TECHNICAL REPORT

ON THE

MINERAL RESOURCE ESTIMATE FOR THE DENISON NI-CU-PGE SULPHIDE DEPOSIT, DENISON PROJECT, SUDBURY, ONTARIO CANADA

NAD83 UTM Zone 17N 473,000 m E; 5,141,800 m N
LATITUDE 46° 25.8' N, LONGITUDE 81° 21.1' W

Prepared for:

Magna Mining Inc.
1300 Kelly Lake Road
Sudbury, Ontario
P3E 5P4

Report Date: December 14, 2022
Effective Date: August 19, 2022

Qualified Persons	**Company**
Allan Armitage, Ph. D., P. Geo.,	SGS Geological Services ("SGS")

SGS Project # P2022-15

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1 SUMMARY

SGS Geological Services Inc. ("SGS") was contracted by Magna Mining Inc. (formerly CT Developers Ltd.) (the "Company" or "Magna") to complete a Mineral Resource Estimate ("MRE") for the Crean Hill Ni-Cu-PGE mine ("Crean Hill" or "Deposit") within the Denison Property (the "Property" or the "Project"), located near Sudbury, Ontario, Canada, and to prepare a National Instrument 43-101 ("NI 43-101") Technical Report written in support of the MRE.

On August 16th, 2022, Magna announced it has entered into a definitive share purchase agreement (the "Purchase Agreement") to acquire 100% of Lonmin Canada Inc. ("Loncan"), including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine.

On November 7, 2022, Magna announced that it has closed the acquisition of Loncan, including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine, pursuant to the share purchase agreement dated August 15, 2022 among the Corporation, Loncan, each of the shareholders of Loncan and Sibanye UK Limited, as shareholder representative.

Magna is a mineral exploration and development company and is engaged in the exploration of mineral properties. Its current assets consist of the Shakespeare Nickel Project, located near Sudbury, Ontario, Canada, and the Shining Tree Ni-Cu-PGE project, located 100-km north of Sudbury, Ontario, Canada. Magna's common shares are listed on the Toronto Stock Exchange Venture Exchange ("TSX-V") under the symbol "NICU". Their current business address is 1300 Kelly Lake Road Sudbury, Ontario P3E 5P4.

The current report is authored by Allan Armitage, Ph.D., P. Geo., ("Armitage" or the "Author") of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report. The Author conducted a site visit to the Crean Hill mine / Denison Property on May 25 and 26, 2022.

The Property is a past producing mine and is currently at an advanced stage of exploration.

1.1 Property Description, Location, Access, and Physiography

The Property is located in Denison Township within the City of Greater Sudbury, Ontario, Canada approximately 30 km southwest of downtown Sudbury. The Property is centered at approximately 46° 25.8' N latitude, 81° 21.1' W longitude, or 473,000 m E; 5,141,800 m N in NAD83 UTM Zone 17N.

The Property is an area of Patented Surface and Mining Rights, consisting of approximately 255.9 hectares, located within the southern half of Lots 3, 4 and 5 and parts of the northern half of Lots 3, 4, and 5 of Concession 5, Denison Township, District of Sudbury. The area is more particularly described as parts 1 to 16 inclusive on registered plan 53R – 21031, filed with the Land Titles Division of Sudbury.

The Patents do not have an expiry date, but are subject to an annual rent of $4/ha plus municipal taxes.

Loncan holds the Mining Rights from the top of the Concrete Capped Shaft #2 (as shown on plan 53R – 21031) to a depth of 4500 feet (1371.6 m). Vale Canada Limited ("Vale") continues to hold all Mining Rights below 4,500 feet, from the top of the Concrete Capped Shaft #2.

The Property is subject to surface easements as described in PIN No. 73382-0487(LT), PIN No. 73382-0537(LT) and PIN No. 73382-550(LT) and as represented on the survey plan 53R – 21031.

The Property is legally described as follows:

1) PIN No. 73382-0487(LT) being PCL 450 SEC SWS; Nl/2 LT 3 CON 5 Denison except L Tl 6817; Greater Sudbury; subject to an easement as in SD202334.

2) PIN No. 73382-0537(LT) being PCL 428 SEC SWS; Nl/2 LT 4-5 CON 5 Denison; SIT D422; Greater Sudbury.
3) PIN No. 73382-550(L T) being LT 1-6 CON 4 Denison; S 1/2 LT 3-5 CON 5 Denison; SIT S48617, S62072, S63396, S89248; Greater Sudbury.

Denison became wholly owned and controlled by Loncan as of July 2018, when the joint venture between Lonmin (Loncan's predecessor) and Vale was cancelled. The joint venture was established in 2005 with the intent of exploring multiple Vale properties for low-sulfide, high-PGE-Au mineralization, as it was believed they hosted significant exploration potential. These properties included Capre, Denison, Levack North, McKim, Trillabelle and Wisner.

Vale reserved a three percent (3%) Net Smelter Return royalty from the sale or other disposition of any metals or non-metallic minerals or other materials mined, produced or otherwise recovered from the Revised Property (or any waste rock or tailings derived from the Revised Property), such royalty to be on, in accordance with, and subject to the terms set out in the Royalty Agreement.

From and after the completion of the Beneficial Transfer, Loncan had the right to reasonable access to and egress from and use of (such right to access and egress subject to certain terms and conditions set forth in this Agreement and the Ancillary Agreements) such parts of the Surface Rights and other adjoining surface rights of Vale as may be reasonably required from time to time by Loncan and reasonably agreed by Vale Canada, to permit Early Exploration, Advanced Exploration, and Mine Operations to be conducted by Loncan or its Agents in or on the Revised Property.

Vale reserved and has the right to access, upgrade (if required), operate and use the Crean Hill Mine surface and underground infrastructure (for persons and vehicles, and with or without tools, equipment and machinery) in the event of a decision by Vale to conduct any Early Exploration, Advanced Exploration or Development or Mine Operations in the future on, in, or under the Property or any other adjacent or proximate property of Vale Canada (including below the Denison Cut-off Depth), subject to and in accordance with a Crean Hill Mine access agreement as shall be negotiated in good faith and entered into between Vale and Loncan at that time, taking into account the relative existing and proposed operations and facilities of each of Vale and Loncan on, in, or under or adjacent or proximate to the Revised Denison Property and the Property and such other matters as are reasonably relevant at that time.

Loncan must first offer Vale the right to process and/or purchase the ore or metals from ore mined by Loncan from the Revised Property before offering a contract on market terms with a third party to process and/or purchase ore.

On November 7, 2022, Magna announced that it has closed the acquisition of Loncan, including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine, pursuant to the share purchase agreement dated August 15, 2022 among the Corporation, Loncan, each of the shareholders of Loncan and Sibanye UK Limited, as shareholder representative.

Under the terms of the share purchase agreement, Magna acquired 100% of the issued and outstanding shares of Loncan, whose core asset is the Denison Project, in exchange for an aggregate purchase price of $16,000,000 comprised of a closing payment of $13,000,000 in cash (the "First Payment") and a deferred payment of $3,000,000 (the "Deferred Payment") payable pro rata to each shareholder of Loncan (the "Vendors"). The Deferred Payment is payable on or before the 12-month anniversary of the closing of the Acquisition. The Corporation will use commercially reasonable efforts to settle the Deferred Payment in cash, but may, at its option, settle the Deferred Payment in common shares of the Corporation priced at the time of issue in accordance with the rules of the TSX-V. As ongoing security pending the settlement of the Deferred Payment, the Corporation has granted a pledge of the shares of Loncan in favour of the Vendors. The Corporation inherited Loncan's existing commercial arrangements with Vale Canada Limited, including access rights and certain net smelter return royalties. Certain other arrangements, including Loncan's joint venture arrangements with Wallbridge Mining Company Limited, terminated concurrently with the completion of the Acquisition.

Denison is located 7 km north of Highway 17 a component of the Trans-Canada highway, approximately 28 km southwest of the City of Greater Sudbury, Ontario, Canada. It is within the south half of Lot 5, Concession 5 of Denison Township. The site is easily accessed by road throughout the year by taking Regional Road 4 north off highway 17 to Crean Hill Road, and then continuing on north-northeast until the site is reached.

The region is serviced by Highway 17, a part of the Trans-Canada Highway network, and the Sudbury Regional Airport which has daily regional flights to Thunder Bay, Toronto, Timmins, and Ottawa.

The City of Greater Sudbury, a major mining and manufacturing city, can provide all the infrastructure and technical needs for any exploration and development work. A 230 kV transmission line is located passing just south of the Property. A 115 kV transmission line passes at the western edge of the Property with a substation at the Property boundary. Water is abundant in the region from numerous lakes and rivers to support exploration programs and mining activities.

The closest active weather station to the project is at the Sudbury Airport located approximately 45 km to the northeast. The climate in the region is typical Canadian Shield summers and winters, with daily average temperatures averaging from 19°C in the summer to -13°C in the winter. Precipitation comes in the form of 30 to 63 cm per month of snow in the winter months (263 cm annual average), and 77 to 101 mm per month of rain in the summer months (676 mm annual average) (http://en.climate-data.org).

Drilling and geophysical surveys can be carried out year-round. Surface bedrock exploration can be done for about seven to eight months of the year.

The Property lies at a mean elevation of about 290 masl. Relief is moderate and typical of Precambrian Shield topography. The Property is a brownfield mine site. Existing infrastructure has altered the physiography. Outcrop exposure on the Property is limited to about 20% with the remaining areas covered mostly by a thin (less than 1 m) veneer, yet locally reach tens of metres of glacial till, gravel, outwash sand, and silt.

1.2 History of Exploration, Drilling and Production

The Project has been subject to sporadic exploration and production between 1906 and 2017 by various operators. As of the effective date of this report, Magna has yet to complete exploration on the Property.

Francis Charles Crean discovered the Crean Hill deposit in 1885. First production from the Crean Hill open pit and underground mining began at a rate of 300 tonnes/day. A total of 1.15 M tonnes @ 2.07% Ni and 2.35% Cu was produced between 1906 and 1919 when it closed.

In 1950, the Crean Hill underground workings were dewatered and underground diamond drilling commenced. From 1956-57 the Crean Hill No. 2 Shaft was collared and sunk to a depth of 2,116' (645 m). By 1958, the initial Crean Hill development was completed but the mine was closed.

In 1965-71, Crean Hill development recommenced and production reached a rate of 3,860 tonnes/day. No. 2 shaft was extended to a depth of 4,180' (1,274 m). A total of 10.5 M tonnes of ore grading 1.05 % Ni, 0.89 % Cu, and 1.47 g/t PGE-Au were produced underground with an additional 1.1 M tonnes grading 0.73% Ni and 0.56% Cu being produced from the open pit. From 1972-78, Crean Hill Mine was closed and re-opened as development work continued.

From 1983-86, Inco Limited drilled 45 holes totalling 15,436' (4,705 m) in the immediate vicinity of the Vermilion Mine site. The program intersected erratically distributed Cu-Ni-PGE mineralization.

In 1987, the Crean Hill Mine was reopened and from 1987 and 2002, a total of 7.62 M tonnes of ore grading 1.25 % Cu, 1.64 % Ni and 2.14 g/t PGE-Au was produced from the Crean Hill Main, Intermediate and West orebodies.

In 2002, a drill program consisting of 3,406' (1,038 m) of BQ core from ten underground 1,000' (305 m) level drill holes and 7,260' (2,212 m) of NQ core from four surface holes was completed to confirm and explore for extensions of the Crean Hill 9400 Zone. The mine was once more subsequently closed and decommissioned.

In 2003, the Lonmin-Vale JV was initiated & included the Property with a focus on the search for LHSPM. Property scale mapping and sampling was conducted to establish a detailed lithological and structural map. Surface UTEM and IP surveys were conducted. Five boreholes were surveyed with borehole UTEM-4 and 14 holes were surveyed with down-hole IP (0.125 Hz).

In 2005, Property mapping and sampling was conducted to establish a detailed lithological and structural map of the property. Surface UTEM and IP surveys were conducted. Five boreholes were surveyed with borehole UTEM-4 and 14 holes were surveyed with down-hole IP (0.125 Hz).

The 2005 drill program comprised of 18 holes totalling 18,720' (5,706 m), testing the depth extensions of the known Vermillion mineralisation, the strike and plunge extensions of the Crean Hill 9400 Zone as well as testing MIMDAS IP chargeability anomalies in the near surface environment.

In 2006, the mapping and sampling program was continued, including a focus on the Vermillion Mine area. A total of 165 grab samples was collected for geochemical and thin section analysis, yielding numerous anomalous PGE-Au occurrences all of which are located within a corridor ~80 m south of the SIC contact. Most notably, these showings are centred about the west flank of the main Crean Hill embayment, the west flank of the eastern embayment and the area immediately south of the Beeper Zone.

The 2006 drilling program, totalling 20,098' (6,126 m) was directed at investigating the strike and plunge extensions of the Crean Hill 9400 and 109 zones, the depth extension of the Xstrata Nickel Beeper Zone onto the Property, the up plunge extension of the 8800 Zone and the footwall potential of the Eastern Embayment.

In 2007, a limited amount of mapping was carried out around the Vermillion deposit with an emphasis on structure. Numerous down-hole borehole UTEM surveys were conducted on recently drilled holes within the 9400 and 8800 Zones. The 2007 drilling program, totalling 36,093' (11,001 m) was primarily directed at investigating the strike and plunge extensions of the Crean Hill 8800 and 9400 zones. One borehole targeted the footwall potential of the Eastern Embayment. The understanding of the PGE mineralizing systems at Denison was advanced.

In 2008, a total of 6,006 m was drilled in 16 holes. The mineralized system was determined to extend from the 9400 Zone down-dip to the 99-Shaft Zone, but the tenure of mineralization, where tested, was determined to be sub-economic. The bottom of the 9400 Zone was also extended and better defined through additional drilling (9400 Down-Dip). The 101 Zone was tested along strike and down dip. A new concept connecting the 101 Zone to the contact (101 Zone East Extension was drill tested with positive results. A new concept was drill tested in the footwall of the 109 Zone, resulting in the discovery of the 109 FW Zone.

A total of 12 holes were UTEM surveyed in 2008, generating plates explained by known mineralization and mine workings. Optical Televiewer survey on two boreholes in the 109FW Zone confirmed orientation of mineralized features.

The 9400 Zone PMD was updated to reflect the addition of the down dip extension. The 8800 Zone Exploration Potential, last updated in 2006, was reduced in size to reflect the results of the 8800 Zone drilling conducted in 2007. A new zone, the 8800 Contact Zone, discovered in the 2007 drilling, was added to the mineral inventory as Exploration Potential. The newly discovered 109 FW Zone was added to the mineral inventory as Exploration Potential. As this mineralization is interpreted to be continuous with the 109 Zone both zones were combined in to a single 109 FW Zone Exploration Potential.

The 2009 exploration program at the Property was primarily focused on follow-up to the late 2008 discovery of the 109 FW Zone. A total of 20,726' (6,317 m) were drilled in 29 holes, with an average length of 218 metres per hole. Drilling was directed towards defining the limits of the mineralized zone. A total of eight holes were surveyed by optical televiewer in total. There were no other geophysical surveys carried out at Denison in 2009. The 109 FW Zone was projected to surface and the area prospected. A 60 metre x 300 metre area was stripped, washed, mapped in detail and channel sampled with numerous continuous low sulphide high precious metal results returned, confirming the continuity of the 109FW zone to surface.

Metallurgical test results, based on three 25kg composite samples from a single hole, showed variable, but favourable precious metal recoveries generally in the high 70% to 80% range, assuming processing at Clarabelle Mill.

Based on the block modelling carried out internally, a new PMD resource was added to the inventory for the 109 FW Zone with a base case of 1.0 Mt grading 0.4 %Ni, 0.8 %Cu, and 6.0 g/t PGE-Au.

In 2010, a total of 34,738' (10,588 m) were drilled in 2010 completing 58 drill holes, including the extension of 2 historical drill holes. In addition to the drilling programs completed in 2010, other advancements such as; surface stripping, channel sampling, geophysical televiewer surveys (4,243 m in 19 boreholes), geotechnical work, mineral resource modelling, mineralogical and metallurgical studies were completed. The 109 FW mineralization envelope was projected to surface, stripped and channel sampled, returning 32 samples >2.99 g/t TPM, and 8 samples >9.0 g/t TPM, with the highest grade sample assayed at 35.76 g/t TPMs. In total, 291 channel samples were collected and assayed.

In 2011, a total of 1,089' (332 m) was drilled in 2011 completing two boreholes. A conceptual target testing shallow potential Low Sulphide High Grade Precious Metal ("LSHPM") mineralization parallel to the 9400 zone, called the 100 zone, was tested yielding sub-economic results. The focus of work in 2011 was on mineral resource assessment. At year end, mineral resource classification was in progress. The block models for the 109 FW and HW Domains were completed, as well as for the contact HW mineralization, Ni Remnants and the 101 Zone. Lonmin fully vested in the JV in December 2011, earning a 50% interest in LSHPM mineralization on the Lonmin-Vale JV properties in the Sudbury Basin.

In 2012, a total of 4,314' (1,315 m) was drilled completing 12 boreholes, targeting the low-grade contact sulphide and potential LSHPM FW mineralization in the saddle zone and geotechnical drilling in the HW north of the existing Crean Hill pit. Drilling was suspended due to budget constraints.

In 2014, Lonmin Canada Inc, a wholly owned subsidiary of Lonmin Plc, became the operator of the Vale-Lonmin JV including the Property. A total of 30,610' (9,330 m) was drilled in 43 holes, with the primary goal of increasing confidence in the 109FW zone. Three holes targeted the saddle zone between the 109 and 101 Zones. Geotechnical data and specific gravity data were collected from most boreholes. The previously saw-toothed shape of the mineral envelope along the plunge of the hinge (southern margin) was remodelled and smoothed out with the intersection of significant mineralization in previously existing gaps.

In 2015 a total of 46,257' (14,099 m) was drilled in 34 holes in drill programs aimed at the 109FW Zone and 9400 Zone. Drilling in both zones aimed to increase confidence by targeting areas of low drilling density. In the 109FW Zone, boreholes with significant assay results were wedged to duplicate and triplicate the intersection at short distances to provide short-range grade variability data and to provide material for geometallurgical testing. Geotechnical data collected from most boreholes and specific gravity data collected from all boreholes. Immediately north of the known extent of Vermilion mineralization, surface mapping and prospecting identified a chalcopyrite vein with significant Pt, Pd and Au assays. The Vermilion area was subsequently stripped and a sampling program was undertaken; A 16' (5 m) square grid of samples followed by several swaths of channel cuts across areas of high grade and interesting features, which highlighted the high-grade mineralization at surface.

A mineral resource estimation was completed on the 109FW Zone with Indicated and Inferred resources declared for the near-surface portion of the deposit to 370' (113 m) depth that would be mined as an open pit. Mineralization below the proposed open pit was reported as exploration target. The 109FW HW zone (largely mined as the Crean Hill main orebody) was also included in the estimation, but no resources were declared.

In 2016, total of 23,261' (7,090 m) was drilled in 63 holes in drill programs at Denison. A 33 hole program targeted Vermilion, with the aim of filling in gaps in the shallow known mineralization, testing for extensions of the mineralization and confirming historic results. Drilling in the 109FW Zone concentrated on collection of larger diameter core for geometallurgical testing. Thirteen boreholes targeted the 9400 Zone in areas of lower drilling density and boreholes with significant assay results were wedged to duplicate and triplicate the intersection at a short distances, to provide short-range grade variability data and to provide material for geometallurgical testing. Geotechnical data was collected from most boreholes and specific gravity data collected from all boreholes. The morphology of the 9400 area mineralization was re-interpreted as a tabular body that branches at the western margin, with highest TPM grades over largest widths seen at the intersection of the branches.

In 2017, 18,586' (5,665 m) had been drilled from 16 boreholes targeting the 9400 Zone and extensions of the 9400 Zone up-plunge, immediately west of the Crean Hill West Orebody which is largely mined out. Drilling was subsequently curtailed due to budget constraints. Geotechnical data was collected from most boreholes and specific gravity data collected from all boreholes. Both the 109FW Zone and 9400 Zone were subject to mineralogical study by Cabri Consulting Inc and a metallurgical study was completed on the 109FW zone by Blue Coast Research.

1.3 Geology and Mineralization

Ni-Cu-PGE deposits in Sudbury occur within the Sudbury Structure that formed as a result of a major Early Proterozoic meteorite impact 1,850 million years ago. The Sudbury Structure straddles the unconformity between Archean gneisses and plutons of the Superior Province and overlying Paleoproterozoic Huronian supra-crustal rocks of the Southern Province. It is geographically divided into the North, South, and East Ranges (Figure 7-1) and comprises four geologic domains.

The Property is in the South Range of the The Sudbury Igneous Complex ("SIC"). The Main Mass of the South Range SIC consists of a lower unit of the Quartz-rich Norite. Stratigraphically above is the Green Norite with irregular bodies of Brown Norite followed by the Quartz Gabbro then the Granophrye layers.

Found at the basal contact of the Main Mass in embayment and trough structures is a magmatic breccia called Sublayer.

The footwall to the SIC South Range is the Southern Province. The geology can roughly be divided into the Early Proterozoic (~2,450 Ma) Murray and Creighton Granite Plutons and Huronian Supergroup (2,250 to 2,460 Ma) mafic and felsic volcanic and sedimentary rocks.

The Creighton and Murray Plutons are intrusive into older Huronian volcanic and sedimentary rocks, mostly of the Elsie Mountain and Stobie Formations.

The South Range of the Sudbury Igneous Complex and adjacent Huronian rocks, for the most part, dip vertically or steeply north or south. Stratigraphic tops generally face south away from the SIC and toward the Grenville Front. The South Range Shear zone and Creighton and Murray faults are the manifestation of the deformation events that have shaped the present-day South Range. The age of the deformation which has resulted in the current sub-vertical orientation of the Huronian rocks has not been definitively established. The metasedimentary rocks are interbedded sparingly with mafic volcanic flows of the Elsie Mountain Formation and commonly with volcanic rocks of the Stobie Formation. Many of these interflow metasedimentary rocks are sulphide-bearing. The sulphides are dominantly pyrrhotite with minor amounts of pyrite and trace chalcopyrite.

South Range footwall rocks are cut by several small diabase and gabbroic intrusions that are often difficult to distinguish in the field. These include Matachewan dykes, Nipissing intrusions, quartz diabase (trap dykes), and Olivine Diabase. Both the quartz diabase and olivine diabase dykes are younger than the SIC. The Archean and early Proterozoic basement rocks are all crosscut by Sudbury Breccia.

The Property straddles the South Range of the SIC approximately 30 km southwest of Sudbury, in Denison Township. From 1906-2002 a total of 20.4 Mt grading 1.31% Ni, 1.09% Cu, 1.56 g/t Pt + Pd + Au was produced from the Main, Intermediate and West orebodies (predominantly underground).

The Property hosts part of a large trough structure at the base of SIC which contains a number of previously mined ore deposits including Crean Hill Main Orebody, Crean Hill Intermediate Orebody, Crean Hill West Orebody, Ellen Mine, and Lockerby Mine, each sitting in embayments (terraces) within the larger trough. Much of the mined Ni-Cu contact mineralization is associated with the embayment structures in the SIC, and the embayments largely control the distribution of Ni-Cu mineralization.

Additional embayments in the SIC containing significant Ni-Cu sulphide mineralization may be present at Denison, in different orientations to the Crean Hill embayment. In the Creighton deposit (13 km along strike east of Crean Hill), at least three orientations of embayments are present, the steep plunging 400 embayment, the moderate east plunging 402 (Gertrude West) embayment, and the moderate west plunging 403 embayment. Additional embayment trends are present at Crean Hill, with little exploration drilling and represent significant Ni-Cu sulphide exploration targets.

The strike of the SIC contact ranges from 120° at surface to 80°, and the dip varies from steeply dipping to the north at surface through vertical to steeply dipping over-turned to south at the lower depths. The contact between the SIC and the footwall is very often sheared. Shearing and brittle faulting also occur within the footwall, as well as local significant alteration.

A significant portion of the mineralization, such as the 109 FW Zones, the 101 Zone and part of the 9400 Zone, are hosted in the footwall rocks. The host rocks are dominated by metamorphosed basalt (historically mapped and logged as greenschist), but also include gabbro, andesite, rhyolite, and sedimentary units (arkosic quartzite and meta-pelite) of the Huronian Supergroup, Elsie Mountain Formation. Minor lithologies include olivine diabase, quartz diabase (trap dykes), granite, schist, amphibolite, and Sudbury Breccia in the footwall, and quartzose norite at the SIC contact.

Though the distribution of much of the mineralization in controlled by embayments, additional structural settings and controls may be present. The association between shear zones and Ni-Cu sulphide orebodies is common in the South Range of the Sudbury basin, with Ni-Cu sulphide orebodies in the Creighton and Garson deposits associated with large shear zones. The splays of the Crean Hill (Victoria) shear zone can be traced from through the 9400 orebody and into the Crean Hill Main open pit and appears to be associated with Ni-Cu sulphide mineralization at each. In addition, at Denison the line of intersection between the Crean Hill shear zone and SIC is sub-parallel to the trend and plunge of Crean Hill embayment, suggesting the Crean Hill shear zone may have controlled the formation of the embayment. The shear zones are associated with zones of alteration. In the western upper quadrant of the 9400 Zone mineral envelope, a wide zone of significant talc alteration is observed, affecting all rock types except olivine diabase and quartz diabase (trap dyke).

The Crean Hill shear zone may also control the distribution of PGE mineralization away from the Crean Hill embayment. In the South Range, for example, the Crean Hill, Creighton, Garson, Falconbridge, and Thayer Lindsey deposits all display shear zone controls on Ni-Cu sulphide mineralization. If the distribution of Ni-Cu sulphide mineralization is controlled by shear zones, it can be expected that the distribution of PGE mineralization may also be controlled by the shear zones. The PGE mineralization may be distributed within the shear zones along strike from the Ni-Cu sulphide mineralization, rather than directly into the deposit's footwall. This is observed in the Garson deposit, with high tenor PGE mineralization observed in shear zones in the Garson ramp area, along strike from the main shear zone hosted Ni-Cu sulphide ores.

Two variably developed shear structures have also been observed along the limbs of the 109 FW Zone and are interpreted to form the pathway for mineralization of the footwall, not as discrete mineralized features but rather as a route into the footwall for migrating metals. The shears locally appear as chlorite and talc altered zones of metabasalt with strong foliation. The level of alteration is variable, with the extreme end member being very soft heavily talc altered beige intervals up to 30 cm which have been encountered twice in drilling. Many intervals through the interpreted shears appear unaffected, with only typical levels of quartz-carbonate veining and alteration characteristic of the footwall rocks.

There is one main fault in the immediate area of the 109 FW, a shallow fault striking 100° and dipping 25° south. This fault is comprised of two or more anastomosing horizons, where core is broken up along poorly healed joints, with local chlorite rich gouge horizons, bleached core and locally significant quartz-carbonate veining. Locally there are void spaces within the fault which are reported to have caused the abandonment of one hole in a previous drilling campaign. There is no offset of the 109 HW or 109 FW zones through this fault horizon, it appears to be a zone of weakness and alteration with no apparent offset. There is also no apparent trend in terms of enrichment or depletion of the 109 FW Zone mineralization due to the fault.

Sectional plans at Crean Hill are consistent with imbricate reverse fault slices stacked north over south. Many structures have a W-E trend and run close to the base of the SIC (e.g. the Victoria Shear which appears to have a dextral reverse motion), and there may also be splays of the Cliff Lake Fault (which typically exhibits south over north thrusting through much of the South Range except where the basal contact is very steep). It is unclear to what extent the structures deformed/displaced the mineralization versus provided a pathway for the mineralization to follow.

The main mineralized zones from east to west are as follows:

- 109 W/Remnant Zones
- 126
- 123
- 109 FW
- 109 HW
- 99 Zone
- 101
- 9400
- 9400 FW Ext

There are several main types of mineral deposits in the Sudbury area:

- Contact deposits, including massive sulphide consisting of nickel, copper, cobalt, platinum, palladium, and gold mineralization along the lower contact of the SIC, both within the contact sublayer and in the immediately adjacent Footwall Breccia.
- Footwall deposits, including sulphide veins and stringers containing copper, nickel, platinum, palladium, and gold in the brecciated footwall rocks beneath the SIC.
- Structurally and/or hydrothermally remobilized sulphide nickel, copper, cobalt, platinum, palladium, and gold mineralization.
- Offset dyke deposits, including massive sulphide consisting of nickel, copper, cobalt, platinum, palladium, and gold mineralization associated with brecciated and inclusion bearing phases (IQD) of the quartz diorite offset dykes (QD).
- Hybrid type deposits representing combinations of the above.

Much of the historic mining activity on the Property exploited Contact style of mineralization. Mineralization includes blebby to massive accumulations of sulphide, including pyrrhotite > chalcopyrite > pentlandite concentrated within embayment depressions along the base of the Sudbury Igneous Complex both within the contact sublayer and in the immediately adjacent Footwall Breccia.

Examples of recent footwall deposit discoveries in the region include the Denison 109 FW Zone, parts of the 9400 Zone. Mineralization includes networks of one to ten metre sized massive sulphide veins, stockworks of smaller centimetre to metre sized sulphide veinlets and low sulphide alteration zones with weak sulphide disseminations, including chalcopyrite > pentlandite +/- pyrrhotite, millerite, cubanite, bornite, and pyrite. Footwall deposits are often hosted by Sudbury breccia structures.

LSHPM is a relatively new classification of mineralization in Sudbury. LSHPM mineralization has been identified in three geological settings including: as fine-grained specks in footwall shears such as observed in the 109 FW and 9400 Zones at Denison; as fine-grained specks, disseminations and narrow discontinuous fracture fillings in Sudbury Breccia and adjacent wall rocks in the 109 FW and 9400 Zone at Denison. The LSHPM mineralization at Denison exhibits a close spatial relationship to the more massive contact-related Ni-Cu sulphide ores at the base of the SIC. This relationship results in the greatest concentration of LSHPM mineralization occurring adjacent to largest concentration and highest tenor massive sulphide occupying the Denison embayment structure

In some deposits, sulphide has been remobilized into shear zones and related structural traps. Several mineralized trends at Denison mimic the underlying shear fabric and because of this it has been suggested these trends would fall under this deposit type.

Though not identified, the potential for the Property to host Offset dyke deposits exists. Mineralization includes massive and semi-massive accumulations of sulphide, including pyrrhotite > chalcopyrite > pentlandite. Sulphide accumulations are associated with inclusion-bearing phases of quartz diorite and are known to concentrate in structural traps such as vertical or horizontal pinches or terminations in the dyke, bends in the dyke, splays/convergences of dyke branches, along the margins or within “pressure shadows” of large blocks caught up in the dyke, and at intersections of the offset dykes with coarse mafic intrusions in the wall rock. Increased PGEs are typically associated with more fractionated chalcopyrite rich zones within offset dyke deposits, which can extend from the dyke outwards into the surrounding country rock, into adjacent zones of Sudbury breccia, meta-breccia or anatexite.

These structural traps are largely controlled by the geology of the wall rock to the offset dykes (geological units, contacts and structures). Understanding these wall rocks is crucial to developing and prioritizing drill targets below the depth of penetration of surface geophysics.

1.4 Mineral Processing, Metallurgical Testing and Recovery Methods

The Project has been subject to several test programs by Vale over the history of the mine operation. The test work was focused on the nickel sulphide deposits with the Clarabelle Mill flowsheet as the standard. As the Denison / Crean Hill Mine operated on and off from 1906, it is assumed the nickel sulphide deposits have acceptable metallurgical recoveries for the Clarabelle flowsheet.

To date, limited metallurgical testwork and investigations have been conducted on samples of Denison 109FW zone mineralization. In 2010/2011, samples were tested by Vale’s Technical Research Centre (Sheridan Park) and compared with Clarabelle standard feed. In 2017, a single master composite sample was tested by Blue Coast Research for gravity and bulk Cu-Ni flotation concentrates. Additional testing was done by Blue Coast in 2020 on the same sample looking at improving gravity recovery ahead of bulk flotation.

1.5 Crean Hill Deposit Mineral Resource Statement

Completion of the update MRE’s for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2017, as well as three-dimensional (3D) mineral resource models (resource domains), 3D models of all mined-out areas (open pit and underground), 3D models of cross-cutting dykes, a recent topographic surface and available written reports.

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no errors or issues identified with the database. The Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

Inverse Distance Squared ("ID2") calculation method restricted to mineralized domains was used to interpolate grades for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) into block models.

Indicated and Inferred mineral resources are reported in the summary tables below. The current MRE takes into consideration that the Projects deposits may be mined by open pit and underground mining methods.

In order to complete the MRE for the Property, a database comprising a series of comma delimited spreadsheets containing surface and underground drill hole information was provided by Magna. The database included hole location information (local grid coordinates, in feet), survey data (final depth in feet), assay data (from and to in feet), lithology data and specific gravity data. The data in the assay table included assays for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) as well as Ag (g/t), Rh (ppm), S (%) and Fe (%). It should be noted that not all assay samples had values for Pt, Pd, Au, Ag or Rh. Ag and Rh were the least analysed elements and are not included in the MRE.

After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software ("GEMS") for statistical analysis, block modeling and resource estimation.

The database used for the current MRE comprises data for 3,836 surface and underground drill holes completed within the deposit area, which total 1.57 million ft (478,000 m). The database totals 89,257 assay intervals for 622,082 ft (189,611 m).

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. Gaps in the assay sampling and un-sampled elements were assigned a grade value of 0.0001 for Ni, Cu, Co, Pt, Pd and Au.

The MRE for the Property are prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current MRE's into Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources "have reasonable prospects for eventual economic extraction".

The general requirement that all Mineral Resources have "reasonable prospects for economic extraction" implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Denison deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in Table 1-1. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The corresponding strip ratio is approximately 10.6:1 and reaches a maximum depth of below surface of ~1,320 ft (402 m) in the east and 1,250 ft (381 m) in the west. The optimized pit shell is limited to the Property boundary.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 0.3% NiEq is used to determine the in-pit MRE for the Denison deposit.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from underground are used. Based on the size, shape and orientation of the Deposit, it is envisioned that the Deposit may be mined using the longhole open stoping mining method (a bulk mining method that has long been utilized in the Sudbury region). The underground parameters used, based on this mining method, are summarized in Table 1-1. Based on these parameters, a selected base case cut-off grade of 1.1% NiEq is used to determine the below-pit MRE for the Denison deposit. The below-pit MRE is limited to a depth of ~4,500 ft (1,371.6 m) below surface.

The reader is cautioned that the reporting of the underground resources are presented undiluted and in situ (no minimum thickness), constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction. There are no underground mineral reserves reported at this time.

Table 1-1 Whittle™ Pit Optimization Parameters

Parameter	Value	Unit
Nickel Price	$8.50	US$ per pound
Copper Price	$3.75	US$ per pound
Cobalt Price	$22.00	US$ per pound
Platinum Price	$1,000.00	US$ per ounce
Palladium Price	$2,000.00	US$ per ounce
Gold Price	$1,750.00	US$ per ounce
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$80.00	US$ per tonne mined
Transportation	$5.00	US$ per tonne milled
Processing Cost (incl. crushing)	$15.50	US$ per tonne milled
Treatment and Refining	$15.00	US$ per tonne milled
In-Pit General and Administrative	$2.50	US$ tonne of feed
Underground General and Administrative	$7.00	US$ tonne of feed
Overall Pit Slope	55	Degrees
Nickel Recovery	78.0	Percent (%)
Copper Recovery	95.5	Percent (%)
Cobalt Recovery	56.0	Percent (%)
Platinum Recovery	69.2	Percent (%)
Palladium Recovery	68.0	Percent (%)
Gold Recovery	67.7	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

The current MRE for the Deposit is presented in Table 1-2 and includes an in-pit and an underground (below-pit) Mineral Resource (estimated from the bottom of the 2022 pit).

Highlights of the Denison deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 0.3% NiEq, 16,760,000 tonnes grading 0.53% Ni, 0.49% Cu, 0.02% Co, 0.48 g/t Pt, 0.37 g/t Pd and 0.25 g/t Au in the Indicated category, and 434,000 tonnes grading 0.43% Ni, 0.49% Cu, 0.02% Co, 0.29 g/t Pt, 0.14 g/t Pd and 0.07 g/t Au in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 1.1% NiEq, 14,532,000 tonnes grading 0.96% Ni, 0.84% Cu, 0.03% Co, 0.88 g/t Pt, 1.02 g/t Pd and 0.54 g/t Au in the Indicated category, and 1,169,000 tonnes grading 0.61% Ni, 0.46% Cu, 0.02% Co, 0.64 g/t Pt, 1.09 g/t Pd and 0.21 g/t Au in the Inferred category.

Table 1-2 Denison Deposit In-Pit (A) and Underground (below-pit) (B) Mineral Resource Estimate, August 19, 2022

(A)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
0.3% NiEq	16,760,000	0.53	0.49	0.02	0.48	0.37	0.25	1.08
Inferred								
0.3% NiEq	434,000	0.43	0.49	0.02	0.29	0.14	0.07	0.82

(B)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
1.1% NiEq	14,531,000	0.96	0.84	0.03	0.88	1.02	0.54	2.07
Inferred								
1.1% NiEq	1,170,000	0.61	0.46	0.02	0.64	1.09	0.21	1.41

(1) *The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.*

(2) *All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.*

(3) *All Resources are presented undiluted and in situ, constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction.*

(4) *Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

(5) *It is envisioned that parts of the Denison deposit may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 0.3 % NiEq within a conceptual pit shell.*

(6) *The results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.*

(7) *Underground (below-pit) Mineral Resources are estimated from the bottom of the pit and are reported at a base case cut-off grade of 1.1 % NiEq. The underground Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized wireframes. At this base case cut-off grade the deposit shows good deposit continuity with limited orphaned blocks. Any orphaned blocks are connected within the models by lower grade blocks.*

(8) *Based on the size, shape, location and orientation of the Denison deposit, it is envisioned that the deposit may be mined using longhole open stoping (a bulk mining method that has long been utilized in the Sudbury region).*

(9) *High grade capping was done on 10 ft (3.05 m) composite data.*

(10) *Bulk density values were determined based on physical test work from each deposit model and waste model.*

(11) *NiEq Cut-off grades are based on metal prices of $8.50/lb Ni, $3.752/lb Cu, $22.00/lb Co, $1000/oz Pt, $2000/oz Pd and $1,750/oz Au and metal recoveries of 78% for Ni, 95.5% for copper, 56% for Co, 69.2% for Pt, 68% for Pd and 67.7% for Au.*

(12) *The in-pit base case cut-off grade of 0.3% NiEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$38.00/t mineralized material, and an overall pit slope of 55 degrees. The below-pit base case cut-off grade of 1.1 % NiEq considers a mining cost of US$80.00/t rock and processing, treatment and refining, transportation and G&A cost of US$42.50/t mineralized material.*

(13) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

1.6 Recommendations

The Denison deposit contains within-pit and underground Indicated and Inferred Mineral Resources that are associated with well-defined mineralized trends and models. The deposit is open along strike and at depth.

Given the prospective nature of the Deposit, it is the Author's opinion that the Project merits further exploration and that a proposed plan for further work by Magna is justified. A proposed work program by Magna will help advance the Project and will provide key inputs required to evaluate the economic viability of the Project at a Prefeasability ("PFS") level.

The Author is recommending Magna conduct further exploration, subject to funding and any other matters which may cause the proposed exploration program to be altered in the normal course of its business activities or alterations which may affect the program as a result of exploration activities themselves.

The total cost of the recommended work program by Magna is estimated at C$4.2 million to C$5.1 million.

The initial exploration budget includes expenditures to complete detailed geological compilation and review of the historic, and recent diamond drilling completed by Loncan to gain a better understanding the geology and various styles of mineralization within the near surface potential open pit and upper levels of the underground resources.

Magna intends to complete approximately 10,000 m to 12,000 m of surface diamond drilling within the near surface potential open pit and upper levels of the underground resources, roughly above the 2,000 ft mine level. Any future deeper drilling will likely be conducted from the underground mine workings.

Drilling will focus on delineation drilling to facilitate mine design and engineering, and provide additional material for metallurgical and geotechnical studies. The 2023 work program includes engineering, environmental, permitting and other studies required to assess potential mineability and complete a Preliminary Economic Assessment on the Project.

2 INTRODUCTION

SGS Geological Services Inc. ("SGS") was contracted by Magna Mining Inc. (formerly CT Developers Ltd.) (the "Company" or "Magna") to complete a Mineral Resource Estimate ("MRE") for the Crean Hill Ni-Cu-PGE mine ("Crean Hill" or "Deposit") within the Denison Property (the "Property" or the "Project"), located near Sudbury, Ontario, Canada, and to prepare a National Instrument 43-101 ("NI 43-101") Technical Report written in support of the MRE.

On August 16th, 2022, Magna announced it has entered into a definitive share purchase agreement (the "Purchase Agreement") to acquire 100% of Lonmin Canada Inc. ("Loncan"), including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine.

On November 7, 2022, Magna announced that it has closed the acquisition of Loncan, including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine, pursuant to the share purchase agreement dated August 15, 2022 among the Corporation, Loncan, each of the shareholders of Loncan and Sibanye UK Limited, as shareholder representative.

Under the terms of the share purchase agreement, Magna acquired 100% of the issued and outstanding shares of Loncan, whose core asset is the Denison Project, in exchange for an aggregate purchase price of $16,000,000 comprised of a closing payment of $13,000,000 in cash (the "First Payment") and a deferred payment of $3,000,000 (the "Deferred Payment") payable pro rata to each shareholder of Loncan (the "Vendors"). The Deferred Payment is payable on or before the 12-month anniversary of the closing of the Acquisition. The Corporation will use commercially reasonable efforts to settle the Deferred Payment in cash, but may, at its option, settle the Deferred Payment in common shares of the Corporation priced at the time of issue in accordance with the rules of the TSX-V. As ongoing security pending the settlement of the Deferred Payment, the Corporation has granted a pledge of the shares of Loncan in favour of the Vendors. The Corporation inherited Loncan's existing commercial arrangements with Vale Canada Limited, including access rights and certain net smelter return royalties. Certain other arrangements, including Loncan's joint venture arrangements with Wallbridge Mining Company Limited, terminated concurrently with the completion of the Acquisition.

Magna is a mineral exploration and development company and is engaged in the exploration of mineral properties. Its current assets consist of the Shakespeare Nickel Project, located near Sudbury, Ontario, Canada, and the Shining Tree Ni-Cu-PGE project, located 100-km north of Sudbury, Ontario, Canada. Magna's common shares are listed on the Toronto Stock Exchange Venture Exchange ("TSX-V") under the symbol "NICU". Their current business address is 1300 Kelly Lake Road Sudbury, Ontario P3E 5P4.

The current report is authored by Allan Armitage, Ph.D., P. Geo., ("Armitage" or the "Author") of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report.

