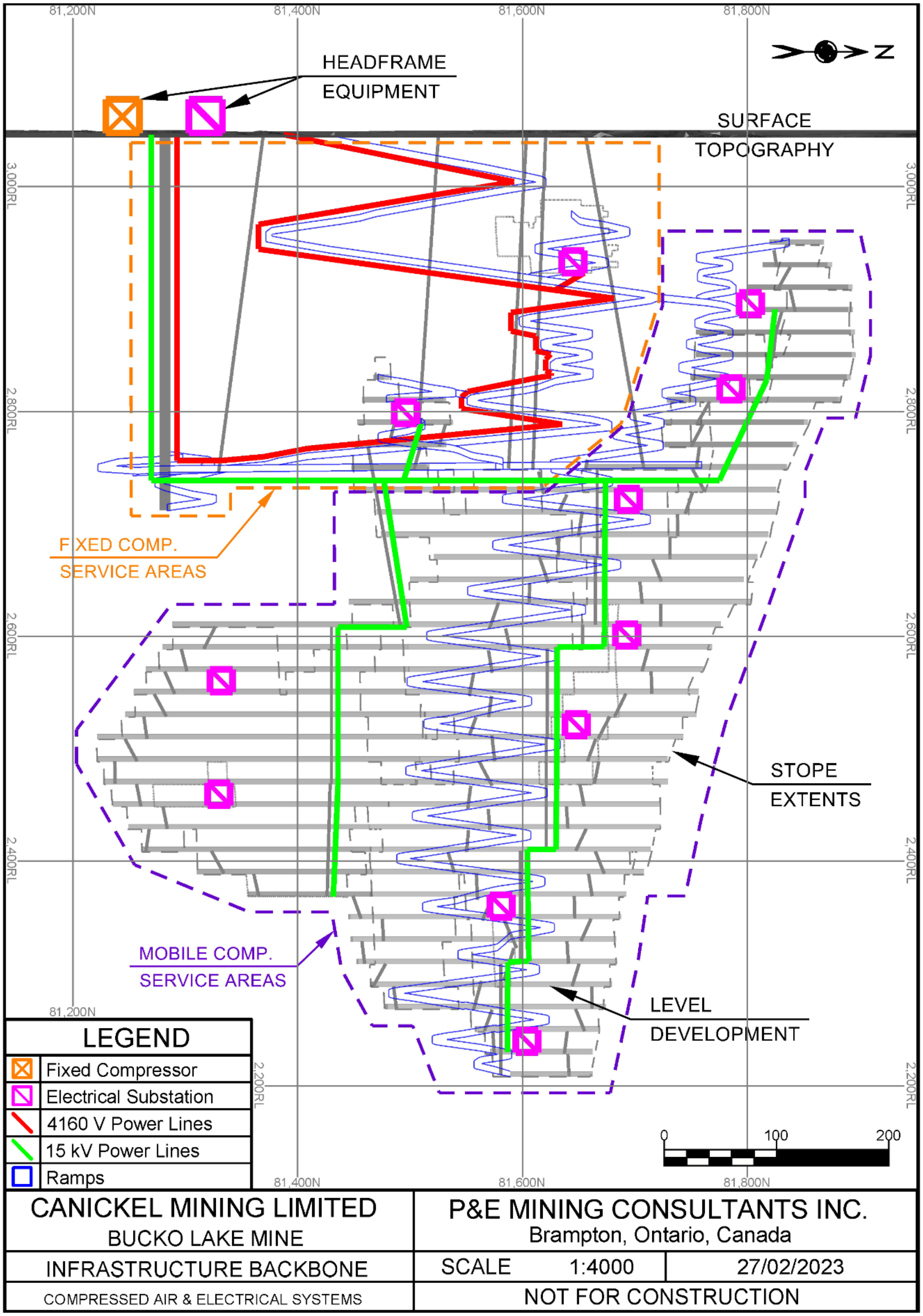


**FIGURE 16.11 PROPOSED DEWATERING SYSTEM PLAN**

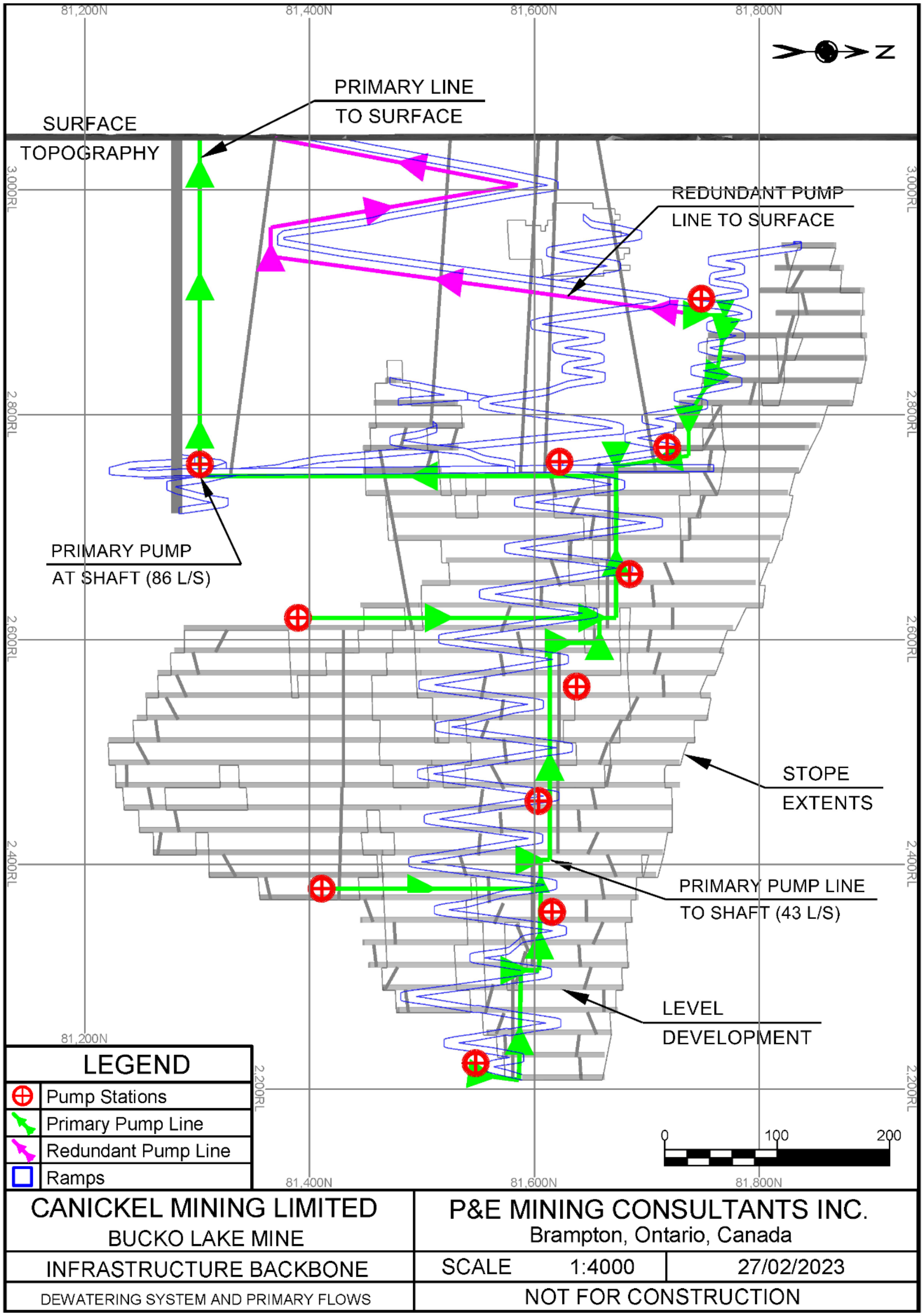
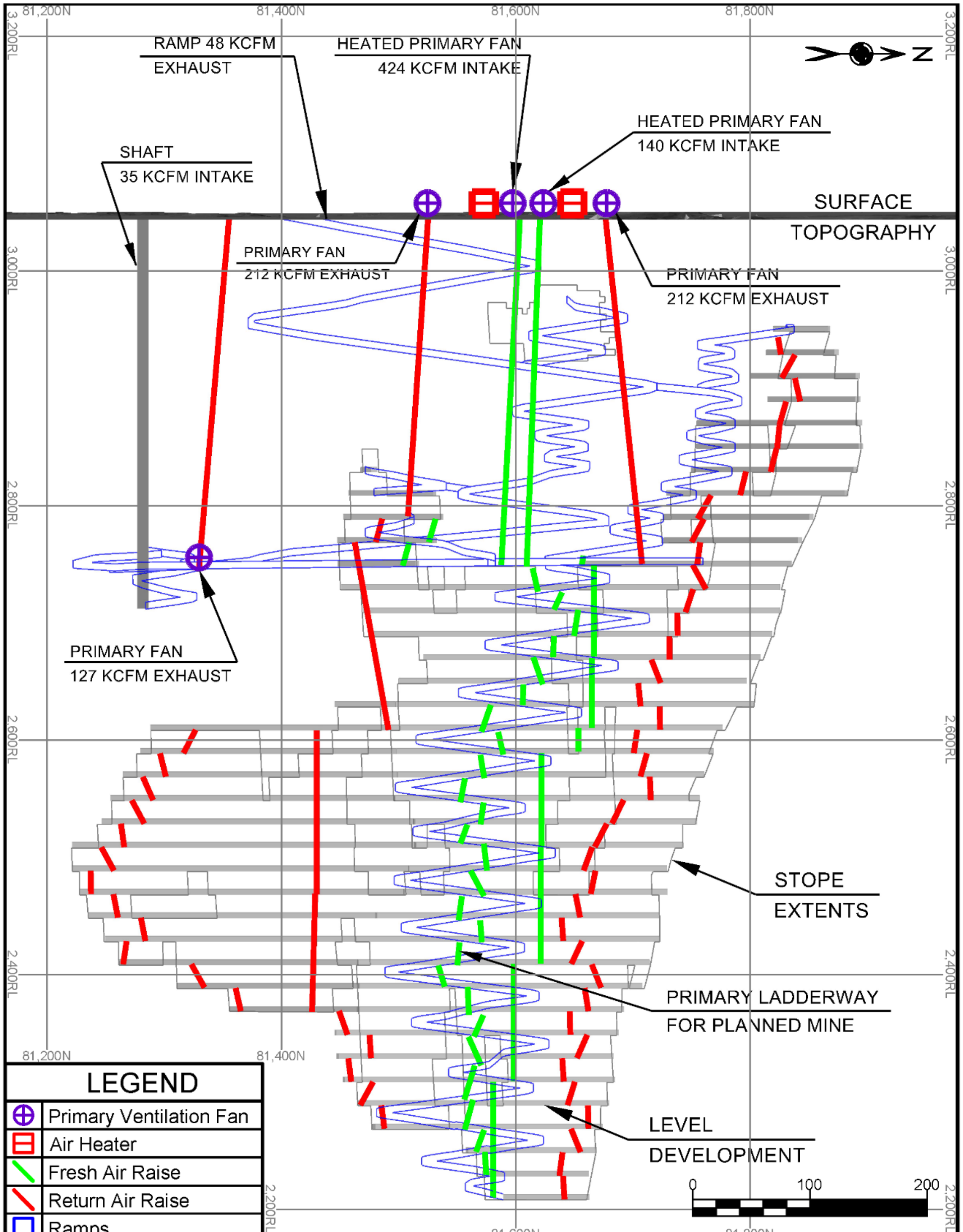


**FIGURE 16.12 PROPOSED VENTILATION SYSTEM PLAN**




| CANICKEL MINING LIMITED<br>BUCKO LAKE MINE | P&E MINING CONSULTANTS INC.<br>Brampton, Ontario, Canada | |
|---|---|---|
| INFRASTRUCTURE BACKBONE | SCALE 1:4000 | 27/02/2023 |
| REPRESENTATIVE STEADY STATE VENT. SYSTEM | NOT FOR CONSTRUCTION | |

### 16.9.1 Electrical

The expected power draw for the Bucko underground mine is estimated at 7.1 MW, comprised of 4.4 MW of equipment draw (including all mobile equipment, diamond drills, the hoist, and electric charging stations), 1.5 MW of dewatering draw (including face pumps and pump stations), and 2.2 MW of ventilation draw (including primary and auxiliary fans, and heaters). The total connected power load is estimated at 10.0 MW. Due to the low cost of electrical power at site of $0.045/kWh and the associated reduction in diesel exhaust emissions, electrically powered equipment (face pumps, compressors, heaters, etc.) have been selected where possible, as have battery-electric trucks and light vehicles (see Section 16.10.1.3).

Electricity is currently supplied to site at a voltage of 66 kV. A surface transformer station steps this down to 4,160 V. Historical mining utilized a transmission voltage of 4,160 V, and if supply lines to the existing workings (namely the shaft infrastructure and the C&F mining area) are found to be in good condition, this supply voltage will be retained in those areas. All new mining areas will utilize underground transmission voltages of 15 kV. Transmission voltage will be stepped down to 600 V for on-level distribution. High transmission voltage has been selected to minimize losses over the significant extents of the mine.

Development operations will utilize 300 kVA portable substations advancing near the active development face. Production operations will utilize 750 kVA substations. It is anticipated that these substations will be located on the level from which LH drilling takes place to minimize line losses, and that the substation will supply power to levels above and below as necessary.

### 16.9.2 Compressed Air

The compressed air system at the Bucko Lake Mine is expected to be minimal. Portable compressors will be used as necessary to support areas of significant consumption (e.g., large-diameter slot-raise drilling), however, a complete distribution system is not planned. A 150 kW electric compressor will be installed at surface to provide compressed air to existing infrastructure (loading pocket, historical workings, etc.). A second, similar, skid-mounted compressor will be utilized to supply compressed air to Alimak operations. All other compressed air demands in the new mining areas will be met by small, portable electric compressors. Development and LH drills will be supplied with onboard compressors to limit system draw.

### 16.9.3 Dewatering

#### 16.9.3.1 Dewatering System

Small electric submersible pumps will be used for face dewatering, pumping to level sumps. Level sumps will cascade to pump stations, where larger electric centrifugal pumps will be used to pump excess water to surface. Clarifying sumps within the pump stations will be used to settle sediments and recover clean water into the service water system. Service water demands are expected to be high, at an average of 8.3 L/s. While minimal hydrogeologic work has been performed at depth, water inflows are expected to be high, at 20 L/s (assumed to be 10 L/s in the historical workings and an additional 10 L/s in the new workings). The pump stations are designed to move 43 L/s each under full load, while the large dewatering pump at shaft bottom (initially used to dewater historical workings) pumps 86 L/s under full load.

All pump stations nominally pump to the shaft bottom pump; however, a redundant dewatering line will be run in the historical ramp.

### 16.9.4 Ventilation and Heating

The steady-state ventilation system of the Bucko Lake Mine uses a push-pull (majority pull) system to provide air to the underground mine. Two Fresh Air Raises ("FARs") provide fresh air near the middle of each level, and Alimak or drop-raised Return Air Raises ("RARs"), coupled with the ramp, return the air to the 1,000 level. From the 1,000 level the air returns to surface via the existing ventilation raise and two new raisebored RARs, as well as new and existing ramps. A total of four new 3 m diameter raisebored raises will break through to surface, with three of them (2 FARs and 1 RAR) being powered and the remaining FAR being a secondary intake and services route. The existing ventilation raise in the historical workings will be repurposed as an FAR initially using fans on surface, and then converted to an RAR once production begins, with a fan located underground. Total flow under steady-state conditions is expected to be 195 $m^3/s$ at 1.5 kPa. Primary fans are 2.1 m in diameter, with varying motor powers depending on application. Two interim stages of ventilation are required prior to reaching the steady-state configuration.

Ventilation will initially be supplied via auxiliary ventilation, using semi-rigid ducting (similar to Mechanicad or SpeedDuct) due to the expected ducting extents, until water levels drop below the height of existing ventilation raise connections (approximately 100 m below surface). At this point, a primary fan will be installed on the top of the existing ventilation raise and used to provide primary ventilation to the underground. Auxiliary fans will be moved to the ventilation connection and be used to ventilate the ramp face until dewatering reaches the bottom of the existing ventilation raise (approximately 300 m below surface). At this point the auxiliary fans will be moved to the bottom of the ventilation raise and used to ventilate development on the 1,000 level as it progresses to the HW side of the Deposit.

Once rehabilitation activities are completed below 130 m from surface, initial development of access to the C&F area can begin, and two 3 m diameter ventilation raises (one FAR, one RAR) will be raisebored to surface. Once development is complete on the 1,000 level, lower legs of these raises will be bored up to the upper legs of these raises, providing primary ventilation to the HW side of the Deposit. Two additional 3 m diameter raises (one FAR, one RAR) will be raisebored to surface afterwards, providing two FARs and two RARs for use in the deepening of the mine. Once the new FARs are complete, the original FAR from the old workings will be converted to an RAR and the surface fan moved underground to the base of the raise at 1,000 level. Fans will be installed at surface on both RARs and the initial FAR. The second FAR will be unpowered. Both FARs will have electric heaters installed to keep the underground environment at or above a nominal 2°C.

Further deepening of the mine will use drop raises to provide fresh air to the ramp until HW drifts on levels can be developed sufficiently to drive two Alimak raises (one RAR, one FAR) from the bottom to the top of each mining block and connect to the primary system. Once connected, these Alimak raises will supply fresh air to the levels of the mining block, while the ramp continues to progress to the bottom of the next block, at which point the process repeats. Escapeways will be installed in the ramp drop raises. This configuration comprises the steady-state for the mine ventilation system.

Due to the positioning of the West Zone, and scheduling implications, the Alimak RAR will eventually be bypassed by the installation of drop raises at the western extents of the West Zone. This delays the need to develop the HW drift to the full extent of the level until mining in the Zone begins.

The Hinge Zone above the 1,000 level uses the ramp to supply fresh air and drop raises to return air from the Eastern extents of the levels to the 1,000 level, where it enters a raisebored RAR to surface. Due to the position of Bucko Lake, it is not feasible to install a return to surface directly adjacent to the Hinge Zone. Below the 1,000 level, drop raises are again used as RARs in the Hinge Zone, however fresh air is supplied from the central Alimak FAR.

Minimal ventilation will be maintained in the majority of the utilized historical workings (unventilated areas will be barricaded), with sufficient ventilation in the historical ramp to support ancillary vehicle travel. Heavy vehicles (trucks, LHDs) will generally utilize the new Hinge Zone ramp due to increased flows therein. An existing manway in the shaft will be maintained and be available as an alternate egress. The shaft will be maintained as downcast to ensure the manway remains in fresh air at all times. Heaters in the headframe will prevent freezing of surface infrastructure.

### 16.9.5 Refuge Stations and Egress

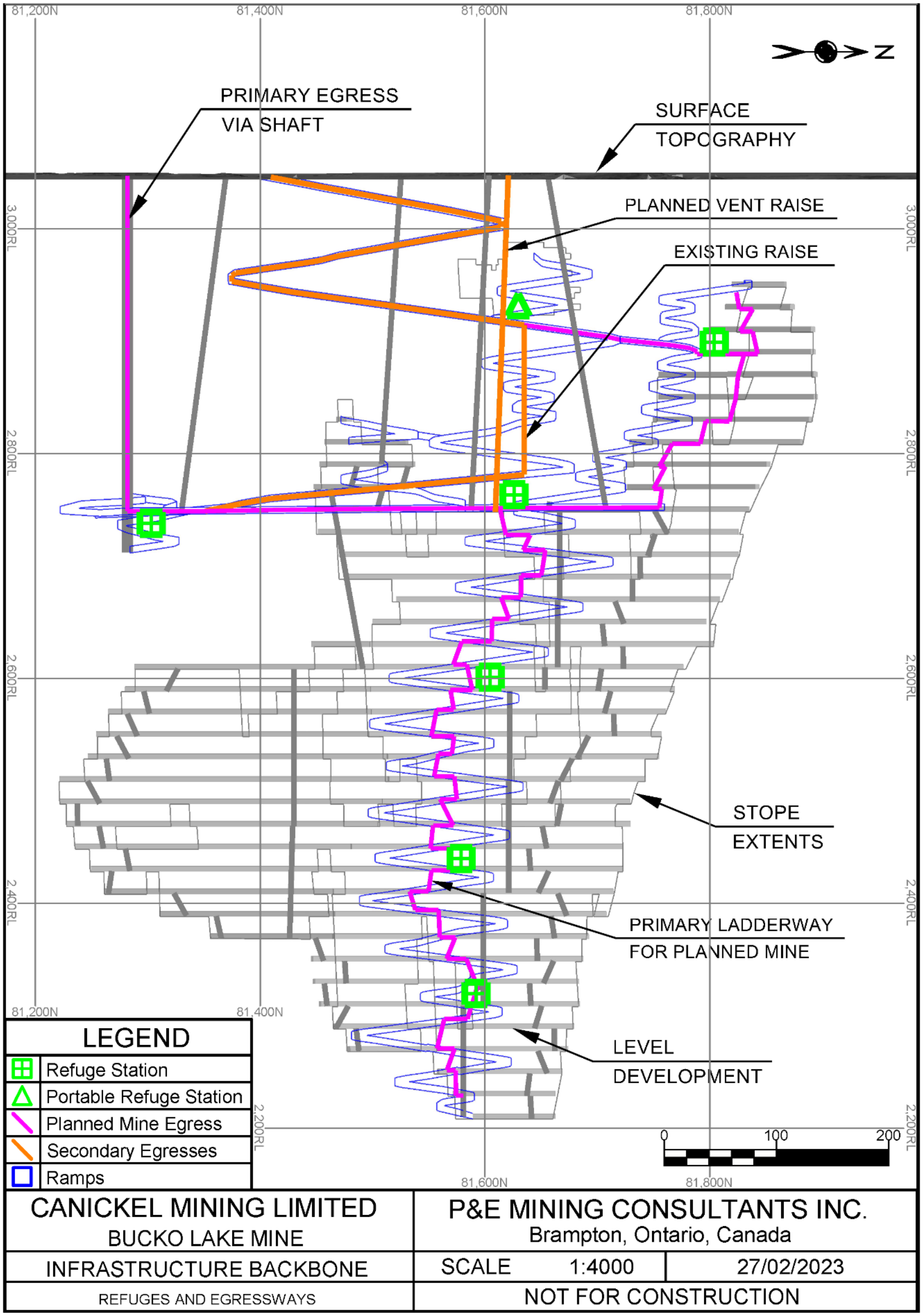
Permanent refuge stations will be installed centrally to each mining block, with a portable refuge station for the ramp face development. A total of five permanent refuge stations will be installed. Portable emergency shelters will be located in strategic areas where needed.

Due to the historical workings, multiple routes to surface exist above the 1,000 level, including:

- The ramp in the historical workings.
- The newly developed Hinge Zone ramp.
- The shaft manway.
- The raisebored FAR adjacent to the top of the ramp below the 1,000 level.

Any of these routes may be used in the event of an emergency. Below the 1,000 level, escapeways will be installed in the drop raises adjacent to the ramp to provide secondary egress. Figure 16.13 shows the egress routes to surface and the position of refuge stations.

**FIGURE 16.13 PROPOSED REFUGES AND SURFACE ESCAPE ROUTES PLAN**



### 16.9.6 Other Infrastructure

Major mobile equipment maintenance will be performed on surface. Basic underground maintenance will be performed in remuck bays converted to service bays. Existing excavations at the bottom of the historical ramp can be rehabilitated and converted into mobile equipment maintenance facilities if required.

Battery-electric vehicles will form a portion of the underground fleet. Light vehicles (similar to Polaris Ranger EVs) will be used to move personnel and their equipment around the mine throughout the mine life, and once the initial fleet of 30 t diesel trucks reaches their end-of-life, 50 t battery-electric trucks will be used to replace them. Therefore, battery charging stations will be positioned in various locations in the mine. Light vehicles can be charged from a 240 V outlet, which will be provided near all substations and at the shaft. For the much larger haul trucks, battery changing/charging stations will be provided in the truck bypass and at the connection of the new Hinge Zone ramp and the historical ramp. Simulations by Sandvik indicate that a loaded haul truck will be able to haul from the bottom of the mine to the shaft dump on a single charge prior to swapping the battery. Using a centroid for new development below the 1,000 level, it is likely that haul trucks, using regenerative braking, will be able to complete multiple hauls on a single charge.

In the event a battery-electric truck has insufficient charge to travel to a charging station, a service vehicle equipped with a suitable deck and crane to transport and replace a battery is included in the auxiliary fleet. For a light vehicle, a portable capacitor can be used to provide sufficient charge to relocate the unit to a charging point.

## 16.10 EQUIPMENT

The underground mobile equipment fleet for the Bucko Lake Mine is comprised of trackless mining equipment. As the site was previously operational, certain used items are present at the site and can be repaired/rebuilt as necessary and used during initial startup at a lower cost than acquiring new equipment. Additionally, a major Company shareholder owns a fleet of appropriately sized equipment located in Canada, which is expected to be available for acquisition at a reduced cost compared to new equipment and is complementary to existing units at site. Used equipment will be gradually replaced with new equipment, with all used units replaced by Year 5 of operations.

The primary fleet for the Bucko Lake Mine will be comprised of units similar to those listed in Table 16.5.

| TABLE 16.5<br>UNDERGROUND MOBILE EQUIPMENT FLEET GENERAL DESCRIPTION | | |
|---|---|---|
| **Type** | **Class** | **Similar To** |
| Jumbo | 2-boom | Sandvik DD311 |
| Rock Bolter | 2.44 m (8 ft) carousel | Sandvik DS311 |
| LHD | 10 tonne | Sandvik LH410 |
| Haul Truck | 30 tonne, diesel | Sandvik TH430 |
| Haul Truck | 50 tonne, battery-electric | Sandvik TH550B |
| LH Drill | Top-Hammer, general production holes | Sandvik DL321 |
| LH Drill | In-The-Hole-Hammer, service and large-diameter holes | Sandvik DU311 |
| Light Vehicle | UTV, battery-electric | Polaris Ranger EV |
| Utility | Light | Kovatera MC100 |
| Utility | Heavy | Walden (Various) |
| Utility | Modular | Maclean (Various) |

Utility vehicles comprise units such as boom trucks, scissor-lifts, man-carriers, transmixers, shotcrete sprayers, explosive loaders, graders, etc. For items with consistent use (explosive loaders, graders, scissor lifts, etc.), dedicated units will be used. For items with inconsistent use (transmixers, shotcrete sprayers, fan handlers, etc.), modular cassette-type units will be used.

### 16.10.1 Initial Fleet

#### 16.10.1.1 Used Company-Owned Units

The existing underground fleet and the plans for each unit are detailed in Table 16.6.

| TABLE 16.6<br>USED UNITS OWNED BY COMPANY | | | | | |
|---|---|---|---|---|---|
| **Type** | **Manufacturer** | **Model** | **Class** | **Engine Hours** | **Use Case** |
| Jumbo | Copco | 292 | 2-boom | 471 | Use |
| LHD | Copco | ST1020 | 10 t | 6,877 | Sell |
| LHD | Copco | ST2G | 4 t | 930 | Use |
| LHD | CAT | R1700G | 12.5 t | 2,872 | Use |
| Utility | MineCAT[1] | MC100 | Small | 3,747 | Repair |
| Utility | MineCAT[1] | MC100 | Small | 3,472 | Repair |
| Utility | MineCAT[1] | MC100 | Small | 1,183 | Use |
| Utility | MineCAT[1] | MC100 | Small | 2,531 | Repair |
| Utility | MineCAT[1] | MC100 | Small | 1,781 | Use |
| Utility | Walden | Boom | Large | 1,076 | Use |

| TABLE 16.6<br>USED UNITS OWNED BY COMPANY | | | | | |
|---|---|---|---|---|---|
| **Type** | **Manufacturer** | **Model** | **Class** | **Engine Hours** | **Use Case** |
| Utility | Walden | Boom | Large | 1,992 | Use |
| Utility | J&S[2] | SLX | Large | 714 | Use |
| Utility | Toyota | Landcruiser | Mine Rescue | 2,005 | Use |

*[1] The MineCAT brand is now owned by Kovatera Inc*
*[2] The J&S brand is now owned by the Walden Group of Companies.*

#### 16.10.1.2 Used Shareholder-Owned Units

A major Company shareholder owns a fleet of equipment located in Canada suitable for use at the Bucko Lake Mine. It is expected that this fleet will be preferentially offered to the Bucko Lake Mine for acquisition under terms favourable to the Project. This existing fleet and the plans for each unit are detailed in Table 16.7.

| TABLE 16.7<br>USED UNITS OWNED BY MAJOR SHAREHOLDER | | | | | |
|---|---|---|---|---|---|
| **Type** | **Manufacturer** | **Model** | **Class** | **Engine Hours** | **Use Case** |
| Jumbo | Sandvik | DD321 | 2-boom | 1,833 | Use |
| Jumbo | Sandvik | DD321 | 2-boom | 1,043 | Use |
| Jumbo | Sandvik | DD321 | 2-boom | 1,230 | Use |
| Bolter | Sandvik | DS311 | N/A | 1,182 | Use |
| Bolter | Sandvik | DS311 | N/A | 1,182* | Use |
| LHD | Sandvik | LH410 | 10 t | 8,998 | Rebuild |
| LHD | Sandvik | LH410 | 10 t | 10,034 | Rebuild |
| LHD | Sandvik | LH410 | 10 t | 9,072 | Rebuild |
| LHD | Sandvik | LH410 | 10 t | 9,368* | Rebuild |
| Truck | Sandvik | TH430 | 30 t | 11,066 | Rebuild |
| Truck | Sandvik | TH430 | 30 t | 10,191 | Rebuild |

***Note:* * *Engine hours unknown. Estimate of hours based on other units of same type.*

#### 16.10.1.3 Newly Acquired Units

New units will be acquired on a lease-to-own strategy to support the expected development and production requirements early in the mine life. These units will include explosive loaders, long hole drills, battery-electric light vehicles, and additional units similar to those available in the used fleet, such as jumbo drills and rock bolters.

### 16.10.2 Replacement Fleet

As used equipment reaches its end of life, it will be sold and replaced with new units of a similar class. It should be noted that the initial fleet of TH430 30 t diesel-electric haul trucks will be replaced with larger TH550B 50 t BEV haul trucks for the purposes of reducing ventilation requirements at depth, reducing greenhouse gases, and improving productivity from depth. While the new BEV haul trucks are larger than the original diesel trucks, all necessary development is sized to accommodate the larger trucks from the beginning of the mine plan. Additionally, it should be noted that the LH drill fleet, while primarily composed of top-hammer units, also utilizes ITH-hammer drills for the purposes of drilling longer service holes and reaming large-diameter uphole slot raises. As mine life progresses, additional ITH units are included in the fleet as LH mining shifts from predominately downholes to upholes.

### 16.10.3 Specialized Equipment for Vertical Development

Certain specialized equipment is required for vertical development other than drop raising. External specialist contractors will be engaged early in the mine life to drive the four raisebored ventilation raises from the 1,000 level to surface. Ongoing Alimak ventilation raise development is also expected to utilize an external specialized contractor. Both methods of excavation are proven technologies and readily available.

### 16.10.4 Zero-Emission Vehicles

The mine plan utilizes zero-emission BEVs for light vehicles (Polaris Ranger EVs) and for heavy haul trucks (Sandvik TH550Bs) for the purposes of reduced greenhouse gas emissions, reduced ventilation requirements, and (in the case of haul trucks) improved productivity. BEV equivalents to other fleet units (LHDs, utilities, etc.) are currently limited on the market, and are expected to improve over the coming years. The Authors recommend re-evaluating the fleet periodically as additional market offerings become available and replacing diesel-powered machinery with zero-emission vehicles where practicable. Existing electrical infrastructure is designed to support additional load and charging stations as needed.

### 16.10.5 Fleet Summary and Repair/Replace Strategy

Table 16.8 shows the equipment quantities by unit type over the LOM. Equipment is generally expected to last five years from its in-service date before replacement or a major rebuild is required. Used equipment from the initial fleet will be replaced with new units rather than rebuilt.

**TABLE 16.8**
**UNDERGROUND MOBILE EQUIPMENT MINING FLEET SUMMARY**

| Machine Type | Condition | Purpose | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y 10 | Y 11 | Y 12 | Y 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Development Jumbo | Used | Primary | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| Rock Bolter | Used | Primary | 1 | 1 | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| LHD | Used | Primary | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - |
| 30-t Diesel Haul Truck | Used | Primary | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| Utility Vehicle - Light | Used | Ancillary | 5 | 5 | 4 | 4 | 3 | - | - | - | - | - | - | - | - | - |
| Development Jumbo | New | Primary | - | - | - | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 |
| Rock Bolter | New | Primary | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| LHD | New | Primary | - | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 50-t BEV Haul Truck | New | Primary | - | - | - | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Utility Vehicle - Light | New | Ancillary | - | 1 | 11 | 11 | 11 | 11 | 11 | 13 | 15 | 15 | 15 | 15 | 9 | 9 |
| Utility Vehicle - Heavy | New | Primary | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Utility Vehicle - Modular | New | Ancillary | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| LH Drill (ITH-Hammer) | New | Primary | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| LH Drill (Top-Hammer) | New | Primary | - | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Light Vehicles | New | Ancillary | 10 | 10 | 10 | 10 | 10 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Subtotal | New + Used | Primary | 15 | 21 | 22 | 25 | 30 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 21 |
| Subtotal | New + Used | Ancillary | 17 | 18 | 27 | 27 | 26 | 23 | 23 | 23 | 25 | 25 | 25 | 25 | 19 | 19 |
| **Total** | **New + Used** | **All** | **32** | **39** | **49** | **52** | **56** | **46** | **46** | **46** | **48** | **48** | **48** | **48** | **42** | **40** |

## 16.11 PERSONNEL

The underground mine is expected to operate with a 3-crew roster (day-shift, night-shift, off-shift) All personnel will work an 11-hour day (this allows for a 1-hour gas clearance at the end of each shift). Table 16.9 shows the number of personnel in roster and non-roster roles for the underground operation by year. Contractor roles for specialized vertical development roles are not included.

**TABLE 16.9**
**PERSONNEL SUMMARY BY YEAR**

| Department | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mining | 32 | 68 | 72 | 72 | 72 | 72 | 66 | 60 | 51 | 51 | 51 | 51 | 45 | 32 |
| Maintenance | 12 | 25 | 26 | 26 | 26 | 26 | 25 | 24 | 22 | 22 | 22 | 22 | 21 | 15 |
| Tech. Services | 8 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 10 |
| **Total** | **52** | **107** | **112** | **112** | **112** | **112** | **105** | **98** | **87** | **87** | **87** | **87** | **80** | **57** |

## 16.12 MINING SCHEDULE

The Bucko Lake Mine has been planned at a production rate of 1,500 tpd over a 13-year mine life. Total contained metal of 74.6 kt Ni and 7.6 kt Cu will be extracted from the underground over this period from 6.52 Mt of process plant feed.

### 16.12.1 Portion of Mineral Resource for Underground Mine Plan

Table 16.10 shows the portion of the Mineral Resource that was considered for the PEA underground mine plan.

**TABLE 16.10**
**UNDERGROUND MINE PLAN**

| Step | Material Class | Tonnes (k) | Ni (%) | Cu (%) |
|---|---|---|---|---|
| Stopes (Internally Diluted) | Measured | 127 | 1.77 | 0.13 |
| | Indicated | 1,472 | 1.51 | 0.14 |
| | Inferred | 3,750 | 1.51 | 0.16 |
| | Waste Rock | 941 | 0.00 | 0.00 |
| External Dilution | Measured | 0 | 0.00 | 0.00 |
| | Indicated | 0 | 0.00 | 0.00 |
| | Inferred | 0 | 0.00 | 0.00 |
| | Waste Rock & Backfill | 827 | 0.00 | 0.00 |
| Stopes (Fully Diluted)* | Measured | 167 | 1.34 | 0.10 |
| | Indicated | 1,956 | 1.14 | 0.10 |
| | Inferred | 4,993 | 1.13 | 0.12 |
| Mining Loss* | Measured | 13 | 1.31 | 0.10 |
| | Indicated | 162 | 1.10 | 0.10 |
| | Inferred | 424 | 1.10 | 0.12 |
| Mine Plan* | Measured | 154 | 1.34 | 0.10 |
| | Indicated | 1,794 | 1.14 | 0.10 |
| | Inferred | 4,568 | 1.14 | 0.12 |

***Note:* * *Includes waste rock and backfill dilution.***

### 16.12.2 Development Schedule

Table 16.11 shows the lateral and vertical development schedule by year in linear metres.

**TABLE 16.11**
**UNDERGROUND DEVELOPMENT SCHEDULE IN LINEAR METRES BY YEAR**

| Method | Type | Profile [1] | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Total [2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rehabilitation | Rehab Historical Workings | N/A | 2,600 | - | - | - | - | - | - | - | - | - | - | - | - | - | 2,600 |
| | Rehab Shaft | N/A | 340 | - | - | - | - | - | - | - | - | - | - | - | - | - | 340 |
| | **Total** | | **2,940** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **2,940** |
| Slashing | Historical Workings | 5.0 x 5.0 | 705 | - | - | - | - | - | - | - | - | - | - | - | - | - | 705 |
| | Attack Ramps | 4.0 x 5.0 | - | 274 | 198 | - | - | - | - | - | - | - | - | - | - | - | 472 |
| | **Total** | | **705** | **274** | **198** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **1,177** |
| Full-Face Lateral Development | Ramp & Truck Bypass | 5.0 x 5.0 | 1,924 | 1,401 | 212 | 643 | 297 | 565 | 834 | 595 | 353 | - | - | - | - | - | 6,824 |
| | Level Accesses | 4.5 x 4.7 | 376 | 398 | 33 | 192 | 89 | 162 | 271 | 178 | 106 | - | - | - | - | - | 1,805 |
| | Remuck Bays | 5.3 x 6.0 | 183 | 257 | 34 | 196 | 112 | 131 | 135 | 72 | 43 | - | - | - | - | - | 1,163 |
| | Attack Ramps - Driven | 4.0 x 5.0 | 132 | 56 | - | - | - | - | - | - | - | - | - | - | - | - | 188 |
| | Pump Stations | 4.0 x 5.0 | 45 | 23 | 1 | 7 | 11 | 13 | 8 | 12 | 7 | 6 | 3 | 3 | 0 | 0 | 140 |
| | Mineralized and Waste Crosscuts | 4.0 x 4.0 | - | 2,685 | 4,156 | 3,845 | 4,262 | 3,529 | 3,274 | 3,273 | 3,116 | 2,130 | 2,403 | 2,227 | 2,464 | 2,384 | 39,747 |
| | Hanging Wall Drifts | 4.0 x 4.0 | 1,484 | 890 | 2,155 | 1,446 | 1,622 | 1,876 | 1,208 | 967 | 458 | 316 | 140 | 140 | - | - | 12,701 |
| | Vent Access | 4.0 x 4.0 | 99 | 1,329 | 609 | 597 | 535 | 644 | 487 | 463 | 274 | 155 | 78 | 78 | - | - | 5,348 |
| | Electrical Cut-Outs | 4.0 x 4.0 | 139 | 157 | 13 | 77 | 66 | 80 | 78 | 48 | 28 | 18 | 9 | 9 | - | - | 722 |
| | Sumps | 4.0 x 4.0 | 90 | 102 | 6 | 37 | 47 | 40 | 42 | 24 | 14 | 15 | 7 | 7 | - | - | 432 |
| | **Total** | | **4,473** | **7,298** | **7,220** | **7,040** | **7,040** | **7,040** | **6,336** | **5,632** | **4,400** | **2,640** | **2,640** | **2,464** | **2,464** | **2,384** | **69,071** |

**TABLE 16.11**
**UNDERGROUND DEVELOPMENT SCHEDULE IN LINEAR METRES BY YEAR**

| Method | Type | Profile [1] | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Total [2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vertical Development | Vent Raise (Drop Raise) | 3.0 x 3.0 | - | 356 | 185 | 190 | 164 | 77 | 301 | 219 | 219 | 60 | 30 | 30 | - | - | 1,831 |
| | Vent Raise (Alimak) | 3.0 x 3.0 | - | 152 | 181 | 250 | 0 | 0 | 203 | 160 | - | - | - | - | - | - | 946 |
| | Vent Raise (Raisebore) | 3.0 m dia. | 590 | 590 | - | - | - | - | - | - | - | - | - | - | - | - | 1,181 |
| | **Total** | | **590** | **1,098** | **366** | **440** | **164** | **77** | **504** | **379** | **219** | **60** | **30** | **30** | **0** | **0** | **3,959** |

*[1] Lateral Development profiles in m W x m H, Vertical Development profiles in m W x m L unless otherwise noted.*
*[2] Totals may not sum due to rounding.*

### 16.12.3 Production Schedule

Table 16.12 shows the production schedule by year.

**TABLE 16.12**
**UNDERGROUND PRODUCTION SCHEDULE BY YEAR**

| Type | Units | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Total [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mined Mass | kt | - | 294 | 487 | 528 | 528 | 528 | 528 | 528 | 528 | 528 | 528 | 528 | 528 | 456 | 6,517 |
| Nickel Grade | % | - | 1.34 | 1.28 | 1.31 | 1.27 | 1.27 | 1.16 | 1.36 | 1.38 | 1.08 | 0.88 | 0.88 | 0.86 | 0.85 | 1.14 |
| Copper Grade | % | - | 0.11 | 0.10 | 0.10 | 0.10 | 0.11 | 0.11 | 0.18 | 0.17 | 0.09 | 0.10 | 0.08 | 0.12 | 0.14 | 0.12 |
| Mined Nickel Mass | kt | - | 3.9 | 6.3 | 6.9 | 6.7 | 6.7 | 6.1 | 7.2 | 7.3 | 5.7 | 4.7 | 4.6 | 4.6 | 3.9 | 74.6 |
| Mined Copper Mass | kt | - | 0.3 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.9 | 0.9 | 0.5 | 0.5 | 0.4 | 0.6 | 0.6 | 7.6 |
| Development Waste Mass | kt | 310 | 422 | 332 | 341 | 313 | 329 | 319 | 270 | 198 | 106 | 102 | 95 | 91 | 88 | 3,316 |
| High Strength Cemented PF | $m^3$ (000s) | - | 19 | 32 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 30 | 431 |
| Low Strength Cemented PF | $m^3$ (000s) | - | 65 | 108 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 117 | 101 | 1,444 |
| Minimal Strength PF or rockfill | $m^3$ (000s) | - | 19 | 32 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 30 | 428 |

[1] *Totals may not sum due to rounding.*

### 16.12.4 Graphic Schedule

Figures 16.14 to 16.29 show the progression of the proposed development by year.

