lundin mining

# NI 43-101 Technical Report on the Caserones Mining Operation Caserones Project

## Atacama Region, Chile

Effective Date: 31 Dec 2022

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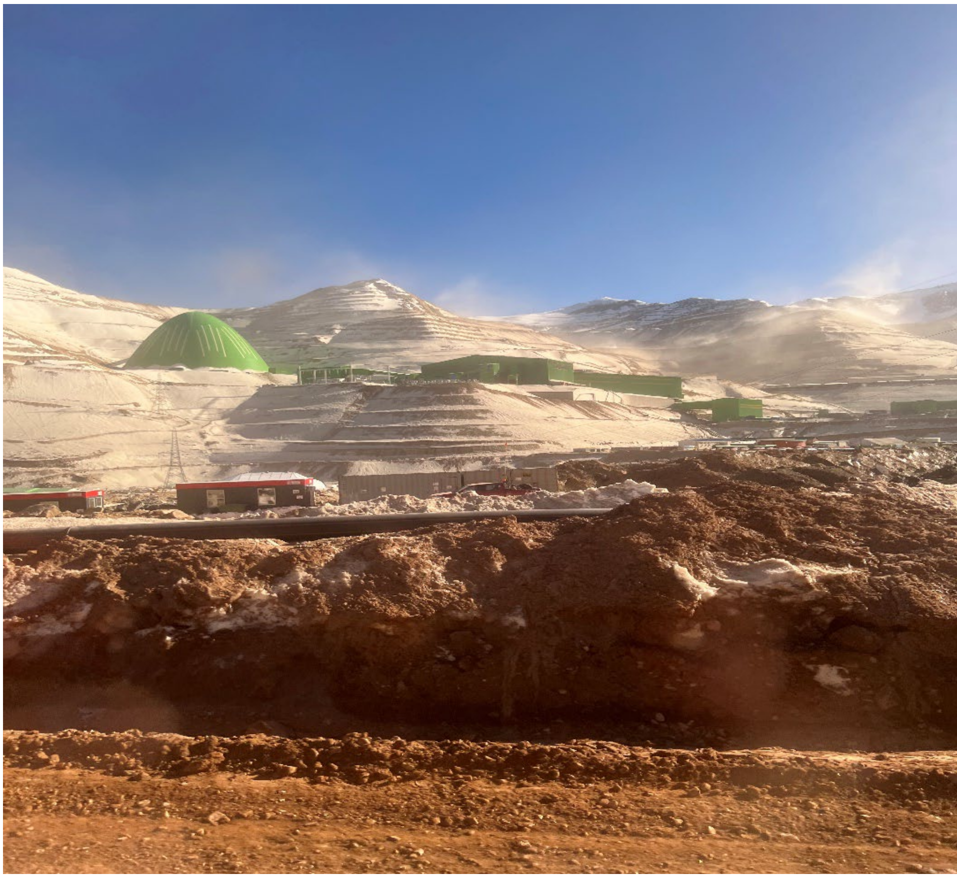


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# IMPORTANT NOTICE

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## Forward Looking Statements

This Technical Report, including the economics analysis, contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and forward-looking information within the meaning of applicable Canadian securities laws. Forward-looking information and forward-looking statements include, but are not limited to, statements with respect to the future prices of copper, the estimation of mineral resources and reserves, the realisation of mineral estimates, the timing and amount of estimated future production, costs of production, capital expenditures, costs (including capital costs, operating costs and other costs) and timing of the LOM, rates of production, annual revenues, requirements for additional capital, government regulation of mining operations, environmental risks, unanticipated reclamation expenses, title disputes or claims and limitations on insurance coverage.

Often, but not always, forward-looking statements can be identified by the use of words such as “plans”, “expects”, or “does not expect”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates”, or “does not anticipate”, or “believes”, or variations of such words and phrases or state that certain actions, events or results “may”, “could”, “would”, “might” or “will” be taken, occur or be achieved.

Forward-looking statements are based on the opinions, estimates and assumptions of contributors to this Technical Report. Certain key assumptions are discussed in more detail. Forward looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance, or achievements of LMC to be materially different from any other future results, performance or achievements expressed or implied by the forward-looking statements.

While these forward-looking statements are based on expectations about future events as at the effective date of this Report, the statements are not a guarantee of LMC’s future performance and are subject to risks, uncertainties, assumptions, and other factors, which could cause actual results to differ materially from future results expressed or implied by such forward-looking statements. Such risks, uncertainties, factors, and assumptions include, amongst others but not limited to metal prices, mineral resources, mineral reserves, capital and operating cost forecasts, economic analyses, smelter terms, labour rates, consumable costs, equipment pricing, accidents, labour disputes and other risks of the mining industry delays in obtaining governmental approvals or financing or in the completion of development or construction activities; shortages of labour and materials, the impact on the supply chain and other complications associated with pandemics, including the COVID-19 (coronavirus) pandemic. There may be other factors than those identified that could cause actual actions, events, or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events, or results not to be anticipated, estimated, or intended. There can be no assurance that any forward-looking statements contained in this Report will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers are cautioned not to place undue reliance on forward-looking statements. Unless required by securities laws, the authors undertake no obligation to update the forward-looking statements if circumstances or opinions should change.

# 1 SUMMARY

## 1.1 Introduction

Lundin Mining Corp (LMC) is a Canadian mining company, based in Toronto, Canada, and is publicly listed on the Toronto Stock Venture Exchange (LUN.TSX) and the Nasdaq Stockholm (LUMI). LMC is a base metal and precious metal mining company with operations or projects in Argentina, Brazil, Chile, Portugal, Sweden, and the United States of America (USA). LMC, through a wholly-owned subsidiary, holds a 51% majority interest Minera Lumina Copper Chile (MLCC) – which is the owner of the Caserones Mining Project (the Project). JX Nippon Mining & Metals Corporation (JX Nippon), together with certain of its affiliates, holds the remaining 49% interest.

The Project is an active open pit operation that has been producing copper continuously for over 9 years. Planned production is estimated at approximately 21,100 tonnes of copper cathode per year: approximately 98,100 tonnes of payable copper in concentrate per year, and approximately 2,300 tonnes of payable molybdenum in concentrate per year (est. 2023–2027).

## 1.2 Terms of Reference

This Report was prepared to support first-time Mineral Resource and Mineral Reserve disclosure by LMC on the Project and supports the disclosures in the press release titled "Lundin Mining Announces Closing of the Acquisition Majority Interest in the Caserones Copper-Molybdenum Mine in Chile" and dated 13 July 2023.

Mr. Paul Daigle, P. Geo., Mr. Oscar Retto, MAIG, Mr. Pierre Lacombe, P.Eng., Mr. Kirk Hanson, P.E., and Mr. Andre Gagnon, P.Eng. are the Qualified Persons (QPs) for this technical report (the Report) on the Caserones Mining Operation (Caserones, Caserones Mine or the Project) in Chile.

All units of measurement used in this Report are in metric units, unless otherwise stated. All grid references are based on the PSAD56 Datum (PSAD56) UTM coordinate system. All currency units are in United States dollars (US$) unless otherwise stated. The Chilean currency is the Chilean peso (CLP).

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019; 2019 CIM Best Practice Guidelines).

## 1.3 Project Setting

The Project is located 125 km by road, southeast of Copiapó. The drive time from Copiapó is typically 2.5 to 3 hours, along paved roads.

The region is characterized by cool dry summers and dry cold winters. Mining operations are year-round. There can be short-term interruptions in June–July if there are major snowfall events. Due to extreme temperatures and snowfall conditions between May to August, exploration activities are limited to September to April.

The Atacama Region is known for its mining industry and is a well-established mining region in Chile. Mining services, supplies and fuel can be obtained in Copiapó. The closest large settlement is at Los Loros, 60 km northwest of the mine site.

There is sufficient surface area for the open pit, waste rock storage facilities, plant, tailings storage facilities (TSFs), associated infrastructure and other operational requirements for the life-of-mine (LOM) plan discussed in this Report.

## 1.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The total mineral tenure consists of 284 mining concessions, covering a total area of 58,533 ha, all of which are located in the commune of Tierra Amarilla, Copiapó Province, Atacama Region.

There are 251 exploitation concessions, covering approximately 54,578 ha. The remaining 33 concessions are exploration concessions, covering an area of 3,955 ha.

All of the key Caserones infrastructure areas including the open pit, tailings storage facilities, and leach pads, are within the exploitation concession area. All required payments and reporting to maintain the concessions as current had been completed at the Report effective date.

The Project property rights cover an area of approximately 38,224 ha, and there are more than 72 easements. MLCC holds sufficient surface rights to support mining and processing operations; however, portions of the power transmission line and the desalination water pipelines are not currently covered by easements and this omission should be rectified. Annual taxes are payable on the surface rights, and all payments were current as at the Report effective date.

A sliding-scale net smelter return (NSR) royalty which ranges from 1% to 2.88%, depending on the prevailing London Metal Exchange copper price at the time of payment, is payable on production from certain of the exploitation concessions. At the forecast copper prices used for the Mineral Reserve estimate, the royalty would be 2.88%.

The Project is not subject to any other back-in rights payments, agreements, or encumbrances.

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project that have not been discussed in this Report.

## 1.5 Geological Setting & Mineralization

The Caserones deposit is considered to be an example of an Andean copper–molybdenum porphyry deposit.

The basement assemblage in the Project area is a Carboniferous assemblage of metavolcanic and metasedimentary rocks. This assemblage has been intruded by the Caserones Granite in the Upper Carboniferous and the El Colorado Granite in the Permo–Triassic. Overlying these units are Mesozoic volcanic assemblages and sedimentary rocks of the La Ternada, Quebrada Seca, and Monardes Formations. The Cenozoic is characterized by three volcanic assemblages, the Pircas Coloradas, Come Caballo, and Pulido Formations. During the Tertiary, several small stock-sized, porphyry intrusive bodies were emplaced.

The regional structure is characterized by a series of rigid blocks of granitic basement that occupy anticlinal cores that formed as a result of regional scale folding of the Mesozoic supracrustal sequences.

Alteration associated with the mineralization includes an older potassic zone, overprinted by phyllic alteration. An intense, texturally destructive silicification characterized by massive silica replacement in places, affects the central part of the deposit and may coincide locally with higher grade supergene copper mineralization.

The Caserones deposit is hosted in a monzogranite within the Caserones Granite. It is about 2,000 m long and has a width of approximately 1,500 m. The oxide and secondary copper zones form a surface-parallel blanket over 1,200 m in diameter with a central "core" of at least 1,000 m in diameter where thicknesses average 300 m and exceed 400 m in the central part. The oxide zone forms a cap that sits on top of the secondary copper zone in the northwest margin of the deposit area. Flanking the oxide zone and overlying the supergene zone, is a zone of "leached" material. Primary copper mineralization remains open in all directions.

Copper mineralization consists of chalcanthite with subordinate chrysocolla, brochantite and minor amounts of malachite, azurite and antlerite in the oxide zone. Oxide minerals are predominantly fracture filling but can also occur as replacements of disseminated primary sulphides. In the supergene-enriched zone, the primary copper minerals are chalcocite and lesser covellite, forming disseminations or hairline veinlets. The leached zone contains only patchy, discontinuous copper mineralization. Primary sulphide mineralization generally comprises 2–5% sulphides, primarily pyrite, with lesser chalcopyrite, molybdenite, and bornite and rare sphalerite.

Molybdenite is present in all of the zones and generally occurs with quartz in veinlets and rarely as disseminated grains.

## 1.6 History

Work completed by MLCC and predecessor companies including SMC California Uña de la Sierra Peña Negra & Compañia Minera Caserones, BTX Exploration Ltda., Compañia Minera Newmont Chile, Inversiones Mineras del Inca SA, Niugini Mining, BHP Chile Inc., South American Gold and Copper Company, Lumina Copper Canada, and Lumina Copper Chile S.A. consisted of geological mapping, geochemical sampling, reverse circulation (RC) and diamond core drilling, mineral resource and mineral reserve estimation, metallurgical testwork, environmental studies and mining studies. Open pit mining commenced in 2013.

The QP has completed data verification in support of Mineral Resource and Mineral Reserve estimates and reviewed the capital and operating cost assumptions in support of Mineral Reserves.

## 1.7 Drilling

Drilling from 2004 to 2022 comprises a total of 1,127 drill holes (196,002 m), consisting of 815 RC holes (94,883 m) and 312 diamond core holes (101,119 m). Drilling from 2004 to 2017 supports the Mineral Resource estimate. Drilling after 2017 is not included in estimation. Drilling and drill information prior to 2004 were excluded from estimation due to a lack of collar and downhole surveys, as well as the lack of quality assurance and quality control (QA/QC) procedures.

Lithology, alteration, mineralogy, and mineral zone were routinely logged using abbreviations and very brief descriptions in 2004–2006. Geotechnical parameters logged included core recovery, rock hardness, rock quality designation (RQD), fracture frequency, fracture fill, and rock mass rating (RMR).

From 2007 to the Report effective date, drill logs have consisted of descriptions of the lithology, alteration, mineralization, and structure. Geotechnical logging captured in the geological database consists of core recovery, rock hardness, RQD, fracture frequency, fracture fill and RMR. All core was photographed.

Drilling is generally perpendicular to the mineralization, and drilled thicknesses approximate true thicknesses.

A total of 91 diamond drill holes totalling 20,718 m have been drilled to within the Caserones deposit after the database close out date for estimation. All drill holes are within the resource model area. All drill holes have lithological and assay data available. The information was compared to the existing block model. The QP is of the opinion that although the newer drilling within the resource model will change the grades locally, overall, the new drilling should have a minimal effect on the average grade of the model.

In the opinion of the QP, the quantity and quality of the logged geological data, and the collar, and downhole survey data collected in the exploration and infill drill programs completed, are sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning.

## 1.8 Sampling

RC samples were collected on 2 m intervals at the drill using a cyclone. In a few areas where water was a problem, a rotary wet splitter was used. Core samples were marked on 2 m intervals and the core was cut in half using a diamond saw.

Activation Laboratories Ltd. (Actlabs) in La Serena, Chile was used for RC and core sample preparation and analysis from 2000–2006. At the time, the laboratory held ISO/IEC 17025 accreditations. SGS Minerals, Copiapó, was used for RC and core sample preparation and analysis from 2007–2017. The laboratory holds ISO 14001 and NCh-ISO17065:2013 accreditations. Both laboratories are independent of LMC and MLCC. Currently, grade control samples are assayed at Bureau Veritas in Copiapó that holds ISO/IEC 27001:2013 accreditations.

Depending on the laboratory, samples were crushed to 95% passing 10 mesh and pulverized to 95% passing 150 mesh (RC) or passing 10 mesh (core). Analytical methods consisted of acid digestion followed by atomic absorption (AA) readings for total copper (CuT), acid-soluble copper (CuAS), cyanide-soluble copper (CuCNS), and molybdenum.

Density determinations were conducted in 2004–2008 using the wet/dry method. There are 977 measurements from 87 drill holes in the Project database.

QA/QC procedures used from 2004 onwards include submission of blank, duplicate, and certified reference materials (CRMs) in the sample stream. A review of the results indicates no material issues arising from the QA/QC programs.

Drill core is stored at a secure site on core racks at the Carizalillo base camp, 5 km from Juntas del Potro, which is fenced and guarded.

In the opinion of the QP, sample preparation, security, analytical procedures, QA/QC insertion rates, data validation steps, and core and sample storage are in line with accepted industry practices. The data are acceptable to support Mineral Resource and Mineral Reserve estimates and can be used in mine planning.

## 1.9 Data Verification

The QPs verified the data in their areas of expertise. Data verification included site visits. The QPs are of the opinion that the data are considered acceptable to support Mineral Resource and Mineral Reserve estimates and can be used for mine planning purposes.

## 1.10 Mineral Processing and Metallurgical Testing

The Caserones SX-EW plant started producing cathodes early in 2013 while the mineral processing facility has been producing copper and molybdenum concentrates since 2014. Ore feed grade has historically been 0.37% Cu to the flotation plant (concentrator) and 0.24% Cu to the dump leach. Primary and secondary sulphide ores are generally fed to the flotation plant and oxides are mixed with some secondary sulphides, are directed to the dump leach area. LOM projection of copper feed grade is expected to be 0.13-0.25% Cu (dump leach) and 0.31% - 0.44% Cu (flotation).

Average monthly copper concentrate grade from the flotation circuit has been 33.4% ± 3% Cu over the 2020–2022 period. The LOM projection for copper concentrate grade is expected to be 28-32% Cu and reflects the gradual increase in the amount of primary mineralization (carrying mostly chalcopyrite as the copper-bearing mineral) as plant feed.

Historical overall copper recovery for the flotation circuit has been in the range of 80–85% and approximately 54% for the dump leach. Average overall plant copper recoveries in 2021 and 2022 were 83% and 88% respectively. The projected LOM copper recovery for the flotation plant and dump leach has been fixed at 82.7% and 53.7% respectively.

Projected molybdenum production is based on a 110–-170 ppm Mo head grade, a fixed 50% Mo concentrate grade and fixed 60% recovery. Actual molybdenum recovery over the 2020-2022 period was 50.5% with a concentrate grade of 51.5% Mo; the lower molybdenum recovery was due to not fully operating the molybdenum circuit due to personnel constraints and is thus not a reflection of the plant capabilities. For 2022, average monthly recovery was 55.2% at a 52.6% Mo concentrate grade.

Samples selected for metallurgical testing were representative of the various types and styles of mineralization within the different zones and originated from a range of locations within the deposit zones. Samples were taken so that tests were performed on sufficient sample mass.

There are certain areas of the orebody that were identified as containing increased levels of antimony, arsenic, and mercury, which can lead to higher contents in the copper concentrate.

## 1.11 Mineral Resource Estimates

### 1.11.1 Estimation

Mineralization, lithology, and alteration models were constructed using bench/plans spaced at 15 m intervals. A review of the available data resulted in definition of 14 domains.

Density was estimated by mineralized zone using inverse distance squared interpolation (ID2), in a single pass. Lithology types were considered to be hard boundaries for the estimation. Lithologies with insufficient data to interpolate were assigned fixed density values.

Grade capping and outlier restriction of the CuT, CuAS and CuCNS assays was completed using a two-step process. The first step evaluated samples that were outside three standard deviations from the mean. After compositing, a second threshold is applied to the upper 1% of the samples.

Sample populations were composited to the bench height of 15 m from the top of the collar. Any samples of <7.5 m was discarded.

Experimental absolute variograms were calculated and fitted for the three copper variables CuT, CuAS, and CuCNS. The nugget effect was derived from a down the hole variogram.

Mineral Resources were classified using a combination of drill hole spacing and kriging variance. Mineral Resources are reported within an optimized constraining shell.

### 1.11.2 Mineral Resource Statement

The Mineral Resource estimate has an effective date of 31 December 2022. The Qualified Person is Paul Daigle, P.Geo. The insitu estimate is presented in Table 1-1

**Table 1-1: Mineral Resource Statement**

| Mineral Resource Statement | | | | | |
|---|---|---|---|---|---|
| Categorized | Tonnes (Mt) | Grade | | Contained Metal | |
| | | CuT (%) | Mo (%) | CuT (kt) | Mo (kt) |
| Measured | 173 | 0.36 | 0.012 | 617 | 21 |
| Indicated | 850 | 0.30 | 0.010 | 2,532 | 84 |
| Measured & Indicated | 1,023 | 0.31 | 0.010 | 3,150 | 105 |
| Inferred | 121 | 0.26 | 0.012 | 317 | 14 |

Notes:

1. Mineral Resources have an effective date of 31 December 2022
2. Mineral Resources are presented on a 100% basis.
3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
4. The Qualified Person for the mineral resource estimate is Mr. Paul Daigle, P.Geo
5. The Mineral Resources were estimated using the CIM Definition Standards for Mineral Resources and Reserves, as prepared by the CIM Standing Committee and adopted by CIM Council
6. Mineral Resources are inclusive of Mineral Reserves
7. All figures are rounded to reflect the relative accuracy of the estimate
8. Totals may not sum due to rounding as required by reporting guidelines
9. Open pit Mineral Resources are reported within optimized constraining shell
10. Open pit cut-off grade is 0.13% CuT

Factors that may affect the estimates include metal price and exchange rate assumptions; changes to the assumptions used to generate the copper grade cut-off grade; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and mineralization shape and geological and grade continuity assumptions; variations in density and domain assignments; geometallurgical and oxidation assumptions; changes to geotechnical, mining and metallurgical recovery assumptions; change to the input and design parameter assumptions that pertain to the conceptual pit constraining the estimate; and assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate.

## 1.12 Mineral Reserve Estimates

### 1.12.1 Estimation

Mineral Reserves have been estimated for Caserones assuming open pit methods with conventional methods for drilling, blasting, loading and haulage by large trucks.

The basis for the Mineral Reserve estimate is the ore grade material contained within a set of operational phase designs currently being used at the site to guide mining operations. The phase designs include phases 5 through 10. Phases 5 and 6 are the active phases. Phases 1–4 are mined out.

The long-term guidance copper price of $3.65/lb and the long-term guidance molybdenum price of $11.45/lb were provided by LMC's commercial team. A 2.88% NSR royalty applies to all metal production from Caserones. Mineral Reserves include consideration of mining, processing, general and administrative, and smelting, refining and transport costs.

Caserones is a large, disseminated orebody with an ongoing reconciliation program. Dilution and ore loss are accounted for in the resource model blocks, and no additional ore loss or dilution is applied.

### 1.12.2 Mineral Reserve Statement

Mineral Reserves are reported on a 100% basis in Table 1-2 using the 2014 CIM Definition Standards and have an effective date of 31 December 2022. LMC, through a wholly-owned subsidiary holds a 51% interest in MLCC – which is the owner of the Project. JX, together with certain of its affiliates, holds the remaining 49% interest.

Mineral Reserves are reported based on calculated block values with blocks routed to the process that generates the greatest revenue. In the case where material does not generate positive revenue in either of the processes (dump leach or concentrator), it is routed as waste.

The QP responsible for the Mineral Reserves estimate is Mr. Kirk Hanson, P.E., Principal Mining Engineer with AGP.

**Table 1-2: Mineral Reserve Statement, effective 31 December 2022**

| Category | Tonnes (Mt) | Grade | | Contained Metal | |
|---|---|---|---|---|---|
| | | CuT (%) | MO (%) | CuT (kt) | Mo (kt) |
| Proven | 144 | 0.36 | 0.016 | 518 | 13 |
| Probable | 706 | 0.29 | 0.013 | 2,036 | 63 |
| **Total Reserves** | **850** | **0.30** | **0.014** | **2,554** | **76** |

Notes to Accompany Mineral Reserves Table:

1. The Mineral Reserves have an effective date of 31 December 2022 and are reported at the point of delivery to the process plant. The Qualified Person responsible for the estimate is Mr. Kirk Hanson, P.E., Principal Mining Engineer with AGP.
2. Mineral Reserves are reported within a design pit based on an optimized Lerchs–Grossmann pit shell. Input parameters include the following: long term copper price of US$3.65/lb and long term molybdenum price of US$11.45/lb; a 2.88% net smelter return (NSR) royalty rate; average life-of-mine (LOM) mining cost of US$2.32/t mined, average LOM copper concentrate processing cost of US$8.20/t processed, average LOM general and administrative (G&A) costs of US$3.83/t processed and average desalinated water cost of $0.75/t processed; average LOM molybdenum concentrate processing cost of US$24.93/t of concentrate; average LOM dump leach cost of $1.47/t placed; bench face angles that range from 60–70º; fixed metallurgical recoveries of 82.7%, 53.7%, and 60% for copper concentrate, copper dump leach, and molybdenum concentrate respectively. Cut-off grades are based on block values with positive value blocks classified as ore. Dilution and ore loss are accounted for in the resource model blocks, and no additional ore loss or dilution is applied.
3. Mineral Reserves are presented on a 100% basis. MLCC owns the Project. LMC beneficially holds a 51% interest in MLCC and JX beneficially holds the remaining 49% interest in MLCC.
4. Tonnages are metric tonnes rounded to the nearest 100,000. Copper grade is rounded to the nearest 0.01 % Copper. CuT (Kt) are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained copper is reported as kilo tonnes, rounded to the nearest 1,000.
5. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

## 1.13 Mining Methods

The Project is a large low-grade copper-–molybdenum mine with a low ore to waste strip ratio. It is an operating mine with mature mining practices. Mining is conducted via open pit methods, using a conventional truck and shovel fleet. The fleet is managed via a mine dispatch system. All equipment is manned.