2.1 Sources of Information

In preparing the current Property MRE and the current technical report, Armitage has utilized a digital database, provided to the Author by Magna, and miscellaneous internal technical reports provided by Magna. All background information regarding the Property has been sourced from previous internal technical reports and revised or updated as required. As of the effective date of this report, Magna has yet to complete exploration on the Property.

- *The Property was the subject of a recent technical report by SRK in 2020 and is presented in an internal Technical Report titled "Preliminary Economic Assessment for the Denison Base Metal Project, Final Report" Prepared for Lonmin Canada Inc. Issued December, 2020; effective December 4th, 2020.*

- *The Property was also the subject of a technical report by WSP in 2020 and is presented in an internal Technical Report titled "Denison Project Resource Review, Denison Twp., Sudbury District" Prepared for Lonmin Canada Inc..and Issued November 26, 2020; effective September 29, 2020.*

Armitage has carefully reviewed all digital data and Property information and assumes that all information and technical documents reviewed and listed in the "References" are accurate and complete in all material aspects. Information regarding the property exploration history, previous mineral resource estimates, regional property geology, deposit type, recent exploration and drilling, metallurgical test work, and sample preparation, analyses, and security for previous drill programs (Sections 5-13) have been sourced from the recent internal technical reports.

Historical Mineral Resource figures contained in this report, including any underlying assumptions, parameters and classifications, are quoted "as is" from the source.

The Author believes the information used to prepare the current Technical Report is valid and appropriate considering the status of the Project and the purpose of the Technical Report. By virtue of the Author's technical review of the Project, the Author affirms that the work program and recommendations presented herein are in accordance with NI 43-101 requirements and the MRE follow CIM Standards on Mineral Resources and Reserves – Definitions and Guidelines ("CIM Definition Standards").

2.2 **Site Visit**

Armitage personally inspected the Property on the 25th of May, 2022, accompanied by Jason Jessup, CEO & Director of Magna, David King of King Geoscience, technical advisor and QP for Magna, and Dave Smith, Senior Geologist for Wallbridge Mining Company Ltd. Armitage completed a tour of the historical mine site including the area of the shafts and raises, previous open pit and waste dump. The Author visited a number of outcrops to review the geology and various styles of mineralization, rock sample and channel sample locations, and recent and historical drill sites.

On May 26th, the Author was able to visit the Project's core storage facility in Sudbury (Wallbridge core storage facility), accompanied by David King and Dave Smith. Armitage examined a number of selected mineralized core intervals from recent diamond drill holes from the Project. Armitage examined assay certificates and assays were examined against the drill core mineralized zones. All core boxes were well labelled and properly stored in core racks outside, with a number of significant drill intercepts stored on core racks inside. Sample numbers for recent drill holes were written on the core and it was possible to validate sample intervals and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

At the time of the visit, there was no active exploration or mining activities on the Property and Magna has completed no exploration on the Property to date.

As a result of the site visit, the Author was able to become familiar with conditions on the Property, was able to observe and gain an understanding of the geology and various styles mineralization, was able to verify the work done and, on that basis, is able to review and recommend to Magna an appropriate exploration or development program.

The Author considers the site visit current, per Section 6.2 of NI 43-101CP. To the Authors knowledge there is no new material scientific or technical information about the Property since that personal inspection. The technical report contains all material information about the Property.

2.3 **Effective Date**

The Effective Date of the current MRE is August 19, 2022.

2.4 Units and Abbreviations

All units of measurement used in this technical report are in metric. All currency is in US dollars (US$), unless otherwise noted.

Table 2-1 List of Abbreviations

$	Dollar sign	m^2	Square metres
%	Percent sign	m^3	Cubic meters
°	Degree	masl	Metres above sea level
°C	Degree Celsius	mm	millimetre
°F	Degree Fahrenheit	mm^2	square millimetre
µm	micron	mm^3	cubic millimetre
AA	Atomic absorption	Moz	Million troy ounces
Ag	Silver	MRE	Mineral Resource Estimate
Au	Gold	Mt	Million tonnes
Az	Azimuth	NAD 83	North American Datum of 1983
CAD$	Canadian dollar	Ni	Nickel
cm	centimetre	NQ	Drill core size (4.8 cm in diameter)
cm^2	square centimetre	oz	Ounce
cm^3	cubic centimetre	Pd	Palladium
Co	Cobalt	PGE	Platinum Group Elements
Cu	Copper	ppb	Parts per billion
DDH	Diamond drill hole	ppm	Parts per million
ft	Feet	Pt	Platinum
ft^2	Square feet	QA	Quality Assurance
ft^3	Cubic feet	QC	Quality Control
g	Grams	QP	Qualified Person
g/t or gpt	Grams per Tonne	RC	Reverse circulation drilling
GPS	Global Positioning System	RQD	Rock quality description
Ha	Hectares	SG	Specific Gravity
HQ	Drill core size (6.3 cm in diameter)	t.oz	Troy ounce (31.1035 grams)
ICP	Induced coupled plasma	Ton	Short Ton
kg	Kilograms	Tonnes or T	Metric tonnes
km	Kilometres	TPM	Total Platinum Minerals
km^2	Square kilometre	US$	US Dollar
m	Metres	UTM	Universal Transverse Mercator

3 Reliance on Other Experts

Verification of information concerning Property status and ownership, which are presented in Section 4 below, have been provided to the Author by Magna by way of an E-mail on August 19, 2022. The Author only reviewed the land tenure in a preliminary fashion and has not independently verified the legal status or ownership of the Property or any underlying agreements or obligations attached to ownership of the Property. However, the Author has no reason to doubt that the title situation is other than what is presented in this technical report (Section 4). The Author is not qualified to express any legal opinion with respect to Property titles or current ownership.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Property is located in Denison Township within the City of Greater Sudbury, Ontario, Canada approximately 30 km southwest of downtown Sudbury (Figure 4-1, Figure 4-2). The Property is centered at approximately 46° 25.8' N latitude, 81° 21.1' W longitude, or 473,000 m E; 5,141,800 m N in NAD83 UTM Zone 17N.

Figure 4-1 Property Location Map (from WSP, 2020)

Figure 4-2 Property Location in Northern Ontario (from WSP, 2022)

4.2 Mineral Disposition and Tenure Rights

The Property is an area of Patented Surface and Mining Rights, consisting of approximately 255.9 hectares, located within the southern half of Lots 3, 4 and 5 and parts of the northern half of Lots 3, 4, and 5 of Concession 5, Denison Township, District of Sudbury. The area is more particularly described as parts 1 to 16 inclusive on registered plan 53R – 21031, filed with the Land Titles Division of Sudbury (Figure 4-3).

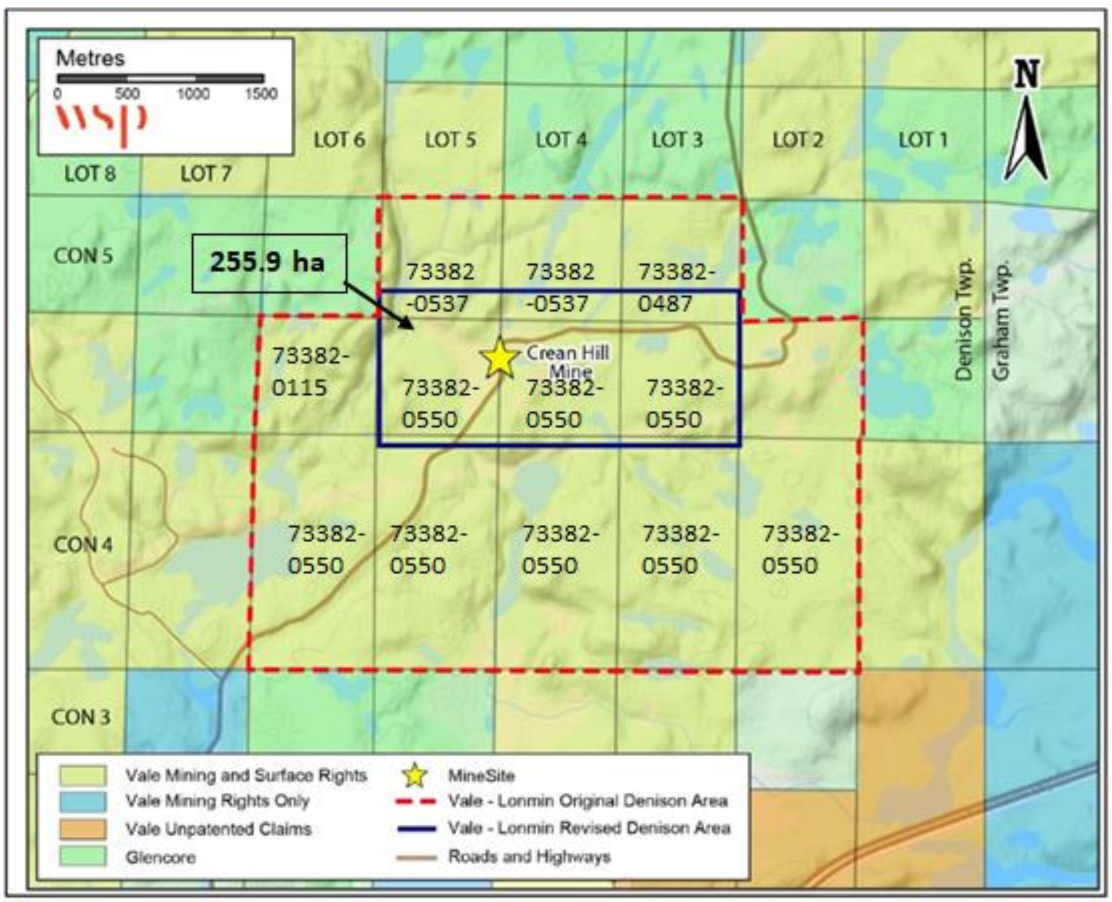
Loncan holds the Mining Rights from the top of the Concrete Capped Shaft #2 (as shown on plan 53R – 21031) to a depth of 4,500 feet (1371.6 m). Vale Canada Limited ("Vale") continues to hold all Mining Rights below 4,500 feet, from the top of the Concrete Capped Shaft #2.

The Property is subject to surface easements as described in PIN No. 73382-0487(LT), PIN No. 73382-0537(LT) and PIN No. 73382-550(LT) and as represented on the survey plan 53R – 21031.

The Property is legally described as follows:

4) PIN No. 73382-0487(LT) being PCL 450 SEC SWS; Nl/2 LT 3 CON 5 Denison except L Tl 6817; Greater Sudbury; subject to an easement as in SD202334.
5) PIN No. 73382-0537(LT) being PCL 428 SEC SWS; Nl/2 LT 4-5 CON 5 Denison; SIT D422; Greater Sudbury.
6) PIN No. 73382-550(L T) being LT 1-6 CON 4 Denison; S 1/2 LT 3-5 CON 5 Denison; SIT S48617, S62072, S63396, S89248; Greater Sudbury.

Figure 4-3 Denison Mining Lease (modified from WSP, 2020)



4.3 Ontario Property Claim Status

On 10 April 2018, Ontario converted its manual system of ground and paper staking and maintaining unpatented mining claims to an online mining claim registration system known as the Mining Land Administration System (MLAS). All active, unpatented claims (legacy claims) were converted from their legally defined location by claim posts on the ground or by township survey to a cell-based provincial grid. The provincial grid is built on the latitude- and longitude-based National Topographic System (NTS) and is made up of more than 5.2 million cells each measuring 15 seconds latitude by 22.5 seconds longitude and ranging in size from 17.7 ha in the north to 24 ha in the south. Cells in the Property area are approximately 22 ha in size. Each cell has a unique identifier based on the cell's position in the grid.

Ontario mining claims are now legally defined by their cell position on the grid and UTM coordinate location in the online MLAS Map Viewer. Legacy claims were not cancelled but continue as one or more cell claims or boundary claims that resulted from conversion.

As defined in the Mining Act, a cell claim is a mining claim that relates to all the land included in one or more cells on the provincial grid that is open for mining claim registration. A cell claim is created as a new registration after 10 April 2018 or at conversion where there are one or more legacy claims in a cell, and all are held by the same holder. In this case, if there is more than one legacy claim in a cell, those claims will merge into one cell claim. A cell claim created from conversion can be a minimum of one cell (single cell mining claim or SCMC) though it can be amalgamated to form a multi-cell mining claim (MCMC) up to a maximum of 25 cells.

As defined in the Mining Act, a boundary claim is created at conversion when there are multiple legacy claims within a cell that cannot merge into a cell claim. There are two circumstances where mining claims will not merge into a cell claim:

- When the legacy claims are held by different holders.
- When the legacy claims are held by the same person who chooses to keep them separate by making an election through the Claim Boundary Report process.

Unpatented mining claims include no surface rights however a right to acquire the surface rights for development purposes exists through the Ontario Mining Act. The Mining Act also provides legal access to the land for the purpose of exploration.

Mining claims are generally subject to the following Crown reservations:

- The surface rights over a width of no more than 120 m from the high-water mark where a mining claim includes land covered with water or bordering on water
- Where a highway or road constructed or maintained by the Ministry of Transportation crosses a mining claim, the surface rights over a width of no more than 90 m, measured from the outside limits of the right
- of way of the highway or road along both sides of the highway or road
- Sand and gravel reserved
- Peat reserved.

Certain mining claims also:

- Are MRO or part MRO where all or part of the surface rights within the claim are held by a third party
- Exclude hydro right of ways
- Exclude withdrawn areas.

Given the nature of Ontario's MLAS cell-based map staking system, certain cell claims overlap areas which are withdrawn from mineral exploration and development. Such cell claims are referred to as encumbered claims. Features that are an encumbrance on a cell claim include:

- Land that is part of an Indian reserve.
- Provincial Park or a conservation reserve.
- Mining leases except for surface rights only leases.
- Freehold patents except those for surface rights only.
- Licences of occupation.
- Designated protected area in a community-based land use plan under the Far North Act.
- Land withdrawn under the Mining Act from prospecting, registration of mining claim, sale or lease for the following reasons:
  - Land included in a proposed Aboriginal land claim settlement
  - Land intended to be added to an Indian reserve
  - Land part of a provincial park, conservation reserve or forest reserve created under Ontario's Living
  - Legacy Land Use Strategy
  - Land that meets the criteria for a site of Aboriginal Cultural Significance
  - Land designated as an area of provisional protection under the Far North Act.

Where a cell or boundary claim overlaps a withdrawn area, the claim holder is only entitled to work on the claim area outside the withdrawn area.

Annual assessment work requirements per mining claim, to be filed on or before the claim due date (anniversary date), are:

- Single cell claim: $400 (unless a cell was encumbered at conversion)
- Multi-cell claim: $400 per cell (unless a cell was encumbered at conversion)
- Boundary claim: $200,

If a cell is encumbered at conversion, the assessment work requirement for a cell claim in that cell will be $200. This special rule applies only if the conversion process results in a claim holder having a cell claim in an encumbered cell. If that cell claim forfeits, the cell will be open for claim registration, subject to the encumbrance but any new cell claim registered for that cell will have the assessment work requirements set at the standard cell claim amount of $400.

4.4 Underlying Agreements

Denison is wholly owned and controlled by Loncan as of July 2018, when the joint venture between Lonmin (Loncan's predecessor) and Vale was cancelled. The joint venture was established in 2005 with the intent of exploring multiple Vale properties for low-sulfide, high-PGE-Au mineralization, as it was believed they hosted significant exploration potential. These properties included Capre, Denison, Levack North, McKim, Trillabelle and Wisner.

Vale reserves a three percent (3%) Net Smelter Return royalty from the sale or other disposition of any metals or non-metallic minerals or other materials mined, produced or otherwise recovered from the Revised Property (or any waste rock or tailings derived from the Revised Property), such royalty to be on, in accordance with, and subject to the terms set out in the Royalty Agreement.

From and after the completion of the Beneficial Transfer, Loncan shall have the right to reasonable access to and egress from and use of (such right to access and egress subject to certain terms and conditions set forth in this Agreement and the Ancillary Agreements) such parts of the Surface Rights and other adjoining surface rights of Vale as may be reasonably required from time to time by Loncan and reasonably agreed by Vale Canada, to permit Early Exploration, Advanced Exploration, and Mine Operations to be conducted by Loncan or its Agents in or on the Revised Property.

Vale reserves and has the right to access, upgrade (if required), operate and use the Crean Hill Mine surface and underground infrastructure (for persons and vehicles, and with or without tools, equipment and machinery) in the event of a decision by Vale to conduct any Early Exploration, Advanced Exploration or Development or Mine Operations in the future on, in, or under the Property or any other adjacent or proximate property of Vale Canada (including below the Denison Cut-off Depth), subject to and in accordance with a Crean Hill Mine access agreement as shall be negotiated in good faith and entered into between Vale and Loncan at that time, taking into account the relative existing and proposed operations and facilities of each of Vale and Loncan on, in, or under or adjacent or proximate to the Revised Denison Property and the Property and such other matters as are reasonably relevant at that time.

Loncan must first offer Vale the right to process and/or purchase the ore or metals from ore mined by Loncan from the Revised Property before offering a contract on market terms with a third party to process and/or purchase ore.

The Author is not aware of any other underlying agreements relevant to the Property.

4.5 Magna Acquisition of Loncan

On August 16th, 2022, Magna announced it had entered into a definitive share purchase agreement (the "Purchase Agreement") to acquire 100% of Loncan, including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine.

On November 7, 2022, Magna announced that it has closed the acquisition of Loncan, including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine, pursuant to a share purchase agreement dated August 15, 2022 among the Corporation, Loncan, each of the shareholders of Loncan and Sibanye UK Limited, as shareholder representative.

Under the terms of the Share Purchase Agreement, Magna acquired 100% of the issued and outstanding shares of Loncan, whose core asset is the Denison Project, in exchange for an aggregate purchase price of $16,000,000 comprised of a closing payment of $13,000,000 in cash (the "First Payment") and a deferred payment of $3,000,000 (the "Deferred Payment") payable pro rata to each shareholder of Loncan (the "Vendors"). The Deferred Payment is payable on or before the 12-month anniversary of the closing of the Acquisition. The Corporation will use commercially reasonable efforts to settle the Deferred Payment in cash, but may, at its option, settle the Deferred Payment in common shares of the Corporation priced at the time of issue in accordance with the rules of the TSX-V. As ongoing security pending the settlement of the Deferred Payment, the Corporation has granted a pledge of the shares of Loncan in favour of the Vendors. The Corporation inherited Loncan's existing commercial arrangements with Vale Canada Limited, including access rights and certain net smelter return royalties. Certain other arrangements, including Loncan's joint venture arrangements with Wallbridge Mining Company Limited, terminated concurrently with the completion of the Acquisition.

4.6 Ontario Permits and Authorization

The Ontario Mining Act regulations require exploration plans and permits, with graduated requirements for early exploration activities of low to moderate impact undertaken on mining claims, mining leases and licences of occupation. Exploration plans and permits are not required on patented mining claims.

As the Property is on patented land, exploration plan and permit applications under the Mining Act are not required by Ontario's Ministry of Energy, Northern Development and Mines (MENDM), for exploration and advanced exploration work. The Property is also considered an active mining area, where any mining activities that fit within the current Closure Plan may commence without additional permitting.

SGS is unaware of any other significant factors and risks that may affect access, title, or the right, or ability to perform the exploration work recommended for the Property.

4.6.1 Exploration Plans and Permits Required under the Mining Act

The Ontario Mining Act regulations require exploration plans and permits, with graduated requirements for early exploration activities of low to moderate impact undertaken on mining claims, mining leases and licences of occupation. Exploration plans and permits are not required on patented mining claims. This is the case for the Property.

There are a number of exploration activities that do not require a plan or permit and may be conducted while waiting for a plan or permit is effective. These may include the following:

- Prospecting activities such as grab/hand sampling, geochemical/soil sampling, geological mapping
- Stripping/pitting/trenching below thresholds for permits
- Transient geophysical surveys such as radiometric, magnetic
- Other baseline data acquisition such as taking photos, measuring water quality, etc.

Exploration Plan

Those proposing to undertake minimal to low impact exploration plan activities (early exploration proponents) must submit an exploration plan. Early exploration activities requiring an exploration plan include:

- Geophysical activity requiring a power generator
- Line cutting, where the width of the line is 1.5 m or less
- Mechanised drilling for the purposes of obtaining rock or mineral samples, where the weight of the drill is 150 kg or less
- Mechanised surface stripping (overburden removal), where the total combined surface area stripped is less than 100 m2 within a 200 m radius
- Pitting and trenching (of rock), where the total volume of rock is between 1 m3 and 3 m3 within a 200 m radius.

To undertake the above early exploration activities, an exploration plan must be submitted, and any surface rights owners must be notified. Aboriginal communities potentially affected by the exploration plan activities will be notified by the MNDM and have an opportunity to provide feedback before the proposed activities can be carried out.

Exploration Permit

Those proposing to undertake moderate impact exploration permit activities (early exploration proponents) must apply for an exploration permit. Early exploration activities that require an exploration permit include:

- Line cutting, where the width of the line is more than 1.5 m
- Mechanised drilling, for the purpose of obtaining rock or mineral samples, where the weight of the drill is greater than 150 kg
- Mechanised surface stripping (overburden removal), where the total combined surface area stripped is greater than 100 m2 and up to advanced exploration thresholds, within a 200 m radius

- Pitting and trenching (rock), where the total volume of rock is greater than 3 m3 and up to advanced exploration thresholds, within a 200 m radius.

The above activities will only be allowed to take place once the permit has been approved by the MNDM. Surface rights owners must be notified when applying for a permit. Aboriginal communities potentially affected by the exploration permit activities will be consulted and have an opportunity to provide comments and feedback before a decision is made on the permit.

4.7 Property Environmental Considerations

The Project in a historical mine site with a filed Closure Plan from the MENDM. Approximately 20.4 Mt of ore was extracted from Crean Hill during its operating lifespan. Following its closure in 2002, the site's surface infrastructure was removed to prepare for site remediation, including the headframe, backfill plant and other buildings, fixed mining infrastructure, power lines, and rail lines. Since then, significant decommissioning work has been undertaken, including:

- Shafts, raises, and other openings to surface were capped with concrete.
- Waste rock was relocated to the Crean Hill Main Site Open Pit and Ellen No. 2 Pit.
- Crean Hill Main Site Open Pit was capped with clay, contoured, revegetated and fenced.
- Disturbed areas were vegetated.
- Capping of the former mine landfill and installation of a seepage barrier.

The Author is not aware of any environmental liabilities related to the historic operation that are the responsibility of Loncan.

As far as the Author is aware, the environmental liabilities related to the Project, if any, are negligible.

4.8 Other Relevant Factors

The Author is unaware of any other significant factors and risks that may affect access, title, or the right, or ability to perform exploration work recommended for the Property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 Accessibility

Denison is located 7 km north of Highway 17 a component of the Trans-Canada highway, approximately 28 km southwest of the City of Greater Sudbury, Ontario, Canada (SRK, 2020). It is within the south half of Lot 5, Concession 5 of Denison Township.

The site is easily accessed by road throughout the year by taking Regional Road 4 north off highway 17 to Crean Hill Road, and then continuing on north-northeast until the site is reached. Figure 4-1 indicates the location of Denison in the western portion of the City of Greater Sudbury, while **Error! Reference source ot found.** provides a more detailed view over of the site and nearby infrastructure.

The region is serviced by Highway 17, a part of the Trans-Canada Highway network, and the Sudbury Regional Airport which has daily regional flights to Thunder Bay, Toronto, Timmins, and Ottawa.

5.2 Local Resources and Infrastructure

The City of Greater Sudbury, a major mining and manufacturing city, can provide all the infrastructure and technical needs for any exploration and development work.

A 230 kV transmission line is located passing just south of the Property. A 115 kV transmission line passes at the western edge of the Property with a substation at the Property boundary.

Water is abundant in the region from numerous lakes and rivers to support exploration programs and mining activities.

5.3 Climate

The closest active weather station to the project is at the Sudbury Airport located approximately 45 km to the northeast. The climate in the region is typical Canadian Shield summers and winters, with daily average temperatures averaging from 19°C in the summer to -13°C in the winter. Precipitation comes in the form of 30 to 63 cm per month of snow in the winter months (263 cm annual average), and 77 to 101 mm per month of rain in the summer months (676 mm annual average) (http://en.climate-data.org).

Drilling and geophysical surveys can be carried out year-round. Surface bedrock exploration can be done for about seven to eight months of the year.

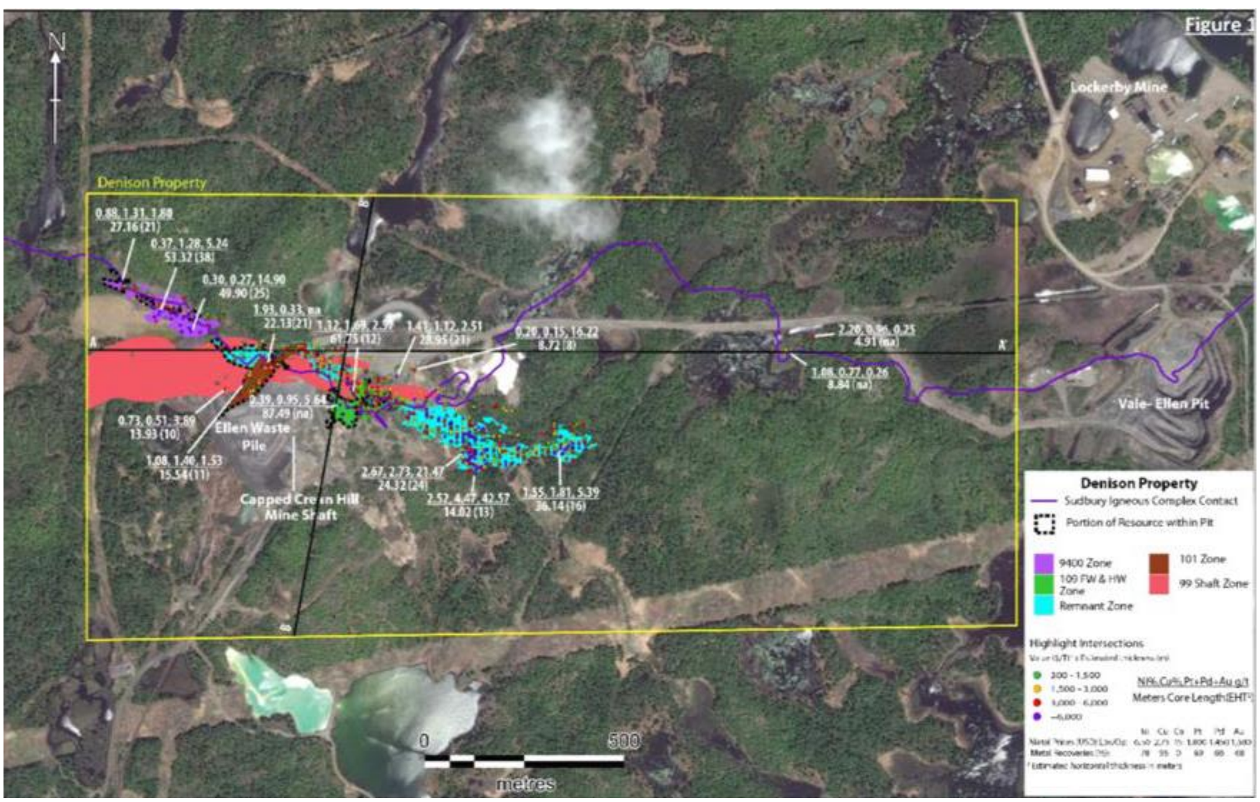
5.4 Physiography

The Property lies at a mean elevation of about 290 masl. Relief is moderate and typical of Precambrian Shield topography.

The Property is a brownfield mine site. Existing infrastructure has altered the physiography. Outcrop exposure on the Property is limited to about 20% with the remaining areas covered mostly by a thin (less than 1 m) veneer, yet locally reach tens of metres of glacial till, gravel, outwash sand, and silt.

Figure 5-1 Location of Denison within the City of Greater Sudbury (from SRK, 2020)

Figure 5-2 Site Map – Denison (from SRK, 2020)



6 HISTORY

The history on the Property dates to 1885 when the mineralization was discovered by Francis Crean. The Project has been subject to sporadic exploration and production between 1906 and 2017 by various operators. Property history is summarized below (SRK, 2020).

6.1 Historical Exploration

Year(s)	Company	Activity
1885	Francis Charles Crean	Discovered the Crean Hill deposit.
1906 - 1919	Canadian Copper Company	First production from the Crean Hill open pit and underground mining began at a rate of 300 tonnes/day. A total of 1.15 M tonnes @ 2.07% Ni and 2.35% Cu was produced.
1918	Inco Limited	The property was transferred to the International Nickel Company (INCO).
1919	Inco Limited	Crean Hill Mine was closed.
1938	Inco Limited	Surface exploration drilling
1950	Inco Limited	The Crean Hill underground workings were dewatered and underground diamond drilling commenced.
1954	Inco Limited	Airborne electromagnetic and magnetic surveys carried out as part of the 1954 regional geophysical program.
1956 - 1957	Inco Limited	The Crean Hill No. 2 Shaft was collared and sunk to a depth of 2,116’ (645 m).
1958	Inco Limited	Crean Hill development of No 2 Shaft was completed and the mine was subsequently closed.
1965- 1971	Inco Limited	Crean Hill development recommenced and production reached a rate of 3,860 tonnes/day. No. 2 shaft was extended to a depth of 4,180’ (1,274 m). A total of 10.5 M tonnes @ 1.05 %Ni, 0.89 %Cu, and 1.47 g/t PGE-Au was produced underground with an additional 1.1 M tonnes @ 0.73% Ni and 0.56% Cu produced from the open pit.
1972 - 1978	Inco Limited	Crean Hill Mine was closed and re-opened again as development work continued.
1983 - 1986	Inco Limited	Drilled 45 holes totalling 15,436’ (4,705 m) in the immediate vicinity of the Vermilion Mine site. The program intersected erratically distributed Cu-Ni-PGE mineralization. Magnetometer and VLF surveys were completed over the property.
1984	Inco Limited	Surface mapping on 800’ (244 m) spaced lines was completed on the Denison property focussing on Cu and Ni.
1985	Inco Limited	Geophysical work included induced polarization (IP) and electromagnetic (VLF) surveys on select areas of interest outlined from the 1984 mapping.
1986	Inco Limited	Surface diamond drilling was completed testing the Crean Hill Ni and Cu-PGE-Au targets.
1987	Inco Limited	Crean Hill Mine was reopened again.
1989	Inco Limited	A shallow drill program was conducted in the footwall environment south of the Crean Hill Main orebody to test the potential for precious metals enrichment. No significant new zones of mineralization were encountered. Shallow drilling was also conducted in the Ellen environment immediately to the east of Crean Hill and up-dip from the Glencore Lockerby Mine.
1993	Inco Limited	Borehole EM surveys were completed in three Crean Hill underground drillholes testing the down-plunge continuity of the known Ni zone. Two exploration drillholes were completed to test the contact environment below the 5,000’ level, between Crean Hill and Lockerby mines. No significant mineralization was encountered at the contact or in the adjacent footwall rocks.
1997	Inco Limited	Nine existing surface Ni-Cu target drillholes were surveyed with UTEM-4.
1998	Inco Limited	Main Zone Ni-Cu grab samples from the Crean Hill 3,840-3,980’ (1,170-1,213 m) levels were submitted for mineralogical analysis. Five additional samples, from each of the two composite mill test samples from the 2,550-2,800’ (777-853 m) and the 3,840-3,980’ (1,170-1,213 m) levels, were also analyzed.
1999	Inco Limited	Two Vermilion surface drillholes were surveyed using UTEM-4.

Year(s)	Company	Activity
2001	Inco Limited	A resource estimate for the Crean Hill 9400 Zone was completed A 9400 Zone exploration drilling program was started late in the year. One hole was completed with no significant intersections.
2002	Inco Limited	Between 1987 and 2002, a total of 7.62 M tonnes @ 1.25 %Cu, 1.64 %Ni and 2.14 g/t PGE-Au was produced from the Crean Hill Main, Intermediate and West orebodies. A drill program consisting of 3,406' (1,038 m) of BQ core from ten underground 1,000' (305 m) level drillholes and 7,260' (2,212 m) of NQ core from four surface holes was completed to confirm and explore for extensions of the Crean Hill 9400 zone. The mine was once more subsequently closed and decommissioned.
2003	Inco Limited	In 2003, the Lonmin-Vale JV was initiated and included the Denison property with a focus on the search for PGM. Property scale mapping and sampling was conducted to establish a detailed lithological and structural map. Surface UTEM and IP surveys were conducted. Five boreholes were surveyed with borehole UTEM-4 and 14 holes were surveyed with down-hole IP (0.125 Hz).
2005	Inco Limited	The 2005 drill program consisted of 18 holes totalling 18,720' (5,706 m), testing the depth extensions of the known Vermillion mineralization, the strike and plunge extensions of the Crean Hill 9400 Zone as well as testing MIMDAS IP chargeability anomalies in the near surface environment.
2006	Inco Limited	The mapping and sampling program was continued and included a focus on the Vermillion Mine area. A total of 165 grab samples was collected for geochemical and thin section analysis, yielding numerous anomalous PGE-Au occurrences all of which are located within a corridor ~80 m south of the SIC contact. Most notably, these showings are centred about the west flank of the main Crean Hill embayment, the west flank of the eastern embayment, and the area immediately south of the Beeper Zone. The 2006 drilling program, totalling 20,098' (6,126 m) was directed at investigating the strike and plunge extensions of the Crean Hill 9400 and 109 Zones, the depth extension of the Glencore Beeper Zone onto the Denison property, the up-plunge extension of the 8800 Zone, and the footwall potential of the Eastern Embayment.
2006	Vale Canada	CVRD of Brazil acquires Inco for an all cash offering of $17 billion. Company rebranded as CVRD Inco.
2007	Vale Canada	Company rebranded as Vale Inco then Vale Canada. A limited amount of mapping was carried out around the Vermillion deposit with an emphasis on structure. Numerous down-hole borehole UTEM surveys were conducted on recently drilled holes within the 9400 and 8800 Zones. The 2007 drilling program, totalling 36,093' (11,001 m) was primarily directed at investigating the strike and plunge extensions of the Crean Hill 8800 and 9400 Zones. One borehole targeted the footwall potential of the Eastern Embayment. The understanding of the PGE mineralizing systems at Denison was advanced.
2008	Vale Canada	A total of 19,705' (6,006 m) were drilled in 16 holes. The mineralized system was determined to extend from the 9400 Zone down-dip to the 99-Shaft Zone, but the tenor of mineralization, where tested, was determined to be sub-economic. The bottom of the 9400 Zone was also extended and better defined through additional drilling (9400 down-dip). The 101 Zone was tested along strike and down-dip. A new concept connecting the 101 Zone to the contact (101 Zone East Extension) was drill tested with positive results. A new concept was drill tested in the footwall of the 109 Zone, resulting in the discovery of the 109 FW Zone. A total of 12 holes were UTEM surveyed in 2008, generating plates explained by known mineralization and mine workings. Optical televiewer survey on two boreholes in the 109 FW Zone confirmed orientation of mineralized features. The 9400 Zone PMD was updated to reflect the addition of the down-dip extension. The 8800 Zone Exploration Potential, last updated in 2006, was reduced in size to reflect the results of the 8800 Zone drilling conducted in 2007. A new zone, the 8800 contact Zone, discovered in the 2007 drilling.

Year(s)	Company	Activity
2009	Vale Canada	The exploration program at the Denison property was primarily focused on follow-up to the late 2008 discovery of the 109 FW Zone. A total of 20,726' (6,317 m) were drilled in 29 holes. Drilling was directed towards defining the limits of the mineralized zone. A total of eight holes were surveyed by optical televiewer in total. There were no other geophysical surveys carried out at Denison in 2009. The 109 FW Zone was projected to surface and the area prospected. A 195' by 985' (60 by 300 m) area was stripped, washed, mapped in detail and channel sampled with numerous continuous Low-Sulphide High-Precious Metal results returned, confirming the continuity of the 109 FW Zone to surface.
		Metallurgical test results, based on three 25 kg composite samples from a single hole, showed variable, but favourable precious metal recoveries generally in the high 70% to 80% range, assuming a standard flowsheet at Clarabelle Mill.
2010	Vale Canada	A total of 34,738' (10,588 m) were drilled in 58 drillholes, including the extension of 2 historical drillholes. In addition to the drilling programs, other advancements such as surface stripping, channel sampling, geophysical televiewer surveys (19 boreholes), geotechnical work, mineral resource modeling, mineralogical and metallurgical studies were completed. The 109 FW mineral envelope was projected to surface, the area stripped and channel sampled, returning 32 samples >2.99 g/t TPM, and 8 samples >9.0 g/t TPM, with the highest grade sample assayed at 35.76 g/t TPMs. In total, 291 channel samples were collected and assayed.
2011	Vale Canada	A total of 1,089' (332 m) was drilled in two boreholes completed. A conceptual target testing shallow potential PGM parallel to the 9400 Zone, called the 100 Zone, was tested. Lonmin fully vested in the JV in December 2011, earning a 50% interest in any declared Low-Sulphide High-Precious Metal deposit on the Lonmin-Vale JV properties in the Sudbury Basin.
2012	Vale Canada	A total of 4,314' (1,315 m) was drilled completing 12 boreholes, targeting the low-grade contact sulphide and potential LSHPM FW mineralization in the saddle zone and geotechnical drilling in the HW north of the existing Crean Hill pit. Drilling was suspended due to budget constraints. Acid Rock Drainage and Prefeasibility studies were completed by Klohn Crippen Berger and Tetra Tech Wardrop, respectively.
2013	Vale Canada	No work was completed on the Denison property; all studies were suspended.
2014	Loncan	Lonmin Canada Inc, a wholly owned subsidiary of Lonmin Plc, became the operator of the Vale-Lonmin JV including the Denison property. A total of 30,610' (9,330 m) was drilled in 43 holes, with the primary goal of increasing confidence in the 109 FW Zone. Three holes targeted the saddle zone between the 109 and 101 Zones. Geotechnical data and specific gravity data were collected from most boreholes. The previously saw-toothed shape of the mineral envelope along the plunge of the hinge (southern margin) was remodelled and smoothed out with the intersection of significant mineralization in previously existing gaps.
2015	Loncan	A total of 46,257' (14,099 m) was drilled in 34 holes in drill programs aimed at the 109 FW Zone and 9400 Zone. Drilling in both zones aimed to increaseconfidence by targeting areas of low drilling density. In the 109 FW Zone, boreholes with significant assay results were wedged to duplicate and triplicate the intersection at short distances to provide short-range grade variability data and to provide material for geometallurgical testing. Geotechnical data was collected from most boreholes and specific gravity data was collected from all boreholes.
2016	Loncan	A total of 23,261' (7,090 m) was drilled in 63 holes in drill programs at Denison. Drilling in the 109 FW Zone concentrated on collection of larger diameter core for geometallurgical testing. Thirteen boreholes targeted the 9400 Zone in areas of lower drilling density and boreholes with significant assay results were wedged to duplicate and triplicate the intersection at a short distance to provide short-range grade variability data and to provide material for geometallurgical testing. Geotechnical data was collected from most boreholes and specific gravity data was collected from all boreholes. The morphology of the 9400 area

Year(s)	Company	Activity
		mineralization was re-interpreted as a tabular body that branches at the western margin, with highest TPM grades over largest widths seen at the intersection of the branches.
2017	Loncan	A total of 18,586' (5,665 m) had been drilled from 16 boreholes targeting the 9400 Zone and extensions of the 9400 Zone up-plunge, immediately west of the Crean Hill West Orebody which is largely mined out. Drilling was subsequently curtailed due to budget constraints. Geotechnical data was collected from most boreholes and specific gravity data was collected from all boreholes. Both the 109 FW Zone and 9400 Zone were subject to mineralogical study by Cabri Consulting Inc., and a metallurgical study was completed on the 109 FW Zone by Blue Coast Research.
2018	Loncan	Vale Canada and Loncan agree to terminate 2003 JV Agreement and sign the Denison Property Transfer and Development Agreement whereby Vale Canada transferred 100% ownership of the Revised Denison Property to Loncan.
2019	Loncan	Loncan and Wallbridge Mining signed a definitive letter agreement whereby Lonmin Limited (a wholly owned subsidiary of Sibanye-Stillwater), has appointed Wallbridge as operator of Loncan's advanced-stage Denison Property.

6.2 Summary of Historical Production

The Crean Hill Mine operated from 1906 to 2002 under the ownership of INCO (Table 6-1). Production was from the Main, Intermediate and West zones, and focused on the Sudbury Igneous Complex (SIC) contact Nickel – Copper mineralization. Since the mine closure in 2002, approximately 90,000 m of drilling has been completed following the execution of an option agreement between Lonmin Canada and Inco. During their ownership, Lonmin Canada remained focused on the low sulphide, high PGM potential at the deposit which is typically associated with the footwall host rocks. This resulted in minimal exploration directed to nickel / copper contact mineralization over this period.

Table 6-1 Summary of Historical Production from the Crean Hill Mine, 1906 to 2002.

Period	Type	Tonnes (M)	Ni %	Cu %	PGE-Au (g/t)
1906 - 1919	Open Pit and Underground	1.15	2.07	2.35	
1965 - 1971	Underground	10.5	1.05	0.89	1.47
1965 - 1971	Open Pit	1.10	0.73	0.56	
1987 - 2002	Underground	7.62	1.64	1.25	2.14
Total		**20.37**	**1.31**	**1.09**	**1.56**

6.3 Historical Mineral Resource Estimate

Prior to the current study, there are have been no publicly disclosed NI 43-101 MREs or Technical reports published on the Property. In October 2019, Loncan commissioned WSP to complete a MRE (Table 6-2 Property Historical Mineral Resource Estimate (WSP, 2022)Table 6-2) and technical report on the Project. The resource estimation was based on diamond drillholes completed on the Property to the end of 2017. Although the report was not publically disclosed, WSP considers the technical report complies with disclosure and reporting requirements set forth in National Instrument 43-101 (NI 43-101) Standards of Disclosure for Mineral Projects, Companion Policy 43-101CP, and Form 43-101F.

Table 6-2 Property Historical Mineral Resource Estimate (WSP, 2022)

Pit Constrained								
Classification	NSR Cut-off (US$)	Tonnes (x1000)	Cu %	Ni %	Co %	Pt ppm	Pd ppm	Au ppm
Measured	$125	111	0.36	0.28	0.01	4.41	2.39	1.39
Indicated	$125	300	0.66	0.83	0.02	1.77	1.01	0.53
Inferred	$125	500	0.97	1.14	0.04	0.55	0.52	0.38
Underground								
Classification	NSR Cut-off (US$)	Tonnes (x1000)	Cu %	Ni %	Co %	Pt ppm	Pd ppm	Au ppm
Measured	$222.50	33	0.89	0.55	0.02	3.04	2.56	1.46
Indicated	$222.50	1,359	1.46	1.75	0.06	1.19	1.67	0.35
Inferred	$222.50	1,481	1.26	1.63	0.05	1.48	1.89	0.49

This resource estimate is considered historical in nature. Although the resource estimate has been prepared and disclosed in compliance with all current disclosure requirements for mineral resources or reserves set out in the NI 43-101 Standards of Disclosure for Mineral Projects and the classification of the historical resource as a Measured, Indicated and Inferred resource is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, a qualified person has not done sufficient work to classify the historical resource estimate as current mineral resources and Magna is not treating the historical resource estimate as current mineral resources. This historical resource has been superseded by the Indicated and Inferred MRE for the Deposit reported in Section 14 of this report.