**FIGURE 16.14 HISTORICAL WORKINGS, BUCKO LAKE MINE**

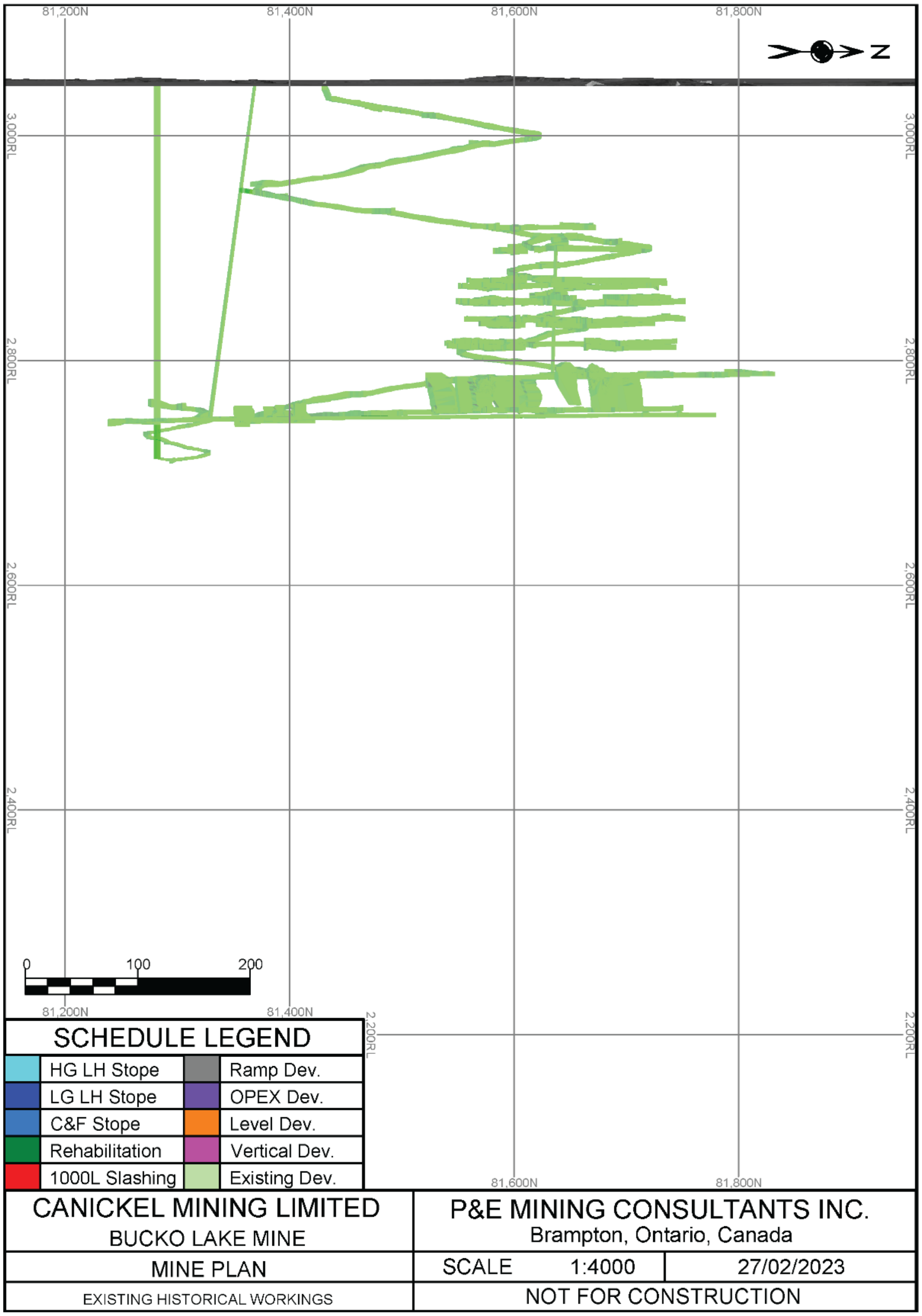


**FIGURE 16.15 YEAR -1 REHABILITATION**

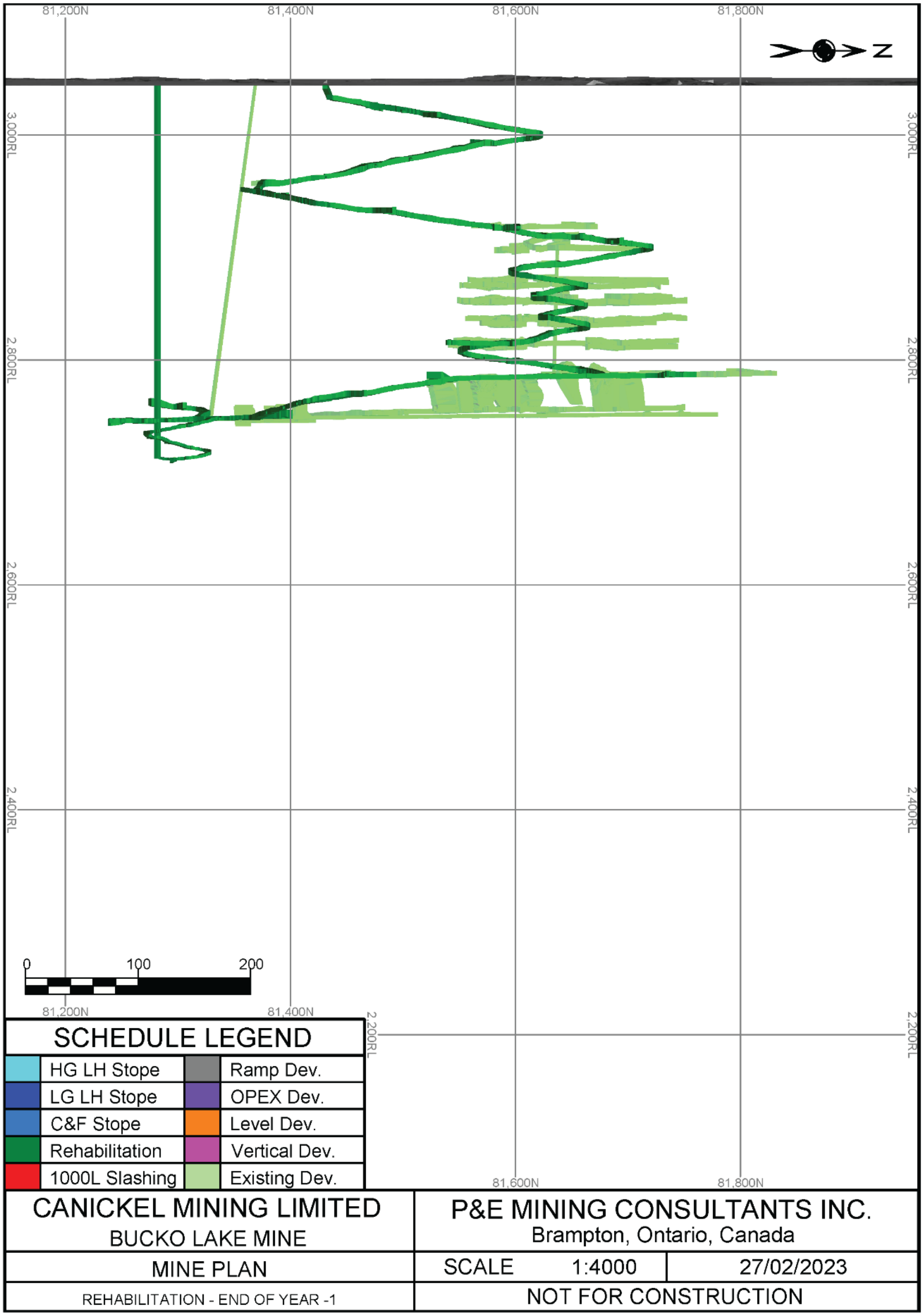
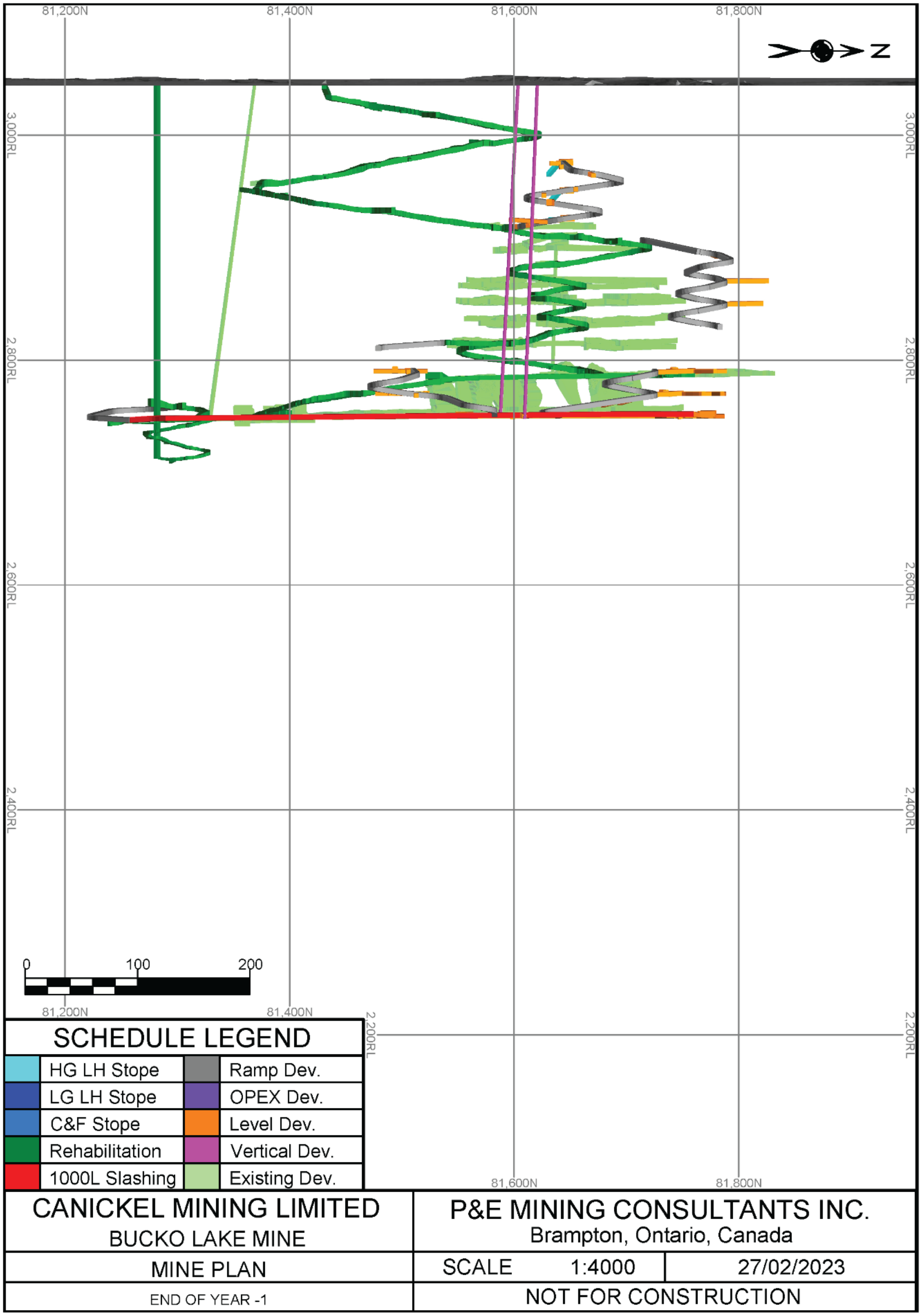


**FIGURE 16.16 YEAR -1 WORKINGS, DEVELOPMENT**



## FIGURE 16.17 YEAR 1 WORKINGS

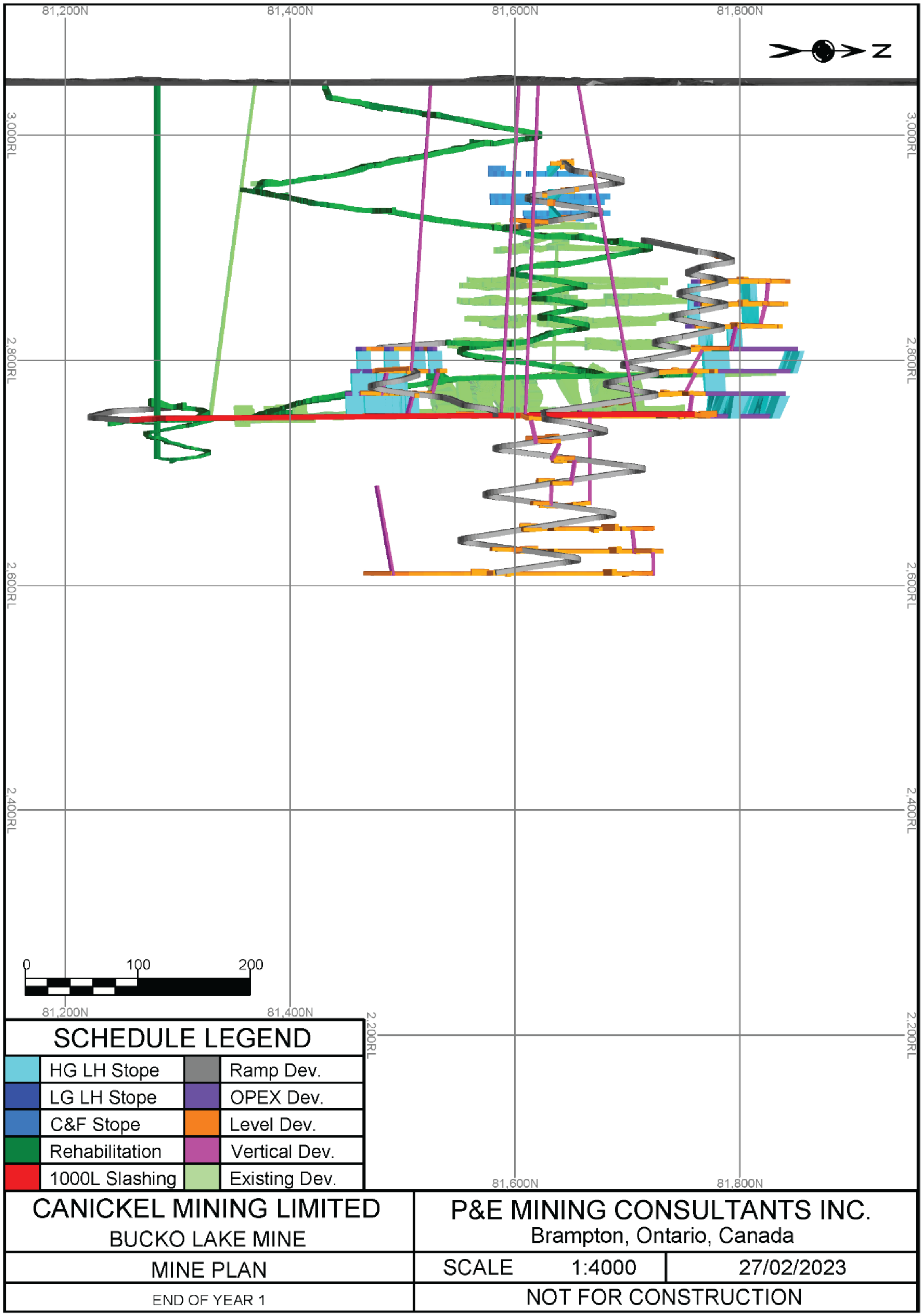


**FIGURE 16.18 YEAR 2 WORKINGS**

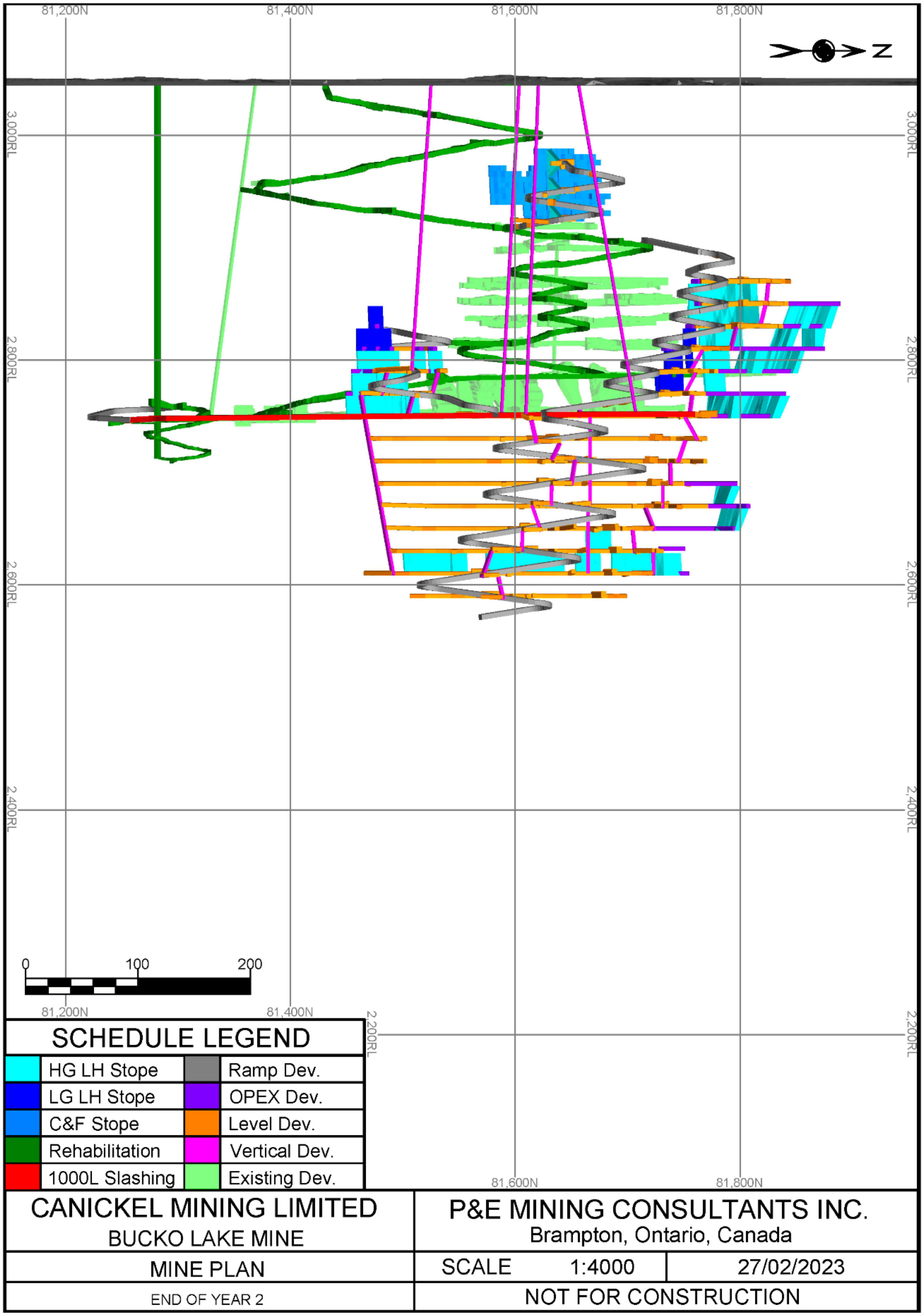


**FIGURE 16.19 YEAR 3 WORKINGS**

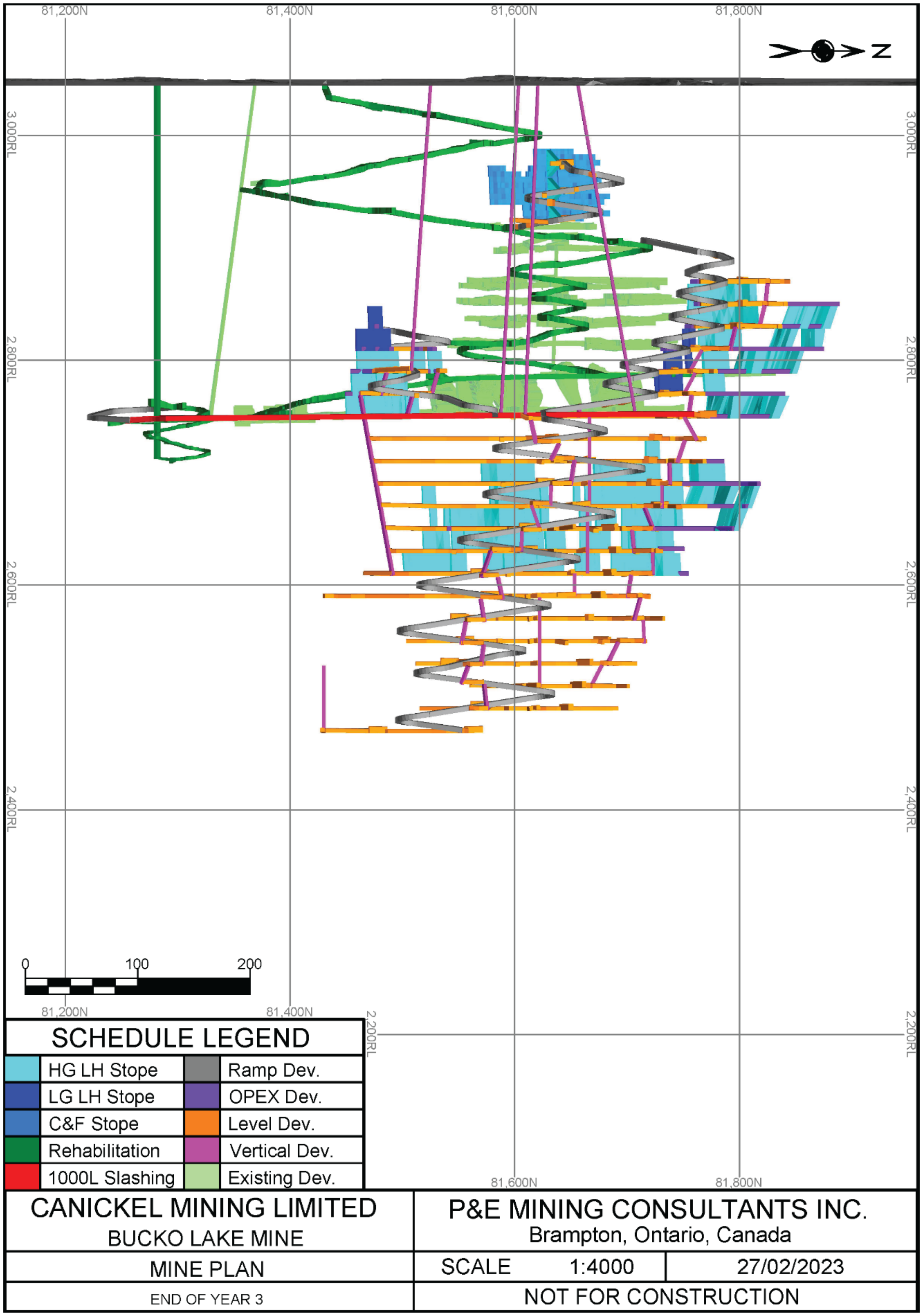


**FIGURE 16.20 YEAR 4 WORKINGS**

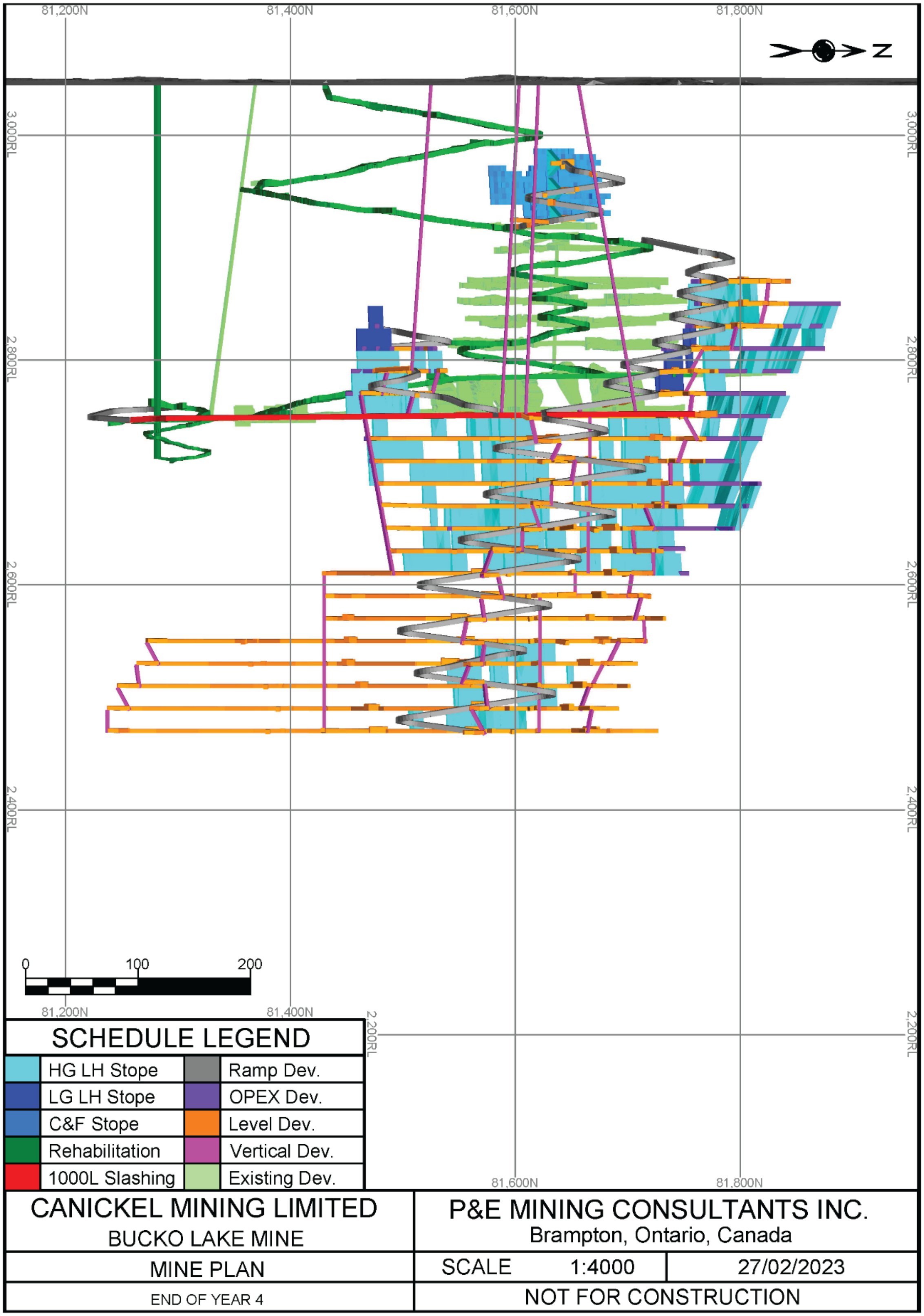


**FIGURE 16.21 YEAR 5 WORKINGS**

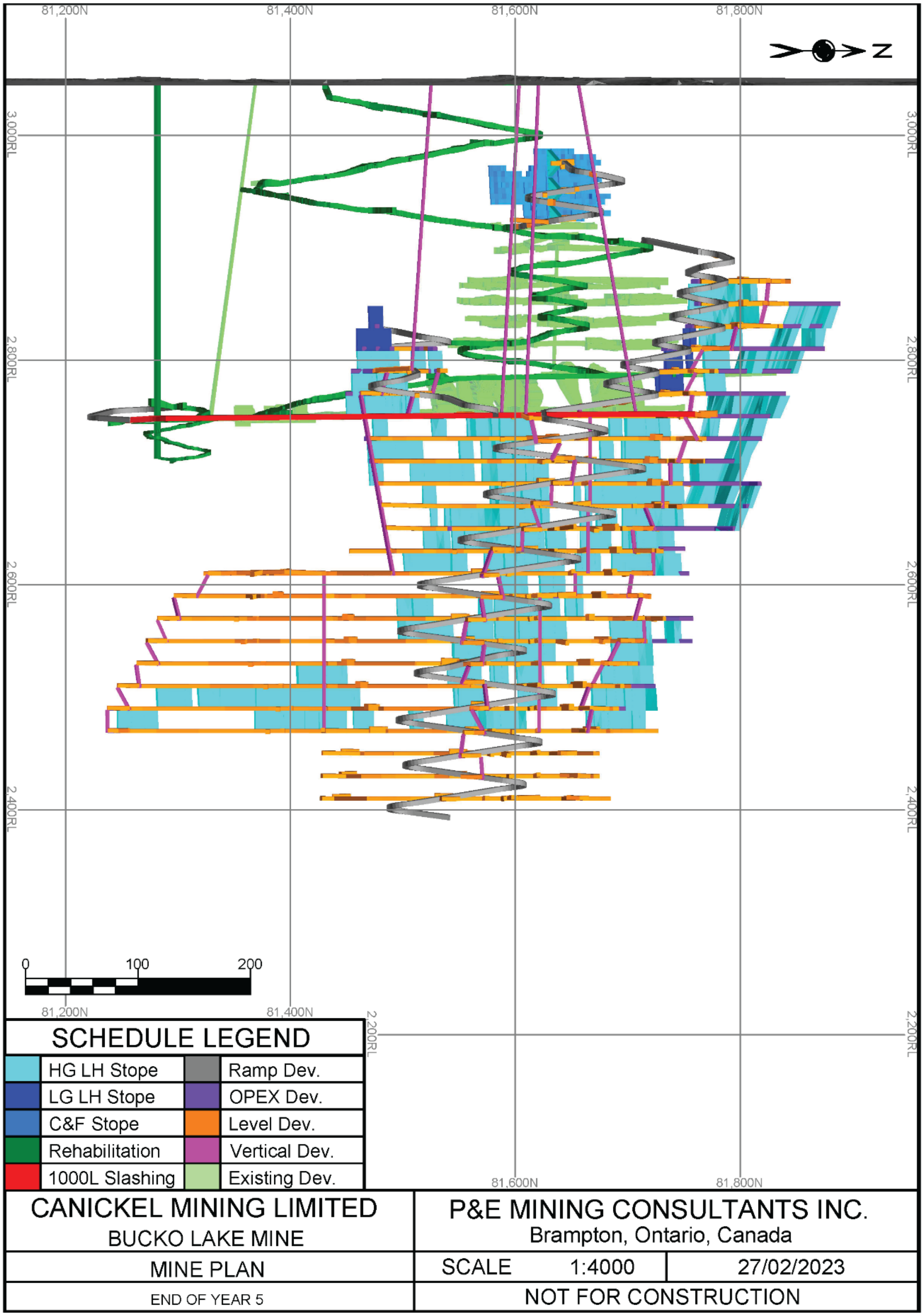


**FIGURE 16.22 YEAR 6 WORKINGS**

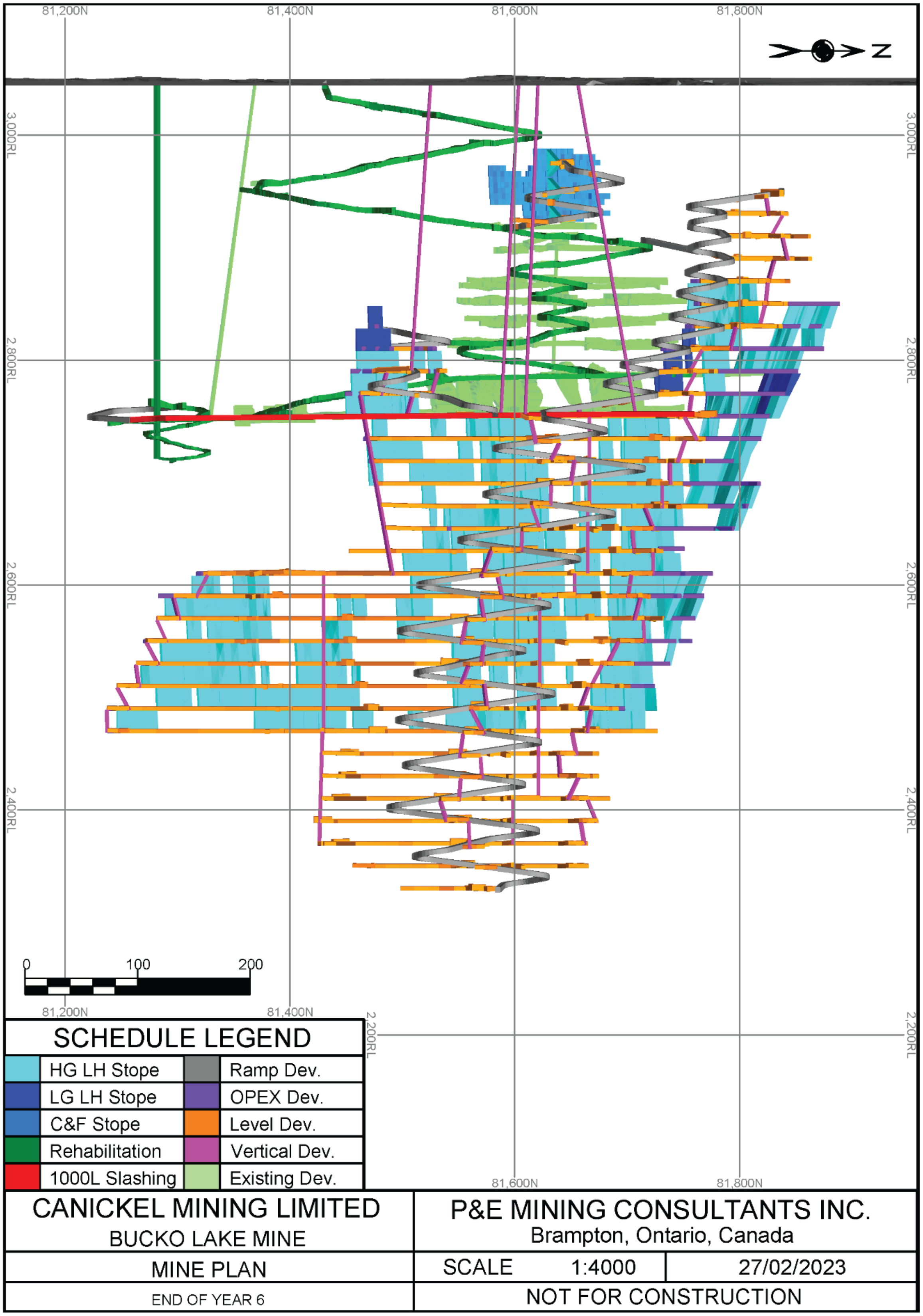
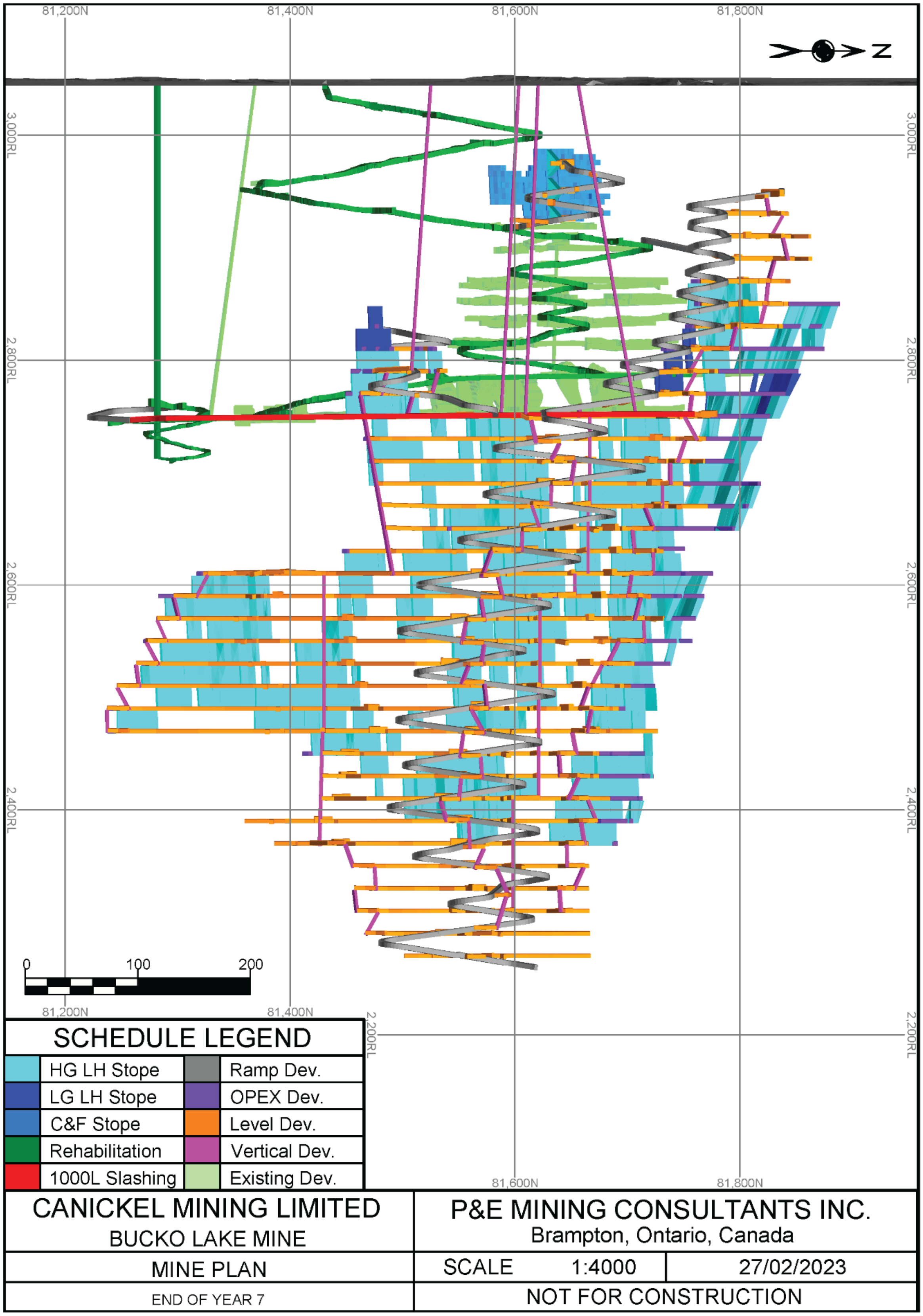