There are five mine phases in the LOM plan, phases 5–10. Phases 1–4 are mined out. The phase designs are based on the optimized pit shells with the highest value material mined in the earlier phases and lower-grade higher strip ratio material mined in later phases. Each phase was designed with double ramp access where possible.

A maximum vertical extraction of 10 benches or a maximum movement of 60 Mt ton per year is considered as a restriction for each phase. The concentrator is scheduled at 27.9 Mt in 2023, ramping up to 33.4 Mt by 2027. Oxide material is placed on the dump leach in the period in which that material is mined.

Operators work a 7-days-on, 7-days-off schedule while staff/supervisors work a 4-days-on, 3-days-off schedule. Due to the commute from the camp to the mine, days are 14.5 hours including a 12-hour shift, half hour lineout, and 2 hours of commuting from the camp to the mine. Shifts are scheduled from 8 a.m. to 8 p.m.

Caserones operates 33 Komatsu 930 (300 t) haul trucks loaded by a combination of two electric rope shovels, one electric-hydraulic shovel, and two large front-end loaders. In addition to the mine-owned fleet, a second smaller diesel shovel (PC5500 – 38yd$^3$) is operated by a contractor to supplement loading capacity.

## 1.14 Recovery Methods

The Caserones mineral processing facility uses a conventional process flowsheet and conventional equipment. The facility currently treats copper oxides and sulphides via two treatment routes. Run-of-mine (ROM) oxide ore is treated via a conventional dump heap leach. Pregnant leach solution (PLS) from the dump leach is treated at a solvent extraction-electrowinning (SX-EW) plant to produce copper cathodes. ROM sulphide ore is treated via a conventional primary gyratory crusher and semi autogenous grinding (SAG)-ball comminution circuit followed by a flotation circuit to produce separate copper and molybdenum concentrates. Flotation tailings are cycloned before storing the cyclone underflow and overflow in separate tailings sands and tailings slime management facilities, respectively.

The processing facilities have been in commercial operation since 2014. The grinding-flotation plant has a stated design capacity of 4,700 t/h operated (105 kt/d based on 93% availability) but historically treated 3,800-4,000 t/h of operation. The SX-EW plant has a nominal capacity of 34.5 kt/y.

The processing facilities historically produced approximately 100–120 kt/y copper concentrate, 1,700-2,500 t/y molybdenum concentrate and approximately 25 kt/y of copper cathodes.

## 1.15 Project Infrastructure

Caserones is an operating mine with well established infrastructure. The infrastructure includes waste rock facilities, dump leach and SX-EW facilities, truck shop, wash bay, fuel stations, explosive facilities, El Tambo and La Brea TSFs, camps and accommodations, power infrastructure, reagents storage facilities; administration building; mine and mill office building; sulphide concentrator (crushing, grinding, Cu and Mo flotation circuits), and assay/metallurgical laboratory.

Caserones is connected to Chile's national grid via a 190 km double circuit 220 kV line which connects to the Jorqueria substation near Vallenar, close to the main north-south high voltage corridor. Power is supplied under a long-term contract to 2037.

The processing facility has fresh (raw) water and process water systems. Process water from the various thickener overflows is collected in a process water pond and reused in the plant. Reclaim water from the tailings management facilities is also reused as process water, through this pond. Approximately 80% of process water is reclaimed water. The Caserones fresh water supply comes from a wellfield connected to the Copiapó river basin. Water consumption is 409 l/s on average. Caserones has a 518 l/s water usage permit and 1,280.5 l/s of water rights.

## 1.16 Market Studies and Contracts

Caserones production consists of copper concentrates, copper cathodes and molybdenum concentrates. As an existing operation with long-term sales agreements in place, no market entry strategies are discussed in this Report.

The copper concentrate produced at Caserones has the following characteristics: its copper content varies between 29.0% and 32.0%, gold content varies from 0.9 g/t to 1.2 g/t and silver content varies from 30 g/t to 55 g/t. There are certain areas of the orebody that contain increased levels of antimony, arsenic, and mercury, which can lead to slightly higher contents in the copper concentrate. In the event some of this quality of concentrate is produced, it can be sold spot or blended with other cleaner concentrate. In general, however, the material has a low content of impurities.

Currently, 100% of the copper concentrate production is sold under a long-term offtake agreement, with destination Asia. By exception, Caserones makes third-party sales to other counterparts in the event of off spec quality. All of the cathode production is sold through a long-term offtake agreement. The majority of the molybdenum concentrates are sold locally through an evergreen contract.

Following LMC's acquisition of the Project, a new long-term offtake agreement with normal market terms will be put in place whereby 100% of Caserones' copper concentration production will be sold to MLCC's shareholders or their affiliates on a pro rata basis tied to their equity interest in MLCC. By exception, Caserones will be able to make third-party sales to other counterparts in the event of off spec quality.

LMC's long-term guidance copper price for Mineral Reserves estimation is $3.65/lb. The guidance metal price is based on a January 20, 2023, update. Copper cathode is sold at a $35/t premium over the $3.65/lb Mineral Reserve price. Molybdenum long term pricing is $11.45/lb. The economic analysis uses a reverting price curve that assumes the pricing will decrease from US$17.20 in 2023 to the long-term price by 2028.

## 1.17 Environmental Studies, Permitting, and Social or Community Impact

### 1.17.1 Environmental Studies and Regulatory Framework

Chile has a comprehensive regulatory framework in place governing both environmental approvals and associated construction and operating permits. The Environmental Impact Evaluation System (Sistema de Evaluación de Impacto Ambiental, or SEIA) is administered by the Environmental Evaluation Service (Servicio de Evaluación Ambiental, or SEA), an arm of the Environment Ministry (Ministerio del Medio Ambiente, or MMA).

The original Environmental Impact Assessment (EIA) was approved in 2010, which included baseline and supporting environmental studies (including soil, water, waste, air, noise, and closure), as well as potential project impacts and the respective reparation or compensation measures. Additional environmental evaluations were completed to change or adjust certain Project aspects. An Environmental and Social Management System (ESMS) was put in place in 2018 to monitor all commitments during the construction and operational stages. The ESMS has been updated as needed to reflect changes to the environmental, permitting, and social aspects that the Project has undergone.

### 1.17.2 Permitting

Caserones has all permits required for the LOM plan until 2037. The Project Environmental Qualification Resolution (RCA) expires in 2037. The mine plan extends to 2040. A new RCA must be obtained to support the remaining two years of mine life.

### 1.17.3 Mine Closure Planning

Caserones has developed a closure plan in accordance with applicable legal requirements.

The mine closure costs used in the economic analysis that supports the Mineral Reserves are estimated to be approximately US$182 M, excluding taxes.

### 1.17.4 Social and Community Issues

There are no communities within the Project footprint area or its immediate surroundings. There are, however, indigenous communities within the Project area of influence. Caserones has good working relationships with most local communities and the mine has successfully operated without any major community issues since it was constructed.

## 1.18 Capital Costs

Capital cost estimates were developed by the QPs based on the 2021 Caserones LOM plan and factored as appropriate. They are presented as 100% project basis with no allocations to ownership considered.

The majority of the sustaining capital costs is attributable to mine equipment replacements and for dump leach, tailings, and infrastructure expansions to support the mine plan. In total, 27 Komatsu 930 trucks are replaced. In addition to the Komatsu truck replacements, two additional Komatsu 930 trucks and a second PC8000 shovel are purchased in 2023 to mitigate the risk of poor mechanical availability.

Additional lifts on the dump leach facilities are built to accommodate fresh material mined throughout the LOM. Major expenses for irrigation piping and extension of the leach solution delivery systems are planned over the 2026–2028 period.

The adjusted LOM capital costs are estimated at $945.1 M and are summarized in Table 1-3. The LOM capital costs do not include capitalized stripping.

**Table 1-3: Caserones Sustaining Capital Cost Summary (US$M)**

| Year | Mining/Process | Other | Total |
|---|---|---|---|
| Total | 819.5 | 125.6 | 945.1 |

## 1.19 Operating Costs

Operating costs were developed by the QPs based on the Caserones 2021 LOM plan and factored as appropriate. They are presented as 100% project basis with no allocations to ownership considered. A combination of historical costs and current pricing for consumables was used to develop operating costs. The QPs made the following adjustments to the 2021 LOM plan operating costs to bring them current and to better reflect historical operating performance:

- **Mining**: Mining variable costs were increased by 10% to account for additional drilling and blasting costs required to complete mine-to-mill initiatives for delivering a finer size distribution to the SAG mill.
- **Concentrator:** Recalculated the proportions of fixed and variable costs to reflect operations using maximum power draw available from all grinding and regrinding mills.
- **General & Administrative**: Costs have been increased to $123 M per annum to align with actual G&A costs.

The adjusted LOM operating costs are estimated at $12,419 M.

Unit operating costs are summarized in Table 1-4.

**Table 1-4: Caserones Operating Cost Summary**

| Cost Area | 2023 | 2024 | 2025 | 2026 | 2027 | Average 2028-2032 | Average 2033-2037 | Average LOM |
|---|---|---|---|---|---|---|---|---|
| Mining US$/t mined | 2.62 | 2.30 | 2.38 | 2.61 | 2.34 | 2.26 | 2.43 | 2.50 |
| Dump Leach US$/t leached | 2.18 | 1.42 | 0.94 | 2.01 | 1.08 | 2.02 | 1.16 | 1.64 |
| Concentrator US$/t milled | 12.75 | 12.54 | 12.30 | 12.50 | 11.49 | 11.42 | 11.41 | 11.85 |
| G&A US$/t milled | 4.40 | 4.24 | 4.06 | 4.07 | 3.73 | 3.73 | 3.73 | 4.01 |

## 1.20 Economic Analysis

LMC is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration for the Caserones Operations is supported by a positive after-tax cash flow on a discounted basis.

## 1.21 Interpretation and Conclusions

Under the assumptions presented in this Report, the Project has a positive after-tax discounted cash flow, and Mineral Reserve estimates can be supported.

## 1.22 Recommendations

The QPs recommended that Caserones undertake the following initiatives which have an estimated budget of approximately $4.25 M:

### 1.22.1 Geology

- RC drill holes should be twinned with diamond drill holes to remove bias

### 1.22.2 Mineral Resources

- remove blocks from the resource block model which have been over extrapolated; an independent audit is recommended

- improve reconciliation of the long-term model by updating the block model with updated topography to improve predictive capabilities

### 1.22.3 Mineral Reserves

- assess geotechnical data for the ultimate pit shape
- develop calibrated hydrogeological model
- identify and implement operational and maintenance improvements to the mine fleet to increase availability and utilization
- implement drill and blast initiatives to improve the proportion of fines sent to the milling circuit
- improve mill preventative maintenance programs; include task-forced maintenance programs for freshwater wells and pumping systems

### 1.22.4 Process/Metallurgy

- continue metallurgical sampling of future ore types to improve metallurgical performance forecasts
- refine flotation recovery projections to integrate the expectations of grind size delivered to flotation (driven by throughput capacity, as limited by SAG milling, and Bond ball mill work index) along with the effect on ore type
- review the dump leach dynamic simulations' parameters to align the assumptions with actual dump performance

### 1.22.5 Infrastructure

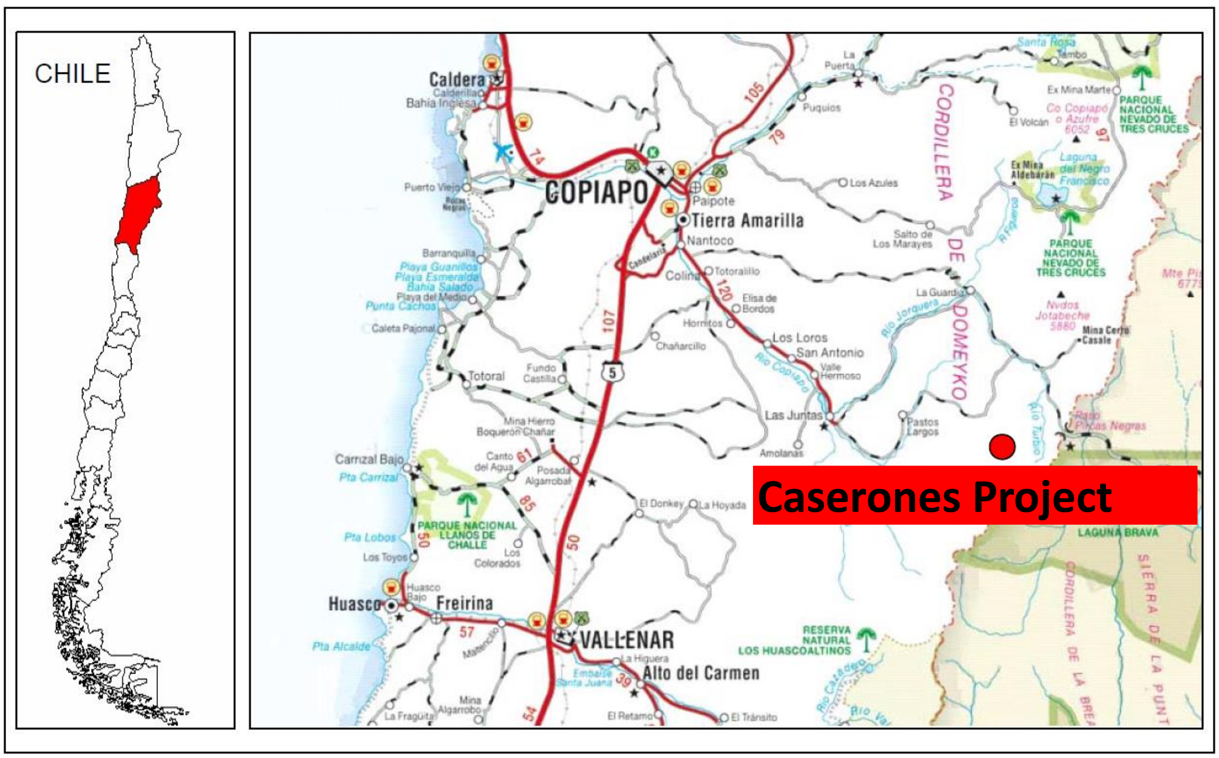
- initiate engineering studies to evaluate supplementing and replacing groundwater supply with desalinated water.

# 2 INTRODUCTION

Lundin Mining Corp (LMC) is a Canadian mining company, based in Toronto, Canada, and is publicly listed on the Toronto Stock Venture Exchange (LUN.TSX) and the Nasdaq Stockholm (LUMI). LMC is a base metal and precious metal mining company with operations or projects in Argentina, Brazil, Chile, Portugal, Sweden, and the United States of America (USA). LMC, through a wholly-owned subsidiary, holds a 51% majority interest Minera Lumina Copper Chile (MLCC) – which is the owner of the Project. JX Nippon Mining & Metals Corporation (JX Nippon), together with certain of its affiliates, holds the remaining 49% interest.

The Project is situated approximately 125 km southeast (by road) of Copiapó, Chile (See Figure 2-1), and 30 km directly north of LMC's Josemaria Project in Argentina. In 2006, MLCC acquired the mine from Pan Pacific Copper Co., Ltd. when the project was named the Regalito Mine. JX Nippon changed the name of the mine to Caserones Mine in March 2007.

**Figure 2-1: Location Map**




Source : Golder (2007)

The Caserones Mine is an active open pit operation that has been in production since 2014. The processing facilities historically produced approximately 100-120 kt/y copper concentrate, 1,700-2,500 t/y molybdenum concentrate and approximately 25 kt/y of copper cathodes.

## 2.1 Issuer and Purpose

This Report was prepared to support first-time Mineral Resource and Mineral Reserve disclosure by LMC on the Project and supports the disclosures in the press release titled "Lundin Mining Announces Closing of the Acquisition of Majority Interest in the Caserones Copper-Molybdenum Mine in Chile" and dated July 13, 2023.

All units of measurement used in this Report are in metric units, unless otherwise stated. All grid references are based on the PSAD56 Datum (PSAD56) UTM coordinate system. All currency units are in United States dollars (US$) unless otherwise stated. The Chilean currency is the Chilean peso (CLP).

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019; 2019 CIM Best Practice Guidelines).

## 2.2 Qualified Persons

The Qualified Persons for this report are listed in Table 2-1.

**Table 2-1: Qualified Persons**

| Qualified Persons (QPs) | Position/Title |
|---|---|
| Paul Daigle, P.Geo. | Principal Resource Geologist, AGP |
| Oscar Retto, MAIG | Senior Resource Estimator, AGP |
| Pierre Lacombe, P.Eng. | Metallurgist, LMC |
| Kirk Hanson, P.E. | Principal Mining Engineer, AGP |
| Andre Gagnon, P.Eng. | Geotechnical Engineer, LMC |

## 2.3 Site Visits and Scope of Personal Inspection

### 2.3.1 Mr. Oscar Retto

Mr. Retto, MAIG, conducted a site visit to the Project site from April 27 to April 28, 2023, a duration of two days.

Drill core logging, sampling, and storage facilities were inspected during the site visit. The site visit also included verifying drill hole collar locations and a review of drill logs against selected drill core. Mr. Retto was accompanied on site by:

- Sr. Garcia, Chief Geologist for MLCC
- Cole Mooney, Director, Resource Geology for LMC

### 2.3.2 Mr. Pierre Lacombe

Mr. Lacombe arrived in Copiapó, Chile, on August 30, 2022, and attended a Caserones management presentation the following day. During the presentation, MLCC staff provide an overview of the Project and described the 2021 Business Plan (BP). Q&A was held throughout the meeting. On September 1, 2022, Mr. Lacombe, and additional members from the LMC technical team conducted a day-long site visit at the Caserones Mine.

During the site visit, Mr. Lacombe visited the following facilities:

- mine and process offices including process control room
- primary crusher
- concentrator
- solvent extraction–electrowin (SX-EW) facility
- El Tambo and La Brea tailings storage facilities (TSFs)

#### 2.3.3 Mr. Kirk Hanson

Mr. Hanson accompanied Mr. Lacombe on the site visit. He attended the Caserones management presentation on August 31, 2022. During that presentation, MLCC staff provided an overview of the Project and described the 2021 BP. Q&A was held throughout the meeting. On September 1, 2022, Mr. Hanson, and additional members from the LMC technical team conducted a day-long site visit at the Caserones Mine.

During the site visit, Mr. Hanson visited the following facilities:

- mine offices including the dispatch room
- open pit
- waste rock facilities
- dump leach facilities
- primary crusher
- truck shop and warehouse
- wash bay
- mobile fuel stations
- emulsion plant and explosive magazines
- El Tambo and La Brea TSFs

#### 2.3.4 Mr. Andre Gagnon

Mr. Gagnon accompanied Mr. Lacombe and Mr. Hanson on the site visit. He attended the Caserones management presentation on August 31, 2022. During that presentation, MLCC staff provided an overview of the Project and described the 2021 BP. Q&A was held throughout the meeting. On September 1, 2022, Mr. Gagnon, and additional members from the LMC technical team conducted a day-long site visit at the Caserones Mine.

During the site visit, Mr. Gagnon visited the following facilities:

- mine and process offices
- El Tambo and La Brea TSFs

## 2.4 Effective Dates

The report has multiple effective dates as noted below:

- date of the database close-out date that supports the Mineral Resource estimate: 31 December 2018.
- date of the latest information on drilling in the Report: 22 April 2022
- date of the Mineral Resource estimate: 31 December 2022
- date of the Mineral Reserve estimate: 31 December 2022

The overall Report effective date is July 13, 2023.

There were no material changes to the scientific and technical information on the Project between the effective data and the signature date of the report.

## 2.5 Information Sources and References

The key information sources for the Report include the reports and documents listed in Section 2.5 (Previous Technical Reports), Section 3.0 (Reliance on Other Experts) and Section 27.0 (References) of this Report and were used to support the preparation of the Report.

Additional information was sought from LMC, MLCC, and AGP personnel where required.

## 2.6 Previous Technical Reports

LMC has not previously filed a technical report on the Project.

Reports filed on SEDAR by predecessor operators are listed in Table 2-2.

**Table 2-2: Summary of Previous Technical Reports**

| Reference | Date | Company | Name |
|---|---|---|---|
| Berezowsky (2003) | 12 Dec, 2003 | Lumina Copper Corp. | Technical Report on the Regalito Property Region III, Northern Chile |
| Amec (2005) | 24 Jan, 2005 | Lumina Copper Corp. | Technical Report on the Regalito Cu Property Region III, Northern Chile |

## 2.7 Units of Measure

**Table 2-3: Units of Measure**

| Unit | Abbreviation | Unit | Abbreviation |
|---|---|---|---|
| Above mean sea level | amsl | Acre | ac |
| Ampere | A | Annum (year) | a |
| Billion | B | Billion tonnes | Bt |
| British thermal unit | BTU | Centimetre | cm |
| Cubic centimetre | $cm^3$ | Cubic feet per minute | cfm |
| Cubic feet | $ft^3$ | Cubic feet per second | $ft^3/s$ |

| Unit | Abbreviation |
|---|---|
| Cubic inch | $in^3$ |
| Cubic yard | $yd^3$ |
| Day | d |
| Days per year (annum) | d/a |
| Decibel | dB |
| Degree | ° |
| Diameter | Ø |
| Dollar (Canadian) | C$ |
| Foot | ft |
| Gallons per minute (US) | gpm |
| Gigapascal | GPa |
| Gram | g |
| Grams per tonne | g/t |
| Hectare (10,000 $m^2$) | ha |
| Horsepower | hp |
| Hours per day | h/d |
| Hours per year | h/a |
| Kilo (thousand) | k |
| Kilograms per cubic metre | $kg/m^3$ |
| Kilograms per square metre | $kg/m^2$ |
| Kilometres per hour | km/h |
| Kilotonne | kt |
| Kilovolt-ampere | kVA |
| Kilowatt hour | kWh |
| Kilowatt hours per year | kWh/a |
| Litre | L |
| Megabytes per second | Mb/sec |
| Megavolt-ampere | MVA |
| Metre | m |
| Metres Baltic sea level | mbsl |
| Metres per second | m/s |
| Microns | ɥm |
| Milligrams per litre | mg/L |
| Millimetre | mm |
| Million bank cubic metres | $Mbm^3$ |
| Minute (plane angle) | ‘ |
| Month | mo |
| Pascal | Pa |
| Parts per billion | ppB |
| Pound(s) | lb(s) |
| Revolutions per minute | rpm |

| Unit | Abbreviation |
|---|---|
| Cubic metre | $m^3$ |
| Coefficients of variation | CVs |
| Days per week | d/wk |
| Dead weight tonnes | DWT |
| Decibel adjusted | dBa |
| Degrees Celsius | °C |
| Dollar (American) | US$ |
| Dry metric ton | dmt |
| Gallon | gal |
| Gigajoule | GJ |
| Gigawatt | g |
| Grams per litre | g/L |
| Greater than | > |
| Hertz | Hz |
| Hour | h |
| Hours per week | h/wk |
| Inch | “ |
| Kilogram | kg |
| Kilograms per hour | kg/h |
| Kilometre | km |
| Kilopascal | kPa |
| Kilovolt | kV |
| Kilowatt | kW |
| Kilowatt hours per tonne (metric ton) | kWh/t |
| Less than | < |
| Litres per minute | L/min |
| Megapascal | MPa |
| Megawatt | MW |
| Metres above sea level | masl |
| Metres per minute | m/min |
| Metric ton (tonne) | t |
| Milligram | mg |
| Millilitre | mL |
| Million | M |
| Million tonnes | Mt |
| Minute (time) | min |
| Ounce | oz |
| Parts per million | ppM |
| Percent | % |
| Pounds per square inch | psi |
| Second (plane angle) | “ |

| Unit | Abbreviation | Unit | Abbreviation |
|---|---|---|---|
| Second (time) | sec | Specific gravity | SG |
| Square centimetre | $cm^2$ | Square foot | $ft^2$ |
| Square inch | $in^2$ | Square kilometre | $km^2$ |
| Square metre | $m^2$ | Thousand tonnes | kt |
| Three dimensional | 3D | Tonne (1,000 kg) | t |
| Tonnes per day | t/d | Tonnes per hour | t/h |
| Tonnes per year (annum) | t/a | Tonnes seconds per hour metre cubed | $ts/hm^3$ |
| Total | T | Volt | V |
| Week | wk | Weight per weight | w/w |
| Wet metric ton | wmt | | |

## 2.8 Terms of Reference (Abbreviations & Acronyms)

Table 2-4 shows terms and abbreviations used in this study. Table 2-5 shows the conversions for common units.