6.3.1 Historical Mineral Resource Estimate Methodology

All resource estimations were conducted using SurpacTM 2020 (64-bit) (WSP, 2020).

A total of 4,009 diamond drillholes totaling 1.7 million ft. are present on the current Property. However, only the drillholes within the areas of interest (mineralized wireframes) and with exploration potential were included in the historical resource estimate. The remaining holes, while containing mineralization, were outside the immediate area of interest.

The array of elements assayed over time has varied, as well as the individual detection limits for those elements. This issue has particular relevance to the PGE. Additionally, in some cases composite samples were created from pulps several years after initial drilling and assayed for additional elements. On this basis, a few instances of data of questionable quality have been identified and deleted from the borehole database. All elements aside from those retained were deleted on this basis:

- Cu and Ni values available on data older than 1968.
- Cu, Ni and Co values available in data collected from 1968-1974.
- Cu, Ni, Co, Pd, Pt and Au available in data collected from 1974 onward.

A total of 17 models were generated by WSP (2020) in Surpac™ for the Project. Upon completion of the 17 models, the models were merged together with the Loncan 109 FW, 109 HW and 9400 models into a single combined model (Figure 6-1). As some of the original models generated by Loncan in Datamine™ format had variable width sub-celling, this has been carried over into the final parent model.

Mineral models were generated using:

- Composited then capped drillhole intervals captured from within the various mineral envelopes.

- Grade capping was evaluated on each element for each mineral model independent of the other block models.
- Parent Blocks are 20 x 20 x 20 ft with variable sub-blocks.
- The interpolation of the models was completed using ordinary kriging (OK). Two validation models were also generated using nearest neighbour (NN) and inverse distance squared (ID2) methodologies. The estimations were designed for three passes. In each pass, a minimum and maximum number of samples were required as well as a maximum number of samples from a borehole to satisfy the estimation criteria.
- The initial search distances were generally 75% of the variogram ranges for the Pt, Pd and Au variables and 50% of the variogram ranges for the Cu, Ni, and Co variables. Subsequent passes were run with incrementally larger searches with the final pass effectively filling un-estimated blocks.
- Open pit mineral resources are reported within a pit constrained NSR cut-off of $125 and an underground mineral resource is reported using underground constrained NSR cut-off of $222.50.
- Mineral resources were prepared in accordance with NI 43-101, the CIM Definition Standards (2014) and CIM Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines. Mineral resources that are not mineral reserves do not have demonstrated economic viability (WSP, 2020).

The Denison open pit mineral resource was developed on Sudbury footwall geological and pit constrained parameters suitable for operating in the Sudbury regions. The Denison underground mineral resource was developed on a Sudbury footwall geological and underground constrained parameter suitable for operating in the Sudbury regions (Table 6-3).

Figure 6-1 Historical MRE Mineral Zones (WSP, 2020)

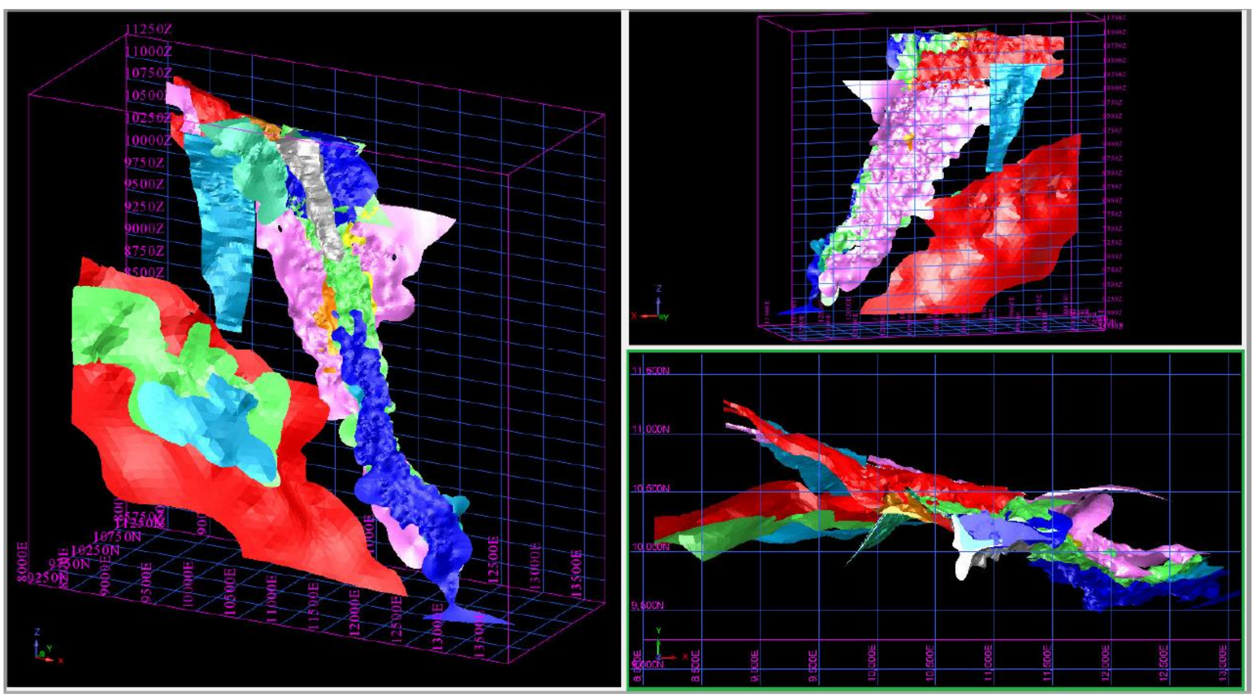


Table 6-3 Loncan 2020 Historical MRE NSR Parameters (WSP, 2020)

Parameter LONMIN CANADA 2020	Value	Unit
Nickel Price	$6.50	US$ per pound
Copper Price	$2.75	US$ per pound
Cobalt Price	$15.00	US$ per pound
Platinum Price	$1,000.00	US$ per ounce
Palladium Price	$1,500.00	US$ per ounce
Gold Price	$1,500.00	US$ per ounce
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$100.00	US$ per tonne mined
Transportation	$5.00	US$ per tonne milled
Processing Cost (incl. crushing)	$40.00	US$ per tonne milled
Treatment and Refining	$75.00	$/tonne processed
In-Pit General and Administrative	$2.50	US$ tonne of feed
Underground General and Administrative	$2.50	US$ tonne of feed
Overall Pit Slope	48	Degrees
Nickel Recovery	78	Percent (%)
Copper Recovery	95.5	Percent (%)
Cobalt Recovery	0	Percent (%)
Platinum Recovery	69.2	Percent (%)
Palladium Recovery	68	Percent (%)
Gold Recovery	67.7	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	5/5	Percent (%) / Percent (%)

7 GEOLOGICAL SETTING AND MINERALIZATION

The follow description of the Geological Setting and Mineralization for the Property is extracted from SRK (2020), WSP (2020) and references therein.

7.1 Regional Geology

Ni-Cu-PGE deposits in Sudbury occur within the Sudbury Structure that formed as a result of a major Early Proterozoic meteorite impact 1,850 million years ago (Ames and Farrow, 2007). The Sudbury Structure straddles the unconformity between Archean gneisses and plutons of the Superior Province and overlying Paleoproterozoic Huronian supra-crustal rocks of the Southern Province. It is geographically divided into the North, South, and East Ranges (Figure 7-1) and comprises four geologic domains:

- The Sudbury Igneous Complex (SIC) occurs as a 60 km x 27 km elliptical bowl-shaped body that formed from a meteorite impact melt sheet. It consists of a basal xenolithic norite breccia (contact sublayer) overlain by norite, quartz-gabbro and granophyre, and historically has been referred to as the "Nickel-Bearing Irruptive", the "Sudbury Nickel Irruptive" and the "Nickel Irruptive".
- Concentric and radial dykes of diorite, granodiorite, and quartz diorite.
- The footwall to the SIC contains a zone, up to 80 km wide, of Archean and Proterozoic rocks that are fractured, brecciated (Sudbury breccia), and locally partially melted (e.g. Late Granite Breccia) or recrystallized due to the meteorite impact and subsequent emplacement of the SIC.
- The SIC is overlain by the Whitewater Group, comprising “fall-back” super-crustal breccia of the Onaping Formation and the overlying basin-fill sedimentary rocks of the Onwatin and Chelmsford Formations.

The Property is in the South Range of the SIC. The Main Mass of the South Range SIC consists of a lower unit of the Quartz-rich Norite. Stratigraphically above is the Green Norite with irregular bodies of Brown Norite followed by the Quartz Gabbro then the Granophrye layers (Lightfoot, 2016).

Found at the basal contact of the Main Mass in embayment and trough structures is a magmatic breccia called Sublayer.

The footwall to the SIC South Range is the Southern Province. The geology can roughly be divided into the Early Proterozoic (~2,450 Ma) Murray and Creighton Granite Plutons and Huronian Supergroup (2,250 to 2,460 Ma) mafic and felsic volcanic and sedimentary rocks. In ascending stratigraphic order, the rock formations present are:

- Elsie Mountain (mafic volcanic and some interflow sedimentary rocks),
- Stobie (mafic volcanic and sedimentary rocks),
- Copper Cliff (felsic volcanic rocks),
- McKim (argillitic and arenaceous rocks),
- Ramsey Lake (arenaceous and conglomeratic rocks),
- Pecors (argillitic and arenaceous rocks),
- and Mississagi (sub-arkose and arkosic sedimentary rocks).

The Creighton and Murray Plutons are intrusive into older Huronian volcanic and sedimentary rocks, mostly of the Elsie Mountain and Stobie Formations.

The South Range of the Sudbury Igneous Complex and adjacent Huronian rocks, for the most part, dip vertically or steeply north or south. Stratigraphic tops generally face south away from the SIC and toward the Grenville Front. The South Range Shear zone and Creighton and Murray faults are the manifestation of the deformation events that have shaped the present-day South Range (Figure 7-1 and Figure 7-2) (Bleeker et al. 2014). The age of the deformation which has resulted in the current sub-vertical orientation of the Huronian rocks has not been definitively established. The metasedimentary rocks are interbedded sparingly with mafic volcanic flows of the Elsie Mountain Formation and commonly with volcanic rocks of the Stobie Formation. Many of these interflow metasedimentary rocks are sulphide-bearing. The sulphides are dominantly pyrrhotite with minor amounts of pyrite and trace chalcopyrite.

South Range footwall rocks are cut by several small diabase and gabbroic intrusions that are often difficult to distinguish in the field. These include Matachewan dykes, Nipissing intrusions, quartz diabase (trap dykes), and Olivine Diabase. Both the quartz diabase and olivine diabase dykes are younger than the SIC. The Archean and early Proterozoic basement rocks are all crosscut by Sudbury Breccia.

Figure 7-1 Simplified Regional Geology (Ames and Farrow, 2007)

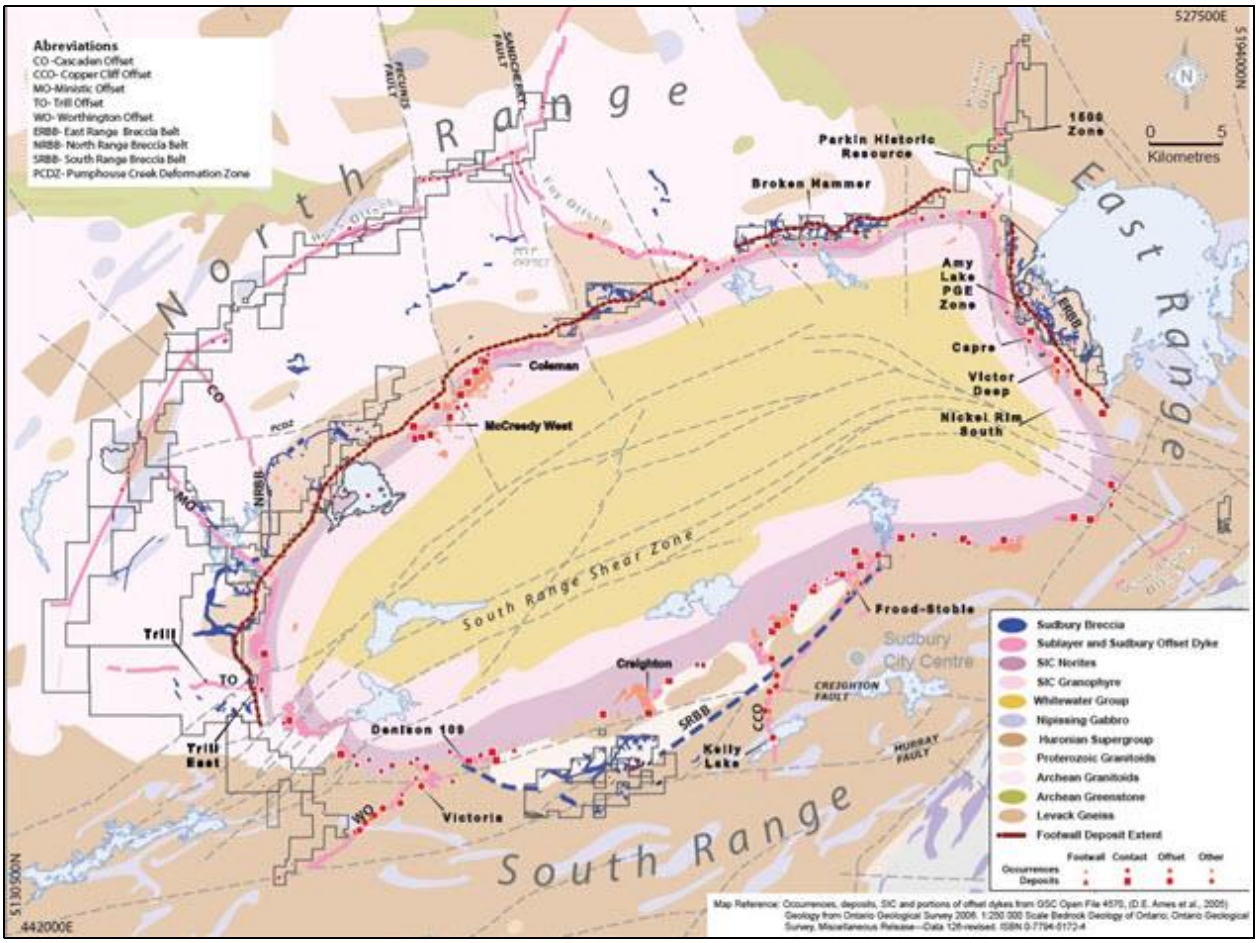
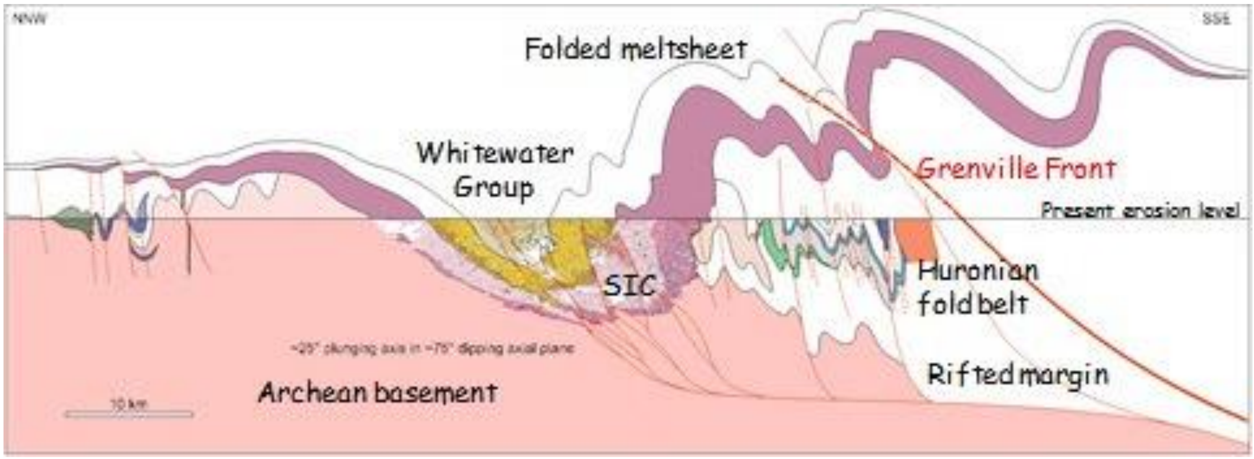


Figure 7-2 Cross-Section Illustration of the Conceptual Deformation of the SIC (looking east) (Bleeker et al., 2014)



7.2 Property Geology

The Property straddles the South Range of the SIC approximately 30 km southwest of Sudbury, in Denison Township. From 1906-2000 a total of 16,680,410 tonnes of ore grading 1.11% Cu, 1.22% Ni, 1.92 g/t TPM, and 5.04 g/t Ag was produced from the Main, Intermediate and West orebodies, and an additional 1,014,232 tonnes were mined from 1967-1971 in Crean Hill open pit grading 0.56% Cu, 0.73% Ni, and 0.025% Co (Baker et al., 2017).

The Property hosts part of a large trough structure at the base of SIC which contains a number of previously mined ore deposits including Crean Hill Main Orebody, Crean Hill Intermediate Orebody, Crean Hill West Orebody, Ellen Mine, and Lockerby Mine, each sitting in embayments (terraces) within the larger trough. Much of the mined Ni-Cu contact mineralization is associated with the embayment structures in the SIC, and the embayments largely control the distribution of Ni-Cu mineralization.

Additional embayments in the SIC containing significant Ni-Cu sulphide mineralization may be present at Denison, in different orientations to the Crean Hill embayment (Figure 7-3). In the Creighton deposit (13 km along strike east of Crean Hill), at least three orientations of embayments are present, the steep plunging 400 embayment, the moderate east plunging 402 (Gertrude West) embayment, and the moderate west plunging 403 embayment. Additional embayment trends are present at Crean Hill, with little exploration drilling (Figure 7-4) and represent significant Ni-Cu sulphide exploration targets (SRK, 2006).

The strike of the SIC contact ranges from 120° at surface to 80°, and the dip varies from steeply dipping to the north at surface through vertical to steeply dipping over-turned to south at the lower depths. The contact between the SIC and the footwall is very often sheared. Shearing and brittle faulting also occur within the footwall, as well as local significant alteration (Baker et. al. 2015 and 2017).

A significant portion of the mineralization, such as the 109 FW Zones, the 101 Zone and part of the 9400 Zone, are hosted in the footwall rocks. The host rocks are dominated by metamorphosed basalt (historically mapped and logged as greenschist), but also include gabbro, andesite, rhyolite, and sedimentary units (arkosic quartzite and meta-pelite) of the Huronian Supergroup, Elsie Mountain Formation (Card et al., 1977). Minor lithologies include olivine diabase, quartz diabase (trap dykes), granite, schist, amphibolite, and Sudbury Breccia in the footwall, and quartzose norite at the SIC contact.

Though the distribution of much of the mineralization in controlled by embayments, additional structural settings and controls may be present. The association between shear zones and Ni-Cu sulphide orebodies is common in the South Range of the Sudbury basin, with Ni-Cu sulphide orebodies in the Creighton and Garson deposits associated with large shear zones. The splays of the Crean Hill (Victoria) shear zone can be traced from through the 9400 orebody and into the Crean Hill Main open pit and appears to be associated with Ni-Cu sulphide mineralization at each. In addition, at Denison the line of intersection between the Crean Hill shear zone and SIC is sub-parallel to the trend and plunge of Crean Hill embayment, suggesting the Crean Hill shear zone may have controlled the formation of the embayment (SRK, 2006). The shear zones are associated with zones of alteration. In the western upper quadrant of the 9400 Zone mineral envelope, a wide zone of significant talc alteration is observed, affecting all rock types except olivine diabase and quartz diabase (trap dyke) (Baker, 2017).

The Crean Hill shear zone may also control the distribution of PGE mineralization away from the Crean Hill embayment. In the South Range, for example, the Crean Hill, Creighton, Garson, Falconbridge, and Thayer Lindsey deposits all display shear zone controls on Ni-Cu sulphide mineralization. If the distribution of Ni-Cu sulphide mineralization is controlled by shear zones, it can be expected that the distribution of PGE mineralization may also be controlled by the shear zones. The PGE mineralization may be distributed within the shear zones along strike from the Ni-Cu sulphide mineralization, rather than directly into the deposit's footwall. This is observed in the Garson deposit, with high tenor PGE mineralization observed in shear zones in the Garson ramp area, along strike from the main shear zone hosted Ni-Cu sulphide ores.

Two variably developed shear structures have also been observed along the limbs of the 109 FW Zone and are interpreted to form the pathway for mineralization of the footwall, not as discrete mineralized features but rather as a route into the footwall for migrating metals. The shears locally appear as chlorite and talc altered zones of metabasalt with strong foliation. The level of alteration is variable, with the extreme end member being very soft heavily talc altered beige intervals up to 30 cm which have been encountered twice in drilling. Many intervals through the interpreted shears appear unaffected, with only typical levels of quartz-carbonate veining and alteration characteristic of the footwall rocks (Baker,2015).

There is one main fault in the immediate area of the 109 FW, a shallow fault striking 100° and dipping 25° south. This fault is comprised of two or more anastomosing horizons, where core is broken up along poorly healed joints, with local chlorite rich gouge horizons, bleached core and locally significant quartz-carbonate veining. Locally there are void spaces within the fault which are reported to have caused the abandonment of one hole in a previous drilling campaign. There is no offset of the 109 HW or 109 FW zones through this fault horizon, it appears to be a zone of weakness and alteration with no apparent offset. There is also no apparent trend in terms of enrichment or depletion of the 109 FW Zone mineralization due to the fault (Baker 2015).

Sectional plans at Crean Hill are consistent with imbricate reverse fault slices stacked north over south. Figure 7-5 shows the evolution of the SIC at Garson. A similar, but not identical, model may apply at Crean Hill (Lightfoot, 2016). Many structures have a W-E trend and run close to the base of the SIC (e.g. the Victoria Shear which appears to have a dextral reverse motion), and there may also be splays of the Cliff Lake Fault (which typically exhibits south over north thrusting through much of the South Range except where the basal contact is very steep). It is unclear to what extent the structures deformed/displaced the mineralization versus provided a pathway for the mineralization to follow (Lightfoot, 2017).

Figure 7-3 Denison Property Geology (Modified from Baker et al., 2015)

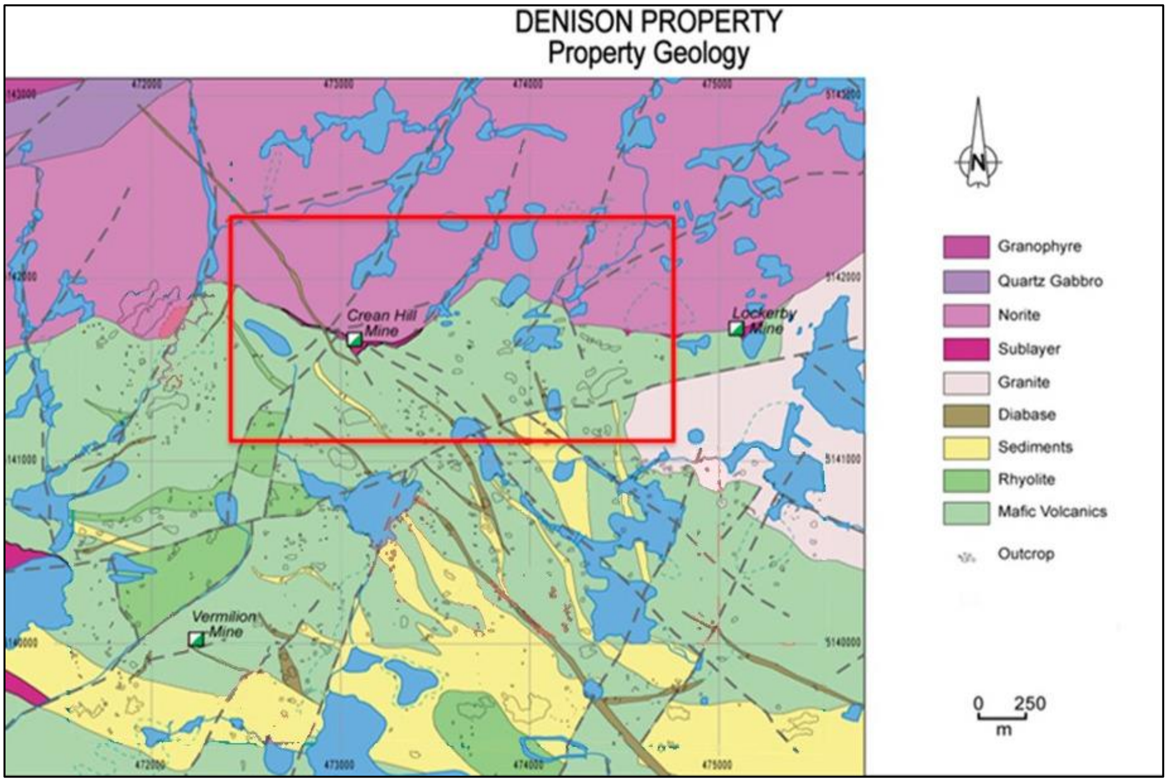


Figure 7-4 Denison (Crean Hill) Long Section (looking south) with SIC contact in magenta and arrows displaying the embayment trends at Denison (SRK, 2006)

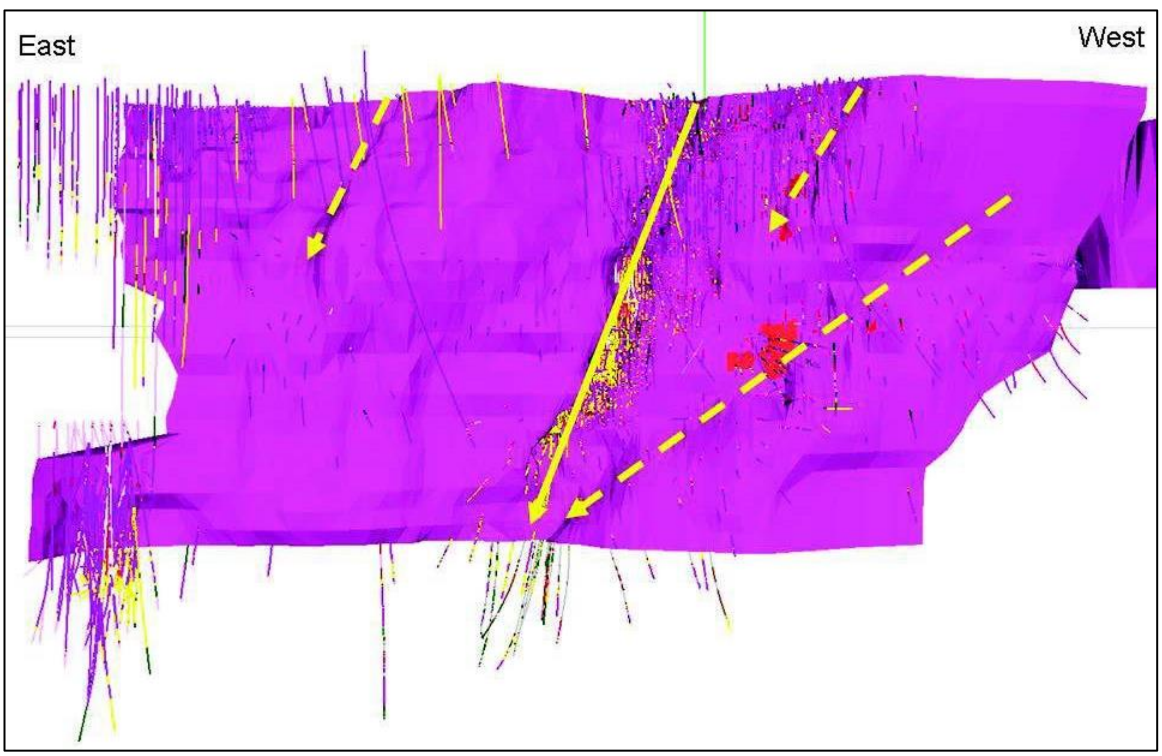
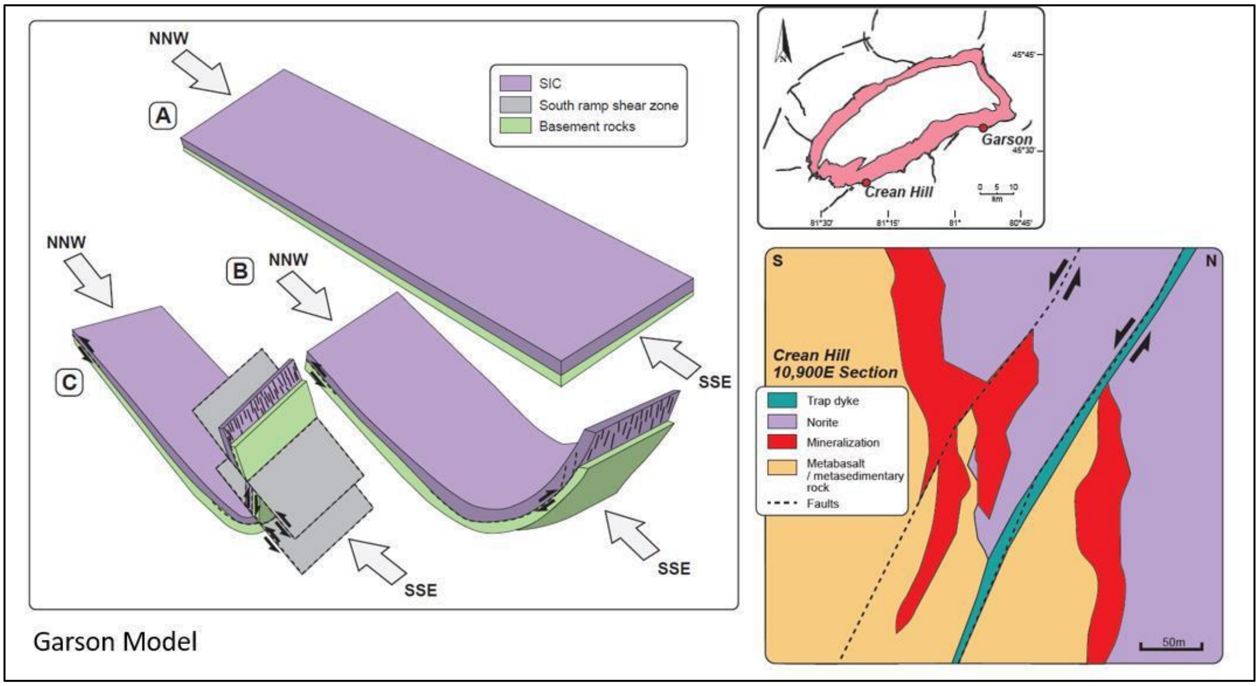


Figure 7-5 Evolution of the SIC at Garson (Lightfoot, 2016)

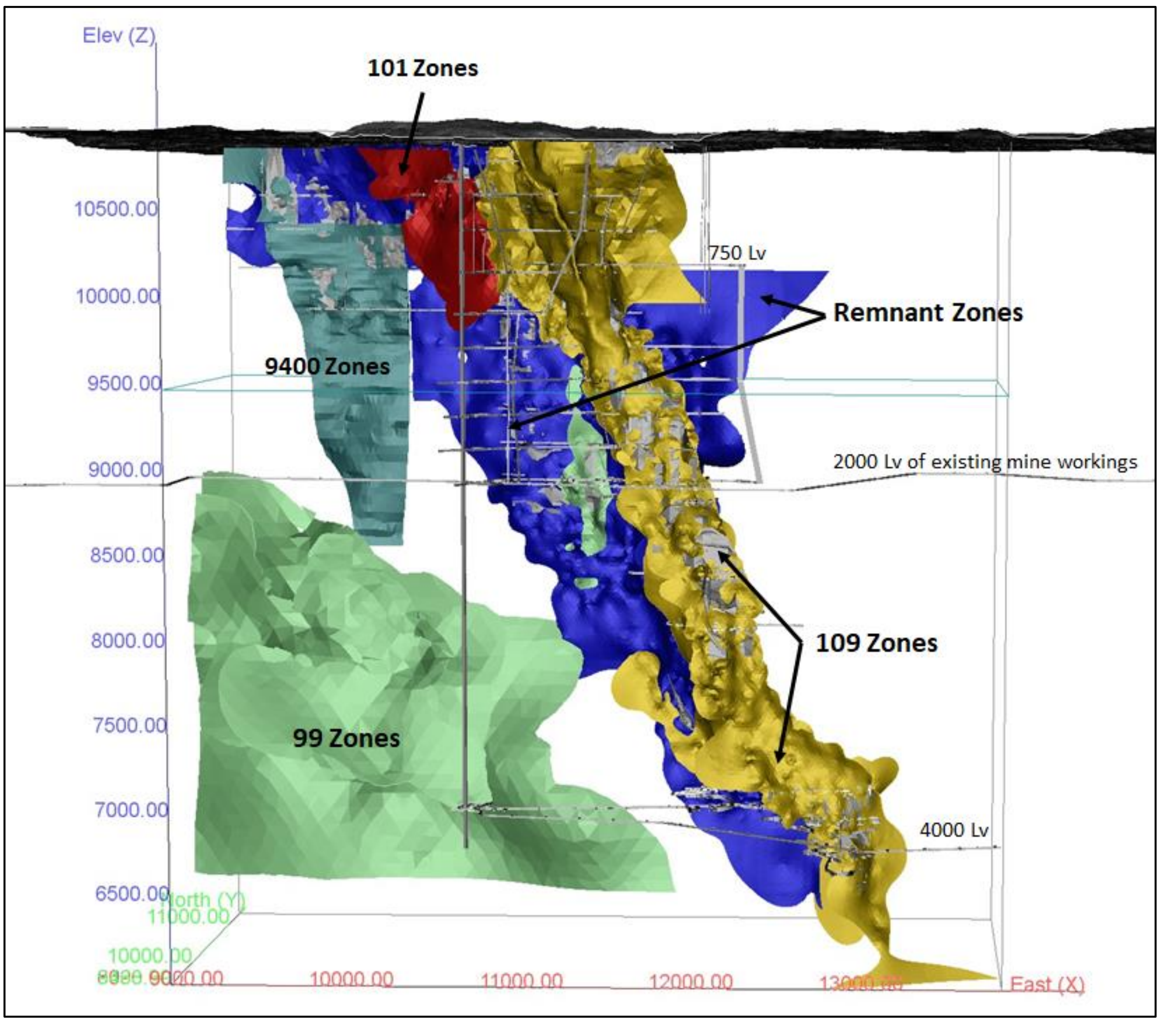


7.3 Deposit Geology and Mineralization

The main mineralized zones from east to west (Figure 7-6) are as follows:

- 109 W/Remnant Zones
- 126
- 123
- 109 FW
- 109 HW
- 99 Zone
- 101
- 9400
- 9400 FW Ext

Figure 7-6 Isometric View Looking North: Main Denison Deposit Models (grid is in ft)



7.4 9400 ZONE

The 9400 Zone mineral envelope, as currently defined, is 1,970' (600 m) in depth extent, up to 820' (250 m) in strike length and ranges from 10 to 130' (3 to 39 m) thick. The envelope extends from 10,470' elevation down to 8,500' elevation, or from 450' to 2,460' (150 to 750 m) below surface. The zone occurs primarily down-dip of the historic Crean Hill West Orebody, as well as mineralization to the west of the mined stopes. It is a tabular body that curves to the south at depth, and thickens from east to west, branching into two to three apophyses at the western margin of the zone. The Ni-Cu rich and PM poor eastern part of the 9400 Zone is in contact with the SIC, trending obliquely away from the contact into the footwall to the west. Mineralization at the eastern part consists mostly of semi-massive to massive Contact-style pyrrhotite, pentlandite, and chalcopyrite.

Towards the west, into the footwall, the PM grades increase whereas the Ni and Cu grades decrease. Here, the sulphide mineralization occurs as stringers, fracture-controlled within quartz/carbonate veins, disseminations within the host rock, and disseminations within quartz/amphibole veins/patches that are interpreted to be partial melts. The majority of the 9400 Zone is composed of this type of footwall mineralization. Footwall sulphide mineralization is dominated by chalcopyrite and pyrrhotite. Other minor sulphide/arsenide minerals include pentlandite, pyrite, gersdorffite, and trace minerals identified primarily in thin section sphalerite, galena, bornite, chalcocite, cobaltite, sperrylite, michenerite, and merenskyite (Baker et al., 2017). This style of mineralization changes to the west, gradually becoming lower in sulphide and a more dramatic shift to higher Pt, Pd and Au grades. While there is visual evidence of possible hydrothermal processes, including intimate spatial association of PM with alteration minerals seen in thin section and the presence of structures that would allow for the movement of fluids and local pervasive alteration, there is no indication of a spatial fractionation process within the geochemical dataset, as might be expected if a secondary process took place. Rather it has been suggested the low- and high-sulphide mineralization styles were emplaced into their current relative locations during a single mineralizing event (Lightfoot, 2017). The 9400 FW Ext Zone is interpreted to be a continuation of the 9400 Zone.

The footwall rocks have been metamorphosed to greenschist and amphibolite facies. Locally, volcanic sections contain patches and veins of medium- to coarse-grained amphibole in a fine-grained quartz matrix. These are interpreted to be partial melts of footwall lithologies due to contact metamorphism from the cooling SIC (Dressler, 1984). Common alteration styles include pervasive chlorite alteration of volcanic rocks, pervasive silicification of sedimentary rocks and rhyolites, and calcite +/- quartz +/- chlorite veins in the volcanic and sedimentary rocks. Less common alteration includes pervasive talc and sericite alteration of sedimentary and volcanic rocks (Baker et al., 2017).

The Low Sulphide Pt-Pd-Au style of mineralization was not well sampled in drilling prior to 2003. As a result, the upper half of 9400 Zone remains open to the west and to surface. The 9400 could also be considered open at depth as one possible interpretation the mineralized trend of the 9400 Zone suggests it extends into the 99 Zone at depth.

7.5 109 FW Zone

The Denison 109 FW deposit rests in the immediate footwall of the main embayment structure which hosted what was the Crean Hill Mine Main Deposit but now includes the 109 HW Zone. There is little or no separation between the norite hosted semi-massive to massive mineralization of the 109 HW and the much lower sulphide Pt-Pd-Au mineralization in the footwall, hosted primarily in metabasalt (Figure 6-7). The mineralization is often associated with partial-melt veinlets, thought to be a thermal effect from the emplacement of the SIC and occurs with veinlets of chalcopyrite-pyrrhotite and local pentlandite near the SIC contact. Fine to 1 cm thick quartz-carbonate veinlets are found throughout the deposit, often hosting pyrrhotite and local chalcopyrite. Fine disseminations and veinlets of gersdorffite are found locally.

Where present, metasediments and felsic metavolcanics are not as prospective as the metabasalt unit. The deposit has the morphology of an open fold with thin limbs and a thickened axial hinge in the footwall of the apex of the Crean Hill embayment. However, the deposit is understood to be located by two shears running parallel to the limbs, concentrating a PGE-Au mineralization halo around the contact mineralization. The mineralization is particularly concentrated in the hinge at the intersection of the two limb shears. Mineralization can be extremely low in sulphide toward the FW margin of its known envelope. The mineralization is not necessarily hosted in noticeably sheared rock, but rather the sheared areas define the mineralized corridors. The shearing may have prepared the host rock to receive or acted as a conduit for mineralizing fluids (Baker et al., 2015).

The Low Sulphide Pt-Pd-Au mineralization style of mineralization was not well sampled in drilling prior to 2003. As a result, the 109 FW Zones remains open below the current extent to depth along within the footwall to the Main orebody.

7.6 Remnant Zones

The Remnant, 109W/Remnant, Main Remnant, and the 109 HW Zones are the unmined Ni-Cu rich contact sulphide mineralization of the historic West, Intermediate and Main orebodies concentrated at or near the base of the SIC or within embayment structures and associated with sublayer norite and quartz-rich norite phase of the SIC. Generally, these zones become more Cu rich the further the mineralization is from the main contact mineralization. The main sulphide assemblages are massive to net-textured pyrrhotite, pentlandite and chalcopyrite mineralization where pentlandite is the main nickel-bearing mineral and chalcopyrite is the main copper-bearing mineral. Most of the Remnant Zone is found outside of the main embayment structures and therefore is generally lower grade relative to the 109W/Remnant and Main Remnant which for the most part, are within or proximal to the main embayment structure. It should also be mentioned that a portion of the current 109W/Remnant Zone that extends west of the 109 FW was previously modeled by Vale as a separate zone they called the 109 W, however, the current interpretation is that this and the Remnants are part of a continuous zone. The Remnant, 109W/Remnant, Main Remnant, and the 109 HW Zones are oriented sub-parallel to one another and the main embayment trend. It is unclear if these zones represent imbricate reverse fault slices stacked north over south or these zones formed as a result of the mineralization exploiting pre-existing structures or a combination of both.

The Low Sulphide Pt-Pd-Au mineralization style of mineralization was not well sampled in drilling prior to 2003. As a result, large portions of the footwall to the Remnant Zones remains untested for this Style of mineralization.

7.7 123 and 126 FW Zones

The 123 and 126 Zones are narrow mineralized zones starting at approximately 800 m depth, oriented sub-parallel and between the Main Remnant Zone and the Remnant Zone. These zones are likely formed by similar mechanisms and have similar mineralogy as those adjacent zones.

7.8 101 FW Zone

The 101 FW Zone has been modeled as four parallel mineralized structures extending out from the SIC contact from near surface to approximately 400 m depth and up to 200 m southwest, perhaps exploiting weakness along lithological contact in the footwall rocks. The orientation and metal ratios are curious for this zone. Unlike most of the mineralized zones which are near parallel to the SIC contact or following identified embayment trends, the strike orientation of the 101 FW Zone is oblique to main mineralized trend. Also peculiar is the high Ni/Cu of the zone despite extending so far into the footwall. The 101 FW Zone remains partially open along to the southwest to depth.