**FIGURE 16.23 YEAR 7 WORKINGS**



## FIGURE 16.24 YEAR 8 WORKINGS

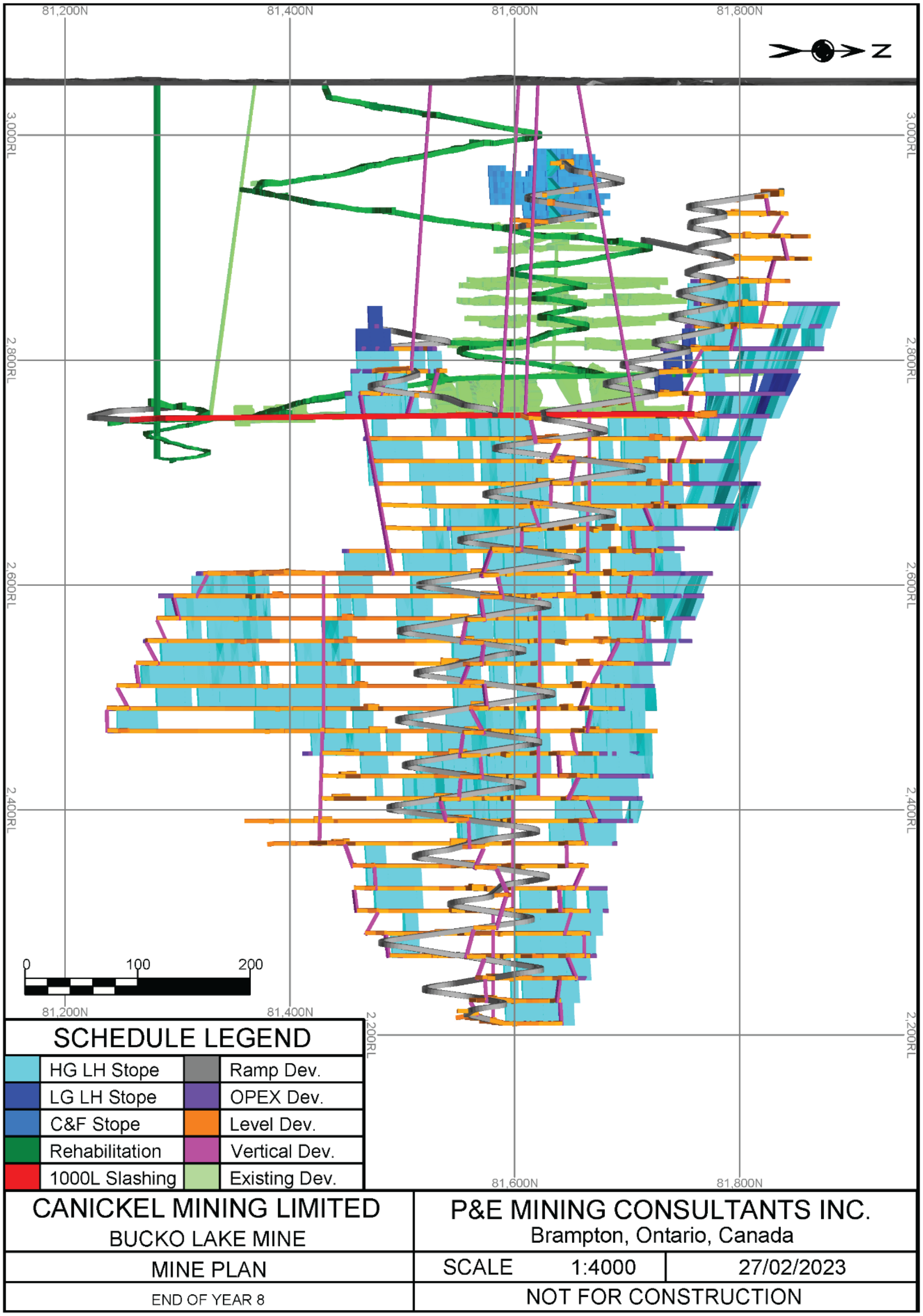


**FIGURE 16.25 YEAR 9 WORKINGS**

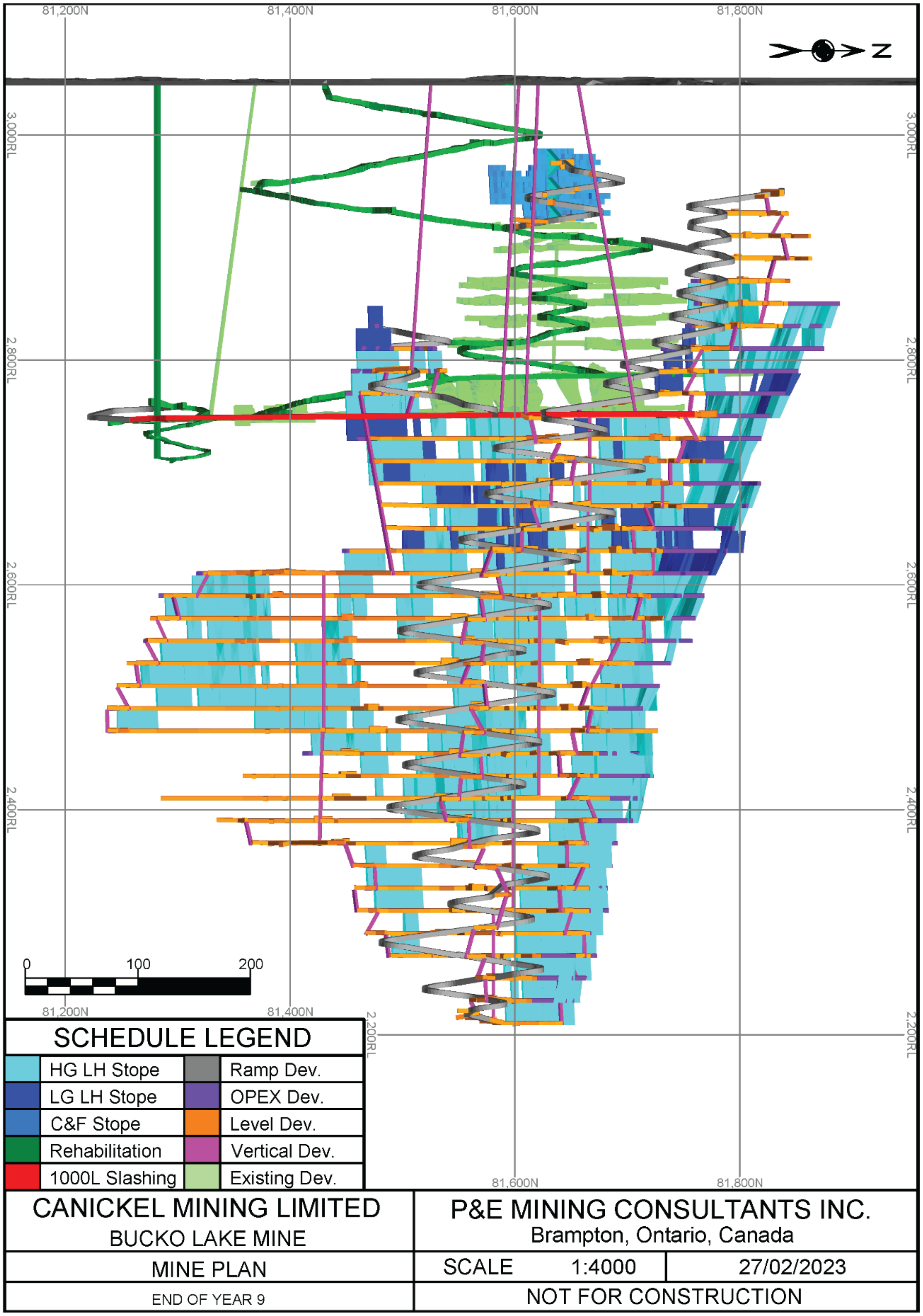


**FIGURE 16.26 YEAR 10 WORKINGS**

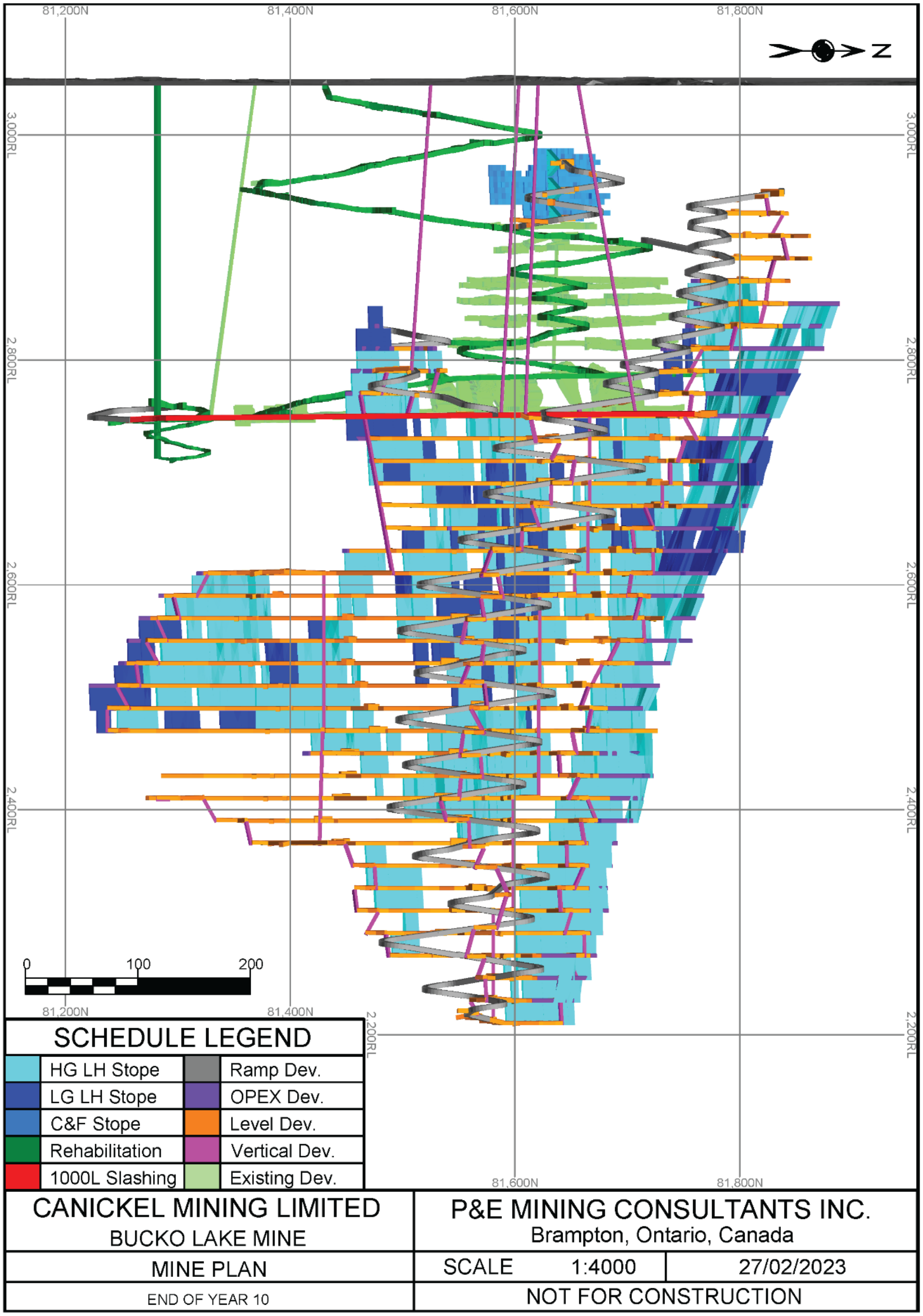


**FIGURE 16.27 YEAR 11 WORKINGS**

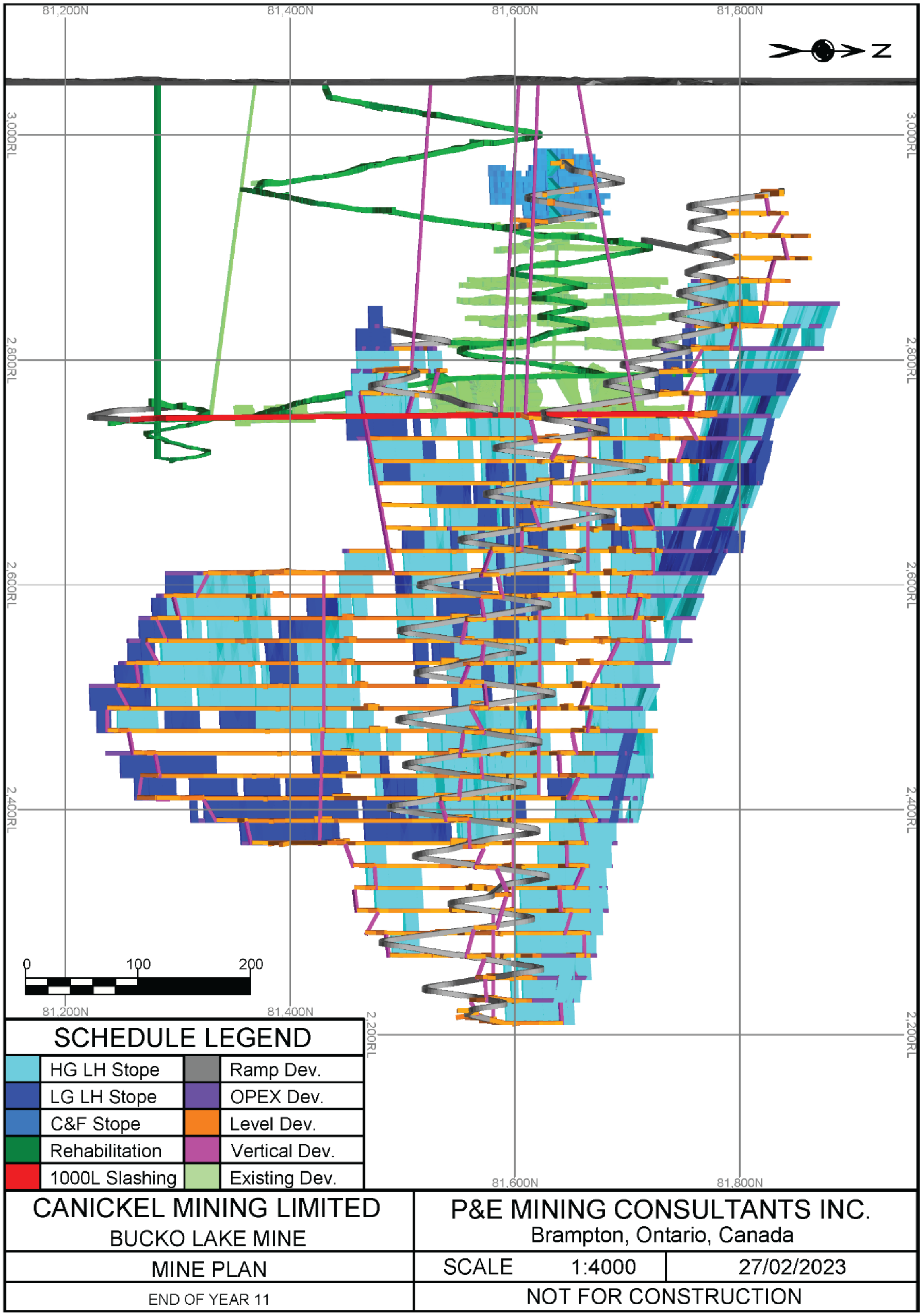


**FIGURE 16.28 YEAR 12 WORKINGS**

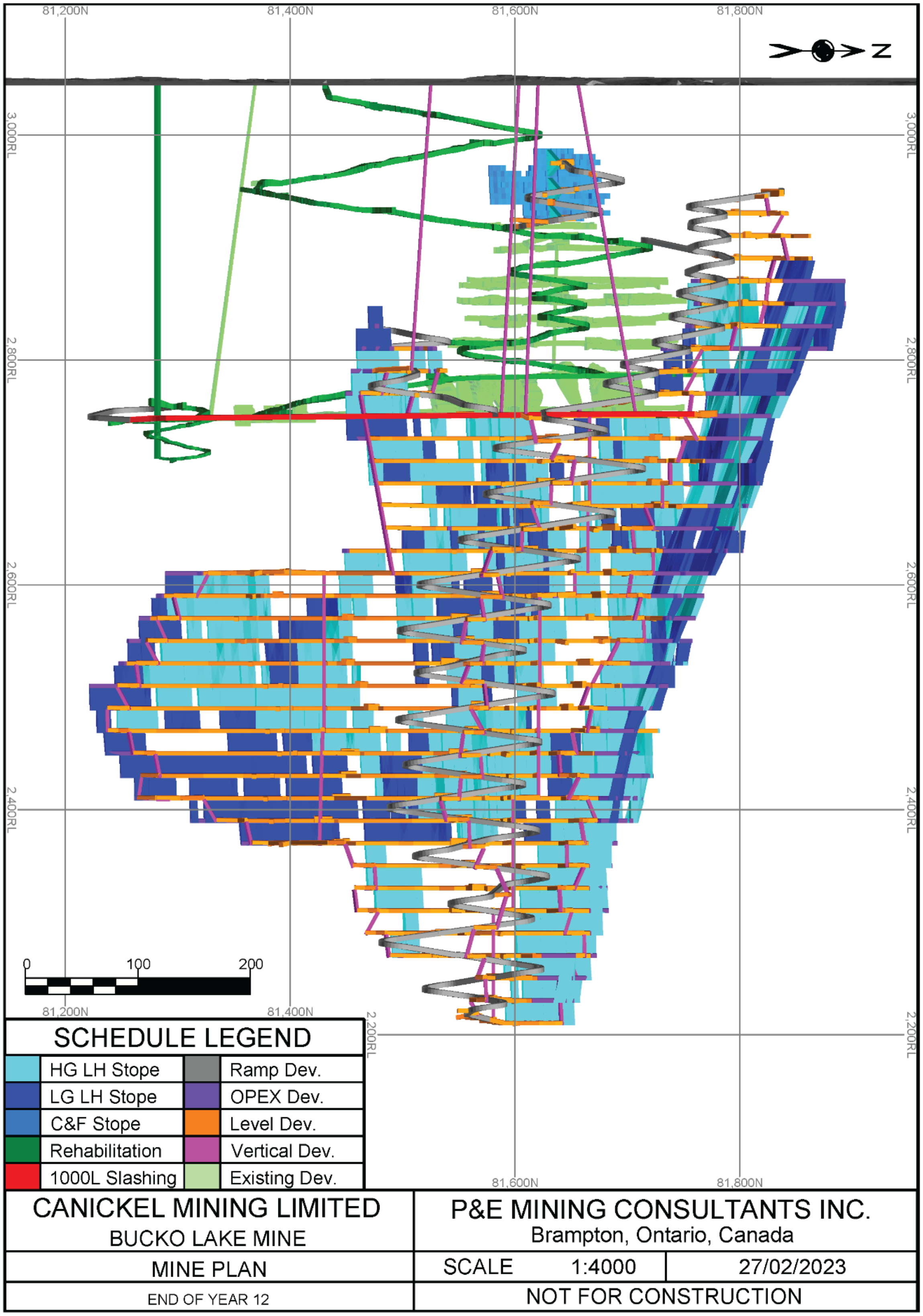
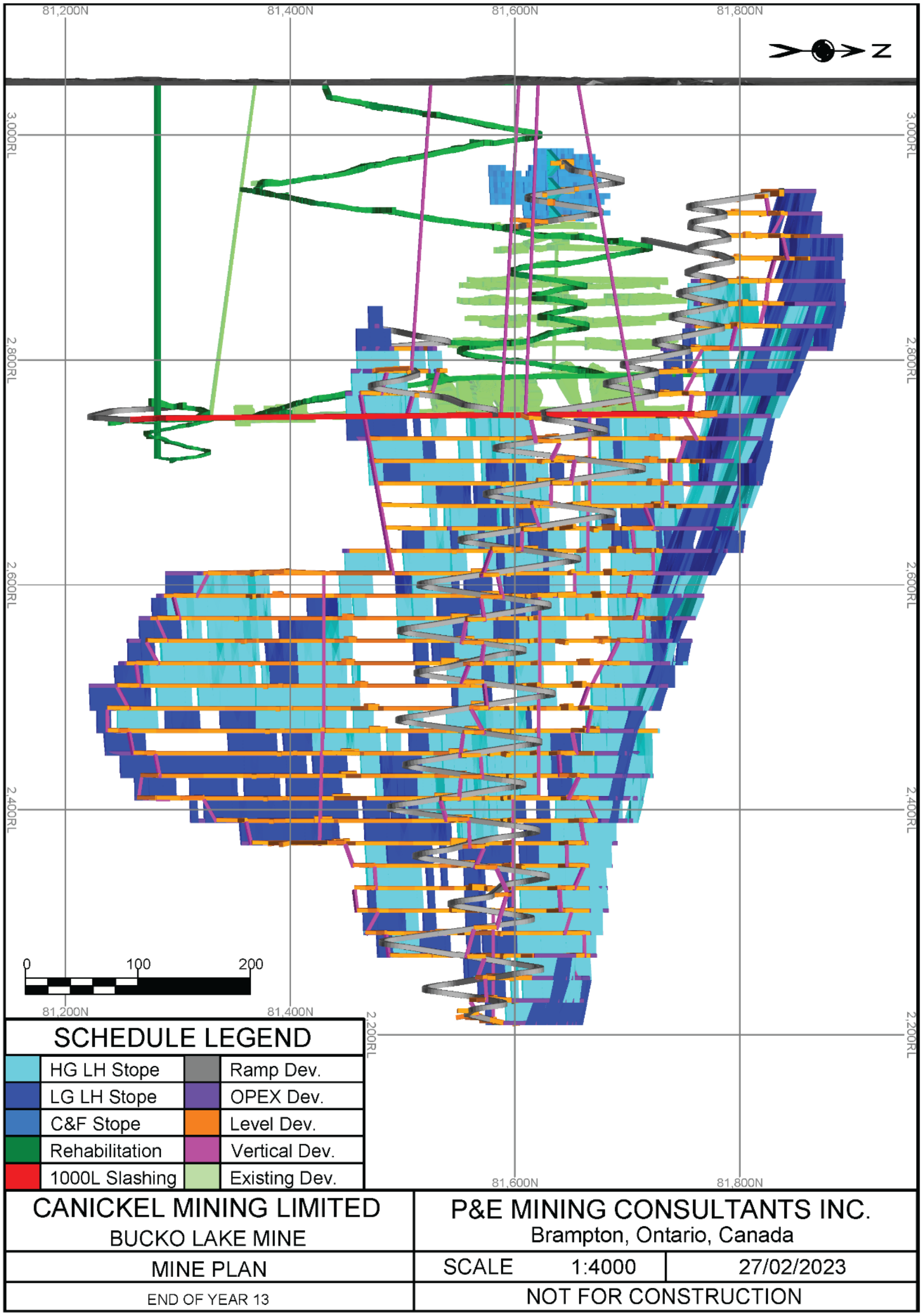


**FIGURE 16.29 YEAR 13 WORKINGS**



## 17.0 RECOVERY METHODS

The process plant has been in care and maintenance since 2012. The process plant will be reactivated to process mineralized material at 50% higher capacity than the previous nominal capacity – 1,500 tpd, versus the original 1,000 tpd design. Some process plant feed will be hoisted, however, most will be hauled by truck up a ramp and fed to the process plant crusher circuit by a loader.

## 17.1 BUCKO HISTORY

The Bucko Lake Mine process plant had been designed to process nickel-rich mineralized material from the underground Bucko Lake Mine. The post-operational (2012) mine shaft (right centre) and the process plant facilities (left) are shown in Figure 17.1. The mine shaft, process plant and tailings facility near the west shore of Bucko Lake are shown in Figure 17.2. The green water treatment settling ponds are clearly evident.

**FIGURE 17.1 BUCKO PROCESS PLANT SITE, 2012**

***Source:*** *Griffin et al. (2012)*

**FIGURE 17.2 BUCKO PROCESS PLANT AND TAILINGS FACILITY SITE, 2022**

***Source:*** *Maxar Technologies, Google Earth (2022)*

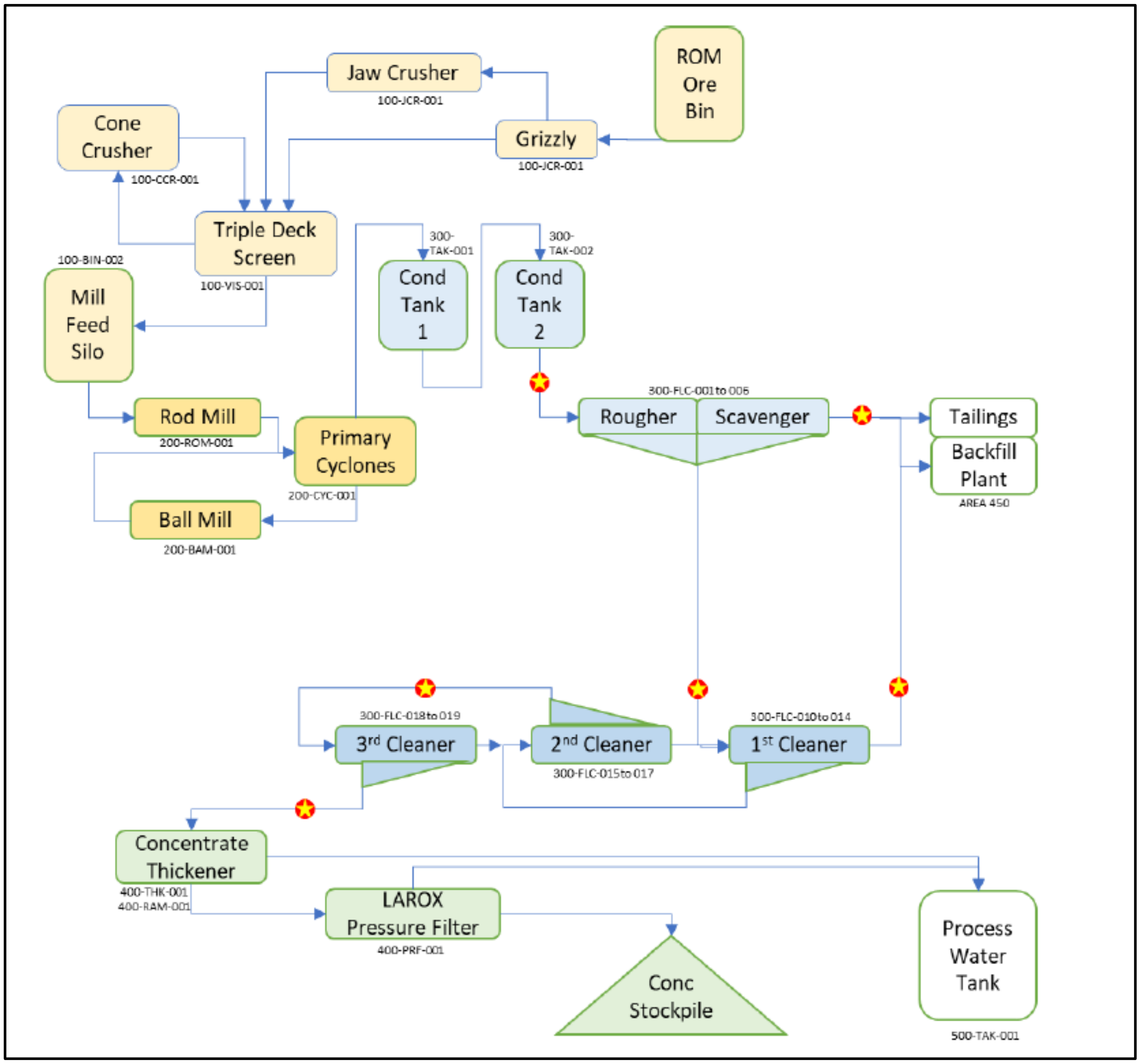
Between 2009 to 2012, the process plant processed 435,573 t of mineralized material from the Bucko Lake Mine to produce a total of 6,928,148 lb (3,142,538 kg) of nickel. Average process recoveries ranged from 55.52% in 2009 to 75.65% in 2012. A process recovery high of 79.98% was reported for processing 22,616 t of feed grading 0.98% Ni in the second quarter of 2012. The last month of operation was May 2012.

## 17.2 CURRENT BUCKO PROCESS PLANT COMPONENTS

The process plant appears to have been reasonably "mothballed" with apparently minimal equipment deterioration and salvage occurring during the last decade. The process flowsheet is shown in Figure 17.3. The plant design can be considered conventional and the flowsheet remains appropriate for processing the Bucko Lake Mineral Resource.

Many of the major operating components of the process plant appear to have been acquired from an equipment salvage company (Carminex). These components are quality items, suitable for producing a high-grade nickel concentrate.

**FIGURE 17.3 BUCKO PROCESS PLANT FLOWSHEET**




***Source:*** *Bestech (2021)*

## 17.2.1 Crushing and Grinding

The mineralized material crushing facilities include a coarse material storage silo, one jaw and one cone crusher, a triple deck vibratory screen and associated conveyors. The Metso C100 jaw crusher reduces ROM material to approximately 76 mm and the XL300 1.1 m cone crusher was reported to have been set to reduce material size to 16 mm (5/8 in). The crushed fines bin is reported to be able to store 1,000 t of material.

Existing grinding facilities are composed of a rod mill in open circuit and a ball mill in closed circuit with a pair of cyclones. The mill drives were 340 and 1,130 kW, respectively, with the nominal capacity of these grinding units listed as 1,000 tpd.

Increasing to 1,500 tpd or greater will require significant investments. An ideal change in crushing and grinding, from an operational perspective, would be the installation of a SAG mill to replace cone crushing, screening and rod milling. An optional and less costly configuration could be the installation of a secondary cone crusher with associated screens, conveyors and dust collection. A second rod mill, which would operate in parallel to the existing rod mill, could be considered, however, is not recommended by the Authors. The installation of a second cone crusher, a SAG, or a second rod mill would require an expansion of the process plant building and electrical power supply.

There appears to be a significant amount of unoccupied space between rod and ball mill grinding and the flotation equipment as shown in Figure 17.4. This could be a location for a small ball mill or a tower mill to regrind rougher flotation concentrate.

**FIGURE 17.4 BUCKO PROCESS PLANT ROD AND BALL MILLS**

***Note:*** *rod mill is in left picture, ball mill is in right picture.*
***Source:*** *CaNickel. (2012)*

### 17.2.2 Flotation and Concentrate Handling

The rougher-scavenger flotation circuit is believed to be composed of five 8.5 $m^3$ cells, and the 3-stage cleaner circuit is composed of ten 1.4 $m^3$ cells. The third stage cleaner concentrate is the final product which is thickened in a 5 m diameter thickener and transferred to a concentrate storage tank that feeds a Larox pressure filter. The pressure filter was expected to dewater the concentrate to approximately 8% moisture, suitable for transport without thermal drying. The dewatered concentrate was placed in an in-plant storage area in advance of loading onto trucks for shipment to a Sudbury smelter.

### 17.2.3 Paste Backfill Plant

A paste backfill plant had been installed in a building attached to the process plant building in 2012 but was not commissioned when operations were suspended in June of that year. The plant was designed to dewater tailings to 60% solids using cyclones and add sand to reduce moisture content. An external view of the backfill plant is shown in Figure 17.5. A conveyor gallery to receive and add sand is shown as well as an air-based system for receiving and storing cement.

**FIGURE 17.5 BUCKO BACKFILL PLANT**

***Source:*** *Griffin et al. (2012)*

The backfill plant will not use sand in the future. The process will be converted paste production from 100% tailings. Vacuum filters will be installed to dewater the tailings to the designed moisture content prior to paste backfill mixing.

## 17.3 BUCKO PROCESS PLANT REHABILITATION AND UPGRADING

Restarting a process plant that has been dormant for a decade will require sequential examination and test operation of all units. The following are some of the major process plant components that are likely to require repair and/or upgrade before restarting mineral processing:

1. Receipt and screening of underground mineralized material haulage would require modification and repair (Figure 17.6). Exposure to weather for an extended period of time would have deteriorated conveyors and led to seized bearings;

2. Replacement or freeing-up of seized conveyor bearings, pump shafts, sensors, safety devices, lighting;

3. Replacement of the 1,130 kW ball mill drive motor;

4. Inspection of ball and rod mill gears and bearings. Check mill internals, such as liners, and determine if rod and ball loads were removed (remaining grinding media would corrode and bond together);

5. Restoring tool and spare parts inventories;

6. Re-equipping the sample preparation and assay laboratories; and

7. Modifications and completion of the paste backfill plant.

**FIGURE 17.6 MINERALIZED MATERIAL RECEIVING ARRANGEMENT**

***Source:*** *P&E (2022)*

## 17.4 PROCESS PLANT UPGRADING

The daily tonnage processed is intended to be increased from 1,000 tpd to 1,500 tpd. In order to achieve this objective, process plant capacity should be increased by at least 10% of this objective or 1,650 tpd. A 65% increase in throughput is likely to stress several sections of the existing process components and lead to bottlenecks. Examples include:

1. Jaw Crushing. The C100 jaw crusher associated conveyors, feeders and screens are expected to be capable of handling the increased tonnage. An increase in daily crushing hours from 12 to between 18 to 20 should accomplish this.

2. Secondary Crushing. The 1.1 m standard crusher should be capable of handling 1,650 tpd when operating for up to 20 hours per day and a setting of 16 mm. Tightening the crusher to 13 mm to increase grinding capacity may choke the cone crushing capacity. The crushed fines bin active capacity is reported to be 1,000 t and this would emphasize the need for extended daily crusher hours. Recent photographs by the Authors in 2022, showing relatively clean surfaces, suggest that dust collection in the crushing circuit was efficient during operations a decade ago.

3. Grinding. The current rod and ball mill combination is expected to be limited to less than 1,650 tpd. A capacity increase may be achieved by reducing the crushed mineral size to 13 mm and installing a system for recycling ball mill “scats” to rod mill feed. Scats are oversize rock fragments that are typically discharged by an overloaded ball mill and are hauled outside or recycled to grinding feed. Returning to grinding feed can be accomplished by hoisting a filled hopper and dumping the scats into mill feed using the process plant internal crane. Some mineral processing operations at other mine sites take the scats to an external stockpile. Since this results in poor metallurgical accounting, stockpiling is not recommended. The two cyclones may not be capable of handling the increased tonnage and the anticipated high circulating load. A review of

cyclone and pumping capacity should be considered. A trash screen should be installed in the cyclone overflow to remove wood and plastic debris.

4. The capacity of the crushing and grinding circuits could be expanded to meet the daily tonnage objective by the installation of a tertiary crusher, a second cone crusher, possibly a short-head cone crusher. This crusher could be set to produce a 10 to 13 mm crushed product.

5. Rougher Flotation. Rougher-scavenger flotation was set up to follow two-stage conditioning and produce a flotation concentrate by five cells. Cleaning was performed in three stages of a total of 10 cells - 5, 3 and 2 configurations. The rougher-scavenger cell volume is barely adequate for processing 1,650 tpd, and cleaner capacity is dependent on process plant feed grade. A rationing of the cleaner cells can be expected and additional cleaning capacity would be needed. This extra capacity could be achieved by the installation of a column cell for the final cleaning stage.

6. Concentrate Regrind. As discussed in Section 13, the regrinding of rougher concentrate or first cleaner concentrate could be considered. A small ball mill or a tower mill could perform this task. The regrinding mill for processing the first cleaner concentrate would be much smaller than for rougher concentrate.

7. Concentrate Thickening and Filtration. The 5 m diameter concentrate thickener is designed for 1,500 tpd of process plant feed grading 2.2% nickel. This thickener and the 5.1 m filter stock tank may be close to adequate for the higher tonnage throughput at a slightly lower grade feed. The capacity of the Larox filter is uncertain, however, having only one filter is operationally risky. A standby pressure filter should be considered in the process plant capitalization.

8. Plant Metallurgical Tools. It is assumed that a belt weightometer, was installed in the proper configuration[2] on the rod mill feed conveyor. A safe location near the weightometer for grab sampling for moisture is expected to be available. If not already installed, automatic Vezin-type samplers could be considered for sampling, grinding cyclone overflow, concentrate between flotation and the thickener, as well as the tailings slurry. It is expected that the final concentrate will be hand-pipe-sampled for moisture and metal content.

9. Reagent Management. No information is available on the status of the decade old reagent mixing and distribution system. These may need extensive cleaning and maintenance.

10. Automation and Control. In advance of process plant restart, there may be an opportunity to install a low-cost monitoring and control network.

11. Process Plant Utilities. The condition and capacity of low- and higher-pressure blowers, switchgear and the reclaim- and fresh-water management systems are uncertain.

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[2] Weightometer installed at the lower end of the conveyor and equipped with a calibration device.

## 17.5 PROCESS PLANT RESTART STRATEGIES

There may be two general options in reviving the Bucko Lake Mine process plant:

1. Reinstall missing or derelict components and restart the plant at nameplate capacity (1,000 tpd), or

2. Make capacity and efficiency upgrades and commence operation.

Given that there is some uncertainty of what the bottlenecks would exactly be and the fact that the significant upgrades may be completed while the plant is operating, it appears that the best option would be to revive the plant in it's constructed flowsheet, identify bottlenecks, and appropriately remediate these during the initial months of operation. Capacity and efficiency equipment and upgrades could be installed prior to restart, and not brought online until the nameplate capacity is re-established. The underground mine is planned to supply an average of 835 tpd in the first year of production, ramping up to 1,500 tpd by the beginning of the third year.

## 18.0 PROJECT INFRASTRUCTURE

The Bucko Lake Mine and surrounding deposits benefit from excellent infrastructure including roads, rail, electrical power, internet, and equipment. The mine can be accessed and operated all year. Existing mine infrastructure includes a 1,000 tpd processing plant with an assay laboratory, cement paste backfill plant, underground hoist and headframe, office, dry/change house trailers, compressor room, maintenance shops, warehouse/garage, on-site drill core shack, and tailings disposal management area.

The town of Wabowden had approximately 400 full time residents in 2021 with modest facilities for provisions, fuel and accommodations.

CaNickel's 100-person camp, constructed in 2009, is located in the Town of Wabowden. The camp consists of five subcamps, referred to as Camp A, B, C, D and E. Camp A was last used in 2012 and consists of 20 trailers fused together to accommodate 40 people. A new roof was installed in 2012 but the interior will need to be rebuilt. Camps B and C, each capable of housing 16-18 people, were used until 2018 and will require refurbishment to the plumbing system and flooring. Camps D and E, each hosting 8 people and were last used in 2018, are in good condition with only minor updating required. The Camp kitchen, housed in a triple-wide trailer, was redone in 2016 and will need new plumbing. Power remains available to all buildings. Figure 18.1 shows a recent photograph of the Camp B and C facilities.

**FIGURE 18.1 CAMP B AND C FACILITIES**

***Source:*** *CaNickel (2022)*

A system of dirt roads connects the town, the Bucko Lake Mine and satellite properties. These can be considered accessible year-round with increased access to surrounding locations during the winter due to frozen ground conditions.

Historically, nickel concentrate was transported by truck to a railroad load-out station in Winnipeg and then by rail to Glencore's smelter in Sudbury, Ontario.

Adequate (grid) electrical supply infrastructure is in place and is currently energized. The mine is fed by a 66 kV overhead powerline built by Manitoba Hydro. A substation at the mine transforms the power to 4.16 kV for distribution to site. A 900 kW, 4.16 kV emergency diesel generator is located near the main electrical room to provide power to critical loads in the process plant and underground mine.

A land-line telephone system currently operates at the mine site. Cell phone service and high speed internet are available in Wabowden.

A water treatment plant ("WTP") at the tailings area includes pipelines and a pump system. The WTP is a micro-filtration, reverse osmosis and radium treatment plant. Historically, water from the underground mine workings was pumped to one of the tailings ponds prior to reclaim or to the WTP and subsequently discharged to Bucko Lake via the settling pond. Mine dewatering was halted in 2018. Access to the underground portal is restricted by a sealed door, and the workings have flooded.

Bucko Lake provides fresh water to the process plant and to the fresh fire water tank on site.

All sewage generated from the underground mine, dry facility, or office buildings is directed to septic holding tanks that are pumped out periodically. Solid waste is sent to a licensed recycling facility if possible, and non-recyclable solid waste is transported in metal bins to Wabowden landfill for disposal.

The two types of waste rock generated by the mine are gneissic and ultramafic. The gneissic waste rock is net acid consuming based on acid-based accounting and can be disposed on surface, usually for construction purposes. The ultramafic waste rock is potentially acid generating, and no permanent stockpiles will be developed on surface. This rock will be used as backfill in the mine to the maximum extent possible, and any material brought to surface will be either processed or directly disposed in the tailings management area ("TMA").

The Bucko Lake Mine is inspected approximately five days per week by CaNickel staff for care and maintenance activities. A security camera records traffic on the access road coming into the mine. There is permanent fencing around the main power substation, and a waste rock berm has been constructed around the propane tank storage area.

## 18.1 PASTE BACKFILL PLANT

In 2011 and 2012 CaNickel was in the process of constructing a new paste backfill plant at its Bucko Lake Mine in order to reduce backfill costs and to enhance the quality of backfill. All surface construction and equipment installation were completed and the plant received engineering and electrical certification. However, due to the suspension of operations at Bucko Lake Mine, CaNickel put the commissioning of the paste backfill plant on hold. The underground distribution system was not installed.

In May 2022 Paterson & Cooke Canada Inc. ("P&C") carried out a desktop review of all available data on the paste backfill plant. Conclusions of the study were:

1. A test work report identified 0.7 MPa at three days as the strength target. However, 600 kPa to 1 MPa at 28 days is a common figure in the industry. P&C recommended a reassessment of the suitability of 28-day 1 MPa strengths.

2. A full mechanical inspection/audit should take place to confirm what is installed versus the design, confirm condition of the equipment after sitting for 10 years, and to confirm the pump duties are suitable for their tasks.

3. Rheology and strength test work should be completed to determine a suitable paste recipe.

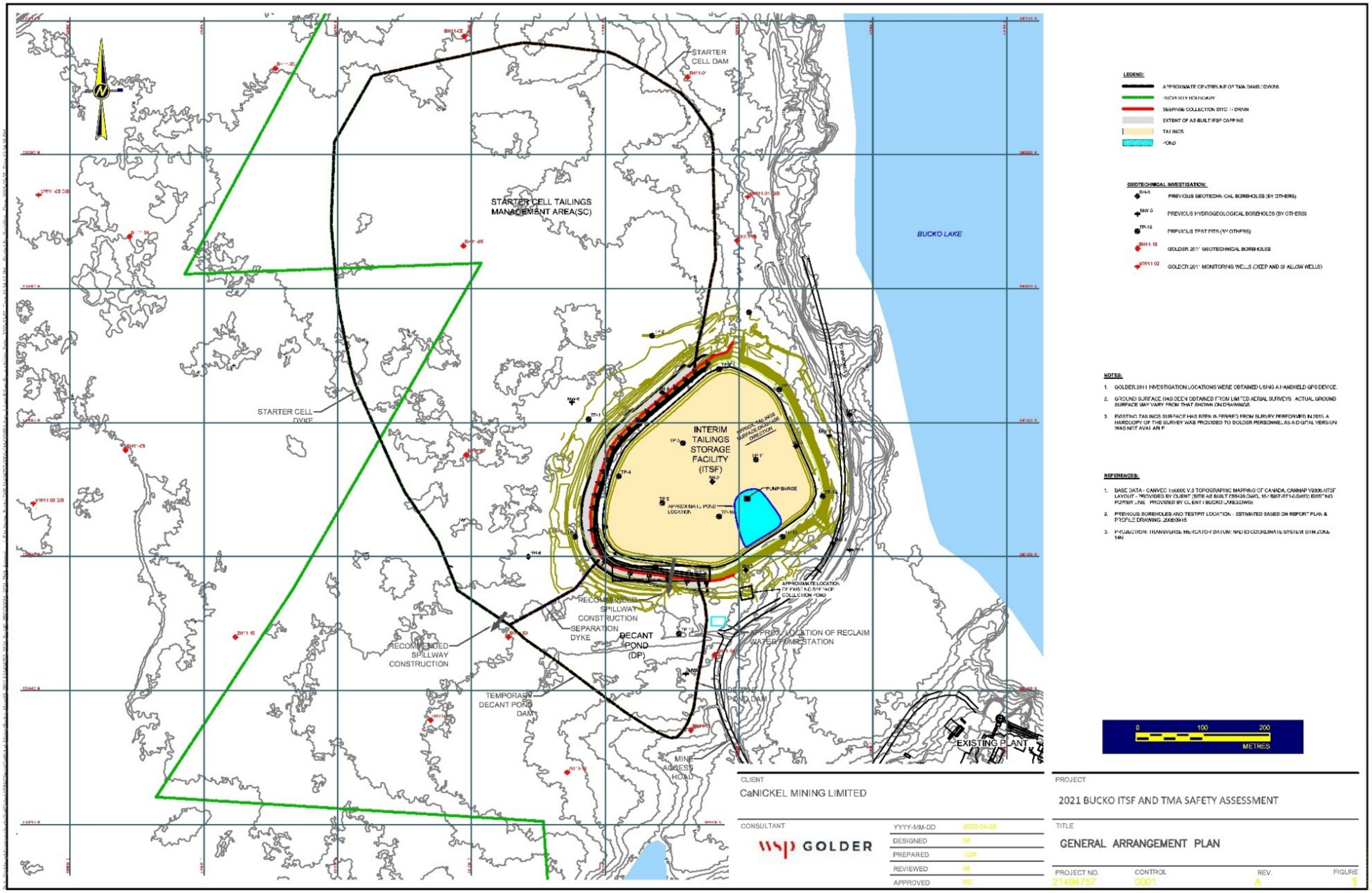
4. The underground distribution system design should then be completed after the rheology test work has been completed.

5. A commissioning program should take place before production commences.

## 18.2 TAILINGS MANAGEMENT AREA

An interim tailings storage facility ("ITSF") was initially built before the mine achieved commercial production in 2009. The 8-hectare ("ha") ITSF contains 410,000 t of tailings and is currently at full capacity. As part of a new TMA a 36.3 ha tailings storage starter cell ("SC") was constructed in 2011, with a 4.3 ha decant pond separated by a separation dyke. The TMA is adjacent to the ITSF and was designed by Golder in 2011. The capacity of the starter dam and pond will be increased during the pre-production period and in the first year of production, so that the facility can store 7.5 years of tailings production. The water treatment plant located at the decant pond will also be expanded. Periodic capacity increases of the TMA will be carried out over the mine life to ensure adequate dam freeboard. Figure 18.2 shows the TMA area layout.

**FIGURE 18.2 GENERAL ARRANGEMENT PLAN OF TMA**




***Source:*** *WSP Golder (2022)*

WSP Golder Associates Ltd. prepared a 2021 ITSF and TMA Safety Assessment Report in April 2022 (WSP Golder 2022). Visual inspections of the dams and dykes of the ITSF and TMA indicated that the structures were in good condition and were functioning as required at the time of a site visit in October 2021. Golder noted the following in the assessment report:

- The ITSF is located approximately 400 m west of the Bucko Lake Mine processing plant. It is retained by a rockfill ring dyke. As built records (Wardrop 2008 and 2010) indicated that a fine rockfill zone was provided at the base and upstream slope of the ring dyke. Geotextile and Bentofix liners were placed on the upstream slope of the ITSF, over the fine rockfill zone, and a 1 m clay cover was provided over the Bentofix. A geotextile liner was placed at the base of the dyke along with the fine rockfill zone to prevent migration of fines from the foundation soils into the coarse rockfill. The ITSF starter dyke upstream and downstream overall slopes are approximately 3H:1V and 1.5H:1V, respectively. The ITSF dyke crest has a width of approximately 7.5 m.

- During construction of the TMA in 2011–2012, the west side of the ITSF was upgraded with slope capping. To provide hydraulic containment for the SC, the downstream slope of the ITSF was capped with clay and geosynthetic clay liner to prevent water from the SC and decant pond flowing into the shell of the ITSF dyke. Currently, runoff from the ITSF surface is collected and pumped to the TMA as needed. Seepage from the ITSF is collected by a ditch located downstream of the ITSF at the east side, which reports to a pond, and then is pumped back to the ITSF.

- The SC dam, decant pond dam and temporary decant pond dam were designed as low permeability embankments to minimize seepage. The structures incorporate a clayey silty/silt upstream cell and silty clay/glacial till central core with a key trench into the foundation clay. The downstream shell was constructed with granular materials that have good drainage characteristics for long-term stability. A sand filter was included to minimize the risk of piping of the clay core material.

- Designed as an internal berm, the West Dyke (or SC Dyke) is a homogeneous clayey silt/silt dyke with a key trench into the foundation clay. It was designed as an interim measure for tailings containment and seepage minimization.

- The Separation Dyke is a low head tailings retaining structure constructed with rockfill. The Separation Dyke was designed to minimize silting of the decant pond by the solids in the SC supernatant water.

- The dam/dyke crest was designed to be 6 m wide for traffic and pipeline operation. Both upstream and downstream slopes were designed to a 2H:1V profile.

- Seepage through the TMA dams/dyke is to be collected in ditches and sumps and returned to the TMA. Upstream of the West Dyke seepage collection ditch will be a diversion ditch for up-gradient clean surface runoff.

- Dewatering of the underground mine workings ceased in July 2018, and the TMA is no longer receiving underground mine water as the underground mine has been allowed to flood.

A closure and reclamation plan for the ITSF was completed by Golder in 2014. The proposed reclamation work has not been completed to date as CaNickel is evaluating mine re-start options.