**Table 2-4: Terms of Reference**

| Unit | Abbreviation/Acronym |
|---|---|
| Absolute Relative Difference | ABRD |
| Acid Base Accounting | ABA |
| Acid Rock Drainage | ARD |
| Alpine Tundra | AT |
| Atomic Absorption Spectrophotometer | AAS |
| Atomic Absorption | AA |
| British Columbia | BC |
| British Columbia Environmental Assessment Act | BCEAA |
| British Columbia Environmental Assessment Office | BCEAO |
| British Columbia Environmental Assessment | BCEA |
| Canadian Dam Association | CDA |
| Canadian Environmental Assessment Act | CEA Act |
| Canadian Environmental Assessment Agency | CEA Agency |
| Canadian Institute of Mining, Metallurgy, and Petroleum | CIM |
| Canadian National Railway | CNR |
| Carbon-in-leach | CIL |
| Caterpillar's ® Fleet Production and Cost Analysis software | FPC |
| Closed-circuit Television | CCTV |
| Coefficient of Variation | CV |
| Copper | Cu |
| Copper Equivalent | CuEq |
| Counter-current decantation | CCD |
| Cyanide Soluble | CN |
| Digital Elevation Model | DEM |
| Direct Leach | DL |
| Distributed Control System | DCS |
| Drilling and Blasting | D&B |
| Environmental Management System | EMS |

| Unit | Abbreviation/Acronym |
|---|---|
| Flocculant | floc |
| Free Carrier | FCA |
| Gemcom International Inc. | Gemcom |
| General and Administration | G&A |
| Gold | Au |
| Gold Equivalent | AuEq |
| Heating, Ventilating, and Air Conditioning | HVAC |
| Hectares | ha |
| High Pressure Grinding Rolls | HPGR |
| Indicator Kriging | IK |
| Inductively Coupled Plasma | ICP |
| Inductively Coupled Plasma Atomic Emission Spectroscopy | ICP-AES |
| Inspectorate America Corp. | Inspectorate |
| Interior Cedar-Hemlock | ICH |
| Internal Rate of Return | IRR |
| International Congress on Large Dams | ICOLD |
| Invers Distance cubed | $ID^3$ |
| Land and Resource Management Plan | LRMP |
| Lerchs-Grossman | LG |
| Life-of-Mine | LOM |
| Load-haul Dump | LHD |
| Locked Cycle Tests | LCTs |
| Loss on Ignition | LOI |
| Metal Mining Effluent Regulations | MMER |
| Methyl Isobutyl Carbinol | MIBC |
| Metres East | mE |
| Metres West | mW |
| Metres North | mN |
| Metres South | mS |
| Mineral Deposits Research Unit | MDRU |
| Mineral Titles Online | MTO |
| Nation Instrument 43-101 | NI 43-101 |
| Nearest Neighbour | NN |
| Net Invoice Value | NIV |
| Net Present Value | NPV |
| Net Smelter Price | NSP |
| Net Smelter Return | NSR |
| Neutralization Potential | NP |
| Northwest Transmission Line | NTL |
| Official Community Plans | OCPs |
| Operator Interface Station | OIS |
| Ordinary Kriging | OK |
| Organic Carbon | org |
| Potassium Amyl Xanthate | PAX |
| Predictive Ecosystem Mapping | PEM |
| Preliminary Assessment | PA |
| Preliminary Economic Assessment | PEA |
| Qualified Person | QP |
| Quality Assurance | QA |

| Unit | Abbreviation/Acronym |
|---|---|
| Quality Control | QC |
| Quality Assurance and Quality Control | QA/QC |
| Rhenium | Re |
| Rock Mass Rating | RMR |
| Rock Quality Designation | RQD |
| SAG Mill/Ball Mill/Pebble Crushing | SABC |
| Semi-autogenous Grinding | SAG |
| Silver | Ag |
| Silver Equivalent | AgEq |
| Standards Council of Canada | SCC |
| Stanford University Geostatistical Software Library | GSLIB |
| Tailings Storage Facility | TSF |
| Terrestrial Ecosystem Mapping | TEM |
| Total Dissolved Solids | TDS |
| Total Suspended Solids | TSS |
| Tunnel Boring Machine | TBM |
| Underflow | U/F |
| Valued Ecosystem Components | VECs |
| Waste Rock Facility | WRF |
| Water Balance Model | WBM |
| Work Breakdown Structure | WBS |
| Workplace Hazardous Materials Information System | WHMIS |
| X-ray Fluorescence Spectrometer | XRF |

**Table 2-5: Conversions for Common Units**

| Metric Unit | Imperial Measure |
|---|---|
| 1 hectare | 2.47 acres |
| 1 metre | 3.28 feet |
| 1 kilometre | 0.62 miles |
| 1 gram | 0.032 ounces (troy) |
| 1 tonne | 1.102 tons (short) |
| 1 gram/tonne | 0.029 ounces (troy)/ton (short) |
| 1 tonne | 2,204.62 pounds |
| **Imperial Measure** | **Metric Unit** |
| 1 acre | 0.4047 hectares |
| 1 foot | 0.3048 metres |
| 1 mile | 1.609 kilometres |
| 1 ounce (troy) | 31.1 grams |
| 1 ton (short) | 0.907 tonnes |
| 1 ounce (troy)/ton (short) | 34.28 grams/tonne |
| 1 pound | 0.00045 tonnes |

# 3 RELIANCE ON OTHER EXPERTS

In accordance with Item 3 of National Instrument 43-101 (“NI 43-101”) Form F1, the QPs have relied upon the following other expert reports, which provided information regarding legal matters (mineral rights, surface rights, property agreements, royalties), and taxation for use in sections of this Report.

## 3.1 Legal Status

The QPs have not reviewed the legal matters related to mineral tenure, nor independently verified the legal status, ownership of the Project area, underlying property agreements, permits or royalties. The QPs have fully relied upon, and disclaim responsibility for information derived from LMC experts and experts retained by LMC for this information through the following documents:

- Bofill Mir, 2023: Title Opinion: legal opinion prepared for LMC and AGP, dated April 6, 2023 (the legal opinion)

This information is used in Section 4 of the Report. It is also used in support of assessing reasonable prospects of eventual economic extraction of the Mineral Resource estimates in Section 14 and demonstrating economic viability of the Mineral Reserve estimates in Section 15.

## 3.2 Taxation

The AGP QPs have not independently reviewed the taxation information. The AGP QPs have fully relied upon and disclaim responsibility for information supplied by LMC related to taxation included in the financial model through the following document.

- Mukurami, T., 2023: Taxation considerations and tax inputs to the financial model used in the Caserones Mining Project, Chile National Instrument 43-101 Technical Report prepared by AGP Mining Consultants Inc. (AGP) for LMC Mining Corporation (LMC): letter prepared for AGP 9 June 2023, 2 p.

This information is used in support of the Mineral Reserve estimate in Section 15.

# 4 PROPERTY DESCRIPTION AND LOCATION

## 4.1 Project Location

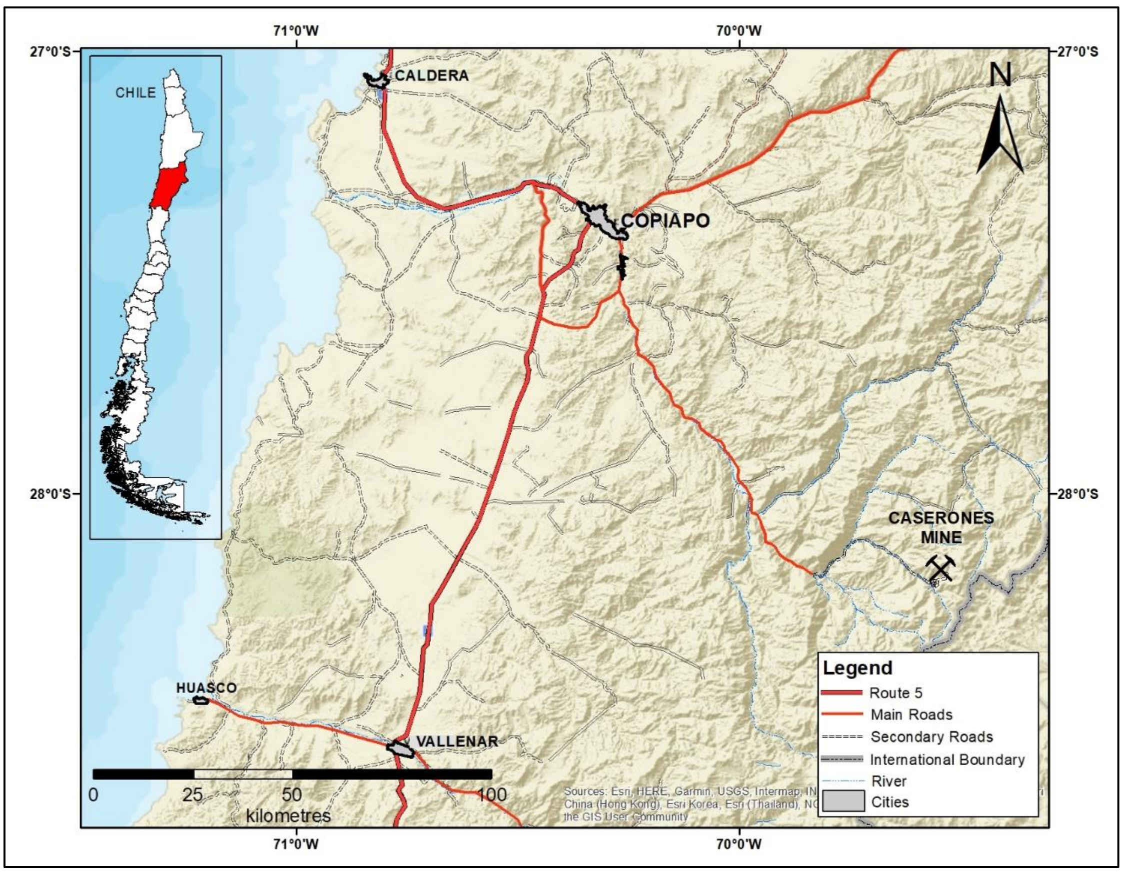
The Project is situated at:

- approximately 28°10’ South and 69°35’ West
- approximately 447600 E; 6882700 S, Zone 19J (WGS84) Universal Transverse Mercator (UTM) coordinates; the Caserones Project uses the PSAD-56 datum (Zone 19S)

It is approximately 125 km southeast (by road) of Copiapó, approximately 62 km southeast (by road) of Los Lobos, and approximately 5 km southeast (by road) of Carizalillo, in the Region of Atacama (III), in the Province of Copiapó, in the Chilean commune of Tierra Amarilla. The Project is approximately 6 km east of the Chile/Argentina border; and the Reserva Provincial de Biósfera San Guillermo, Argentina.

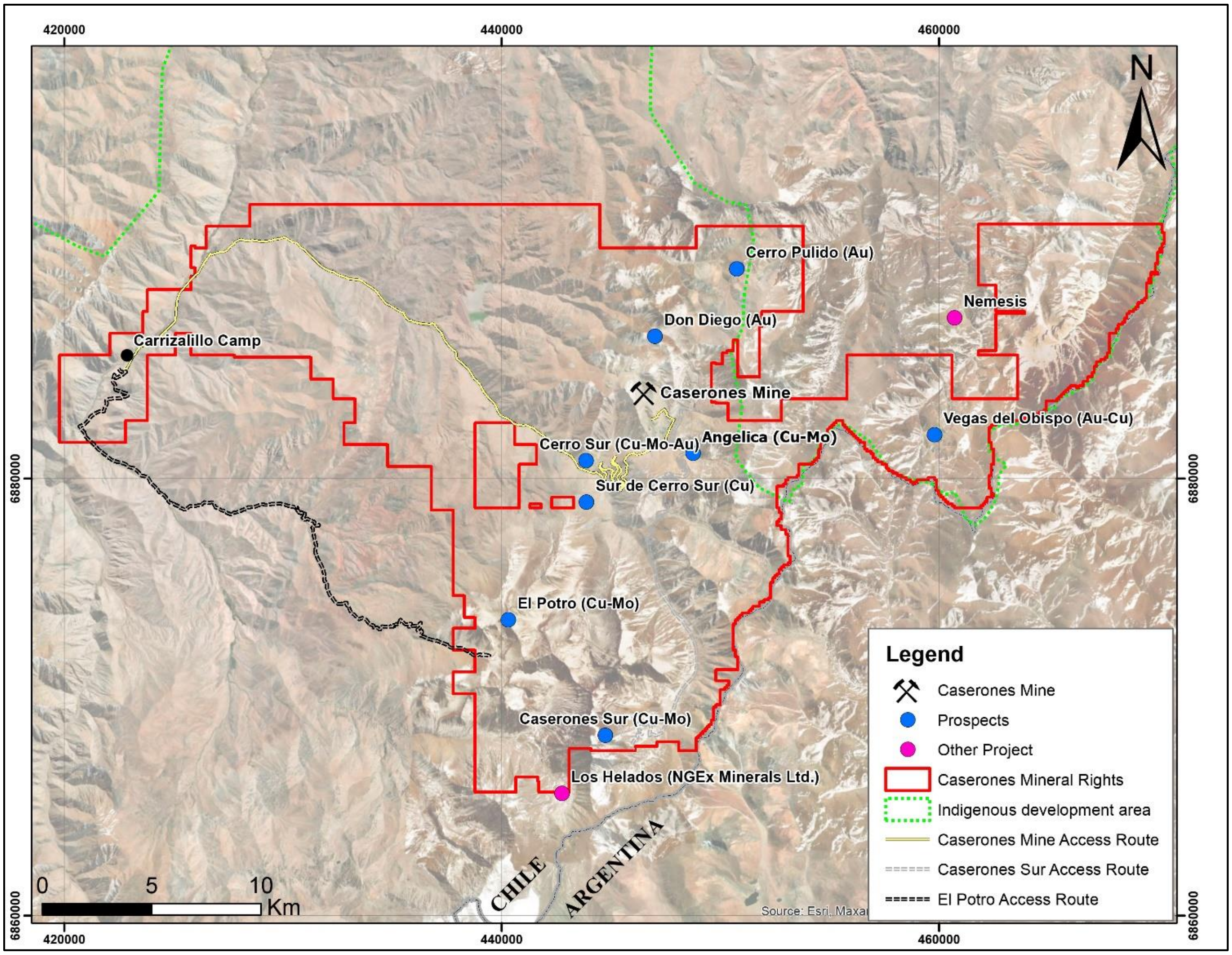
Figure 4-1 shows the location map in Chile and Figure 4-2 shows the Project location map.

**Figure 4-1: Location Map**




Source : MLCC (2023)

**Figure 4-2: Project Location Map**




Source : MLCCC (2023), modified by LMC (2023)

## 4.2 Project Ownership

LMC, through a wholly owned subsidiary, holds a 51% majority interest Minera Lumina Copper Chile (MLCC). MLCC is the owner of the Project. JX Nippon Mining & Metals Corporation (JX Nippon), together with certain of its affiliates, holds the remaining 49% interest in MLCC.

## 4.3 Mineral Tenure

The total mineral tenure consists of 284 mining concessions, covering a total area of 58,533 ha, all of which are located in the commune of Tierra Amarilla, Copiapó Province, Atacama Region.

There are 251 exploitation concessions, covering approximately 54,578 ha. The remaining 33 concessions are exploration concessions, covering an area of 3,955 ha.

### 4.3.1 Exploitation Concessions

The exploitation concessions have an indefinite term. The only obligation under the Chilean Mining Code to maintain ownership of the concessions is to pay a "mining patent" fee of 1/10 UTM. The UTM unit, as of April 2023, equated to the following:

- CLP 62,388 = US$ 76.58 (US$ 1 = CLP 814.64)

The annual total amount payable by MLCC under the Chilean Mining Code is approximately US$400,000.

Exploitation concessions confer an exclusive right to extract and own the mineral substances within the exploitation concession area. The Caserones deposit is situated entirely within MLCC's exploitation concession rights. The legal opinion (see Section 3.1) confirmed that exploitation concessions were correctly constituted and duly granted, were in full force and effect, were correctly registered in the corresponding Mine Registrar of Copiapó to MLCC, and the annual mining patent fees had been paid. There was no litigation involving the exploitation concessions at the opinion date. Table 4-1 presents the list of the exploitation concessions.

**Table 4-1: Exploitation Concessions**

| Order | Concession Type | Name | Holder | Area (ha) | Granted (dd/mm/yyyy) | Expiry | Number |
|---|---|---|---|---|---|---|---|
| 1 | EXPLOITATION | AGUA NINE 1, 1/2 | MLCC | 14 | - | INDEFINITE | 03203-6771-9 |
| 2 | EXPLOITATION | AGUA NINE2 | MLCC | 2 | - | INDEFINITE | 03203-6772-7 |
| 3 | EXPLOITATION | BURA 1, 1/20 | MLCC | 100 | - | INDEFINITE | 03203-6883-9 |
| 4 | EXPLOITATION | CACHIYUYOS 1, 1/60 | MLCC | 300 | - | INDEFINITE | 03203-7175-9 |
| 5 | EXPLOITATION | CACHIYUYOS 2, 1/80 | MLCC | 800 | - | INDEFINITE | 03203-7176-7 |
| 6 | EXPLOITATION | CACHIYUYOS 3, 1/80 | MLCC | 800 | - | INDEFINITE | 03203-7177-5 |
| 7 | EXPLOITATION | CACHIYUYOS 4, 1/80 | MLCC | 800 | - | INDEFINITE | 03203-7178-3 |
| 8 | EXPLOITATION | CACHIYUYOS 4, 1/40 | MLCC | 200 | - | INDEFINITE | 03203-7179-1 |
| 9 | EXPLOITATION | CALIFORNIA 1/1000 | MLCC | 2,475 | 16-05-2012 | INDEFINITE | 03203-1226-4 |
| 10 | EXPLOITATION | CASERONES ESTE 1, 1/60 | MLCC | 300 | 14-08-2012 | INDEFINITE | 03203-5157-K |
| 11 | EXPLOITATION | CASERONES ESTE 10, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5166-9 |
| 12 | EXPLOITATION | CASERONES ESTE 11A 1 AL 30 | MLCC | 300 | 10-02-2022 | INDEFINITE | 03203-7612-2 |
| 13 | EXPLOITATION | CASERONES ESTE 2, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5158-8 |
| 14 | EXPLOITATION | CASERONESESTE 3, 1/60 | MLCC | 300 | 14-08-2012 | INDEFINITE | 03203-5159-6 |
| 15 | EXPLOITATION | CASERONES ESTE 4, 1/36 | MLCC | 175 | 12-07-2012 | INDEFINITE | 03203-5160-K |
| 16 | EXPLOITATION | CASERONES ESTE 5, 1/20 | MLCC | 87 | 14-08-2012 | INDEFINITE | 03203-5161-8 |
| 17 | EXPLOITATION | CASERONESESTE 6, 1/58 | MLCC | 284 | 12-07-2012 | INDEFINITE | 03203-5162-6 |
| 18 | EXPLOITATION | CASERONES ESTE 7, 1/60 | MLCC | 239 | 14-08-2012 | INDEFINITE | 03203-5163-4 |
| 19 | EXPLOITATION | CASERONES ESTE 8, 1/16 | MLCC | 64 | 12-07-2012 | INDEFINITE | 03203-5164-2 |
| 20 | EXPLOITATION | CASERONES ESTE 9, 1/37 | MLCC | 169 | 14-08-2012 | INDEFINITE | 03203-5165-0 |

| Order | Concession Type | Name | Holder | Area (ha) | Granted (dd/mm/yyyy) | Expiry | Number |
|---|---|---|---|---|---|---|---|
| 21 | EXPLOITATION | CASERONES II 1-80 | MLCC | 396 | 10-07-1989 | INDEFINITE | 03203-1765-7 |
| 22 | EXPLOITATION | CASERONES II 81-160 | MLCC | 400 | 10-07-1989 | INDEFINITE | 03203-1766-5 |
| 23 | EXPLOITATION | CASERONES III 1-80 | MLCC | 400 | 10-07-1989 | INDEFINITE | 03203-1768-1 |
| 24 | EXPLOITATION | CASERONES III 81-160 | MLCC | 400 | 10-07-1989 | INDEFINITE | 03203-1769-K |
| 25 | EXPLOITATION | COPA 1/40 | MLCC | 200 | 17-08-2009 | INDEFINITE | 03203-4902-8 |
| 26 | EXPLOITATION | COPITO II, 1/6 | MLCC | 42 | - | INDEFINITE | 03203-7196-1 |
| 27 | EXPLOITATION | CORDILLERA 3, 1/60 | MLCC | 300 | 26-04-2012 | INDEFINITE | 03203-5501-K |
| 28 | EXPLOITATION | CORDILLERA DOS, 1/60 | MLCC | 300 | 26-04-2012 | INDEFINITE | 03203-5500-1 |
| 29 | EXPLOITATION | CARRIZO 1, 1/60 | MLCC | 300 | 18-12-2013 | INDEFINITE | 03203-6353-5 |
| 30 | EXPLOITATION | CARRIZO 2, 1/60 | MLCC | 300 | 18-12-2013 | INDEFINITE | 03203-6354-3 |
| 31 | EXPLOITATION | CARRIZO 3, 1/60 | MLCC | 300 | 20-01-2014 | INDEFINITE | 03203-6355-1 |
| 32 | EXPLOITATION | CARRIZO 4, 1/60 | MLCC | 300 | 18-12-2013 | INDEFINITE | 03203-6357-8 |
| 33 | EXPLOITATION | CARRIZO 5, 1/60 | MLCC | 300 | 18-12-2013 | INDEFINITE | 03203-6362-4 |
| 34 | EXPLOITATION | CARRIZO 6, 1/60 | MLCC | 300 | 20-01-2014 | INDEFINITE | 03203-6358-6 |
| 35 | EXPLOITATION | CARRIZO 7, 1/60 | MLCC | 300 | 18-12-2013 | INDEFINITE | 03203-6359-4 |
| 36 | EXPLOITATION | EL PINGO 1, 1/60 | MLCC | 290 | 27-03-2012 | INDEFINITE | 03203-5615-6 |
| 37 | EXPLOITATION | EL PINGO 1/20 | MLCC | 100 | 12-12-2014 | INDEFINITE | 03203-6679-8 |
| 38 | EXPLOITATION | EL PINGO 2, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5616-4 |
| 39 | EXPLOITATION | EL PINGO 3, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5704-7 |
| 40 | EXPLOITATION | EL PINGO 4, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5705-5 |
| 41 | EXPLOITATION | EL PINGO 5, 1/40 | MLCC | 200 | 27-03-2012 | INDEFINITE | 03203-5706-3 |
| 42 | EXPLOITATION | EL PINGO 6, 1/60 | MLCC | 300 | 26-04-2012 | INDEFINITE | 03203-5707-1 |
| 43 | EXPLOITATION | EL PINGO 8, 1/32 | MLCC | 160 | 27-03-2012 | INDEFINITE | 03203-5630-K |
| 44 | EXPLOITATION | EL RINCON, 1/18 | MLCC | 81 | 14-08-2012 | INDEFINITE | 03203-5831-0 |
| 45 | EXPLOITATION | ESCARCHA 10, 1/60 | MLCC | 300 | 15-04-2008 | INDEFINITE | 03203-4687-8 |
| 46 | EXPLOITATION | ESCARCHA 11, 1/60 | MLCC | 300 | 15-04-2008 | INDEFINITE | 03203-4688-6 |
| 47 | EXPLOITATION | ESCARCHA 13, 1/24 | MLCC | 97 | 15-04-2008 | INDEFINITE | 03203-4690-8 |
| 48 | EXPLOITATION | ESCARCHA 14, 1/ 11 | MLCC | 31 | 05-09-2008 | INDEFINITE | 03203-4691-6 |
| 49 | EXPLOITATION | ESCARCHA 23, 1/9 | MLCC | 30 | - | INDEFINITE | 03203-4743-2 |
| 50 | EXPLOITATION | ESCARCHA 24, 1/3 | MLCC | 12 | 02-04-2008 | INDEFINITE | 03203-4744-0 |
| 51 | EXPLOITATION | ESCARCHA 25 | MLCC | 5 | 02-04-2008 | INDEFINITE | 03203-4745-9 |
| 52 | EXPLOITATION | ESCARCHA 26, 1/20 | MLCC | 92 | 02-04-2008 | INDEFINITE | 03203-4746-7 |
| 53 | EXPLOITATION | ESCARCHA 27, 1/60 | MLCC | 300 | 19-11-2008 | INDEFINITE | 03203-4772-6 |
| 54 | EXPLOITATION | ESCARCHA 28, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4773-4 |