7.9 99 FW Zone

The 99 FW Zone has been modeled as three sub-parallel mineralized zones, are oriented sub-parallel to the SIC contact, and have a strike extent of over 1,800 m and a depth extent of over 700 m within the Property boundary. The largest and most continuous of the three zones is located at the SIC basal contact and two smaller zones are interpreted to be within the footwall. The thickest part of these zones has been interpreted to be plunging shallowly to southeast along a secondary embayment structure. There is a lower confidence in the interpretation of the 99 FW Zone because of the limited number of drillhole intercepts and the high angle at which the drilling completed was oriented relative to the zones.

8 DEPOSIT TYPES

The follow description of the Deposit Model for the Property is extracted from SRK (2020) and references therein. Historical production over the past 125 years, plus current reserves in the Sudbury mining districts, have been estimated at approximately 1.6 billion tonnes of ore containing over 60 million ounces of platinum group metals plus gold, over 11 million tonnes of nickel, and over 10.8 million tonnes of copper (Lightfoot and Farrow, 2002; Eckstrand and Hulbert, 2007; Ames and Farrow, 2007; Lightfoot, 2016).

There are several main types of mineral deposits in the Sudbury area:

- Contact deposits, including massive sulphide consisting of nickel, copper, cobalt, platinum, palladium, and gold mineralization along the lower contact of the SIC, both within the contact sublayer and in the immediately adjacent Footwall Breccia.
- Footwall deposits, including sulphide veins and stringers containing copper, nickel, platinum, palladium, and gold in the brecciated footwall rocks beneath the SIC.
- Structurally and/or hydrothermally remobilized sulphide nickel, copper, cobalt, platinum, palladium, and gold mineralization.
- Offset dyke deposits, including massive sulphide consisting of nickel, copper, cobalt, platinum, palladium, and gold mineralization associated with brecciated and inclusion bearing phases (IQD) of the quartz diorite offset dykes (QD).
- Hybrid type deposits representing combinations of the above.

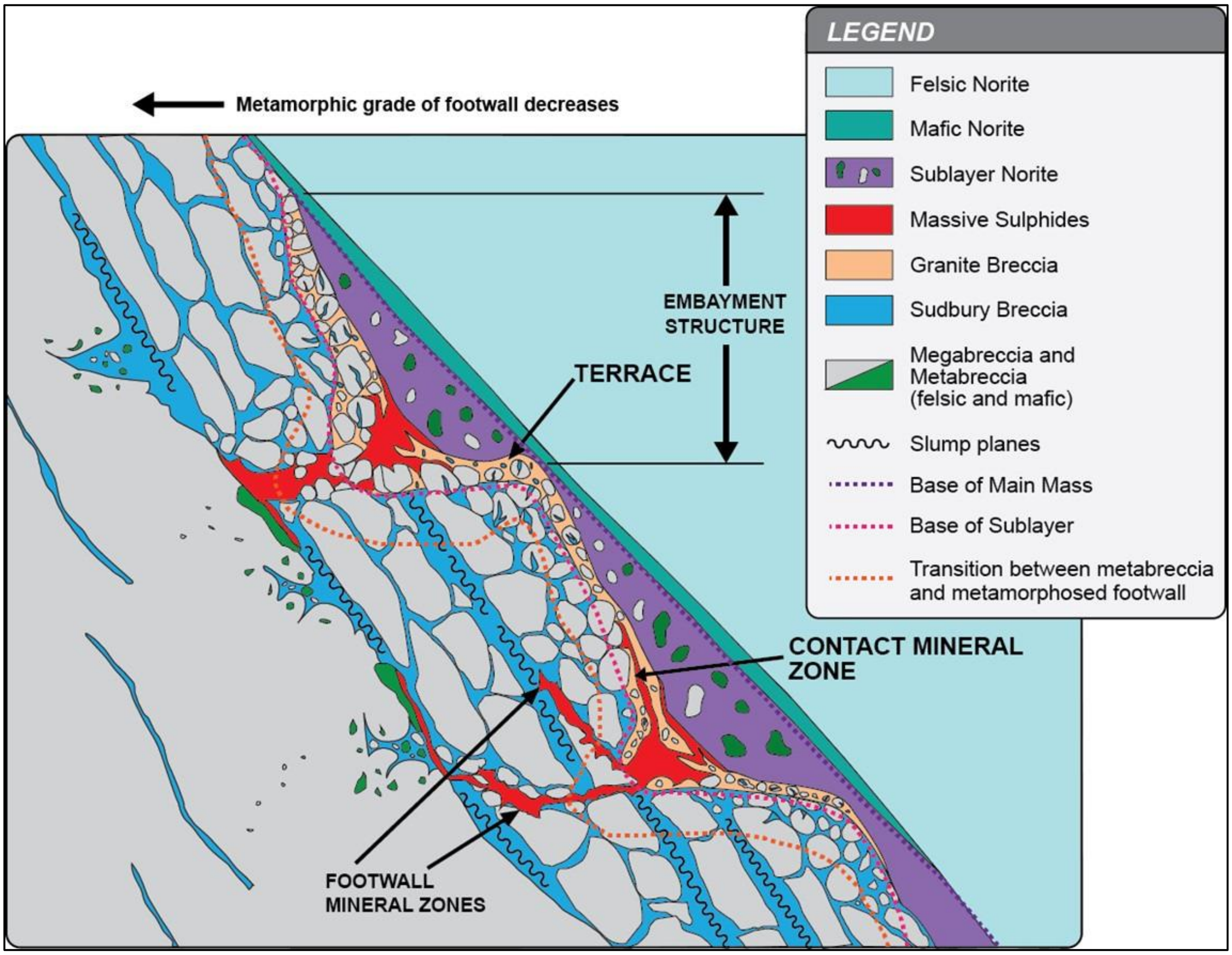
Figure 8-1 shows a cross-section through the SIC contact on the North range, illustrating the host environments for contact and footwall mineralization (Lightfoot, 2016).

8.1 Contact Deposits

Much of the historic mining activity on the Property exploited this deposit type. Mineralization includes blebby to massive accumulations of sulphide, including pyrrhotite > chalcopyrite > pentlandite concentrated within embayment depressions along the base of the Sudbury Igneous Complex both within the contact sublayer and in the immediately adjacent Footwall Breccia (though Footwall Breccia is more prevalent in the North and East Ranges) (Figure 8-1).

The massive and semi-massive accumulations of sulphide are strongly conductive and borehole electromagnetics (BHEM) is used routinely on all drillholes of significant depth. The rule of thumb is that current BHEM technology can detect an off-hole conductor about the same distance as the median dimension of that conductor, with several practical caveats. Maximum effectiveness requires strong coupling between the loop configuration and the conductor. As well, quality low-noise data depends on precise knowledge of transmitter-receiver geometry, which requires gyro surveying of the borehole and GPS surveying of the borehole collar and loop configuration. Due to the fragmental nature of the ore deposits and host rocks, a deposit might not be electrically continuous and actually made up of several conductors; in this case the distance it can be detected from will be reduced relative to the overall size of the sulphide mass. In practice, for the target type in question and providing there is quality data, BHEM is thought to dependably test a radius of 75-100 m around the drillhole.

Figure 8-1 Cross-section through the SIC contact on the North Range (Lightfoot, 2016)



8.2 Footwall Deposits

Examples of recent footwall deposit discoveries in the region include the Denison 109 FW Zone, parts of the 9400 Zone, McCreedy East footwall deposits at Vale's Coleman Mine (the 148, 153, and 170 orebodies), the footwall orebodies at Glencore's Nickel Rim South Mine, and the footwall deposits at Vale's Victor and Capre development projects.

Mineralization includes networks of one to ten metre sized massive sulphide veins, stockworks of smaller centimetre to metre sized sulphide veinlets and low sulphide alteration zones with weak sulphide disseminations, including chalcopyrite > pentlandite +/- pyrrhotite, millerite, cubanite, bornite, and pyrite. Footwall deposits are often hosted by Sudbury breccia structures.

Low Sulphide High Grade Precious Metal ("LSHPM") is a relatively new classification of mineralization in Sudbury (Farrow et al., 2005; Péntek et al., 2008; Tuba et al., 2010; Kjarsgaard & Ames, 2010). LSHPM mineralization has been identified in three geological settings. These are as fine-grained specks in footwall shears such as observed in the 109 FW and 9400 Zones at Denison; as fine-grained specks, disseminations and narrow discontinuous fracture fillings in Sudbury Breccia and adjacent wall rocks in the 109 FW and 9400 zones at Denison and at several occurrences in the North Range and East Range of the Sudbury Structure; and as fine disseminations and specks in quartz-diorite dykes, lenses and pods.
The LSHPM mineralization at Denison exhibits a close spatial relationship to the more massive contact-related Ni-Cu sulphide ores at the base of the SIC. This relationship results in the greatest concentration of

LSHPM mineralization occurring adjacent to largest concentration and highest tenor massive sulphide occupying the Denison embayment structure (Lightfoot, 2017).

Sulphide veins within footwall deposits are variably conductive and chargeable. Airborne, ground and BHEM, as well as ground and borehole DCIP surveys can be effective in directly detecting the sulphide veins. However, due to the potentially small physical size of individual conductive veins and the low sulphide nature of some of the PGE-rich footwall deposits, the detectable distance of geophysical techniques may be quite limited. Exploration requires careful geological mapping to understand structural controls, drilling, extensive sampling, as well as recognition of SIC-related partial melting features and hydrothermal alteration styles associated with footwall systems.

8.3 Structurally and/or Hydrothermally Remobilized Mineralization

In some deposits, sulphide has been remobilized into shear zones and related structural traps. Important examples of this type of deposit include those at Garson, Falconbridge, Falconbridge East, and Creighton mines. Several mineralized trends at Denison mimic the underlying shear fabric and because of this it has been suggested these trends would fall under this deposit type. However, it is unclear whether the mineralization has been remobilized or if the shear zones acted as ground preparation providing pathways for the magmatic melts to follow.

8.4 Offset Dyke Deposits

Though not identified, the potential for the Property to host this style of deposit exists. Examples of recent offset dyke deposit discoveries in the region include the Kelly Lake deposit within the Copper Cliff offset dyke and the Totten and Victoria deposits within the Worthington offset dyke. Mineralization includes massive and semi-massive accumulations of sulphide, including pyrrhotite > chalcopyrite > pentlandite. Sulphide accumulations are associated with inclusion-bearing phases of quartz diorite and are known to concentrate in structural traps such as vertical or horizontal pinches or terminations in the dyke, bends in the dyke, splays/convergences of dyke branches, along the margins or within “pressure shadows” of large blocks caught up in the dyke, and at intersections of the offset dykes with coarse mafic intrusions in the wall rock. Increased PGEs are typically associated with more fractionated chalcopyrite rich zones within offset dyke deposits, which can extend from the dyke outwards into the surrounding country rock, into adjacent zones of Sudbury breccia, meta-breccia or anatexite.

These structural traps are largely controlled by the geology of the wall rock to the offset dykes (geological units, contacts and structures). Understanding these wall rocks is crucial to developing and prioritizing drill targets below the depth of penetration of surface geophysics.

Geophysically, offset style deposits are similar to contact style deposits discussed above.

9 EXPLORATION

Loncan has not conducted any significant surface exploration on the Property (SRK, 2020) and as of the effective date of this report, Magna has yet to complete exploration on the Property.

10 DRILLING

The following description of drilling on the Property has been extracted from WSP (2020). As of the effective date of this report, Magna has yet to complete exploration on the Property.

A total of 4,009 drillholes totaling 515,664 m (1,691,812 ft) is in the Denison drillhole dataset. Table 10-1 summarizes the number of holes drilled and the total footage by year (WSP, 2020).

Table 10-1 Summary of Property Diamond Drillholes by Year

Year	# of Holes	Total Metres	Year	# of Holes	Total Metres
1901	154	11,300	1983	20	2,864
1905	10	1,155	1984	16	1,421
1906	9	899	1986	18	3,005
1908	4	593	1987	79	6,181
1909	4	225	1988	34	3,130
1912	7	206	1989	17	5,050
1915	14	278	1990	99	8,234
1917	13	967	1991	92	13,205
1918	20	1,886	1992	110	17,031
1919	1	65	1993	189	24,418
1937	16	4,773	1994	158	15,581
1938	2	590	1995	130	18,993
1945	14	3,343	1996	95	12,116
1950	6	1,975	1997	62	7,065
1951	40	2,800	1998	33	4,801
1952	73	11,835	1999	10	450
1953	69	14,457	2001	2	557
1954	28	745	2002	14	3,009
1957	78	6,933	2004	2	20
1958	45	3,883	2005	17	5,507
1959	118	12,339	2006	16	7,052
1960	198	31,613	2007	21	14,157
1961	49	8,076	2008	23	7,879
1962	7	2,830	2009	30	6,819
1964	10	293	2010	56	11,271
1965	25	2,680	2011	3	447
1966	62	5,878	2012	19	2,474
1967	54	8,962	2014	40	8,646
1968	138	15,963	2015	33	15,689
1969	121	12,178	2016	58	13,165
1970	270	20,689	2017	18	6,226
1971	226	15,701	**Total**	**4,009**	**515,664**
1972	6	975			
1975	98	13,068			
1976	241	22,823			
1977	236	23,766			
1978	29	2,459			

10.1 Vale Drilling

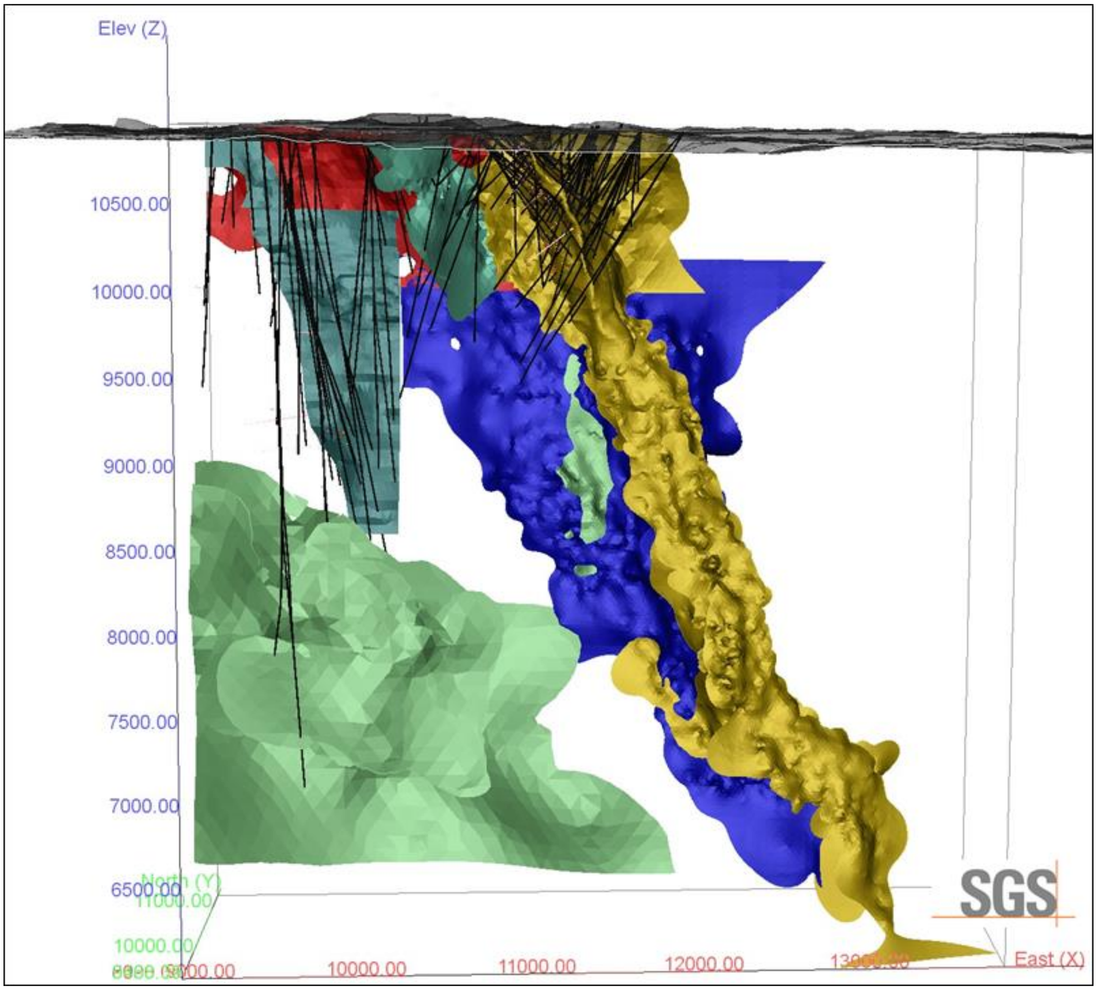
The diamond drilling by Vale and its predecessor companies dates back to 1906. Drilling equipment has evolved over this period from standard rods to wireline and core sizes from EX, AQ, BQ, and NQ. The drilling by Vale was focused primarily supporting the copper-nickel exploration and production at the Crean Hill mine.

From 2005 until Loncan became the operator of the Project in 2014, the drilling was focused on the LSHPM (Figure 10-1). During this time, a total of 185 holes totalling 55,605 m (182,430 ft) was completed, of which 176 holes totaling 53,313 m (174,911 ft) targeted the LSHPM.

Core recovery tends to be greater than 95%. Recovery losses tended to be near surface in fractured ground or near old underground workings.

The true thickness of core intersections is variable depending on if the hole was collared on the hanging wall or footwall side of the mineralization and the dip the hole.

Figure 10-1 Isometric View Looking North: Distribution of Drill Holes Completed by Loncan within the Deposit Area – 2005 – 2014



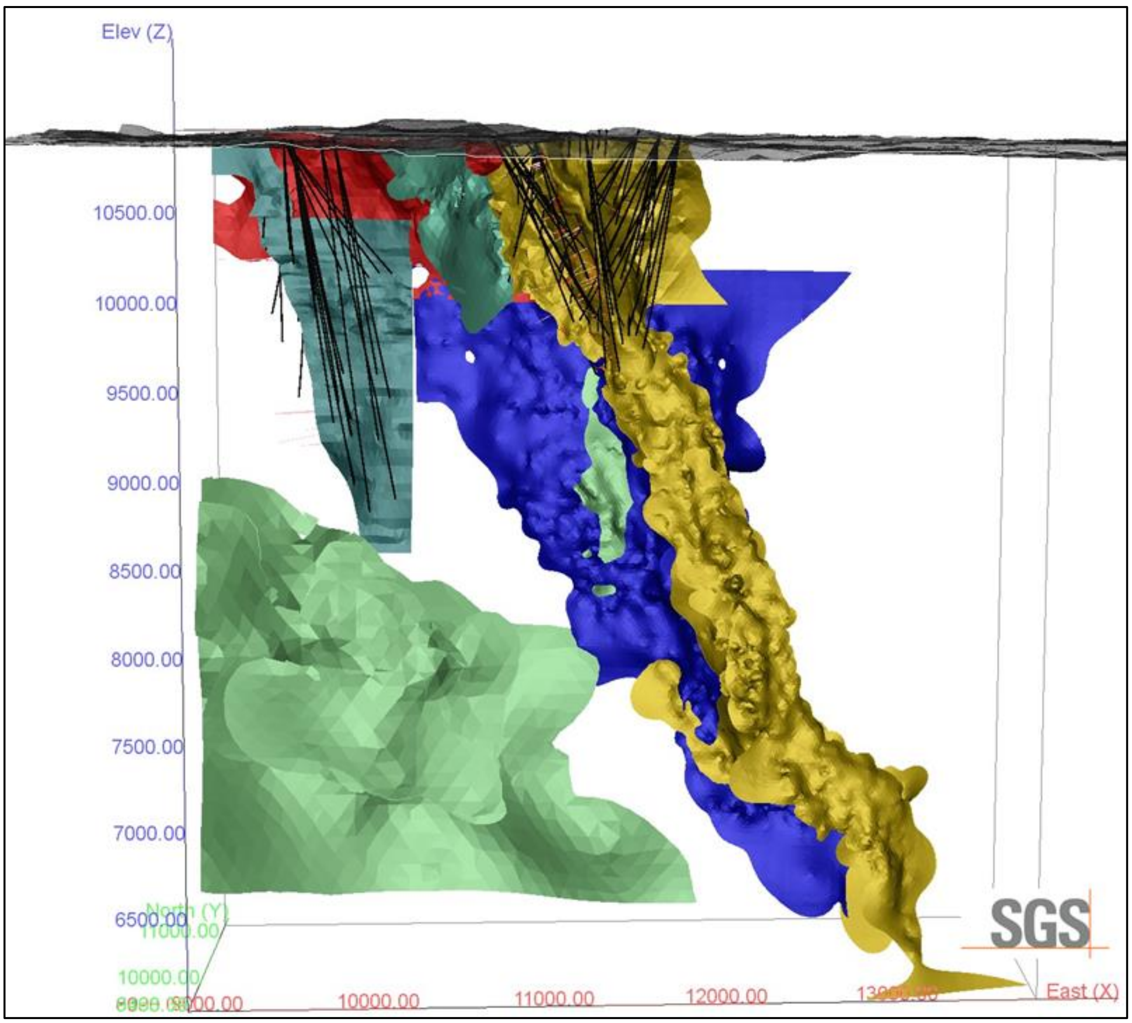
10.2 Loncan Drilling

Loncan took over operatorship of the Project in 2014. A total 149 holes totalling 43,726 m (143,458 ft) were completed from 2014 to 2017 (Figure 10-2). The drilling was completed by various drilling contractors using industry standard NQ wireline drill rigs. A small proportion of these holes may be outside the revised property boundary.

All the holes drilled by Loncan targeted the LSHPM material on the Project. Core recovery tends to be greater than 95%. Recovery losses tended to be near surface in fractured ground or in close proximity to old underground working.

The true thickness of core intersections is variable depending on if the hole was collared on the hanging wall or footwall side of the mineralization and the dip the hole.

Figure 10-2 Isometric View Looking North: Distribution of Drill Holes Completed by Loncan within the Deposit Area – 2014 – 2017



10.3 Surveying

10.3.1 Collar

The earliest drilling programs on the Project used a mine grid to spot holes. The Mines Exploration Borehole System, Vale’s borehole database system (“MEBS”) can convert the various Vale grids into a common coordinate system for export.

There is a risk of inaccuracies in the earlier grid drilling data not matching true survey data, however, this risk was considered low for the purposes of resource estimation.

From 2000 onwards, drill collars were spotted in the field using a real time differential GPS and surveyed again with the real time differential GPS upon completion of the hole or program. Survey results from the GPS were completed in the mine grid coordinate or converted from UTM to mine grid.

Survey lines for underground boreholes were marked on the walls by the Vale survey department with front sights and back sights. A borehole layout was provided to the diamond driller with the hole ID, front sight / back sight and the dip the hole. Final collar locations were not surveyed after the completion of the boreholes.

10.3.2 Downhole

Various downhole survey methods were used over the Project life:

- Acid tests (no azimuth, dip only);
- Reflex;
- Gyro;
- North-seeking gyro.

Acid tests were collected approximately every 30.5 m (100 ft) down the hole. Reflex, gyro and north-seeking gyro surveys were conducted upon the completion of the hole and results with continuous downhole survey readings approximately every 0.9 to 1.5 m (3 to 5 ft) down the hole.

Acid tests are inherently less accurate that the other methods mentioned here and should be avoided for future programs.

10.4 Core Delivery

10.4.1 Surface

Surface core was delivered to the Vale or Loncan core logging facility, depending on the program operator, by the diamond drillers or Vale core technician every weekday.

10.4.2 Underground

Drill core from underground was secured on pallets. Periodically, the pallets were transported by the Vale mine operations group to the shaft and hoisted to surface. The pallets were then delivered to the Vale core logging facility.

10.5 Core Logging

During the 2015-2017 Denison drilling program, diamond drill core was transported from the field at the Denison project to the Loncan core shack, a distance of about 30 km, by either company personnel or by drill contractor. The core was inspected for continuity and the correct marking of depths, tagged and then logged, and sample intervals were marked by Loncan geologists (WSP, 2020).

All borehole data from surface and underground drilling are stored in Vale's Mines Exploration Borehole System ("MEBS") database. In addition, all boreholes drilled by Loncan exist as Excel® files exported from MEBS as a back-up record.

MEBS contains modern holes recorded directly into the system and holes that existed before the database which have been transcribed into the database, dating back to 1901 on the Property. Old boreholes often have extremely short interval descriptions, if any. The borehole database used in this resource estimation was downloaded by Alexander (Sandy) Gibson of Vale on April 27, 2017 in Datamine Studio 3, using Vale Ontario Operation's scripts which export data directly out of MEBS. The measured density data was manually merged with this dataset using the sample identification number as the key field.

Routine geological logging is conducted by suitably qualified geologists and geological technicians and is captured in MEBS. All logging is completed in imperial units, as per MEBS requirements. Rock and minor rock codes, RQD, angle (foliation or significant contact angle), sample number, "ore" code, estimated Ni + Cu grade, estimated percent sulphide and a detailed description are recorded for each interval where applicable for each field. Additional data uploaded into MEBS includes core photos, geotechnical logs, and measured density data.

Earlier geological logging that pre-dates MEBS followed procedures which diverge in several respects from the existing current Loncan procedure. These differences are not expected to have a material impact on the integrity of the geological interpretation or understanding.

10.6 QP's Comments

In the Author's opinion, based on a review of all possible information, the drilling and logging procedures put in place by Loncan and the preceding companies meet acceptable industry standards and that the information can be used for geological and resource modeling.

11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

As of the effective date of this report, Magna has yet to complete exploration on the Property. The following description of the sample preparation, analyses and security by previous operators for the Property has been sourced from WSP (2020), Baker and Hoffman (2015) and (2017).

11.1 Core Sampling

The sampling of the core varied with the age and focus of the drilling program. Older Vale programs, particularity the underground programs focused on definition drilling, used whole core sampling. Surface exploration programs used a rock saw to cut the core in half, with one half of the core placed in samples bags with the appropriate sample tag and the other half of the core returned to the core box. The core logging and assay methods used by Vale in earlier drilling campaigns are described in Appendix 1.

Drill core sampling is guided by lithology, alteration or visible mineralization but due to the nature of the low sulphide mineralization at Denison, sampling is routinely extended over the entire expected mineralized interval and extended to a wider buffer zone on either side. The sampling interval is continuous, with no gaps left where mineralization is perceived to be absent. The maximum sample length is 1.5 m (5 ft) and the minimum, 30 cm (6”). To facilitate compatibility of the data with Vale’s MEBS program, marking, logging and sampling are done in imperial rather than metric units. Every effort is taken to ensure that the sample sent to the laboratory is representative of the entire section of core; however, due to nugget effects and the heterogeneity that is common with this type of PGE mineralization, it is not guaranteed that an assay could be repeated. The half-core samples selected for assay are un-orientated. All samples are sealed (stapled) in individual, labelled plastic bags with a unique sample tag.

Cores were halved using a water-cooled diamond saw that is cleaned regularly to avoid sample to sample contamination. Half of the core was submitted to the lead laboratory, ALS Minerals in Sudbury, by Loncan staff for analysis and the other half was retained on outdoor, roofed core racks at the Loncan office at 129 Fielding Road, Lively, Ontario, as a representative sample or for possible re-sampling. Prior to dispatch to the sample analysis laboratory, each individual sample is weighed.

11.2 Sample Preparation

Samples received by ALS laboratory are processed using the sample preparation package PREP-31:

- Sample logged into tracking system and a bar code label is attached;
- Dry, crush (<5 kg) 70% passing -8 mesh (2 mm);
- Rotary split (250 g) using a Boyd rotary splitter;
- Pulverize (to 85% passing -75 µm).

At no time was an employee of Loncan involved in the preparation of the samples.

The 250 g splits are then transported by ALS Minerals to their analytical facilities in Vancouver, British Columbia via courier. Coarse and pulp rejects are retained at the Sudbury facility for a minimum period of six months; however, these are routinely collected by Loncan personnel for storage at the Loncan office facility.

Before 2013, all data was acquired by Vale. From 2013 onwards, the data was collected by both Vale and Loncan. The most recent data, from 1999 to 2017, used the ALS Laboratories in Sudbury. ALS is an internationally-recognized laboratory accredited by the Standards Council of Canada (SCC) for specific tests listed in ALS’s Scopes of Accreditation which conforms with CAN-P-1579: Requirements for the Accreditation of Mineral Analysis Testing Laboratories and CAN-P-4E ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories.

The analytical assay methodology varied over time. Table 10-1 summarizes the periods of the different analytical methodologies over time.

11.3 ANALYTICAL METHOD

Before 2013, all data was acquired by Vale. From 2013 onwards, the data was collected by both Vale and Loncan. The most recent data, from 1999 to 2017, used the ALS Laboratories in Sudbury. ALS is an internationally-recognized laboratory accredited by the Standards Council of Canada (SCC) for specific tests listed in ALS's Scopes of Accreditation which conforms with CAN-P-1579: Requirements for the Accreditation of Mineral Analysis Testing Laboratories and CAN-P-4E ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories. The Author is independent of ALS.

11.4 The analytical assay methodology varied over time. Quality Assurance and Quality Control Programs

No additional QA/QC has been performed by Loncan on the data acquired by Vale, as it was accepted that the Vale QA/QC protocol and system is MEBS was adequate. This included all data collected prior to Loncan becoming Operator in 2014. Appendix 1 contains information on Vale's QA/QC methods and assay validation.

After borehole data has been finalized, only the MEBS administrator can make changes or re-classify them as available for changes to be made by another user. All the boreholes used in this estimate have been finalized in this manner. It has been accepted that all the Vale data has been assayed by an accredited laboratory which uses standard reference materials and strict internal QA/QC procedures, and that the data has been adequately reviewed by qualified individuals.

The Certified Reference Materials (CRMs) used on the Denison program from 2014 are PGM standards PGMS-24 and PGMS-25. Subsequently, in 2016, two additional standards, PGMS-27 and PGMS-28 were introduced to the QA/QC due to the exhaustion of stocks of PGMS-24. All CRMs were obtained from CDN Laboratories in Vancouver – the first two are sourced from Stillwater and specifically the J-M Reef, both are low Ni-Cu, one is low in 3E (PGMS-25; 2.7 g/t) and one is moderate in 3E (PGMS-24; 6.7 g/t). The second two were made available in 2016 and have a different provenance; PGMS-27 is sourced from the skarn-related Serra Pelada Au-PGE deposit in Brazil with a moderate 3E grade of 8.09 g/t 3E whilst PGMS-28 comes from the low grade (3.45g/t 3E) Platreef from the central section of the Bushveld Complex's Northern Limb. In PGMS-27, Au forms 65% of the precious metal assemblage, whilst in PGMS-28 it forms only 5%. Standards are supplied in batches of one hundred, 50 g envelopes directly by courier from Vancouver. No separate Ni-Cu standards are used. Standards are inserted randomly in the sample order. Blank samples of quartz sand are also inserted in the sample order immediately after an expected high-grade PGE/Ni-Cu sample.

On receipt of the assay data from ALS, the samples representing CRMs, blanks and sample duplicates are highlighted and compiled manually for inspection. Assay values are denominated in Avoirdupois ounces per short ton and these are converted directly into metric grams per tonne using a conversion factor of 34.28657. These are then imported into a separate MS Excel® monitoring sheet and plotted graphically.

The QA/QC tolerances and hurdles for the project are based on the means and standard deviations of the round robin laboratory data for the individual PGMS standards. A batch failure is deemed when any of the individual 3E assays for a standard sample in the batch exceeds the mean ±3SD threshold or when more than one sample in a batch exceeds the mean ±2SD threshold on any of the 3E. The MS Excel® monitoring sheet is conditionally formatted on a True or False basis for each individual precious metal such that a failure on the 3SD criterion is flagged as a False entry and highlighted. Also, the assay values are plotted together with the round robin laboratory data, on which the accepted mean and variance values for the standard are based, graphically on a time-ordered scatter plot graph for each individual envelope.

Table 11-1 summarizes the periods of the different analytical methodologies over time.

For analysis at ALS, samples underwent the proprietary PGM-ICP23 process which involves fire assay with standard lead collection of a 30 g aliquot for Pt, Pd and Au followed by a combination of inductively coupled plasma mass spectrometry (ICP-MS) and atomic emission spectrometry (ICP-AES) to finish.

Samples which exceed 10 g/t on any individual PGE are also run on the PGM-ICP27 process which recalibrates the ICP-AES finish to accurately report values up to 100 g/t for the PGE. Samples are also analyzed for 33 trace elements and base metals (including Ni, Cu, Co and Cr) using a four-acid (HNO3-HClO4-HF and HCl) near total digestion and a combination of ICP-MS and ICP-AES (ME-ICP61 process). ICP-MS over-limits on the ME-ICP61 process are reanalyzed using HF-HNO3-HClO4 acid digestion, HCl leach and ICP-AES (ME-OG62 process).

In the event of visibly higher-grade mineralization, the preference is to analyze sample groups by submitting the samples directly for analytical methods described for over-limits with a specific sample tag prefix. These analytical methods, also referred to as High Grade/Ores Methods, are comprised of HF- HNO3- HClO4 acid digestion, HCl leach and ICP-AES. In addition to High Grade/Ores Methods, sulphur is analyzed using Total Sulphur by LECO to accommodate the anticipated higher sulphur levels. ALS Minerals provides assay results to Loncan's Senior Manager, Exploration and Project Geologist by e-mail in MS Excel® format.

11.5 Quality Assurance and Quality Control Programs

No additional QA/QC has been performed by Loncan on the data acquired by Vale, as it was accepted that the Vale QA/QC protocol and system is MEBS was adequate. This included all data collected prior to Loncan becoming Operator in 2014. Appendix 1 contains information on Vale's QA/QC methods and assay validation.

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On receipt of the assay data from ALS, the samples representing CRMs, blanks and sample duplicates are highlighted and compiled manually for inspection. Assay values are denominated in Avoirdupois ounces per short ton and these are converted directly into metric grams per tonne using a conversion factor of 34.28657. These are then imported into a separate MS Excel® monitoring sheet and plotted graphically.

The QA/QC tolerances and hurdles for the project are based on the means and standard deviations of the round robin laboratory data for the individual PGMS standards. A batch failure is deemed when any of the individual 3E assays for a standard sample in the batch exceeds the mean ±3SD threshold or when more than one sample in a batch exceeds the mean ±2SD threshold on any of the 3E. The MS Excel® monitoring sheet is conditionally formatted on a True or False basis for each individual precious metal such that a failure on the 3SD criterion is flagged as a False entry and highlighted. Also, the assay values are plotted together with the round robin laboratory data, on which the accepted mean and variance values for the standard are based, graphically on a time-ordered scatter plot graph for each individual envelope.

Table 11-1 Analytical Summary (WSP, 2020)

Period	Dates	Comments
1	Pre – 1968	• Values of S (and therefore SG) based on composite samples. During 2007-2008 all SG were re-calculated using Cu, Ni (and available S) to ensure consistency. • Values of PGE + Au taken infrequently and based on composite samples • Values of Co based on assay of combined Ni + Co and regression from Ni
2	1968 – 1972	• All samples assayed for Cu, Ni and Co • PGE + Au and S (SG) as in Period 1 (Pre – 1968)
3	1972 – 1974	• All samples assayed for Cu, Ni, Co, S and Fe • PGE + Au as in Period 1 (Pre – 1968)
4	1974 – 1984	• All samples assayed for Cu, Ni, Co, S and Fe • Values of PGE + Au taken infrequently, but from individual samples. Values determined using arc-spark emission spectrography
5	1984 – 1999	• All samples assayed for Cu, Ni, Co, S and Fe • Values of PGE + Au taken infrequently, but from individual samples. Values determined using DCP
6	1999 - present	• All samples assayed for Cu, Ni, Co, S, Fe, PGE and Au

11.6 2014 – 2015 Drill Programs

11.6.1 Borehole Core Sampling and Assay

In the 2014-2015 drilling campaign, core sampled outside the mineral envelope has been sampled at 1.5 m intervals and core sampled within the FW and HW mineralisation envelopes and an approximate 10 m enclosing margin around was sampled at 1 m, except where a geological unit is narrower or to make up the length between a sample above and a geological contact. The minimum sample length is 30 cm (Baker and Hoffman, 2015).

Core is cut in half with a water cooled saw. One half is placed into a sample bag with a bar coded sample tag and the other half is stored at the Lonmin office at 129 Fielding Road, Lively, Ontario as a representative sample or for possible re-sampling.

Samples were weighed, placed in rice bags for transport and delivered to ALS Chemex by Lonmin personnel.

11.6.2 Density Data

The majority of the dataset has no measured density values. In previous resource estimations, Vale applied the "Alcock" formula to calculate specific gravity based on assay results:

SG = 100 / (100 / 2.88 + 0.0166*Cu - 0.1077*Ni - 0.328*S)

This formula was developed for semi-massive to massive contact Ni-Cu sulphide deposits. The minimum value possible is 2.88 g/cc, known to be too high for some of the host rocks for the 109 FW Domain. A comparison of measured to calculated values revealed the calculated value for felsic rock types (rhyolite and siliceous metasediment) was approximately 5 % too high, and for mafic rock types (metabasalt) the calculated values were approximately 3 % too low. There are 4,545 measured values that were merged into the borehole database prior to the data capture, a subset of which fell within the mineral envelope.

Specific gravity data was collected during the 2014-2015 drilling campaign for most samples within and in a buffer adjacent to the mineral envelope, by measuring the dry and submerged weight. The first several boreholes of this campaign were processed prior to acquiring the specific gravity equipment. Each sample was allowed to fully dry after being cut, was weighed on top of the balance, then placed in a mesh basket suspended from a free-hanging hook below the balance and weighed submerged in water. The water was kept at approximately 20°C using a heater/agitator. SG was calculated using the following formula:

SG = Dry weight / (Dry weight – Wet weight) * 0.998

Where 0.998 is a factor to account for the density of water at 20°C.

The balance was checked with reference weights and a reference rock sample had SG determined prior to each day of SG determinations to ensure high quality data. Data was checked for values below 2.5, with one value removed from the dataset.

Vale also collected SG data using the same method. No information was provided on any QA/QC performed on the Vale dataset, but it assumed that the data collected is adequate for use in the resource estimation. Two values below 2.5 were removed from the dataset.

11.6.3 Data Management

All borehole data from surface and underground drilling are stored in Vale's Mines Exploration Borehole System (MEBS) database. In addition, all boreholes drilled in the 2014-2015 campaign exist as excel files exported from MEBS as a back-up record.

Data including core photos, geotechnical logs, and SG data is uploaded into MEBS, and copies from the 2014-2015 campaign are retained. Additionally, copies from all previous drilling campaigns since inception of the JV have been obtained from Vale.

MEBS contains holes logged in the system and holes that existed previous to the database, dating back to 1901 on the Denison property. The lithology descriptions for older holes often do not correspond with modern nomenclature.

11.6.4 2014-2015 Borehole Assay QA/QC

All samples were weighed before submitting to ALS Chemex and were re-weighed by ALS on receipt. All samples were reviewed for consistent weights to identify sample switches. No sample swaps have been identified to date.

All assay data has been reviewed in MEBS's internal QA/QC system to identify samples with weights different to that expected (based on sample length and density calculated using the Alcock formula as outlined in section 1.5.7.2), and sulphide and grade estimates inconsistent with assay results. This routine allows for identification of any blanks or standards that have had sample numbers erroneously entered in place of a core sample and sample swaps. A change request routine allows any required changes to be made by the MEBS administrator and records that the change has been made. All corrections requested were completed prior to finalizing holes in the 2014-2015 drilling campaign. No sample swaps were identified with this routine in the 2014-2015 drilling campaign.

Blind Certified Reference Materials (CRMs), often referred to as Standards, and field silica blanks were included in sample runs and submitted on the basis that the minimum oven batch size at the lab is in the range of 20 to 24 samples. Standard procedure is to cover each batch with one CRM, one blank sample and one sample duplicate which is two quarter cores from the same half core sample. The CRM was inserted randomly within the batch whilst the blank sample was placed in sequence immediately after where the highest PGM grade was expected. The position of the sample duplicate is random. The sample book used to track the samples was in the standard Vale format using their numbering system so as to allow easy integration of assay results into their borehole database.

The Canadian analytical laboratories of ALS are accredited by the Standards Council of Canada (SCC) for specific tests listed in ALS's Scopes of Accreditation which conforms with CAN-P-1579: Requirements for the Accreditation of Mineral Analysis Testing Laboratories and CAN-P-4E ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories.

Accreditation to this ISO standard involves detailed, on-site audits to evaluate ALS's quality management system and verify the technical competence of methods and personnel. This technical verification includes the requirement for successful participation in inter-laboratory proficiency testing programs and full method validation.

At ALS Minerals, on receipt samples are checked against requisition documents prior to being dried, weighed and then crushed to 70% passing -2mm, then Boyd rotary split to 250g and this is pulverized & split to better than 85% passing 75 microns. The 250g splits are then transported by ALS Minerals to their analytical facilities in Vancouver, British Columbia via courier. Coarse and pulp rejects are retained at the Sudbury facility for a minimum period of six months, however these are routinely collected by Lonmin personnel for storage at the Lonmin office facility.

For routine analysis at ALS, samples undergo the proprietary PGM-ICP23 process which involves fire assay with standard lead collection of a 30g aliquot for Pt, Pd and Au followed by a combination of inductively coupled plasma mass spectrometry (ICP-MS) and atomic emission spectrometry (ICP-AES) to finish. Samples which exceed 10g/t on any individual PGE are also run on the PGM-ICP27 process which recalibrates the ICP-AES finish to accurately report values up to 100g/t for the PGE. Samples are also analyzed for 33 trace elements and base metals (including Ni, Cu, Co and Cr) using a four acid (HNO3-HClO4-HF and HCl) near total digestion and a combination of ICP-MS and ICP-AES (ME-ICP61 process). ICP-MS overlimits on the ME-ICP61 process are reanalyzed using HF-HNO3-HClO4 acid digestion, HCl leach and ICP-AES (ME-OG62 process). In the event of visibly higher grade mineralisation, the preference is to analyze sample groups by submitting the samples directly for analytical methods described for overlimits with a specific sample tag prefix. These analytical methods, also referred to as High Grade/Ores Methods, are comprised of HF-HNO3- HClO4 acid digestion, HCl leach and ICP-AES. In addition to High Grade/Ores Methods, sulphur is analyzed using Total Sulphur by LECO to accommodate the anticipated higher sulphur levels. ALS Minerals provides assay results to Lonmin's Senior Manager, Exploration and Project Geologist by e-mail in MS Excel format. Assay results are also provided to Vale's MEBS administrator through their online Webtrieve service, which allows direct importing into their MEBS database.

The Certified Reference Materials (CRMs) used on the Denison program since 2014 are PGM standards PGMS-24 and PGMS-25 obtained from CDN Laboratories in Vancouver – these are sourced from Stillwater and specifically the J-M Reef, both are low Ni-Cu, one is low in 3E (`PGMS-25; 2.7g/t) and one is moderate in 3E (PGMS-24; 6.7g/t). Standards are supplied in batches of 100, 50g envelopes directly by courier from Vancouver. No separate Ni-Cu standards are used. Standards are inserted randomly in the sample order. Blank samples of quartz sand are also inserted in the sample order immediately after an expected high grade PGE/Ni-Cu sample.