During the 2011–2012 construction of the TMA the following was not completed, and will be completed prior to the resumption of mining operations:

- Erosion protection placement on the downstream face of the SC dam and decant pond dam.
- Road surface placement on the crest of the SC dam and West Dyke.
- TMA dams and dyke construction to design crest elevations.
- TMA seepage collection ditches and sumps, and diversion ditch construction.
- SC temporary emergency spillway construction at the south end of the West Dyke.

Golder recommended that resumption of tailings operations should be accompanied by a review of the water balance and storage capacity of the SC along with a Dam Safety Review. The SC pond should be drained to remove the vegetation inside the pond to provide tailings storage capacity. An Operation, Maintenance and Surveillance ("OMS") Manual should be developed for the TMA prior to resumption of tailings deposition.

# 19.0 MARKET STUDIES AND CONTRACTS

## 19.1 METAL PRICES AND FOREIGN EXCHANGE

The Author used a nickel price of US$9.84/lb based on the two-year monthly trailing average price as of the end of November 2022. The 0.77 US$ = 1.00 CAD$ exchange rate was based on the three-year monthly trailing average rate as of the end of November 2022. Both the metal price and currency exchange rate are subject to spot market conditions. There are no metal streaming or hedging agreements in place.

## 19.2 CONTRACTS

Concentrate transport, smelting, refining, penalties and price participation costs are based on a sales agreement with Glencore that was established in 2007 before the mine went into production and currently remains in effect. The sales agreement terms are proprietary. The Author has reviewed the contract and has confirmed that the terms are appropriately included in the PEA financial model.

Previous contracts for underground mining and supply of materials have been terminated. Other than the Glencore agreement, there are no major contracts currently in place that would affect the Project.

## 19.3 MARKET OUTLOOK FOR NICKEL

Nickel is heavily linked to stainless steel production, accounting for approximately 70% of consumption. A recovery in the stainless steel market fueled by China, particularly with the recent removal of lockdown restrictions due to its strict zero-COVID policy, combined with ongoing strong growth in nickel use in electric vehicle ("EV") batteries, is anticipated to push the market back into supply deficit in the next five years. Steadily rising annual prices are expected for the next five years. Demand from the battery sector is growing rapidly, currently accounting for approximately 5% of total demand.

Governments continue to push for further control of their lithium-ion battery supply chains, including sourcing raw materials regionally. Canada, the USA, Europe and Australia have been moving forward with critical minerals strategies, which are expected to address mining, including nickel production.

In reviewing supply, Indonesia will be a key country to watch as it boosts production to meet demand. Rising output could put downward pressure on nickel prices in the short term. Another short term risk to nickel prices could be a global economic recession. However, potential disruption to Russian nickel supply, due to either western sanctions or Russian export controls, presents upside potential.

Overall, there are currently insufficient advanced, viable nickel projects to support projected global demand. This is expected to result in a premium on nickel assets that can advance into production within the next several years. Long permitting times are one of the main challenges for upcoming nickel projects.

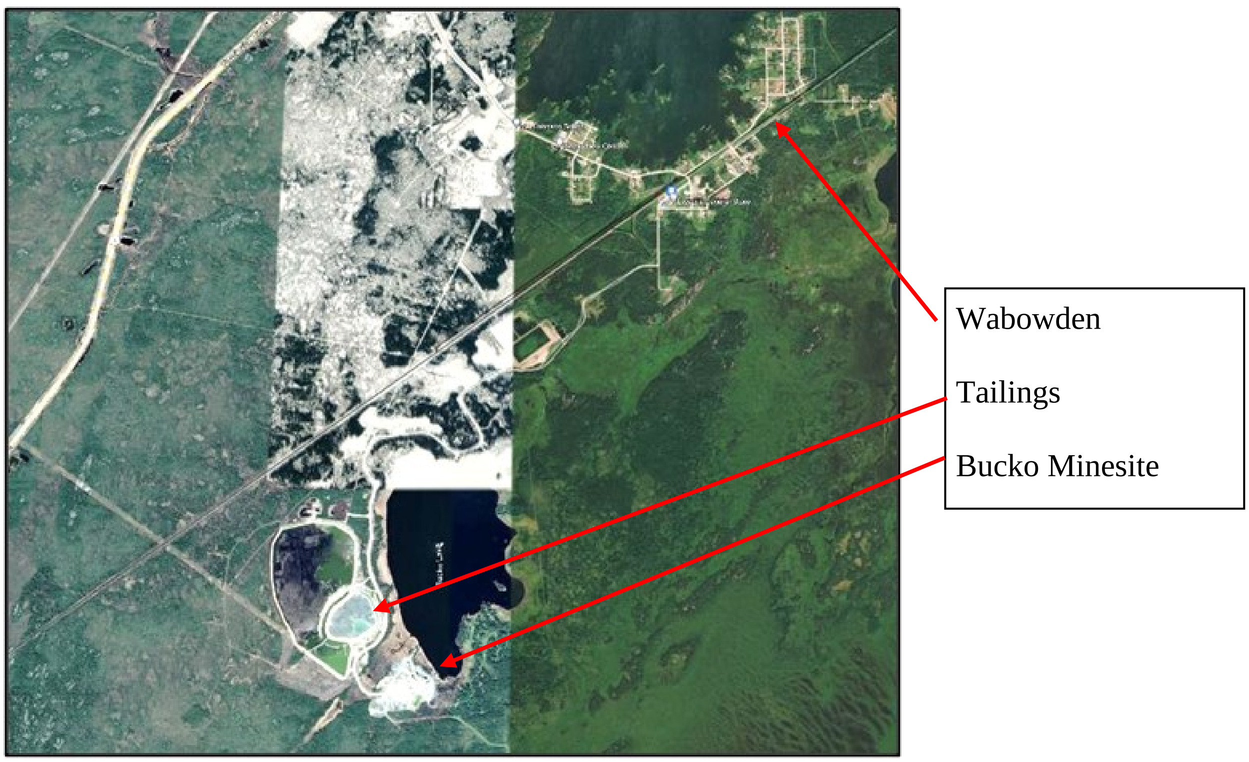
## 20.0 ENVIRONMENTAL STUDIES, PERMITS, AND SOCIAL OR COMMUNITY IMPACTS

## 20.1 CURRENT CONDITIONS

The Bucko Lake underground mine, process plant and associated facilities are located 4 km southwest of the Town of Wabowden, Manitoba. Wabowden is over 600 km north of Winnipeg on Provincial Highway 6 and 110 km south of Thompson. Wabowden was established early last century as a service stop for the Hudson Bay Railway. The stop was named after railway executive W. A. Bowden. The railway remains active connecting Thompson with Winnipeg.

Wabowden (Figure 20.1) had a population of 400 in 2021, and 138 of 175 private dwellings were occupied. Access to the Bucko Lake Mine is currently through the Town of Wabowden. Recent proposals[3] to utilize the Bucko Lake Mine process plant for processing offsite mineralized material included a consideration that a new dedicated access road would be built to connect the Bucko Lake Mine site to Provincial Highway 6. The need for building such a bypass road for a Bucko Lake Mine restart is uncertain.

**FIGURE 20.1 WABOWDEN TOWN, BUCKO LAKE MINESITE AND TAILINGS STORAGE FACILITIES**




***Source:*** *Maxar Technologies, Google Earth. (2022)*

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[3] January 2021, NI 43-101 Technical Report PEA, Rockcliff Tower and Rail Project by Bestech

The Bucko Lake Mine has been under care and maintenance since 2012. A site supervisor and an environmental/safety advisor ensure compliance to Manitoba Environmental Act License 2808RR and the federal Metal and Diamond Mining Effluent Regulations (“MDMER”). Site security/safety activities and tailings facility inspections occur as part of the Company’s obligations.

There are no known significant environmental liabilities at the Bucko site. Water quality results have met criteria with the minor exception of a few slight exceedances of radium-226 concentration in mine water from 2012 to 2017, compared to the national mine effluent criteria (MDMER). Mine dewatering ended in 2018. Mine water quality meets the criteria for all deleterious substances under the MDMER except for Radium-226. Chemical treatment, a simple and robust method for radium, is required before release.

The extent and condition of the storage of residual amounts of fuel and chemicals on site is believed to be of minimal concern. No spills or spread of contamination have been reported. Small amounts of mine waste rock are present on site and approximately 300,000 t of tailings have been deposited in a nearby engineered storage facility.

The Bucko site is surrounded by black spruce dominated lowland forests with a few areas of higher elevations and bedrock outcrops. Stands of fir and spruce mix woods with alder and birch occur in areas separating the lowlands. Tree cover on the bedrock outcrops ranges from moderately dense to sparse with jack pine and black spruce being the dominant tree species. Muskeg lowlands, ponds and swamps are common in the surrounding area.

Bucko Lake is located immediately east of the Bucko Lake Mine and is a shallow lake with depths ranging up to approximately 2 m. Water quality studies were part of the aquatic baseline studies conducted in 2007 and 2008. The elevation of the Bucko site ranges from approximately 229 m above sea level (“m asl”) to 236 m asl.

The local climate is typical of northern Manitoba with long winters of snow and ice cover from approximately November to March, and short, warm summers. The average temperate ranges from a low average of -24°C in January to a high average of 17°C in July. The annual precipitation averages approximately 340 mm of rain and approximately 190 cm of snow. When rehabilitated, the Bucko Lake Mine can be expected to be able to operate year-round.

The Bucko site has infrastructure in place including the idle processing plant, a ramp-accessed underground mine with a dormant mine shaft and hoist, a land-based interim tailings storage facility (“ITSF”), mine water treatment facility with two-cell water settling ponds, and other buildings including offices, a dry facility and maintenance shops. There is a paste backfill plant that is attached to the process plant. Electrical power is supplied to the site by Manitoba Hydro and the site has its own sewage collection and associated water treatment capability.

## 20.2 ENVIRONMENTAL REVIEW AND MANAGEMENT

### 20.2.1 Baseline Information

Baseline environmental studies to support the environmental review and permitting process of the original Bucko Lake Mine Project were conducted during the fall of 2007 and spring of 2008, and a terrestrial reconnaissance of a proposed Bucko access road was conducting during the summer of 2009. An Environmental Assessment was submitted to the Manitoba Government Agencies containing baseline environmental information for a wide range of aspects including geology/topography, soils, groundwater, surface water and drainage, vegetation, wildlife, species of conservation concern, air quality, noise and vibration and the socioeconomic environment including heritage resources.

Updates of any of the baseline studies are not expected to be required for the revitalization of the Bucko Lake Mine.

### 20.2.2 Environmental Management

The following aspects will be subject to review and action in advance of the Bucko Lake Mine restart and during operation:

- Mine water management. Mine dewatering before operations will include treatment, sediment control and confirmation analyses using the existing two-cell system to ensure quality before discharge to Bucko Lake. During operations, mine water will be integrated into the tailings management system;

- Tailings environmental management. The Bucko tailings are not potentially acid generating on the basis of tailings sampling and acid-base accounting ("ABA") by SGS in 2011[4]. Should acidification occur, this could be managed by underwater disposal at the Bucko tailings facilities and the maintenance of a permanent water cover on closure. Chemical analysis of the overlying wastewater from the ITSF indicated that, after settling of suspended solids, no acid generation was indicated and additional treatment of the decant wastewater would not be necessary. The tailings effluent water quality has met the Federal Metal and Diamond Mining Effluent Regulations ("MDMER") and the Manitoba Water Quality Standards Objectives and Guidelines for the protection of aquatic life and wildlife at the point of discharge;

- Tailings storage. A starter cell ("SC") of the tailings management area ("TMA") was constructed in 2011 to 2012 and has been recently subject to care and maintenance. Significant upgrading of the SC and an associated Decant Pond ("DP") will be required to contain the tonnage of new tailings;

- Sewage. Sewage and grey water generated from the office building, dry, and underground is to be directed to a holding tank. The tank will be periodically pumped out by a local contractor and hauled to the Wabowden wastewater lagoon for treatment;

- Site runoff. Runoff and storm water is to be directed to the Bucko TMA; and

- Used oil, batteries, scrap metal and tires recycling. These materials will be collected and sent to a licensed recycler.

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[4] WSP-Golder June 13, 2022, Bucko Lake Closure Plan

Several environmentally-related plans and programs that were developed over a decade earlier in advance of operations in 2011 will be updated. This includes the Emergency Response Plan and the Environmental Monitoring Programs for air, water and noise.

Mine waste rock brought to surface will be tested for acid rock drainage ("ARD") and metal leaching ("ML"). Non-ARD and non-ML waste rock may be used for road and tailings embankment construction. In general, it is understood that of the two types of waste rock, gneissic and ultramafic, the ultramafic is potentially acid generating and may be used as mine backfill.

Effluent quality monitoring will ensure that discharges (to Bucko Lake) meet the MDMER limits for As, Cu, CN, Ni, Pb, Ra-226, Zn, unionized NH3 and TSS. Also, pH and acute toxicity limits will be monitored. The monitoring of ammonia and phosphorous in discharges may be required by Manitoba. The monitoring of receiving water quality is an expected requirement outlined by the Manitoba Environment Act.

## 20.3 PERMITTING

To restore and upgrade the Bucko Lake Mine including the potential new access road, the existing Manitoba Environment Act License 2808 RR, issued in September 2011 under *The Manitoba Environment Act,* requires the submission and approval of a Notice of Alteration ("NOA"). The NOA will be reviewed and is to be approved by Manitoba Conservation and Climate, Environmental Approvals Branch. The NOA will include details of the Bucko Lake Nickel Project – construction activities, timing, emission controls and waste management strategies, as well as environmental effects of the proposed Alteration. Once an NOA has been issued for the Project, and with Manitoba approval, permit and license applications can be submitted for other specific Bucko revitalization-related activities.

Among a wide range of aspects, permit and license renewals are anticipated to be required for:

- Clearing of trees and land use (laydown areas and construction of the access road);
- Dewatering of the underground workings;
- Rehabilitation of the shaft and hoist;
- Water rights licenses updates;
- Petroleum storage;
- Septic holding tank; and
- Hazardous waste management.

The only federal permits or approval required is related to the storage and management of explosives. Provisions of the Federal Fisheries Act are not expected to be triggered.

## 20.4 CLOSURE

The Bucko Closure Plan was updated by WSP Golder in June 2022. This Plan combines and amends previously filed Closure Plans by Wardrop in 2006 and CaNickel in 2011. Closure Plans are submitted to Manitoba Conservation and Climate in accordance with the Manitoba Mine Closure Regulation 67/99 General Closure Plan Guidelines. Closure cost estimates and financial assurances are submitted to Manitoba Conservation and Climate as part of the Bucko Lake Nickel Project licensing process. CaNickel has been in discussions with the Manitoba government concerning Financial Assurance ("FA") related to closure and reclamation and has filed a partial (according to Manitoba) payment. A settlement of the final FA amount is expected following the issuance of this PEA and when the Bucko Lake Mine and process plant are restarted and a multi-year operational plan is in effect.

The overall objective of the Closure Plan, as stipulated in the Manitoba Mine Closure Regulation 67/99 Guidelines, is to restore the site to a satisfactory condition by:

- Eliminating unacceptable health hazards and ensuring public safety;
- Limiting the production and circulation of substances that could damage the receiving environment and, in the long-term, eliminate the need for maintenance and monitoring;
- Restoring the site to a condition in which it is visually acceptable to the local communities; and
- Reclaiming for future traditional use the areas where infrastructure is located.

A Closure Plan includes details on the aspects of Closure that are needed to develop an estimate of closure costs. The WSP Golder 2022 report estimated closure cost to be $8.5M including the cost of a seven-year post-closure monitoring program. No credit was listed for equipment salvage and sale.

As a result of the Manitoba Conservation and Climate review of the 2022 Closure Plan, revisions or changes can be added. Changes are also expected as the Bucko Lake Nickel Project will be significantly modified during operations.

## 20.5 SOCIAL

In advance of, and during, the reconstruction and operational phases of the revitalized Bucko Lake Nickel Project, there will be opportunities for members of the local communities of Wabowden and Thompson, as well as the Cross Lake (Pimicikamak Okimawin) First Nation, to review environmental and social aspects, and to participate in the Project.

While the reactivation of the Bucko process plant is anticipated to result in low to moderately low environmental and generally positive social impacts (employment, local purchases and contracts), consultation with the local Pimicikamak Okimawin Indigenous First Nation will be undertaken under the direction of the Province of Manitoba. These consultations will be guided by the Manitoba - First Nations Mineral Development Protocol issued in May 2019.

# 21.0 CAPITAL AND OPERATING COSTS

The total initial capital cost of the Bucko Lake Nickel Project is estimated at $87M. Sustaining capital costs incurred during the 13 production years are estimated to total $192M. Total operating costs over the life-of-mine ("LOM") are estimated at $611M which average $93.74/t processed. The following subsections provide details of these costs. All costs are presented in Q4 2022 Canadian dollars. No provision has been included in the cost estimates to offset future escalation.

## 21.1 CAPITAL COSTS

Initial capital cost estimates are relatively modest given that much of the Project infrastructure is in place. The majority of the costs are related to underground mine rehabilitation and pre-production development, followed by process plant capacity upgrades to achieve 1,500 tpd compared to current nameplate capacity of 1,000 tpd. The capital cost estimates are summarized in Table 21.1.

**TABLE 21.1**
**INITIAL CAPITAL COSTS**

| Item | Cost ($M) |
|---|---|
| Site and General | 5.0 |
| Utilities and Services | 2.0 |
| Underground Mine Development | 18.1 |
| Underground Mining (All Other) | 28.1 |
| Process Plant Equipment and Buildings | 13.1 |
| Tailings Management Area | 4.1 |
| Owner's Costs | 5.0 |
| Contingency | 11.3 |
| **Total Capital Cost [1]** | **86.7** |

*[1] Totals may not sum due to rounding.*

### 21.1.1 Site and General

Site and General costs are an allowance of $5M for infrastructure items not specifically itemized in the other cost categorizes that will require replacement or rehabilitating due to the operation being shut down for over 10 years. Examples are office equipment and infrastructure including the outside walls of buildings, vehicles, shop equipment, communication systems, yard clean-up, gatehouse refurbishment, etc.

### 21.1.2 Utilities and Services

Utilities and Services costs are an allowance of $2M to ensure proper function and distribution of items such as electrical power, propane, diesel fuel, water and compressed air after a 10-year shut down.

### 21.1.3 Underground Mine Development

Costs associated with underground capital development include, however are not limited to: the rehabilitation of the existing shaft and portions of the existing underground workings; costs associated with changing the primary access to mining areas from the FW side of the Deposit to the HW side; and cost of developing infrastructure to support the change, such as ventilation raises and truck bypasses. Total initial underground mine development costs, pre-contingency, are estimated at $18.1M, as shown in Table 21.2.

**TABLE 21.2**
**INITIAL UNDERGROUND DEVELOPMENT CAPEX**

| Item | Cost ($M) |
|---|---|
| Shaft Rehabilitation | 0.3 |
| Ramp and Level Rehabilitation | 3.2 |
| Lateral Capital Development - Slashing | 1.0 |
| Lateral Capital Development – Full Face | 12.3 |
| Vertical Capital Development | 1.2 |
| Cut and Fill Attack Ramps | 0.3 |
| **Total (pre-contingency) [1]** | **18.1** |

*[1] Totals may not sum due to rounding.*

Costs for rehabilitation of the shaft assume that the shaft timbers are in good condition and only minor repairs and replacements will be required. Previous camera surveys indicated that the submerged timbers were in good condition. A rehabilitation unit rate of $750 per vertical metre of shaft has been used.

Costs for rehabilitation of existing ramp and levels assumes that a full replacement of ground support will be required in 50% of areas that will be returned to service in the mine plan. A unit rate of $1,225 per lateral metre rehabilitated has been used.

Attack ramps developed prior to the start of production are accrued as CAPEX. Once production begins, these items are considered to be OPEX.

### 21.1.4 Underground Mining - Other

Costs not associated with pre-production development include, but are not limited to: costs of acquiring fixed plant and mobile fleet units; reconfiguring the loading pocket truck dump and pass system; dewatering; delineation drilling; waste rock hoisting; power costs for services; indirect salaries and mining G&A; lease interest; and dayworks and sundries. Total initial cost for these items, pre-contingency, is estimated at $28.1M, as shown in Table 21.3. Of this total, $13.3M is derived from operating costs that are capitalized due to being incurred prior to the start of production.

| TABLE 21.3<br>OTHER INITIAL CAPEX FOR UNDERGROUND MINING | |
|---|---|
| **Item** | **Cost ($M)** |
| Fleet Acquisition and Overhaul Costs | 6.6 |
| Backfill Plant and Reticulation | 0.8 |
| Ventilation, Dewatering and Compressed Air Systems | 2.7 |
| Truck Dump Grizzly and Rockbreaker System | 2.1 |
| IT Systems | 0.5 |
| Other General Infrastructure and Fitment | 2.1 |
| Dewatering of Historical Workings | 0.2 |
| **Subtotal – CAPEX Items** | **14.9** |
| Delineation Drilling | 0.3 |
| Waste Rock Hoisting | 0.4 |
| Power Costs | 2.0 |
| Indirect Salaries and G&A | 8.1 |
| Dayworks and Sundries | 1.8 |
| Leasing Interest | 0.5 |
| **Subtotal – Capitalized OPEX Items** | **13.3** |
| **Total (pre-contingency) [1]** | **28.1** |

*[1] Totals may not sum due to rounding.*

#### 21.1.4.1 New Mobile Fleet Units

New units for the mobile fleet are assumed to be acquired under a lease-to-own strategy on a 4-year term at a 5.5% APR rate with 15% down payment and minor contract setup fees.

#### 21.1.4.2 Used Mobile Fleet Units

A significant fleet of suitable units exists on site that can be repaired or rebuilt as necessary and returned to service. Several of these units are in a poor state of repair and require overhauling, other units are suitable for service with minor repairs. See Section 16.10.1.1 for details on unit conditions.

In addition to Company-owned units, a major shareholder owns a fleet of equipment suitable for use at the Bucko Lake Mine. Specific units from this fleet are expected to be acquired under a similar lease-to-own strategy under similar terms as new units at reduced unit prices versus new equipment. Lightly-used equipment, totalling two development jumbos and one rock bolter will be acquired at 75% of the unit price of new equipment. Heavily-used equipment, totalling three 10-tonne class LHDs and two 30-tonne class haul trucks will be acquired at 25% of the unit price of new equipment. Heavily-used equipment will be overhauled prior to entering service at site, lightly-used equipment will undergo minor repairs as necessary.

Total costs for mobilizing, repairing, and rebuilding used equipment prior to commencement of production is $2.4M of the total estimate of $6.6M in fleet acquisition costs.

### 21.1.5 Process Plant Equipment and Buildings

Capital costs to refit and rehabilitate the existing 1,000 tpd process plant, then upgrade it to a capacity of 1,500 tpd, are presented in Table 21.4. The main piece of equipment required to achieve the increased throughput is a secondary cone crusher. The paste backfill plant requires a set of vacuum filters to dewater the tailings, and a capacity increase.

**TABLE 21.4**
**PROCESS PLANT CAPITAL COSTS**

| Item | Cost ($M) |
|---|---|
| General Refit/Rehab | 1.20 |
| Secondary Crushing Circuit | 2.50 |
| Ball Mill Motor and Controls | 0.25 |
| Grinding Circuit, Cyclone Upgrade, Trash Screen, Auto Sampler | 0.35 |
| Flotation | 0.60 |
| Regrind Rougher Concentrate | 0.08 |
| Concentrate Handling | 0.15 |
| Laboratory Refit | 0.25 |
| Tailings Pumps and Thickener, Auto Sampler | 0.10 |
| Paste Backfill Plant Upgrade | 1.75 |
| Supporting Equipment, Facilities | 3.25 |
| Freight, Engineering, Project Management | 2.62 |
| **Total Capital Cost (pre-contingency) [1]** | **13.10** |

*[1] Totals may not sum due to rounding.*

### 21.1.6 Tailings Management Area

Water that will be pumped from the underground workings is slightly saline and requires treatment for removal of suspended solids and Radium 226. Tailings decant water may be used as process water if supported by test results; excess water to be discharged to the environment will require treatment for the removal of suspended solids and minor amounts of nickel. Treatment of these water sources during pre-production, and expansion of the water treatment plant for the 1,500 tpd processing capacity, is estimated at $1.55M. This cost also includes expanding settling ponds and the installation of baffles and automatic sampling systems to ensure compliance with effluent criteria. A tertiary polishing basin will also be constructed.

The 8 ha interim tailings storage facility contains 410,000 t of tailings and is at its storage capacity. The facility will be closed, covered with glacial till and vegetated. Half of the work will be completed during pre-production ($0.35M) and the other half during the first year of production.

The 36.3 ha tailings storage starter cell was constructed in 2011, with a 4.3 ha decant pond. Embankment spillways, dam buildup, upstream membrane installation, and seepage collection were not completed, and vegetation needs to be removed, at an estimated cost of $2.15M. Half of the dam buildup required to contain seven years of tailings is planned during pre-production, with the other half to be completed in the first year of production.

Total tailings management capital costs are estimated at $4M as presented in Table 21.5.

**TABLE 21.5**
**TAILINGS MANAGEMENT CAPITAL COSTS**

| Item | Cost ($M) |
|---|---|
| Management of Water Sources | 0.05 |
| Water Treatment Plant | 1.50 |
| Closure of Interim Tailings Storage Facility | 0.35 |
| TMA Starter Cell | 2.15 |
| **Total Capital Cost (pre-contingency) [1]** | **4.05** |

*[1] Totals may not sum due to rounding.*

### 21.1.7 Owner's Costs

Owner's costs are estimated at $5M and include management and support staff wages during the one-year pre-production period, with expenses for operating the site offices, minor environmental and permitting costs, insurance, community programs, electrical power, camp operation, personnel transportation and an allowance for miscellaneous site maintenance.

### 21.1.8 Contingency

A 15% contingency has been applied to all capital costs, estimated at $11M.

## 21.2 SUSTAINING COSTS

Sustaining capital costs during the 13-year production period are estimated to total $192M and are presented in Table 21.6. The costs are primarily for sustained underground mine development and equipment and to incrementally increase the Tailings Management Facility capacity. An additional $14 million is estimated for closure costs, of which the Company has already paid a $2.54M financial security bond.

| TABLE 21.6<br>SUSTAINING CAPITAL COSTS | |
|---|---|
| **Item** | **Cost ($M)** |
| Underground Mine Development | 73.0 |
| Other Underground Mining Capital | 85.0 |
| Tailings Management Facility | 8.8 |
| Contingency | 25.0 |
| **Total Sustaining Capital Costs [1]** | **191.8** |

*[1] Totals may not sum due to rounding.*

### 21.2.1 Underground Mine Development

During the production period, sustaining capital development supporting the expansion of the mine to depth, as well as level development in existing areas, will be undertaken. This includes the development of ramps, level accesses, HW drifts, and both lateral and vertical infrastructure development. The total sustaining capital cost of underground development over the LOM is estimated at $73.0M, pre-contingency, as shown in Table 21.7.

| TABLE 21.7<br>UNDERGROUND DEVELOPMENT SUSTAINING CAPITAL COSTS | |
|---|---|
| **Item** | **Cost ($M)** |
| Ramps | 15.0 |
| Level Development | 47.9 |
| Lateral Infrastructure Development | 2.2 |
| Ventilation – Drop Raises | 3.6 |
| Ventilation – Alimak Raises | 3.1 |
| Ventilation – Raisebore Raises | 1.2 |
| **Total (pre-contingency) [1]** | **73.0** |

*[1] Totals may not sum due to rounding.*

### 21.2.2 Other Underground Mining Capital

Other sustaining capital costs include all CAPEX associated with the expansion, upgrade, relocation or replacement of facilities and machinery necessary to support the operations of the Bucko Lake Mine that are incurred after the commencement of production in year one. These include, but are not limited to:

- Expansion of the backfill distribution piping system.
- Acquisition and replacement of items of the underground mobile fleet and fixed plant infrastructure.

- Fitment and installation of escapeways.

Other sustaining capital costs are estimated to total $85.0 M as presented in Table 21.8.

| **TABLE 21.8<br>OTHER SUSTAINING CAPEX FOR UNDERGROUND MINING** | |
|---|---|
| **Item** | **Cost ($M)** |
| Fleet Acquisition and Overhaul Costs | 71.6 |
| Backfill Plant and Reticulation | 1.1 |
| Ventilation, Dewatering and Compressed Air Systems | 6.1 |
| Truck Dump Grizzly and Rockbreaker System | 0.4 |
| Other General Infrastructure and Fitment | 5.6 |
| **Total (pre-contingency) [1]** | **85.0** |

*[1] Totals may not sum due to rounding.*

### 21.2.3 Tailings Management Area

The TMA will require capacity increases in production years one and six that are estimated to total $6.8M. The two increases will ensure adequate capacity for the 13-year mine life. Annual maintenance of the facility is estimated to total $2M over the LOM.

### 21.2.4 Contingency

A 15% contingency has been applied to all sustaining capital costs, estimated at $25M.

## 21.3 OPERATING COSTS

The majority of operating costs have been estimated from first principles, with a minor amount of factoring from historical actual site costs and estimates from the Author's experience at other mines. Operating costs have been summarized in Table 21.9.

| **TABLE 21.9<br>OPERATING COSTS** | |
|---|---|
| **Item** | **Operating Cost ($/t processed)** |
| Underground Mining | 66.03 |
| Processing | 17.73 |
| General & Administration | 9.97 |
| **Total Unit Cost [1]** | **93.74** |

*[1] Totals may not sum due to rounding.*

### 21.3.1 Underground Mining

The operating cost estimate addresses the costs associated with ongoing operation of the Bucko Lake Mine after the start of production. These costs include, but are not limited to:

- Operating development in the mineralized zone, whether mineralized or waste rock.
- Mine production, including all operations at the working face/stope, transport to the loading pocket, hoisting to surface, and backfilling with pastefill.
- Underground power consumption and mine air heating.
- Interest on leases.
- Indirect and mining G&A costs.
- Other items, including dayworks and sundries (general construction), delineation drilling and assaying.

Total OPEX for the operation is estimated at $297.2M from Y1 to Y13. Items normally considered to be OPEX that are incurred during the pre-production period (Y-1) have been capitalized.

Table 21.10 presents a breakdown of operating costs for the mine.

**TABLE 21.10**
**LIFE OF MINE UNDERGROUND OPERATING COSTS**

| Item | Cost ($M) | Cost per Tonne ($/t) |
|---|---|---|
| Cross-cuts | 84.2 | 12.91 |
| Attack Ramps | 1.1 | 0.17 |
| Delineation Drilling | 6.2 | 0.95 |
| Production | 128.3 | 19.69 |
| Hoisting | 10.8 | 1.65 |
| Backfill | 36.4 | 5.58 |
| Underground power consumption and mine air heating | 35.0 | 5.37 |
| Interest on leases | 7.7 | 1.19 |
| Indirect Salaries and G&A costs | 104.8 | 16.09 |
| Dayworks and Sundries | 15.8 | 2.43 |
| **Total [1]** | **430.3** | **66.03** |

*[1] Totals may not sum due to rounding.*

### 21.3.2 Processing

Process plant operating costs have been estimated taking into account historical operating costs, combined with first principles calculations and the Author's experience with similar process plants. Operating costs are estimated to average $17.73/t processed as presented in Table 21.11.

**TABLE 21.11**
**PROCESS PLANT OPERATING COSTS**

| Item | Annual Cost ($) | Unit Cost ($/t processed) |
|---|---|---|
| Labour | 4,748,830 | 9.43 |
| Safety Supplies | 18,000 | 0.04 |
| Reagents | 1,184,500 | 2.35 |
| Grinding Media | 894,000 | 1.77 |
| Power, 38 kWh/t, $0.045/kWh | 861,000 | 1.71 |
| Scale Calibration | 1,500 | 0.00 |
| Crusher Maintenance | 50,000 | 0.10 |
| Coarse Feed Blending | 378,000 | 0.75 |
| SAG Maintenance | 285,000 | 0.57 |
| Ball Mill Maintenance | 85,000 | 0.17 |
| Cyclones and Screens | 20,000 | 0.04 |
| Grinding Pumps | 15,000 | 0.03 |
| Float Cells and Pumps | 35,000 | 0.07 |
| Float Air System | 15,000 | 0.03 |
| Concentrate Thickener and Reagents | 15,000 | 0.03 |
| Larox Filter, Pumps, Conveyor Op and Maintenance | 85,000 | 0.17 |
| Tailings Pumps and Pipeline | 5,000 | 0.01 |
| Backfill Plant Maintenance | 155,000 | 0.31 |
| Fresh and Fire Water System | 5,000 | 0.01 |
| Dust Collection and Ventilation | 15,000 | 0.03 |
| Monitoring and Motor Control Center Maintenance | 7,500 | 0.01 |
| Freight | 50,000 | 0.10 |
| **Total Process Plant Opex [1]** | **8,928,330** | **17.73** |

*[1] Totals may not sum due to rounding.*

### 21.3.3 General and Administration

General and Administration costs are estimated at $5.2M annually, as summarized in Table 21.12. The costs are based on the 2012 budget for the operation, inflated to present day.

| Table 21.12<br>General and Administration Costs | | |
|---|---|---|
| **Item** | **Annual Cost ($)** | **Unit Cost ($/t processed)** |
| Labor | 3,089,000 | 5.85 |
| Camp Operation | 40,000 | 0.08 |
| Consumables | 83,000 | 0.16 |
| Safety and Environmental | 596,000 | 1.13 |
| Communication | 87,000 | 0.16 |
| Utilities | 111,000 | 0.21 |
| Communities and Rentals | 165,000 | 0.31 |
| Recruitment | 248,000 | 0.47 |
| Maintenance | 311,000 | 0.59 |
| Insurance | 470,000 | 0.89 |
| **Total G&A Opex [1]** | **5,200,000** | **9.85** |

*[1] Totals may not sum due to rounding.*

## 21.4 ROYALTIES

The Project is subject to royalties of 2.5% of NSR payable to Glencore. There is no buy-back provision applicable to the royalty. Total costs associated with NSR royalty payments are estimated at $32.2M over the LOM.

## 21.5 CLOSURE COSTS

A Bucko Closure Plan was prepared by WSP Golder in 2022 based on current site conditions and infrastructure. The report estimated closure costs at $8.5M including the cost of a seven-year post-closure monitoring program. Closure costs after the LOM plan in this PEA were estimated by the Authors to be $14M to close and rehabilitate the Bucko Lake Mine.

## 21.6 CASH COSTS AND ALL-IN SUSTAINING COSTS

Cash costs over the LOM, including royalties, are estimated to average US$4.91/lb Ni. All-In Sustaining Costs ("AISC") over the LOM are estimated to average US$6.48/lb Ni and include closure costs.

# 22.0 ECONOMIC ANALYSIS

**Cautionary Statement -** The reader is advised that the PEA summarized in this Technical Report is intended to provide only an initial, high-level review of the Project potential and design options. The PEA mine plan and economic model include numerous assumptions and the use of Inferred Mineral Resources. Inferred Mineral Resources are considered to be too speculative to be used in an economic analysis except as allowed by NI 43-101 in PEA studies. There is no guarantee the Project economics described herein will be achieved.

Economic analysis for the Bucko Lake Project has been undertaken for the purposes of evaluating potential financial viability. NPV and IRR estimates are calculated based on a series of inputs: costs (described in Section 21) and revenues (detailed in this Section). Revenues are derived from estimated process recoveries and contracted smelter payables.

Sensitivity analysis has been completed for post-tax NPV and IRR on a ±30% range of values for: nickel price, OPEX and CAPEX costs, and discount rate. US$ exchange rate sensitivity has not been performed, as both costs and revenues are expected to be accrued in Canadian dollars. All costs in the financial analysis are in Q4 2022 Canadian dollars unless otherwise stated (metal prices are in US$).

Under baseline scenarios (6% discount rate, US$9.84/lb Ni price, OPEX and CAPEX as set out in Section 21), the overall after-tax NPV of the Project is estimated at $169M ($205M pre-tax), with an IRR of 30%. This results in a payback period of approximately 3.3 years.

## 22.1 PARAMETERS

The revenue, and therefore profit and NPV, of the Project are influenced by the parameters detailed in Sections 22.1.1 to 22.1.5. Cost estimates are detailed in Section 21.

### 22.1.1 Nickel Price and Exchange Rate

The nickel price is based on the 24-month average monthly trailing price as of end of November 2022, and is projected at US$9.84/lb, with an exchange rate of 0.77 US$ per CAD$.

### 22.1.2 Discount Rate

A 6% discount rate was selected for the Project. The discount rate is based on considerations such as the Project being a restart, as opposed to a new operation, within the stable operating environment of the Thompson Nickel Belt of Manitoba, which is an area that has a long history of successful mining operations.

### 22.1.3 Costing

Costing has been performed from first principles using input from industry databases (CostMine), factors derived from the Author's experience in other Canadian mines, historical costs and budgets at the Bucko Lake Mine, and the current Canadian labour market. The mining method utilizes a proven extraction methodology (primarily long hole stoping with cemented paste backfill) with predictable costs for consumables, equipment and labour.

### 22.1.4 Concentrate Sales Agreement

Concentrate transport, smelting, refining, penalties and price participation costs are based on a sales agreement with Glencore that was established in 2007 before the mine went into production. The agreement remains in effect.

### 22.1.5 Other Inputs

The economic analysis is valid for the production schedule presented in Section 16 of this Technical Report. The underground mining schedule includes a ramp-up of production in Y1, starting at 56% capacity, reaching 92% capacity in Y2, then achieving full capacity of 1,500 tpd as of Y3. The process plant will be upgraded from 1,000 tpd to 1,500 tpd by the beginning of Y3.

The production rate is set at 528 ktpa, which is assumed to be a 1,500 tpd throughput rate for 96% process plant availability providing 352 days per year of processing. Alternatively, the production rate can be viewed as ~1,450 tpd for 365 days per year. Mine production grades do not vary from processing plant throughput grades, since minimal stockpiles are anticipated.

### 22.1.6 Royalties and Taxes

The Bucko Lake Project is subject to a 2.5% royalty on NSR payable to Glencore.

Taxes are estimated at 15% for Federal income tax, 12% for Provincial income tax, and an additional 11.5% for the Manitoba Mining Tax, for a maximum tax rate of 38.5% on taxable income. CaNickel is currently carrying approximately $43M in tax loss carry forwards, and after adjustments for CAPEX the operation is projected to pay taxes in the second half of the 13-year LOM.

## 22.2 SIMPLIFIED FINANCIAL MODEL

Table 22.1 shows a LOM summary financial model for the Bucko Lake Project, using baseline inputs (6% discount rate, US$9.84/lb Ni price, OPEX and CAPEX as set out in Section 21). A simplified financial model is presented in Table 22.2.

| Table 22.1<br>LOM Summary Financial Model | |
|---|---|
| **Cash Flow (Life of Mine)** | **Cost ($M)** |
| Revenue from Concentrate | 1,289.9 |
| (-) Operating Cost | - 610.8 |
| (-) Royalties | - 32.2 |
| (-) Closure Cost | - 14.0 |
| (-) Capital Spending | - 278.6 |
| Pre-Tax Cash Flow (undiscounted) | 354.2 |
| Pre-Tax NPV (6% discount rate) | 205.2 |
| Pre-Tax IRR (%) | 32 |
| (-) Taxes | - 61.3 |
| After-Tax Cash Flow (undiscounted) | 292.9 |
| After-Tax NPV (6% discount rate) | 169.4 |
| After-Tax IRR (%) | 30 |
| After-Tax Payback (years) | 3.3 |

**TABLE 22.2**
**SIMPLIFIED FINANCIAL MODEL**

| Item | Units | Y-1 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 | Y13 | Total [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tonnes Processed | kt | - | 293.9 | 486.8 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 528.0 | 455.9 | **6,517** |
| Processed Grade | %Ni | - | 1.34 | 1.28 | 1.31 | 1.27 | 1.27 | 1.16 | 1.36 | 1.38 | 1.08 | 0.88 | 0.88 | 0.86 | 0.85 | **1.14** |
| Concentrate | Wet kt | - | 26.0 | 41.2 | 45.7 | 44.4 | 44.2 | 40.3 | 47.5 | 48.1 | 37.6 | 30.7 | 30.5 | 30.1 | 25.5 | **491.8** |
| NSR Revenue | $M CAD | - | 68.2 | 108.1 | 119.8 | 116.4 | 115.8 | 105.8 | 124.5 | 126.1 | 98.6 | 80.7 | 80.2 | 78.9 | 66.8 | **1,289.9** |
| Operating Cost | $M CAD | - | (39.0) | (50.2) | (51.1) | (51.8) | (50.4) | (49.7) | (49.4) | (48.5) | (45.8) | (46.1) | (45.4) | (45.7) | (37.8) | **(610.8)** |
| Working Capital | $M CAD | - | (6.5) | - | - | - | - | - | - | - | - | - | - | - | 6.5 | **0.0** |
| Royalties | $M CAD | - | (1.7) | (2.7) | (3.0) | (2.9) | (2.9) | (2.6) | (3.1) | (3.2) | (2.5) | (2.0) | (2.0) | (2.0) | (1.7) | **(32.2)** |
| Closure Cost | $M CAD | - | - | - | - | - | - | - | - | - | - | - | - | - | (14.0) | **(14.0)** |
| CAPEX[2] | $M CAD | (86.7) | (31.5) | (17.7) | (19.5) | (18.6) | (19.3) | (23.1) | (15.9) | (11.8) | (9.7) | (9.5) | (7.2) | (6.1) | (2.0) | **(278.6)** |
| Cash Flow (Pre-Tax) | $M CAD | (86.7) | (10.5) | 37.5 | 46.2 | 43.1 | 43.2 | 30.3 | 56.1 | 62.8 | 40.7 | 23.1 | 25.5 | 25.2 | 17.8 | **354.2** |
| Income Taxes | $M CAD | - | - | - | - | - | - | (0.8) | (15.2) | (17.1) | (9.8) | (5.9) | (6.4) | (6.6) | 0.6 | **(61.3)** |
| Cash Flow (After-Tax) | $M CAD | (86.7) | (10.5) | 37.5 | 46.2 | 43.1 | 43.2 | 29.5 | 40.9 | 45.7 | 30.8 | 17.2 | 19.1 | 18.6 | 18.4 | **292.9** |
| Cumulative Cash Flow (After-Tax) | $M CAD | (86.7) | (97.2) | (59.7) | (13.5) | 29.6 | 72.8 | 102.3 | 143.2 | 188.9 | 219.7 | 236.8 | 255.9 | 274.5 | 292.9 | **292.9** |
| Yearly After-Tax NPV Addition | $M CAD | (84.2) | (9.6) | 32.4 | 37.7 | 33.1 | 31.3 | 20.2 | 26.4 | 27.8 | 17.7 | 9.3 | 9.8 | 9.0 | 8.4 | **169.4** |
| Cumulative After-Tax NPV at MOY | $M CAD | (84.2) | (93.8) | (61.4) | (23.7) | 9.4 | 40.8 | 60.9 | 87.4 | 115.2 | 132.9 | 142.2 | 152.0 | 161.0 | 169.4 | **169.4** |

***Note:*** *Y = year, MOY = middle of year.*

*1 Totals may not sum due to rounding.*

*2 CAPEX expenditures include 15% contingency. All expenditures in Y-1 have been capitalized.*

## 22.3 SENSITIVITY ANALYSIS

The Project NPV and IRR are sensitive to several factors, with the largest impacts coming from nickel price and changes to costs. Discount rate changes have minor impact to the NPV of the Project, and do not affect undiscounted metrics, such as payback period and IRR.