| Order | Concession Type | Name | Holder | Area (ha) | Granted (dd/mm/yyyy) | Expiry | Number |
|---|---|---|---|---|---|---|---|
| 55 | EXPLOITATION | ESCARCHA 29, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4775-0 |
| 56 | EXPLOITATION | ESCARCHA 3, 1/48 | MLCC | 231 | 15-04-2008 | INDEFINITE | 03203-4680-0 |
| 57 | EXPLOITATION | ESCARCHA 30, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4776-9 |
| 58 | EXPLOITATION | ESCARCHA 31, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4777-7 |
| 59 | EXPLOITATION | ESCARCHA 32, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4778-5 |
| 60 | EXPLOITATION | ESCARCHA 33, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4779-3 |
| 61 | EXPLOITATION | ESCARCHA 34, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4780-7 |
| 62 | EXPLOITATION | ESCARCHA 35, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4781-5 |
| 63 | EXPLOITATION | ESCARCHA 36, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4782-3 |
| 64 | EXPLOITATION | ESCARCHA 38, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4783-1 |
| 65 | EXPLOITATION | ESCARCHA 39, 1/40 | MLCC | 200 | 02-04-2008 | INDEFINITE | 03203-4784-K |
| 66 | EXPLOITATION | ESCARCHA 4 1/51 | MLCC | 245 | 15-04-2008 | INDEFINITE | 03203-4681-9 |
| 67 | EXPLOITATION | ESCARCHA 40, 1/20 | MLCC | 100 | 02-04-2008 | INDEFINITE | 03203-4785-8 |
| 68 | EXPLOITATION | ESCARCHA 41, 1/60 | MLCC | 300 | 17-11-2010 | INDEFINITE | 03203-5096-4 |
| 69 | EXPLOITATION | ESCARCHA 42, 1/40 | MLCC | 200 | 17-11-2010 | INDEFINITE | 03203-5097-2 |
| 70 | EXPLOITATION | ESCARCHA 43, 1/60 | MLCC | 270 | 17-11-2010 | INDEFINITE | 03203-5321-1 |
| 71 | EXPLOITATION | ESCARCHA 46, 1/60 | MLCC | 300 | 02-04-2008 | INDEFINITE | 03203-4786-6 |
| 72 | EXPLOITATION | ESCARCHA 5, 1/47 | MLCC | 222 | 15-04-2008 | INDEFINITE | 03203-4682-7 |
| 73 | EXPLOITATION | ESCARCHA 6, 1/47 | MLCC | 223 | 15-04-2008 | INDEFINITE | 03203-4683-5 |
| 74 | EXPLOITATION | ESCARCHA 7, 1/40 | MLCC | 200 | 15-04-2008 | INDEFINITE | 03203-4684-3 |
| 75 | EXPLOITATION | ESCARCHA 8, 1/37 | MLCC | 160 | 15-04-2008 | INDEFINITE | 03203-4685-1 |
| 76 | EXPLOITATION | ESCARCHA 9, 1/40 | MLCC | 200 | 15-04-2008 | INDEFINITE | 03203-4686-K |
| 77 | EXPLOITATION | ESCARCHA DOCE, 1/60 | MLCC | 290 | 15-04-2008 | INDEFINITE | 03203-4689-4 |
| 78 | EXPLOITATION | ESCARCHA DOS 1, 1/40 | MLCC | 200 | 15-04-2008 | INDEFINITE | 03203-4679-7 |
| 79 | EXPLOITATION | ESCARCHA UNO, 1/31 | MLCC | 122 | 15-04-2008 | INDEFINITE | 03203-4678-9 |
| 80 | EXPLOITATION | GRANIZO 2, 1/27 | MLCC | 135 | 09-07-2014 | INDEFINITE | 03203-6361-6 |
| 81 | EXPLOITATION | HURACAN 1, 1/40 | MLCC | 200 | 13-10-2014 | INDEFINITE | 03203-6711-5 |
| 82 | EXPLOITATION | HURACAN 10, 1/ 40 | MLCC | 200 | 13-10-2014 | INDEFINITE | 03203-6720-4 |
| 83 | EXPLOITATION | HURACAN 11, 1/40 | MLCC | 200 | - | INDEFINITE | 03203-6721-2 |
| 84 | EXPLOITATION | HURACAN 12, 1/40 | MLCC | 200 | 29-08-2014 | INDEFINITE | 03203-6722-0 |
| 85 | EXPLOITATION | HURACAN 2, 1/20 | MLCC | 100 | 13-11-2014 | INDEFINITE | 03203-6712-3 |
| 86 | EXPLOITATION | HURACAN 3, 1/40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6713-1 |
| 87 | EXPLOITATION | HURACAN 4, 1/40 | MLCC | 200 | 26-12-2014 | INDEFINITE | 03203-6714-K |
| 88 | EXPLOITATION | HURACAN 5, 1/40 | MLCC | 200 | 13-10-2014 | INDEFINITE | 03203-6715-8 |

| Order | Concession Type | Name | Holder | Area (ha) | Granted (dd/mm/yyyy) | Expiry | Number |
|---|---|---|---|---|---|---|---|
| 89 | EXPLOITATION | HURACAN 6, 1/40 | MLCC | 200 | - | INDEFINITE | 03203-6716-6 |
| 90 | EXPLOITATION | HURACAN 7, 1/36 | MLCC | 180 | 26-12-2014 | INDEFINITE | 03203-6717-4 |
| 91 | EXPLOITATION | HURACAN 8, 1/40 | MLCC | 200 | 2014-12-12 | INDEFINITE | 03203-6718-2 |
| 92 | EXPLOITATION | HURACAN 9, 1/40 | MLCC | 200 | 13-10-2014 | INDEFINITE | 03203-6719-0 |
| 93 | EXPLOITATION | JOTE DOS, 1/26 | MLCC | 112 | 19-03-2014 | INDEFINITE | 03203-5499-4 |
| 94 | EXPLOITATION | JOTE UNO, 1/20 | MLCC | 80 | 26-04-2012 | INDEFINITE | 03203-5498-6 |
| 95 | EXPLOITATION | LA BREA 1, 1/40 | MLCC | 200 | 25-05-2009 | INDEFINITE | 03203-4904-4 |
| 96 | EXPLOITATION | LA BREA 10, 1/20 | MLCC | 100 | 25-05-2009 | INDEFINITE | 03203-4913-3 |
| 97 | EXPLOITATION | LA BREA 11, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4914-1 |
| 98 | EXPLOITATION | LA BREA 12, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4915-K |
| 99 | EXPLOITATION | LA BREA 13, 1/20 | MLCC | 100 | 25-05-2009 | INDEFINITE | 03203-4916-8 |
| 100 | EXPLOITATION | LA BREA 14, 1/ 60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4917-6 |
| 101 | EXPLOITATION | LA BREA 15, 1/40 | MLCC | 200 | 25-05-2009 | INDEFINITE | 03203-4918-4 |
| 102 | EXPLOITATION | LA BREA 16, 1/40 | MLCC | 200 | 25-05-2009 | INDEFINITE | 03203-4919-2 |
| 103 | EXPLOITATION | LA BREA 17, 1/20 | MLCC | 100 | 25-05-2009 | INDEFINITE | 03203-4920-6 |
| 104 | EXPLOITATION | LA BREA 2, 1/40 | MLCC | 200 | 25-05-2009 | INDEFINITE | 03203-4905-2 |
| 105 | EXPLOITATION | LA BREA 3, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4906-0 |
| 106 | EXPLOITATION | LA BREA 4, 1/40 | MLCC | 200 | 25-05-2009 | INDEFINITE | 03203-4907-9 |
| 107 | EXPLOITATION | LA BREA 5, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4908-7 |
| 108 | EXPLOITATION | LA BREA 6, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4909-5 |
| 109 | EXPLOITATION | LA BREA 7, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4910-9 |
| 110 | EXPLOITATION | LA BREA 8, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4911-7 |
| 111 | EXPLOITATION | LA BREA 9, 1/60 | MLCC | 300 | 25-05-2009 | INDEFINITE | 03203-4912-5 |
| 112 | EXPLOITATION | LIMITE 1, 1/5 | MLCC | 5 | 13-11-2014 | INDEFINITE | 03203-6551-1 |
| 113 | EXPLOITATION | LIMITE 10, 1/2 | MLCC | 14 | 29-08-2014 | INDEFINITE | 03203-6560-0 |
| 114 | EXPLOITATION | LIMITE 2, 1/6 | MLCC | 30 | 29-08-2014 | INDEFINITE | 03203-6552-K |
| 115 | EXPLOITATION | LIMITE 3 | MLCC | 4 | 12-04-2011 | INDEFINITE | 03203-6553-8 |
| 116 | EXPLOITATION | LIMITE 4 | MLCC | 2 | 12-12-2014 | INDEFINITE | 03203-6554-6 |
| 117 | EXPLOITATION | LIMITE 5,1/8 | MLCC | 40 | 29-08-2014 | INDEFINITE | 03203-6555-4 |
| 118 | EXPLOITATION | LIMITE 7 1/2 | MLCC | 12 | 29-08-2014 | INDEFINITE | 03203-6557-0 |
| 119 | EXPLOITATION | LIMITE 8 | MLCC | 5 | 25-01-2011 | INDEFINITE | 03203-6558-9 |
| 120 | EXPLOITATION | LIMITE 9 | MLCC | 4 | 25-01-2011 | INDEFINITE | 03203-6559-7 |
| 121 | EXPLOITATION | LLARETA5, 1/38 | MLCC | 188 | 27-01-2011 | INDEFINITE | 03203-5207-K |
| 122 | EXPLOITATION | MONDAQUITA 29, 1/9 | MLCC | 27 | 27-03-2012 | INDEFINITE | 03203-5637-7 |

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|---|---|---|---|---|---|---|---|
| 123 | EXPLOITATION | MONDAQUITA 30, 1/18 | MLCC | 90 | 27-03-2012 | INDEFINITE | 03203-5638-5 |
| 124 | EXPLOITATION | MONDAQUITA 31, 1/49 | MLCC | 223 | 27-03-2012 | INDEFINITE | 03203-5639-3 |
| 125 | EXPLOITATION | MONDAQUITA 32,1/60 | MLCC | 270 | 27-03-2012 | INDEFINITE | 03203-5640-7 |
| 126 | EXPLOITATION | MONDAQUITA 43, 1/13 | MLCC | 23 | 14-08-2012 | INDEFINITE | 03203-5642-3 |
| 127 | EXPLOITATION | MONDAQUITA 44, 1/42 | MLCC | 210 | 27-03-2012 | INDEFINITE | 03203-5643-1 |
| 128 | EXPLOITATION | MONDAQUITA 45, 1/42 | MLCC | 147 | 27-03-2012 | INDEFINITE | 03203-5644-K |
| 129 | EXPLOITATION | MONDAQUITA 49, 1/25 | MLCC | 74 | 27-03-2012 | INDEFINITE | 03203-5645-8 |
| 130 | EXPLOITATION | MONDAQUITA 50, 1/39 | MLCC | 171 | 27-03-2012 | INDEFINITE | 03203-5646-6 |
| 131 | EXPLOITATION | MONDAQUITA 54, 1/27 | MLCC | 117 | 27-03-2012 | INDEFINITE | 03203-5647-4 |
| 132 | EXPLOITATION | MONDAQUITA 55, 1/18 | MLCC | 63 | 27-03-2012 | INDEFINITE | 03203-5648-2 |
| 133 | EXPLOITATION | NEGRO 4, 1/4 | MLCC | 16 | 25-06-2010 | INDEFINITE | 03203-5100-6 |
| 134 | EXPLOITATION | NEGRO 5, 1/40 | MLCC | 200 | 25-06-2010 | INDEFINITE | 03203-5101-4 |
| 135 | EXPLOITATION | NERON 6, 1/110 | MLCC | 110 | 02-09-2010 | INDEFINITE | 03203-5018-2 |
| 136 | EXPLOITATION | NERON 7, 1/96 | MLCC | 96 | 02-09-2010 | INDEFINITE | 03203-5019-0 |
| 137 | EXPLOITATION | NERON 9, 1/98 | MLCC | 98 | 02-09-2010 | INDEFINITE | 03203-5020-4 |
| 138 | EXPLOITATION | NERUDA 1, 1/42 | MLCC | 210 | 27-03-2012 | INDEFINITE | 03203-5694-6 |
| 139 | EXPLOITATION | NERUDA 10, 1/30 | MLCC | 103 | 27-03-2012 | INDEFINITE | 03203-5703-9 |
| 140 | EXPLOITATION | NERUDA 2, 1/42 | MLCC | 210 | 14-08-2012 | INDEFINITE | 03203-5695-4 |
| 141 | EXPLOITATION | NERUDA 3, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5696-2 |
| 142 | EXPLOITATION | NERUDA 4, 1/42 | MLCC | 210 | 27-03-2012 | INDEFINITE | 03203-5697-0 |
| 143 | EXPLOITATION | NERUDA 5, 1/42 | MLCC | 210 | 27-03-2012 | INDEFINITE | 03203-5698-9 |
| 144 | EXPLOITATION | NERUDA 6, 1/18 | MLCC | 90 | 27-03-2012 | INDEFINITE | 03203-5699-7 |
| 145 | EXPLOITATION | NERUDA 7, 1/18 | MLCC | 90 | 27-03-2012 | INDEFINITE | 03203-5700-4 |
| 146 | EXPLOITATION | NERUDA 8, 1/16 | MLCC | 76 | 27-03-2012 | INDEFINITE | 03203-5701-2 |
| 147 | EXPLOITATION | NERUDA 9, 1/18 | MLCC | 210 | 27-03-2012 | INDEFINITE | 03203-5702-0 |
| 148 | EXPLOITATION | NIEVES 1, 1/60 | MLCC | 300 | 25-03-2010 | INDEFINITE | 03203-5083-2 |
| 149 | EXPLOITATION | NIEVES 2, 1/60 | MLCC | 300 | 25-03-2010 | INDEFINITE | 03203-5084-0 |
| 150 | EXPLOITATION | NIEVES 3, 1/60 | MLCC | 300 | 25-03-2010 | INDEFINITE | 03203-5085-9 |
| 151 | EXPLOITATION | NIEVES 4, 1/53 | MLCC | 223 | 25-03-2010 | INDEFINITE | 03203-5086-7 |
| 152 | EXPLOITATION | NIEVES 5, 1/60 | MLCC | 300 | 25-03-2010 | INDEFINITE | 03203-5087-5 |
| 153 | EXPLOITATION | NIEVES 6, 1/60 | MLCC | 300 | 25-03-2010 | INDEFINITE | 03203-5088-3 |
| 154 | EXPLOITATION | NIEVES 7, 1/30 | MLCC | 130 | 25-03-2010 | INDEFINITE | 03203-5089-1 |
| 155 | EXPLOITATION | NIEVES 8, 1/30 | MLCC | 130 | 25-03-2010 | INDEFINITE | 03203-5090-5 |
| 156 | EXPLOITATION | NUEVA CALIFORNIA 18, 1/9 | MLCC | 9 | 27-03-2012 | INDEFINITE | 03203-5674-1 |

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|---|---|---|---|---|---|---|---|
| 157 | EXPLOITATION | NUEVA CALIFORNIA 20, 1/18 | MLCC | 84 | 27-03-2012 | INDEFINITE | 03203-5675-K |
| 158 | EXPLOITATION | NUEVA CALIFORNIA 22, 1/4 | MLCC | 10 | 27-03-2012 | INDEFINITE | 03203-5676-8 |
| 159 | EXPLOITATION | OJOS DE AGUA 1, 1/40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6699-2 |
| 160 | EXPLOITATION | OJOS DE AGUA 10, 1/20 | MLCC | 100 | 13-10-2014 | INDEFINITE | 03203-6707-7 |
| 161 | EXPLOITATION | OJOS DE AGUA 11, 1/40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6708-5 |
| 162 | EXPLOITATION | OJOS DE AGUA 12, 1/20 | MLCC | 100 | 13-10-2014 | INDEFINITE | 03203-6709-3 |
| 163 | EXPLOITATION | OJOS DE AGUA 13, 1/20 | MLCC | 100 | 13-11-2014 | INDEFINITE | 03203-6710-7 |
| 164 | EXPLOITATION | OJOS DE AGUA 14, 1/38 | MLCC | 190 | - | INDEFINITE | 03203-6919-3 |
| 165 | EXPLOITATION | OJOS DE AGUA 15, 1/40 | MLCC | 200 | - | INDEFINITE | 03203-6920-7 |
| 166 | EXPLOITATION | OJOS DE AGUA 2, 1/40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6700-K |
| 167 | EXPLOITATION | OJOSDEAGUA 3, 1/18 | MLCC | 90 | 20-07-2015 | INDEFINITE | 03203-6927-4 |
| 168 | EXPLOITATION | OJOSDEAGUA 4, 1/60 | MLCC | 300 | - | INDEFINITE | 03203-6701-8 |
| 169 | EXPLOITATION | OJOSDEAGUA 5, 1/40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6702-6 |
| 170 | EXPLOITATION | OJOSDEAGUA6 1 60 | MLCC | 300 | 13-10-2014 | INDEFINITE | 03203-6703-4 |
| 171 | EXPLOITATION | OJOSDEAGUA 7, 1/60 | MLCC | 300 | 12-12-2014 | INDEFINITE | 03203-6704-2 |
| 172 | EXPLOITATION | OJOSDEAGUA 8, 1/60 | MLCC | 300 | 13-10-2014 | INDEFINITE | 03203-6705-0 |
| 173 | EXPLOITATION | OJOSDEAGUA9 1 40 | MLCC | 200 | 13-11-2014 | INDEFINITE | 03203-6706-9 |
| 174 | EXPLOITATION | OLLITA 1, 1/60 | MLCC | 300 | 22-01-2013 | INDEFINITE | 03203-5102-2 |
| 175 | EXPLOITATION | OLLITA 10, 1/60 | MLCC | 300 | 22-01-2013 | INDEFINITE | 03203-5111-1 |
| 176 | EXPLOITATION | OLLITA 11, 1/60 | MLCC | 300 | 15-06-2012 | INDEFINITE | 03203-5112-K |
| 177 | EXPLOITATION | OLLITA 12, 1/60 | MLCC | 300 | 21-07-2012 | INDEFINITE | 03203-5113-8 |
| 178 | EXPLOITATION | OLLITA 13, 1/60 | MLCC | 300 | 15-06-2012 | INDEFINITE | 03203-5114-6 |
| 179 | EXPLOITATION | OLLITA 14, 1/60 | MLCC | 300 | 14-08-2012 | INDEFINITE | 03203-5115-4 |
| 180 | EXPLOITATION | OLLITA 15, 1/60 | MLCC | 300 | 15-06-2012 | INDEFINITE | 03203-5116-2 |
| 181 | EXPLOITATION | OLLITA 16, 1/60 | MLCC | 300 | 21-07-2012 | INDEFINITE | 03203-5117-0 |
| 182 | EXPLOITATION | OLLITA17, 1/60 | MLCC | 300 | 15-06-2012 | INDEFINITE | 03203-5118-9 |
| 183 | EXPLOITATION | OLLITA18, 1/60 | MLCC | 300 | 21-07-2012 | INDEFINITE | 03203-5119-7 |
| 184 | EXPLOITATION | OLLITA 19, 1/60 | MLCC | 300 | 15-06-2012 | INDEFINITE | 03203-5120-0 |
| 185 | EXPLOITATION | OLLITA 2, 1/60 | MLCC | 298 | 19-03-2014 | INDEFINITE | 03203-5103-0 |
| 186 | EXPLOITATION | OLLITA 20, 1/60 | MLCC | 255 | 21-07-2012 | INDEFINITE | 03203-5121-9 |
| 187 | EXPLOITATION | OLLITA 21, 1/17 | MLCC | 50 | 21-06-2012 | INDEFINITE | 03203-5122-7 |
| 188 | EXPLOITATION | OLLITA 3, 1/57 | MLCC | 282 | 21-07-2012 | INDEFINITE | 03203-5104-9 |
| 189 | EXPLOITATION | OLLITA 4, 1/60 | MLCC | 260 | 21-07-2012 | INDEFINITE | 03203-5105-7 |
| 190 | EXPLOITATION | OLLITA 5, 1/60 | MLCC | 292 | - | INDEFINITE | 03203-5106-5 |