On receipt of the Assay data from ALS, the samples representing CRMs, blanks and sample duplicates are highlighted and compiled manually for inspection. Assay values are denominated in Avoirdupois ounces per short ton and these are converted directly into Metric grams per tonne using a conversion factor of 34.287. These are then imported into a separate MS Excel monitoring sheet and plotted graphically.

The QA/QC tolerances and hurdles for the project are based on the means and standard deviations of the round robin lab data for the individual PGMS standards. A batch failure is deemed when any of the individual 3E assays for a sample in the batch exceeds the mean +/-3SD threshold or when more than one sample in a batch exceeds the mean +/- 2SD threshold on any of the 3E. The MS Excel monitoring sheet is conditionally formatted on a True or False basis for each individual precious metal such that a failure is flagged as a "False" entry and highlighted. An example is given as Table 11-2. Also, the assay values are plotted together with the round robin lab data, on which the accepted mean and variance values for the standard are based, graphically on a time ordered scatter plot graph for each individual envelope. The graph displays an envelope bounded by the mean + 3SD and mean – 3SD thresholds and failures lie outside of that envelope (Figure 11-1).

The graphs also serve to show up any overall and between batch bias for each of the elements in each of the standards as well as the overall precision. To date there is evident a small positive variance for each of the individual 3E relative to the round robin means but no discernable trend with time. The precision in the ALS data is generally better than for many of the round robin labs used in compilation of the standards.

A batch failure would necessitate repeat assay of the entire batch from coarse reject stage with insertion of new control samples. For blank sample values it is more subjective & a failure ceiling value has not been set – very occasionally there have been instances of blank values returning up to 0.24g/t 3E where it is likely there had been carry over from the previous high grade sample in the prep stage. In these instances the lab was notified of this issue. Both blank and standard sample insertion also serve to highlight any mix up in transfer of sample tags from the received bags through the wet and dry lab processes. To date there have been no such instances.

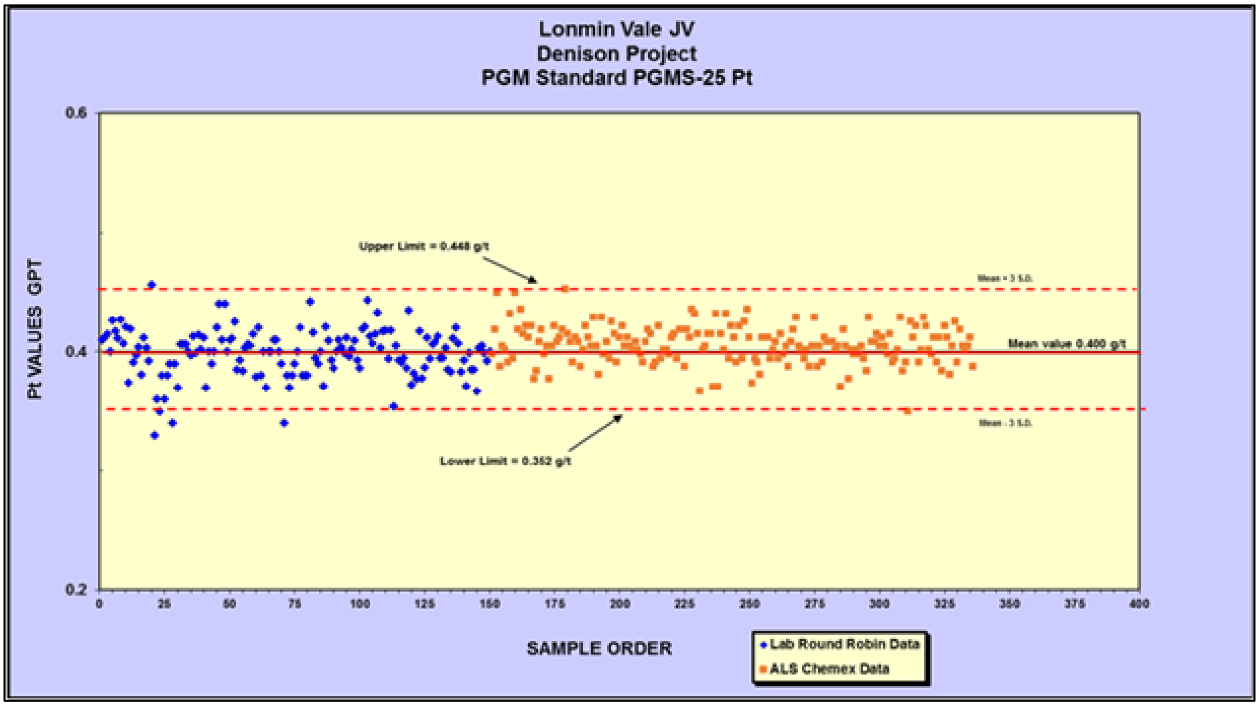
ALS has its own internal QA/QC program which is reported in the assay certificates sent to Lonmin but no account is taken of this in determination of batch acceptance or failure. For geochemical and Fire Assays, ALS expects to achieve a precision and accuracy of plus or minus 10% (of the concentration) ±1 Detection Limit (DL) for duplicate analyses, in-house standards and client submitted standards, when conducting routine geochemical analyses for gold and base metals. These limits apply at, or greater than, fifty times the limit of detection. For samples containing coarse gold, native silver or copper, precision limits on duplicate analyses can exceed plus or minus 10% (of the concentration).

For ore grade analysis, ALS expects to achieve a precision and accuracy of plus or minus 5% (of the concentration) ± 1 DL for duplicate analyses, in-house standards and client submitted standards. These limits apply at fifty times the limit of detection. As in the case of routine geochemical analyses, samples containing native silver or copper are less likely to meet the expected precision levels for ore grade analysis.

Table 11-2 Example of Tracking Spreadsheet for Certified Reference Material Samples (Baker and Hoffman, 2015)

LAB DATA							
Sample #	Lab Work #	LAB ALS Chemex g/t Au	LAB ALS Chemex g/t Pt	LAB ALS Chemex g/t Pd	CHECK Au	CHECK Pt	CHECK Pd
R318096	SD14126271	0.463	0.398	1.841	TRUE	TRUE	TRUE
R318122	SD14126271	0.483	0.418	1.906	TRUE	TRUE	TRUE
R318185	SD14126271	0.483	0.449	1.875	TRUE	FALSE	TRUE
R318207	SD14128040	0.535	0.387	1.862	TRUE	TRUE	TRUE
R318266	SD14128040	0.463	0.405	1.869	TRUE	TRUE	TRUE
R318333	SD14129804	0.477	0.401	1.886	TRUE	TRUE	TRUE
R318359	SD14129804	0.470	0.391	1.858	TRUE	TRUE	TRUE
R318379	SD14131095	0.482	0.432	1.817	TRUE	TRUE	TRUE
R318453	SD14131095	0.459	0.394	1.851	TRUE	TRUE	TRUE
MG219087	SD14130901	0.504	0.449	1.917	TRUE	FALSE	TRUE
MG219105	SD14130901	0.518	0.418	1.869	TRUE	TRUE	TRUE
MG219127	SD14130901	0.501	0.435	1.917	TRUE	TRUE	TRUE
MG219193	SD14135517	0.513	0.415	1.910	TRUE	TRUE	TRUE
MG219231	SD14135517	0.495	0.422	1.917	TRUE	TRUE	TRUE
MG219277	SD14135517	0.499	0.411	1.882	TRUE	TRUE	TRUE
MG219297	SD14135517	0.490	0.422	1.810	TRUE	TRUE	TRUE
MG219312	SD14138433	0.492	0.377	1.814	TRUE	TRUE	TRUE

Figure 11-1 Example of Tracking Graph for Certified Reference Material Samples Showing Mean and Threshold Envelope (Baker and Hoffman, 2015)



11.7 2016 – 2017 Drill Programs

11.7.1 Borehole Core Sampling and Assay

In the 2015-2017 drilling campaign, core that was sampled outside the confines of the mineral envelope has been sampled at 5' (1.5 m) lengths whereas the core sampled within the mineral envelopes and the immediately surrounding 30' (10 m) was sampled at 3.3' (1 m) lengths (Baker and Hoffman, 2017). Exceptions occurred where a geological unit was narrow (less than 3.3') or to make up the length between a sample above and a geological contact. The minimum sample length is 6" (30 cm).

Core is cut in half with a water cooled saw. One half is placed into a sample bag with a bar coded sample tag and the other half is stored at the Lonmin office at 129 Fielding Road, Lively, Ontario as a representative sample or for possible re-sampling.

Samples were weighed, placed in plastic bags and grouped together in rice bags for transport and delivered to ALS Chemex by Lonmin personnel.

11.7.2 Density Data

All diamond drill core from the 2015-2017 drilling campaign within the expected intersection of the mineral envelope was subject to specific gravity measurement, by measuring dry and submerged sample weight.. Each sample was allowed to fully dry after being cut, was weighed on top of the balance, then placed in a mesh basket suspended from a free-hanging hook below the balance and weighed submerged in water. The water was kept at approximately 20°C using a heater/agitator. Density was calculated using the following formula:

Density = Dry weight / (Dry weight – Wet weight) * 0.998

Where 0.998 is a factor to account for the lower density of water at 20°C.

The balance was checked with reference weights and a reference rock sample had SG determined prior to each day of SG determinations to ensure high quality data.

Several 2015-2017 drilling campaign samples within the mineral envelop do not have specific gravity measurements as they were not expected to lie within the mineral envelope. For these samples and all historical data, a regression is applied within Vale's MEBS database to calculate an estimated density. The "Alcock" formula calculates density based on assay results to all samples where Cu, Ni and S assays are available:

Density = 100 / (100 / 2.88 + 0.0166*%Cu - 0.1077*%Ni - 0.328*%S)

And in samples drilled before 1968 where only Cu and Ni are available:

Density = 2.80 + 0.02*%Cu + 0.20*%Ni

These formulae were developed for semi-massive to massive contact Ni-Cu sulphide deposits. They are known to underestimate the density of most felsic rocks and overestimate the density of most mafic rock types outside the SIC. The lowest possible values from the Alcock and pre-1968 formulae are 2.88 and 2.80 g/cc respectively, too high for the felsic footwall lithologies. The formulae also underestimate the density of mafic rocks. As a result, there is little correlation between calculated values up to 3.00 g/cc and measured values. Above this, sulphide contributes more significantly to the density.

There are 1,805 measured density values that were merged into the borehole database, a subset of which lie within the mineral envelope. A new density field for use in block modelling was added to the borehole dataset, where measured density overrides calculated density, if available. As the bulk of the 9400 Zone is hosted by mafic rocks, the density used in this grade model and the resulting tonnage could be biased lower. As highlighted in the exploratory data analysis (Appendix 3), a revised density calculation could be used in future to improve this bias. This was not applied in the current resource estimation as the revised density calculation was developed after the bulk of this mineral resource estimation was complete.

A density of 3.01 g/cc has been assigned to the Olivine Diabase dykes, which is both the median and mean value of 57 measured values for the unit in the 9400 Zone area. The stopes are all assumed to be filled with rock fill, as rock fill was recovered each time a stope was encountered. The stopes have been assumed to be approximately 2/3 rock fill and 1/3 void space, and are thus assigned a density of 2.00 g/cc. Other mine workings (air raises, drifts, and escape ways) are assumed to be void space and have been assigned a density of 0.

11.7.3 Data Management

All borehole data from surface and underground drilling are stored in Vale's Mines Exploration Borehole System (MEBS) database. In addition, all boreholes drilled in the 2015-2017 campaign exist as excel files exported from MEBS as a back-up record.

Data including core photos, geotechnical logs, and measured density data is uploaded into MEBS, and copies from the 2015-2017 campaign are retained. Additionally, copies from previous drilling campaigns since inception of the JV have been obtained from Vale.

MEBS contains modern holes recorded directly into the system and holes that existed previous to the database which have been transcribed into the database, dating back to 1901 on the Denison property. Old boreholes often have extremely short interval descriptions, if any. The borehole database used in this resource estimation was downloaded by Alexander (Sandy) Gibson of Vale on April 27th, 2017 in Datamine Studio 3, using Vale Ontario Operation's scripts which export data directly out of MEBS. The measured density data was manually merged with this dataset using the sample identification number as the key field.

11.7.4 2015-2017 Borehole Assays and QA/QC

During the 2015-2017 Denison drilling program, diamond drill core was transported from the field at the Denison project to the Lonmin core shack, a distance of about 30 km, by either company personnel or by drill contractor. The core was inspected for continuity and the correct marking of depths, tagged and then logged and sample intervals marked by Lonmin geologists. Cores were halved using a water cooled diamond saw that is cleaned regularly to avoid sample to sample contamination. Half of the core was submitted to the lead laboratory, ALS Minerals in Sudbury, by Lonmin staff for analysis and the other half was retained on outdoor, roofed core racks at the Lonmin office at 129 Fielding Road, Lively, Ontario as a representative sample or for possible re-sampling. Prior to dispatch to the sample analysis laboratory, each individual sample is weighed.

Typically at Denison two variable styles of mineralisation are juxtaposed or within close proximity of each other, namely high sulphide (Contact style mineralisation) and low sulphide (Footwall style mineralisation). Occasionally, stringer type mineralisation is also developed. Drill core sampling is guided by lithology, alteration or visible mineralization but due to the nature of the low sulphide mineralisation at Denison, sampling is routinely extended over the entire expected mineralised interval and extended to a wider buffer zone on either side. The sampling interval is continuous with no gaps left where mineralisation is perceived to be absent. The maximum sample length is 5' (1.5 m) and the minimum, 6" (30 cm). However, in order to facilitate compatibility of the data with Vale's MEBS program, marking, logging and sampling are done in Imperial rather than Metric units. Every effort is taken to ensure that the sample sent to the lab is representative of the entire section of core; however, due to nugget effects and the heterogeneity that is common with this type of PGE mineralization, it is not guaranteed that an assay could be repeated. The half core samples selected for assay are un-orientated. All samples are sealed (stapled) in individual, labelled plastic bags with a unique sample tag.

Blind Certified Reference Materials (CRMs), often referred to as Standards, and field silica blanks are included in sample runs and submitted on the basis that the minimum oven batch size at the lab is in the range of 20 to 24 samples. The standard procedure requires that each such batch has one CRM, one blank sample and one sample field duplicate which is two quarter cores from the same half core sample. The CRM is inserted randomly within the batch whereas the blank sample is situated in sequence immediately after where the highest PGM grade is expected. The position of the sample duplicate is randomized. The sample book used to track the samples is in the standard Vale format & with their numbering system so as to allow easy integration of assay results into their borehole database. In previous drilling campaigns, standards and blanks were inserted at the ratio of one blank and two standard per 100 samples. Crusher rejects were duplicated at the laboratory at a rate of three per 100 samples (see Appendix 1).

Samples are delivered by Lonmin personnel exclusively to ALS Minerals in Kelly Lake Road, Sudbury, Ontario and are then booked into their LIMS system and batched before entering their prep lab. Both blank and standard sample insertion serve to highlight any mix up in transfer of sample tags from the received bags through the wet and dry lab processes. A further check is a comparison of sample mass delivered vs sample mass recorded as being received at the lab.

The Canadian analytical laboratories of ALS are accredited by the Standards Council of Canada (SCC) for specific tests listed in ALS's Scopes of Accreditation which conforms with CAN-P-1579: Requirements for the Accreditation of Mineral Analysis Testing Laboratories and CAN-P-4E ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories.

Accreditation to this ISO standard involves detailed, on-site audits to evaluate ALS's quality management system and verify the technical competence of methods and personnel. This technical verification includes the requirement for successful participation in inter-laboratory proficiency testing programs and full method validation.

At ALS Minerals, on receipt samples are checked against requisition documents prior to being dried, weighed and then the entire sample crushed to 70% passing -2mm, then Boyd rotary split to 250g and this is pulverized & split to better than 85% passing 75 microns. The 250g splits are then transported by ALS

Minerals to their analytical facilities in Vancouver, British Columbia via courier. Coarse and pulp rejects are retained at the Sudbury facility for a minimum period of six months, however these are routinely collected by Lonmin personnel for storage at the Lonmin office facility.

For routine analysis at ALS, samples undergo the proprietary PGM-ICP23 process which involves fire assay with standard lead collection of a 30 g aliquot for Pt, Pd and Au followed by a combination of inductively coupled plasma mass spectrometry (ICP-MS) and atomic emission spectrometry (ICP-AES) to finish. Samples which exceed 10 g/t on any individual PGE are also run on the PGM-ICP27 process which recalibrates the ICP-AES finish to accurately report values up to 100 g/t for the PGE. Samples are also analysed for 33 trace elements and base metals (including Ni, Cu, Co and Cr) using a four acid (HNO3-HCIO4-HF and HCI) near total digestion and a combination of ICP-MS and ICP-AES (ME-ICP61 process). ICP-MS over-limits on the ME-ICP61 process are reanalysed using HF-HNO3-HClO4 acid digestion, HCl leach and ICP-AES (ME-OG62 process). In the event of visibly higher grade mineralization, the preference is to analyse sample groups by submitting the samples directly for analytical methods described for over-limits with a specific sample tag prefix. These analytical methods, also referred to as High Grade/Ores Methods, are comprised of HF-HNO3- HClO4 acid digestion, HCl leach and ICP-AES. In addition to High Grade/Ores Methods, sulphur is analysed using Total Sulphur by LECO to accommodate the anticipated higher sulphur levels. ALS Minerals provides assay results to Lonmin's Senior Manager, Exploration and Project Geologist by e-mail in MS Excel format.

The Certified Reference Materials (CRMs) used on the Denison program from 2014 are PGM standards PGMS-24 and PGMS-25. Subsequently, in 2016, two additional standards, PGMS-27 and PGMS-28 were introduced to the QA/QC due to the exhaustion of stocks of PGMS-24. All CRMs were obtained from CDN Laboratories in Vancouver – the first two are sourced from Stillwater and specifically the J-M Reef, both are low Ni-Cu, one is low in 3E (`PGMS-25; 2.7 g/t) and one is moderate in 3E (PGMS-24; 6.7 g/t). The second two were made available in 2016 and have a different provenance; PGMS-27 is sourced from the skarn-related Serra Pelada Au-PGE deposit in Brazil with a moderate 3E grade of 8.09 g/t 3E whilst PGMS-28 comes from the low grade (3.45g/t 3E) Platreef from the central section of the Bushveld Complex's Northern Limb. In PGMS-27 Au forms 65% of the precious metal assemblage whilst in PGMS-28 it forms only 5%.

Standards are supplied in batches of one hundred, 50g envelopes directly by courier from Vancouver. No separate Ni-Cu standards are used. Standards are inserted randomly in the sample order. Blank samples of quartz sand are also inserted in the sample order immediately after an expected high grade PGE/Ni-Cu sample.

On receipt of the Assay data from ALS, the samples representing CRMs, blanks and sample duplicates are highlighted and compiled manually for inspection. Assay values are denominated in Avoirdupois ounces per short ton and these are converted directly into Metric grams per tonne using a conversion factor of 34.28657. These are then imported into a separate MS Excel monitoring sheet and plotted graphically.

The QA/QC tolerances and hurdles for the project are based on the means and standard deviations of the round robin lab data for the individual PGMS standards. A batch failure is deemed when any of the individual 3E assays for a standard sample in the batch exceeds the mean +/-3SD threshold or when more than one sample in a batch exceeds the mean +/- 2SD threshold on any of the 3E. The MS Excel monitoring sheet is conditionally formatted on a True or False basis for each individual precious metal such that a failure on the 3SD criterion is flagged as a False entry and highlighted. Also, the assay values are plotted together with the round robin lab data, on which the accepted mean and variance values for the standard are based, graphically on a time ordered scatter plot graph for each individual envelope. The graph displays an envelope bounded by the mean + 3SD and mean – 3SD thresholds and failures lie outside of that envelope.

The graphs also serve to show up any overall and between batch bias for each of the elements in each of the standards as well as the overall precision. Throughout the program there has been evidence of a small positive variance for each of the individual 3E relative to the round robin means but with no discernible trend within or between batches over time. The precision in the ALS data is generally better than for many of the round robin labs used in compilation of the standards.

A batch failure would necessitate repeat assay of the entire batch from coarse reject stage with insertion of new control samples. Since inception of the QA/QC protocol, there have been three single element failures on PGMS-24 (Au all three) and three on PGMS-25 (Au 1, Pt 2). The specific instrumentation or fusion runs containing these samples were identified and re-run for assay. In all cases there were no significant differences between the original and repeat assays. The problem was assigned to difficulty in achieving fusion of the original CRM samples.

With the later introduction of the PGMS-27 and PGMS-28 CRMs it became apparent that the precision on individual elements in PGMS-27 was low and whilst there have been no recorded failures on the mean +/- 3SD criterion and fewer than ten reporting outside the mean +/- 2SD lines, the spread of data is significant. For PGMS-28, problems have been experienced with the Au assay which has a mean value of 0.193g/t in the round robin data. Given the proximity to the detection limit in a routine commercial lab fire assay, it is considered likely that the population for this element would be closer to lognormal rather than normal and that the upper and lower cut-offs that are selected based on a normal distribution are not appropriate. During the 2016/17 drilling program there were four failures on Au only in PGMS-28, two on the high side and two on the low side. In the first instance the surrounding ten samples in the containing batch were rerun without significant variance. Subsequently, the three other failed batches were examined and, as there were no significant values in the surrounding ten samples, no further action was taken beyond flagging of the data. There have been no failures on either Pt or Pd for this standard.

For blank sample values, failure is more subjective and a failure ceiling value has not been set – early on in the program very occasionally there were instances of blank values returning up to 0.24 g/t 3E where it is likely there had been carry over from the previous high grade sample in the prep stage. This issue became noticeably more apparent during 2016 with the inception of the Denison 109FW metallurgical drilling program where one third HQ core samples were being submitted instead of the normal one half core NQ. In these instances a 3 kg plus high grade sample was being crushed and followed by a 100 g quartz blank with the effect that any carryover had a disproportionately high effect and was being magnified in the reported blank grade. Sporadic values of up to 0.695 g/t 3E were recorded in blank samples because of this. In these instances the lab was notified of this issue but in all cases the mass carryover from one sample to the next was within the contractually acceptable tolerances which are set at a percentage.

From the beginning of 2016 until end April 2017, a total of 8,786 samples were submitted for assay. These included 146 samples of standard PGMS-24, 176 of PGMs-25, 33 of PGMS-27 and 32 of PGMS-28 as well as 390 blank samples. QA/QC coverage is therefore 8.8% which is close to the planned coverage of 1 standard plus one blank per nominal oven batch of 24 samples.

ALS has its own internal QA/QC program which is reported in the assay certificates sent to Lonmin but no account is taken of this in determination of batch acceptance or failure.

For geochemical and Fire Assays, ALS expects to achieve a precision and accuracy of plus or minus 10% (of the concentration) ±1 Detection Limit (DL) for duplicate analyses, in-house standards and client submitted standards, when conducting routine geochemical analyses for gold and base metals. These limits apply at, or greater than, fifty times the limit of detection. For samples containing coarse gold, native silver or copper, precision limits on duplicate analyses can exceed plus or minus 10% (of the concentration).

For ore grade analysis, ALS expects to achieve a precision and accuracy of plus or minus 5% (of the concentration) ± 1 DL for duplicate analyses, in-house standards and client submitted standards. These limits apply at fifty times the limit of detection. As in the case of routine geochemical analyses, samples containing native silver or copper are less likely to meet the expected precision levels for ore grade analysis.

Duplicate samples were submitted for the bulk of the 2015-2017 drilling campaign as a means of investigating the precision at ALS. As duplicates were submitted at the target rate of one per 24 samples spread evenly throughout each borehole, the bulk of the duplicated samples were low grade, making analysis of the precision difficult. For this reason, duplicate sampling was discontinued toward the end of the drilling campaign. Duplicate samples have been plotted in Figure 1.5.13, with the first sample on the X axis and the second sample on the Y axis for all of the precious metals as well as the combined TPM grade.

The linear regressions for Pd, TPM and especially Pt are very close to the 100% precision line. The linear regression for Au shows the greatest deviation from 100% precision, due to five of the six Au samples over 6 g/t having higher grades in the first sample than the second, skewing the regression line downward.

Duplicate assay analyses for Au, Pt, Pd and TPM (Figure 11-2). Black line represents 100% precision, blue line is the linear regression.

The use of a third party laboratory for routine check assays was investigated during 2016 as a means to investigate the slight but consistent positive bias seen in ALS assays on CRMs. The aim was to match the ALS methodology as closely as possible. AGAT Labs were selected and a trial run of 68 variably high grade channel sample pulps from a prospect on Denison was renumbered and submitted for analysis. The results returned from AGAT showed exceptional precision with respect to the corresponding ALS analyses without exception. Unfortunately AGAT closed their precious metal lab shortly after completion of this work and no replacement third party lab has been located.

Pt check assays on a batch of 68 pulps from AGAT (orange) overlain on original ALS assays (blue) (Figure 11-3).

10.6 QP's Comments

It is the Author's opinion, based on a review of all possible information, that the sample preparation, analyses and security used on the Project meet acceptable industry standards and the drill data can be used for geological and resource modeling, and estimation of Indicated and Inferred mineral resource estimation.

Figure 11-2 Duplicate Assay Analyses for Au, Pt, Pd and TPM: Black Line Represents 100% Precision, Blue Line is the Linear Regression (Baker and Hoffman, 2017)

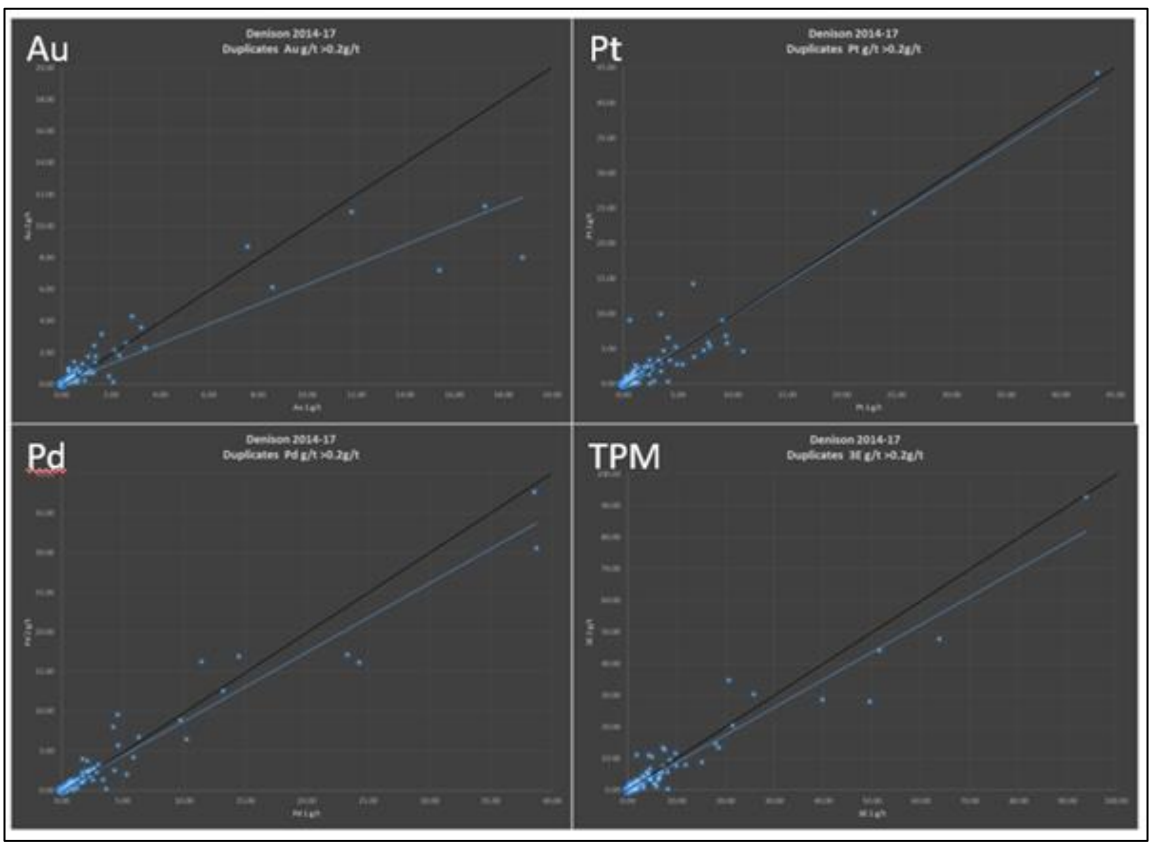
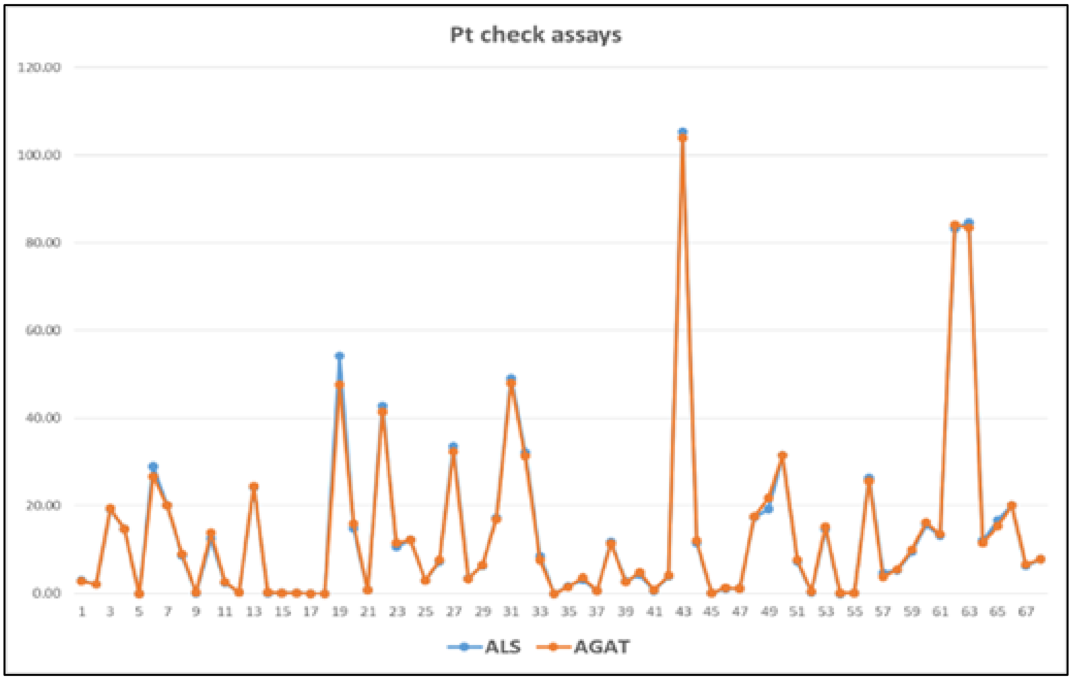


Figure 11-3 Pt Check Assays on A Batch of 68 Pulps from AGAT (Orange) Overlain on Original ALS Assays (Blue) (Baker and Hoffman, 2017)



12 DATA VERIFICATION

The following section summarise the data verification procedures that were carried out and completed and documented by the Author for this technical report.

As part of the verification process, the Author reviewed all geological data and databases as well as past in-house technical reports.

As of the effective date of this report, Magna has yet to complete exploration on the Property, including drilling. All previous drilling has been completed by other issuers and is described in Section 6: History and Section 10: Drilling. The Author assumes that the sample preparation, analyses, and security for drilling completed by other issuers prior to the effective date of this report has been reviewed and validated by previous authors of internal resource estimates including WSP (2020) and SRK (2020). Armitage believes that sample preparation, analysis and security by previous operators, as described in this report, was completed in a manner consistent with industry standard sampling techniques at the time.

Armitage conducted an independent verification of the assay data in the drill sample database. Approximately 10 - 20% of the digital assay records were randomly selected and checked against the available laboratory assay certificate reports by Armitage. It should be noted that only assay certificates were available for drilling completed by Loncan from 2014 to 2017. Assay certificates for drilling by Vale prior to 2014 were not available.

Armitage reviewed the assay database for errors, including overlaps and gapping in intervals and typographical errors in assay values. In general, the database was in good shape and no adjustments were required to be made to the assay values contained in the assay database.

Verifications were also carried out on drill hole locations, down hole surveys, lithology, SG, trench data, and topography information. Minor errors were noted and corrected during the validation process but have no material impact on the 2022 MRE presented in the current report. The database is of sufficient quality to be used for the current MRE.

In addition, as described below, the Authors conducted a site visits to better evaluate the veracity of the data.

The Property is a past producing mine and is currently at an advanced stage of exploration. The project has had numerous studies completed, and has had numerous past authors complete site visits, data verification programs, and complete internal mineral resource estimates and mineral resource estimate reviews of various parts of the Deposit (Lonmin, Loncan, WSP and SRK). The Project has seen past production (open pit and underground). As such, the Author did not deem it necessary to collect check samples.

12.1 May 2022 Site Inspection and Data Verification

Armitage personally inspected the Property on the 25th of May, 2022, accompanied by Jason Jessup, CEO & Director of Magna, David King of King Geoscience, technical advisor and QP for Magna, and Dave Smith, Senior Geologist for Wallbridge Mining Company Ltd. Armitage completed a tour of the historic mine site including the area of the shafts and raises, previous open pit and waste dump. The Author visited a number of outcrops to review the geology and various styles of mineralization, rock sample and channel sample locations, and recent and historical drill sites.

On May 26th, the Author was able to visit the Project's core storage facility in Sudbury (Wallbridge core storage facility), accompanied by David King and Dave Smith. Armitage examined a number of selected mineralized core intervals from recent diamond drill holes from the Project. Armitage examined assay certificates and assays were examined against the drill core mineralized zones. All core boxes were well labelled and properly stored in core racks outside, with a number of significant drill intercepts stored on core racks inside. Sample numbers for recent drill holes were written on the core and it was possible to validate sample intervals and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

At the time of the visit, there was no active exploration or mining activities on the Property and Magna has completed no exploration on the Property to date.

As a result of the site visit, the Author was able to become familiar with conditions on the Property, was able to observe and gain an understanding of the geology and various styles mineralization, was able to verify the work done and, on that basis, is able to review and recommend to Magna an appropriate exploration or development program.

The Author considers the site visit current, per Section 6.2 of NI 43-101CP. To the Authors knowledge there is no new material scientific or technical information about the Property since that personal inspection. The technical report contains all material information about the Property.

12.2 Conclusion

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no errors or issues identified with the database. Based on a review of all possible information, the Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Background

The Project has been subject to several test programs by Vale over the history of the mine operation. The test work was focused on the nickel sulphide deposits with the Clarabelle Mill flowsheet as the standard (WSP, 2020). As the Denison / Crean Hill Mine operated on and off from 1906, it is assumed the nickel sulphide deposits have acceptable metallurgical recoveries for the Clarabelle flowsheet.

To date, limited metallurgical testwork and investigations have been conducted on samples of Denison 109FW zone mineralization (SRK, 2020). In 2010/2011, samples were tested by Vale's Technical Research Centre (Sheridan Park) and compared with Clarabelle standard feed. In 2017, a single master composite sample was tested by Blue Coast Research for gravity and bulk Cu-Ni flotation concentrates. Additional testing was done by Blue Coast in 2020 on the same sample looking at improving gravity recovery ahead of bulk flotation.

13.2 2010 Vale Technical Research Test Results

Over the period 2010 and 2011, Sheridan Park investigated the flotation response of a Denison 109FW sample using the "Standard Full Circuit Simulation" flowsheet used for the Clarabelle concentrator (Figure 13-1). The Denison sample was tested both alone and as a blend with standard Clarabelle feed. No ill effects were noted from the blend tests and it was recommended that the more recent Clarabelle "Challenging Ore Recovery" (CORe) flowsheet be tested on the material.

A formal report was not available for review that included details of the flotation test conditions. Other tests using the mill-float-mill-float or "MF2" flowsheet were also described in the summary presentation material from Sheridan Park.

The 109FW sample tested was relatively low in Cu and Ni but with a combined Pt+Pd+Au grade of 8 g/t (Table 13-1).

Recovery to a bulk Cu-Ni concentrate varied from 36% for gold to 80% for copper. Copper upgrade to concentrate was 33 while nickel upgrade was 21.

Mineralogical analysis indicated 87% of the Pt occurred as sperrylite (PtAs) while 96% of the Pd occurred as michenerite ([Pd,Pt]BiTe). (Minor element analysis by Blue Coast in 2017 and 2020 indicated elevated levels of As, Bi, Pb and Te in the float concentrates.)

Figure 13-1 Vale Lab "Full Circuit Simulation" Flowsheet (SRK, 2020)

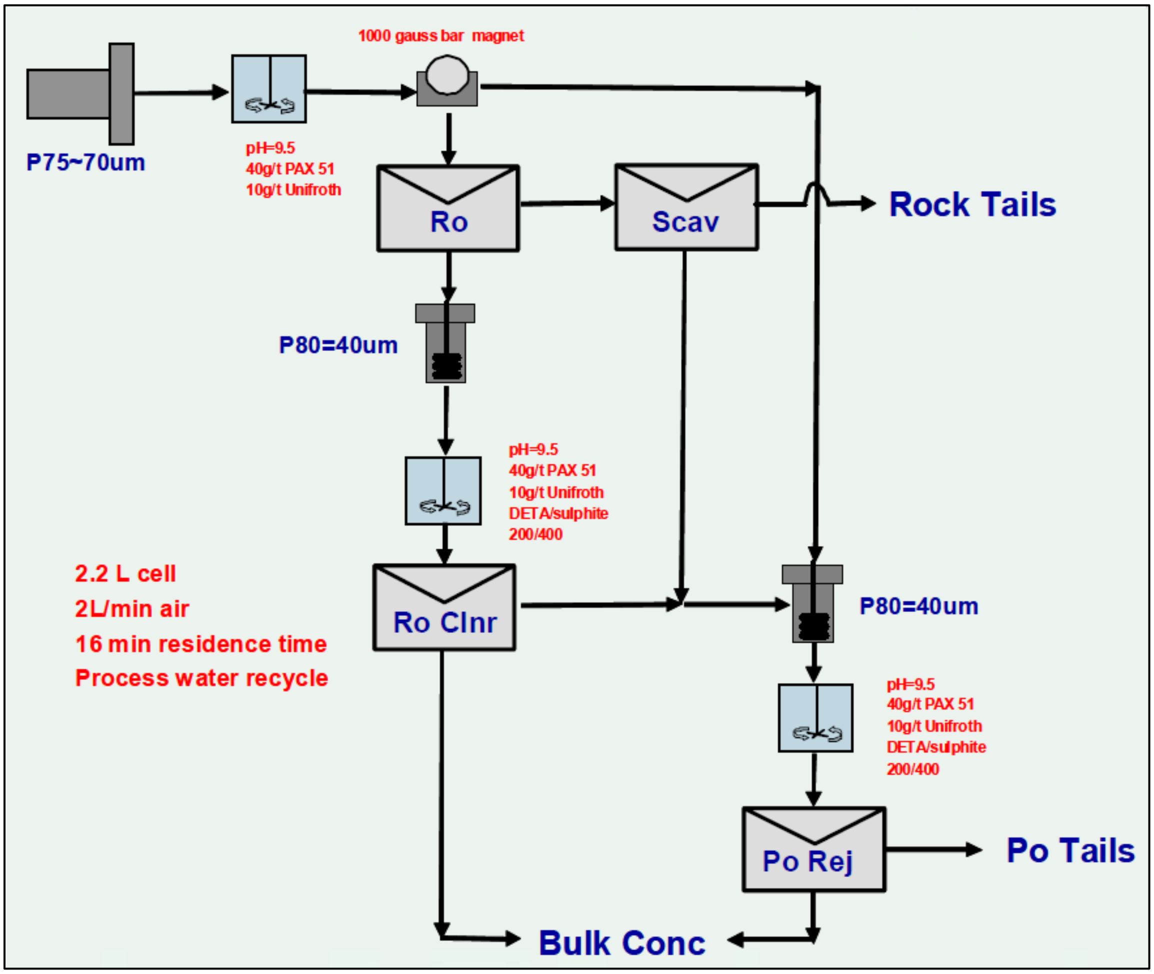


Table 13-1 Vale 100% Denison Flotation Test Results (SRK, 2020)

		Assay (% or g/t)					Distribution %				
	Wt %	Ni	Cu	Pt	Pd	Au	Ni	Cu	Pt	Pd	Au
Feed	100	0.22	0.21	4.30	2.38	1.31	100	100	100	100	100
Conc	2.4	4.65	6.85	84.9	43	19.4	51.6	79.6	48.2	44.1	36.3
Tails	97.6	0.11	0.04	2.28	1.36	0.85	48.4	20.4	51.8	55.9	63.7
Upgrade		21.1	32.6	19.7	18.1	14.8					

13.3 2017 Blue Coast Research Test Results

A single, master composite from the 109FW zone was submitted for metallurgical testing by Blue Coast as well as mineralogical analysis by Cabri Consulting Inc. in 2016 and 2017. Mineralogy showed no presence of millerite (NiS) which has been found to limit copper-nickel separation in the processing of Sudbury ores.

Before being combined, the upper and lower intervals were separately hardness tested. The contact ore (at 6.7% S) was softer with a rod work index of 17.1 kWh/t and ball work index of 16.6 kWh/t (75µm closing screen). The footwall ore (at 0.96% S) was harder with a rod work index of 19.1 kWh/t and ball work index of 19.0 kWh/t (75µm closing screen). Abrasion indices were moderate at 0.327 g and 0.349 g for the upper and lower intervals.

The 109FW sample was higher in Cu and Ni grade compared with the Vale sample and a combined Pt + Pd + Au grade of almost 10 g/t.

Locked cycle test results indicated good metal recoveries and reasonable bulk concentrate grades of 13.6% Cu, 3.76% Ni and 134g/t PGE + Au. A standard reagent suite was employed using sodium isopropyl xanthate (SIPX) as the primary collector and Aero 3477 (dithiophosphate) as a secondary collector to enhance PGE recovery. Methyl isobutyl carbinol (MIBC) was used as the frother. During locked cycle testing, the Aero 3477 showed evidence of building up in the process water and depressing the final concentrate grade. However, this was managed by reducing the dosage rates in subsequent tests by 50% to maintain concentrate grades. Table 13-2 summarizes the final locked cycle test results.