Of note is that the spot price of nickel at time of writing is approximately 132% of the base case price. Table 22.3 presents base case and spot price metrics for the Project.

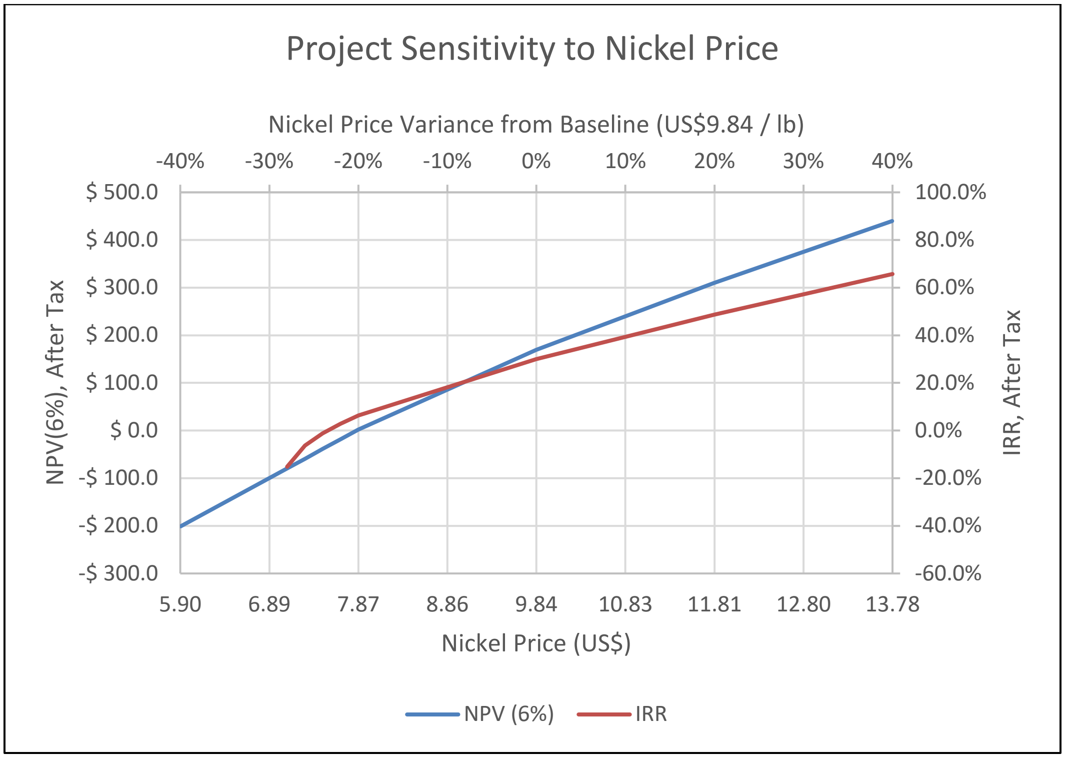
**TABLE 22.3**
**PROJECT BASE CASE VERSUS SPOT PRICE CASE FINANCIALS**

| Variables | Case | Base | Spot |
|---|---|---|---|
| | **US$/lb Ni** | **9.84** | **13.00** |
| Pre-Tax Metrics | $NPV_{6\%}$ (\$M) | 205 | 531 |
| | $NPV_{8\%}$ (\$M) | 171 | 461 |
| | IRR (%) | 32 | 65 |
| | Payback (years) | 3.3 | 1.9 |
| After-Tax Metrics | $NPV_{6\%}$ (\$M) | 169 | 389 |
| | $NPV_{8\%}$ (\$M) | 141 | 337 |
| | IRR (%) | 30 | 59 |
| | Payback (years) | 3.3 | 1.9 |

### 22.3.1 Metal Price Sensitivity

Nickel is the primary payable metal for the Bucko Lake Mine. While copper is present in the Deposit, only a nickel concentrate stream is produced, and copper provides additional value as a bi-product credit with Co, Au, Ag, Pt and Pd at an average combined equivalent payable contribution of approximately 4% Ni payable. Figure 22.1 shows the Project NPV and IRR sensitivity to changes in nickel price.

**FIGURE 22.1 PROJECT SENSITIVITY TO NICKEL PRICE CHANGE GRAPH**

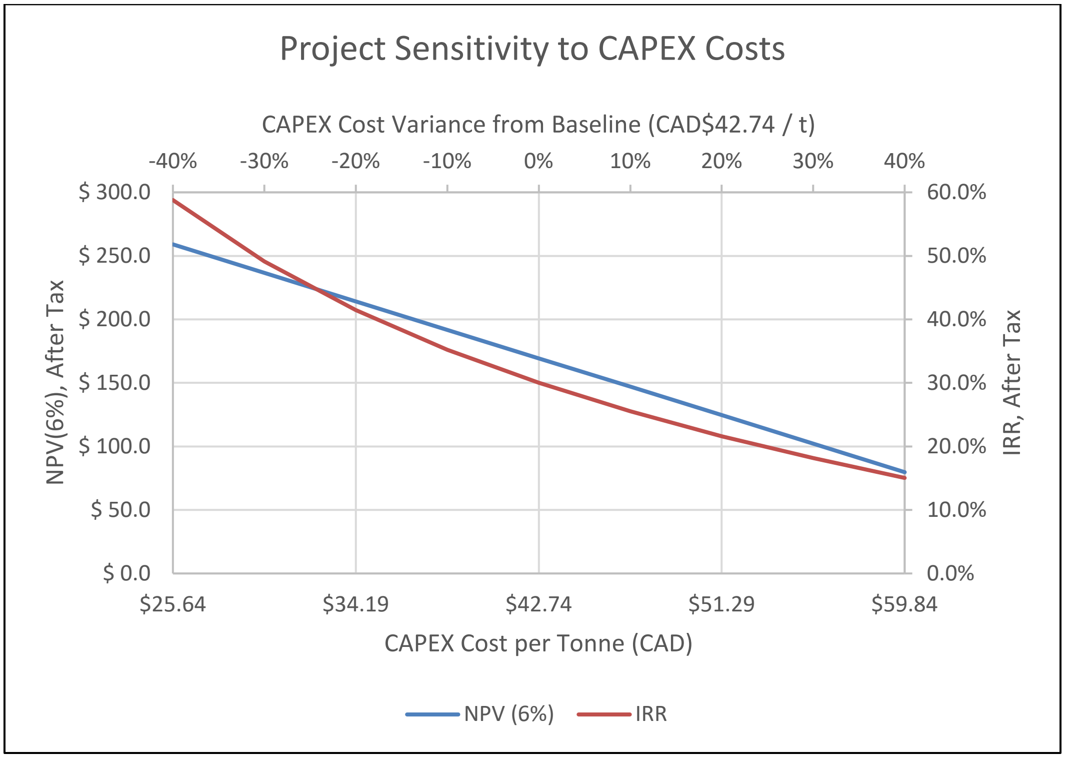



Note that for Figure 22.1, the IRR function produces irrational values when no positive cash flows exist. This occurs when the nickel price is changed by more than -29% from the baseline (when nickel price falls below US$7.00/lb). This area is not plotted in the figure.

### 22.3.2 CAPEX Cost Sensitivity

Baseline CAPEX costs are $42.74 per tonne over the LOM. Variance in CAPEX can be the result of changes in technology, required total quantities of items, increase in raw materials costs, and other sources. CAPEX costs for the Bucko Lake Mine are relatively low due to the site's existing infrastructure and, therefore, IRR and NPV are relatively sensitive to changes in CAPEX costs. Figure 22.2 shows the Project NPV and IRR sensitivity to changes in CAPEX costs.

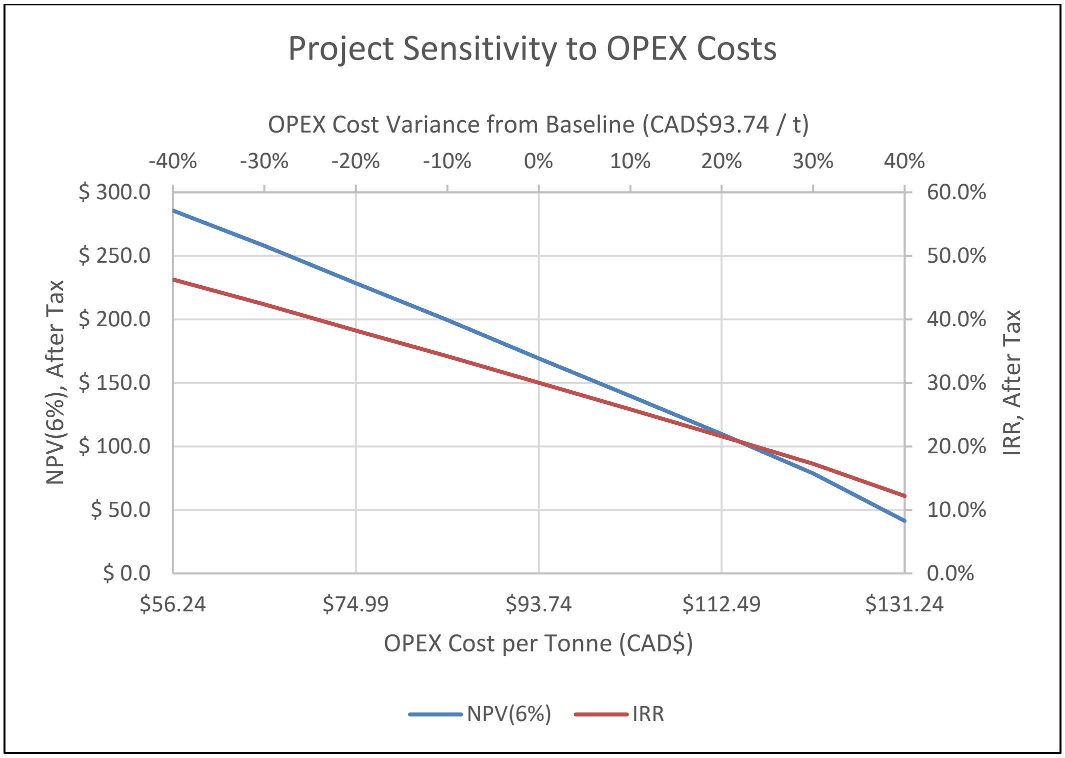
### FIGURE 22.2 PROJECT SENSITIVITY TO CAPEX COSTS CHANGE GRAPH




### 22.3.3 OPEX Cost Sensitivity

OPEX includes all costs associated with direct development (mineralized and waste drifts for production access), production and processing, in addition to indirect salaries, services costs, leasing costs and G&A, excluding costs accrued in the pre-production year. Baseline per-tonne OPEX is estimated at $93.74/t over the LOM. Variance in OPEX can be the result of changes in the Canadian labour market, increase in raw materials costs, changes in mining or processing parameters, general inflation, and other sources. Figure 22.3 shows the Project NPV and IRR sensitivity to changes in OPEX costs.

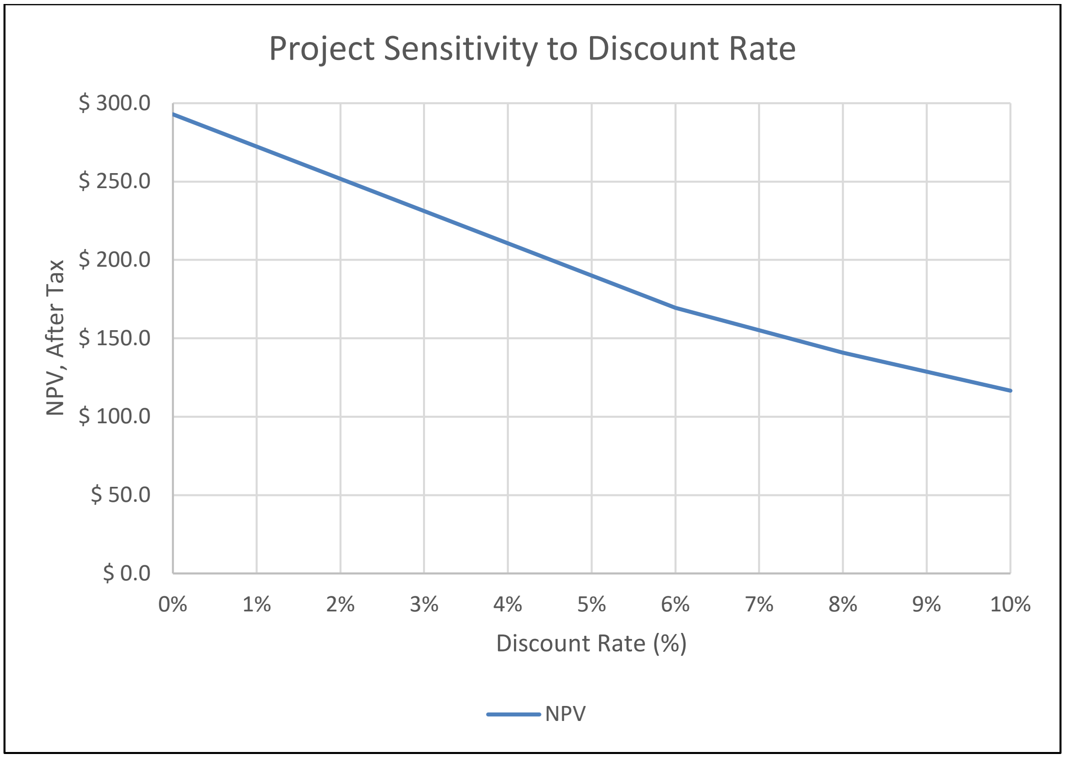
**FIGURE 22.3 PROJECT SENSITIVITY TO OPEX COSTS GRAPH**




### 22.3.4 Discount Rate Sensitivity

A variance in the discount rate could occur as a result of numerous factors, from market confidence to political or social risk. For the Bucko Lake Mine, as it is located in a stable political climate in a district with a history of mining and has historical production at site, a baseline discount rate of 6% has been selected. Note that since IRR is calculated from undiscounted cash flows, IRR is completely insensitive to changes in the discount rate. Figure 22.4 shows the Project NPV and IRR sensitivity to changes in discount rate.

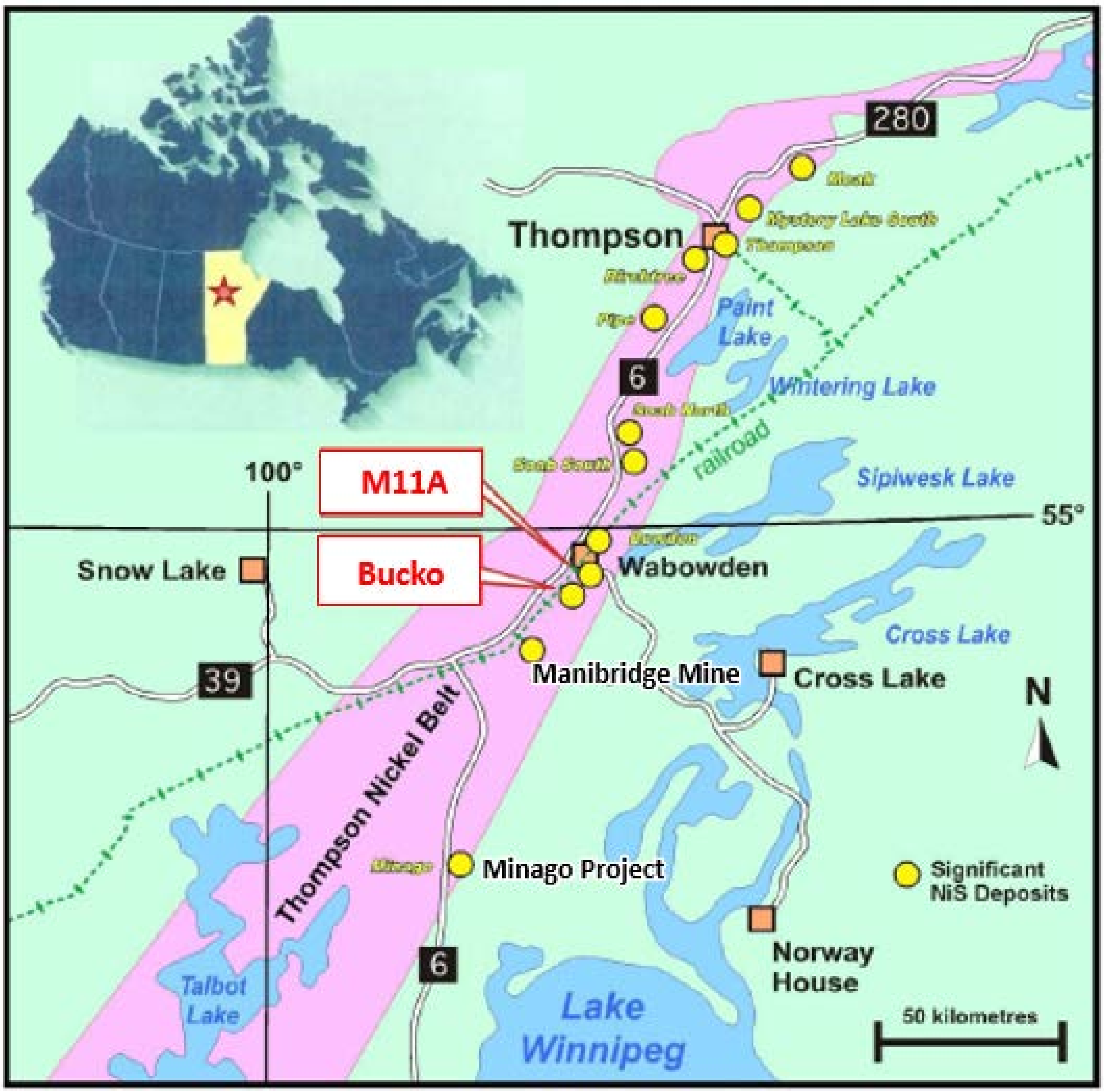
**FIGURE 22.4 PROJECT SENSITIVITY TO DISCOUNT RATE CHANGES GRAPH**



## 23.0 ADJACENT PROPERTIES

Within the Thompson Nickel Belt, many nickel mines and deposits exist (Figure 23.1). In the south part of the TNB the Manibridge Mine and the Minago Property are the best-known projects. The north part of the TNB, historically dominated by INCO (now Vale), hosts the Thompson Nickel Mine itself plus the Birchtree Mine, Pipe No. 1 Mine and Pipe No. 2 Open Pit Mines, the Soab Deposits, Moak Prospect, Brunne Lake Prospect, and many others. The Thompson Nickel Mine is at present the only operating mine in the TNB. The Birchtree Mine is on care and maintenance and the Pipe Mines are closed.

**FIGURE 23.1 ADJACENT PROPERTIES MAP**




*Source: Griffin et al. (2012)*

## 23.1 MANIBRIDGE NICKEL MINE

The Manibridge Mine Property is currently owned by CanAlaska Uranium Ltd. ("CanAlaska"). In a press release dated March 30, 2021, CanAlaska announced that it had entered into a Letter of Intent with D Block Discoveries ("DBD"), a private company wholly-owned by Ore Group Inc., to allow DBD to earn up to 100% interest in the 4,368 ha Manibridge Mine Project. DBD became Metal Energy later in 2021.

In 2022, Metal Energy commenced a drill program at the Manibridge Mine Property that aimed to confirm historical drilling results on the Property and expand the size of the nickel sulphide deposits. The drilling expenditure allowed Metal Energy to earn-in for a 49% ownership stake in Manibridge.

## 23.2 MINAGO NICKEL PROPERTY

The Minago Nickel Property is 100% owned by Flying Nickel Mining Corp. ("Flying Nickel"). Flying Nickel acquired Minago from Victory Nickel Inc. in February 2021. Subsequently, Flying Nickel announced an open-pit optimized Minago Mineral Resource Estimate ("MRE"), prepared by Mercator Geotechnical Services and AGP Mining Consultants, with an effective date of July 2, 2021. This MRE includes Measured plus Indicated Mineral Resources of 722 Mlb of contained nickel and an Inferred Mineral Resource of 319 Mlb of contained nickel grading 0.74% nickel, based on 86,118 m of drilling. The Minago Project has ready access to electric power, water and is adjacent to a paved provincial highway.

In 2022, Flying Nickel completed a drilling program consisting of six infill and exploration holes totalling 2,834 m. Assay results from the first three drill holes were released on November 14, 2022. Flying Nickel is in the process of completing a Feasibility Study on the Minago Property and a Notice of Alteration, which is required for the reissuance of the Environmental Act License by the province of Manitoba. No federal permit is required.

## 23.3 THOMPSON NICKEL MINE

The Thompson Nickel Mine has been in continuous production by INCO (now Vale) since 1961. Historically, the mine has consisted of open pit and underground mining operations. Currently, only the underground mine is operating. The Thompson smelter and refinery were shutdown by Vale in 2018, however, the nickel concentrator remains in operation. Past production from Thompson Mine totals at least 2,500 kt Ni metal. As of 2017, Mineral Reserve Estimates for the Thompson Mine were 27.54 Mt at 1.75% Ni (Lightfoot *et al*., 2017).

On June 29, 2021, Vale announced a $150M investment to extend the current mining activities in the Thompson Nickel Mine by 10 years and aggressively explore and expand known deposits, in order to extend nickel mining past 2040. The Thompson Mine will be expanded northwards and at depth to access recently developed nickel sulphide mineralization.

***The reader is cautioned that the Author has been unable to verify the information in this section and such information is not necessarily indicative of the mineralization on the Bucko Lake Property, which is the subject of this Technical Report.***

# 24.0 OTHER RELEVANT DATA AND INFORMATION

## 24.1 PROJECT RISKS AND OPPORTUNITIES

Risks and opportunities have been identified for the Project. The anticipated impact on the Project is listed in brackets after each item, using high-medium-low categories.

### 24.1.1 Risks

#### 24.1.1.1 Mineral Resource Estimate

- Future metal prices could cause a revision of the Mineral Resource Estimate. However, the current nickel spot price is much higher than the long-term forecasts used in the financial analysis of this PEA. (Low)

#### 24.1.1.2 Underground Mining

- The mine plan consists of approximately 70% Inferred Mineral Resources. Infill drilling is required to potentially convert Inferred to Indicated Mineral Resources and increase the confidence in the Mineral Resource Estimate. (Medium)

- Several pieces of used mining equipment have been assumed to be available from a major shareholder of the Company at reasonable terms. This equipment may not be available when required, resulting in new equipment purchases or leases. (Low)

#### 24.1.1.3 Processing Plant and Tailings

- With the planned increase in throughput from the nominal 1,000 tpd to the planned 1500 tpd, new bottlenecks may arise. The ball mill circulating load is expected to significantly increase, stressing slurry pumping and cyclone capacity. In addition to a review of these capacities, the installation of ball mill "scat" discharge handling should be considered. (Low)

- Restarting the Bucko Lake Mine process plant in cold weather should be avoided if possible to avoid incidental freezing. (Low)

#### 24.1.1.4 Financial Aspects

- Financial viability of the Project is very dependent on the nickel price. (Low)

### 24.1.2 Opportunities

#### 24.1.2.1 Mineral Resource Estimate

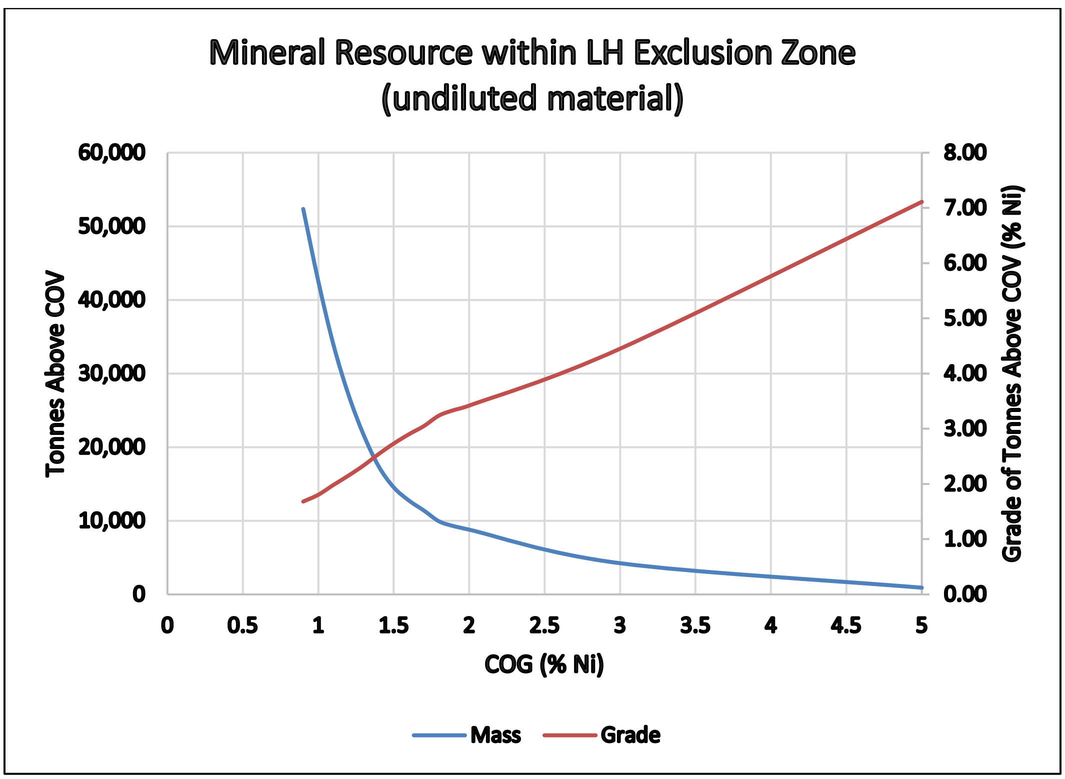
- The Bucko Lake Mineral Resource remains open along strike and particularly down dip. There is an opportunity to extend the Deposit with additional drilling. (Medium)

- Opportunities exist: three contiguous deposits are located within 4 km from the Bucko Lake Mine, and a fourth deposit is located approximately 30 km away. (Medium)

#### 24.1.2.2 Historical Workings Areas

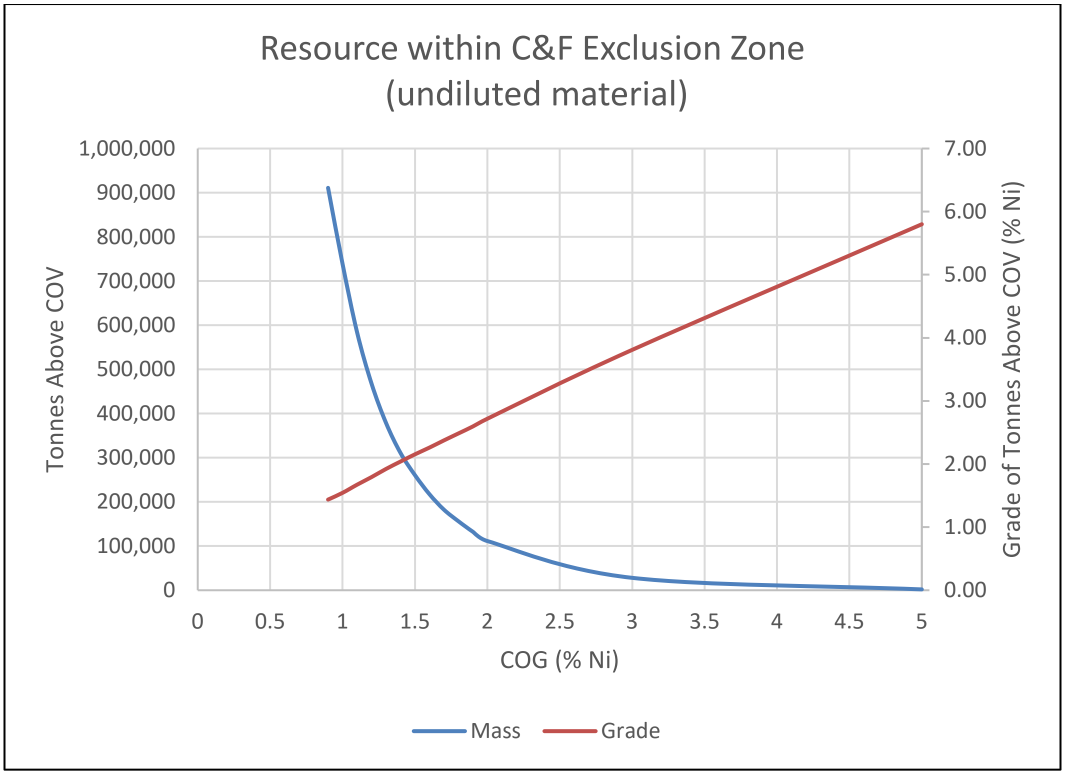
- Areas surrounding historical production stopes were excluded from the mine plan, as described in Section 16.4.3. Within these areas lies a significant quantity of mineralized material above the 0.9% Ni cut-off grade used for generating low-grade stopes. Grade-Tonnage curves for these areas are shown in Figure 24.1 (exclusion zone around historical long hole mining areas) and Figure 24.2 (exclusion zone around historical C&F mining areas).

**FIGURE 24.1 MINERAL RESOURCE POTENTIAL AROUND HISTORICAL LONG HOLE EXCLUSION ZONE**




***Note:*** *COV = cut-off value, COG = cut-off grade, LH = long hole.*

**FIGURE 24.2 MINERAL RESOURCE POTENTIAL AROUND HISTORICAL CUT AND FILL EXCLUSION ZONE**




***Note:*** *COV = cut-off value, COG = cut-off grade, C&F = cut and fill.*

There is potential that a portion of this material can be brought into the mine plan after operations have resumed and the exact condition of this zone is better understood. (High)

- Due to a lack of survey data, it is unclear whether all of the stopes within the delineated areas have actually been mined. Once operations recommence and the areas are accessible, it may be possible to find additional mineralized material that could potentially be brought into the mine plan. (Low)

#### 24.1.2.3 Underground Mining

- The mine design is planned at 20 m sublevel spacing. Once the operation is back in production and there is experience at that level spacing, it may be possible to increase the spacing. An increase to 25 m sublevel spacing would result in up to a 20% decrease in development costs depending on when the new spacing interval is implemented. (Medium)

- From a rock mechanics perspective, in the area in the middle of Mining Blocks 2 and 3 it is expected that mining individual stopes and the stopes in the FW lode (which is the lode furthest away from level access) are going to be the most challenging stopes to obtain. Approximately 167,000 t at 0.88% Ni were removed from the mine plan.

With mining experience and enhanced ground support it may be possible to recover these tonnes. (Medium)

- Expanded use of electric mining equipment, particularly LHDs, would reduce ventilation requirements. (Low)

- The Authors studied a mine design based primarily on the longitudinal retreat method to reduce development metres and still retain access, however, it restricted the production schedule to such an extent that it was not pursued further. This could be studied once the mine is in production and there is opportunity to complete infill drilling on the Mineral Resource. There may be potential to reduce both OPEX and CAPEX on certain levels. (Low)

- Costs for rehabilitation of the mine and shaft may be overstated. The mine is full of water, which is generally better for the longevity of ground support and timbers than being in damp air. (Low)

- No rheology test work has been undertaken to optimize the required cement content of the paste backfill, and there may be potential to reduce cement usage and OPEX from the amounts estimated by the Authors. (Low)

#### 24.1.2.4 Processing Plant and Tailings

- The process plant can be recommissioned and operated at nameplate capacity of 1,000 tpd for up to a year while bottlenecks are sorted out. Expansion to 1,500 tpd can be accomplished either concurrently in the first year or during the next year at minimal disruption to plant operation. (Medium)

- There is adequate space at the TMA for future expansion or extension of the LOM. (Medium)

- The installation of automatic, Vezin-type samplers in mill feed (cyclone overflow) and tailings streams would greatly assist in ensuring metallurgical accounting. Off-the-shelf or home-built samplers could be considered. Additionally, low-cost remote control and strategically located monitoring devices can assist plant operations and control. (Low)

#### 24.1.2.5 Financial Aspects

- Nickel is currently trading above the base case price of US$9.84/lb used in the PEA financial analysis. Using a recent spot nickel price of US$13.00/lb for the LOM, the Project generates after-tax $NPV_{6\%}$ of $389M and IRR of 59% at a payback period of 1.9 years. (High)

## 25.0 INTERPRETATION AND CONCLUSIONS

The Bucko Lake Property is located near the Town of Wabowden, in north-central Manitoba approximately 500 km north-northwest of the City of Winnipeg, and 110 km southwest of the City of Thompson. The Bucko Lake Mine and surrounding deposits benefit from excellent infrastructure including roads, rail, electrical power, internet, and equipment. The mine can be accessed and potentially operated all year.

The Bucko Lake Nickel Deposit was first discovered in 1964 and the mine was developed from 1971–1972 by Falconbridge Limited (subsequently Xstrata Nickel Inc., and now Glencore Canada Corporation), primarily for underground exploration drilling. The mine was closed in 1972. CaNickel (formerly Crowflight Minerals Inc. up to 2011) acquired the Bucko Lake Mine from Xstrata (now Glencore) in 2007.

The Bucko Lake Mine was constructed in 2008 and achieved commercial production in June 2009. The mine was in operation periodically in 2010 and 2011 before being placed into care and maintenance in May 2012 due to low nickel prices. Since then, the Company's main objective has been focused on carrying out minimal exploration work and running the care and maintenance program to safeguard assets.

The Bucko Lake Property is located within the Thompson Nickel Belt ("TNB"), a northeast-trending 10 to 35 km wide and 100 km long zone of reworked Archean basement gneisses and Paleoproterozoic cover rocks (Ospwagan Group) between the Superior Province to the east and the Churchill Province to the west, in northern Manitoba.

The Bucko Lake area of the Property is underlain by Archean gneisses and Paleoproterozoic Ospwagan Group metasedimentary and ultramafic intrusive rocks. The Archean gneisses are intruded by Paleoproterozoic ultramafic sills, including the Bucko Lake Ultramafic, which hosts the Bucko Lake nickel sulphide deposit.

Within the Bucko Lake Deposit, three main zones of nickel sulphide mineralization have been recognized: the West Limb Zone, the Hinge Zone, and the Footwall Zone. The West Limb and Hinge Zones each contain the Lower, Middle and Upper Zones of mineralization. Wide zones of lower-grade disseminated mineralization (generally >1.0% Ni) typically envelope higher grade net-textured to semi-massive sulphide layers or shoots (>3.0% Ni) within the host ultramafic intrusion. Sulphides are found along altered contacts with pegmatite dykes that cross-cut the intrusion. Mineralization consists of disseminated to net-textured sulphides, mainly pentlandite, pyrrhotite, pyrite and chalcopyrite with minor mackinawite, violarite and cubanite.

The Bucko Lake nickel sulphide deposits (Bucko Lake, Bowden, M11A and Apex) are classified as mineralization largely hosted within serpentinized ultramafic intrusions.

In total, 642 surface and underground drill holes totalling 152,328 m have been completed by Falconbridge and Crowflight/CaNickel at Bucko Lake. In addition, 153 drill holes totalling 65,653 m have been completed in the areas of the satellite deposits. Overall, 795 drill holes totalling 217,981 m have been completed on the Bucko Lake Nickel Property since 1962.

It is the Author's opinion that sample preparation, security and analytical procedures for the 2004 to 2012 Bucko Lake Mine Project drill programs were adequate and that the data is of good quality and satisfactory for use in the current Mineral Resource Estimate. The Authors consider that there is good correlation between Ni assay values in Canickel's database and the independent verification samples collected by the Authors and analyzed at ALS. The Authors are of the opinion that the drill data are of good quality and appropriate for use in the current Mineral Resource Estimate.

The testing and evaluation of concentration processes (grinding and flotation) have been comprehensive for the Bucko Lake Mineral Resource and have been conducted at several laboratories over several years. A high-grade nickel concentrate appears readily achievable by moderate grinding, rougher flotation and multi-stage flotation cleaning. No significant amount of additional metallurgical testing appears to be required.

In a news release dated January 16, 2023, CaNickel announced an updated Mineral Resource Estimate for its 100% owned Bucko Lake Mine. Mineral Resources at 0.70% Ni cut-off grade are 5,727 kt grading 1.24% Ni and 0.11% Cu in the Measured and Indicated classification and 10,587 kt grading 1.18% Ni and 0.13% Cu in the Inferred classification. The effective date of this Mineral Resource Estimate is January 13, 2023.

The updated Mineral Resource Estimate ("MRE") incorporates results from a total of 428 drill holes drilled from 1962 to 2013, of which 360 drill holes intersected the mineralization wireframes used for the MRE. Mined areas and barren pegmatite dykes were depleted from the Mineral Resource Estimate. Additionally, recent metal prices were incorporated into the estimate for the PEA. The 0.70% Ni cut-off grade was based on an underground long-hole method mining cost of \$60/t, processing cost of \$33/t, G&A cost of \$12/t, Ni price of US\$8.75/lb, 79% Ni process recovery, 90% smelter Ni payable, 16% mass pull, \$276/dry metric tonne (dmt) smelter treatment charge, \$105/wet metric tonne (wmt) concentrate freight cost, 2.5% NSR royalty, \$1/t MgO penalty charge and \$3/t price participation cost.

The Mineral Resources in this Technical Report were estimated in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM"), CIM Standards on Mineral Resources and Reserves, Definitions (2014) and Best Practices Guidelines (2019) prepared by the CIM Standing Committee on Reserve Definitions and adopted by the CIM Council. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues. The Inferred Mineral Resource in this estimate has a lower level of confidence than that applied to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of the Inferred Mineral Resource could potentially be upgraded to an Indicated Mineral Resource with continued exploration.

The Bucko Lake Deposit is open along strike and particularly down dip, and further drilling may provide additional Mineral Resources.

Despite underground development challenges associated with geotechnical stability experienced during previous operations at the Bucko Lake Mine from 2009 to 2012, there are no significant technical issues to prevent successful mining and processing of the nickel-copper mineralization.

Optimization of mining methods and LOM planning with cemented paste backfill hold the key to a successful mine restart and the following mine development strategies are being adopted to overcome previously known issues:

- Rehabilitate and re-use existing development where possible while avoiding stopes in historical production areas:
  - Refit and re-use the existing shaft for broken rock conveying.
  - Rehabilitate and re-use the existing ramp for trackless equipment access.
  - Convert the existing 1,000 ft (305 m) Level exploration drift into new primary access on the hanging wall ("HW") side of the Deposit.

- Change access orientation to the HW from the footwall (FW) to improve geotechnical stability of the parallel wireframed domains.

- Improve the ventilation system by relocating ventilation raises to the HW side of the deposit using raise-bore holes from the 1,000 ft Level to surface.

- Postpone capital development while mining previously accessed areas.

- Develop FW drifts to defer mining in low-grade areas, allowing for a "high-grade early" production profile.

- Alimak ventilation raises will be attached to FW drifts to facilitate bypassing of levels in a mining block versus using drop raises, allowing further postponement of lateral development.

- Areas of development to be situated away from weaker ultramafic contact areas. Development will be done either outside the ultramafic unit or fully inside the unit with improved ground support versus previous efforts at the mine. Intersections with the ultramafic unit, while unavoidable, will be minimized.

Mine design and planning were accomplished with the assistance of geomechanical input from Knight Piésold Ltd. based on review of the historical mine performance, experience at similar operating mines, and empirical methods. Knight Piésold provided several recommendations on the PEA underground mine plan.

Paterson & Cooke Canada Inc. reviewed the paste backfill system that was previously installed at the Bucko Lake Mine. The system was installed just prior to mine suspension in 2012 and therefore was never commissioned. Recommendations were provided on rehabilitating equipment, completing the paste plant installation and future test work.

The PEA is based on an underground mine operating at a mining rate of 1,500 tpd for a mine life of 13 years. The mining method was selected to ensure maximum geotechnical stability and grade control flexibility while minimizing initial capital expenditure requirements. It is estimated to take one year of pre-production and a production ramp-up period of two years to reach the steady-state rate of 1,500 tpd. Key considerations of the underground mine design and production schedule are:

- Long-hole mining, on both transverse and longitudinal orientations, has been chosen as the main mining method with a small subset (~2% of tonnes) of cut-and-fill mining above existing workings.

- The sublevel spacing is set at 20 m (floor to floor) to allow use of top-hammer or in-the-hole drills. Mining will be carried out bottom-up in "blocks" approximately 100 to 150 m in height.

- A stope width of 12 m (along strike) was selected to limit the hydraulic radius, enhance stability and reduce cable bolting requirements.

- Cemented paste backfill will replace previous backfill practices to improve stope stability, enhance stope cycling and to reduce the amount of tailings stored on surface.

- A modular approach to mining will be used:
    - Stopes will be segregated into high-grade (average 1.31% Ni mined grade) and low-grade (average 0.88% Ni mined grade) areas using a 1.0% Ni mined grade as the nominal split.
    - Low-grade mining areas are deferred where possible to postpone development costs and improve the production grade profile (segregation and selection done both vertically and laterally).
    - A combination of cemented paste backfill, transverse crosscuts, and top-hammer drills will allow for the extraction of low-grade stopes situated between mined-out high-grade stopes later in mine life using up-hole drilling.

- Mining will be kept above the 1,000 ft Level until high-grade stopes in the area are depleted prior to developing a ramp to the next block to minimize CAPEX. This strategy will be repeated in consecutive blocks until the maximum mine depth of approximately 900 m below surface is reached.

- Initial production will use diesel trucks to haul material to the shaft with later production to use battery-powered electric trucks to limit ventilation requirements as the mine progresses deeper.

- Trucks will not enter FW drifts and load-haul-dump equipment will haul all material to level access re-muck bays where the trucks will be loaded. This allows smaller FW drift profiles and reduces ventilation requirements on the levels.

- Trucks will predominantly haul to the shaft and a portion of the tonnage from above the 1,000 ft Level will be trucked up the existing ramp directly to surface.

The Bucko Lake Mine is planned to produce 6.5 Mt of mineralized material at a nominal production rate of 1,500 tpd with average grades of 1.14% Ni and 0.11% Cu over a 13-year mine life. Production will consist of 1.9 Mt from the Measured and Indicated Mineral Resource at 1.16% Ni and 0.10% Cu, and 4.6 Mt from the Inferred Mineral Resource at 1.14% Ni and 0.12% Cu. External stope dilution is estimated to average 13% by mass over the mine life. Total contained nickel is estimated at 164 Mlb and the LOM amount of payable nickel is estimated at 101 Mlb.

The Bucko Lake Mine process plant had been designed to process nickel-rich mineralized material from the underground Bucko Lake Mine. Upgrades to the conventional flotation plant have been envisaged to be consistent with the Company's existing permits. The current process plant design includes jaw and cone crushers, rod and ball mills, flotation circuit with rougher/scavenger/cleaner cells, concentrate thickener, Larox pressure filter, concentrate handling facility for transport to a smelter, paste backfill plant, and a tailings storage facility with water reclaim.

Other than rehabilitation of existing equipment, process plant upgrades to a 1,500 tpd capacity are planned to consist of the following installations: a secondary cone crusher with associated screens, conveyors and dust collection; an expanded crushed mineralized material feed bin; additional flotation cells, including a column cell for the final cleaning stage; a rougher concentrate regrind mill; and modification and completion of the paste backfill plant, including the installation of vacuum filters.

Based on historical metallurgical test work and subsequent analysis, the average nickel recovery is estimated to be 79% with an average 13% Ni concentrate grade. Copper and other minor metals are payable at an additional 4% above the Ni NSR payable based on a conservative estimate of historical production information from 2009 to 2012. Concentrate production is estimated to commence at 26,000 wet tonnes in the first year of operation, subsequently averaging 42,000 wet tonnes per year in the peak Ni grade years, and 30,000 wet tonnes per year thereafter.