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|---|---|---|---|---|---|---|---|
| 191 | EXPLOITATION | OLLITA 6, 1/60 | MLCC | 300 | 08-11-2012 | INDEFINITE | 03203-5107-3 |
| 192 | EXPLOITATION | OLLITA 7, 1/60 | MLCC | 300 | 22-01-2013 | INDEFINITE | 03203-5108-1 |
| 193 | EXPLOITATION | OLLITA 8, 1/60 | MLCC | 300 | 08-11-2012 | INDEFINITE | 03203-5109-K |
| 194 | EXPLOITATION | OLLITA 9, 1/60 | MLCC | 300 | 22-01-2013 | INDEFINITE | 03203-5110-3 |
| 195 | EXPLOITATION | PAREDES 11, 1/60 | MLCC | 284 | 05-04-2013 | INDEFINITE | 03203-6063-3 |
| 196 | EXPLOITATION | PAREDES 12, 1/60 | MLCC | 300 | 05-04-2013 | INDEFINITE | 03203-6064-1 |
| 197 | EXPLOITATION | PAREDES 13, 1/60 | MLCC | 300 | 05-09-2013 | INDEFINITE | 03203-6065-K |
| 198 | EXPLOITATION | PAREDES 14, 1/60 | MLCC | 300 | 05-09-2013 | INDEFINITE | 03203-6066-8 |
| 199 | EXPLOITATION | PAREDES 16, 1/10 | MLCC | 20 | 05-09-2013 | INDEFINITE | 03203-6068-4 |
| 200 | EXPLOITATION | PAREDES 16A, 1 AL 129 | MLCC | 129 | 07-02-2022 | INDEFINITE | 03203-7613-0 |
| 201 | EXPLOITATION | PEÑA NEGRO 1 51 | MLCC | 245 | - | INDEFINITE | 03203-7149-K |
| 202 | EXPLOITATION | PEÑA NEGRO 10, 1/58 | MLCC | 284 | - | INDEFINITE | 03203-7153-8 |
| 203 | EXPLOITATION | PEÑA NEGR02, 1/36 | MLCC | 173 | - | INDEFINITE | 03203-7150-3 |
| 204 | EXPLOITATION | PEÑA NEGROS 52 | MLCC | 229 | 25-10-2010 | INDEFINITE | 03203-5184-7 |
| 205 | EXPLOITATION | PEÑA NEGRO 4, 1/60 | MLCC | 299 | 25-10-2010 | INDEFINITE | 03203-5185-5 |
| 206 | EXPLOITATION | PEÑA NEGRO 5, 1/58 | MLCC | 226 | 25-10-2010 | INDEFINITE | 03203-5186-3 |
| 207 | EXPLOITATION | PENA NEGROS 41 | MLCC | 178 | 25-10-2010 | INDEFINITE | 03203-5187-1 |
| 208 | EXPLOITATION | PEÑA NEGRO 7, 1/20 | MLCC | 100 | 02-09-2010 | INDEFINITE | 03203-5188-K |
| 209 | EXPLOITATION | PEÑA NEGROS, 1/20 | MLCC | 100 | 02-09-2010 | INDEFINITE | 03203-5189-8 |
| 210 | EXPLOITATION | PEÑA NEGROS | MLCC | 100 | 25-10-2010 | INDEFINITE | 03203-5190-1 |
| 211 | EXPLOITATION | PIRCAS 1, 1/40 | MLCC | 200 | 02-09-2010 | INDEFINITE | 03203-5192-8 |
| 212 | EXPLOITATION | PIRCAS 10, 1/51 | MLCC | 240 | 02-09-2010 | INDEFINITE | 03203-5198-7 |
| 213 | EXPLOITATION | PIRCAS NEGRAS 1, 1 1 | MLCC | 143 | 02-09-2010 | INDEFINITE | 03203-5199-5 |
| 214 | EXPLOITATION | PIRCAS NEGRAS | MLCC | 200 | 02-09-2010 | INDEFINITE | 03203-5211-8 |
| 215 | EXPLOITATION | PIRCAS NEGRAS 3, 1/40 | MLCC | 200 | 02-09-2010 | INDEFINITE | 03203-5212-6 |
| 216 | EXPLOITATION | PIRCASNEGRAS 4 | MLCC | 200 | 02-09-2010 | INDEFINITE | 03203-5193-6 |
| 217 | EXPLOITATION | PIRCAS NEGUS 5, 1/24 | MLCC | 72 | 02-09-2010 | INDEFINITE | 03203-5213-4 |
| 218 | EXPLOITATION | PIRCAS NEGRAS 6, 1/60 | MLCC | 300 | 02-09-2010 | INDEFINITE | 03203-5194-4 |
| 219 | EXPLOITATION | PIRCAS NEGRAS 7, 1/60 | MLCC | 300 | 02-09-2010 | INDEFINITE | 03203-5195-2 |
| 220 | EXPLOITATION | PIRCAS NEGRAS 8, 1/56 | MLCC | 259 | - | INDEFINITE | 03203-7151-1 |
| 221 | EXPLOITATION | PIRCAS NEGRAS 9, 1/35 | MLCC | 133 | - | INDEFINITE | 03203-7152-K |
| 222 | EXPLOITATION | POTRO 4, 1/60 | MLCC | 300 | 15-04-2008 | INDEFINITE | 03203-4694-0 |
| 223 | EXPLOITATION | POTRO 5, 1/60 | MLCC | 300 | 15-04-2008 | INDEFINITE | 03203-4695-9 |
| 224 | EXPLOITATION | POTRO 6, 1/60 | MLCC | 300 | 15-04-2008 | INDEFINITE | 03203-4696-7 |

| Order | Concession Type | Name | Holder | Area (ha) | Granted (dd/mm/yyyy) | Expiry | Number |
|---|---|---|---|---|---|---|---|
| 225 | EXPLOITATION | POTRO ESTE 1, 1/60 | MLCC | 71 | 14-08-2012 | INDEFINITE | 03203-5170-7 |
| 226 | EXPLOITATION | POTRO ESTE 10, 1/20 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5179-0 |
| 227 | EXPLOITATION | POTRO ESTE 11, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5180-4 |
| 228 | EXPLOITATION | POTRO ESTE 12, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5181-2 |
| 229 | EXPLOITATION | POTRO ESTE 2, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5171-5 |
| 230 | EXPLOITATION | POTRO ESTE 3, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5172-3 |
| 231 | EXPLOITATION | POTRO ESTE 4, 1/60 | MLCC | 300 | - | INDEFINITE | 03203-5173-1 |
| 232 | EXPLOITATION | POTRO ESTE 5, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5174-K |
| 233 | EXPLOITATION | POTRO ESTE 6, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5175-8 |
| 234 | EXPLOITATION | POTRO ESTE 7, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5176-6 |
| 235 | EXPLOITATION | POTRO ESTE 8, 1/60 | MLCC | 300 | 12-07-2012 | INDEFINITE | 03203-5177-4 |
| 236 | EXPLOITATION | POTRO ESTE 9, 1/60 | MLCC | 271 | 14-08-2012 | INDEFINITE | 03203-5178-2 |
| 237 | EXPLOITATION | POTRO UNO 1/20 | MLCC | 100 | 15-04-2008 | INDEFINITE | 03203-4692-4 |
| 238 | EXPLOITATION | POTRO UNO 3, 1/50 | MLCC | 100 | 15-04-2008 | INDEFINITE | 03203-4693-2 |
| 239 | EXPLOITATION | PULIDO 1, 1/2 | MLCC | 20 | 09-07-2014 | INDEFINITE | 03203-6725-5 |
| 240 | EXPLOITATION | PULIDO 2, 1/2 | MLCC | 12 | 20-07-2015 | INDEFINITE | 03203-6926-6 |
| 241 | EXPLOITATION | PULIDO 3 | MLCC | 5 | 09-07-2014 | INDEFINITE | 03203-6726-3 |
| 242 | EXPLOITATION | PULIDO 4 | MLCC | 5 | - | INDEFINITE | 03203-6727-1 |
| 243 | EXPLOITATION | PULIDO 5 | MLCC | 5 | 09-07-2014 | INDEFINITE | 03203-6728-K |
| 244 | EXPLOITATION | PULIDO 6 | MLCC | 5 | - | INDEFINITE | 03203-6729-8 |
| 245 | EXPLOITATION | PULIDO 7, 1/2 | MLCC | 20 | - | INDEFINITE | 03203-6730-1 |
| 246 | EXPLOITATION | RAMA 3, 1/20 | MLCC | 100 | 27-03-2012 | INDEFINITE | 03203-5496-K |
| 247 | EXPLOITATION | RAMA 4, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5497-8 |
| 248 | EXPLOITATION | RAMA DOS, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5495-1 |
| 249 | EXPLOITATION | RAMA UNO, 1/60 | MLCC | 300 | 27-03-2012 | INDEFINITE | 03203-5494-3 |
| 250 | EXPLOITATION | RAMADILLA, 1/12 | MLCC | 87 | 22-10-1991 | INDEFINITE | 03203-2066-6 |
| 251 | EXPLOITATION | VICUÑA VI, 1/20 | MLCC | 100 | 04-02-2009 | INDEFINITE | 03203-4697-5 |

### 4.3.2 Exploration Concessions

Exploration concessions have a duration of two years, with the possibility of a two-year renewal period. At the end of the renewal period, to maintain rights, the concession, in part or in whole, must be converted to an exploitation concession. As with exploitation concessions, an annual mining patent fee must be made to keep the concessions current over the granted terms.

As of June 2023, 26 of the 33 exploration concessions, have been fully granted and seven are in the grant process.

Table 4-2 presents the list of the exploration concessions.

**Table 4-2: Exploration Concessions**

| Order | Concession Type | Name | Holder | Area (ha) | Expiry Date (dd/mmm/yy) | ID Number |
|---|---|---|---|---|---|---|
| 1 | Exploration | LUMINA 1 | MLCC | 300 | 31-Jan-24 | 03203-G871-K |
| 2 | Exploration | LUMINA 2 | MLCC | 300 | 10-Dec-23 | 03203-G857-4 |
| 3 | Exploration | LUMINA 3 | MLCC | 300 | 26-Mar-24 | 03203-H016-1 |
| 4 | Exploration | LUMINA 4 | MLCC | 300 | 7-Mar-24 | 03203-H014-5 |
| 5 | Exploration | LUMINA 5 | MLCC | 200 | 28-Jan-24 | 03203-G937-6 |
| 6 | Exploration | LUMINA 6 | MLCC | 200 | 26-Mar-24 | 03203-H017-K |
| 7 | Exploration | LUMINA 7 | MLCC | 200 | 28-Jan-24 | 03203-G934-1 |
| 8 | Exploration | LUMINA 8 | MLCC | 300 | 7-Mar-24 | 03203-H013-7 |
| 9 | Exploration | LUMINA 9 | MLCC | 200 | 28-Jan-24 | 03203-G936-8 |
| 10 | Exploration | LUMINA 10 | MLCC | 100 | 26-Mar-24 | 03203-H018-8 |
| 11 | Exploration | LUMINA 11 | MLCC | 100 | 7-Mar-24 | 03203-G935-K |
| 12 | Exploration | LUMINA 12 | MLCC | 100 | 7-Mar-24 | 03203-H012-9 |
| 13 | Exploration | LUMINA 13 | MLCC | 100 | 28-Jan-24 | 03203-G938-4 |
| 14 | Exploration | LUMINA 14 | MLCC | 100 | 26-Mar-24 | 03203-H019-6 |
| 15 | Exploration | LUMINA 15 | MLCC | 200 | 23-Apr-24 | 03203-G946-5 |
| 16 | Exploration | LUMINA 16 | MLCC | 200 | 11-Mar-24 | 03203-G947-3 |
| 17 | Exploration | LUMINA 17 | MLCC | 300 | 20-Apr-24 | 03203-G948-1 |
| 18 | Exploration | LUMINA 18 | MLCC | 300 | 18-Mar-24 | 03203-G949-K |
| 19 | Exploration | LUMINA 19 | MLCC | 200 | 23-Apr-24 | 03203-G950-3 |
| 20 | Exploration | LUMINA 20 | MLCC | 100 | 11-Mar-24 | 03203-G951-1 |
| 21 | Exploration | LUMINA 21 | MLCC | 100 | 18-Mar-24 | 03203-G952-K |
| 22 | Exploration | LUMINA 22 | MLCC | 200 | 20-Apr-24 | 03203-G953-8 |
| 23 | Exploration | LUMINA 23 | MLCC | 300 | 23-Apr-24 | 03203-G954-6 |
| 24 | Exploration | LUMINA 24 | MLCC | 200 | 11-Mar-24 | 03203-G955-4 |
| 25 | Exploration | LUMINA 25 | MLCC | 100 | 18-Mar-24 | 03203-G956-2 |
| 26 | Exploration | LUMINA 26 | MLCC | 100 | 18-Apr-24 | 03203-G957-0 |
| 27 | In Process | LUMINA 27 | MLCC | 200 | 11-Apr-25 | 03203-H464-7 |
| 28 | In Process | LUMINA 28 | MLCC | 300 | - | 03203-H465-5 |
| 29 | In Process | LUMINA 29 | MLCC | 300 | 14-Apr-25 | 03203-H466-3 |
| 30 | In Process | LUMINA 30 | MLCC | 300 | 27-Apr-25 | 03203-H476-0 |
| 31 | In Process | LUMINA 31 | MLCC | 300 | 21-Apr-25 | 03203-H467-1 |
| 32 | In Process | LUMINA 32 | MLCC | 300 | - | 03203-H470-1 |
| 33 | In Process | LUMINA 33 | MLCC | 200 | 14-Apr-25 | 03203-H469-8 |

### 4.3.3 Exploitation Concessions Purchased

On 12th April 2023, MLCC bought in a public mining auction the exploitation concessions listed in Table 4-3 below.

**Table 4-3: Exploitation Concessions Purchased April 2023**

| National Number | Name | Ha |
|---|---|---|
| 03203-48358 | NORESA 1 1/9 | 36 |
| 03203-48374 | NORESA 3 1/60 | 293 |
| 03203-48382 | NORESA 4 1/30 | 300 |
| 03203-48390 | NORESA 5 1/26 | 252 |
| 03203-48404 | NORESA 6 1/22 | 110 |
| 03203-48900 | MANTO REAL 28,1/10 | 100 |

MLCC is not a full owner of those concessions, because the sale is still pending two issues: the signature of the purchase agreement by the Court, and (after so) the registration in the Conservator of Mines.

## 4.4 Surface Rights

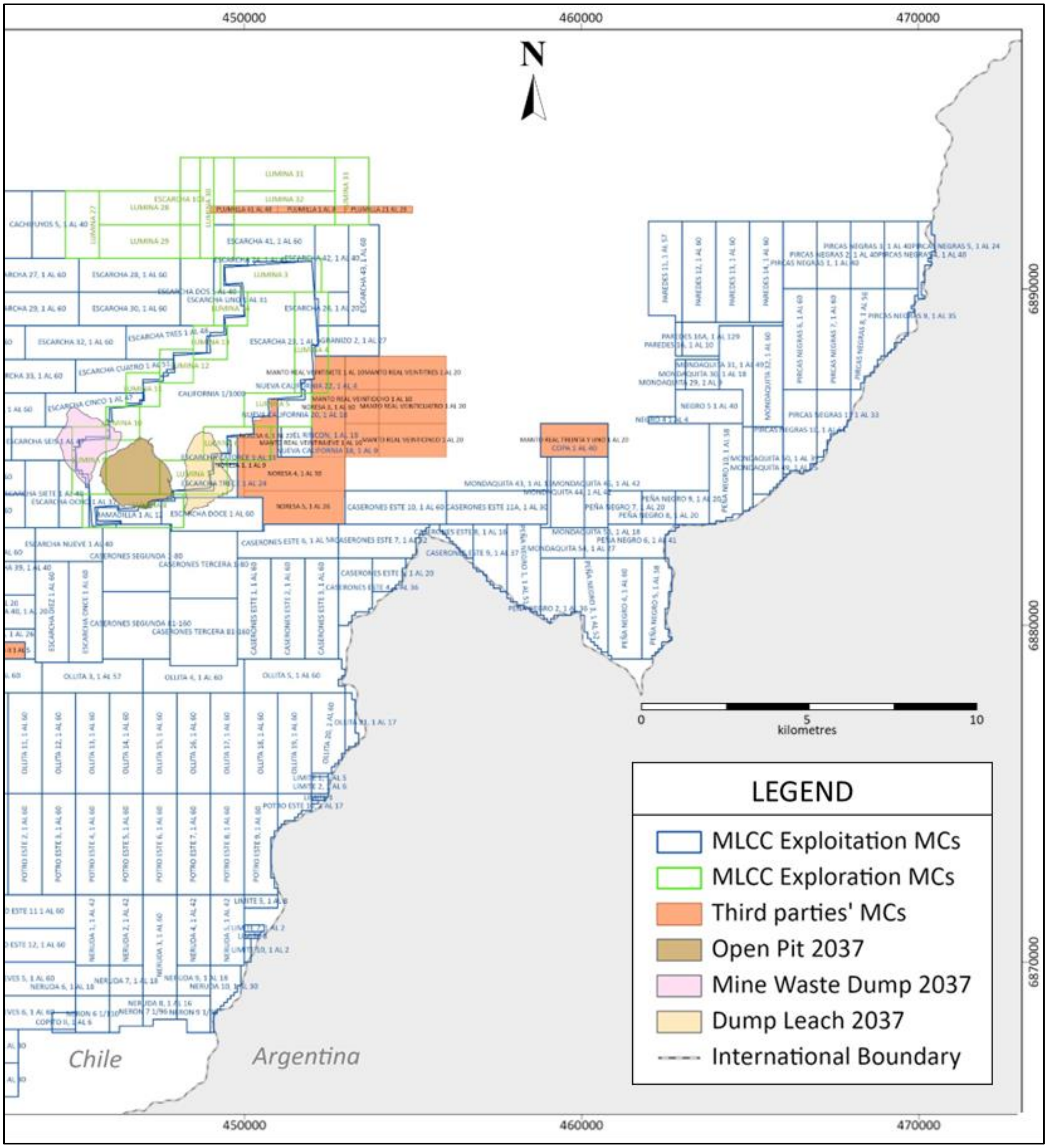
In Chile, ownership of mining concessions is distinct from ownership over the surface land on which a concession is located. According to Chilean law, a mining concession does not confer rights to access and occupy the surface land; such rights are necessary to build infrastructure and conduct mining activities.

Figure 4-3 and Figure 4-4 show the mineral rights and the surface rights attributed to MLCC, for the west and east halves, respectively.

**Figure 4-3: Mineral Rights and Surface Rights Map – Caserones Project (west)**


Source: MLCC (2023); modified by AGP (2023)

**Figure 4-4: Mineral Rights and Surface Rights Map – Caserones Project (east)**




Source: MLCC (2023); modified by AGP (2023)

MLCC holds two types of surface rights, located in the commune of Tierra Amarilla, province of Copiapó, Atacama Region:

- property rights, covering 38,224 ha, which comprise the surface rights that allow mining activities on the surface land; that is, where the open pit, leach dump and waste dump are located
- legal rights, consisting of 72 easements covering areas such as the power transmission line, water pipelines, and environmental commitments
- MLCC holds the surface rights outlined in Figures 4-3 and 4-4. Except for those areas noted below, all mining activities and infrastructure are within the surface rights holdings
- The legal opinion noted that there are two areas that are not fully covered by easements:
  - approximately 28 km of the transmission line is not covered by easements
  - approximately 4 km of the desalination water pipeline is not covered by easements in Caldera area

These omissions should be rectified.

Chilean legislation requires a quarterly payment called real estate taxes("contribuciones"), which consists of a tax that is applied on the tax appraisal of the properties and is made in annual installments. MLCC remits a total amount of approximately US$500,000 per year. All payments were current as at the legal opinion date.

## 4.5 Water Rights

MLCC is the owner of a total of groundwater rights consisting of 1,280.5 L/sec currently distributed in 36 different wells. Use of such groundwater rights is limited to the environmental restriction of 518 L/sec. In addition, MLCC owns consumptive superficial water rights consisting of 46.5 shares in three different channels, community rights in one channel, and one right is a non-consumptive superficial water right, with a total flow of 100 L/sec covering the Ramadilla o del Medio River. Superficial water rights are not allowed for Caserones project according to the environmental license.

The legal opinion (refer to Section 3.1) confirmed that the water rights were correctly constituted, were in accordance with Chilean laws and were in full force and effect at the legal opinion date. The rights were duly registered to MLCC in the Water Property Registry of the competent Real Estate Registry. There were no legal proceedings related to the process of auction for non-payment of the Patent for Non-Use.

## 4.6 Royalties and Encumbrances

The following royalties and encumbrances were in place at the Report effective date.

### 4.6.1 NSR Royalty

When MLCC acquired the following 62 concessions, the company agreed to pay a quarterly net smelter return (NSR) to Sociedad Legal Minera California Una de la Sierra Peña Negra (SLM California) and Compañía Minera Caserones (Minera Caserones) upon production:

- California 1/1000, Caserones II 1/80, Caserones II 81/160, Caserones III 1/80, Caserones III 81/160, Cordillera 2 1/60, Cordillera 3 1/60, Escarcha 1 1/31, Escarcha 2 1/40, Escarcha 3 1/48, Escarcha 4 1/51, Escarcha 5 1/47, Escarcha 6 1/47, Escarcha 7 1/40, Escarcha 8 1/37, Escarcha 9 1/40, Escarcha 10 1/60, Escarcha 11 1/60, Escarcha 12 1/60, Escarcha 13 1/24, Escarcha 14 1/11, Escarcha 23 1/3, Escarcha 24 1/3, Escarcha 25, Escarcha 26 1/20, Escarcha 27 1/60, Escarcha 28 1/60, Escarcha 29 1/60, Escarcha 30 1/60, Escarcha 31 1/60, Escarcha 32 1/60, Escarcha 33 1/60, Escarcha 34 1/60, Escarcha 35 1/60, Escarcha 36 1/60, Escarcha 38 1/60, Escarcha 39 1/40, Escarcha 40 1/20, Escarcha 46 1/60, La Brea 1 1/40, La Brea 2 1/40, La Brea 3 1/60, La Brea 4 1/40, La Brea 5 1/60, La Brea 6 1/60, La Brea 7 1/60, La Brea 8 1/60, La Brea 9 1/60, La Brea 10 1/20, La Brea 11 1/60, La Brea 12 1/60, La Brea 13 1/20, La Brea 14 1/60, La Brea 15 1/40, La Brea 16 1/40, La Brea 17 1/20, Potro 1 1/20, Potro 1 31/50, Potro 4 1/60, Potro 5 1/60, Potro 6 1/60, and Ramadilla 1/12.

The exploitation concessions with this royalty burden cover about 10,000 ha, which consists of the total exploitation concession area plus a 2 km buffer area from the outer perimeter of the exploitation concessions.

The NSR is calculated as follows:

- If the average price of a pound of copper published by the London Metal Exchange (LME) is <US$1.00, the NSR royalty is 1% of all revenues obtained from the sale of the mineral products mined from those exploitation concessions that are subject to the royalty, minus certain allowable deductions (refining costs; transportation, insurance, and port costs; taxes; and sales costs) as set forth in corresponding purchase agreement.
- If the average price of a pound of copper published by the LME is between US$1.00 and US$1.25, the NSR royalty is 2% of all revenues obtained from the sale of the mineral products mined from those exploitation concessions that are subject to the royalty, minus certain allowable deductions.
- If the average price of a pound of copper published by the LME is >US$1.25, the NSR royalty is 2.88% of all revenues obtained from the sale of the mineral products mined from those exploitation concessions that are subject to the royalty s, minus certain allowable deductions.

The royalty payments must be allocated as follows:

- 67.5% to SLM California
- 32.5% to Minera Caserones

The exploitation concessions that are subject to the royalty are also affected by a prohibition to sell and encumber granted in favor of SLM California and Minera Caserones. This prohibition will remain in force as long as the royalty remains as an MLCC obligation.

### 4.6.2 Tax Loss

As of December 31, 2022, SCM Minera Lumina Copper Chile reported an accrued tax loss of approximately $3 billion, which can be applied against future income taxes.  The tax loss is currently carried in the financial model that supports the Mineral Reserves.

### 4.6.3 Mortgage

The property known as "Ramadillas Sur", which is the surface land on which the open pit is located, is subject to a mortgage constituted by MLCC in favor of Japan Bank for International Cooperation; Mizuho Corporate Bank, LTD; Sumitomo Mitsui Banking Corporation; The Bank of Tokyo-Mitsubishi UFJ LTD; and The Hong Kong and Shanghai Banking Corporation Limited, Tokyo Branch.

## 4.7 Permits

MLCC has the following permits in place to conduct mining operations:

Permits regarding Caserones project.

- Estudio de Impacto Ambiental "Proyecto Caserones", aprobado mediante la RCA N° 13/2010 de la COREMA Región de Atacama.
- Resolución Ex. N°052/2010 de COREMA Región de Atacama que rectifica RCA 13/2010.
- Declaración de Impacto Ambiental "Actualización Mina Caserones", aprobada por la RCA N° 57/2014 de la Comisión de Evaluación Ambiental Región de Atacama.

Permits regarding Transmission Line:

- Estudio de Impacto Ambiental "Línea de Transmisión 2x 220 Kv Maitencillo- Caserones", aprobado mediante RCA N°151/2011 de la Comisión de Evaluación Ambiental Región de Atacama.
- Declaración de Impacto Ambiental "Modificación Línea de Transmisión 2x 220 Kv Maitencillo- Caserones, variante Maitencillo Norte", aprobado mediante RCA N°017/2014 de la Comisión de Evaluación Ambiental Región de Atacama.
- Declaración de Impacto Ambiental "Regularización Torres Línea de Transmisión 2x 220 Kv Maitencillo- Caserones", aprobado mediante RCA N°048/2014 de la Comisión de Evaluación Ambiental Región de Atacama.