Table 13-2 Blue Coast 109FW Locked Cycle Test Results (SRK, 2020)

	Mass	Assay (% or g/t)					Distribution %				
	Wt %	Ni	Cu	Pt	Pd	Au	Ni	Cu	Pt	Pd	Au
Feed	100	0.29	0.76	3.66	4.42	1.67	100	100	100	100	100
Conc	5.5	3.76	13.6	56.5	57.8	19.7	75.1	97.3	85.4	82.4	72.7
Tails	94.5	0.08	0.02	0.57	0.82	0.48	24.9	2.7	14.6	17.6	27.3
Upgrade		13.0	17.9	15.4	13.1	11.8					

Rougher and cleaner flotation tests identified the drivers of overall metallurgical performance for the Denison deposit to be a finer primary grind (80% passing, P80 of 60µm) and Aero 3477 addition. Regrinding the concentrate did not improve overall recovery but did allow for higher grade concentrates to be produced. The regrind time was selected to ensure final concentrate grades would be reasonable.

Gravity recovery testwork evaluated both single-stage gravity recovery at a P80 of 60µm as well as a two-stage gravity treatment with grinds of 175µm and 60µm. The two-stage gravity treatment produced higher PGE and Au recoveries, suggesting that overgrinding may limit PGE recovery by gravity techniques.

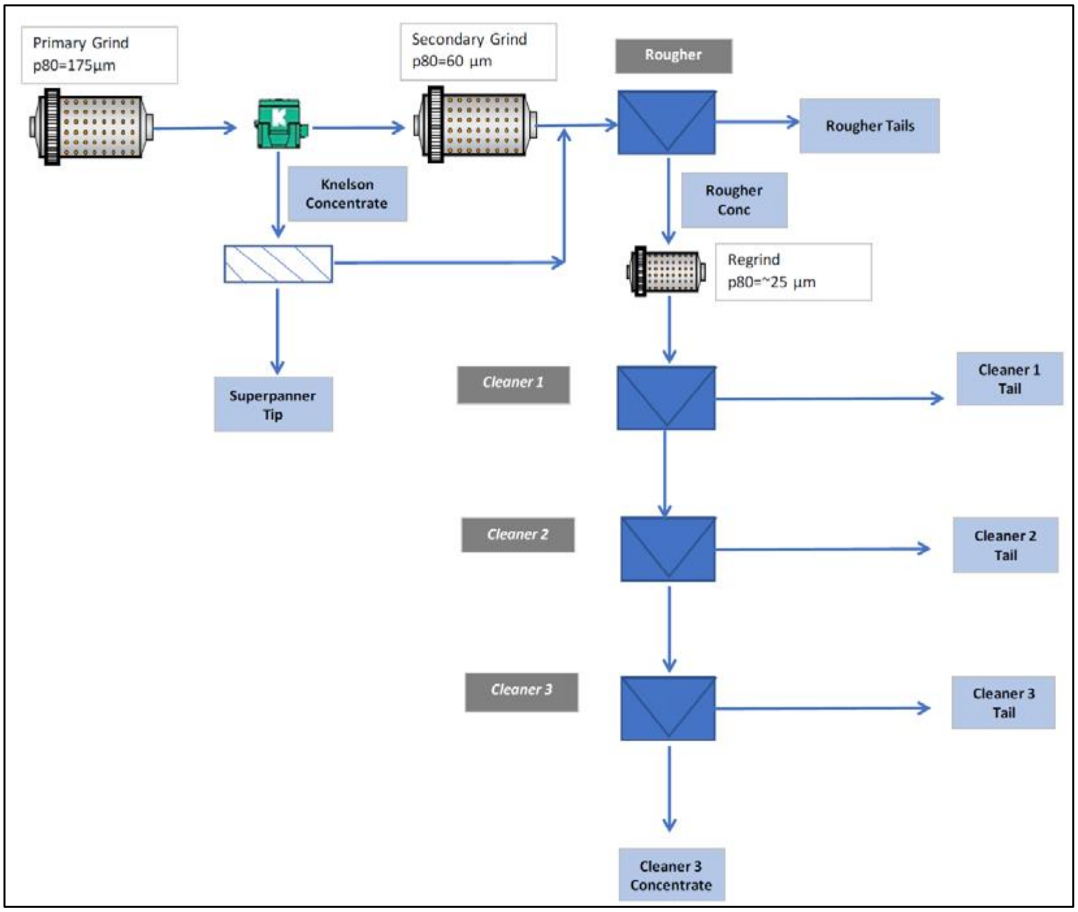
Acid-Base Accounting (ABA) and Net Acid Generation (NAG) tests were conducted to determine the extent that Denison tailings could be acid generating. Results of both analyses suggest that the potential for Denison tailings to be acid generating is low. The Net Neutralization Potential (NNP) of each composite was higher than the Maximum Potential Acidity. The NAG test results were also both below detection limits.

In their final report in 2017, Blue Coast recommended an MF2 flowsheet be investigated along with further cleaner circuit optimisation work, including reduced reagent additions. In addition, variability testing to understand the impact of varying sample grades on metal recoveries.

13.4 2020 Blue Coast Research Test Results

To assist SRK in evaluating the Northern Sun Redstone milling option, Blue Coast was contracted for additional metallurgical testing of the same 109FW sample from 2017. The lab flowsheet was arranged to reproduce the currently understood Redstone circuit, with the flowsheet shown in Figure 13-2.

Figure 13-2 Blue Coast Lab Flowsheet (SRK, 2020)



An Extended Gravity Recoverable Gold (EGRG) and PGE (EGRG+PGE) test was conducted on the Denison Master Composite with 28% of the gold, 77% of the platinum and 36% of the palladium reported as being gravity recoverable. The EGRG results were modelled by FLSmidth to simulate Knelson concentrators operating after primary and secondary grinding stages as found in the Redstone flowsheet. Producing a gravity concentrate would reduce the PGE and gold content in the downstream flotation concentrate from approximately 130 g/t to 100 g/t (Pd+Pt+Au). The results of the Blue Coast testing indicated a gravity concentrate high in PGE could be generated, with minimal losses of copper and nickel (not payable in this concentrate).

Both gravity and flotation concentrates were high in As, Pb, Bi and Te, but were not considered penalties in the payability terms of this study. The 2020 testwork showed similar overall metal recoveries to two concentrates as was achieved in the previous flotation-only testwork completed in 2017 (Table 13-3).

In their second report in 2020 by Blue Coast, additional evaluation work was recommended including variability testing on a range of sample grades and evaluation of selective copper-nickel flotation.

Table 13-3 Blue Coast 109FW Modelled Gravity + Float Test Results (SRK, 2020)

	Mass	Assay (% or g/t)					Distribution (%)				
	Wt %	Cu	Ni	Pd	Pt	Au	Cu	Ni	Pd	Pt	Au
Feed	100	0.76	0.27	3.94	3.65	1.64	100	100	100	100	100
Gravity Conc. (model)	0.18	2.98	4.61	221	736	128	0.7	3	10	36	14
Float Feed	99.8	0.76	0.27	3.55	2.34	1.41	99.3	97	90	64	86
Rougher Conc.	16	4.66	1.38	19.14	12.1	6.87	98.3	80.5	77.7	52.9	67.2
Cleaner Conc.	5.5	13.3	3.82	51.3	31.8	16.9	96.6	76.4	71.6	47.9	56.7
Comb Conc.	5.68	13.0	3.84	56.6	54.0	20.4	97.3	79.4	81.6	83.9	70.7

13.5 Recommended Future Testwork

Following a review of testwork completed to date, SRK (2020) recommended the following testwork be completed to better understand the metallurgical response of the Denison deposit:

- Additional samples covering a wider range of grades and Cu/Ni ratios
- Representative samples from the 9400 zone
- Cu/Ni separation testing to saleable concentrates
- Minor element analysis of both copper and nickel concentrates
- Additional comminution testwork
- Solid/liquid separation testing

13.6 Mineral Sensing and Sorting

Recognizing that mill feed from the Project will be custom milled and ore transport costs will be incurred as a result, Loncan requested that mineral sensing and sorting be investigated. The premise would be to reject unwanted waste from the mill feed, thereby saving in its haulage and subsequent milling (SRK, 2020).

Consequently, SRK embarked on investigations to assess the heterogeneity of the deposit from drill holes and test mineral sensing responses on samples deemed to have representative heterogeneity.

13.6.1 Heterogeneity Analysis

SRK has developed a methodology to assess the heterogeneity of a mineral deposit from drill hole data. For the Project, being a polymetallic deposit, net smelter return (NSR) was used as the grade measure for the heterogeneity analysis. The parameters used in the derivation of NSR are presented in Table 13-4. These values have been used throughout the SRK 2020 PEA to derive NSR.

For the heterogeneity analysis, called “Composite vs Sample Interval Relationship”, NSR is calculated for each of the sample intervals in the drill hole dataset as well as for 20-foot composites of the data. The 20-foot composite length was selected based on the expected mining bench height for the open pit operations. The sample interval NSRs are then compared to composite NSRs. Figure 13-3 shows the Composite vs Sample Interval Relationship for select composites for Denison.

In Figure 13-3, four composite ranges are shown, two above the selected NSR cut-off ($45/t, which is the sum of expected mill feed transport, processing, and G&A) and two below the cut-off. The composite ranges are each $9/t in size. The chart shows the cumulative length of samples (y-axis) against the NSR values of those samples (x-axis). The red vertical line is drawn at the NSR cut-off.

The dataset is limited in these grade ranges and thus the erratic nature of the plots. However, two phenomena can be seen. For composites above the NSR cut-off, which represent “ore”[1] (the green and dark blue lines), there are sample intervals left of the NSR cut-off line. These samples represent “waste in ore”. Similarly, for composites below the NSR cut-off which represent waste (the yellow and light blue lines), there are sample intervals right of the NSR cut-off line. These samples represent “ore in waste”. By quantifying these heterogeneity measures, “waste in ore” and “ore in waste”, one is able to make predictions of preconcentration.

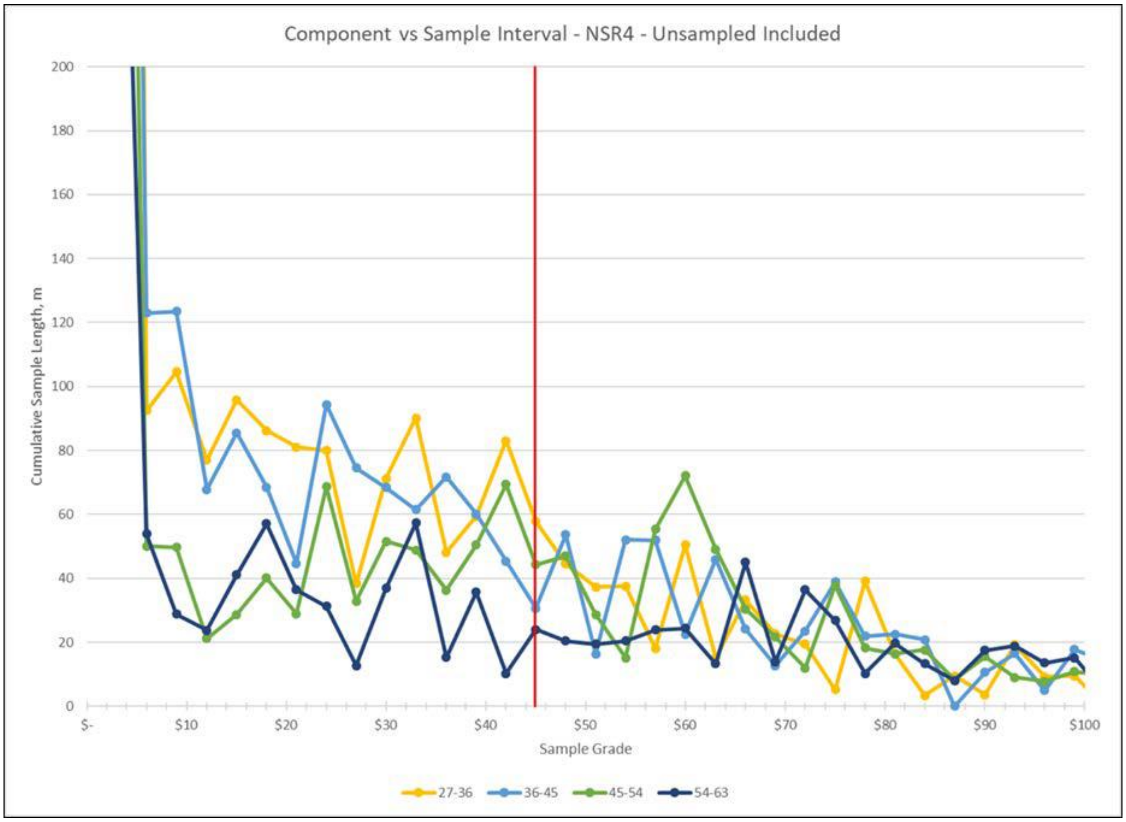
[1] “ore”, as used in this context, does not imply that the mineable resource at Denison is a mineral reserve. There has been insufficient definition of indicated and measured resource to base at least a prefeasibility study upon to confirm a reserve. The context here is only in relation to the derived heterogeneity terms, “waste in ore” and “ore in waste”.

For surface mineable resources contained within the pit shell derived in the 2020 PEA, the measures of waste in ore and ore in waste are 45.5% and 30.6%, respectively (for ore in waste, the composite interval, $36-$45/t, was considered). These are significant values and represent an opportunity for preconcentration. SRK also extended the analysis to consider deeper mineralization, down to the 6,500-foot elevation. The results of this were waste in ore an ore in waste measures of 38.9% and 16.5% respectively. While these values suggest that heterogeneity it not as pronounced, it should be born in mind that the 20-foot composite interval continued to be the basis of the Composite vs Sample Interval Relationship. For underground mining taller stopes are expected which would result in accentuation of these measures.

Table 13-4 NSR Parameter Values (SRK, 2020)

Metal Recoveries		Nickel	Copper
Platinum		8.03*ln(Ni)+45.69, Max 50	8.03*ln(Ni)+45.69, Max 50
Palladium		8.01*ln(Ni)+47.51, Max 50	8.01*ln(Ni)+47.51, Max 50
Gold		7.11*ln(Ni)+45.04, Max 50	7.11*ln(Ni)+45.04, Max 50
Nickel		18.42*ln(Ni)+90.63, Max 95	0
Copper		2.28*ln(Cu)+24.11, Max 25	6.84*ln(Cu)+72.33, Max 75
Yield Ni		4.8*Ni+0.9	N/A
Yield Cu		N/A	3.25*Cu+0.53
Payability			
Platinum	%	80.0	80.0
Palladium	%	80.0	80.0
Gold	%	80.0	80.0
Nickel	%	95.0	0.0
Copper	%	95.0	95.0
Deductions			
Platinum	ppm	1.0	1.0
Palladium	ppm	1.0	1.0
Gold	ppm	1.0	1.0
Nickel	%	1.0	1.0
Copper	%	1.0	1.0
Selling Costs			
Platinum	US$/kg	803.8	803.8
Palladium	US$/kg	803.8	803.8
Gold	US$/kg	803.8	803.8
Nickel	US$/kg	1.6	1.6
Copper	US$/kg	0.8	0.8
Royalty	%	3.0	3.0
Treatment	US$/conc	350.0	350.0
Metal Prices			
Platinum	US$/oz	1000	
Palladium	US$/oz	1450	
Gold	US$/oz	1500	
Nickel	US$/lb	6.50	
Copper	US$/lb	2.75	

Figure 13-3 Heterogeneity of drill hole composites (SRK, 2020)



13.7 Mineral Sensing Testing

The envisioned preconcentration method for the Deposit is particle sorting. Consequently, SRK selected samples to be sent for particle sorting testing at Steinert's facilities in Kentucky. These samples were derived from bench composites that had displayed heterogeneity in the Composite vs Sample Interval analysis (Table 13-5).

The core was initially sent to ALS Global's laboratory in Kamloops, B.C., for sample preparation. Waste and "ore" samples were derived from the bench composites in Table 12-5. The assessment of waste vs "ore" was based on comparison of the NSRs of the drill core sample intervals to the NSR cut-off. In all, four waste samples and two "ore" samples were gathered across these composites, generally staying within composites or adjacent composites where sufficient material needed to be gathered. In all, 160 "specimens" (rocks) across the six samples (20 in the "ore" samples and 30 in the waste samples) were gathered for mineral sensing testing.

The samples were sent to Steinert who subjected these to sensor testing using induction, x-ray transmission (XRT) and laser (the last for particle sizing to assist the other techniques). Steinert established that the best results to segregate the accept and reject particles was a proprietary simulation that used all three of the noted technologies.

The samples were then returned to ALS Global's testing laboratory in Kamloops, BC for assay of precious metals and multi-element induced couple plasma mass spectroscopy (ICP). ALS produced a report that summarized the results of both Steinert's and ALS's work. A key outcome is the relationships captured in Table 13-6.

In Table 13-6, the streams of product and waste were defined from the accept (product) and reject (waste) designations in the Steinert algorithms. The count is the number of specimens reporting to each stream. The assays are as generated by ALS.

Relevant observations are that in the ore specimens, over 96% of the Au, Pt, Pd, Cu and Ni metal is contained in 70% of the mass. So pre-concentration, rejecting 30% of the material as waste would have limited loss of metal. And in the waste specimens, still 34% of the mass contains 74% of Cu, 64% of the Ni and over 80% of the AGM. Thus, if marginal, below cut-off, sort feed can be pre-concentrated by rejecting 66% of the waste, real value can be extracted from the remaining product material.

SRK integrated the results of the Composite vs Sample Interval heterogeneity analysis and the foregoing Steinert-ALS data using percent waste in ore of the bench composites in Table 13-5. The resulting charts are shown in Figure 13-4 as product grade upgrade factor and metal recovery against the measure, “waste in ore”.

The two charts in Figure 13-4 indicate strong relationships that with increasing waste in ore heterogeneity, grade improvement (via upgrade factor) increases polynomially and metal recovery decreases linearly. These relationships can be used in conjunction with the Composite vs Sample Interval heterogeneity analyses to predict preconcentration outcomes.

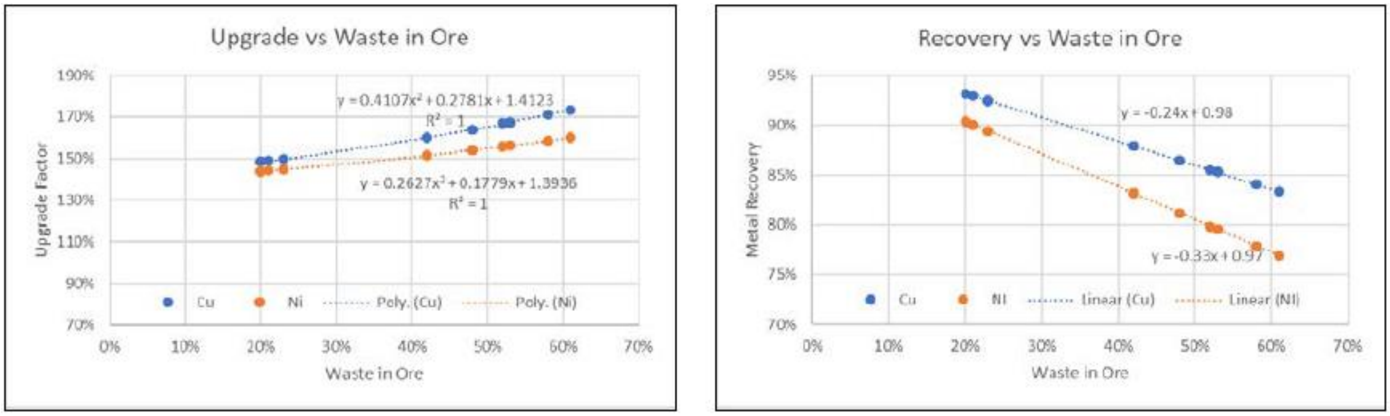
Table 13-5 Bench composites for mineral sensing testing (SRK, 2020)

Hole	Elevation Top (ft)	Elevation Bottom (ft)
LMO4310	10760	10740
	10720	10700
	10700	10680
LMO4320	10700	10680
	10680	10660
	10660	10640
	10640	10620
	10620	10600
	10600	10580

Table 13-6 Mineral sensing test results (SRK, 2020)

Stream	Count	Assay g/t			Assay - %				Count	Distribution %						
		Au	Pt	Pd	Cu	Ni	S	K		Au	Pt	Pd	Cu	Ni	S	K
Denison Ore Specimens																
Product	28	2.88	5.04	7.69	1.86	0.89	4.12	0.67	70.0	97.5	96.5	98.7	98.2	97.1	98.6	73.0
Waste	12	0.17	0.42	0.24	0.08	0.06	0.14	0.58	30.0	2.5	3.5	1.3	1.8	2.9	1.4	27.0
Feed	40	2.06	3.66	5.45	1.33	0.64	2.92	0.64	100	100	100	100	100	100	100	100
Denison Waste Specimens																
Product	41	0.39	1.14	0.56	0.33	0.08	0.51	1.18	34.2	81.1	87.1	81.7	74.2	63.6	73.7	49.7
Waste	79	0.05	0.09	0.06	0.06	0.02	0.10	0.62	65.8	18.9	12.9	18.3	25.8	36.4	26.3	50.3
Feed	120	0.16	0.45	0.23	0.15	0.05	0.24	0.81	100	100	100	100	100	100	100	100

Figure 13-4 Upgrade Factor and Metal Recovery versus Waste in Ore (SRK, 2020)



14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

Completion of the update MRE's for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2017, as well as three-dimensional (3D) mineral resource models (resource domains), 3D models of all mined-out areas (open pit and underground), 3D models of cross-cutting dykes, a recent topographic surface and available written reports.

Inverse Distance Squared ("ID2") calculation method restricted to mineralized domains was used to interpolate grades for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) into block models.

Indicated and Inferred mineral resources are reported in the summary tables in Section 14.11. The current MRE takes into consideration that the Projects deposits may be mined by open pit and underground mining methods.

14.2 Drill Hole Database

In order to complete the MRE for the Property, a database comprising a series of comma delimited spreadsheets containing surface and underground drill hole information was provided by Magna. The database included hole location information (local grid coordinates, in feet), survey data (final depth in feet), assay data (from and to in feet), lithology data and specific gravity data. The data in the assay table included assays for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) as well as Ag (g/t), Rh (ppm), S (%) and Fe (%). It should be noted that not all assay samples had values for Pt, Pd, Au, Ag or Rh. Ag and Rh were the least analysed elements and are not included in the MRE (see section 14.5 for summary of assay data).

After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software ("GEMS") for statistical analysis, block modeling and resource estimation.

The original database provided by Magna included data for 4,719 surface and underground drill holes. The database was reduced to only include data for surface and underground drill holes completed within the current property boundary. Thus the database used for the current MRE comprises data for 3,836 surface and underground drill holes which total 1.57 million ft (478,000 m) (Figure 14-1 and Figure 14-2). The database totals 89,257 assay intervals for 622,082 ft (189,611 m) (see section 14.4).

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. Gaps in the assay sampling and un-sampled elements were assigned a grade value of 0.0001 for Co, Pt, Pd and Au.

Figure 14-1 Plan View: Distribution of Surface and Underground Drill Holes on the Denison Property in Local Mine Grid

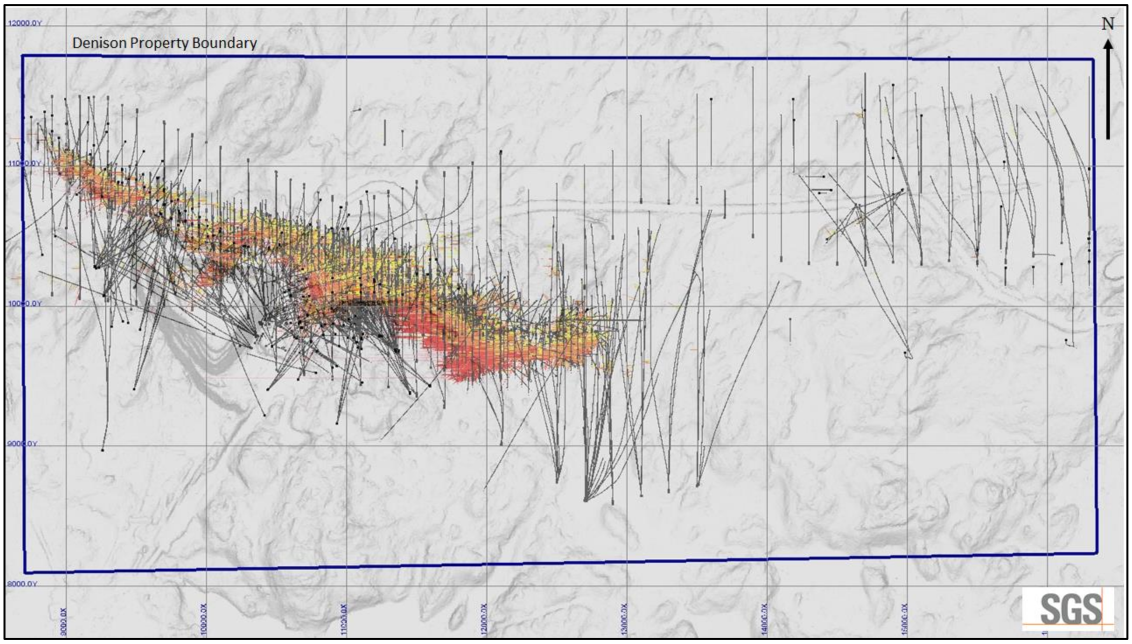
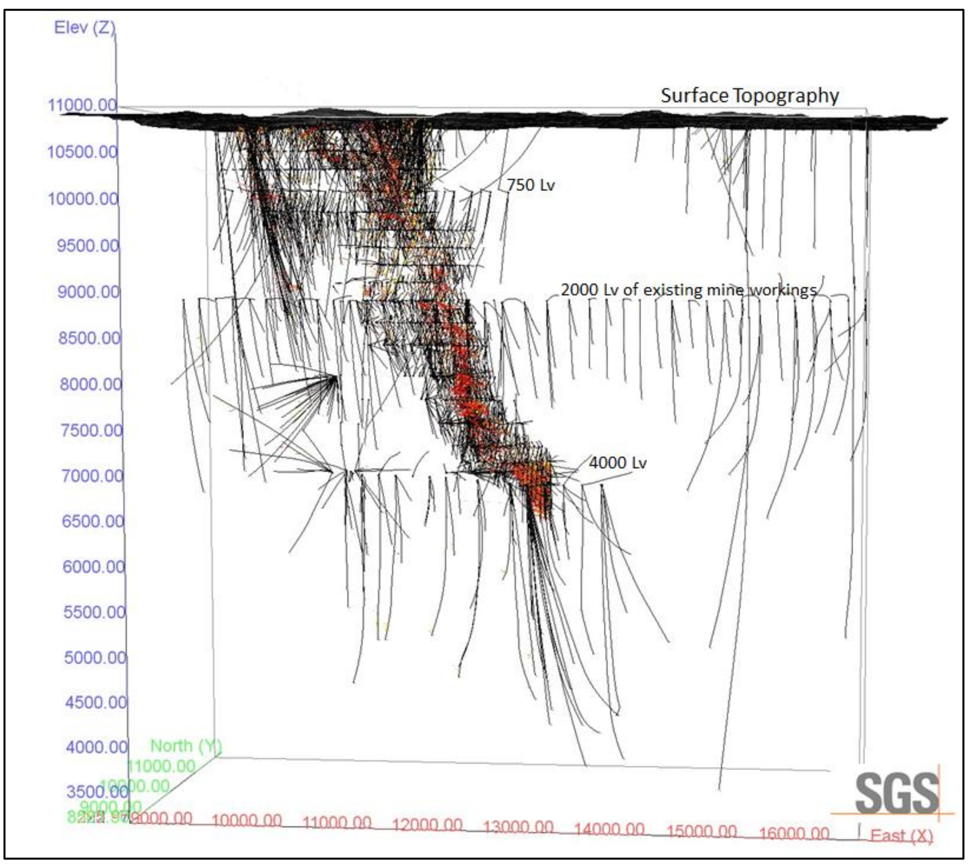


Figure 14-2 Isometric View Looking Grid North: Distribution of Surface and Underground Drill Holes on the Denison Property in Local Mine Grid



14.3 Mineral Resource Modelling and Wireframing

The Author was provided with a total of 20 three-dimensional wireframe models (mineral domains) of mineralization, to be used for the current MRE (Figure 14-3). Solids were developed in Leapfrog using a minimum $50/ton metal value calculated using metal prices and recoveries outlined in Table 14-1 (WSP, 2020). No minimum thickness was applied and all drillholes were referenced regardless of the date they were drilled. Adjustments were made to the solids to account for underground mapping. The domains of mineralization interpreted for each area were generally contiguous; however, due to the nature of the mineralization, there are portions of the wireframe that contain zones of poor mineralization yet are still within the mineralizing trend. Several of the domains have minor overlap with other domains. This is was to ensure there was no gap in the block model and to account for changing parameters within the deposit. The final merged model removes any overlap with the blocks.

The Author has reviewed the mineral domains on section and in the Author's opinion the models provided are very well constructed and fairly accurately represents the distribution of the high grade mineralization within the Property. No re-modeling of the deposits is recommended at this time. Limited sporadic mineralization exists outside of these wireframes, as well as along strike and at depth. With additional drilling, some areas of scattered mineralization may get incorporated into the mineral domains.

The Denison deposit generally strikes 85° to 110° and dips/plunges steeply south, with the exception of the 101 Zone which strikes at 40° and dips near vertical. The mineral domains extend for roughly 3,100 ft (945 m) along strike and reaches a maximum depth of 5,000 ft (1,524 m) below surface

The Author was also provided with six 3D dyke models (olivine diabase dykes and quartz diabase dykes (trap dykes)) (Figure 14-4), 3D models of the surface and underground mined out areas (Voids-out) (Figure 14-5), and a 3D surface model of the current topography (Figure 14-6). The topographic digital terrain model was generated using LiDAR topographic data collected by Loncan.

Table 14-2 summarizes the mineral domains, dykes and mined areas. All mineral domains are clipped to topography and property boundary.

Table 14-1 Input Values used to Determine Resource Model base case Cut-off Grade

Metal	Value	Units
Metal Prices		
Cu	2.75	US$/lb
Ni	6.5	US$/lb
Co	15	US$/lb
Pt	1000	US$/oz
Pd	1450	US$/oz
Au	1500	US$/oz
Ag	16	US$/oz
Recoveries		
Cu	95.5	%
Ni	78	%
Co	0	%
Pt	69.2	%
Pd	68	%
Au	67.7	%
Ag	50	%

Figure 14-3 Isometric View Looking Grid North (A) and Plan View (B): Denison Mineral Domains

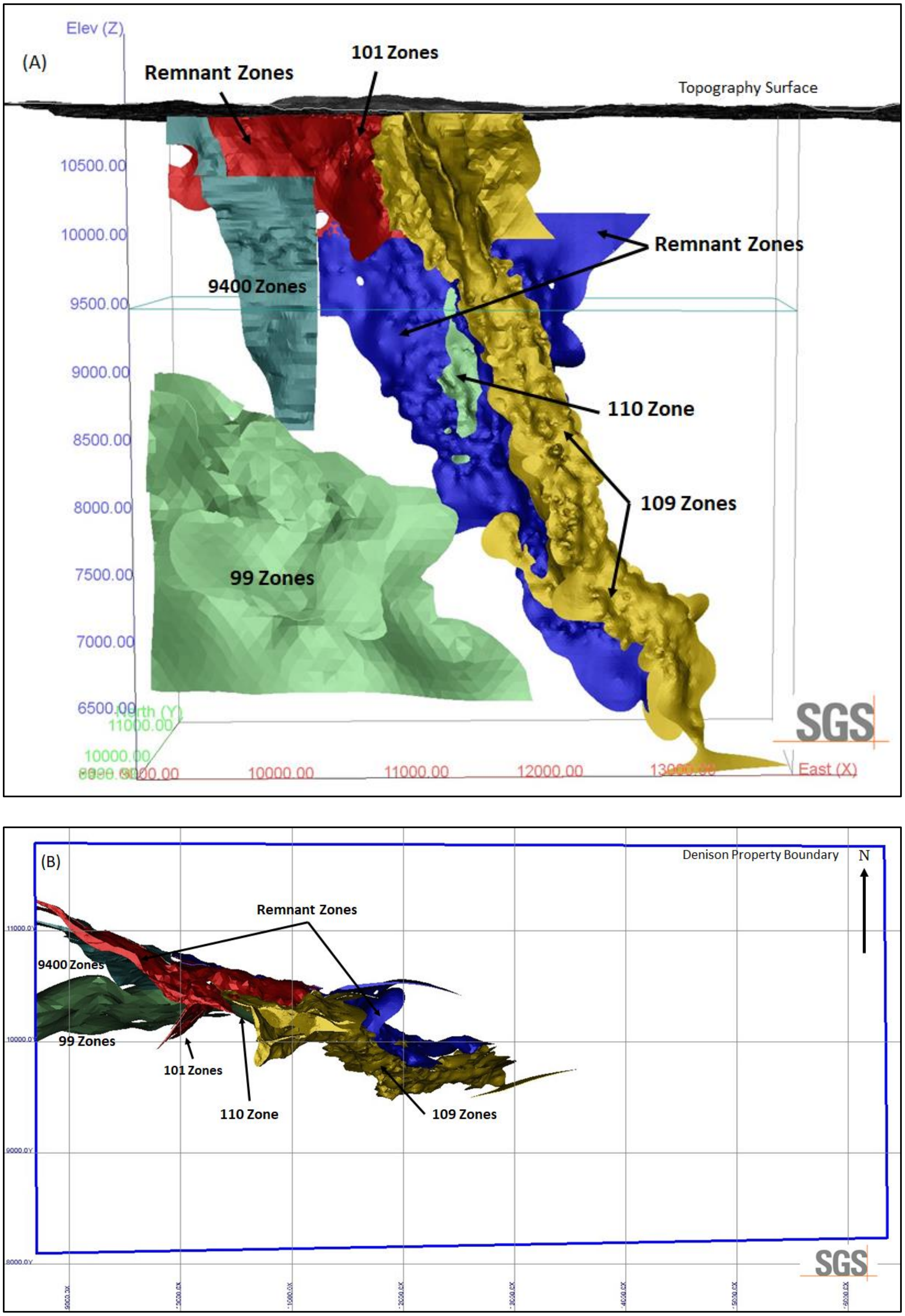


Figure 14-4 Isometric View Looking Grid North: Denison Diabase Models

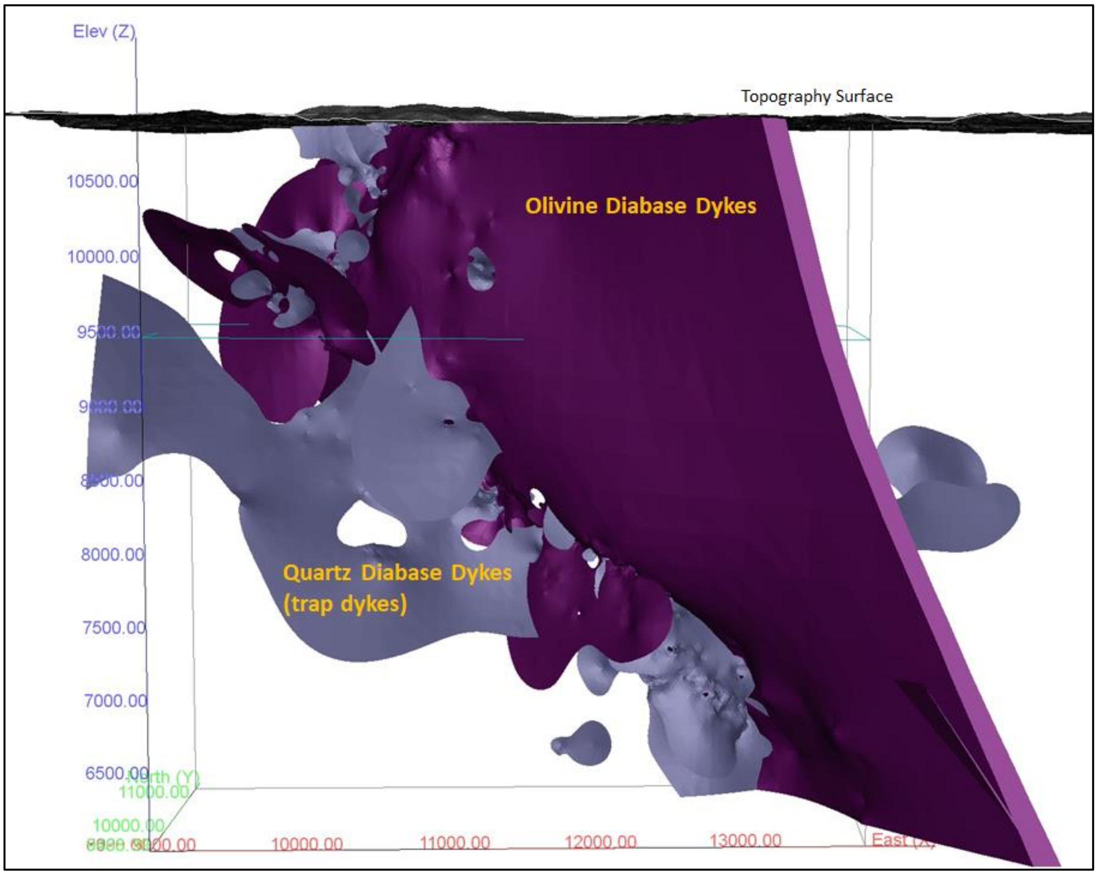


Figure 14-5 Isometric View Looking Grid North: Mined Out Stopes and Pits

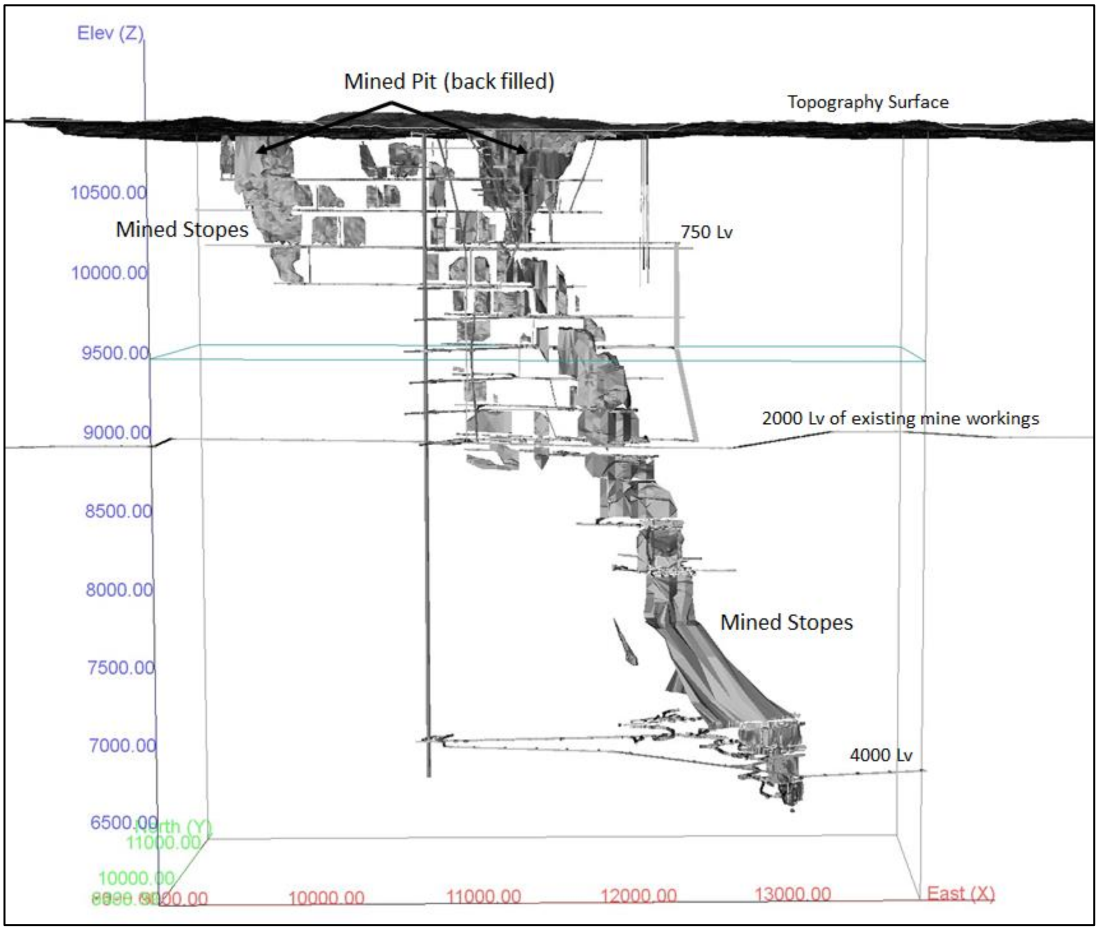


Figure 14-6 Plan View: Denison Property Digital Terrain Model

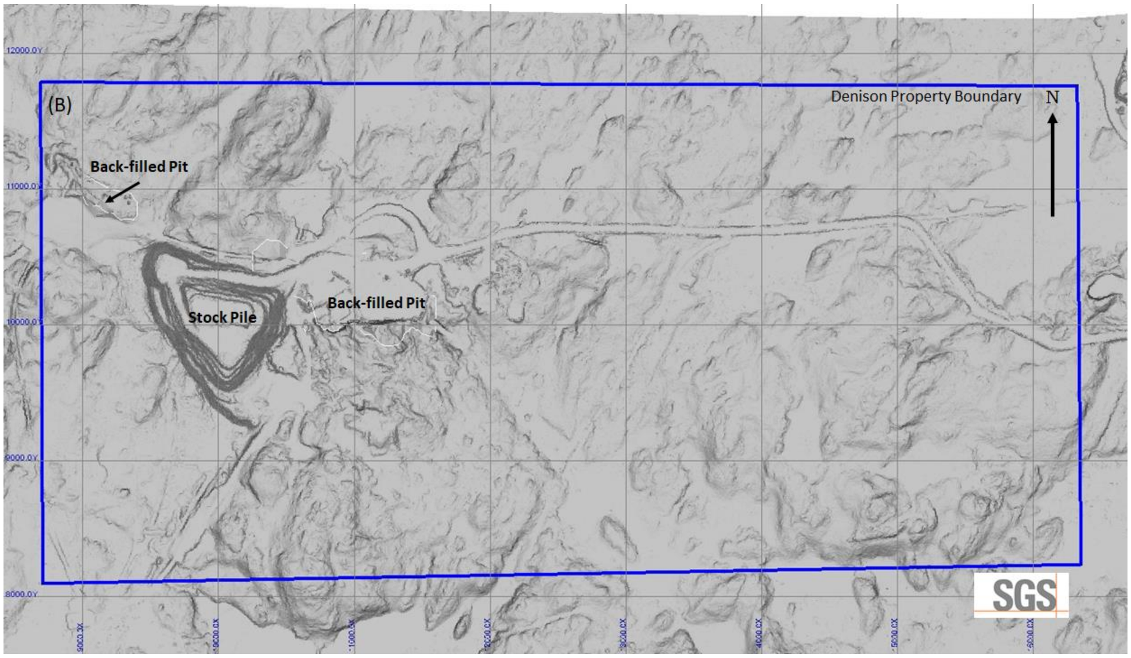


Table 14-2 Denison Property Domain Descriptions

Domain	Rock Code	Block Rock Code	Solid Precedence	Volume (ft^3)	Density (Ton/ft^3)	Ton	Tonnes
101 Zone	101	400	8	13,309,098	0.096	1,277,673	1,159,086
109 FW Below 10000	109FWB	1050	4	62,130,585	0.107	6,647,973	6,030,939
109 FW_2 Below 10000	109FW2B	1100	4	11,165,718	0.096	1,071,909	972,419
109 FW_4 Below 10000	109FW4B	1150	4	2,108,467	0.096	202,413	183,626
109 W Below 10000	109WB	1200	4	31,601,530	0.094	2,970,544	2,694,832
109fw_2017	109FW	850	4	40,637,928	0.092	3,738,689	3,391,682
109W_2 Below 10000	109W2B	1250	4	93,345,846	0.096	8,961,201	8,129,465
110 Below 10000	110BELOW	1300	7	3,471,500	0.097	336,736	305,481
115 Below 10000	115BELOW	1350	7	460,280	0.092	42,346	38,415
9400 FW_Ext	9400FW	600	5	2,804,116	0.095	266,391	241,666
9400_2017	94002017	950	5	46,278,375	0.094	4,350,167	3,946,405
99-1_50	991	100	3	140,291,855	0.092	12,906,851	11,708,898
99-2_50	992	200	3	51,009,380	0.092	4,692,863	4,257,294
99-FW_50	99FW	300	3	15,222,391	0.094	1,430,905	1,298,095
Rem Below 10000	REMBELOW	1400	6	181,004,532	0.094	17,014,426	15,435,228
Rem_10000z	REMNANT	500	6	80,268,283	0.094	7,545,219	6,844,907
Rem_109W	109W	700	6	41,947,607	0.094	3,943,075	3,577,098
Rem_109W	109W2	750	6	64,004,144	0.094	6,016,390	5,457,977
Rem_South_East	REMBELOW	1400	6	3,246,089	0.094	305,132	276,811
REM_South_West	REMNANTW	550	6	9,832,449	0.095	934,083	847,386
Total				**894,140,173**		**84,654,984**	**76,797,710**
Dykes							
OD 2	DYKES	3	2		0.094		
OD 3	DYKES	3	2		0.094		
OD 4	DYKES	3	2		0.094		
OD 1	DYKES	3	2		0.094		
Trap 2	DYKEST	4	2		0.087		
Trap 1	DYKEST	4	2		0.087		
Voids - Out	STOPES	2	1		0.0624		
Waste	WASTE	1	9		0.088		

14.4 Bulk Density

Most diamond drill core samples completed by Loncan from the 2015-2017 were subject to specific gravity measurement, by measuring dry and submerged sample weight (WSP, 2020). Each sample was allowed to fully dry after being cut, was weighed on top of the balance, then placed in a mesh basket suspended from a free-hanging hook below the balance and weighed submerged in water. The water was kept at approximately 20°C using a heater/agitator.