Existing mine infrastructure is sufficient for a 1,000 tpd operation. Rehabilitation and refit of some components will be required to place the mine back into production. The PEA envisages initial expansion of the process plant to 1,500 tpd capacity, with expansion of the tailings storage facility and water treatment plant. While the underground mine is developed over the LOM, periodic capacity increases will be carried out to the tailings management area (“TMA”) to ensure adequate dam freeboard.

WSP Golder Associates Ltd. prepared a 2021 ITSF and TMA Safety Assessment Report in April 2022 (WSP Golder 2022). Visual inspections of the dams and dykes of the ITSF and TMA indicated that the structures were in good condition and were functioning as required at the time of a site visit in October 2021.

The Authors based a US$9.84/lb nickel price on the two-year monthly trailing average price as of the end of November 2022. The 0.77 US$ = 1.00 CAD$ exchange rate was based on the three-year monthly trailing average rate as of the end of November 2022. Both the metal price and currency exchange rate are subject to spot market conditions. There are no metal streaming or hedging agreements in place.

Concentrate transport, smelting, refining, penalties and price participation costs are based on a sales agreement with Xstrata (now Glencore) that was established in 2007 before the mine went into production, which remains in effect. Previous contracts for underground mining and supply of materials have been terminated. Other than the Glencore agreement, there are no major contracts currently in place that would affect the mine operation.

There are no known significant environmental liabilities at the Bucko site. To restore and upgrade the Bucko Lake Mine including a potential new access road, the existing Manitoba Environment Act License 2808 RR, issued in September 2011 under the Manitoba Environment Act, requires the submission and approval of a Notice of Alteration ("NOA"). The NOA must be reviewed and approved by the Manitoba Conservation and Climate, Environmental Approvals Branch. The NOA will include details of the Bucko Lake Nickel Project such as construction activities, timing, emission controls and waste management strategies, as well as environmental effects of the proposed Alteration. Once an NOA has been issued for the Project, and with Manitoba approval, permit and license applications can be submitted for other specific Bucko revitalization-related activities such as mine dewatering and underground rehabilitation, petroleum storage, and hazardous waste management. The only federal permit or approval required is related to the storage and management of explosives.

A Closure Plan in a report by WSP Golder 2022 includes details on the aspects of Closure that are needed to develop an estimate of closure costs, including the cost of a seven-year post-closure monitoring program. Changes are expected if the Bucko Lake Nickel Project is significantly modified during potential operations.

Initial capital cost estimates are relatively modest at $87M given that much of the Project infrastructure is in place. The majority of the costs are related to underground mine rehabilitation and pre-production development, followed by process plant capacity upgrades. Sustaining capital costs over the LOM are estimated at $192M. The costs are primarily for sustained underground mine development and equipment and to incrementally increase the TMA capacity. An additional $14M is estimated for closure costs, of which the Company has already paid a $2.5M financial security bond.

The majority of operating costs have been estimated from first principles, with a minor amount of factoring from historical actual site costs and estimates from the Author's experience at other mines. Operating costs for underground mining, processing and G&A are estimated to average $93.74/t and total $611M over the LOM.

The PEA indicates that the Project would be rehabilitated from its current "care and maintenance" status and placed into operation to produce 101 Mlb of payable nickel over a 13-year mine life.

The Project is subject to an NSR royalty of 2.5% payable to Glencore. Total costs associated with NSR royalty payments are estimated at $32.2M over the LOM.

Cash costs over the LOM, including royalties, are estimated to average US$4.91/lb Ni. All-In Sustaining Costs ("AISC") over the LOM are estimated to average US$6.48/lb Ni and include closure costs.

At a 6% discount rate and US$9.84/lb price, the after-tax NPV of the Project is estimated at $169M ($205M pre-tax), with an IRR of 30% (32% pre-tax). This results in a payback period of approximately 3.3 years. The Project NPV breaks even at a -20% nickel price of US$7.87/lb. At current spot prices at +30% nickel price of US$12.79/lb and a 6% discount rate, after-tax NPV of the Project is estimated at $376M ($510M pre-tax), with an IRR of 57% (63% pre-tax).

This PEA supersedes the previous Technical Report for the Project date October 19, 2012 (Griffin et al.), and Mineral Reserves are no longer declared for the Project.

## 26.0 RECOMMENDATIONS

The Authors consider that the Bucko Lake Project contains a significant nickel-copper Mineral Resource that merits further evaluation. This PEA shows potential economic viability for an underground mining and processing plan. The plan is based on a Mineral Resource that is classified as approximately 70% Inferred and 30% Indicated. To advance the Project to the next level of study, a diamond drill program is required to convert Inferred Mineral Resources to Indicated Mineral Resources. The Author's recommended work program includes infill diamond drilling while the underground workings are dewatered and rehabilitated, then further infill diamond drilling from underground. An advanced geotechnical study is required before a Pre-Feasibility Study can be conducted.

Specific recommendations are listed below.

The Authors recommend that further diamond drilling should be directed to convert Inferred Mineral Resources to Indicated Mineral Resources. Historical drilling has typically reported assays for Ni/Cu/Co/MgO/S/Fe. It is recommended that all future drill core samples include assays for Au/Ag/Pt/Pd.

Knight Piésold provided the following key recommendations on the PEA underground mine design and production plan:

- Long Hole Stope Sizing: A strike length of 12 m and HW to FW span of 8 to 12 m, depending on rock mass quality. A sub-level spacing of 20 m was specified by the Authors.

- Cut and Fill Stope Sizing: Maximum stope size of 4 to 5 m wide by 5 m high. Larger HW-FW spans can be managed with multiple cuts. Tight filling will be required to maintain the stability of the stopes.

- Ground Support: The existing ground support standards were updated. In addition to primary support, long hole stopes will require long support.

- Sequencing: The PEA design involves mining the high-grade stopes first, followed by the low-grade stopes. The interactions between the high and low-grade stopes are complex due to the geometry of the mineralized zones. Sequencing will require a detailed evaluation in the next level of design.

- Inter-Lode Pillars: Where stopes can be mined FW to HW, a 7 m inter-lode pillar between the stopes is expected to be achievable and is believed to be a suitable thickness for a PEA study.

- Hanging Wall Drift Offset: The HW drift should be offset from the mineralization at least 20 m and, where possible, should be located in the gneiss at least 5 m away from the lithology contact.

- Shaft Extension: Extending the current shaft another 300 m is expected to be reasonable given that it is expected to stay within the higher quality gneiss. Additional information in the next level of design will be required to confirm the feasibility of the extension.

Knight Piésold recommended the following paste backfill strengths as being appropriate for the planned PEA stope dimensions and mining strategy:

- 250 kPa for stopes where the paste will be exposed in the side or end walls; and

- 1,500 kPa for stopes where the paste will be undercut by future stopes.

The paste backfill strength recommendations assume that only one side or end wall of the paste backfill will be exposed at any given time.

At 1,500 tpd process plant capacity, the ball mill circulating load is expected to significantly increase, stressing slurry pumping and cyclone capacity. In addition to a review of these capacities, the installation of ball mill "scat" discharge handling should be considered.

For the process plant, the installation of automatic, Vezin-type samplers in mill feed (cyclone overflow) and tailings streams would greatly assist in ensuring metallurgical accounting. Off-the-shelf or home-built samplers could be considered. Additionally, low-cost remote control and strategically located monitoring devices can assist plant operations and control.

Recommendations on the cemented paste backfill system were provided by Paterson & Cooke as follows:

- Reassessment of the suitability of 28-day 1 MPa backfill strengths.

- A full mechanical inspection/audit should take place to confirm what is installed versus the design, confirm condition of the equipment after sitting for 10 years, and to confirm the pump duties are suitable for their tasks.

- Rheology and strength test work should be completed to determine a suitable paste recipe.

- The underground distribution system design should then be completed after the rheology test work has been completed.

- A commissioning program should take place before production commences.

Golder Associates noted that during the 2011–2012 construction of the TMA the following was not completed, and will need to be completed prior to the resumption of mining operations:

- Erosion protection placement on the downstream face of the SC dam and decant pond dam.

- Road surface placement on the crest of the SC dam and West Dyke.

- TMA dams and dyke construction to design crest elevations.
- TMA seepage collection ditches and sumps, and diversion ditch construction.
- SC temporary emergency spillway construction at the south end of the West Dyke.

Golder recommended that resumption of tailings operations should be accompanied by a review of the water balance and storage capacity of the SC along with a Dam Safety Review. The SC pond should be drained to remove the vegetation inside the pond to provide tailings storage capacity. An Operation, Maintenance and Surveillance ("OMS") Manual should be developed for the TMA prior to resumption of tailings deposition.

It is the Author's opinion that the Bucko Lake Project has the potential to be financially viable. The Authors recommend advancing the Project with infill drilling. Access to underground workings would reduce drilling expenditures, therefore, it is recommended that the underground be dewatered and rehabilitated. A drill spacing of 25 m along strike and 35 m down dip has been used to estimate the drilling required to potentially convert all Inferred Mineral Resources to Indicated Mineral Resources. Once a detailed geotechnical study is completed, a Pre-Feasibility Study can be carried out.

To be able to carry out this work program the submission and approval of an NOA through the Manitoba government would need to be completed. Once an NOA has been issued for the Project, permit and license applications can be submitted for activities such as mine dewatering and underground rehabilitation, and petroleum storage.

A recommended $9.0M work program is proposed in Table 26.1.

**TABLE 26.1**
**RECOMMENDED WORK PROGRAM AND BUDGET**

| Program | Units (m) | Unit Cost ($/m) | Budget ($M) |
|---|---|---|---|
| Infill Drilling From Surface | 3,820 | 150 | 0.6 |
| Dewater and Rehab UG Workings | | | 1.0 |
| Infill Drilling From UG | 28,300 | 150 | 4.2 |
| Advanced Geotechnical Study | | | 0.5 |
| Pre-Feasibility Study | | | 1.5 |
| Contingency (15%) | | | 1.2 |
| **Total** | | | **9.0** |

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# 28.0 CERTIFICATES

## CERTIFICATE OF QUALIFIED PERSON

## ANDREW BRADFIELD, P. ENG.

I, Andrew Bradfield, P. Eng., residing at 5 Patrick Drive, Erin, Ontario, N0B 1T0, do hereby certify that:

1. I am an independent mining engineer contracted by P&E Mining Consultants.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of Queen's University, with an honours B.Sc. degree in Mining Engineering in 1982. I have practiced my profession continuously since 1982. I am a Professional Engineer of Ontario (License No.4894507). I am also a member of the National CIM.

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   I have practiced my profession continuously since 1982. My summarized career experience is as follows:

   - Various Engineering Positions – Palabora Mining Company, 1982-1986
   - Mines Project Engineer – Falconbridge Limited, 1986-1987
   - Senior Mining Engineer – William Hill Mining Consultants Limited, 1987-1990
   - Independent Mining Engineer, 1990-1991
   - GM Toronto – Bharti Engineering Associates Inc, 1991-1996
   - VP Technical Services, GM of Australian Operations – William Resources Inc, 1996-1999
   - Independent Mining Engineer, 1999-2001
   - Principal Mining Engineer – SRK Consulting, 2001-2003
   - COO – China Diamond Corp, 2003-2006
   - VP Operations – TVI Pacific Inc, 2006-2008
   - COO – Avion Gold Corporation, 2008-2012
   - Independent Mining Engineer, 2012-Present

4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Sections 2, 3, 15, 19, 24 and co-authoring 1, 21, 22, 25, 26, and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signing Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Andrew Bradfield]***

___________________________

Andrew Bradfield, P.Eng.

## CERTIFICATE OF QUALIFIED PERSON

## WILLIAM STONE, PH.D., P.GEO.

I, William Stone, Ph.D., P.Geo, residing at 4361 Latimer Crescent, Burlington, Ontario, do hereby certify that:

1. I am an independent geological consultant working for P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of Dalhousie University with a Bachelor of Science (Honours) degree in Geology (1983). In addition, I have a Master of Science in Geology (1985) and a Ph.D. in Geology (1988) from the University of Western Ontario. I have worked as a geologist for a total of 35 years since obtaining my M.Sc. degree. I am a geological consultant currently licensed by the Professional Geoscientists of Ontario (License No 1569).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is:
   - Contract Senior Geologist, LAC Minerals Exploration Ltd. 1985-1988
   - Post-Doctoral Fellow, McMaster University 1988-1992
   - Contract Senior Geologist, Outokumpu Mines and Metals Ltd. 1993-1996
   - Senior Research Geologist, WMC Resources Ltd. 1996-2001
   - Senior Lecturer, University of Western Australia 2001-2003
   - Principal Geologist, Geoinformatics Exploration Ltd. 2003-2004
   - Vice President Exploration, Nevada Star Resources Inc. 2005-2006
   - Vice President Exploration, Goldbrook Ventures Inc. 2006-2008
   - Vice President Exploration, North American Palladium Ltd. 2008-2009
   - Vice President Exploration, Magma Metals Ltd. 2010-2011
   - President & COO, Pacific North West Capital Corp. 2011-2014
   - Consulting Geologist 2013-2017
   - Senior Project Geologist, Anglo American 2017-2019
   - Consulting Geoscientist 2020-Present
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Sections 4 to 10, 23 and co-authoring Sections 1, 25, 26 and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and this Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signed Date: February 28, 2023

***{SIGNED AND SEALED}***
***[William Stone]***

_____________________________
William E. Stone, Ph.D., P.Geo.

## CERTIFICATE OF QUALIFIED PERSON

## YUNGANG WU, P.GEO.

I, Yungang Wu, P. Geo., residing at 3246 Preserve Drive, Oakville, Ontario, L6M 0X3, do hereby certify that:

1. I am an independent consulting geologist contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of Jilin University, China, with a Master's degree in Mineral Deposits (1992). I have worked as a geologist for 30 plus years since graduating. I am a geological consultant and a registered practising member of the Professional Geoscientists Ontario (Registration No. 1681).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is as follows:

   - Geologist –Geology and Mineral Bureau, Liaoning Province, China 1992-1993
   - Senior Geologist – Committee of Mineral Resources and Reserves of Liaoning, China 1993-1998
   - VP – Institute of Mineral Resources and Land Planning, Liaoning, China 1998-2001
   - Project Geologist–Exploration Division, De Beers Canada 2003-2009
   - Mine Geologist – Victor Diamond Mine, De Beers Canada 2009-2011
   - Resource Geologist– Coffey Mining Canada 2011-2012
   - Consulting Geologist 2012-Present
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for co-authoring Sections 1, 14, 25, 26 and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signing Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Yungang Wu]***

______________________________
Yungang Wu, P.Geo.

## CERTIFICATE OF QUALIFIED PERSON

## JARITA BARRY, P.GEO.

I, Jarita Barry, P.Geo., residing at 9052 Mortlake-Ararat Road, Ararat, Victoria, Australia, 3377, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of RMIT University of Melbourne, Victoria, Australia, with a B.Sc. in Applied Geology. I have worked as a geologist for over 17 years since obtaining my B.Sc. degree. I am a geological consultant currently licensed by Engineers and Geoscientists British Columbia (License No. 40875) and Professional Engineers and Geoscientists Newfoundland & Labrador (License No. 08399). I am also a member of the Australasian Institute of Mining and Metallurgy of Australia (Member No. 305397).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is:

   - Geologist, Foran Mining Corp. 2004
   - Geologist, Aurelian Resources Inc. 2004
   - Geologist, Linear Gold Corp. 2005-2006
   - Geologist, Búscore Consulting 2006-2007
   - Consulting Geologist (AusIMM) 2008-2014
   - Consulting Geologist, P.Geo. (EGBC/AusIMM) 2014-Present

4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Section 11 and co-authoring Sections 1, 12, 25, 26 and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signed Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Jarita Barry]***

______________________________

Jarita Barry, P.Geo.

## CERTIFICATE OF QUALIFIED PERSON

## D. GRANT FEASBY, P. ENG.

I, D. Grant Feasby, P. Eng., residing at 12,209 Hwy 38, Tichborne, Ontario, K0H 2V0, do hereby certify that:

1. I am currently the Owner and President of:
   FEAS - Feasby Environmental Advantage Services
   38 Gwynne Ave, Ottawa, K1Y1W9
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I graduated from Queens University in Kingston Ontario, in 1964 with a Bachelor of Applied Science in Metallurgical Engineering, and a Master of Applied Science in Metallurgical Engineering in 1966. I am a Professional Engineer registered with Professional Engineers Ontario. I have worked as a metallurgical engineer for over 50 years since my graduation from university.

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report has been acquired by the following activities:
   - Metallurgist, Base Metal Processing Plant.
   - Research Engineer and Lab Manager, Industrial Minerals Laboratories in USA and Canada.
   - Research Engineer, Metallurgist and Plant Manager in the Canadian Uranium Industry.
   - Manager of Canadian National Programs on Uranium and Acid Generating Mine Tailings.
   - Director, Environment, Canadian Mineral Research Laboratory.
   - Senior Technical Manager, for large gold and bauxite mining operations in South America.
   - Expert Independent Consultant associated with several companies, including P&E Mining Consultants, on mineral processing, environmental management, and mineral-based radiation assessment.
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for authoring Sections 13, 17, 18, 20 and co-authoring Sections 1, 21, 25, 26 and 27 of this Technical Report.
6. I am independent of the issuer applying the test in Section 1.5 of NI 43-101.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signed Date: February 28, 2023

***{SIGNED AND SEALED}***
***[D. Grant Feasby]***

D. Grant Feasby, P.Eng.

## CERTIFICATE OF QUALIFIED PERSON

## GREG ROBINSON, P. ENG.

I, David Gregory (Greg) Robinson, P. Eng. (ON), residing at 1236 Sandy Bay Road, Minden, ON, K0M 2K0, do hereby certify that:

1. I am an independent engineering consultant working for P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of Dalhousie University, Queens University and Cornell University, and Professional Engineer of Ontario (License No. 100216726).

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   I have practiced my profession continuously since 2008. My summarized career experience is as follows:
   - Associate Engineer, P&E Mining Consultants — Aug 2017 - Present
   - Mine Engineer, Lac des Iles Mine, North American Palladium — May 2016 – Jun 2017
   - Senior Underground Engineer, Phoenix Gold, Rubicon Minerals — Sep 14 – Jan 2016
   - Mine Engineer, Diavik Diamond Mine, Rio Tinto Diamonds — Sep 2011 – Sep 2014
   - Mine Engineer, Bengalla Mine, Rio Tinto Coal and Allied — Dec 2008 – Sep 2011
   - EIT, Creighton Mine, Vale-Inco — May2008 – Dec 2008
4. I have visited the Property that is the subject of this Technical Report on June 21, 2022.
5. I am responsible for authoring Section 16 and co-authoring Sections 1, 12, 21, 22, 25, 26 and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signing Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Greg Robinson]***

______________________________
Greg Robinson, P.Eng.

## CERTIFICATE OF QUALIFIED PERSON

## EUGENE PURITCH, P. ENG., FEC, CET

I, Eugene J. Puritch, P. Eng., FEC, CET, residing at 44 Turtlecreek Blvd., Brampton, Ontario, L6W 3X7, do hereby certify that:

1. I am an independent mining consultant and President of P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of The Haileybury School of Mines, with a Technologist Diploma in Mining, as well as obtaining an additional year of undergraduate education in Mine Engineering at Queen's University. In addition, I have also met the Professional Engineers of Ontario Academic Requirement Committee's Examination requirement for a Bachelor's degree in Engineering Equivalency. I am a mining consultant currently licensed by the: Professional Engineers and Geoscientists New Brunswick (License No. 4778); Professional Engineers, Geoscientists Newfoundland and Labrador (License No. 5998); Association of Professional Engineers and Geoscientists Saskatchewan (License No. 16216); Ontario Association of Certified Engineering Technicians and Technologists (License No. 45252); Professional Engineers of Ontario (License No. 100014010); Association of Professional Engineers and Geoscientists of British Columbia (License No. 42912); and Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (No. L3877). I am also a member of the National Canadian Institute of Mining and Metallurgy.

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

   I have practiced my profession continuously since 1978. My summarized career experience is as follows:

   - Mining Technologist - H.B.M.& S. and Inco Ltd., 1978-1980
   - Open Pit Mine Engineer – Cassiar Asbestos/Brinco Ltd., 1981-1983
   - Pit Engineer/Drill & Blast Supervisor – Detour Lake Mine, 1984-1986
   - Self-Employed Mining Consultant – Timmins Area, 1987-1988
   - Mine Designer/Resource Estimator – Dynatec/CMD/Bharti, 1989-1995
   - Self-Employed Mining Consultant/Resource-Reserve Estimator, 1995-2004
   - President – P&E Mining Consultants Inc, 2004-Present

4. I have visited the Property that is the subject of this Technical Report on February 07, 2005.
5. I am responsible for co-authoring Sections 1, 12, 14, 25, 26 and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101.
7. I have had prior involvement with the Project that is the subject of this Technical Report. I was a "Qualified Person" for a Technical Report titled "Technical Report Regarding Update to Reserves and Resources for the Bucko Lake Nickel Project, Wabowden, Manitoba", with a Mineral Resource effective date of December 31, 2008. I was a "Qualified Person" for a Technical Report titled "Technical Report on the Updated Bucko Lake Nickel Project Feasibility Study, Wabowden, Manitoba", with an effective date of November 28, 2006. I was also a "Qualified Person" for a Technical Report titled "Technical Report and Resource Estimate on the Bucko Lake Property, the Pas Mining District, Manitoba, Canada.", with a Mineral Resource effective date of October 24, 2005.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signed Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Eugene Puritch]***

______________________________
Eugene Puritch, P.Eng., FEC, CET

## CERTIFICATE OF QUALIFIED PERSON

## ANTOINE R. YASSA, P.GEO.

I, Antoine R. Yassa, P.Geo. residing at 3602 Rang des Cavaliers, Rouyn-Noranda, Quebec, J0Z 1Y2, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the Technical Report titled "Updated Mineral Resource Estimate and Preliminary Economic Assessment of the Bucko Lake Nickel Project, Wabowden, Manitoba", (The "Technical Report") with an effective date of January 13, 2023.
3. I am a graduate of Ottawa University at Ottawa, Ontario with a B. Sc (HONS) in Geological Sciences (1977) with continuous experience as a geologist since 1979. I am a geological consultant currently licensed by the Order of Geologists of Québec (License No 224) and by the Association of Professional Geoscientist of Ontario (License No 1890);

   I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

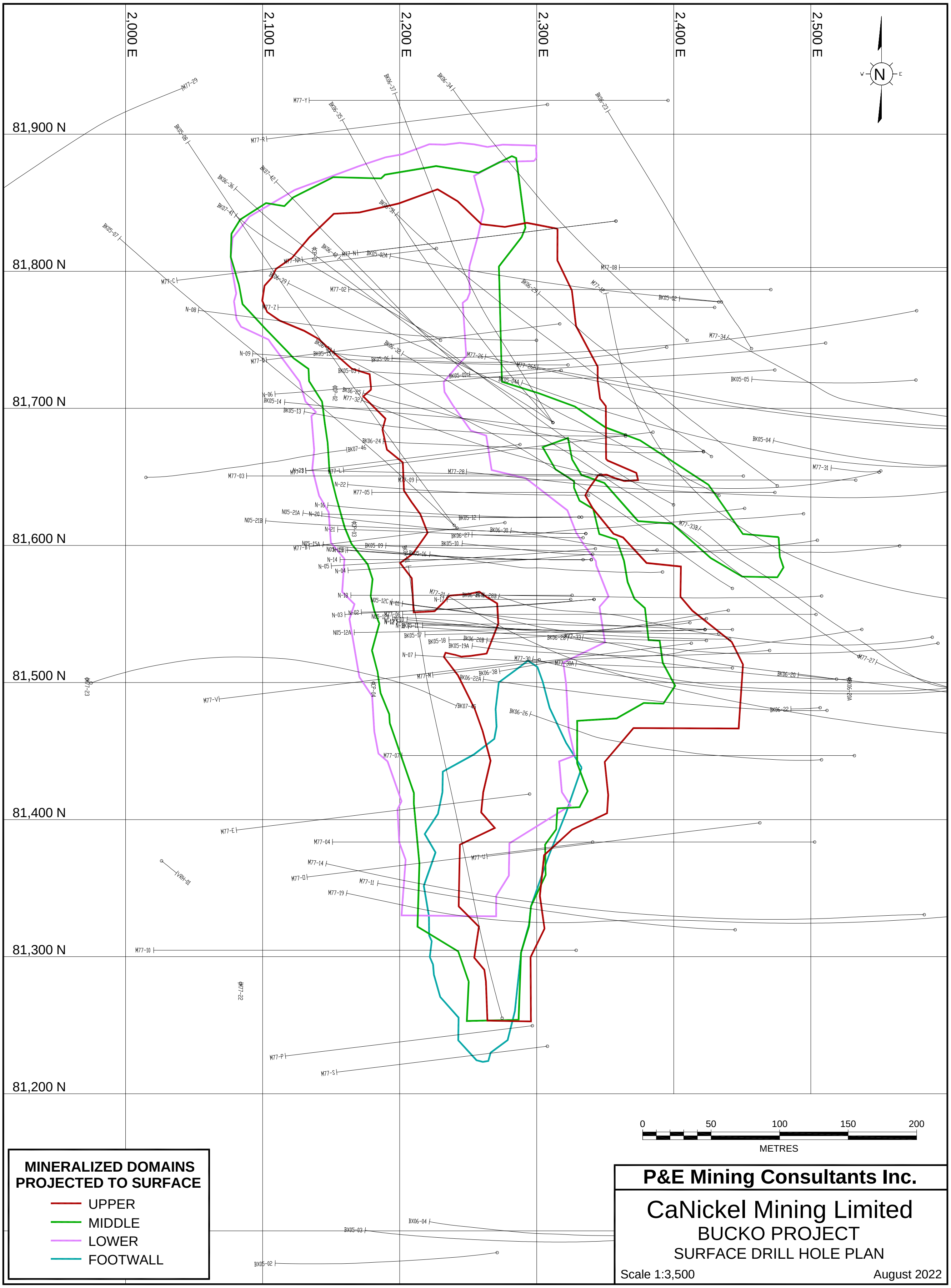
   My relevant experience for the purpose of the Technical Report is:
   - Minex Geologist (Val d'Or), 3-D Modeling (Timmins), Placer Dome 1993-1995
   - Database Manager, Senior Geologist, West Africa, PDX, 1996-1998
   - Senior Geologist, Database Manager, McWatters Mine 1998-2000
   - Database Manager, Gemcom modeling and Resources Evaluation (Kiena Mine) 2001-2003
   - Database Manager and Resources Evaluation at Julietta Mine, Bema Gold Corp. 2003-2006
   - Consulting Geologist 2006-present
4. I have not visited the Property that is the subject of this Technical Report.
5. I am responsible for co-authoring Sections 1, 14, 25, 26, and 27 of this Technical Report.
6. I am independent of the Issuer applying the test in Section 1.5 of NI 43-101. I am independent of the Vendor and the Property.
7. I have had no prior involvement with the Project that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1. This Technical Report has been prepared in compliance therewith.
9. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: January 13, 2023
Signing Date: February 28, 2023

***{SIGNED AND SEALED}***
***[Antoine R. Yassa]***

______________________________
Antoine R. Yassa, P.Geo.

# APPENDIX A DRILL HOLE PLANS



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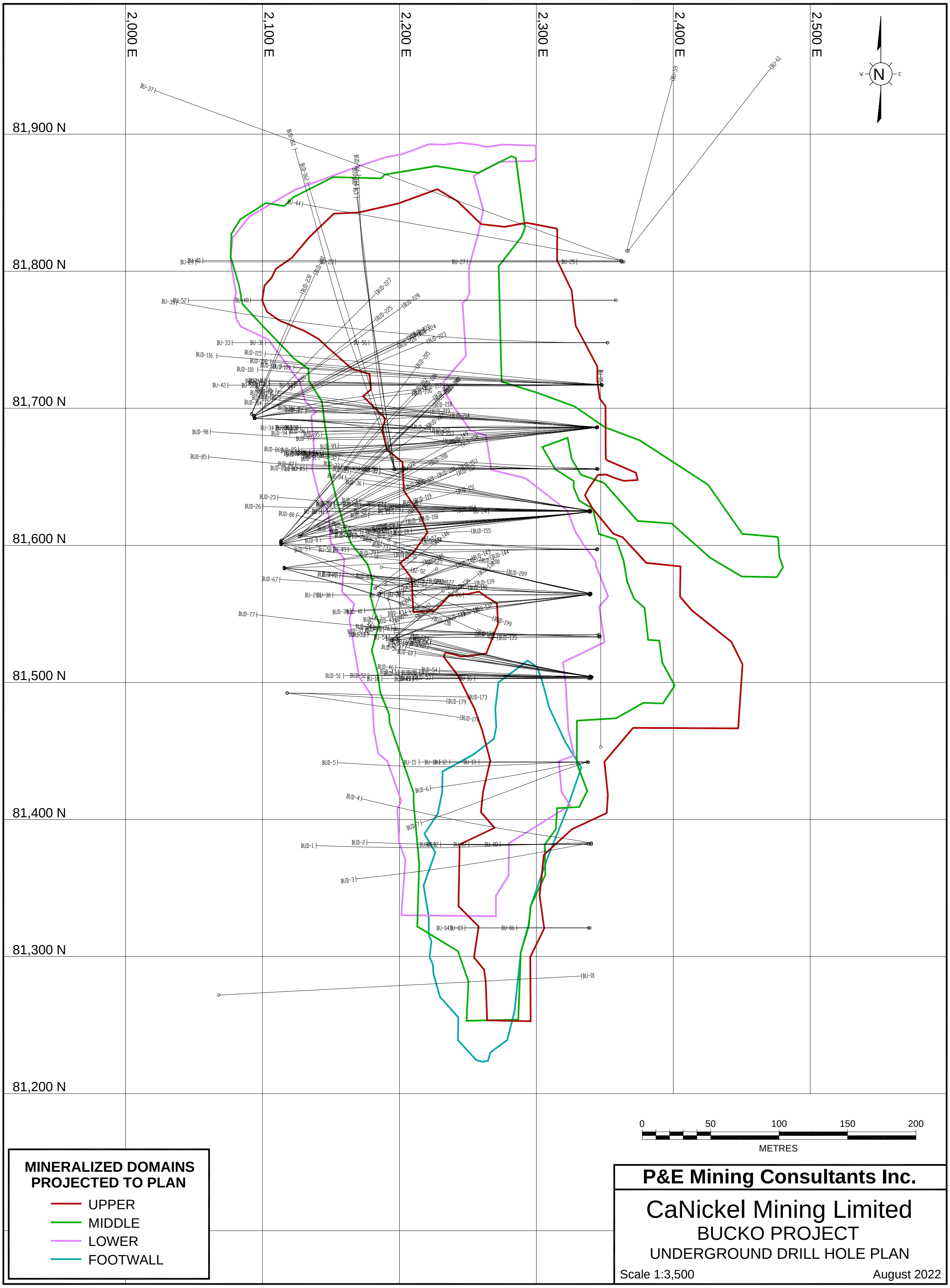
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
0 50 100 150 200
METRES
MINERALIZED DOMAINS PROJECTED TO SURFACE
UPPER
MIDDLE
LOWER
FOOTWALL
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
SURFACE DRILL HOLE PLAN
Scale 1:3,500
August 2022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N
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81,800 N
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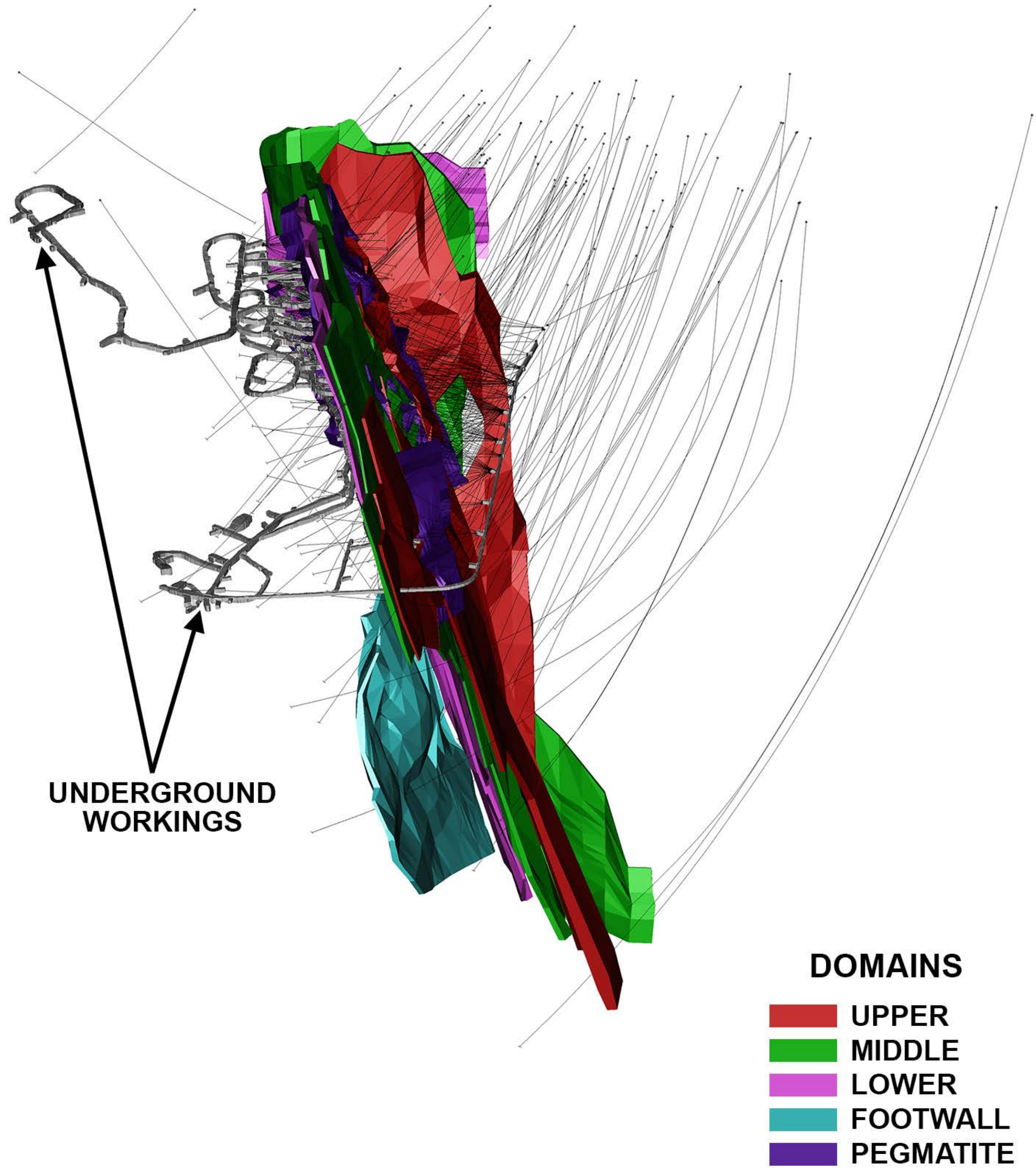
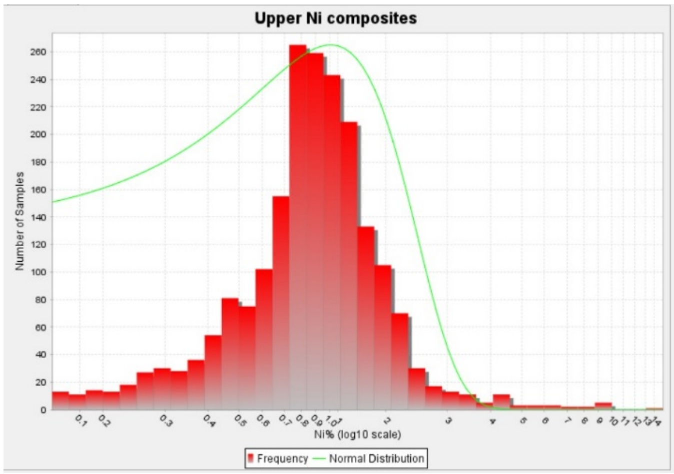
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
UNDERGROUND DRILL HOLE PLAN
Scale 1:3,500
August 2022

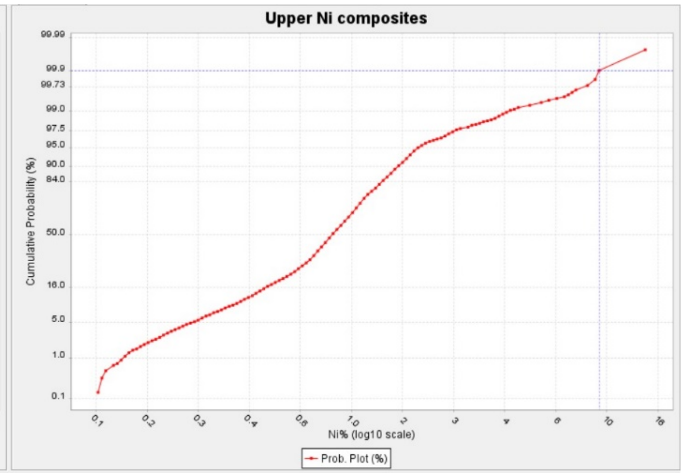
# APPENDIX B 3-D DOMAINS

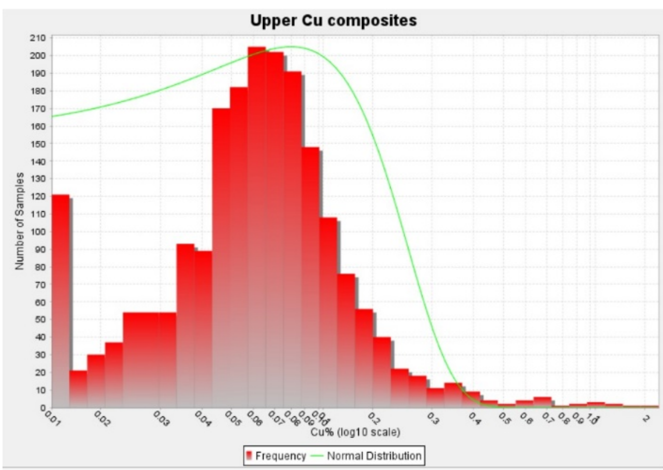
# BUCKO PROJECT - 3D DOMAINS

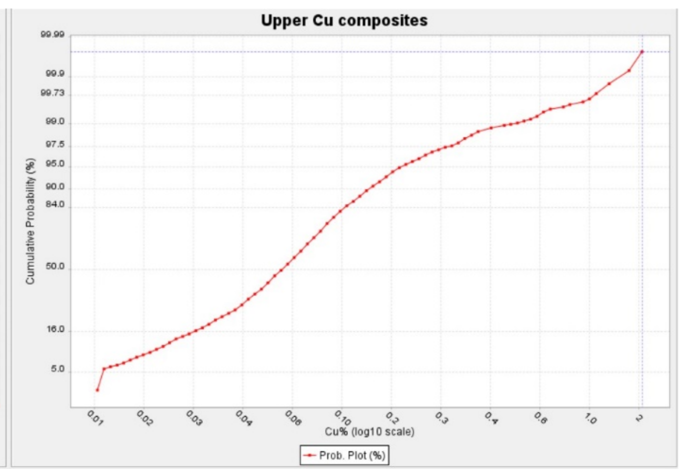


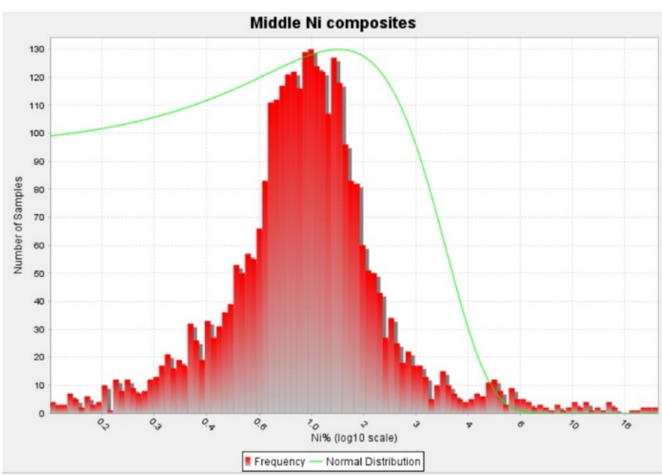
## APPENDIX C LOG NORMAL HISTOGRAMS AND PROBABILITY PLOTS

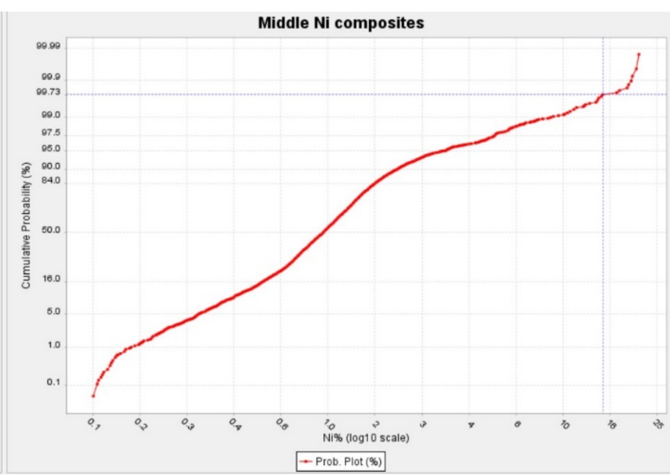


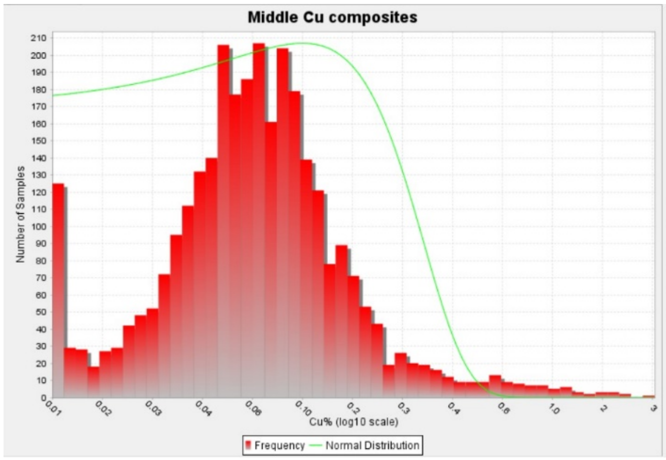
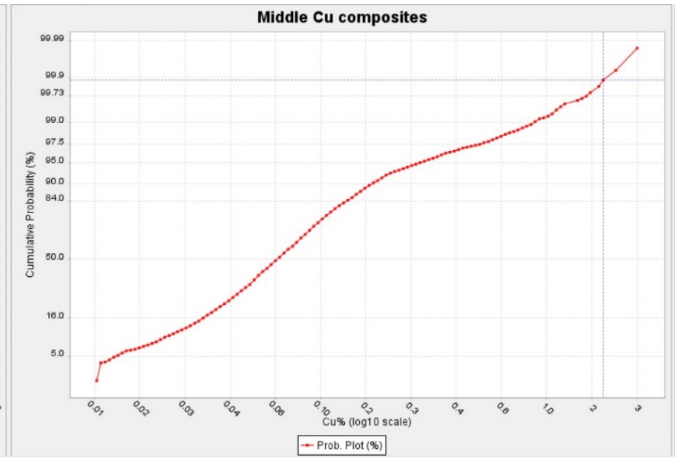
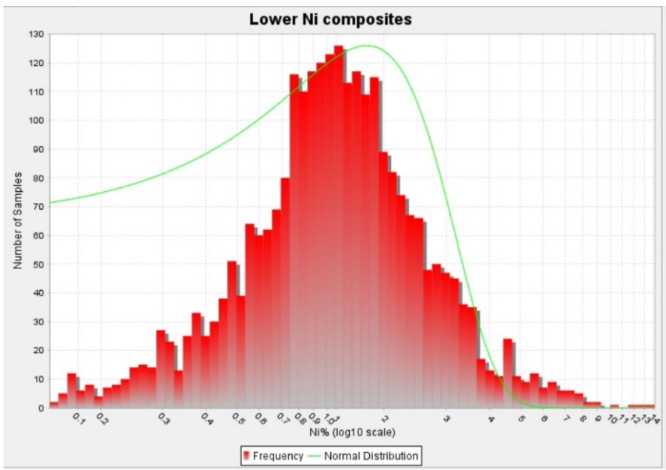
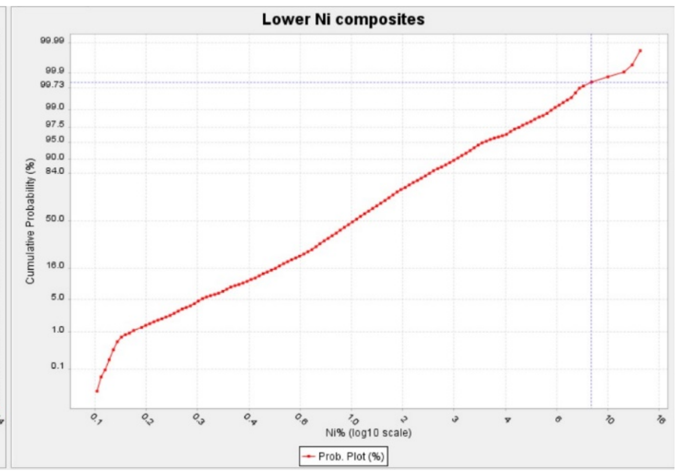
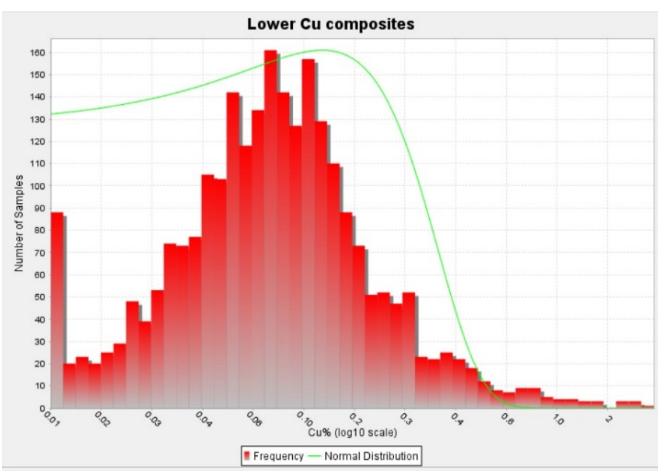
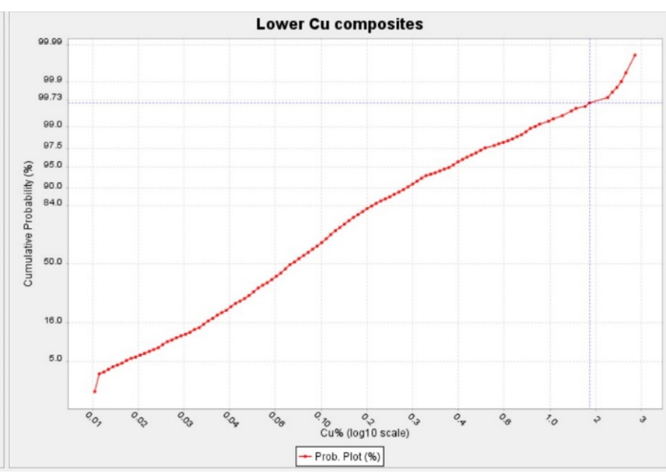