The National Geology and Mining Service (SERNAGEOMIN) has granted the following sectorial permits:

- Resolución Exenta N°3472 de fecha 08.11.2011: Aprueba el Método de Explotación, considerando los procesos de perforación, tronadura, extracción y transporte, y las instalaciones asociadas a dichos procesos como la mina y el botadero de lastre.
- Resolución Exenta N°1434 de fecha 25.05.2011: Aprueba el Proyecto Botadero de Lastre en su diseño de ingeniería, el cual recibe el material de lastre proveniente de la operación del rajo Caserones.
- Resolución Exenta N°2860 de fecha 15.09.2011: Aprueba el Proyecto Depósito de Lixiviación (Dump Leach).
- Resoluciones Exentas N°1654 de fecha 13.06.2011 y N° 712 del 18.10.2013: Aprueba el Proyecto y modificaciones posteriores de la Planta de Procesamiento de Minerales. Considera los procesos de Chancado; Molienda SAG y Bolas; Flotación Colectiva; Flotación Selectiva (Mo); Espesamiento, Filtrado y Almacenamiento de Concentrado de Cobre; Secado y envasado de Molibdeno; Clasificación de Relaves y Espesamiento de Lamas.

- Resolución Exenta N°0690 de fecha 01.03.2012: Aprueba el Proyecto Planta de Electro-obtención de Caserones.
- Resolución Exenta N°2149 de fecha 22.07.2011: Aprueba el Proyecto Depósito de Lamas La Brea, en su configuración original.
- Resolución Exenta N°0542 de fecha 06.03.2017: Aprueba el Proyecto Definitivo Depósito de Lamas La Brea, el cual incluyó obras que ya se encontraban construidas.
- Resolución Exenta N°2145 de fecha 02.08.2018: Aprueba el Proyecto Plan de Adaptación Operacional (PAO) Depósito de Lamas La Brea. En este proyecto se solicitó autorización para depositar transitoriamente arenas en el depósito de lamas, dado que la puesta en marcha del acopio de arenas fue más lenta de lo esperado. Este plan, en teoría, fue requerido hasta el término de la etapa 9 de crecimiento del muro, lo que se estima al año 2024.
- Resolución Exenta N°3370 de fecha 02.11.2011: Aprueba el Proyecto Depósito de Arenas Caserones, en su diseño original.
- Resolución Exenta N°2229 de fecha 17.08.2018: Aprueba el Proyecto Actualización Acopio de Arenas Caserones.

In 2021, work has continued with updating activities that were modified, or are planned to be modified, with respect to their approvals. This has been done through different applications, including:

- Environmental sanctioning procedure followed before the Environmental Superintendence (SMA) in which 18 charges or infractions were formulated to the environmental permit of the Caserones mining project (RCA13/2010). Currently, the sanctioning process continues for 2 charges in which reparable environmental damage is imputed, due to infiltration in the two tailings deposits (resolution by the environmental authority is expected for the second half of 2023). The remaining 16 charges are covered by a Compliance Programme (PdC), which is a legal alternative to regularise deviations through actions approved by the SMA within a certain period of time.
- Compliance Programme (PdC) for 16 charges to the RCA 13/2010 approved by the SMA, dated 12 February 2021, and ends on 22 February 2024.
- Nuevo Estudio de Impacto Ambiental (EIA), ingresado al Sistema de Evaluación de Impacto Ambiental (SEIA) el 1 de junio de 2020 y actualmente en proceso de evaluación ambiental por parte de los organismos con competencia ambiental.
- Actualización de permisos sectoriales: Plan de Cierre de Faena Minera (ingresado en enero 2021), Actualización Depósito de Arenas (SERNAGEOMIN), Barrera Hidráulicas La Brea (en tramitación) y Caserones (actualmente con una prueba de bombeo de larga duración para verificar eficacia del sistema de control de infiltración, campaña de investigación hidrogeológica llevada por la GRMD).

There is an Indigenous Development Area (ADI) in the east end of the Property (Figure 4-2), situated to the east of Cerro Caserones and does not affect the mine or mining operations. When MLCC requires to carry out activities in this area, MLCC seeks permission from the local indigenous communities.

An ADI is defined as territorial areas where state administration focuses their action to improve the quality of life of people of indigenous origin who live in said territories. The ADIs are defined by Art. 26

of Law No. 19,253 (1995) and were created to encourage and strengthen the indigenous people's management capacities in the use of their own natural, human, economic and cultural resources.

Additional information on Project permitting is discussed in Section 20.2.

## 4.8 Environmental Liabilities

Environmental liabilities are restricted to those associated with the operations. Remediation of these is covered by the Project closure plan, see discussion in Section 20.4.

## 4.9 QP Comment on Section 4

To the extent known to the QP, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the property that are not discussed in this Report.

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

## 5.1 Accessibility

The Project is located 125 km by road, southeast of Copiapó. From Copiapó, the Project is easily accessed by driving:

- southeast along the paved highway C-35 for approximately 90 km to the town of Rodeo
- turning southeast along the paved highway C-453 for approximately 25 km to Juntas del Potro
- turning northeast onto secondary highway C-535 km for approximately 9 km to access the mining camp at Pastos Largos
- to access the Caserones Project site, continue on the mine access road for approximately 35 km

Highways are paved all the way to the mine site and are in good condition. The drive from Copiapó is typically 2.5 to 3 hours. There are also regular scheduled flights to Copiapó from Santiago.

## 5.2 Climate

Chile has a diverse series of climates. The Project is situated close to an oceanic climate (Cfb; Köppen climate classification). However, where in elevations rise in the east, near the Chilean–Argentinean border, the climate changes rapidly to a temperate (cold summer) Mediterranean climate (Csc) and to tundra in the upper peaks. The mine is considered to be in a tundra (cold desert) climate (ET) or polar mountain climate (H).

The region is characterized by cool dry summers and dry cold winters. Mean temperatures range from 6°C in January (summer) to around -10°C in July (winter). Mean annual precipitation is typically <5 mm (meteoblue.com; Cerro Norte Pirca Negras).

Mining operations are year-round. There can be short-term interruptions in June–July if there are major snowfall events. Due to extreme temperatures and snowfall conditions between May to August, exploration activities are limited to September to April.

### 5.2.1 Local Resources

The largest village near the Project is Los Loros, population 1,000 (est. 2020), located approximately 60 km northeast of the mine on highway C-35; or approximately an hour's drive from both Tierra Amarilla (to the west) and Carrizalillo Grande Camp (to the east). The dirt roads are in fair to good condition. There are limited services available at Los Loros.

Copiapó, population 154,500 (est. 2017) is the largest town in Atacama, nearest to the mine, and offers most services, supplies and fuel required for the Project. The Atacama Region is known for its mining industry and is well-established mining centre in Chile. The Atacama Region also has an economic agriculture industry in fruit and vegetable exports due to its favorable climate closer to the coast, and irrigation.

### 5.2.2 Electricity

A small power line parallels highway C-35 along the Copiapó River Valley for approximately 90 km. The electricity supply for the Project is discussed in Section 18.6.

### 5.2.3 Water

There is water flow in the Rio Ramadillas that flows all year round. Water requirements for the Project are discussed in Section 18.4.

### 5.2.4 Infrastructure

The majority of the required infrastructure to support the LOM plan is in place. See discussions in Section 18.

## 5.3 Physiography

The Project area is situated at the northern end of the Andes australes, or southern Andes. The Parque Nacional el Nevado Tres Cruces, located 120 km north of the mine, is considered the southern extent of the Andes centrales, or central Andes.

The vertical relief in the Project area is very high with elevations ranging between 2,500 m and 5,500 m above sea level (masl). The mine is situated at the base of highest peak in the area, Pt. Caserones at 5,505 masl. Elevations of the mine infrastructure vary from 3,200 m to 4,500 masl

There is no vegetation around the mine site and neighbouring valleys.

## 5.4 Sufficiency of Surface Rights

There is sufficient surface area for the open pits, waste rock storage facilities, plant, tailings storage facilities, associated infrastructure and other operational requirements for the LOM plan discussed in this Report. MLCC has sufficient surface rights to conduct the planned mining and exploration activities.

# 6 HISTORY

The Caserones Project was previously known as the Regalito Project up until 2007. Any reference to Regalito may be translated as Caserones.

## 6.1 Pre-Colombian, Pre-1983

The first evidence of mining activity in the area dates back to pre-Colombian times and consisted of artisanal turquoise mining operations along the Quebrada Central and the Quebrada Tamberias. Both drainages originate immediately downslope along the south flank of the Caserones Project (Berezowsky, 2003).

## 6.2 Initial Exploration, 1983–1986

In January 1984, SMC California Uña de la Sierra Peña Negra & Compañia Minera Caserones (SLM California & CMC), carried out a five-day regional reconnaissance in the Andean range of Copiapó that included portions of the Project area.

Subsequent to this, SLM California & CMC, and LCM Caserones both staked claims in the area. SMC California & CMC and LCM Caserones were both private Chilean companies.

In May 1986, BTX Exploration Ltda. (BTX) conducted a nine-day reconnaissance sampling and mapping program that included seven days of helicopter support. This program was known as the Regalito Exploration Project and covered 1,250 $km^2$. This work resulted in the identification of several areas of mineralization that included: Pulido, Pulido Sur, West Caserones and Central Caserones, East Caserones, Angelica and Potro (see Figure 4-2). The West Caserones and Central Caserones were collectively known as the Regalito prospect.

Table 6-2 summarizes the exploration activities from 1983 to 1986.

**Table 6-1: Summary of Previous Exploration Activities, Drill Programs**

| Company | Date | Activity | Details |
|---|---|---|---|
| SLM California & CMC | 1984 | Regional Reconnaissance | Geological mapping; along Caserones Fault |
| BTX | 1986 | Rock Sampling Geological Mapping | 701 soil and rock samples (Cu, Mo, Au, Ag, As, Pb and Zn) |

## 6.3 Advanced Exploration, 1988–2000

Between 1988 and 2000, four mining companies completed surface mapping of the Regalito prospect, initiating exploration by means of both reverse circulation (RC) and diamond drilling (DD).

- 1888–1990 Compañia Minera Newmont Chile (Minera Newmont)
- 1990–1991 Inversiones Mineras del Inca SA (INCA) and Niugini Mining (Niugini)
- 1994–1998 BHP Chile Inc.

- 2000 South American Gold and Copper Company (SAGC)

The exploration and drill results revealed a porphyritic Cu-Mo body embedded in granitic intrusive rocks, intruded by a stock of dacitic porphyry of Miocene age with some local breccia bodies related to this intrusion. The sector was characterized by a quartz-sericitic alteration that graded at depth to potassic alteration. An oxide zone was present at the top of the body, followed by a zone of secondary sulfides subparallel to the surface.

Table 6-2 summarizes the drill programs from 1988 to 2000.

**Table 6-2: Summary of Previous Exploration Activities, Drill Programs**

| Company | Date | Type | Total No. | Total Metres (m) |
|---|---|---|---|---|
| Minera Newmont | 1988 – 1990 | RC | 15 | 844 |
| Minera Newmont | 1988 – 1990 | DDH | 5 | 976 |
| Inca & Niugini | 1991 – 1995 | RC | 35 | 3236 |
| Inca & Niugini | 1991 – 1995 | DDH | 5 | 519 |
| Inca & Niugini | 1991 – 1995 | Two adits (72 m, 65 m) were completed for metallurgical sampling of the oxide and secondary sulphide zones | | |
| BHP Chile | 1995 – 1998 | RC | 2 | 260 |
| BHP Chile | 1995 – 1998 | RC-DDH | 5 | 1157 |

For reference, the mineral tenure at the time was divided into the following elements at varying stages of exploration:

- Regalito (Caserones) Cu-Mo porphyry prospect: This prospect was subject to the majority of exploration and drilling.
- Angelica Cu-Mo porphyry prospect: The prospect is situated 3.5 km south of the Caserones mine and has been drill tested.
- Don Diego Au porphyry prospect: The prospect approximately 2 km northeast of the Caserones mine and was subject to limited drilling.
- Pulido Ag-Pb prospect: The prospect is located on the approximately 6 km northeast of the Caserones mine. There has been no drilling on this prospect.
- Potro Cu-Mo porphyry prospect: The prospect is situated approximately 11 km northeast of the Caserones mine, and exploration has been limited to geochemical sampling.

## 6.4 Isotopic Dating and Petrographic Studies 1991, 1996, 2004

### 6.4.1 INCA, 1991 and BHP, 1996, Isotopic Dating

Taken from Amec (2005).

Lumina sampled secondary biotite from the dacite porphyry at Regalito that has been dated by K-Ar at 19.0 ± 0.7 Ma. BHP also dated secondary biotite by K-Ar at 18.3 ± 0.2 Ma, but no details of this determination are available (Anonymous, 1997).

Three samples of intensely sericite altered monzonite returned a mean K-Ar date of 18.4 Ma (ranging from 17.7 ± 0.5 Ma to 19.8 ± 1.0 Ma) and a fourth sample, which returned a date of 25.7 ± 2.4 Ma that is not considered reliable (Curcurella and Oyarzún, 1996).

INCA reported a date of 14 Ma for the porphyry, but the source and origin of the date are unknown (Egert and Ulriksen, 1991).

### 6.4.2 Minera Newmont, 2004, Petrographic, Mineralogical and PIMA Studies

Newmont commissioned Ana Maria Court to complete petrographic studies on 8 thin sections and 13 polished sections for 14 core samples taken from various locations in the mineralization of the Regalito Porphyry system (Court, no date). The individual descriptions are well detailed and describe the texture, composition, and alteration of each sample.

Based on data from five core holes, Newmont geologists proposed a vertical mineral zonation for the Regalito Deposit. The descriptions are included as part of the Newmont Summary Report (Puig, 1990).

In 2004, Lumina contracted the services of Jimena Cucurella at the University of La Serena to complete six separate thin and polished section reports covering 56 individual samples (Curcurella and Flores, 2004 a, b, c, d, e, f). Lumina reports that the results helped determine rock and mineral species for preliminary geologic characterization of the deposit. In addition, the thin sample and polished section analyses were used to assist in defining the rock types and as references for field geologists making hand lens determinations during core logging. Major rock types, quartz monzonite, and quartz biotite porphyry were confirmed, along with the relationships of the copper sulphide species (pers comm, J. Selters, 2005).

At the request of Lumina, a preliminary study of clay mineralogy was conducted by Pablo Uribe using a field PIMA™ instrument. This study was done on drill core from the core holes in the central section of the deposit (Amec, 2005).

## 6.5 Lumina Copper Canada, 2004–2006 (MLCC, 2009)

Lumina Copper Canada (Lumina Canada) conducted an exploration drilling and surface mapping campaign at the Caserones Project (previously Regalito) between February 2004 and October 2004. The objective was to establish the shape and grade of the secondary sulphide enrichment zone.

A total of 32,189.10 m was drilled in 114 holes, of which 46 were DD. Drill holes were completed using JKS-Boyles machines of type B-20 and B-56 using HQ (63.5 mm) and NQ (47.6 mm) core diameters. A total of 76 RC drill holes (19,451 m), were completed using T-4W (Ingersoll Rand), Schramm (T685-W) and Drilltech (S40KX) type drill rigs at drill hole diameters of 5⅜, 5½ and 5¾ inches, respectively (Amec, 2005).

The drill holes were drilled in a 100 m by 200 m grid with dips that ranged from 65º–vertical. Downhole survey measurements were completed using Maxibor equipment (10 measurements) and later with a gyroscope (84 measurements).

Eight twin holes were completed along with an additional 8 drill holes completed for metallurgical purposes.

Drill holes were sampled at 2 m intervals. Copper and molybdenum were determined using an atomic absorption method. Samples grading ≥ 0.1% CuT were subjected to sequential copper determinations, using the same method which used a 5% sulphuric acid leach followed by sodium cyanide (10%). Analyses were carried out by Actlabs in La Serena. For quality control and quality assurance (QA/QC) in each set of analysis of 52 samples, five duplicates, a blank of sterile material, a laboratory standard and a certified standard are considered in order to check precision and accuracy. To ensure the repeatability of the results, 5% of field duplicates were sampled from the total number of samples obtained.

Density tests were completed at Actlabs and uniaxial compression tests at the Universidad de la Serena Metallurgical bottle tests were conducted.

In parallel, the sample geology, geotechnical parameters and geochemistry were characterized. A mineral resource estimate was completed by Amec (2005).

In February 2005, a district-scale geological-structural mapping was completed. A relogging program on the drill holes was completed by Rojas y Asociados Chile Lda, based in Santiago.

## 6.6 Lumina Copper Chile S.A. (2006–2009)

### 6.6.1 Due Diligence (2006)

In 2006, as part of a due diligence evaluation, Pan Pacific Copper S.A. completed two twin drill holes to validate the 2004 drill campaign information. Lumina Copper Chile completed exploration programs to capture information to support the pre-feasibility and feasibility engineering studies.

### 6.6.2 Pre-feasibility Drilling (2007)

Drilling was carried out in a 100 m by 200 m grid. Work was initiated with the validation of the oxide zone and followed by the exploration of the open zones to the southwest and southeast (MLCC, 2009).

Table 6-3 summarizes the 2007–2008 drill campaigns.

**Table 6-3: Summary of 2007 to 2008 Drill Campaigns**

| Drill Hole Type | Objective | No. of Drill Holes | Metres (m) |
|---|---|---|---|
| Diamond Core | Exploration | 29 | 9,832 |
| Diamond Core | Geotechnical | 8 | 2,825 |
| RC | Exploration | 27 | 7,191 |
| RC | Condemnation | 6 | 1,260 |
| | **Total** | **70** | **21,108** |

### 6.6.3 Feasibility Drilling (2007–2009)

Table 6-4 presents a summary of drilling from 2008 and 2009 in preparation for the subsequent feasibility study. Drill holes were located, depending on area and program purpose, on 100 by 200 m or 50 by 50 m spacings.

**Table 6-4: Summary of 2008 and 2009 Drill Campaigns**

| Objective | Drill | No. of Drill Holes (2008) | Metres (m) | No. of Drill Holes (2009) | Metres (m) |
|---|---|---|---|---|---|
| Exploration | DD | 10 | 7,113.05 | | |
| Infill | DD | 25 | 8,952.30 | 19 | 7,790.00 |
| Infill | RC | 104 | 9,251.00 | | |
| Metallurgical | DD | 15 | 4,044.00 | | |
| Condemnation | DD | 5 | 2,318.90 | | |
| Condemnation | RC | 5 | 1,069.00 | | |
| Tunnel | DD | 2 | 200.00 | | |
| | **Total** | **166** | **32,948.25** | **19** | **7,790.00** |

### 6.6.4 Feasibility Study (2009)

In 2009, Lumina Copper engaged Golder and Associates to complete a Mineral Resource estimate for Caserones Project which was completed in August 2009.

In December 2009, Lumina Copper prepared an internal feasibility study on the Caserones Project.

## 6.7 Past Production

Prior to the Feasibility Study in 2009, there was no historical mining production from the Caserones deposit.

Table 6-5 presents the annual copper production by MLCC from 2013–2022.

**Table 6-5: Summary of Copper Produced by MLCC (2013-2022)**

| MLCC Annual Report Year | Copper Concentrate | | Copper Cathode |
|---|---|---|---|
| | Fine Cu (tonnes) | Fine Mo (tonnes) | Fine Cu (tonnes) |
| 2013 | n/a | n/a | 16,193 |
| 2014 | 19,501 | n/a | 26,803 |
| 2015 | 46,788 | 218 | 28,579 |
| 2016 | 83,014 | 1,049 | 34,368 |
| 2017 | 88,643 | 898 | 32,294 |
| 2018 | 108,073 | 1,697 | 28,477 |
| 2019 | 121,499 | 2,778 | 24,566 |
| 2020 | 104,917 | 2,453 | 22,056 |
| 2021 | 94,887 | 2,287 | 14,829 |
| 2022 | 110,138 | 3,056 | 15,120 |

# 7 GEOLOGICAL SETTING AND MINERALIZATION

The following summary is taken from Amec (2005), by S. Haynes (1995), describing the tectonic setting of central and northern Chile (Figure 7-1).

## 7.1 Tectonic Setting of Central and Northern Chile

Northern and central Chile comprises a continental consuming plate margin beneath which oceanic crust has been subducting eastward from an offshore oceanic trench since Jurassic time. This subduction has resulted in the formation of magmatic volcanic and plutonic arcs that have migrated eastward with time from the region of the present coast (Jurassic) to the high Cordillera (present day). This, in turn, has led to formation of the three major tectonic features of Chile: the Coast Range; the Central Valley; and the Andean Cordillera.

The Coastal Range, between 25°S and 35°S, is comprised of Jurassic granitoids cutting Paleozoic granitoids and metamorphic schists and phyllites as well as isolated areas of Jurassic andesitic volcanism and marine sedimentary sequences. Toward the close of the Jurassic, marine regression resulted in evaporite deposition to the east of the Coastal Ranges. This regression resulted from uplift of the Coastal Range as horsts bounded by north-south and east-west block faults that accompanied intrusion of Upper Jurassic granitoid batholithic intrusions in a north-south belt near the present coast. At the close of the Jurassic, the sea transgressed northward over the area.

During the Early Cretaceous, an extensive north-south magmatic volcanic-plutonic arc covered the western part of northern Chile. North of 32°S, the western part of this arc was characterized by continental sediments and volcanics, intruded by early and mid-Cretaceous Batholiths, whereas the eastern part was filled with shallow marine sediments and volcanics.

The Central Valley is a depressed elongate structure that is developed from Arica (18°S) to the Taitao Peninsula (47°S), except for a segment between Latitudes 27°S and 33°S where transverse ridges connect the Coastal Ranges to the Andean Cordillera. The Central Valley proper appears to be a down-faulted graben structure bounded by longitudinal normal and strike-slip faults. Between 27°S and 33°S, faulting changes to east-facing (west dipping) north-south thrust faults present throughout the early Cretaceous volcanic-sedimentary arc and marking its eastern boundary. Of interest to metallotectonics is that the disappearance of the Central Valley is accompanied by two other tectonic features between 27°S and 33°S:

- a zone of east-west lineations between 28°S and 32°S, which continues into Argentina to at least Longitude 65°W
- a non-volcanic gap in the north-south line of Pliocene-Quaternary volcanoes that marks the Andean chain

Of considerable importance is the recent recognition that this zone is marked by a shallow subducting plate (flat-slab segment of the Chilean Andes) that corresponds approximately (Latitudes 26°S to 31°S) with the largest number of known epithermal precious metal deposits in Chile (the Miocene Maricunga and El Indio belts of the Andean Cordillera; see, below). Furthermore, the zone between 26°S and 33°S was marked in the Jurassic and Early Cretaceous by the Central Chile volcanic back-arc basin in the Andean Cordillera, immediately east of the Early Cretaceous magmatic arc.

During the Late Cretaceous a change of westward oceanic plate subduction, north of La Serena, from a low-stress Marian-type to a high-stress Chilean-type caused closure of the back-arc Central Chile basin and its eastward thrust over the Aconcagua platform to form the Domeyko Proto Cordillera. No Late Cretaceous granitoid intrusions are known in northern and central Chile. During the Upper Cretaceous and Lower Tertiary, the rocks were folded and faulted, the Andean mobile belt uplifted, and an elongate continental basin formed east of the Coast Range between 22°S to 31°S that was filled with Late Cretaceous-Early Tertiary continental volcanic rocks (tuffs, ashflows and ignimbrites) and fresh-water, limestones and sediments of the Cerrillos Formation and the overlying Hornitos Formation (which contains also evaporitic gypsum units). After folding and faulting (normal and reverse) along north or north-northeast axes, the western part of the basin from 16°S to 30°S was intruded by a north-south belt of Paleocene granitoid plutons (about 60 ma), locally with subvolcanic porphyry centres or breccia pipes that are now often deeply eroded.