- Density = Dry weight / (Dry weight – Wet weight) * 0.998

Where 0.998 is a temperature correction for at water at 20°C. A conversion fact of 0.0312 ton/ft3 equals 1 tonne/m3.

Density is expressed as short tons per cubic ft (ton/ft^3).

The balance was checked with reference weights and a reference rock sample had density determined prior to each day of density determinations to ensure high quality data.

Samples without density measurements were subject to a regression formula. This includes all historical data post-1968. The regression formula applied is based on assay results where Cu, Ni and S assays are available. The "Alcock" formula calculates density:

- Density = 100 / (100 / 2.88 + 0.0166*%Cu - 0.1077*%Ni - 0.328*%S)

and in samples drilled before 1968 where only Cu and Ni are available:

- Density = 2.80 + 0.02*%Cu + 0.20*%Ni

These formulae were developed for semi-massive to massive contact Ni-Cu sulphide deposits. They are known to underestimate the density of most felsic rocks and overestimate the density of most mafic rock types outside the SIC. In these formulae, sulphides contribute significantly to the density.

Based on a review of the available density data, it was decided that a fixed value be used for each resource model, dyke model, stope/mined out model and waste (**Error! Reference source not found.**).

A density of 0.094 has been assigned to the Olivine Diabase dykes, while Trap dykes were assigned a value of 0.087 (WSP, 2020). All other waste has been assigned a density of 0.088.

The stopes have been assumed to be approximately 2/3 rock fill and 1/3 void space and were assigned a density of 0.0624 (WSP, 2020). Other mine workings (air raises, drifts, and escape ways) are assumed to be void pace and have been assigned a density of 0.

14.5 Compositing

The assay sample database available for the current resource estimate totalled 89,257 assay intervals for 622,082 ft (189,611 m) of drilling. Of this, a total of 41,293 assays (281,409 ft or 85,773 m) occur within the deposit mineral domains. Of the 41,293 assays, all had Ni and Cu values, 24,864 had Pt values, 24,706 had Pd values, 20,340 had Au values and 8,037 had silver values. Silver is not estimated for this mineral resource. Un-sampled precious metals were given a nominal value of 0.0001.

A statistical analysis of the assay data from within the mineralized domains. Average length of the assay sample intervals is 6.81 ft (2.08 m). Of the total assay population approximately 80% are 10 ft (3.05 m) or less with approximately 91% of the samples <14.8 ft (4.50 m).

Sample intervals were composited into 10 ft (3.05 m) downhole intervals honouring the interpreted mineralization solids. The composites were extracted to point files for statistical analysis and capping studies. The constrained composites were grouped based on the mineral domain (rock code) of the constraining wireframe model.

Composites were generated starting from the collar of each hole. Composites were then constrained to the individual mineral domains. The constrained composites were extracted to point files for statistical analysis and capping studies.

A total of 28,451 composite sample points occur within the resource wire frame models. A statistical analysis of the composite data from within the mineralized domains, by state of oxidation, is presented in (Table 14 4). These values were used to interpolate grade into resource blocks.

Table 14-3 Statistical Analysis of the 10 ft (3.05 m) composite Data from Within the Denison Deposit Mineral Domains

Variable	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t
	All Domains					
Total # Assay Samples	28,451					
Average Sample Length	10 ft (3.05 m)					
Minimum Grade	0.00	0.00	0.00	0.00	0.00	0.00
Maximum Grade	11.90	16.98	0.55	177.30	102.22	42.63
Mean	0.72	0.66	0.03	0.39	0.37	0.14
Standard Deviation	0.94	0.84	0.03	2.07	1.57	0.65
Coefficient of variation	1.30	1.28	1.17	5.23	4.22	4.74
97.5 Percentile	3.59	2.91	0.12	2.26	2.52	0.89

14.6 Grade Capping

A statistical analysis of the cumulative composite database within the Deposit wireframe models (the “resource” population) was conducted to investigate the presence of high-grade outliers which can have a disproportionately large influence on the average grade of a mineral deposit. High grade outliers in the composite data were investigated using statistical data, histogram plots, and cumulative probability plots of the composite data. The statistical analysis was completed using GEMS.

After a review of the composites globally and by domain, it is the Author’s opinion that minimal capping of high-grade composites to limit their influence during the grade estimation is necessary. Appropriate capping levels were chosen by metal and however it was decided, based on statistical analysis the same capping levels be applied globally. A summary of grade capping values within the mineralized domains is presented in Table 14-4. The capped composites are used for grade interpolation into the Shakespeare deposit block model.

Table 14-4 Composite Capping Summary of the Denison Deposit Mineral Domains

Domain	Total # of Composites	Attribute	Capping Value	# Capped	Mean of Raw Composites	Mean of Capped Composites	CoV of Raw Composites	CoV of Capped Composites
All Domains	28,451	Ni %	7.5	2	0.72	0.72	1.30	1.30
		Cu %	9.5	14	0.66	0.66	1.28	1.26
		Co %	0.2	14	0.03	0.03	1.17	1.15
		Pt g/t	35.0	14	0.39	0.38	5.23	3.49
		Pd g/t	35.0	7	0.37	0.36	4.22	3.43
		Au g/t	19.0	4	0.14	0.14	4.74	4.35

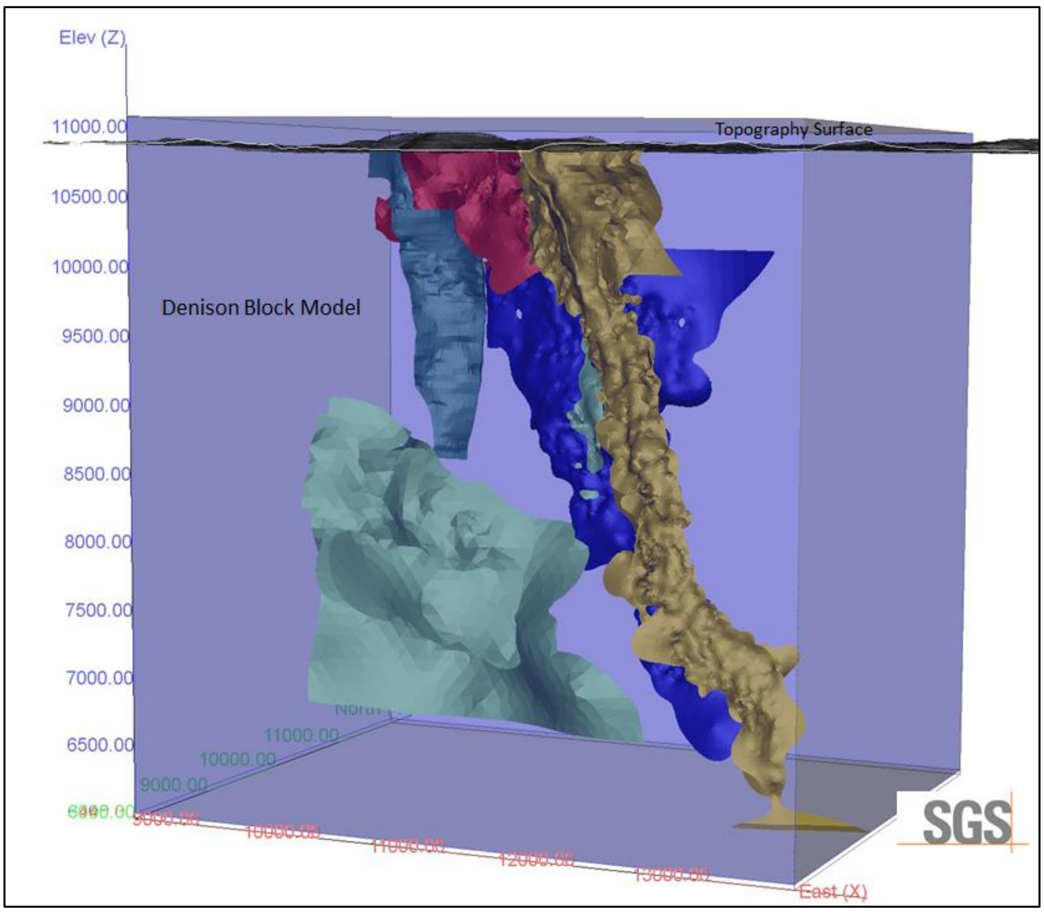
14.7 Block Model Parameters

The Property mineral domains are used to constrain composite values chosen for interpolation, and the mineral blocks reported in the estimate of the Mineral Resource. A block model within local mine grid coordinate space (no rotation) (Table 14-5 and Figure 14-7) with block dimensions of 16.4 x 16.4 x 32.8 ft (5 x 5 x 10 m) in the x (east), y (north) and z (level) directions was placed over the grade shells with only that portion of each block inside the shell recorded (as a percentage of the block) as part of the MRE (% Block Model). The block size was selected based on borehole spacing, composite length, the geometry of the mineralized domains, and the selected starting mining method (Open Pit). At the scale of the Denison deposit this provides a reasonable block size for discerning grade distribution, while still being large enough not to mislead when looking at higher cut-off grade distribution within the model. The model was intersected with surface topography to exclude blocks, or portions of blocks, that extend above the bedrock surface.

Table 14-5 Deposit Block Model Geometry

Block Model	Denison Property		
	X (East)	Y (North)	Z (Level)
Origin (Local Grid)	8445	8040	11120
Extent	315	235	145
Block Size	16.4 ft (5 m)	16.4 ft (5 m)	32.8 ft (10 m)
Rotation (counter clockwise)	0°		

Figure 14-7 Isometric View Looking Southeast Showing the Denison Deposit Mineral Resource Block Model and Mineralization Domains



14.8 Grade Interpolation

Nickel, copper, cobalt, platinum, palladium and gold were estimated for each domain in the Denison deposit. Blocks within each mineralized domain were interpolated using composites assigned to that domain. To generate grade within the blocks, the inverse distance squared (ID^2) interpolation method was used for all domains.

For all domains, the search ellipse used to interpolate grade into the resource blocks was interpreted based on orientation and size the mineralized domains. The search ellipse axes are generally oriented to reflect the observed preferential long axis (geological trend) of the vein structures and the observed trend of the mineralization down dip/down plunge (Table 14-6).

Three passes were used to interpolate grade into all of the blocks in the grade shells (Table 14-6). For Pass 1 the search ellipse size (in feet) for all mineralized domains was set at 99 x 73 x 26 in the X, Y, Z direction; for Pass 2 the search ellipse size for each domain was set at 198 x 146 x 54; for Pass 3 the search ellipse size was set at 329 x 230 x 78. Blocks were classified as Indicated if they were populated with grade during Pass 1 and during Pass 2 of the interpolation procedure. The Pass 3 search ellipse size was set to assure all remaining blocks within the wireframe (within the extents of the search ellipse) were assigned a grade. These blocks were classified as Inferred.

Grades were interpolated into blocks using a minimum of 7 and maximum of 10 composites to generate block grades during Pass 1 (maximum of 3 sample composites per drill hole), 5 and 10 for Pass 2 (maximum of 3 sample composites per drill hole), and a minimum of 3 and maximum of 10 composites to generate block grades during pass 3 (Table 14-6).

Table 14-6 Grade Interpolation Parameters by Domain

Parameter	99 Zones			101 Zones			All Other Zones		
	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3	Pass 1	Pass 2	Pass 3
	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred	Indicated	Indicated	Inferred
Calculation Method	Inverse Distance squared			Inverse Distance squared			Inverse Distance squared		
Search Type	Ellipsoid			Ellipsoid			Ellipsoid		
Principle Azimuth	100°			65°			115°		
Principle Dip	-55°			-65°			-55°		
Intermediate Azimuth	75°			35°			85°		
Anisotropy X – ft (m)	99 (30.2)	198 (60.4)	329 (100.3)	99 (30.2)	198 (60.4)	329 (100.3)	99 (30.2)	198 (60.4)	329 (100.3)
Anisotropy Y– ft (m)	73 (22.3)	146 (44.5)	230 (70.1)	73 (22.3)	146 (44.5)	230 (70.1)	73 (22.3)	146 (44.5)	230 (70.1)
Anisotropy Z– ft (m)	26 (7.9)	54 (16.5)	78 (23.8)	26 (7.9)	54 (16.5)	78 (23.8)	26 (7.9)	54 (16.5)	78 (23.8)
Min. Samples	7	5	3	7	5	3	7	5	3
Max. Samples	10	10	10	10	10	10	10	10	10
Min. Drill Holes	3	2	1	3	2	1	3	2	1

14.9 Mineral Resource Classification Parameters

The Mineral Resource Estimate presented in this Technical Report was prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects. The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources “have reasonable prospects for eventual economic extraction”.

The current Mineral Resource is sub-divided, in order of increasing geological confidence, into Inferred and Indicated categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource. There are no Measured Mineral Resources reported.

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

Interpretation of the word ‘eventual’ in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to envisage ‘eventual economic extraction’ as covering time periods in excess of 50 years. However, for many gold or base metal deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Indicated Mineral Resource

An ‘Indicated Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource Estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions

Inferred Mineral Resource

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An Inferred Mineral Resource is based on limited information and sampling gathered through appropriate sampling techniques from locations such as outcrops, trenches, pits, workings and drill holes. Inferred Mineral Resources must not be included in the economic analysis, production schedules, or estimated mine life in publicly disclosed Pre-Feasibility or Feasibility Studies, or in the Life of Mine plans and cash flow models of developed mines. Inferred Mineral Resources can only be used in economic studies as provided under NI 43-101.

There may be circumstances, where appropriate sampling, testing, and other measurements are sufficient to demonstrate data integrity, geological and grade/quality continuity of a Measured or Indicated Mineral Resource, however, quality assurance and quality control, or other information may not meet all industry norms for the disclosure of an Indicated or Measured Mineral Resource. Under these circumstances, it may be reasonable for the Qualified Person to report an Inferred Mineral Resource if the Qualified Person has taken steps to verify the information meets the requirements of an Inferred Mineral Resource.

14.10 Mineral Resource Statement

The general requirement that all Mineral Resources have “reasonable prospects for economic extraction” implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Denison deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering “reasonable prospects for economic extraction” by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be “reasonably expected” to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in Table 14-7. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The corresponding strip ratio is 10.6:1 and reaches a maximum depth of approximately below surface of 1,320 ft (402 m) in the east and 1,250 ft (381 m) in the west. The optimized pit is limited to the property boundary.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the “reasonable prospects for economic extraction” by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 0.3% NiEq is used to determine the in-pit MRE for the Denison deposit.

In order to determine the quantities of material offering “reasonable prospects for economic extraction” by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be “reasonably expected” to be mined from underground are used. Based on the size, shape and orientation of the Deposit, it is envisioned that the Deposit may be mined using the longhole open stoping mining method (a bulk mining method that has long been utilized in the Sudbury region). The underground parameters used, based on this mining method, are summarized in Table 14-7. Based on these parameters, a selected base case cut-off grade of 1.1% NiEq is used to determine the below-pit MRE for the Denison deposit. The below-pit MRE is limited to a depth of ~4,500 ft (1,371.6 m) below surface.

The reader is cautioned that the reporting of the underground resources are presented undiluted and in situ (no minimum thickness), constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction. There are no underground mineral reserves reported at this time.

The current MRE for the Denison deposit is presented in Table 14-8 and includes an in-pit and an underground (below-pit) Mineral Resource (estimated from the bottom of the 2022 pit) (Figure 14-8 and Figure 14-9).

Highlights of the Denison deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 0.3% NiEq, 16,760,000 tonnes grading 0.53% Ni, 0.49% Cu, 0.02% Co, 0.48 g/t Pt, 0.37 g/t Pd and 0.25 g/t Au in the Indicated category, and 434,000 tonnes grading 0.43% Ni, 0.49% Cu, 0.02% Co, 0.29 g/t Pt, 0.14 g/t Pd and 0.07 g/t Au in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 1.1% NiEq, 14,532,000 tonnes grading 0.96% Ni, 0.84% Cu, 0.03% Co, 0.88 g/t Pt, 1.02 g/t Pd and 0.54 g/t Au in the Indicated category, and 1,169,000 tonnes grading 0.61% Ni, 0.46% Cu, 0.02% Co, 0.64 g/t Pt, 1.09 g/t Pd and 0.21 g/t Au in the Inferred category.

Table 14-7 Whittle™ Pit Optimization Parameters

Parameter	Value	Unit
Nickel Price	$8.50	US$ per pound
Copper Price	$3.75	US$ per pound
Cobalt Price	$22.00	US$ per pound
Platinum Price	$1,000.00	US$ per ounce
Palladium Price	$2,000.00	US$ per ounce
Gold Price	$1,750.00	US$ per ounce
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$80.00	US$ per tonne mined
Transportation	$5.00	US$ per tonne milled
Processing Cost (incl. crushing)	$15.50	US$ per tonne milled
Treatment and Refining	$15.00	US$ per tonne milled
In-Pit General and Administrative	$2.50	US$ tonne of feed
Underground General and Administrative	$7.00	US$ tonne of feed
Overall Pit Slope	55	Degrees
Nickel Recovery	78.0	Percent (%)
Copper Recovery	95.5	Percent (%)
Cobalt Recovery	56.0	Percent (%)
Platinum Recovery	69.2	Percent (%)
Palladium Recovery	68.0	Percent (%)
Gold Recovery	67.7	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

Table 14-8 Denison Deposit In-Pit (A) and Underground (below-pit) (B) Mineral Resource Estimate, August 19, 2022

(A)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
0.3% NiEq	16,760,000	0.53	0.49	0.02	0.48	0.37	0.25	1.08
Inferred								
0.3% NiEq	434,000	0.43	0.49	0.02	0.29	0.14	0.07	0.82

(B)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
1.1% NiEq	14,531,000	0.96	0.84	0.03	0.88	1.02	0.54	2.07
Inferred								
1.1% NiEq	1,170,000	0.61	0.46	0.02	0.64	1.09	0.21	1.41

(1) *The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.*

(2) *All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.*

(3) *All Resources are presented undiluted and in situ, constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction.*

(4) *Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.*

(5) *It is envisioned that parts of the Denison deposit may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 0.3 % NiEq within a conceptual pit shell.*

(6) *The results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.*

(7) *Underground (below-pit) Mineral Resources are estimated from the bottom of the pit and are reported at a base case cut-off grade of 1.1 % NiEq. The underground Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized wireframes. At this base case cut-off grade the deposit shows good deposit continuity with limited orphaned blocks. Any orphaned blocks are connected within the models by lower grade blocks.*

(8) *Based on the size, shape, location and orientation of the Denison deposit, it is envisioned that the deposit may be mined using longhole open stoping (a bulk mining method that has long been utilized in the Sudbury region).*

(9) *High grade capping was done on 10 ft (3.05 m) composite data.*

(10) *Bulk density values were determined based on physical test work from each deposit model and waste model.*

(11) *NiEq Cut-off grades are based on metal prices of $8.50/lb Ni, $3.752/lb Cu, $22.00/lb Co, $1000/oz Pt, $2000/oz Pd and $1,750/oz Au and metal recoveries of 78% for Ni, 95.5% for copper, 56% for Co, 69.2% for Pt, 68% for Pd and 67.7% for Au.*

(12) *The in-pit base case cut-off grade of 0.3% NiEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$38.00/t mineralized material, and an overall pit slope of 55 degrees. The below-pit base case cut-off grade of 1.1 % NiEq considers a mining cost of US$80.00/t rock and processing, treatment and refining, transportation and G&A cost of US$42.50/t mineralized material.*

(13) *The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*

Figure 14-8 Isometric View Looking North of the Denison Deposit Mineral Resource Block Grades and Whittle Pit

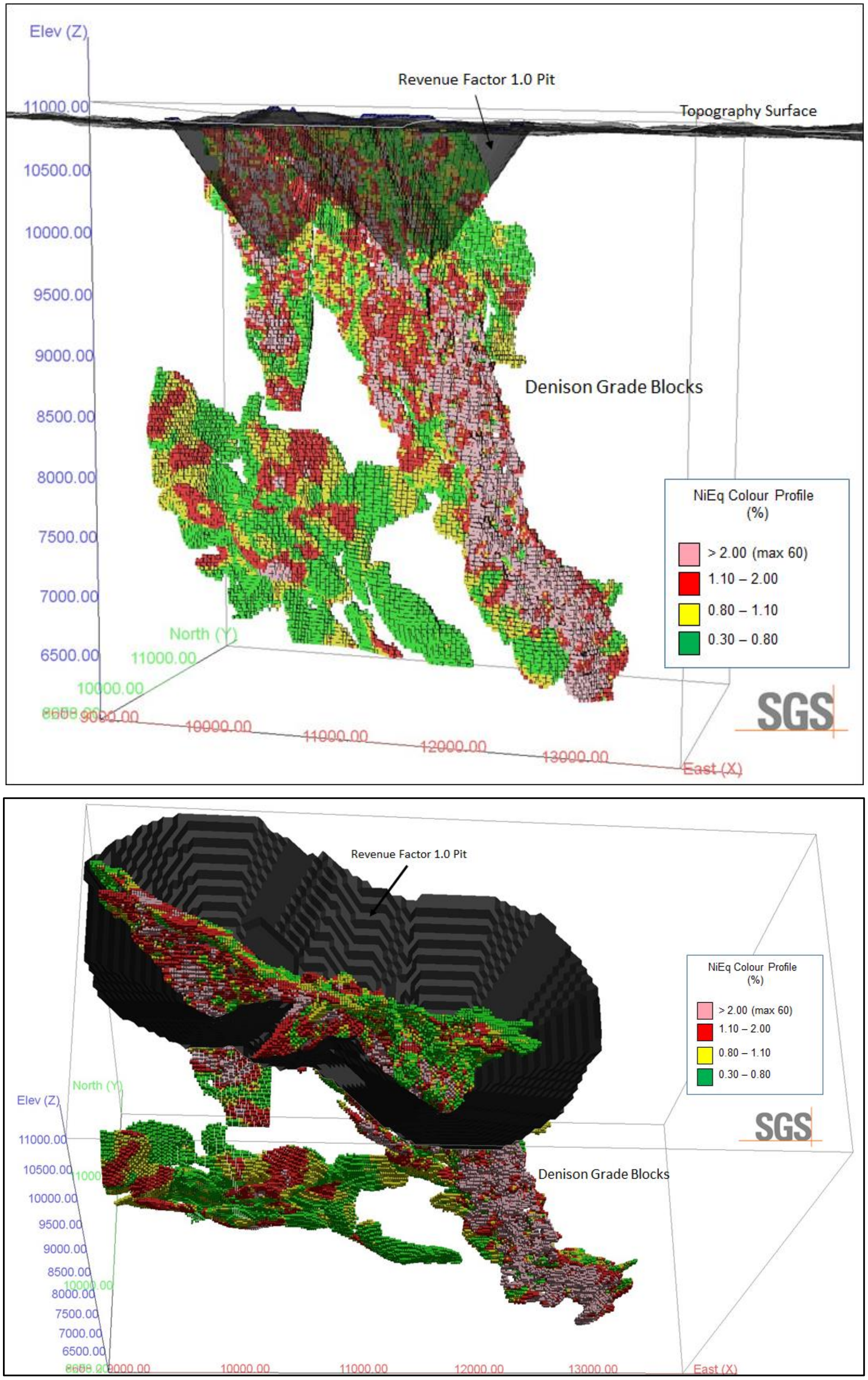
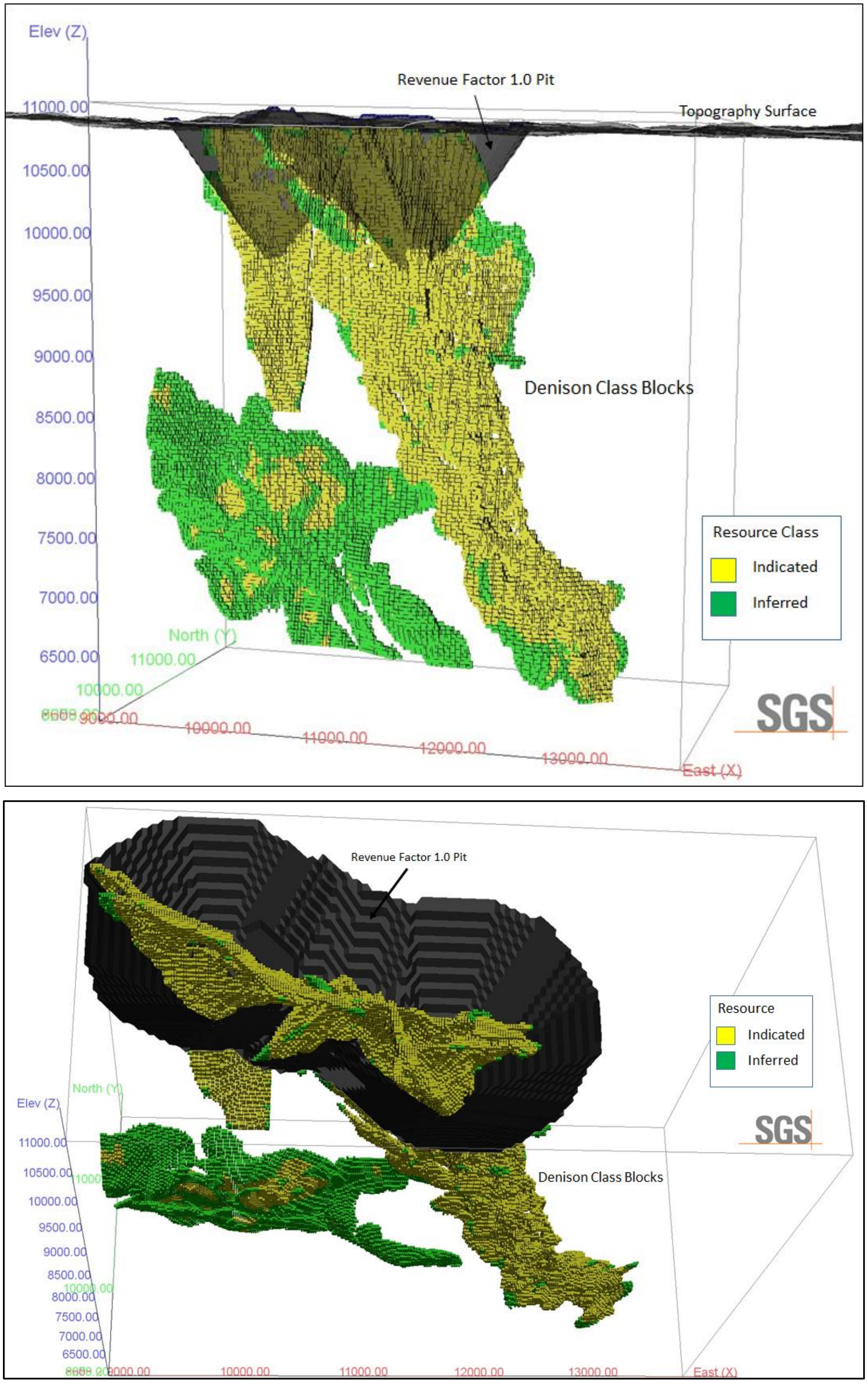


Figure 14-9 Isometric View Looking North of the Denison Deposit Indicated and Inferred Mineral Class Blocks and Whittle Pit



14.11 Model Validation and Sensitivity Analysis

The total volume of the Denison deposit resource blocks in the Mineral Resource model, at a 0.0% NiEq cut-off grade value compared well to the total volume of the 3D models with the total volume of the block model being 3.44% lower than the total volume of the mineralized domains (Table 14-9). The slightly higher volume of the domains is the result of minor overlapping of domains, not being counted in the MRE, and the result of limiting the search radius; parts of the 99 Zone models were beyond the search radius. Where solids overlap, GEMS assigns the data to the first possible solid based on the “Solid Precedence” setting.

Visual checks of block grades gold against the composite data on vertical section showed good correlation between block grades and drill intersections.

A comparison of the average composite grades with the average grades of all the blocks in the block model at a 0.0% NiEq cut-off grade was completed and is presented in Table 14-10. The block model average grades compared well with the composite average grades. The lower block grades for Ni and Cu are likely due to grade smoothing during the interpolation procedure. The higher grades of precious metals in blocks is likely the result of ignoring un-sampled precious metals during the interpolation procedure.

Table 14-9 Comparison of Block Model Volume with the Total Volume of the Deposit 3D Models (before removing mined out material)

Deposit	Total Domain Volume		Block Model Volume		Difference %
Denison Deposit	894,140,000 ft^3	25,319,000 m^3	863,355,000 ft^3	24,447,000 m^3	3.44%

Table 14-10 Comparison of Average Composite Grades (based on assayed data) with Block Model Grades

Deposit	Variable	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t
Denison Deposit	Composites Capped	0.72	0.66	0.03	0.38	0.36	0.14
	Blocks	0.60	0.53	0.02	0.53	0.54	0.30

14.11.1 Sensitivity to Cut-off Grade

The Denison deposit Mineral Resource has been estimated at a range of cut-off grades presented in Table 14-11 to demonstrate the sensitivity of the resource to cut-off grades. The current Mineral Resources are reported at a cut-off grade of 0.3% NiEq within a conceptual pit shell and below-pit Mineral Resources are reported at a cut-off grade of 1.1% NiEq below the conceptual pit shell.

Table 14-11 Denison Deposit Open Pit (A) and Underground (B) Mineral Resource Estimate, July 4, 2022 at Various NiEq Cut-off Grades

(A)

Cut-off Grade NiEq (%)	Tonnes	Ni%	Cu%	Co%	Pt g/t	Pd g/t	Au g/t	NiEq%
Indicated								
0.2	17,241,000	0.52	0.48	0.02	0.47	0.36	0.25	1.06
0.3	16,760,000	0.53	0.49	0.02	0.48	0.37	0.25	1.08
0.4	16,080,000	0.55	0.50	0.02	0.49	0.38	0.26	1.11
0.5	14,977,000	0.57	0.52	0.02	0.50	0.39	0.27	1.16
0.6	13,528,000	0.61	0.55	0.02	0.53	0.42	0.28	1.22
0.8	9,961,000	0.70	0.62	0.02	0.62	0.50	0.32	1.41
Inferred								
0.2	440,000	0.43	0.48	0.02	0.28	0.14	0.07	0.81
0.3	434,000	0.43	0.49	0.02	0.29	0.14	0.07	0.82
0.4	410,000	0.45	0.51	0.02	0.30	0.15	0.08	0.84
0.5	326,000	0.49	0.58	0.02	0.29	0.19	0.10	0.94
0.6	283,000	0.53	0.62	0.02	0.33	0.22	0.11	1.00
0.8	192,000	0.61	0.70	0.02	0.32	0.16	0.16	1.14

(B)

Cut-off Grade NiEq (%)	Tonnes	Ni%	Cu%	Co%	Pt g/t	Pd g/t	Au g/t	NiEq%
Indicated								
0.8	21,678,000	0.78	0.70	0.03	0.73	0.82	0.45	1.70
1.0	16,789,000	0.89	0.79	0.03	0.82	0.94	0.51	1.94
1.1	14,531,000	0.96	0.84	0.03	0.88	1.02	0.54	2.07
1.2	12,581,000	1.02	0.90	0.03	0.94	1.10	0.58	2.22
1.3	10,909,000	1.09	0.95	0.04	1.01	1.18	0.61	2.37
Inferred								
0.8	4,039,000	0.50	0.41	0.02	0.44	0.64	0.15	1.07
1.0	1,779,000	0.58	0.47	0.02	0.56	0.89	0.19	1.29
1.1	1,170,000	0.61	0.46	0.02	0.64	1.09	0.21	1.41
1.2	754,000	0.67	0.50	0.02	0.62	1.32	0.21	1.56
1.3	539,000	0.73	0.51	0.02	0.63	1.44	0.23	1.68

(1) In-pit Mineral Resources are reported at a base case cut-off grade of 0.3% NiEq within a conceptual pit shell and underground (below-pit) Mineral Resources are reported at a base case cut-off grade of 1.1% NiEq from the bottom of the conceptual pit shell. Values in this table reported above and below the base case cut-off grades should not be misconstrued with a Mineral Resource Statement. The values are only presented to show the sensitivity of the block model estimates to the selection of cut-off grade. All values are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.

(2) All figures are rounded to reflect the relative accuracy of the estimate. Composites have been capped where appropriate.

14.12 Disclosure

All relevant data and information regarding the Project are included in other sections of this Technical Report. There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading.

The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

15 MINERAL RESERVE ESTIMATE

There are no Mineral Reserve Estimates for the Property.

16 MINING METHODS

This section does not apply to the Technical Report.

17 RECOVERY METHODS

This section does not apply to the Technical Report.

18 PROJECT INFRASTRUCTURE

This section does not apply to the Technical Report.

19 MARKET STUDIES AND CONTRACTS

This section does not apply to the Technical Report.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section does not apply to the Technical Report.

21 CAPITAL AND OPERATING COSTS

This section does not apply to the Technical Report.

22 ECONOMIC ANALYSIS

This section does not apply to the Technical Report.

23 ADJACENT PROPERTIES

There is no information on properties adjacent to the Property necessary to make the technical report understandable and not misleading

24 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. To the Authors' knowledge, there are no significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information or MRE.

25 INTERPRETATION AND CONCLUSIONS

SGS Geological Services Inc. was contracted by Magna to complete a Mineral Resource Estimate for the Crean Hill Ni-Cu-PGE mine within the Denison Property, located near Sudbury, Ontario, Canada, and to prepare a National Instrument 43-101 Technical Report written in support of the MRE.

On August 16th, 2022, Magna announced it has entered into a definitive share purchase agreement to acquire 100% of Lonmin Canada Inc., including the Denison Project and the past producing Crean Hill Ni-Cu-PGE mine.

Under the terms of the Purchase Agreement, Magna will acquire 100% of the issued and outstanding shares of Loncan, whose core asset is the Denison Project. The Denison Project is located within the Sudbury Basin mining district and covers the past producing Crean Hill Mine. The Crean Hill Mine operated during three separate periods, from 1906 to 2002, with past production totaling 20.3 Mt grading 1.3% Ni, 1.1% Cu, 1.6 g/t Pt + Pd + Au. Prior to 2018, several zones of low-sulphide, high PGE footwall mineralization were discovered and defined. In addition to diamond drilling, detailed mapping, geophysical surveying, mineralogical and metallurgical studies, and geotechnical test work were completed, advancing the understanding of this style of mineralization. In 2018, subsequent to the mine closing, Loncan entered into an agreement with Vale Canada Limited regarding the transfer and development of the Denison Project.

Magna is a mineral exploration and development company and is engaged in the exploration of mineral properties. Its current assets consist of the Shakespeare Nickel Project, located near Sudbury, Ontario, Canada, and the Shining Tree Ni-Cu-PGE project, located 100-km north of Sudbury, Ontario, Canada. Magna’s common shares are listed on the Toronto Stock Exchange Venture Exchange under the symbol “NICU”. Their current business address is 1300 Kelly Lake Road Sudbury, Ontario P3E 5P4.

The current report is authored by Allan Armitage, Ph.D., P. Geo., of SGS, and the MRE presented in this report was estimated by Armitage. Armitage is an independent Qualified Person as defined by NI 43-101 and is responsible for all sections of this report. The Author conducted a site visit to the Crean Hill mine / Denison Property on May 25 and 26, 2022.

25.1 Property Description

The Property is located in Denison Township within the City of Greater Sudbury, Ontario, Canada approximately 30 km southwest of downtown Sudbury. The Property is centered at approximately 46° 25.8’ N latitude, 81° 21.1’ W longitude, or 473,000 m E; 5,141,800 m N in NAD83 UTM Zone 17N.

The Property is an area of Patented Surface and Mining Rights, consisting of approximately 255.9 hectares, located within the southern half of Lots 3, 4 and 5 and parts of the northern half of Lots 3, 4, and 5 of Concession 5, Denison Township, District of Sudbury. The area is more particularly described as parts 1 to 16 inclusive on registered plan 53R – 21031, filed with the Land Titles Division of Sudbury.

Loncan holds the Mining Rights from the top of the Concrete Capped Shaft #2 (as shown on plan 53R – 21031) to a depth of 4500 feet (1371.6 m). Vale Canada Limited (“Vale”) continues to hold all Mining Rights below 4,500 feet, from the top of the Concrete Capped Shaft #2.

The Property is subject to surface easements as described in PIN No. 73382-0487(LT), PIN No. 73382-0537(LT) and PIN No. 73382-550(LT) and as represented on the survey plan 53R – 21031.

The Property is legally described as follows:

1) PIN No. 73382-0487(LT) being PCL 450 SEC SWS; NI/2 LT 3 CON 5 Denison except L TI 6817; Greater Sudbury; subject to an easement as in SD202334.
2) PIN No. 73382-0537(LT) being PCL 428 SEC SWS; NI/2 LT 4-5 CON 5 Denison; SIT D422; Greater Sudbury.

3) PIN No. 73382-550(L T) being LT 1-6 CON 4 Denison; S 1/2 LT 3-5 CON 5 Denison; SIT S48617, S62072, S63396, S89248; Greater Sudbury.

Denison is wholly owned and controlled by Loncan as of July 2018, when the joint venture between Lonmin (Loncan's predecessor) and Vale was cancelled. The joint venture was established in 2005 with the intent of exploring multiple Vale properties for low-sulfide, high-PGE-Au mineralization, as it was believed they hosted significant exploration potential. These properties included Capre, Denison, Levack North, McKim, Trillabelle and Wisner.

Vale reserves a three percent (3%) Net Smelter Return royalty from the sale or other disposition of any metals or non-metallic minerals or other materials mined, produced or otherwise recovered from the Revised Property (or any waste rock or tailings derived from the Revised Property), such royalty to be on, in accordance with, and subject to the terms set out in the Royalty Agreement.

From and after the completion of the Beneficial Transfer, Loncan shall have the right to reasonable access to and egress from and use of (such right to access and egress subject to certain terms and conditions set forth in this Agreement and the Ancillary Agreements) such parts of the Surface Rights and other adjoining surface rights of Vale as may be reasonably required from time to time by Loncan and reasonably agreed by Vale Canada, to permit Early Exploration, Advanced Exploration, and Mine Operations to be conducted by Loncan or its Agents in or on the Revised Property.

Vale reserves and has the right to access, upgrade (if required), operate and use the Crean Hill Mine surface and underground infrastructure (for persons and vehicles, and with or without tools, equipment and machinery) in the event of a decision by Vale to conduct any Early Exploration, Advanced Exploration or Development or Mine Operations in the future on, in, or under the Property or any other adjacent or proximate property of Vale Canada (including below the Denison Cut-off Depth), subject to and in accordance with a Crean Hill Mine access agreement as shall be negotiated in good faith and entered into between Vale and Loncan at that time, taking into account the relative existing and proposed operations and facilities of each of Vale and Loncan on, in, or under or adjacent or proximate to the Revised Denison Property and the Property and such other matters as are reasonably relevant at that time.

Loncan must first offer Vale the right to process and/or purchase the ore or metals from ore mined by Loncan from the Revised Property before offering a contract on market terms with a third party to process and/or purchase ore.

Under the terms of the Purchase Agreement, Magna will acquire 100% of the issued and outstanding shares of Loncan, whose core asset is the Denison Project. The Acquisition will be completed pursuant to the terms of the Purchase Agreement entered into between the Company, Loncan and the current shareholders of Loncan, being Sibanye UK Limited (formerly Lonmin Limited, and a subsidiary of Sibanye Stillwater Limited), Wallbridge Mining Company Limited and certain other minority shareholders of Loncan (collectively, the "Vendors"); Wallbridge was appointed the operator. The aggregate purchase price for the outstanding shares of Loncan is equal to $16,000,000, comprised of a closing payment of $13,000,000 in cash and a deferred payment of $3,000,000, payable pro rata to the Vendors. The deferred payment is payable on or before the 12-month anniversary of the closing of the Acquisition. The Company will use commercially reasonable efforts to settle the deferred payment also in cash, but may, at its option, settle the deferred payment in common shares of the Company priced at the time of issue in accordance with the rules of the TSX Venture Exchange (the "TSXV"). As ongoing security pending the settlement of the deferred payment, the Company has agreed to grant a pledge of the shares of Loncan in favour of the Vendors. The Company will inherit Loncan's existing commercial arrangements with Vale, including access rights and the NSR royalty referred to above. Certain other arrangements including Loncan's joint venture arrangements with Wallbridge will terminate concurrently with closing.