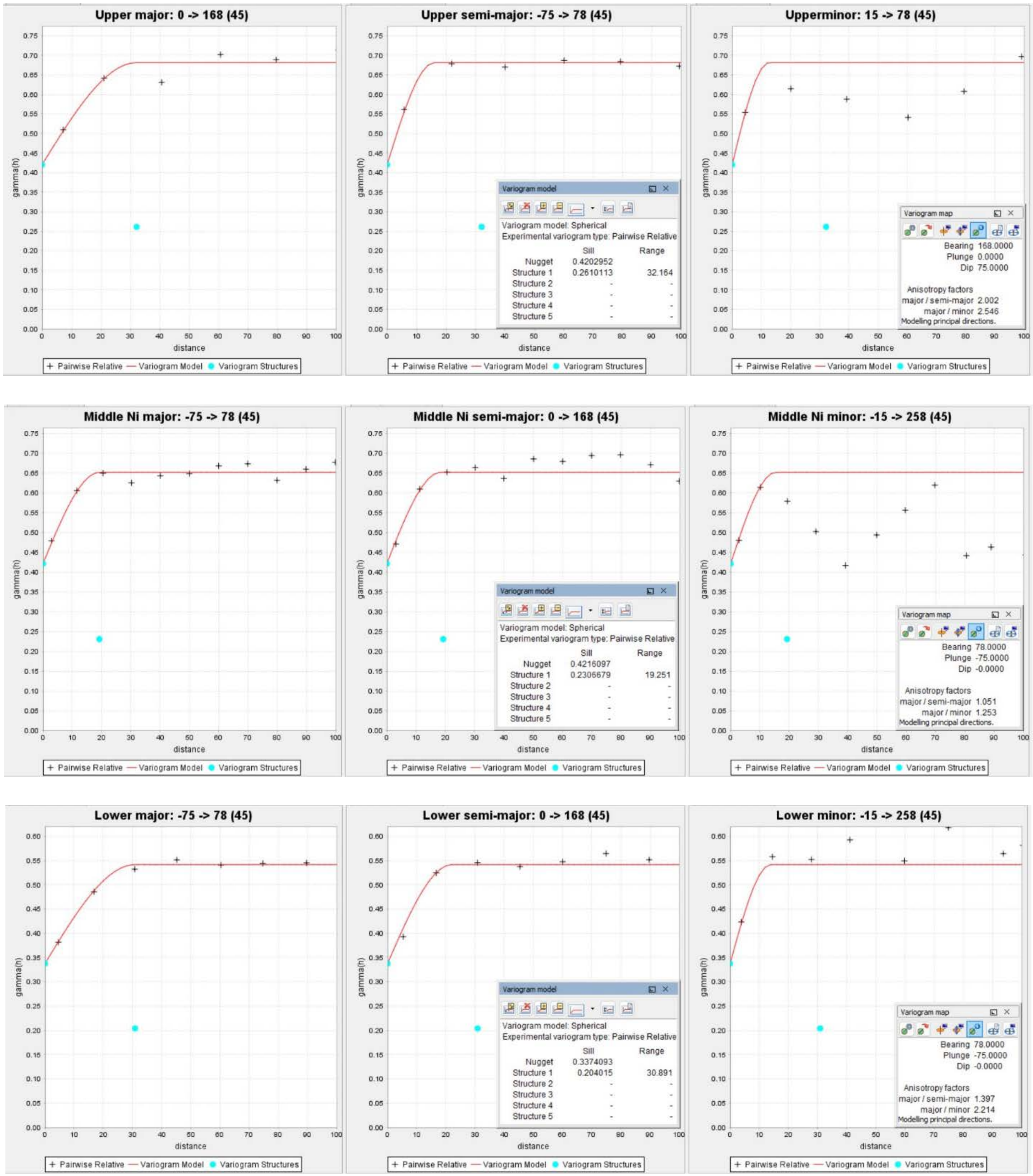



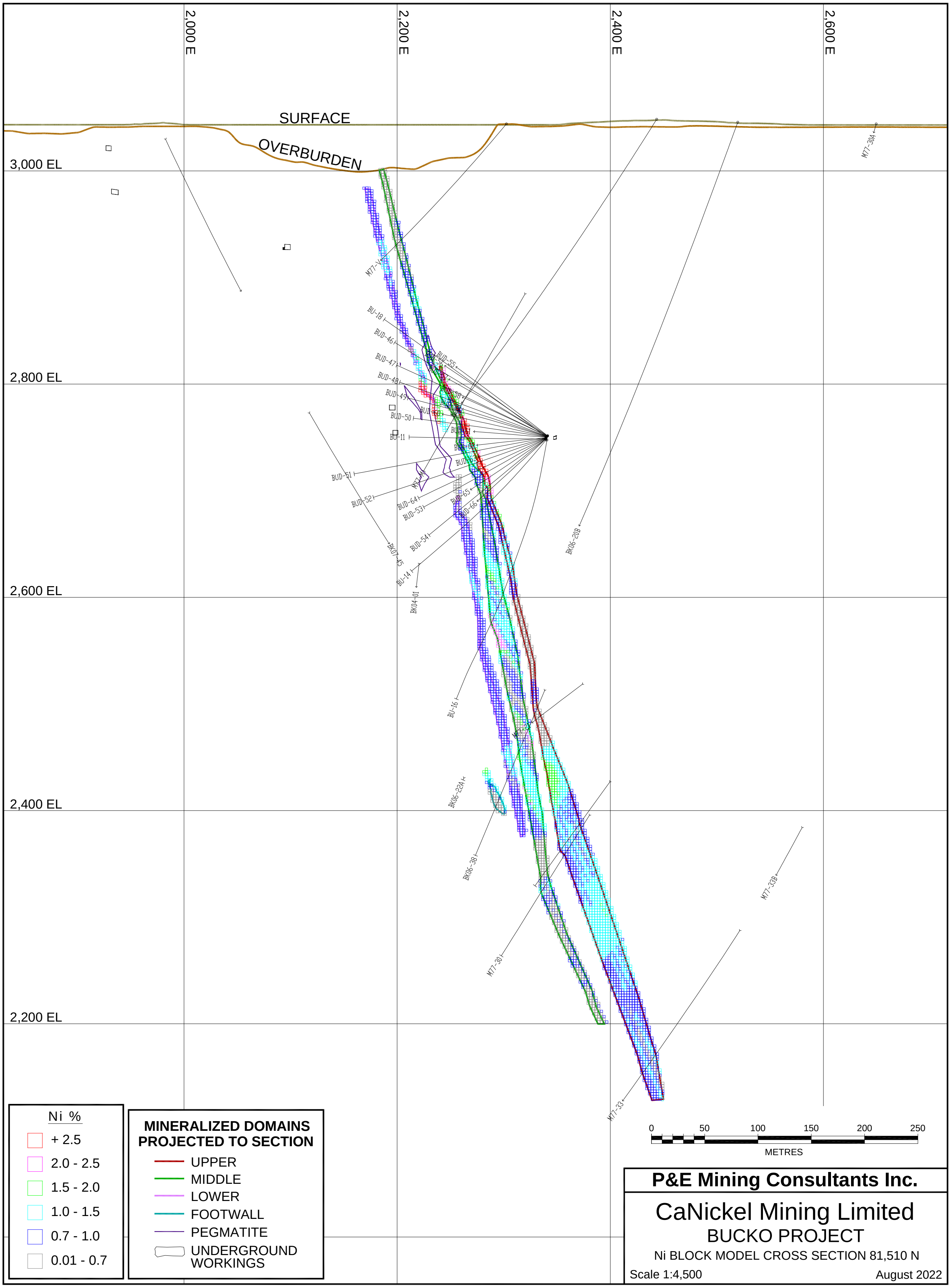




Middle Cu composites
Number of Samples
Cu% (log10 scale)
Frequency
Normal Distribution

Middle Cu composites
Cumulative Probability (%)
Cu% (log10 scale)
Prob. Plot (%)

Lower Ni composites
Number of Samples
Ni% (log10 scale)
Frequency
Normal Distribution

Lower Ni composites
Cumulative Probability (%)
Ni% (log10 scale)
Prob. Plot (%)

Lower Cu composites
Number of Samples
Cu% (log10 scale)
Frequency
Normal Distribution

Lower Cu composites
Cumulative Probability (%)
Cu% (log10 scale)
Prob. Plot (%)

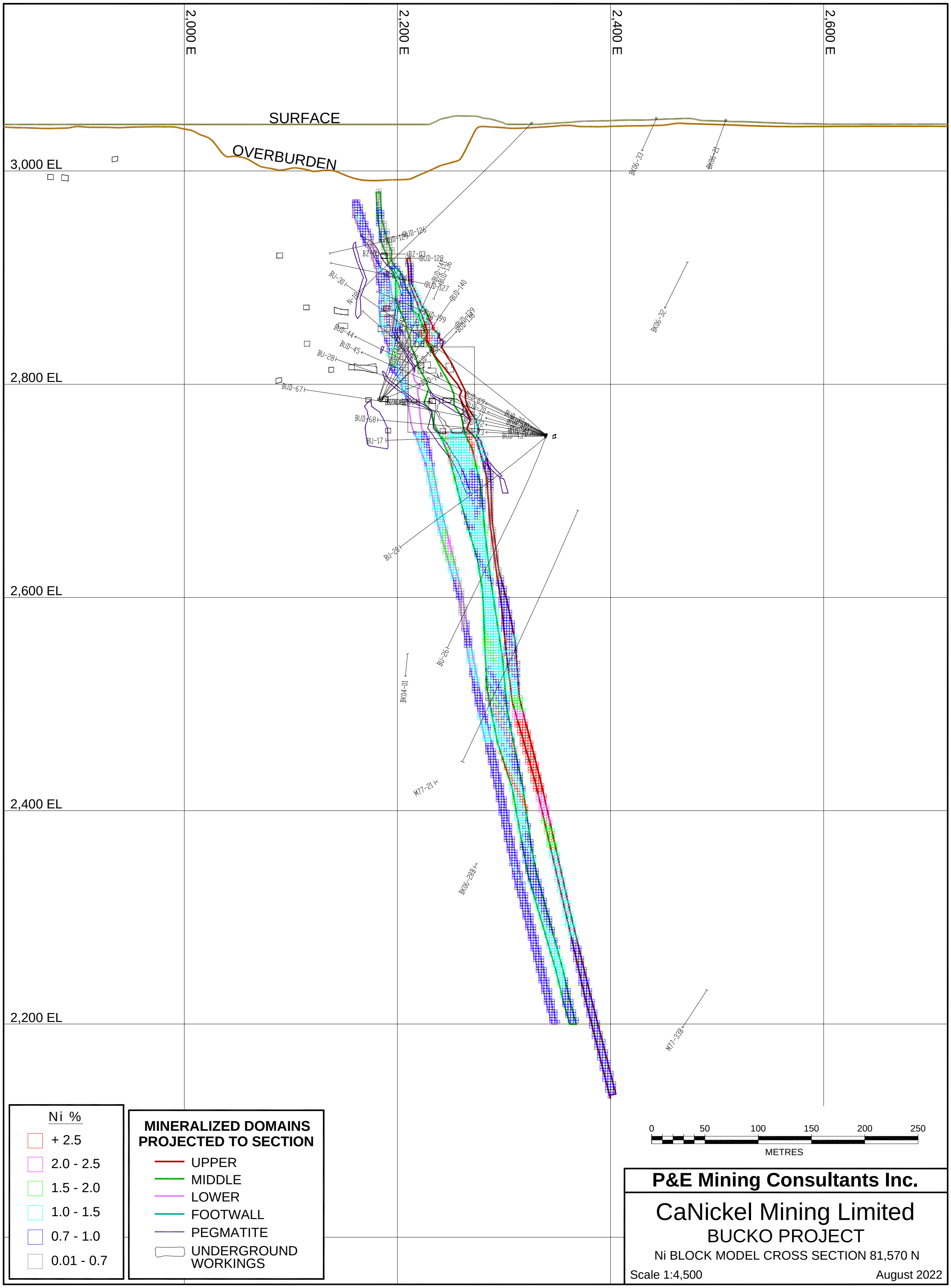
## APPENDIX D VARIOGRAMS



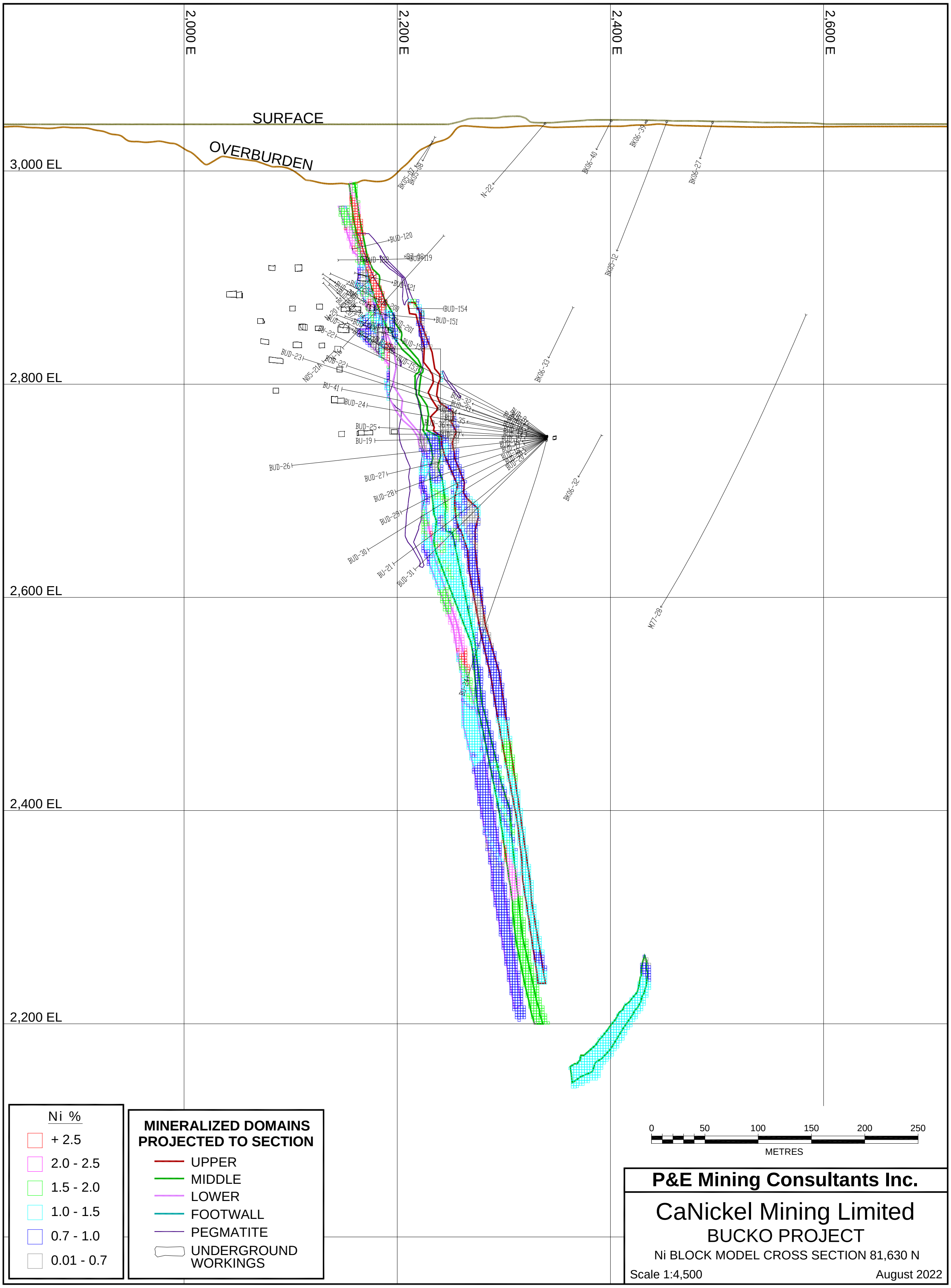
# APPENDIX E NI BLOCK MODEL CROSS SECTIONS AND PLANS



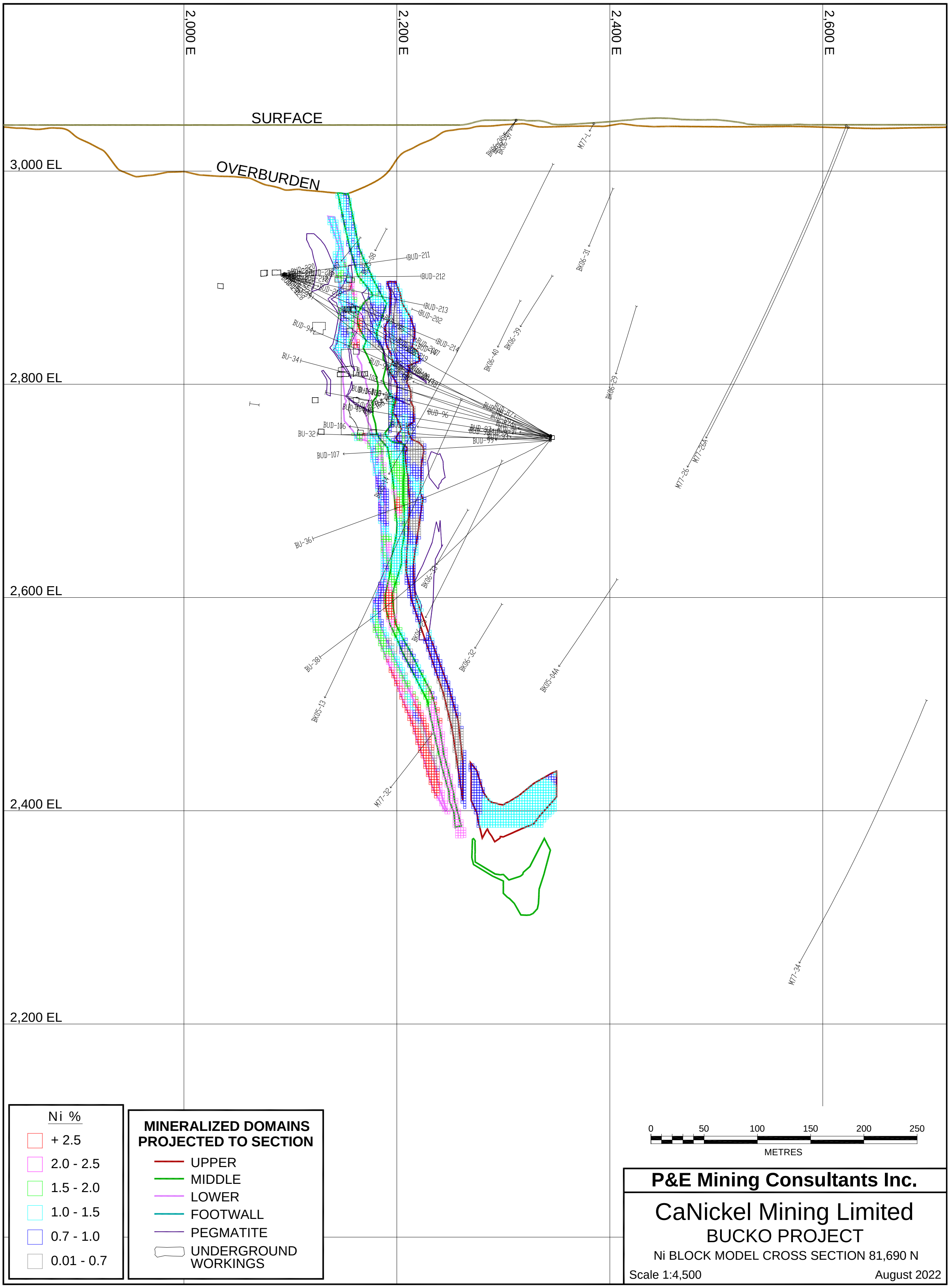
2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200 250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,510 N
Scale 1:4,500
August 2022

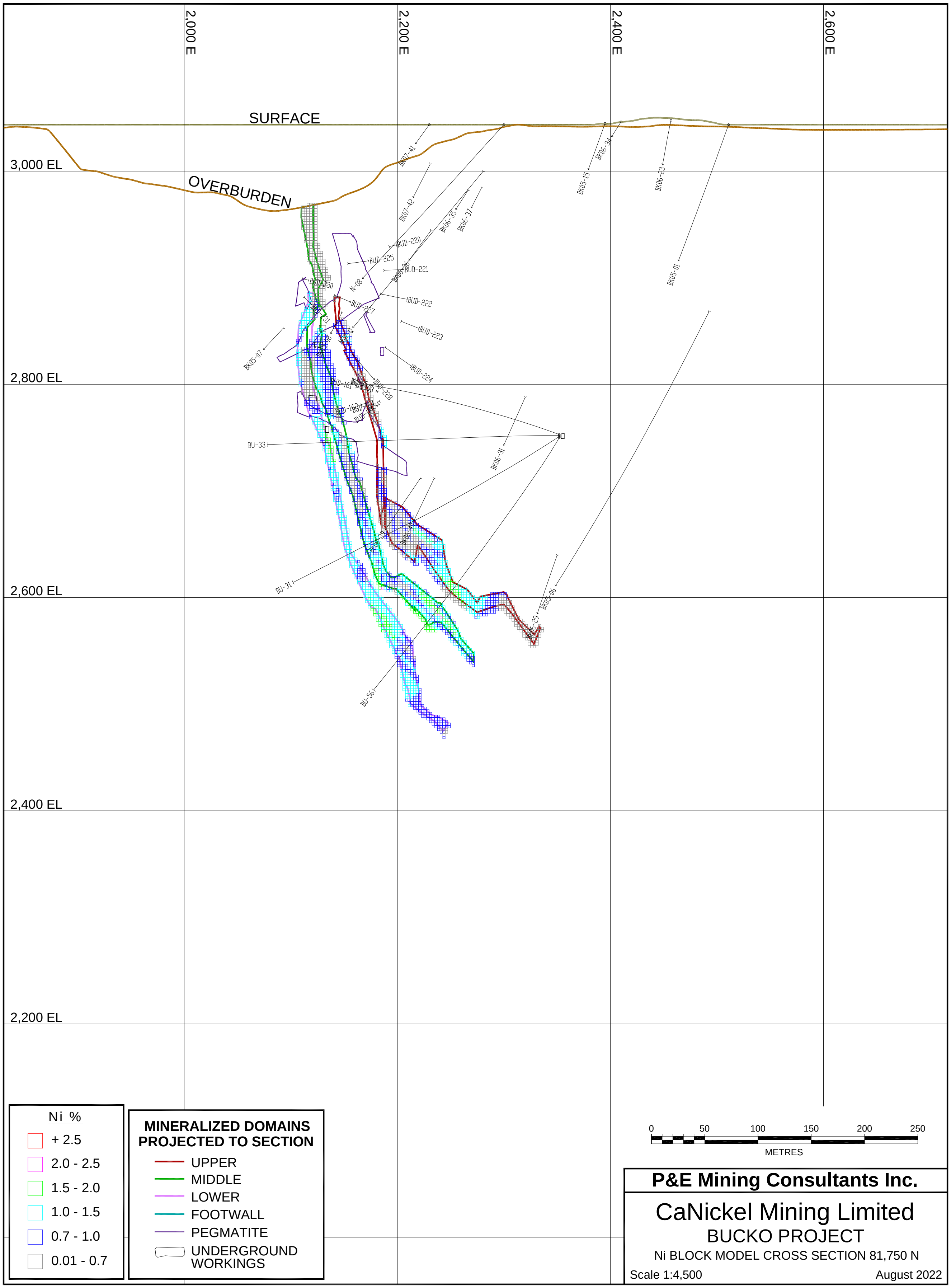


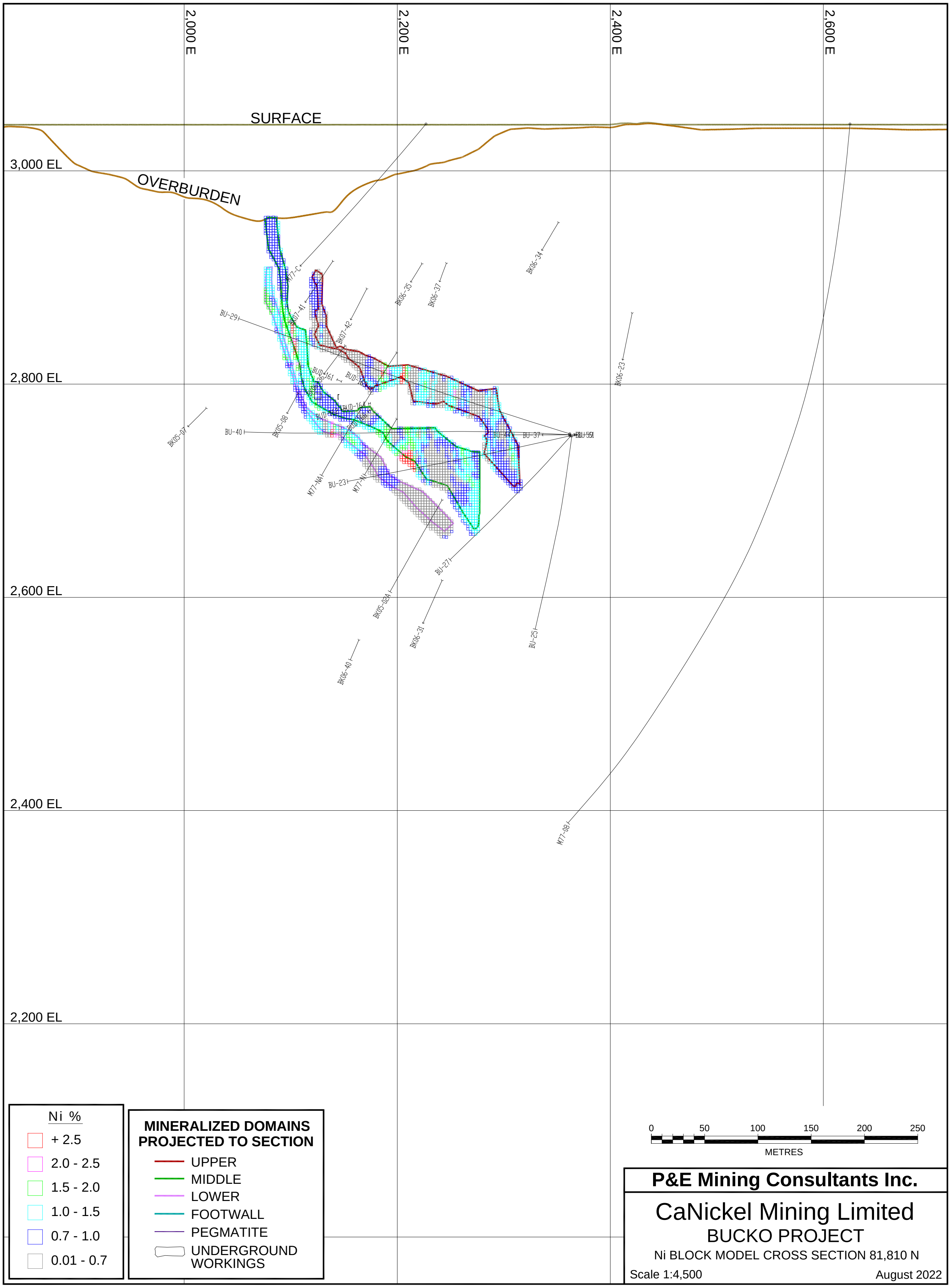
2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200 250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,570 N
Scale 1:4,500
August 2022

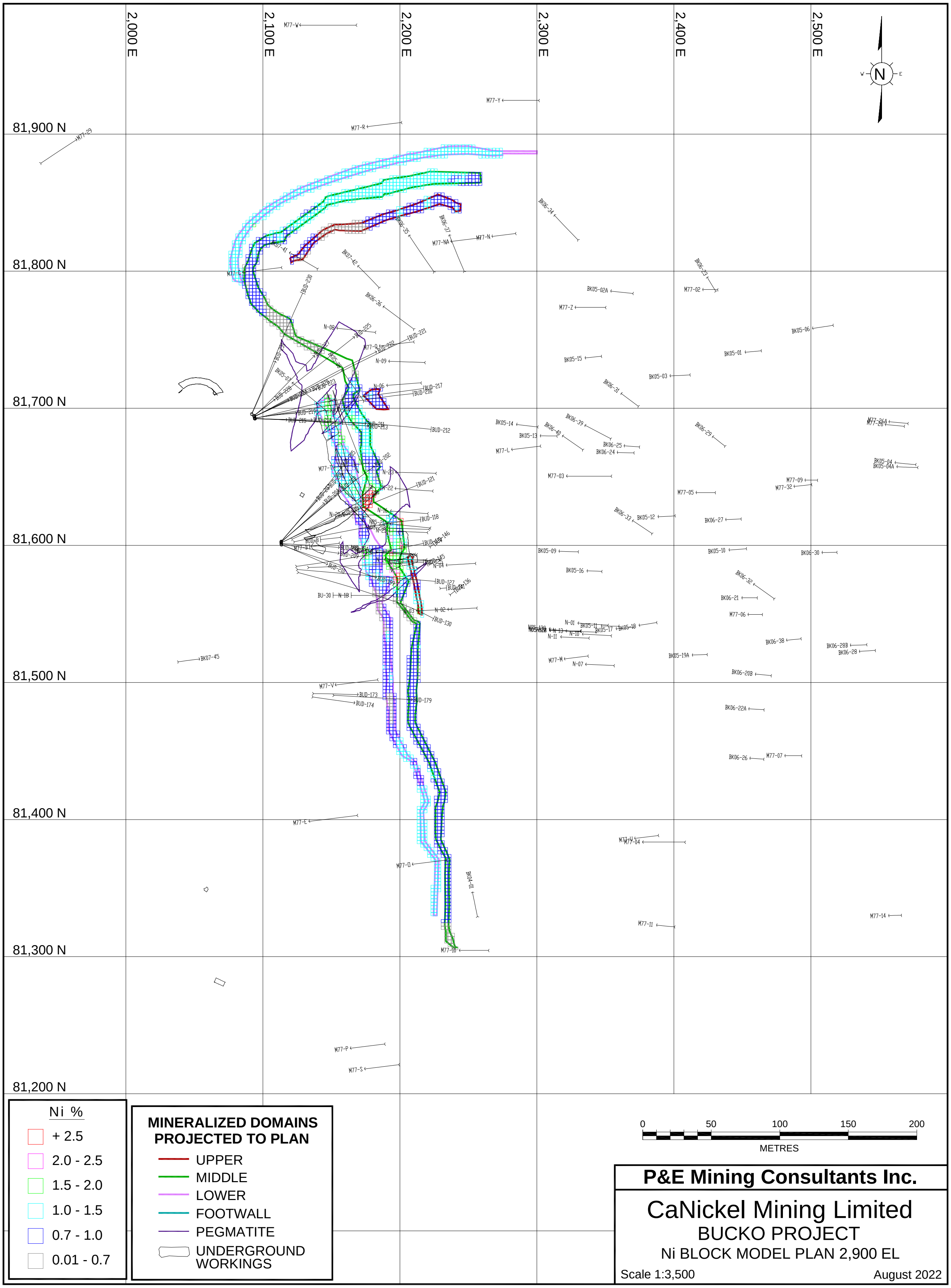


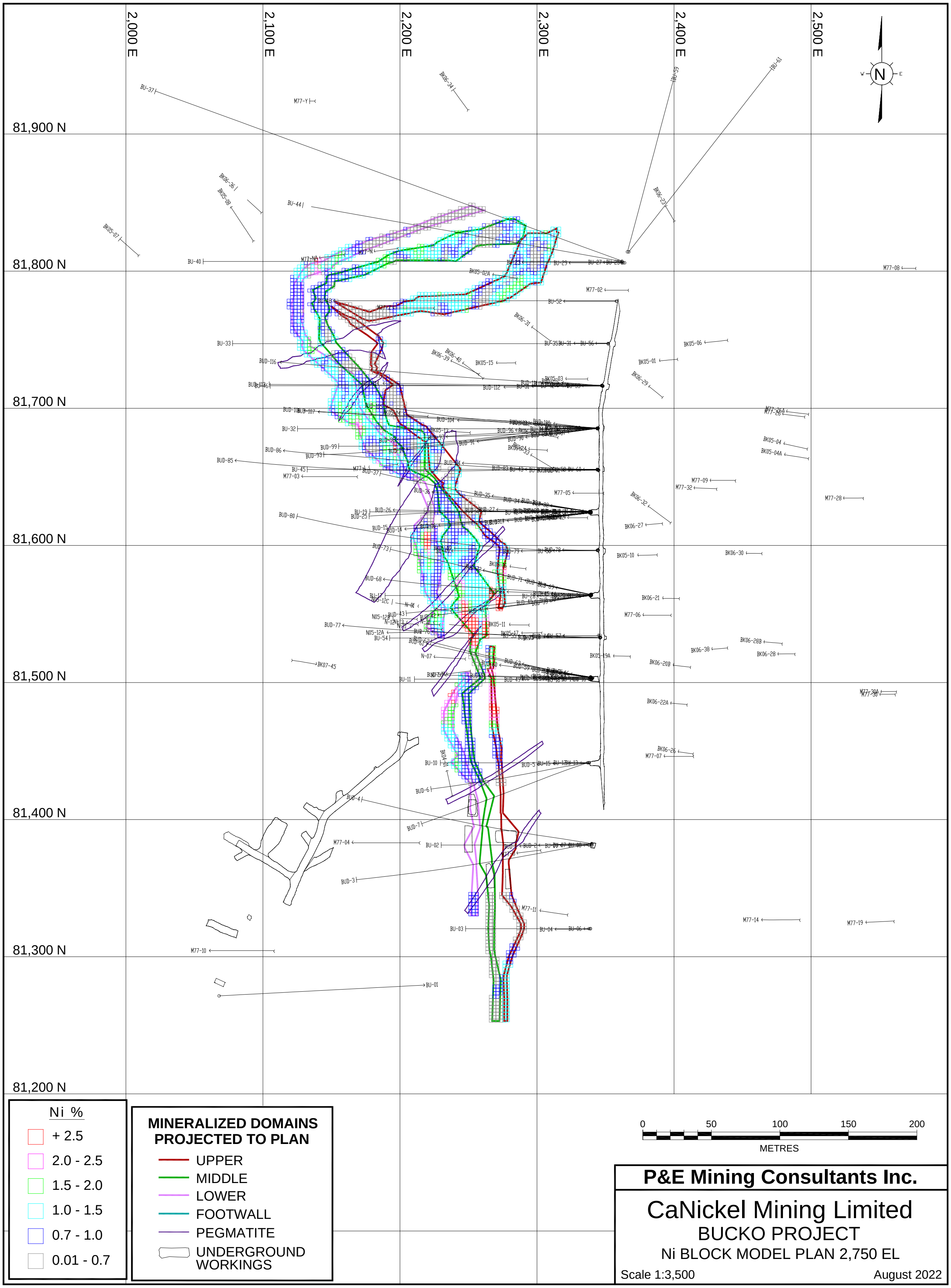
2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200 250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,630 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,690 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,750 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200 250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL CROSS SECTION 81,810 N
Scale 1:4,500
August 2022