The Early Eocene is marked by deposition of silicic pyroclastic (ignimbrites) and rhyolitic flows from isolated volcanic centres in the eastern part of the basin, such as Cerro de La Pinta (53 Ma) east of Copiapó and at El Salvador (45-50 Ma). These silicic pyroclastic flows overlie aggradation gravels (molasse) deposited by pediplanation of the deformed Hornitos Formation. This Eocene aggradation surface is preserved only vestigially today as remnants on higher peaks in the pre-Cordillera. However, this erosion surface may have removed many high-level Paleocene porphyritic or epithermal centres.

The Late Eocene-Early Oligocene was marked by granitoid magmatism to the east of the Paleocene belt, which comprised plutonic stocks (about 40 Ma) in the Copiapó area and a north-south belt of high-level porphyritic sub-volcanic centres (41-28 Ma) in northern Chile along the Domeyko Fault Zone from 20°S, to its possible extension to 27°S. These sub-volcanic porphyries are the main porphyry copper belt of northern Chile.

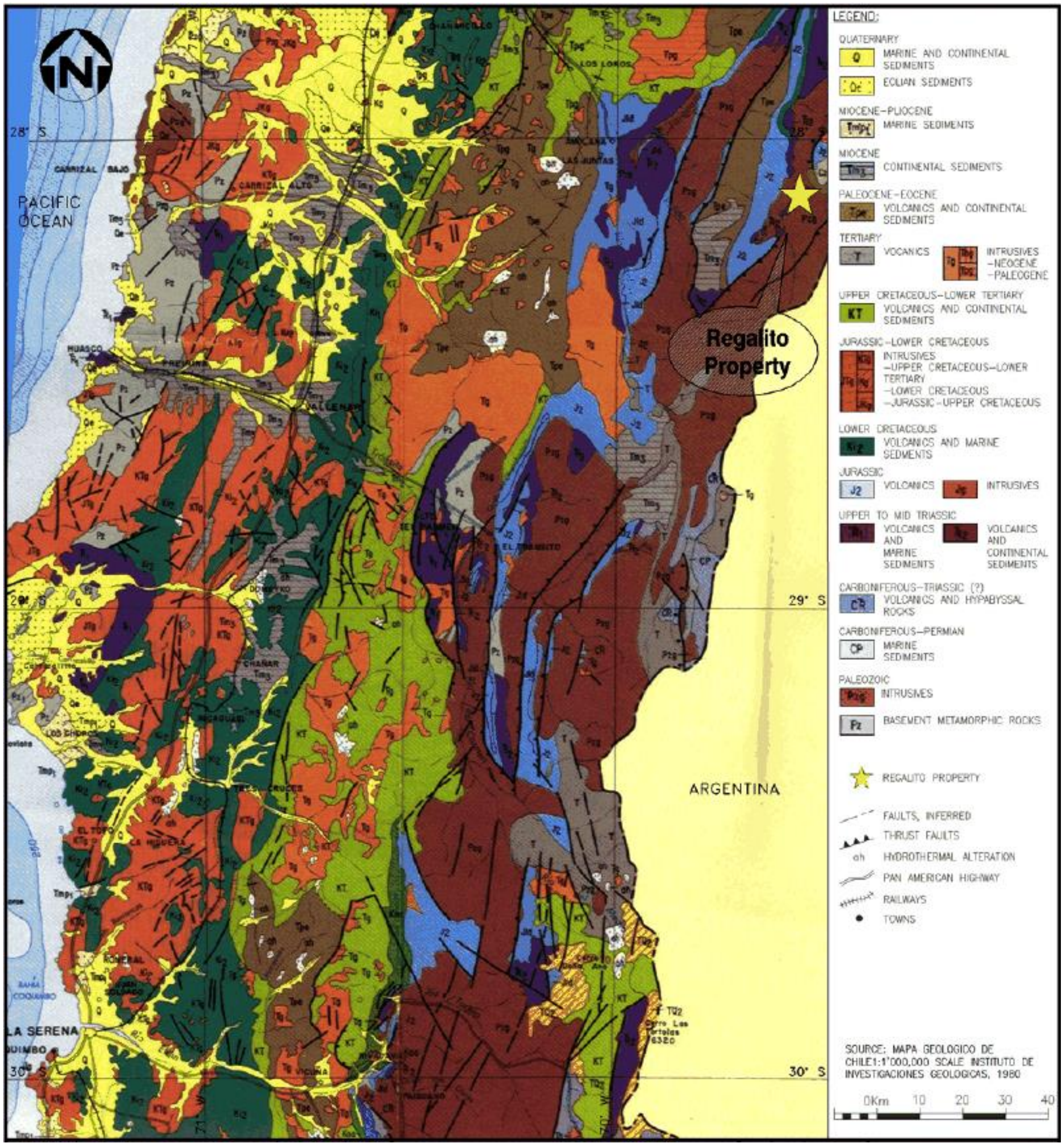
No Oligocene sedimentary rocks have been reported in central and northern Chile. During this period the landscape was subdued by pediplanation. The resultant aggradation surface, "the Atacama Pediplain", and its overlying thick deposits of aggradation molasse gravels, is the dominant landform of the western flanks of the Andean Cordillera from southern Peru to the Rio Choapa (Lat. 32°S). In the Coast Ranges it is only poorly developed. In the High Cordillera, it is concealed by younger volcanic cones. The upper age of the gravels is probably Late Miocene as ages of 12-9 Ma have been obtained from ignimbrites overlying the gravels in Atacama Province.

The Late Oligocene-Miocene geology of the High Cordillera of central and northern Chile has been the subject of intensive investigations over the past 15 years, as this previously largely unexplored area contains significant new Au-Ag-Cu epithermal deposits (see below). This time period is characterized between 26°S and 31°S by volcanism which began (33-17 Ma) with eruption of rhyolitic ignimbrites and andesitic flows and breccias. At about 18 Ma horizontal crustal shortening (30-40 Km) along high-angle reverse faults allowed intrusion of subvolcanic plutons and porphyry stocks (16.7 Ma) along north-south horst and graben structures. The Regalito porphyry (18.3 Ma) is tentatively grouped with this igneous event. This was followed by eruption of large, Middle Miocene andesite-dacite volcanic complexes (16.6-10 Ma) which mark the last major volcanic event between 28°S and 31°S.

In the Late Miocene-Quaternary, the High Cordillera of Chile north of 27°S was marked by extensive eruption of andesitic strato-volcanoes (including Ojos del Salado, at 6,885 m the highest volcano in the world), termed the Central Volcanic Zone. Between 27°S and 33°S volcanoes are absent, probably due to the shallow subduction zone in this region (Flat-Slab Segment, although Late Miocene subvolcanic porphyries (e.g., Bajo de la Alumbrera) are present to the east in Argentina at about Longitude 67°W). South of 33°, the belt of strato-volcanoes reappears as the Southern Volcanic Zone. Late Miocene (10-5 Ma) porphyry stocks (including three porphyry copper deposits) cluster around the 33°S transition (Davidson and Mpodozis, 1991).

The Late Oligocene-Quaternary volcanism was deposited over Palaeozoic to Jurassic sediments and granitoid plutons of the Argentine platform upthrust in the Early Tertiary as horsts. The Flat Slab Segment is underlain principally by granitoids and silicic volcanics of Late Palaeozoic age, which may be related to the prevalence of porphyry-epithermal gold deposits in this segment (Davidson and Mpodozis, 1991).

**Figure 7-1: Geology Map of Central Chile**




Note: Regalito Property is Caserones Property
Source: Amec (2005)

## 7.2 Regional Geology

The Caserones deposit corresponds to a Cu-Mo deposit of Lower Miocene age, which presents geological characteristics typical of a "Porphyry Copper" type deposit. It is located in the south end of the central volcanic zone that forms part of the Maricunga belt (Oligocene-Middle Miocene).

### 7.2.1 Stratigraphy

The following summary is taken from AMEC (2005), Berezowsky (2003).

The oldest basement rocks in the region are a Carboniferous assemblage of metavolcanic and metasedimentary rocks that are collectively known as the Mondaquita Metamorphic Complex and include metamorphosed basaltic and andesitic lava flows along with slate, siltstone and graywacke (Urzua, 1995; Egert and Ulriksen, 1991; Puig, 1990; Fort, 1984a; and Thomson, 1986).

During the Upper Carboniferous, the basement rocks were intruded by the Caserones Granite (260-250 Ma), and during Permo-Triassic by the El Colorado Granite (Figure 7-2), which dominate the regional geology. Of the two, the Caserones Granite is commonly the host rock for the Tertiary-aged porphyries and associated base and precious metal mineralization at the Regalito, Angelica and Don Diego Prospects.

The Mesozoic is characterized by two volcanic assemblages, La Ternada and Quebrada Seca Formations, separated by a sequence of sedimentary rocks belonging to the Monardes Formation. The La Ternada Formation is composed of Triassic andesites and amygdaloidal basalts with interbedded tuff and intruded by basaltic sills and necks. The Quebrada Seca Formation is Upper Cretaceous and is characterized by amygdaloidal andesitic to trachytic lava flows with interbedded volcanic breccias and ignimbrites. A sequence of Lower Cretaceous to Upper Jurassic red sandstones, shales and conglomerates belonging to the Monardes Formation separates the volcanic formations. Small exposures are found north of the Property in the Quebrada Las Breas and along the Rio Ramadillas a few kilometres southwest of the Property.

The Cenozoic is characterized by three volcanic assemblages. The oldest is the Pircas Coloradas Formation that includes dacitic welded tuff volcanic breccias, and subordinate andesitic lava flows and subvolcanic dacitic intrusions that are Lower Eocene to Paleocene in age. The Come Caballo Formation is Lower Oligocene-aged (38-32 Ma) and composed of a thick sequence of dacitic to andesitic breccias and rare layers of ignimbrite. This unit is partially concealed under a sequence of block and ash flows and Upper Oligocene-Lower Miocene-aged (25-22 Ma), co-magmatic, dacitic to andesitic domes belonging to the Pulido Formation.

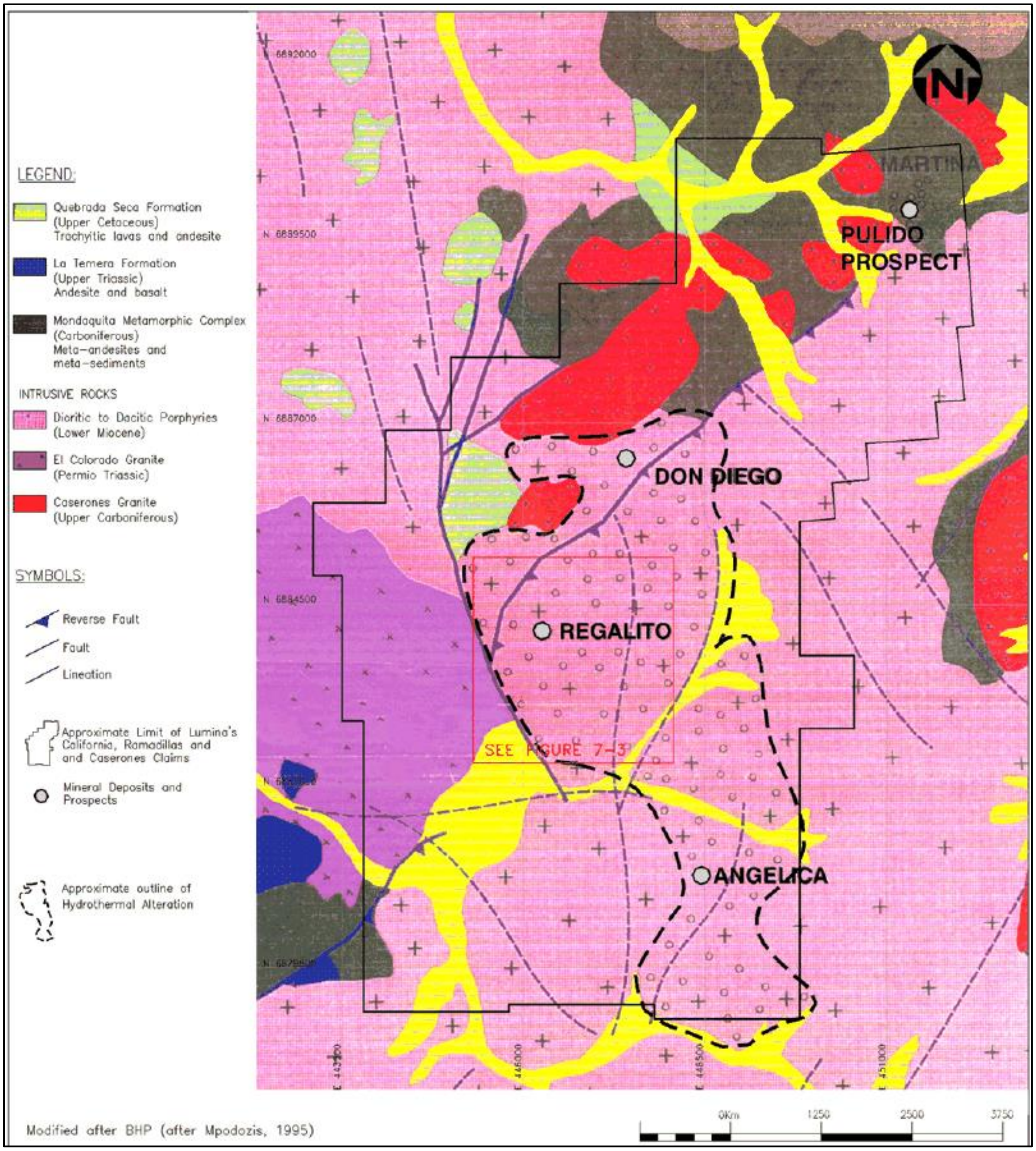
The most significant Tertiary-aged intrusive activity in the region is represented by several stock-sized, porphyry intrusive bodies ranging in composition from quartz-diorites to diorites and dacites, some of which host base and precious mineral prospects. Based on their age and compositions, they are thought to represent the southern extension of the Lower Miocene Maricunga Belt intrusives, which host the La Pepa, Refugio and Santa Cecilia precious metal deposits to the north.

The regional stratigraphy is summarized in Table 7-1 and presented in Figure 7-2.

Table 7-1: Regional Stratigraphy

| ERA | Period | Unit |
|---|---|---|
| Cenozoic | Lower Miocene | Porphyritic Andesite Dykes |
| | | Dacitic to dioritic porphyries. Includes Caserones porphyry (K-Ar 18.3 ± 0.2 Ma) + Cu, Mo, Au mineralization |
| | Lower Miocene | Pulido Formation (25-22 Ma) block and ash deposits and domes |
| | Upper Miocene to Lower Oligocene | Come Caballo Formation (38-32 Ma) dacitic volcanic rocks |
| | Lower Eocene to Paleocene | Pircas Coloradas Formation – dacitic to andesitic volcanic rocks |
| Mesozoic | Upper Cretaceous | Quebrada Seca Formation – andesitic and Trachytic lavas |
| | Upper Cretaceous | Monardes Formation – red sandstones and conglomerates |
| | Upper Triassic | La Ternada Formation – andesitic to basaltic rocks |
| | Permo-Triassic | El Colorado Granite |
| Paleozoic | Upper Carboniferous | Caserones Granite (260-250 Ma) – host rock for Tertiary porphyries and prospects |
| | Carboniferous | Mondaquita Metamorphic Complex – meta-andesite and metasediments |

Figure 7-2: Property Geology Map (2005)




Note: Regalito is Caserones
Source: Amec (2005); modified after BHP (after Mpodozis, 1995)

### 7.2.2 Structure

The following section was taken from AMEC (2005) and Berezowsky (2003)

The regional structure is characterized by a series of rigid blocks of granitic basement that occupy anticlinal cores that formed as a result of regional scale folding of the Mesozoic supracrustal sequences (Urzua, 1995; Egert and Ulriksen, 1991; Puig, 1990; Fort, 1984a; Thomson, 1986; Anonymous, 1997). Regional high-angle reverse faults that bring the Paleozoic basement on top of the cover sequences are also common (Anonymous, 1997).

A Cretaceous north-northeast trending normal fault system has been mapped in the Pulido Prospect area as cutting across an older NE-SW trending fault system. This normal fault system was considered by BHP geologists to have been reactivated during the Upper Tertiary as these older structures both transect and connect with the low-angle reverse faults of probable Miocene age (Urzua, 1995).

## 7.3 Project Geology

The following description was taken from Amec (2005) and Valenzuela (2005).

In the area of the Regalito Deposit there were several distinct types of lithologies observed. In terms of volume, the major units are monzogranite and dacite porphyry. Less common are the contact breccia, hydrothermal breccia and microdiorite (Figure 7-3). Each is discussed below, and a representative cross section (Section 6) is shown on Figure 7-4.

### 7.3.1 Monzogranite

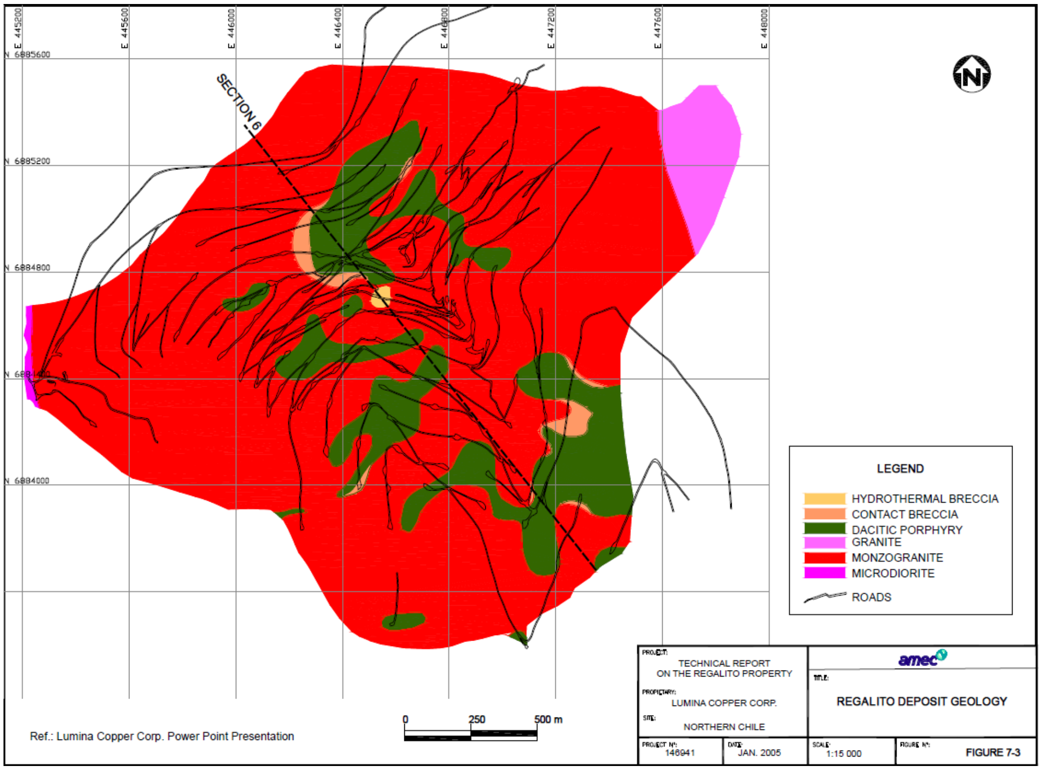
Monzogranite is the host rock for the porphyry-style mineralization at the Regalito Deposit. The majority of this rock type is light grey, medium to coarse grained with interlocking quartz and white feldspar crystal grains and sparse biotite. Aplite dykes, which cut the monzogranite are present locally and large (>10 cm), rounded zenoliths of dark brown, massive, fine grained biotite rich mafic lithology are common, and may be derived from the microdiorite/diorite, which is mapped at property scale as being in contact with the monzongranite to the west of Regalito.

### 7.3.2 Dacite Porphyry

Dacite porphyry on the Property has a dark grey colour and is predominantly composed of feldspar-quartz-biotite phenocrysts. This rock type is the only type of porphyry that has been logged and modeled so far. Subdivision of mappable units within the intrusive was not possible during first round drilling, but more than one generation of the dacite are recognized locally and at least one of these is associated with hypogene sulphide mineralization.

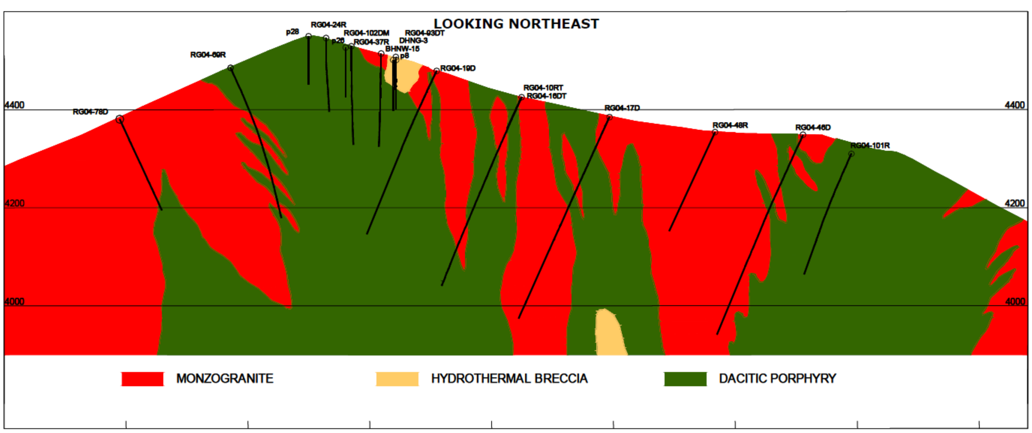
The dacite porphyry intrusive has a complex geometry and in the central part of the deposit up to three, steep sided stocks ranging in width between 150 m and 300 m have been identified. These stocks appear to coalesce into a single stock to the northeast of the deposit. In the upper parts of the deposit and on the flanks of the intrusives numerous mafic to intermediate composition dikes cut the porphyry and interdigitation with the wall rock occurs. The dacite porphyry is exposed at surface as a series of irregular apophyses that are generally elongate in a northeast orientation and characterize the roof zone of the intrusion (Figure 7-4). The limits of the porphyry are not completely defined by drilling but the drilling to date has outlined the intrusive bodies over an area of at least 1,500 m diameter.

**Figure 7-3: Property Geology Map (2005)**




Note: Regalito is Caserones
Source: Amec (2005)

**Figure 7-4: Property Geology Map; Section 6 (2005)**




Note: Regalito is Caserones
Source: Amec (2005)

### 7.3.3 Andesite Dykes

Dark brown crowded plagioclase feldspar andesitic porphyry dykes occur rarely within the area drilled. These have not been separated during logging and are believed to be volumetrically insignificant.

### 7.3.4 Contact Breccia

Contact breccias have been noted to occur along the flanks of the porphyry intrusives and are particularly common where the intruding dacite porphyry interdigitates extensively with the monzogranite host, such as along the northwest contact of the porphyry. The dacite porphyry ubiquitously comprises the matrix of these igneous breccias and monzogranite and dacite porphyry wallrock comprise the clasts. Thickness of contact breccia bodies range from centimeters to tens of metres.

### 7.3.5 Hydrothermal Breccias

Several different hydrothermal breccias have been recognized to date. The most common type occurs locally within the monzogranite host rock with 5-30 cm, subrounded monzogranite clasts and occasional subangular 1-10 cm clasts of the same fine-grained, biotite-rich mafic lithology that comprises the xenoliths within the monzogranite. This breccia style contains very little matrix material were seen and is often fractured.

A second, polymictic hydrothermal breccia with angular to sub rounded clasts and a mostly coarse-grained matrix of comminuted clast material is commonly associated with higher grade primary copper and molybdenum mineralization (e.g., RG04-57: 432-478 m @ 0.89% CuT, 586ppm Mo) and strong sericite alteration, occasionally with secondary biotite or milky quartz. It is likely that these hydrothermal breccias have intruded along “channels of weakness” presented by structures or contact breccias, leading to an overprinting of the genetically distinct breccias styles. Rarely, milling of clasts produces textures reminiscent of those characteristic of pebble dykes.