Completion of the Acquisition is subject to the satisfaction or waiver of a number of customary closing conditions, including the approval of the TSX-V.

25.2 Crean Hill Deposit Mineral Resource Statement

Completion of the update MRE's for the Property involved the assessment of a drill hole database, which included all data for surface drilling completed through the end of 2017, as well as three-dimensional (3D) mineral resource models (resource domains), 3D models of all mined-out areas (open pit and underground), 3D models of cross-cutting dykes, a recent topographic surface and available written reports.

All geological data has been reviewed and verified by the Author as being accurate to the extent possible and to the extent possible all geologic information was reviewed and confirmed. There were no errors or issues identified with the database. The Author is of the opinion that the database is of sufficient quality to be used for the current Indicated and Inferred MRE.

Inverse Distance Squared ("ID2") calculation method restricted to mineralized domains was used to interpolate grades for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) into block models.

Indicated and Inferred mineral resources are reported in the summary tables below. The current MRE takes into consideration that the Projects deposits may be mined by open pit and underground mining methods.

In order to complete the MRE for the Property, a database comprising a series of comma delimited spreadsheets containing surface and underground drill hole information was provided by Magna. The database included hole location information (local grid coordinates, in feet), survey data (final depth in feet), assay data (from and to in feet), lithology data and specific gravity data. The data in the assay table included assays for Ni (%), Cu (%), Co (%), Pt (g/t), Pd (g/t) and Au (g/t) as well as Ag (g/t), Rh (ppm), S (%) and Fe (%). It should be noted that not all assay samples had values for Pt, Pd, Au, Ag or Rh. Ag and Rh were the least analysed elements and are not included in the MRE.

After review of the database, the data was then imported into GEOVIA GEMS version 6.8.3 software ("GEMS") for statistical analysis, block modeling and resource estimation.

The database used for the current MRE comprises data for 3,836 surface and underground drill holes completed within the deposit area, which total 1.57 million ft (478,000 m). The database totals 89,257 assay intervals for 622,082 ft (189,611 m).

The database was checked for typographical errors in drill hole locations, down hole surveys, lithology, assay values and supporting information on source of assay values. Overlaps and gapping in survey, lithology and assay values in intervals were checked. Gaps in the assay sampling and un-sampled elements were assigned a grade value of 0.0001 for Ni, Cu, Co, Pt, Pd and Au.

The MRE for the Property are prepared and disclosed in compliance with all current disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2016). The classification of the current MRE's into Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves, including the critical requirement that all mineral resources "have reasonable prospects for eventual economic extraction".

The general requirement that all Mineral Resources have "reasonable prospects for economic extraction" implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account extraction scenarios and processing recoveries. In order to meet this requirement, the Author considers that the Denison deposit mineralization is amenable for open pit and underground extraction.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by an open pit, Whittle™ pit optimization software 4.7.1 and reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from an open pit were used. The pit optimization was completed by SGS. The pit optimization parameters used are summarized in Table 25-1. A Whittle pit shell at a revenue factor of 1.0 was selected as the ultimate pit shell for the purposes of this MRE. The corresponding strip ratio is approximately 10.6:1

and reaches a maximum depth of below surface of ~1,320 ft (402 m) in the east and 1,250 ft (381 m) in the west. The optimized pit shell is limited to the Property boundary.

The reader is cautioned that the results from the pit optimization are used solely for the purpose of testing the "reasonable prospects for economic extraction" by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade. A selected base case cut-off grade of 0.3% NiEq is used to determine the in-pit MRE for the Denison deposit.

In order to determine the quantities of material offering "reasonable prospects for economic extraction" by underground mining methods, reasonable mining assumptions to evaluate the proportions of the block model (Indicated and Inferred blocks) that could be "reasonably expected" to be mined from underground are used. Based on the size, shape and orientation of the Deposit, it is envisioned that the Deposit may be mined using the longhole open stoping mining method (a bulk mining method that has long been utilized in the Sudbury region). The underground parameters used, based on this mining method, are summarized in Table 25-1. Based on these parameters, a selected base case cut-off grade of 1.1% NiEq is used to determine the below-pit MRE for the Denison deposit. The below-pit MRE is limited to a depth of ~4,500 ft (1,371.6 m) below surface.

The reader is cautioned that the reporting of the underground resources are presented undiluted and in situ (no minimum thickness), constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction. There are no underground mineral reserves reported at this time.

Table 25-1 Whittle™ Pit Optimization Parameters

Parameter	Value	Unit
Nickel Price	$8.50	US$ per pound
Copper Price	$3.75	US$ per pound
Cobalt Price	$22.00	US$ per pound
Platinum Price	$1,000.00	US$ per ounce
Palladium Price	$2,000.00	US$ per ounce
Gold Price	$1,750.00	US$ per ounce
In-Pit Mining Cost	$2.50	US$ per tonne mined
Underground Mining Cost	$80.00	US$ per tonne mined
Transportation	$5.00	US$ per tonne milled
Processing Cost (incl. crushing)	$15.50	US$ per tonne milled
Treatment and Refining	$15.00	US$ per tonne milled
In-Pit General and Administrative	$2.50	US$ tonne of feed
Underground General and Administrative	$7.00	US$ tonne of feed
Overall Pit Slope	55	Degrees
Nickel Recovery	78.0	Percent (%)
Copper Recovery	95.5	Percent (%)
Cobalt Recovery	56.0	Percent (%)
Platinum Recovery	69.2	Percent (%)
Palladium Recovery	68.0	Percent (%)
Gold Recovery	67.7	Percent (%)
Mining loss / Dilution (open pit)	5/5	Percent (%) / Percent (%)
Mining loss/Dilution (underground)	10/10	Percent (%) / Percent (%)

The current MRE for the Deposit is presented in Table 25-2 and includes an in-pit and an underground (below-pit) Mineral Resource (estimated from the bottom of the 2022 pit).

Highlights of the Denison deposit Mineral Resource Estimate are as follows:

- The in-pit Mineral Resource includes, at a base case cut-off grade of 0.3% NiEq, 16,760,000 tonnes grading 0.53% Ni, 0.49% Cu, 0.02% Co, 0.48 g/t Pt, 0.37 g/t Pd and 0.25 g/t Au in the Indicated category, and 434,000 tonnes grading 0.43% Ni, 0.49% Cu, 0.02% Co, 0.29 g/t Pt, 0.14 g/t Pd and 0.07 g/t Au in the Inferred category.
- The below-pit Mineral Resource includes, at a base case cut-off grade of 1.1% NiEq, 14,532,000 tonnes grading 0.96% Ni, 0.84% Cu, 0.03% Co, 0.88 g/t Pt, 1.02 g/t Pd and 0.54 g/t Au in the Indicated category, and 1,169,000 tonnes grading 0.61% Ni, 0.46% Cu, 0.02% Co, 0.64 g/t Pt, 1.09 g/t Pd and 0.21 g/t Au in the Inferred category.

Table 25-2 Denison Deposit In-Pit (A) and Underground (below-pit) (B) Mineral Resource Estimate, August 19, 2022

(A)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
0.3% NiEq	16,760,000	0.53	0.49	0.02	0.48	0.37	0.25	1.08
Inferred								
0.3% NiEq	434,000	0.43	0.49	0.02	0.29	0.14	0.07	0.82

(B)

Cut-off Grade	Tonnes	Ni %	Cu %	Co %	Pt g/t	Pd g/t	Au g/t	NiEq %
Indicated								
1.1% NiEq	14,531,000	0.96	0.84	0.03	0.88	1.02	0.54	2.07
Inferred								
1.1% NiEq	1,170,000	0.61	0.46	0.02	0.64	1.09	0.21	1.41

(1) The classification of the current Mineral Resource Estimate into Indicated and Inferred is consistent with current 2014 CIM Definition Standards - For Mineral Resources and Mineral Reserves.

(2) All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding.

(3) All Resources are presented undiluted and in situ, constrained by continuous 3D wireframe models, and are considered to have reasonable prospects for eventual economic extraction.

(4) Mineral resources which are not mineral reserves do not have demonstrated economic viability. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

(5) It is envisioned that parts of the Denison deposit may be mined using open pit mining methods. In-pit mineral resources are reported at a cut-off grade of 0.3 % NiEq within a conceptual pit shell.

(6) The results from the pit optimization are used solely for the purpose of testing the “reasonable prospects for economic extraction” by an open pit and do not represent an attempt to estimate mineral reserves. There are no mineral reserves on the Property. The results are used as a guide to assist in the preparation of a Mineral Resource statement and to select an appropriate resource reporting cut-off grade.

(7) Underground (below-pit) Mineral Resources are estimated from the bottom of the pit and are reported at a base case cut-off grade of 1.1 % NiEq. The underground Mineral Resource grade blocks were quantified above the base case cut-off grade, below the constraining pit shell and within the constraining mineralized

wireframes. At this base case cut-off grade the deposit shows good deposit continuity with limited orphaned blocks. Any orphaned blocks are connected within the models by lower grade blocks.

(8) Based on the size, shape, location and orientation of the Denison deposit, it is envisioned that the deposit may be mined using longhole open stoping (a bulk mining method that has long been utilized in the Sudbury region).

(9) High grade capping was done on 10 ft (3.05 m) composite data.

(10) Bulk density values were determined based on physical test work from each deposit model and waste model.

(11) NiEq Cut-off grades are based on metal prices of $8.50/lb Ni, $3.752/lb Cu, $22.00/lb Co, $1000/oz Pt, $2000/oz Pd and $1,750/oz Au and metal recoveries of 78% for Ni, 95.5% for copper, 56% for Co, 69.2% for Pt, 68% for Pd and 67.7% for Au.

(12) The in-pit base case cut-off grade of 0.3% NiEq considers a mining cost of US$2.50/t rock and processing, treatment and refining, transportation and G&A cost of US$38.00/t mineralized material, and an overall pit slope of 55 degrees. The below-pit base case cut-off grade of 1.1 % NiEq considers a mining cost of US$80.00/t rock and processing, treatment and refining, transportation and G&A cost of US$42.50/t mineralized material.

(13) The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

There is no other relevant data or information available that is necessary to make the technical report understandable and not misleading. The Author is not aware of any known mining, processing, metallurgical, environmental, infrastructure, economic, permitting, legal, title, taxation, socio-political, or marketing issues, or any other relevant factors not reported in this technical report, that could materially affect the current Mineral Resource Estimate.

26 RECOMMENDATIONS

The Denison deposit contains within-pit and underground Indicated and Inferred Mineral Resources that are associated with well-defined mineralized trends and models. The deposit is open along strike and at depth.

Given the prospective nature of the Deposit, it is the Author's opinion that the Project merits further exploration and that a proposed plan for further work by Magna is justified. A proposed work program by Magna will help advance the Project and will provide key inputs required to evaluate the economic viability of the Project at a Pre-feasibility ("PFS") level.

The Author is recommending Magna conduct further exploration, subject to funding and any other matters which may cause the proposed exploration program to be altered in the normal course of its business activities or alterations which may affect the program as a result of exploration activities themselves.

The total cost of the recommended work program by Magna is estimated at C$4.2 million to C$5.1 million (Table 26-1).

The initial exploration budget includes expenditures to complete detailed geological compilation and review of the historic, and recent diamond drilling completed by Loncan to gain a better understanding the geology and various styles of mineralization within the near surface potential open pit and upper levels of the underground resources.

Magna intends to complete approximately 10,000 m to 12,000 m of surface diamond drilling within the near surface potential open pit and upper levels of the underground resources, roughly above the 2,000 ft mine level. Any future deeper drilling will likely be conducted from the underground mine workings.

Drilling will focus on delineation drilling to facilitate mine design and engineering, and provide additional material for metallurgical and geotechnical studies. The 2023 work program includes engineering, environmental, permitting and other studies required to assess potential mineability and complete a Preliminary Economic Assessment on the Project.

Table 26-1 Recommended 2022/23 Work Program for the Denison Project

Denison Project	
2022/23 Budget	
Item	**Cost**
Geological compilation and logging of historic and recent core	\$250,000 - \$300,000
Diamond Drilling [1] (10,000 m to 12,000 m, \$250/m)	\$2,500,000 - \$3,000,000
Metallurgical Testwork	\$250,000 - \$300,000
Engineering and PFS [2]	\$1,000,000 - \$1,200,000
Enviromental and Permitting [3]	\$150,000 - \$200,000
Community Engagement [4]	\$50,000 - \$100,000
Total:	\$4,200,000 - \$5,100,000

[1] Includes sampling cost, assaying, logging, geotechnical, drill management, core storage, travel accommodation, logging facilities, consumables, and data reporting
[2] Includes NI43-101 Technical Reporting
[3] Includes engagment with First Nations
[4] Includes studies and field work for required for permitting

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28 DATE AND SIGNATURE PAGE

This report titled "Mineral Resource Estimate Update for the Denison Ni-Cu-PGE Sulphide Deposit, Denison Project, Sudbury, Ontario Canada" dated December 14, 2022 (the "Technical Report") for Magna Mining Inc. was prepared and signed by the following author:

The effective date of the report is August 19, 2022
The date of the report is December 14, 2022.

Signed by:

Qualified Persons	Company
Allan Armitage, Ph.D., P. Geo.,	SGS Geological Services ("SGS")

December 14, 2022

29 CERTIFICATES OF QUALIFIED PERSONS

QP CERTIFICATE – ALLAN ARMITAGE

To Accompany the Report titled **"Mineral Resource Estimate Update for the Denison Ni-Cu-PGE Sulphide Deposit, Denison Project, Sudbury, Ontario Canada"** dated December 14, 2022 (the "Technical Report") for Magna Mining Inc.

I, Allan E. Armitage, Ph. D., P. Geol. of 62 River Front Way, Fredericton, New Brunswick, hereby certify that:

1. I am a Senior Resource Geologist with SGS Canada Inc., 10 de la Seigneurie E blvd., Unit 203 Blainville, QC, Canada, J7C 3V5 (www.geostat.com).
2. I am a graduate of Acadia University having obtained the degree of Bachelor of Science - Honours in Geology in 1989, a graduate of Laurentian University having obtained the degree of Master of Science in Geology in 1992 and a graduate of the University of Western Ontario having obtained a Doctor of Philosophy in Geology in 1998.
3. I have been employed as a geologist for every field season (May - October) from 1987 to 1996. I have been continuously employed as a geologist since March of 1997.
4. I have been involved in mineral exploration and resource modeling at the grass roots to advanced exploration stage, including producing mines, since 1991, including mineral resource estimation and mineral resource and mineral reserve auditing since 2006 in Canada and internationally. I have extensive experience in Archean and Proterozoic load gold deposits, volcanic and sediment hosted base metal massive sulphide deposits, porphyry copper-gold-silver deposits, low and intermediate sulphidation epithermal gold and silver deposits, magmatic Ni-Cu-PGE deposits, and unconformity- and sandstone-hosted uranium deposits.
5. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta and use the title of Professional Geologist (P.Geol.) (License No. 64456; 1999), I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and use the designation (P.Geo.) (Licence No. 38144; 2012), and I am a member of Professional Geoscientists Ontario (PGO) and use the designation (P.Geo.) (Licence No. 2829; 2017), I am a member of the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) and use the designation (P.Geo.) (Licence No. L4375, 2019).
6. 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 of my professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person".
7. I am the author of this report and responsible for all sections. I have reviewed all sections and accept professional responsibility for all sections of this technical report.
8. I conducted a site visit to the Crean Hill mine / Denison Property on May 25 and 26, 2022.
9. I have had no prior involvement in the Crean Hill mine / Denison Property.
10. I am independent of the Company, Lonmin Canada Inc. ("Loncan"), and Sibanye UK Limited, as defined by Section 1.5 of NI 43-101.
11. As of the date of this certificate, 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.
12. I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

Signed and dated December 14, 2022 at Fredericton, New Brunswick.

"Original Signed and Sealed"

Allan Armitage, Ph. D., P. Geo., SGS Canada Inc.

APPENDIX A

A Summary of Vale Core Logging, Sampling, Sample Preparation, Analysis, QA/QC Practices and Assay Validation Procedures

Compiled by: Sasa Krstic, Vale Base Metals Resource Management Group (Baker and Hoffman, 2015 and 2017)

Core Logging, Sampling, Sample Preparation, Analysis and QA/QC Practices

All the drill core handling is done on site with the logging and sampling processes conducted by geologic technicians and geologists, with the exception of core cutting or certain specialist geotechnical methods. Upon completion of drilling, diamond drill core is inserted into wooden core trays, secured with a lid and tapped. The core is then placed on pallets, secured with chains and transported to surface. On surface, core is transported by forklift to secure (locked) facilities on a mine property until the final transport to the central logging facility at CC North Mine.

Chain of Custody

Handling and sampling of core at all logging facilities involves the following steps:

- transport the core in core boxes from the drill to the core logging area location,
- move the core boxes into the core logging area,
- open the core boxes,
- mark the core with the sample intervals and describe them in the database (log) with corresponding tag sample numbers (MEBS),
- if analysis required sample the core and register each sample (barcode) in the database (LIMS),
- place each registered samples in the registered shipment bag (bin),
- store representative samples and dump un-sampled core in a waste bin,
- close the shipment bin of core samples with an enclosed list of lab instructions from the sample database (LIMS),
- track and ensure return of any samples sent to another area for core cutting or geotechnical testing,
- store the closed bin in a secure area until shipped to the lab for preparation and analysis, and;
- Ship the bin (usually weekly) with a registered courier and shipment tracking number.

Core Logging

Standardized logging procedures and software are used to record geological and geotechnical information including rock type, description of mineralization and percentage sulphide content, mineralogy, major structures, Rock Quality Designation (RQD) and Rock Mass Rating (RMR). The logging procedures are described in the MMTS Guidelines and Reporting Standards, Geology Diamond Drilling (Section 02.01.03) the MEBS – Logging system and sampling reference guide.

The core logging process starts with opening the boxes of core and the start and end footage of each box is measured and recorded at the end of the box. During this operation the driller's footage markers are verified. The core is then photographed and the pictures digitally archived, linked to the database log for future reference.

The core logging information is recorded directly into the drillhole database on a secure central server via an online web intranet interface. During 2008, Vale Ontario Operations Mines Geology department developed and implemented a web based online logging program ("Logger") within the Mines Exploration Borehole System (MEBS) replacing an old DOS based routine (Logmxp14). Validation of all the security and quality assurance controls that were in place, with respect to sample description and preparation, were maintained and improved. This logging program populates all information directly into the database tables after strict filters that include a series of quality checks and tracking (geologist and time). The format of data entry is kept exactly the same as in the MEBS drill hole report for clarity. The program follows strict standards with respect to ore, rock codes, allowable estimation limits, sample numbers, and related checks. All details including the "MEBS Logger" guidelines are available to geologists as a help link in the logging page.

Diamond drill logging is performed by employees of the Mine who are either professional geologists or geologists-in-training under the guidance of professional geologists. Training for new personnel is usually done by one of the geologists at the mine and the Chief Mine Geologist. Logging includes recording of the correct spatial information, identification of rock types and a description of mineralization.

Geotechnical logging is performed on exploration boreholes that intersect the ore zone and for areas of potential future infrastructure. Information recorded includes structural measurements and RQD. The interval that is logged typically extends through the mineralized zone and 60m into both the hangingwall and footwall. These logs are currently kept as Excel files and are digitally attached to the drill hole log in MEBS.

Sampling Methodology and Tagging

The sampling method and approach is described in “Sudbury Operations Sampling Method and Approach_v4.pdf” manual and excerpts of the procedures are described below.

Drill core is examined visually for the distribution of mineralization. High and low-grade intervals are identified as separate samples. Continuous samples are collected through the entire mineralized zone with barren samples taken to bracket the zone on either side. Non-mineralized inclusions within the zone are also sampled to allow proper statistical evaluations of mineral distribution to be performed. Care is taken to ensure that mineralization from the high-grade sample intervals is not included in the low-grade sample intervals.

The sampling interval is established by minimum or maximum sampling lengths and geological and/or structural criteria. The minimum sampling length is 15 cm while the maximum is 3 m. The typical sample length in the SIC contact-style massive sulphide zones is 1.5 m. In the footwall copper zones a 0.3 m sampling length is typical due to the presence of narrow massive chalcopyrite veins. Samples of barren rock bracketing the mineralized zone are 1.5 m in length, regardless of the zone they are bracketing.

The core from udergroung drilling is typically sampled in its entirity. On the other hand, surface exploration programs cut most mineralized intersections and stores half of the core.

During exploration drilling, representative samples are taken for future reference. One sample is taken for every 3 m of core or when the lithology changes. These “rep.” samples are typically 10 – 15 cm in length and are not assayed but boxed in core trays, labeled and shipped to the Copper Cliff Mine core farm area for storage.

The sample tagging procedure involves the geologist clearly marking the start and end of each sample on the core with a grease pencil. The geologist or geological technologist transfers all sample intervals to a sample book. Each page in the sample book represents a unique number and bar code with two identical sample tags. The borehole number and sample interval are transferred to one of the tags. The first tag does not list the borehole number and is registered in the LIMS STS database by scanning the barcode. It is then placed in a plastic sample bag with the sample. The samples are placed in a registered shipment bag or “bin” and the list of all database registered samples, including corresponding lab instructions, is printed by the system upon bag closure. These instructions are sent to the lab as a paper copy with the shipment bin and are also automatically emailed by the LIMS STS to the lab upon bin shipment. The bins are also assigned a shipment number, provided by the contracted courier company for shipment tracking. This method of recording sample numbers is a quality control measure that ensures the proper sample tag is inserted into the correct sample bag and shipment for complete tracking. The second portion of each sample tag, containing the borehole number and interval, is also kept in the sample book as a permanent record.

Specific Gravity

The specific gravity (SG) values in the MEBS database are estimated by the following theoretical regression ("Alcock") formula: **SG = 100 / (100 / 2.88 + 0.0166*Cu - 0.1077*Ni - 0.328*S**. The formula utilizes Cu, Ni and S assays and assumes the SG of the rock fraction of 2.88, computing the amount of chalcopyrite (which accounts for the entire Cu content) and pentlandite (based on the Ni assay minus the Ni from pyrrhotite, which is set at 0.7% Ni). The amount of sulphur remaining after the uptake by chalcopyrite and pentlandite, is assigned to pyrrhotite. The formula is applicable to most orebodies although inaccurate SG values may be generated for samples containing atypical minerals such as millerite, bornite or pyrite. Another default SG formula is used for the pre 1970 samples assayed for Cu, Ni and Co only (**SG = 2.80 + 0.02*Cu + 0.20*Ni**).

When required a procedure to validate estimated specific gravity is utilized during the core logging and sampling process.

The specific gravity for a sample is determined using a facility to weigh the sample in air and then in water. The weight in water is subtracted from the weight in air and this figure is then divided by the weight in air to arrive at a specific gravity; SG = Dry weight / (Dry weight – Wet weight).

QA/QC of Core Logging and Sampling

Diamond drill logs are reviewed by either the RP or the senior geologist (a registered professional geologist) to ensure that the standards are followed. Estimated copper and nickel grades are compared with assay results upon receipt and, if a significant discrepancy is found, a re-assay is requested.

The details of core logging and sampling QC are given in "Guidelines for QC of Sample Data, Sign-off and Drillhole Finalization"; a summary of the guidelines is presented below.

The drill hole and sampling QC is performed by the geologist as a part of drill hole finalization in MEBS by selecting borehole QC option. There are three major QC checks including i) Weight Check (estimated weight *versus* measured weight by lab), ii) Assay Check (visually estimated Ni and Cu grade *versus* Cu and Ni assay values) and iii) Sulphide check (visually estimated sulphide content *versus* calculated sulphur content from S assay). Should assay data correspond to geologists' estimates, a geologist sign-offs on the borehole QC. This sign-off process is linked to drillhole finalization, which cannot be completed without the QC sign-off. All holes that are not finalized are considered incomplete in some respect.

A QC review of all assay data received in a month is carried out by QA/QC personnel at MMTS of Ontario Operations for all operating mines' data. The results of such an assessment are communicated to the mines personnel and reported monthly.

Sample Shipment

The lab instructions (packing slip) for all the samples in a shipment bin are received by the sample preparation lab prior to the bin arrival. Upon receipt of the shipment bag (bin) of samples at the prep facility, the samples are organized in order, checked against the packing slip instructions, weighed and the bin shipment receipt is provided digitally to Vale for review. Any missing or extra samples are noted in the statement and the assay instructions for the extra samples are forwarded to the lab by Vale Ontario Operations Mines Geology. The missing samples are tracked by notifying the geologist or noting it as an extra sample in another bin. These reports are tracked daily allowing for an opportunity to address issues (such as potential sampling or swaps/mix-ups) before the sample preparation begins.

Sample Preparation

Samples from Ontario Operations Mines and Brownfield exploration are prepared at ALS Minerals prep lab facility in Sudbury, Ontario. The facility is currently registered under the ISO 9001:2008 quality standard for the "provision of assay and geochemical analytical services" by QMI Management System Registrars. The sample preparation procedures employed by the lab adhere to a protocol designed for all operating mines in the Ontario Operations.

Each sample is crushed to a minimum of 70% passing 2 mm and split using the dual-drawer Boyd crusher-Rotary Sample Divider (Boyd-RSD) combo units manufactured by ROCKLABS Ltd. The dual-drawer Boyd-RSD combo units were rolled out on January 1, 2013 and replaced the single drawer equipment (which in turn replaced riffle splitting in February, 2010). Upon sample crushing and splitting, approximately 250g of a crushed sample aliquot is pulverized by Labtech Essa LM2 pulverizers to 85% passing 0.074 mm (74 microns) and a portion of the sample pulp (about 100 g) is sent to ALS' analytical facilities in Vancouver, British Columbia. The remainder (about 150 g) of master sample pulps is stored in the Sudbury facility for one year and then returned to Ontario Operations for permanent storage, whereas the remaining crushed reject is disposed after storage at the Sudbury facility for a period of six months (free of charge); if the material is to remain in storage, a monthly fee per sample is charged.

Sample Preparation QA/QC

The sample preparation quality control (QC) is carried out by the prep facility and it consists of crush and pulp screening to ensure the grain size specification is consistently met at each workstation. The frequency of the QC sizing tests is 2.5% (at the beginning of a sample batch and every fortieth sample thereafter) for both crushing and pulverization stages. The results of sample prep QC are made available to the client and can be reviewed at ALS Minerals website (Webtrieve).

Assay Methodology

ALS Minerals is the primary analytical laboratory used for assaying of all Ontario Operations mine samples. ALS Minerals is a recognized, ISO/IEC 17025:2005 accredited laboratory for all the specific procedures pertinent to the required sample analysis. SGS Lakefield serves as the secondary (or umpire) laboratory since 2007, and re-assays a representative portion of the samples analyzed by ALS Minerals. SGS Lakefield facility is also ISO/IEC 17025:2005 accredited for all analytical methods of interest.

At ALS all samples are analysed for Cu, Ni, Co, Fe, S, As, Pb and Zn using the ME-ICP81 procedure. When requested, CaO, MgO and SiO_2 are also reported from the ME-ICP81 package. The analytical procedure involves fusion of the pulp (0.2g) with sodium peroxide flux (2.6g) at 670°C, and subsequent dissolution in 30% hydrochloric (HCl) acid. Nickel, Cu, Co, Fe, S, As, Pb and Zn content are determined by Varian Vista Inductively Coupled Plasma Atomic Emission Spectrometers (ICP-AES). Gold, Pt and Pd content were determined by a lead collection fire assay/ICP technique (PGM-ICP27) on a 30g sample until Dec 31, 2013. On Jan 1st, 2014 the primary method for Au, Pt and Pd became PGM-ICP23 method, which is almost identical to the PGM-ICP27 procedure but has lower detection limits (refer to Table 1-1). Silver content is determined by aqua regia dissolution with atomic absorption (AA) finish on a 2 g sample. Arsenic and Pb at the trace levels had been reported from the aqua regia dissolution followed by AA finish (AA45 method), however in October, 2012 this method was replaced by the ME-ICP41 analytical package (aqua regia dissolution of 0.5 g sample pulp followed with ICP-AES finish).

Any sample assays exceeding the upper limits of quantification of the primary analytical packages are re-assayed by selected methods with higher upper limits.

Exploration samples requiring quantification of trace levels of Cu and Ni are analyzed using the ME-ICP61 method. This procedure involves the 'nera near total' acid digestion of 0.2 g sample pulp with a combination of perchloric ($HClO_4$), nitric (HNO_3), hydrofluoric (HF) and hydrochloric (HCl) acids and assaying of 33 elements by ICP-AES. The detection limit of the ME-ICP61 for Cu and Ni is 1 ppm. The same samples are also analyzed for the PGEs and Au using the PGM-ICP23 method.

A complete list of elements of interest, their detection limits and and pertinent analytical methods used by ALS is illustrated in Table 1-1.

Table 1-1: Element, analytical method, and detection limits at ALS Minerals

Element	Symbol	Method	DL	Upper Limit	Units
Arsenic	As	ME-ICP81	0.01	10.0	%

Cobalt	Co	ME-ICP81	0.002	30.0	%
Copper	Cu	ME-ICP81	0.005	30.0	%
Iron	Fe	ME-ICP81	0.05	70.0	%
Nickel	Ni	ME-ICP81	0.005	30.0	%
Lead	Pb	ME-ICP81	0.01	30.0	%
Sulfur	S	ME-ICP81	0.01	60.0	%
Zinc	Zn	ME-ICP81	0.01	30.0	%
Gold	Au	PGM-ICP23/ICP27	0.0009 / 0.00003	2.92 / 0.292	opt
Platinum	Pt	PGM-ICP23/ICP27	0.0009 / 0.0001	2.92 / 0.292	opt
Palladium	Pd	PGM-ICP23/ICP27	0.0009 / 0.00003	2.92 / 0.292	opt
Arsenic	As	ME-ICP41	2	10,000	ppm
Lead	Pb	ME-ICP41	2	10,000	ppm

SGS Lakefield uses pyrosulfite fusion XRF for base metals (Cu, Ni, Fe, Co, Pb and Zn), S is analyzed by LECO and PMs are are determined by a lead collection fire assay/ICP technique. The list of analytes, their detection limits and analytical methods used by SGS Lakefield is presented in Table 1-2.

Table 1-2: Element, analytical method and detection limits at SGS Lakefield

Element	Symbol	Method	DL	Upper Limit	Unit
Copper	Cu	WD - XRF	0.01	100.0	%
Nickel	Ni	WD - XRF	0.01	100.0	%
Cobalt	Co	WD - XRF	0.01	100.0	%
Iron	Fe	WD - XRF	0.01	100.0	%
Lead	Pb	WD - XRF	0.01	100.0	%
Zinc	Zn	WD - XRF	0.01	100.0	%
Sulfur	S	Combustion - IR	0.01	100.0	%
Gold	Au	ICP-AES	0.0006	5.8	opt
Platinum	Pt	ICP-AES	0.0006	5.8	opt
Palladium	Pd	ICP-AES	0.0006	5.8	opt

Historical information

The reliability of assay results has improved as analytical techniques have evolved. A summary of the analytical techniques used to analyse Ontario Operations samples for various elements and specific gravity (SG) is given in Table 1-3.

Table 1-3: Historical Analytical Techniques

Item	Technique
S	• At present, individual samples are analyzed for S. • Prior to 1972, only composite samples were analyzed for S.
Pt, Pd & Au	• Currently, individual samples are analyzed for Pt, Pd & Au by fire assay/ICP • From 1983 – late 1990s, individual samples were assayed using fire assay/DCP (Direct Coupled Plasma). • Prior to 1972, composite samples were assayed for Pd and the total precious metals, using an arc-spark emission spectrography.
Rh & Ag	• Currently, individual samples from high PM areas only are assayed for Rh and Ag, at the discretion of the Chief Mine Geologist.
As	• Currently, all samples are routinely assayed for As with a detection limit of 0.01% (since 1999). • Currently, all samples are assayed for trace As with a detection limit of 2 ppm.

	• From 2001 – 2012, all samples were assayed for trace As with a detection limit of 5 ppm. • From 1991 – 2001, all samples were assayed for trace As with a detection limit of 10 ppm. • Prior to 1991, As was not assayed.
Pb & Zn	• Currently, all samples are routinely assayed for Pb and Zn with a detection limit of 0.01% (since 1999). • From 2005 – 2012, all samples were assayed for trace Pb with a detection limit of 1 ppm. • Currently, all samples are assayed for trace Pb with a detection limit of 2 ppm.
SG	• SG is currently estimated based on the calculated content of chalcopyrite, pentlandite and pyrrhotite from assays, which can be approximated using the following formula ("Alcock regression formula"): • SG = 100 / (100 / 2.88 + 0.0166 * Cu - 0.1077 * Ni - 0.328 * S) • Prior to the 1970s, SG was estimated using Cu and Ni content only: • SG = 2.80 + 0.02*Cu + 0.20*Ni • Measured SG (bulk density determinations by water displacement method) began for specific projects in 2008 and is used to verify the calculated density ("Alcock regression formula").
Co	• Currently, individual samples are analyzed for Co. • Prior to 1968, samples were assayed for combined Co+Ni and Co determined from a property-wide Co/Ni ratio.

The most significant change to the assaying procedure has been analysing individual samples for the entire suite of elements. Prior to 1970, the cost of analysis, particularly for PGE-Au and S, was prohibitivly high and the content of elements other than Ni and Cu was estimated either from composite samples or factors. Sample composites were generally made up from pulps of 4 to 5 sequential samples that were not necessarily characterized by the same type or degree of mineralization. The S and PGE-Au assay for the composite was then assigned to the individual samples making up the composite. This practice tended to smooth values and prevented the full understanding of the distribution of PGE-Au minerals, particularly in a narrow seam environment.

The pre-1972 values for PGE-Au, S, and Co are not used in mineral resource modelling. The impact of this historic data, with different sampling and analytical techniques is investigated, primarily with regression analyses and when required a regression formula is applied.

Historic drill core samples are divided six periods based on the type of samples collected and type of analyses (Table 1-4)

Table 1-4: Type of Samples and Analyses by Period

Period	Dates	Comments
1	Pre – 1968	❑ Values of S (and therefore SG) based on composite

		samples. During 2007-2008 all SG were re-calculated using Cu, Ni (and available S) to ensure consistency. ❑ Values of PGE + Au taken infrequently and based on composite samples ❑ Values of Co based on assay of combined Ni + Co and regression from Ni
2	1968 – 1972	❑ All samples assayed for Cu, Ni and Co ❑ PGE + Au and S (SG) as in Period 1 (Pre – 1968)
3	1972 – 1974	❑ All samples assayed for Cu, Ni, Co, S and Fe ❑ PGE + Au as in Period 1 (Pre – 1968)
4	1974 – 1984	❑ All samples assayed for Cu, Ni, Co, S and Fe ❑ Values of PGE + Au taken infrequently, but from individual samples. Values determined using arc-spark emission spectrography
5	1984 – 1993	❑ All samples assayed for Cu, Ni, Co, S and Fe ❑ Values of PGE + Au taken infrequently, but from individual samples. Values determined using DCP
6	1993 – 1999	❑ All samples assayed for Cu, Ni, Co, S and Fe ❑ Values of PGE + Au + Ag** taken infrequently, but from individual samples. Values determined using DCP
7	Post – 1999	❑ All samples assayed for Cu, Ni, Co, S, Fe, PGE and Au

** Ag added to table based on communication with Scott Jeffries, 2017.

Assay QA/QC

The assay QA/QC at Ontario Operations is described in "Assay QA/QC Protocols and Processes (Ontario Division Mines Geology)" manual and excerpts of the procedures are described below.

The QA/QC protocol at Ontario Operations includes the following control samples:

- In-house and certified standard reference materials inserted at the 2% insertion frequency.
- Coarse preparation blanks inserted at the 1% frequency.
- Reject checks (crusher duplicates) on 3% of randomly selected coarse rejects stored at the prep lab.
- External assay checks by the secondary lab on 2% of randomly selected original pulps analyzed previosly by ALS Minerals.

Ontario Division's QA/QC protocol is compliant with the Corporate Guidelines and Standards for MRMR reporting in terms of the components, sample types and frequency of QC samples. The exception is split core duplicates, which are not inserted into the routine sample stream as mines exploration depatments submit the whole core for analysis.

The purpose of inserting the standard reference materials is to a) quantify bias as a measure of accuracy and b) monitor a lab drift over time. MMTS of Ontario Operations is currently predominantly using two internal standards (ODFD and ODFD-2) and three certified reference materials (PTC-1a, SU-1b, OREAS 74b and OREAS 77b).

The preparation blank is barren coarse (preferably quartzose) material submitted with samples for crushing and pulverizing to monitor contamination (carry over) and errors in the sample sequencing during sample prep and analysis (sample swap). MMTS of Ontario Operations is using quartzite, sourced from Vale's Lawson Quarry, which was crushed to 1/2" and screened to ¼" and bagged in 1 kg aloquoits.

The coarse reject checks (crusher duplicates) provide a measure of sub-sampling variance introduced during the preparation process. At Ontario Operations, the list of randomly selected rejects is automatically generated by the LIMS STS with a set of criteria on semi-monthly basis, on the 8^{th} and 22^{nd} of each month. A request is automatically sent to ALS Minerals prep lab to retrieve the rejects, create new pulps, and submit the pulps to the Vancouver analytical lab for analysis.

The purpose of the external assay checks is to provide a measure of the accuracy of the initial determination performed by the primary lab. Similar to the coarse reject checks, the LIMS STS generates an assay check list and ALS Minerals prep lab is automatically notified to pull the master pulps from the storage. The sample pulps are forwarded to MMTS where standard reference materials are inserted (at the 5% frequency) and the samples are submitted to the SGS Lakefield analytical lab for assay.

The performance indicators for reject and external checks are stipulated by the contract agreement between Vale and ALS. Until December 31, 2012, the following control limits were used:

1. Reject checks (new pulp from reject duplicate): (Δ / Average) x 100 ≤ Precision x √2

Where: Δ = abs [Original Value – Duplicate value]; Precision = Reject Duplicate Precision (as %, which will depend on the type of element, its concentration and analytical method); Average = (Original value + Duplicate value)/2.

2. External checks (original pulp duplicate): Δ ≤ (Precision x Average) + (2 x LOD)

Where: Δ = abs [Original Value – Duplicate value], Precision = Pulp Duplicate Precision (as decimal, which will depend on the type of element, its concentration and analytical method); Average = (Original value + Duplicate value)/2; LOD = limit of detection.

In the current contract (effective as of February, 2013), the performance indicators are simplified as follows:

1. Reject checks (new pulp from reject duplicate): 20% relative for sample pairs averaging over 50X DL for ME-ICP81 and As,Pb-ICP41 and 25% relative for Pd.

2. External assay checks (original pulp duplicate): 7.5% relative for sample pairs averaging over 20X DL for ME-ICP81, 15% relative for Pd and 10% relative for As,Pb-ICP41.
Should samples selected for the check analysis exceed the stipulated limits, ALS is informed and lab initiates re-analysis of the sample and a minimum of four adjacent samples (two above and two below the affected samples within the analytical sequence) using the same methods as the original analysis. Upon receiving the lab investigation and results of re-assaying, three sample assays (the original, check assay and re-assay) are evaluated and a decision is made which analytical result will be final in the Certificate of Analysis. The check results are typically compiled on a quarterly basis and the results are reported annually.

The ALS internal quality control includes certified reference materials (standards), analytical duplicates and blanks, and these QC samples are inserted by the lab at prescribed frequencies (depending on the analytical method) into each analytical batch. Monitoring of ALS internal control sample results augmented the QA/QC protocol used at Ontario Operations until December 31, 2013 as the results of the standards and duplicates from the common analytical packages used to be compiled on a monthly basis and reported annually. Considering that the robust QA/QC protocol at Ontario Operations has been operational for the last 7 years and has proven capable of revealing issues within with the analytical service provider, the significance of evaluating lab's internal QC samples has decreased considerably and a decision was made to discontinue the process of active monitoring the internal QC samples. At present ALS is responsible for providing a summary report of its internal QC's to Vale annually.

Vale carries out an annual audit of the ALS sample preparation facility in Sudbury and periodic reviews of the ALS analytical facility in Vancouver.

Assay Validation

The drill hole database used for mineral resource estimation at Ontario Operations is called the Mines Exploration Borehole System (MEBS) and contains data describing over 82,500 Sudbury area drill holes. Prior to 2002, MEBS was mainframe-based. In 2001, the database was migrated to a modern relational-database running on a central server to facilitate the electronic transfer of data through the Vale secure network system.

Several steps are employed to validate data and ensure the integrity of the MEBS database. Most of these checks are performed by software data checking routines that rigorously verify data acceptance by MEBS. For instance, the drill hole logging program forces compliance with the use of certain assay method codes and checks from-to intervals and other common sources of error before accepting entry information in the drill log, including cross-references and database checks for previously used sample numbers. For example, duplicate intervals and samples in the database are prevented at entry. Sample intervals with samples recorded in the LIMS database cannot be changed. Sample, rock and ore types must correspond to a selection list. All value entries have QC checks, relational cross-checks and warnings.

Assays are received as digital certificates from the laboratories and securely stored. The results are parsed into the LIMS database, transferred to MEBS and merged in the drill logs. This transfer is done electronically from the lab's LIMS system to Ontario Operations' LIMS database. The transfer of the assay data from LIMS to MEBS is done overnight by the automatic data file transfer system (DTS). The transfers are reported daily and any errors or unexpected formats of the certificate prevent all the data within that certificate from populating MEBS are followed-up and corrected. Any errenous certificate is investigated and a request for re-issuance is made to the lab.

All new assays data being added to the database are monitored daily and validated monthly for accuracy and consistency by comparing the data trasferred to MEBS to the assay certificates received from ALS. The objective of the monthly database integrity check is to ensure that the final assay values and related information are correctly transferred to MEBS including i) proper reporting of under and over assay limits for each element, ii) honoring of assay method priorities, and iii) proper transfer of data corrections (after checks and re-assays). This monthly database integrity check enables timely resolution of inconsistencies between the database entries and lab certificates.

Along with the monthly database integrity check, MMTS of Ontario Operations performs assay data validation through three principal quality indicators: 1) weight checks, 2) assay checks and 3) sulphide checks. The objective of the monthly assay data validation is to ensure that i) any major weight discrepancies are addressed, ii) major grade estimation errors are followed up with the lab and re-assays are requested, and iii) potential logging and sampling issues are communicated to the geologists and remedial actions taken.

Prior to use in mineral resource estimation, the data is downloaded from MEBS into a project file and reviewed for improbable entries and high values. Any errors are flagged and corrected.