2,000 E
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL PLAN 2,900 EL
Scale 1:3,500
August 2022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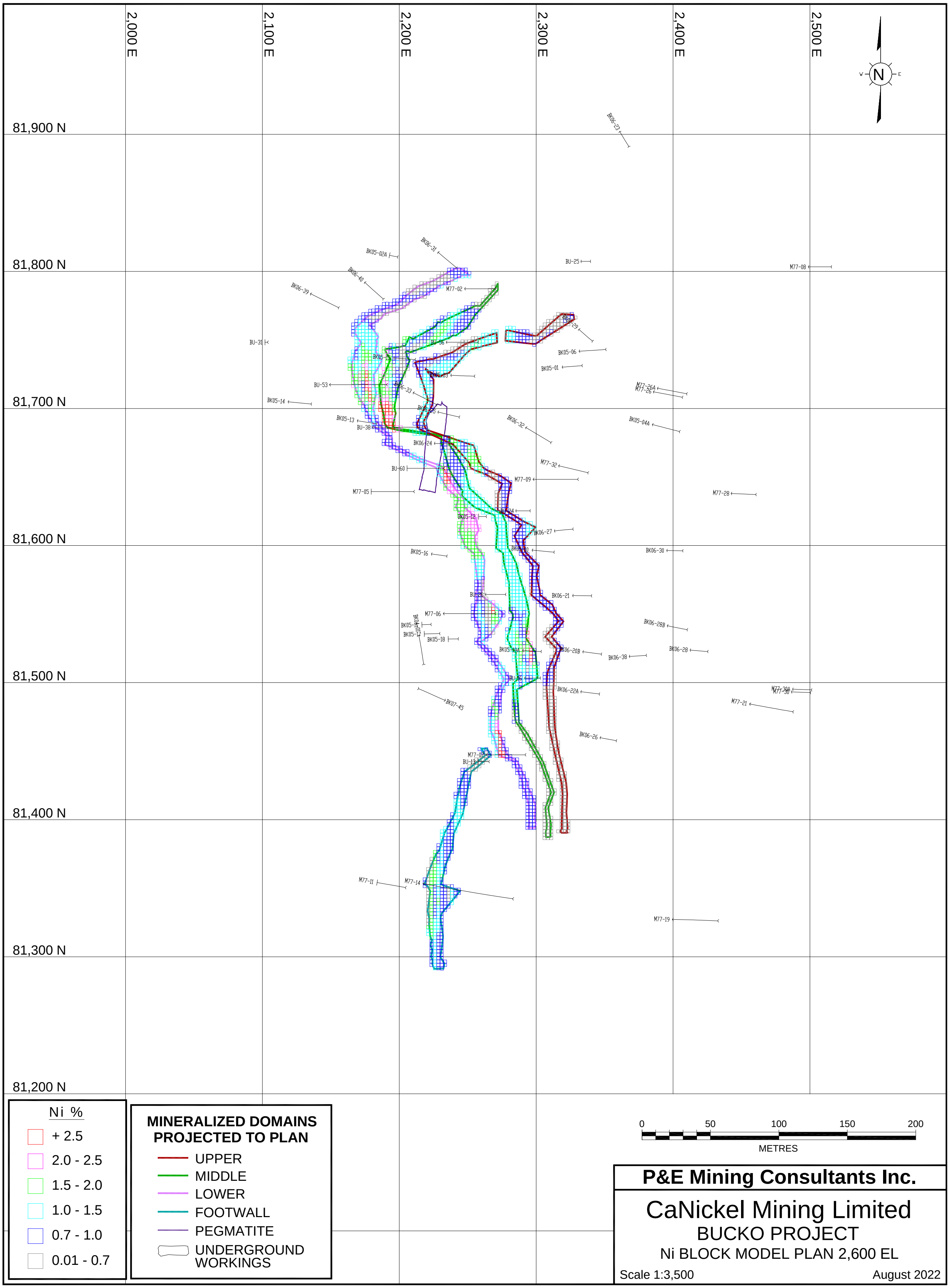
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL PLAN 2,750 EL
Scale 1:3,500
August 2022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2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
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81,500 N
81,400 N
81,300 N
81,200 N
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0
50
100
150
200
METRES
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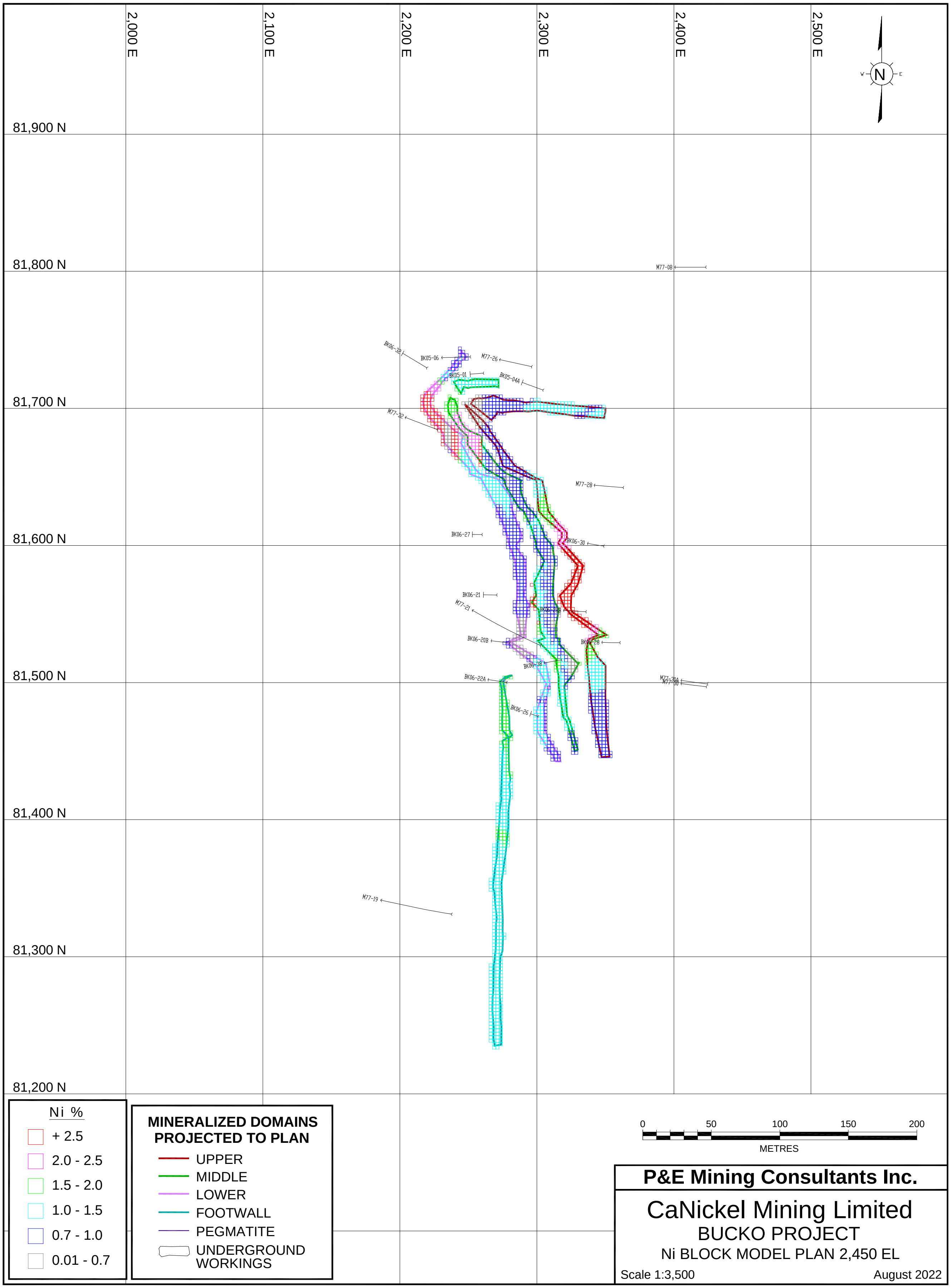
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL PLAN 2,600 EL
Scale 1:3,500
August 2022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2,200 E
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2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
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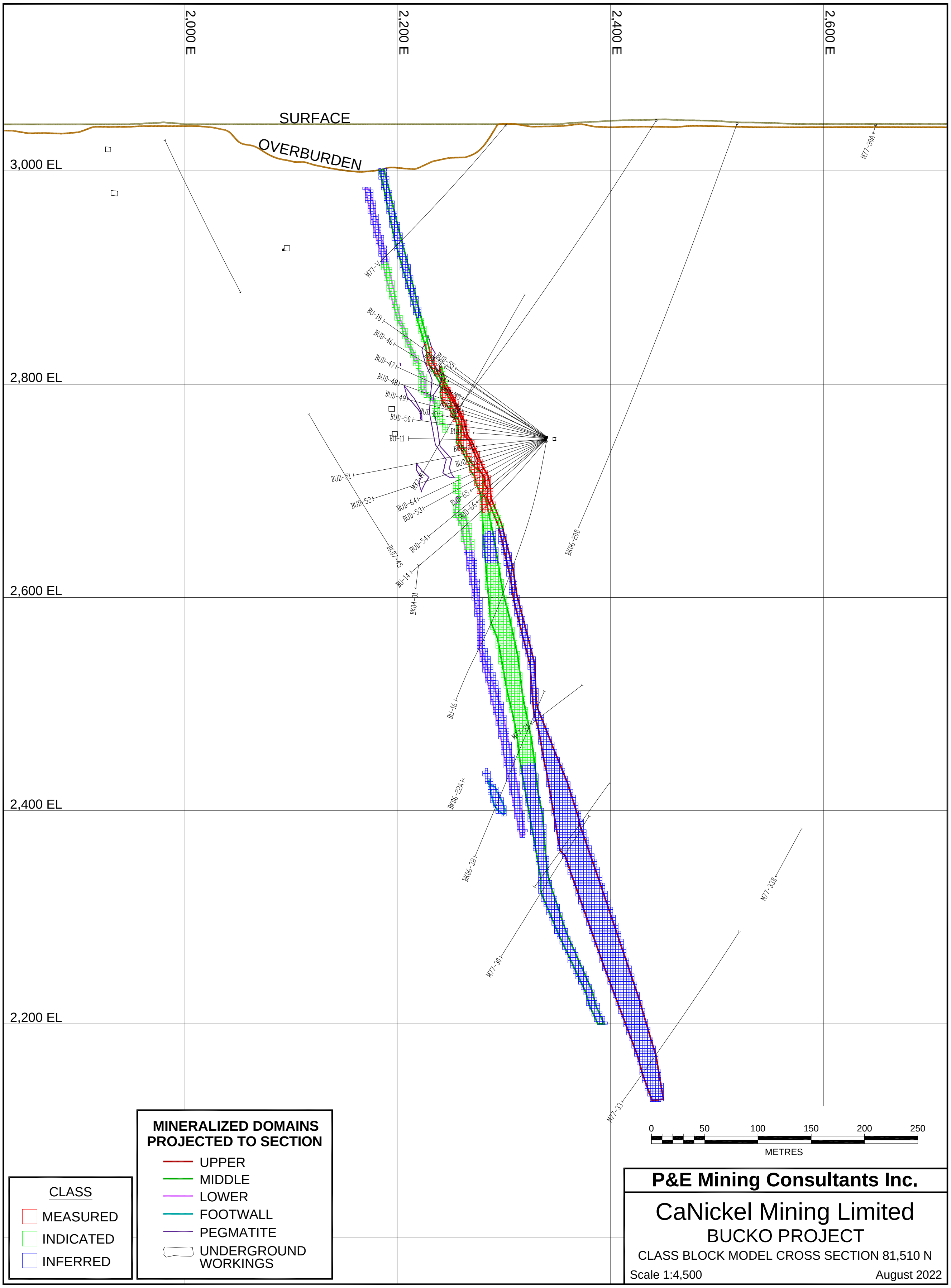
81,500 N
81,400 N
81,300 N
81,200 N
Ni %
+ 2.5
2.0 - 2.5
1.5 - 2.0
1.0 - 1.5
0.7 - 1.0
0.01 - 0.7
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
Ni BLOCK MODEL PLAN 2,450 EL
Scale 1:3,500
August 2022

# APPENDIX F CLASSIFICATION BLOCK MODEL CROSS SECTIONS AND PLANS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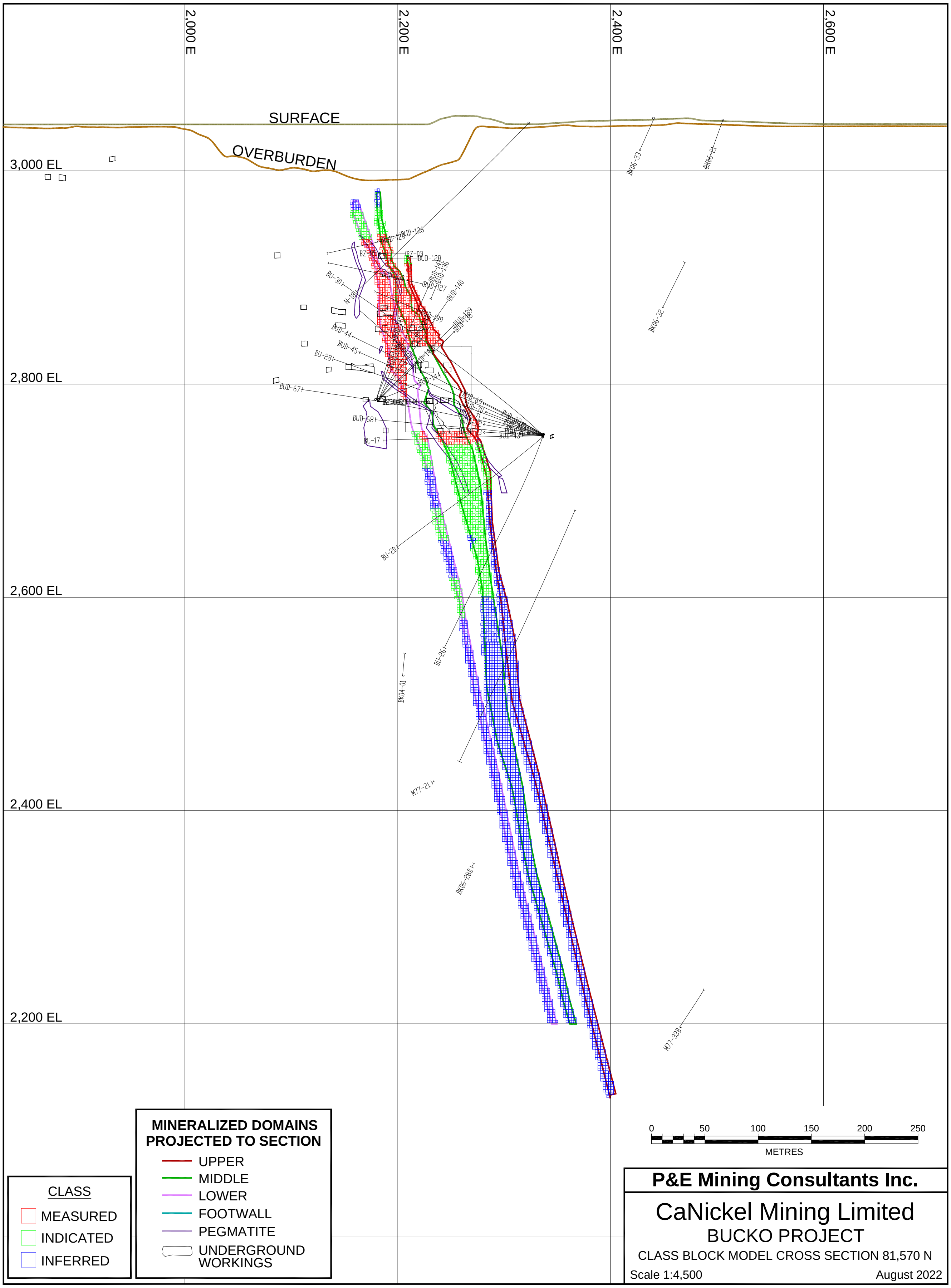
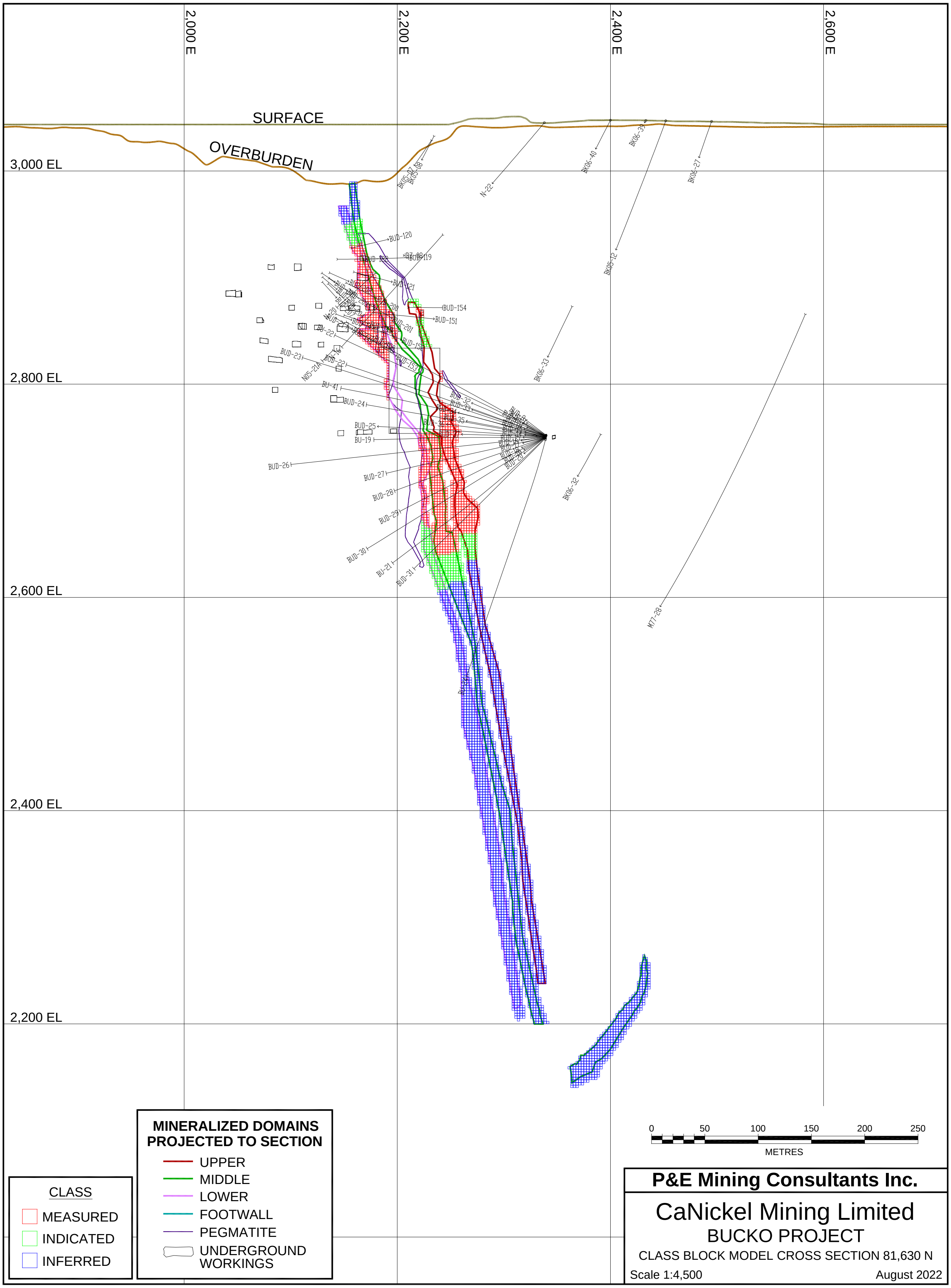
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL CROSS SECTION 81,510 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL CROSS SECTION 81,570 N
Scale 1:4,500
August 2022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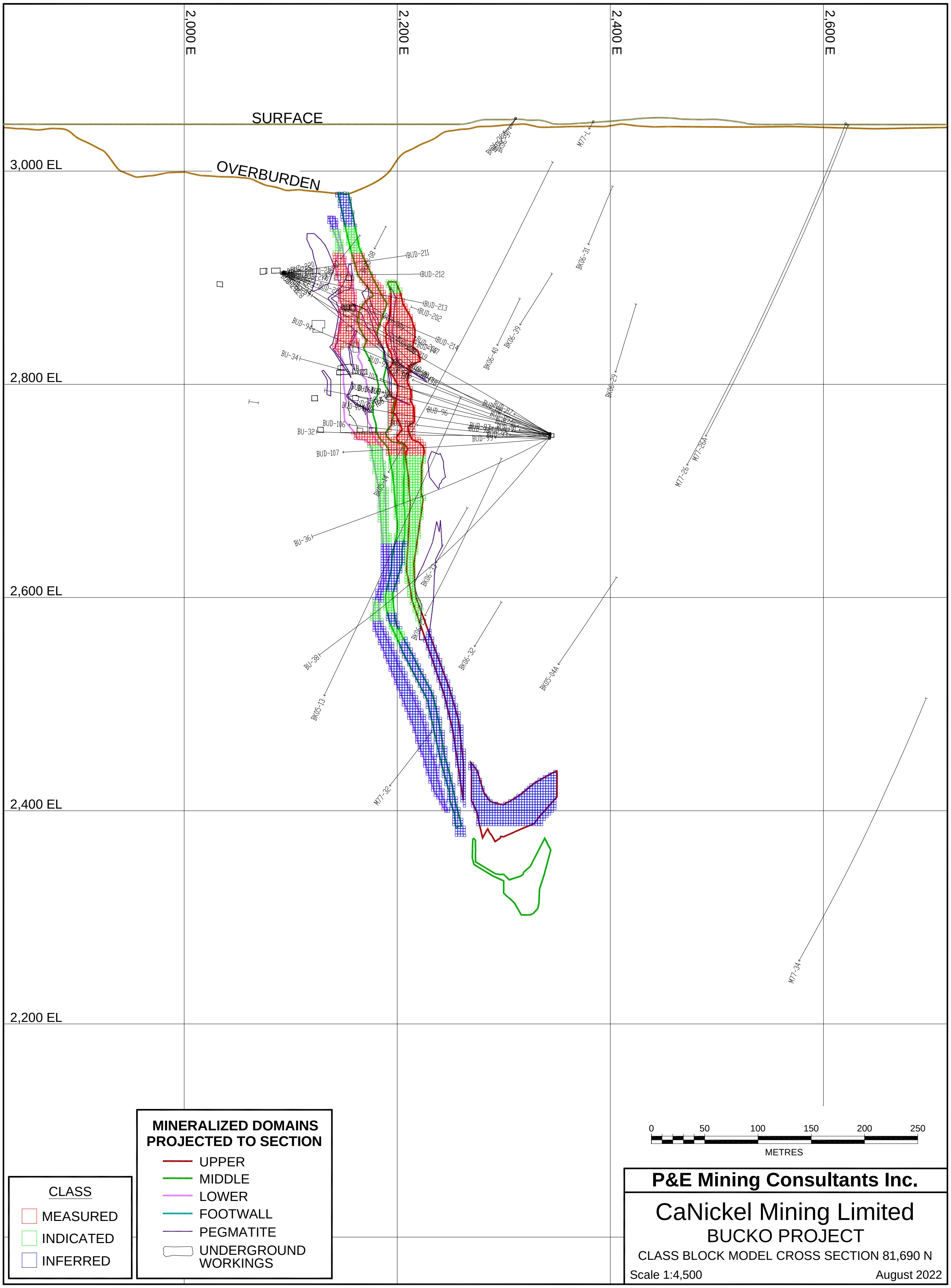
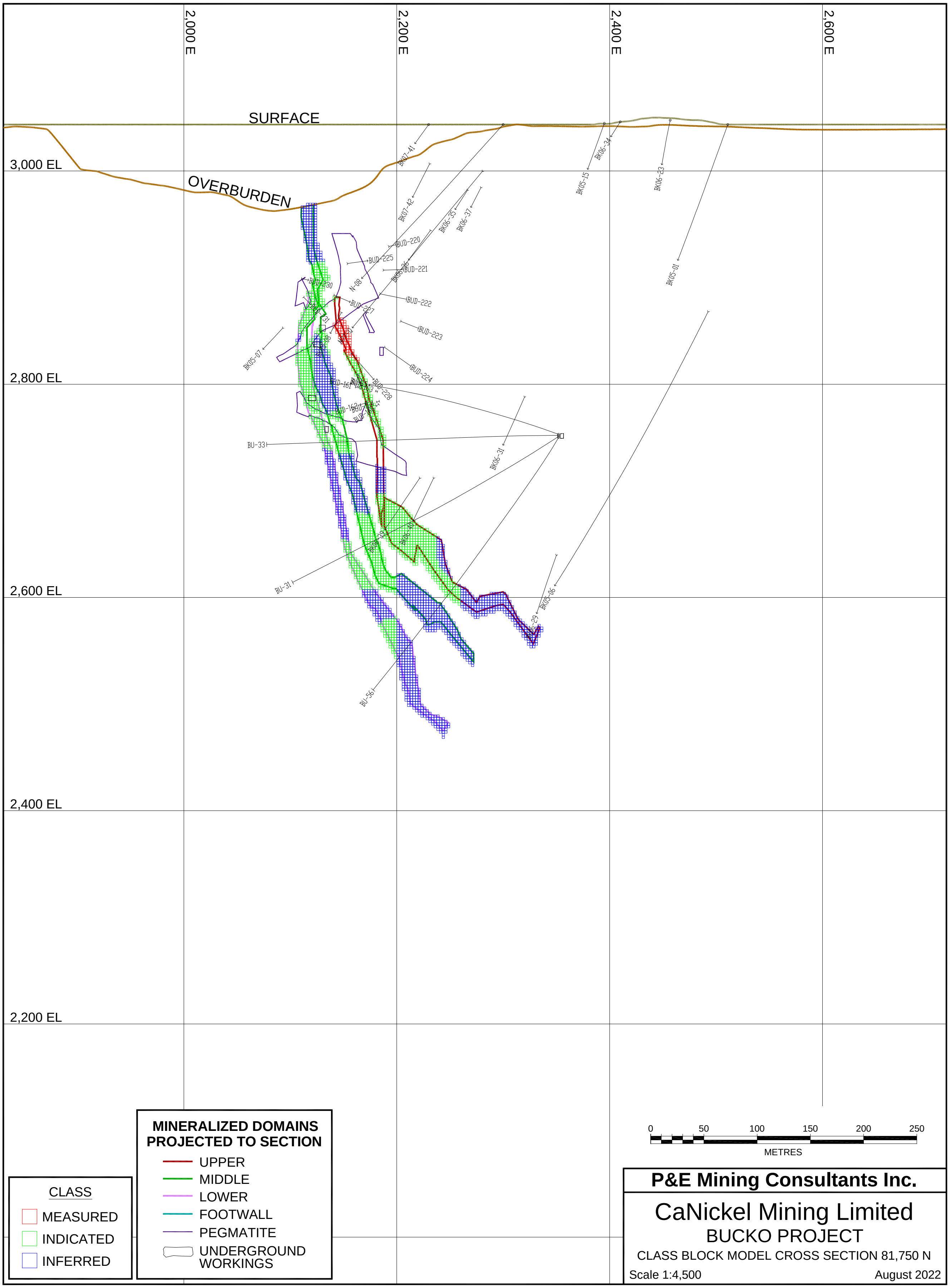
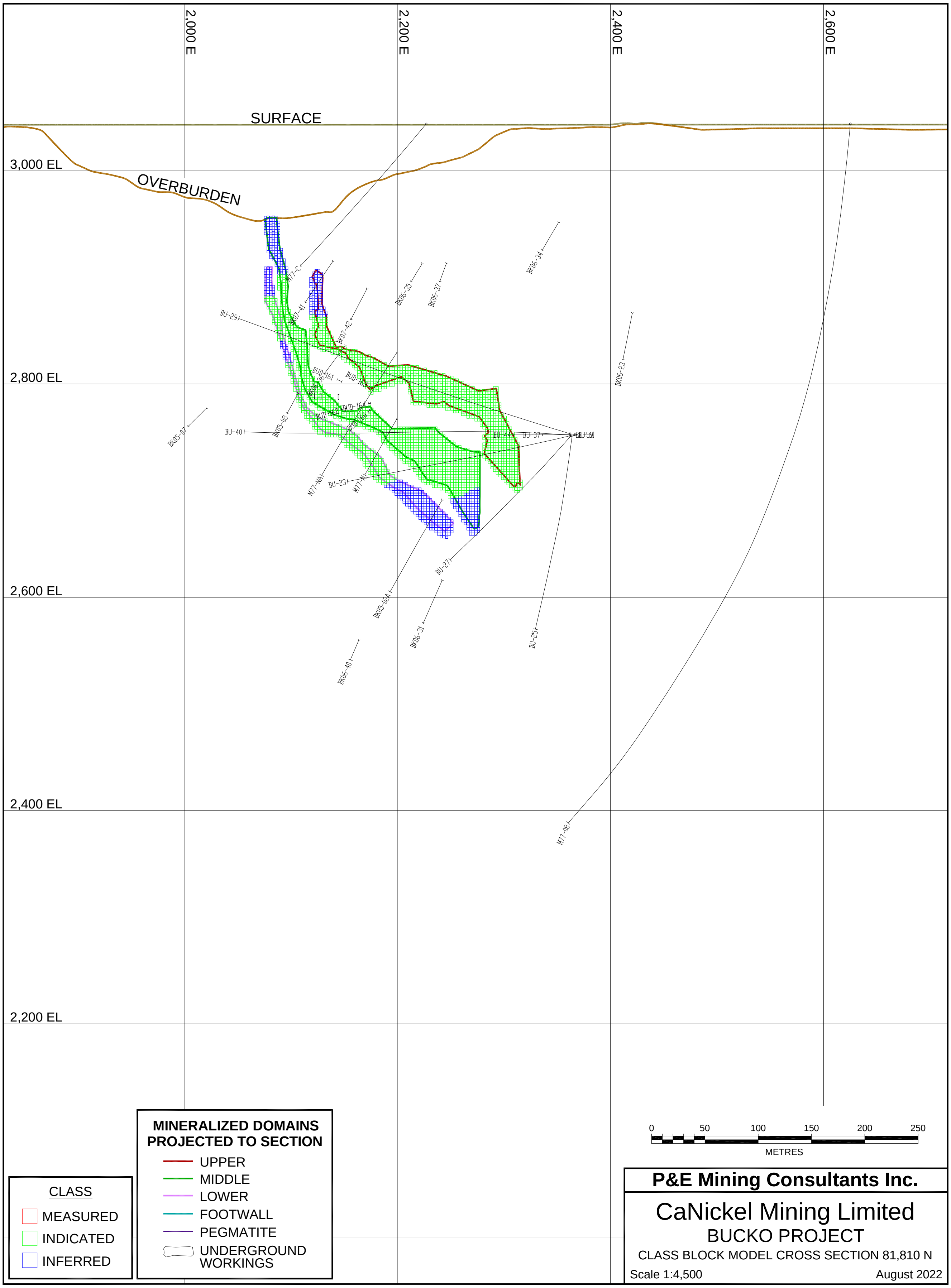
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0 50 100 150 200 250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL CROSS SECTION 81,630 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL CROSS SECTION 81,690 N
Scale 1:4,500
August 2022


2,000 E
2,200 E
2,400 E
2,600 E
SURFACE
OVERBURDEN
3,000 EL
2,800 EL
2,600 EL
2,400 EL
2,200 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0
50
100
150
200
250
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL CROSS SECTION 81,750 N
Scale 1:4,500
August 2022



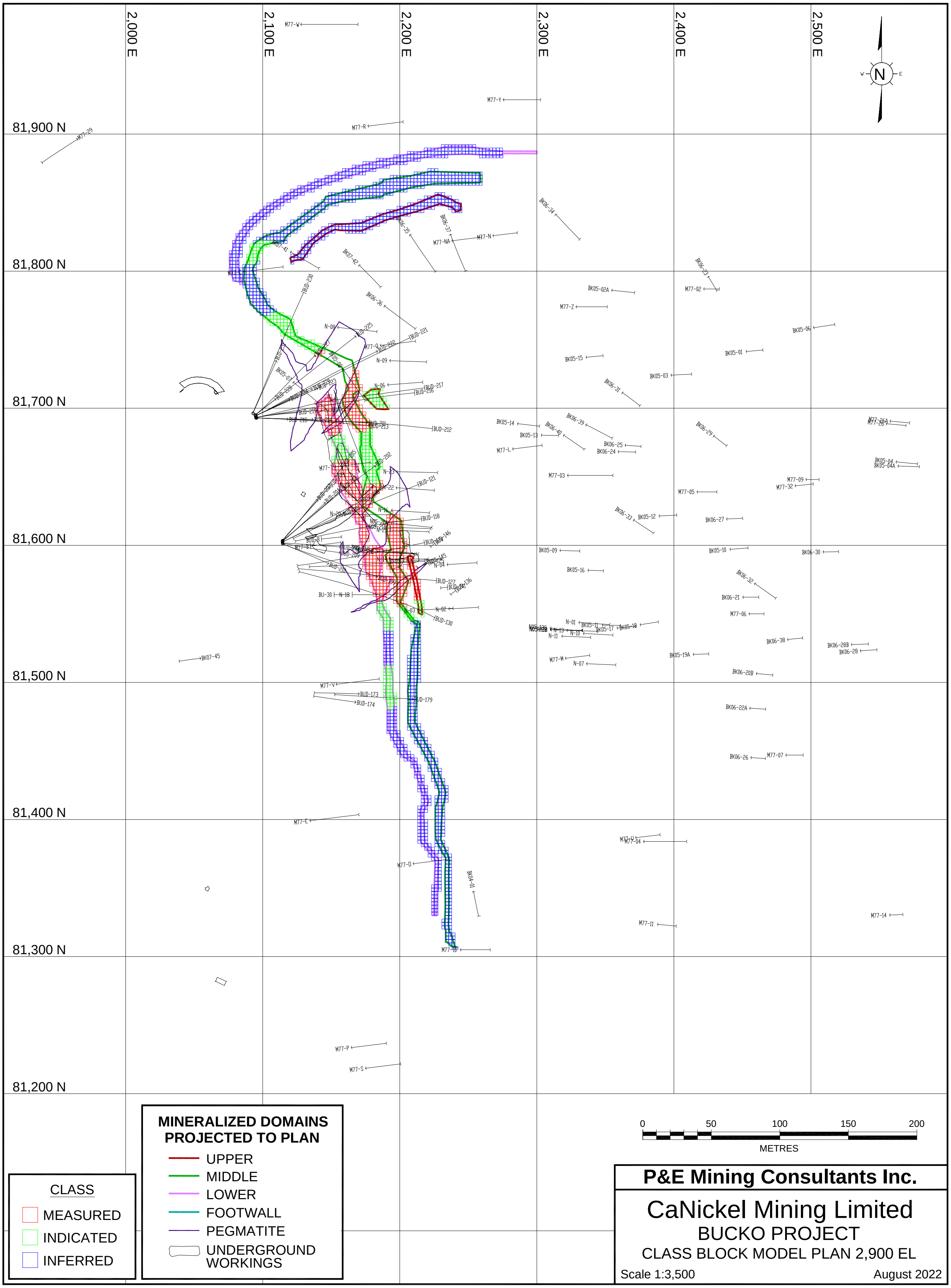

**P&E Mining Consultants Inc.**

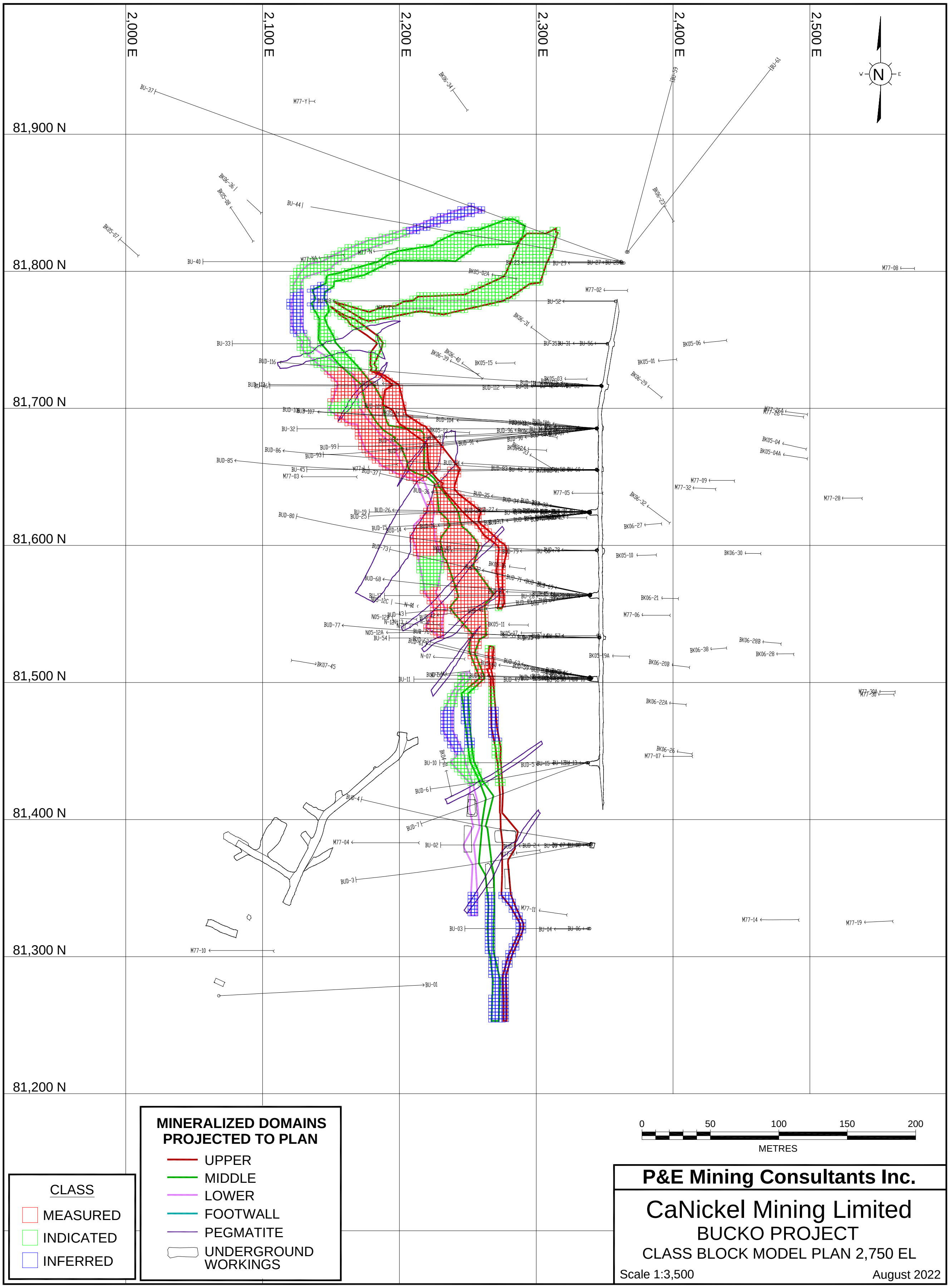
CaNickel Mining Limited

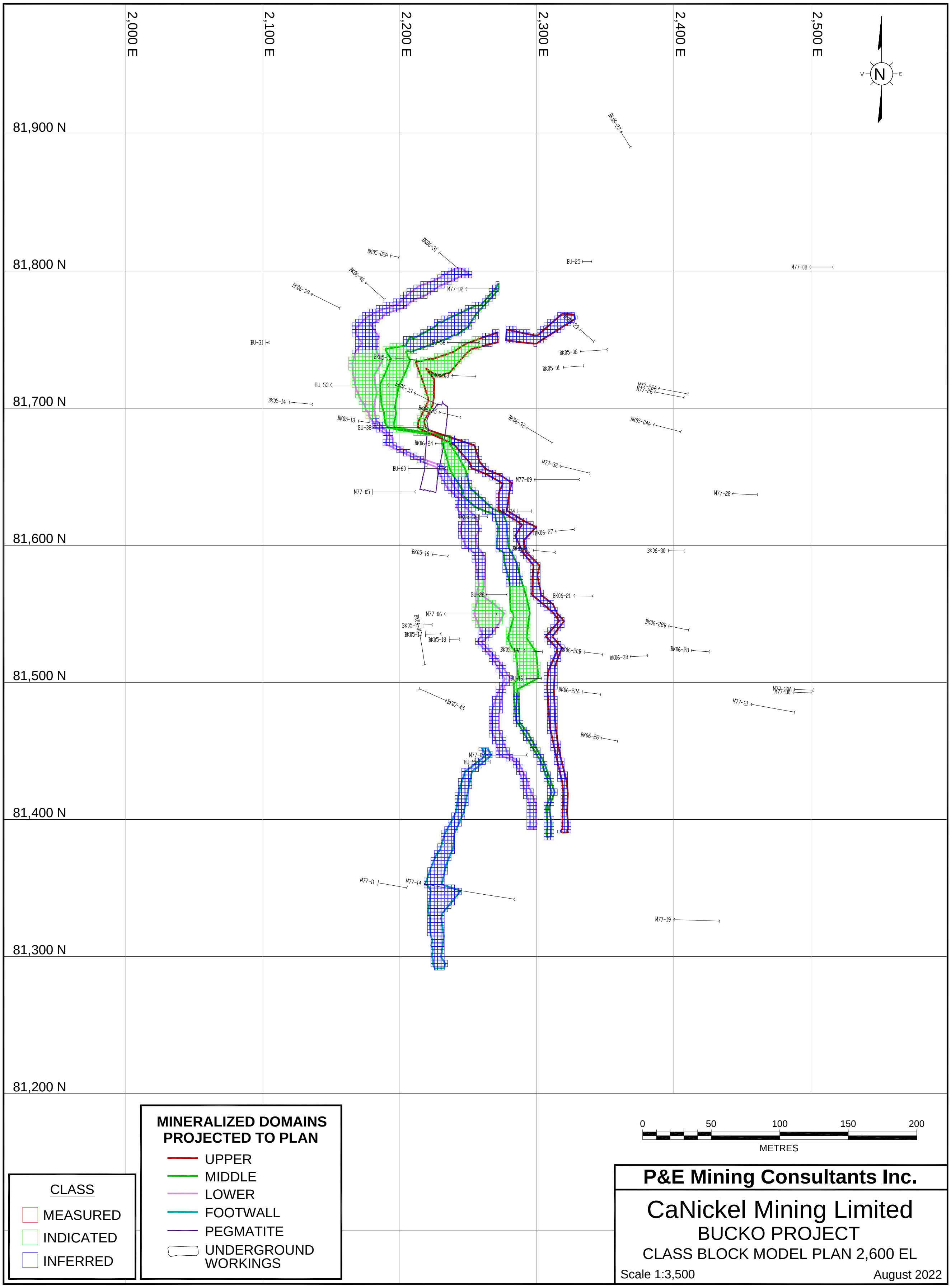
BUCKO PROJECT

CLASS BLOCK MODEL CROSS SECTION 81,810 N

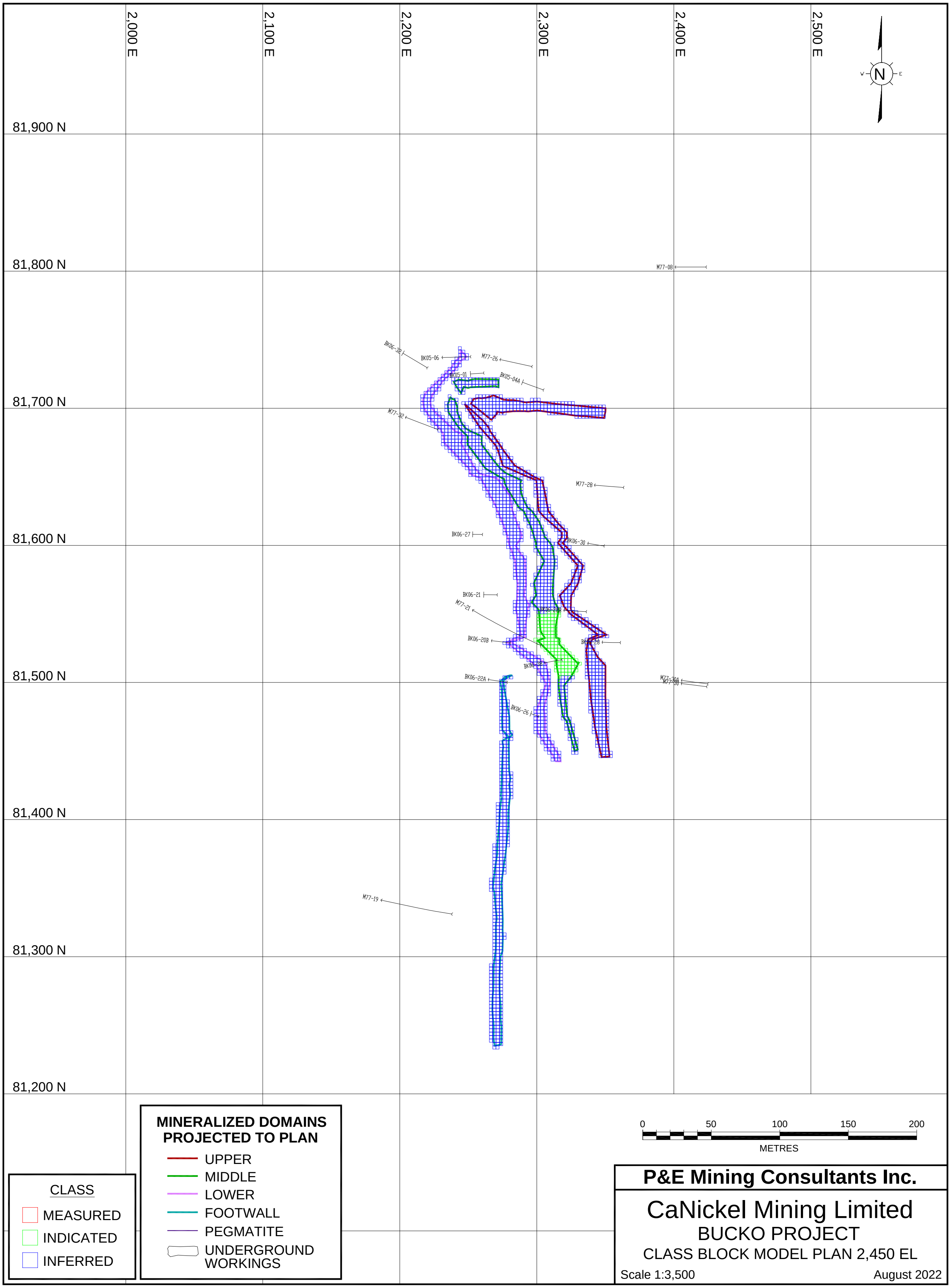
Scale 1:4,500 August 2022


2,000 E
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
CLASS
MEASURED
INDICATED
INFERRED
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL PLAN 2,900 EL
Scale 1:3,500
August 2022


2,000 E
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0 50 100 150 200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL PLAN 2,750 EL
Scale 1:3,500
August 2022



2,000 E
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
N
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND WORKINGS
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL PLAN 2,600 EL
Scale 1:3,500
August 2022


2,000 E
2,100 E
2,200 E
2,300 E
2,400 E
2,500 E
N
81,900 N
81,800 N
81,700 N
81,600 N
81,500 N
81,400 N
81,300 N
81,200 N
CLASS
MEASURED
INDICATED
INFERRED
MINERALIZED DOMAINS
PROJECTED TO PLAN
UPPER
MIDDLE
LOWER
FOOTWALL
PEGMATITE
UNDERGROUND
WORKINGS
0
50
100
150
200
METRES
P&E Mining Consultants Inc.
CaNickel Mining Limited
BUCKO PROJECT
CLASS BLOCK MODEL PLAN 2,450 EL
Scale 1:3,500
August 2022