A third breccia type that occurs at surface is a magnetite matrix crackle breccia that outcrops along the southeast trending ridge in the central part of the deposit. Magnetite veinlets are associated with biotite alteration and are thought to form part of a deep potassic alteration assembly.

Crackle breccias comprising a network of millimetric pyrite dominant sulphide veinlets occur locally as a fourth breccia type, and rare breccia textures have also been observed areas of intense, mostly texturally destructive silicification, in the central part of the deposit.

### 7.3.6 Microdiorite

Microdiorite is fine grained intrusive lithology comprised of plagioclase with minor amounts of quartz, K-feldspar, and sparse magnetite and ferromagnesian minerals. This rock crops out on the western margin of the Lumina’s drill pattern near Curva Negra (a switchback in the access road named for the outcrop) and is in contact with the monzogranite. Within the deposit, this rock type occurs only as xenoliths and enclaves in monzogranite and to a lesser extent, in dacite porphyry in the northeast part of the area.

## 7.4 Alteration

Moderate to strong silicification with sercite alteration and pyrite disseminations and veinlets (2-4%) affects the majority of the volume drilled and is interpreted to be phyllic alteration that, in part, overprints an older potassic alteration. This alteration type is also present in the monzogranite host rock, diminishing in intensity away from the porphyry contacts. Figure 7-5 shows a generalised plan of surface alteration at the Regalito Deposit, while Figure 7-6 shows a representative cross section of the alteration.

An intense, texturally destructive silicification characterized by massive silica replacement in places, affects the central part of the deposit and may coincide locally with higher grade supergene copper mineralization. This intense alteration is believed to be caused by densely spaced quartz-pyrite veinlets with coalescing silica-sericite selvages, from which the sulphide minerals have been nearly completely oxidized and leached (pers. comm. R. Sillitoe, 2004). Locally, quartz overgrowths on quartz crystals combined with a texturally destructive alteration of the surrounding crystals/groundmass produces a pseudo breccia texture.

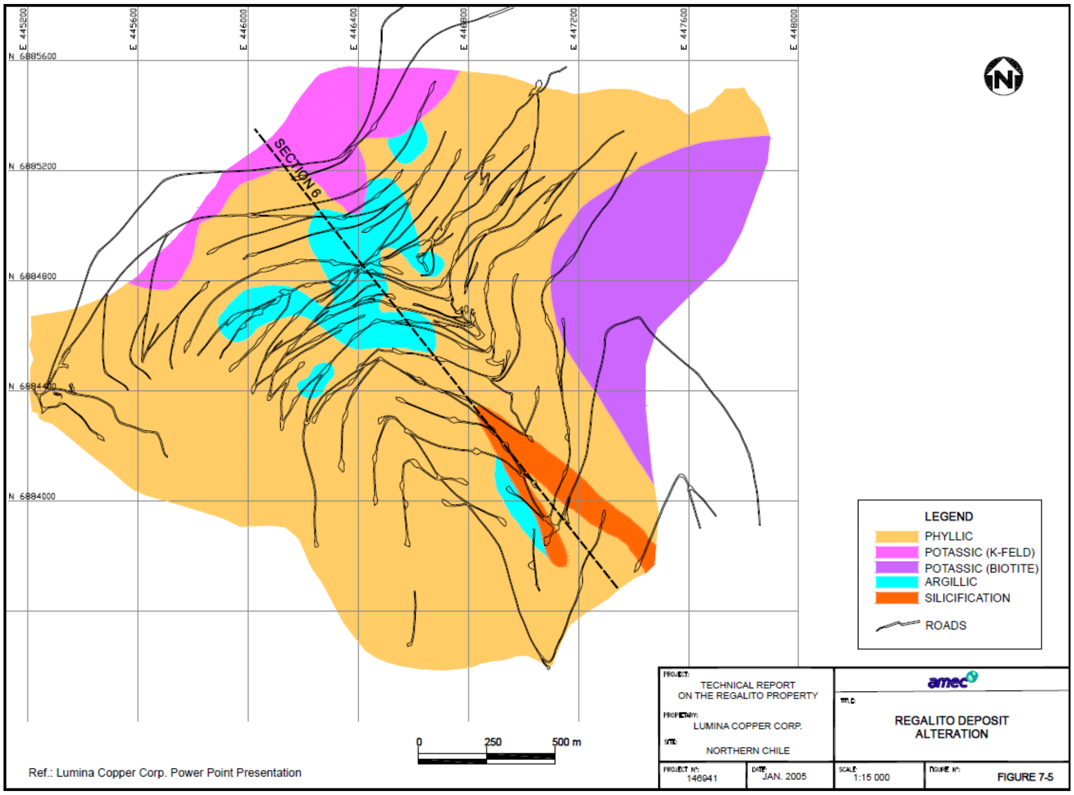
Within the dacite porphyry strong to intense biotite alteration occurs in irregular pods that appear to be more common deeper within the deposit, often with magnetite disseminations and veinlets. This alteration style is interpreted to be potassic alteration and the pod like occurrence is thought to represent relics of potassic alteration that were not affected by the overprinting phyllic alteration event.

Within the monzongranite wallrock to the north and west of the deposit K-spar alteration of feldspars has been observed and weak secondary biotite alters ferromagnesium minerals locally. While lacking the geochemical and veining characteristics normally associated with a typical porphyry potassic alteration zone, a potassic alteration event does appear to affect the monzogranite in this area also.

A generally discreet zone of clay alteration occurs within the northeast trending ridge and broadly coincides with the oxide part of the deposit. The nature and intensity of this clay alteration is not fully understood but it’s spatial association with the oxide zone implies that the alteration derives from supergene acid generation. Fracture filling supergene alunite is also frequently observed within the oxide and supergene zones.

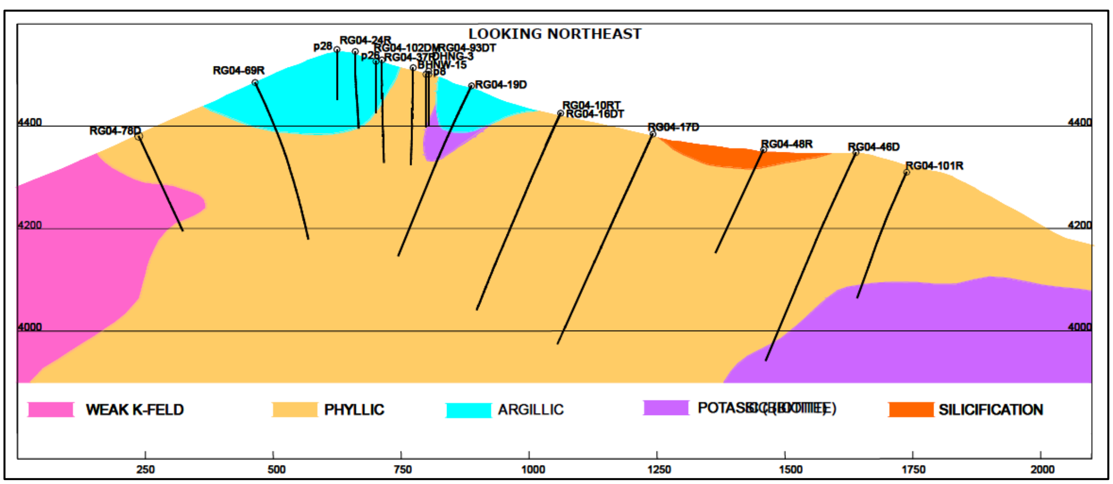
Chlorite occurrences are not clearly zoned and are not fully understood. Intermediate argillic assemblages with chlorite have been reported locally but are not thought to be widespread. White alunite and other minerals characteristic of advanced argillic alteration assemblages, such as pyrophyllite and diaspore, have been reported locally but no such alteration zone has been delineated to date. A propylitic alteration zone has not yet been observed at Regalito and trace amounts of tourmaline have been observed rarely.

**Figure 7-5: Alteration Map (Amec, 2005)**




Source: AMEC (2005)
Note: Regalito is Caserones

**Figure 7-6: Section 6; showing alteration zones (Amec, 2005)**




Source: Amec (2005)
Note: Regalito is Caserones

## 7.5 Mineralization

The Regalito Deposit strikes SE-NW with a length of approximately 2,000 m and a width of approximately 1,500 m. The oxide and secondary copper zones form a surface-parallel blanket over 1,200 m in diameter with a central “core” of at least 1,000 m in diameter where thicknesses average 300 m and exceed 400 m in the central part. Secondary copper grades within this central area are also slightly elevated above those in the surrounding parts of the deposit. Outboard of this “core” the zone thins, and grades are generally lower, although the enrichment blanket is still open to the southwest. The secondary copper zone has been modeled to approximately 4,000 m in elevation and deeper locally. It is generally coincident with the porphyry intrusive (Amec, 2005).

The oxide zone forms a cap that sits on top of the secondary copper zone in the upper part of the northeast trending ridge that constitutes the northwest margin of the deposit, mostly above 4,400 m and thinning to a skin of a few metres, moving down the ridge slopes. Grades within the oxide zone are higher than the average grade of the secondary copper zone and it is open to the northeast.

Flanking the oxide zone and overlying the supergene zone, a zone of “leached” material varies in thickness from 0 to 200 m, averaging ~40 m over the majority of the deposit. This zone is not leached sensu strictu, as it contains appreciable amounts of pyrite and pods of chalcocite and copper oxide mineralization, which is poorly defined at the current drill spacing and were not included in the resource estimate.

Primary copper mineralization was not targeted by Lumina’s drill program and this zone remains open in all directions. Locally high-grade copper-moly mineralization associated with hydrothermal breccia bodies was cut by drill holes, notably RG04-57 and RG04-84, which may be associated with structures. Samples from the primary copper and molybdenum mineralization range from being relatively high grade to being low grade and it remains to be determined whether the primary zone is of economic interest.

It should be noted that molybdenum was not modeled as part of the resource estimate, since Lumina envisions a heap leach SX-EW operation from the oxide and supergene enriched horizons, which would not recover any molybdenum. Future studies could contemplate the potential of recovering the copper and molybdenum sulphides from deeper portions of the deposit through a milling and flotation operation.

### 7.5.1 Mineralization Zonation

At Regalito, interpretation of the results of the various drill programs has established four main sub horizontal zones of copper mineralization. These zones (leached, oxide, supergene sulphide, and primary) are characterized by distinctive assemblages of copper and molybdenum minerals (Amec, 2005).

Molybdenite is present in all of the zones and generally occurs with quartz in veinlets and rarely as disseminated grains.

The distribution of CuT in the various zones is summarized in Table 7-2 and the distribution of Mo in the various zones is summarized in Table 7-3. Figure 7-7 shows a representative cross section of the mineralization zoning.

Logged contacts between leached, oxide supergene and primary zones were documented and occasionally modified when compared to sequential copper analyses. Oxide material is defined as material that contains more than 50% acid soluble copper (CuS (acid)). The supergene sulphide zone contains less than 50% acid soluble copper and more than 50% cyanide soluble copper (CuS (NaCN)). The primary zone contains less than 50% soluble copper (combined CuS (acid) and CuS (NaCN)).

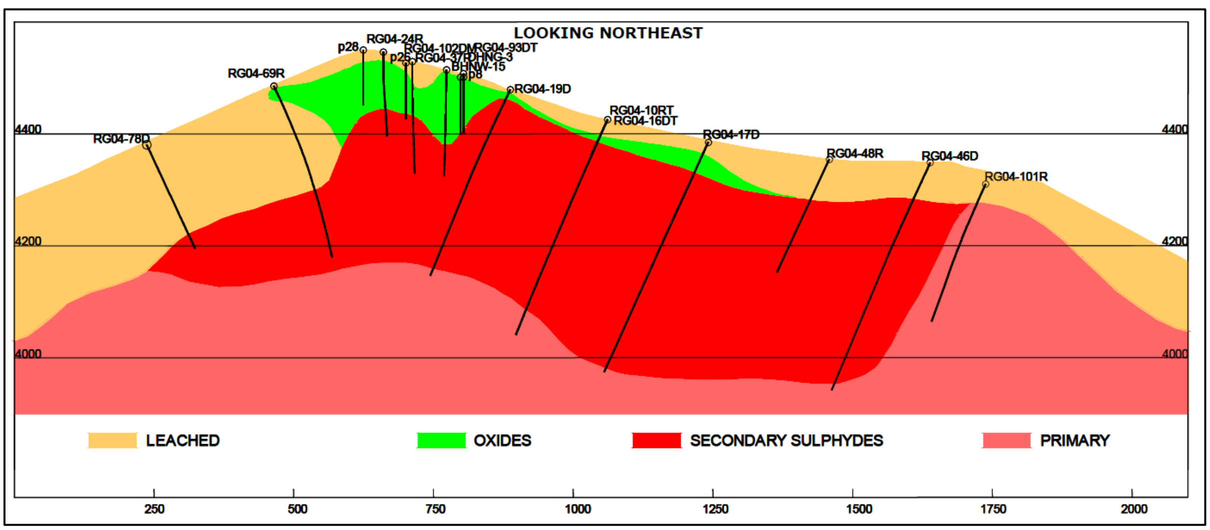
**Table 7-2: Distribution of CuT in the Various Zones**

| Description | Leached | Oxide | Secondary Sulphide | Primary |
|---|---|---|---|---|
| Minimum (%) | 0.002 | 0.008 | 0.004 | 0.008 |
| Maximum (%) | 1.380 | 2.800 | 3.155 | 2.975 |
| Mean (%) | 0.051 | 0.464 | 0.365 | 0.280 |
| Standard Deviation (%) | 0.073 | 0.336 | 0.261 | 0.251 |
| N | 4,866 | 1,850 | 9,801 | 1,856 |

**Table 7-3: Distribution of Mo in the Various Zones**

| Description | Leached | Oxide | Secondary Sulphide | Primary |
|---|---|---|---|---|
| Minimum (ppm) | 1 | 4 | 1 | 2 |
| Maximum (ppm) | 1,589 | 2,700 | 20,799 | 1,565 |
| Mean (ppm) | 83 | 76 | 101 | 94 |
| Standard Deviation (ppm) | 94 | 110 | 302 | 128 |
| N | 1,589 | 1,038 | 8,896 | 1,855 |

**Figure 7-7: Section 6; showing mineralization zones (Amec, 2005)**




Source: Amec (2005)
Note: Regalito is Caserones

## Leached Zone

Typical leached zones in porphyry environments are formed when copper and iron-bearing sulphide minerals are leached from the host rock by groundwater and removed from the immediate area where leaching occurred, typically downwards, or laterally. The leached zone at Regalito contains only patchy, discontinuous copper mineralization and is well developed along the north and northeast sides of the deposit and less well developed over the central part of the deposit. Non-silicate minerals are dominantly pyrite with minor chalcopyrite and iron oxide minerals with significant, but patchy pods of secondary copper sulphide and oxide minerals. Leaching of sulphide within this zone is not complete and relic boxwork textures occur occasionally, mainly in veins, after pyrite and chalcopyrite.

**Oxide Zone**

The majority of the oxide zone at Regalito is restricted to the topographically higher part of the deposit. Oxide copper mineralogy is dominantly chalcanthite with subordinate chrysocolla, brochantite and minor amounts of malachite, azurite and anterlite noted locally. Oxide minerals are predominantly fracturing filling, with a fraction of the total disseminated as replacements of disseminated primary sulphides. Fracture filling mineralization is likely transported from overlying or lateral sources, and this is particularly evident where pods of copper oxide mineralization occur in monzogranite wallrock that contained only trace amounts of pre-existing sulphides. Gypsum is also present within the oxide zone, mostly as fracture fills and iron oxide minerals are dominantly goethite, hematite with lesser jarosite. Black manganese oxides also occur, most often in the peripheral parts of the deposit within the monzogranite host rock.

**Secondary Sulphide Zone (supergene enriched)**

Typical secondary sulphide (supergene enriched) zones form as a result of deposition of Cu-bearing secondary sulphide minerals from groundwater leading to enrichment of the primary grades. The secondary sulphide zone is moderately developed at Regalito and covers an area of about 2.0 km north-south and 1.5 km east-west and averages about 355 m in thickness. The zone is restricted to elevations between 3,877 masl and 4,552 masl.

Supergene copper mineralization has been observed to preferentially replace chalcopyrite throughout the deposit, replacing pyrite to a much lesser extent and often leaving it pristine or coating grains with a sooty film.

The majority of secondary copper sulphides consequently occur as disseminations or hairline veinlets, mirroring the style of the primary sulphide mineralization. Regularly spaced, millimetric veinlets of chalcocite also represent a widespread mineralization type and veinlets generally occur with widths of 2-10 mm containing massive, crystalline, or granular aggregates of chalcocite. It has been noted that higher grade 2 m core samples (> 0.8% CuT) tend to contain one, rarely two, chalcocite veins in excess of 1 cm thick.

Small amounts of covellite are also present within the supergene zone and are generally more common towards the base of the enrichment blanket. Native copper blebs also occur rarely near the base of the drilled supergene zone. Fracture filling gypsum and lesser supergene alunite are also present in this zone.

**Primary Zone**

The exploration program by Lumina, up to 2005, did not target the primary zone and most of the Lumina drill holes were stopped when primary mineralization was encountered, and many did not reach primary mineralization. Primary sulphide mineralization generally comprises 2-5% sulphides with 1 to 3% associated with areas of potassic alteration, frequently with 1-2% magnetite. Pyrite is the principal sulphide with subordinate chalcopyrite generally occurring in a proportion of less than 2:1. Molybdenite is also a subordinate sulphide and minor amounts of bornite, and traces of sphalerite have also been observed. Sulphides occur as disseminations and veinlets with pyritic veinlets more common in strongly phyllic altered areas. Gypsum occurs sporadically in this zone and anhydrite has been observed locally in the deeper parts of the deposit.

Mineralization at Regalito is typical of many Andean porphyry copper molybdenum deposits. The deposit consists of well defined leached, oxide, supergene sulphide, and primary zones. The supergene sulphide zone is moderately developed and is somewhat anomalous in that it is quite thick with fairly consistent copper grades throughout. There are no very high-grade zones within the enrichment as is common in many similar deposits.

Overall, this is a typical porphyry copper molybdenum deposit that is reasonably well understood for this level of exploration.

# 8 DEPOSIT TYPES

The porphyry style mineralization at Caserones is a typical Andean porphyry copper/molybdenum deposit. A generic description from Pantaleyev (1995) summarizes the common features of porphyries as large zones of hydrothermally altered rock containing quartz veins and stockworks, sulphide-bearing veinlets, fractures, and lesser disseminations in areas up to 10 $km^2$ in size, commonly coincident wholly or in part with hydrothermal or intrusion breccias and dike swarms. Deposit boundaries are determined by economic factors that outline ore zones within larger areas of low-grade, concentrically zoned mineralization (Amec, 2005).

The four main stages of mineralization and alteration that typically occur in porphyry copper systems are shown in Figure 8-1.

Important geological controls on porphyry mineralization include igneous contacts, cupolas and the uppermost, bifurcating parts of stocks and dike swarms. Intrusive and hydrothermal breccias and zones of intensely developed fracturing due to coincident or intersecting multiple mineralized fracture sets commonly coincide with the highest metal concentrations.

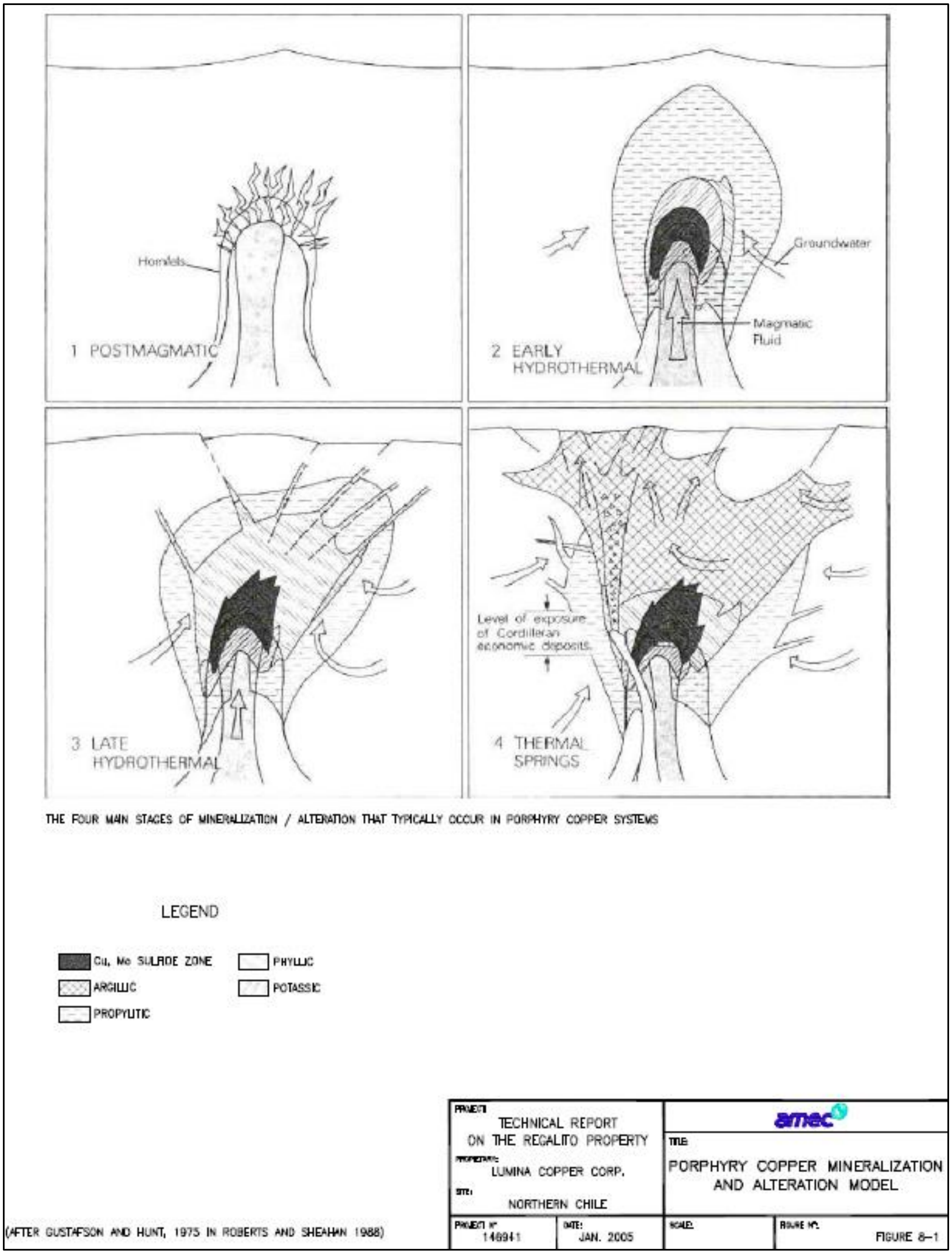
The effects of surface oxidation commonly modify porphyry deposits in weathered environments. Low pH meteoric waters generated by the oxidation of iron sulphides leach copper from oxidized copper minerals such as malachite, chrysocolla, and brochantite and re-deposit it as secondary chalcocite and covellite immediately below the water table in flat tabular zones of supergene enrichment. The process results in a copper-poor leached cap lying above a relatively thin but high-grade zone of supergene enrichment that caps a thicker zone of moderate grade primary hypogene mineralization at depth.

It appears that the pyrite content in portions of the Regalito Deposit may have been sufficient to allow acid generation followed by the development of surface oxidation and leaching, and in turn the development of a supergene enrichment zone.

Alternatively, or in addition, a porphyry system may exhibit hypogene enrichment. The process of hypogene enrichment may relate to the introduction of late hydrothermal copper enriched fluids along structurally prepared pathways, or the leaching and redeposition of hypogene copper, or a combination of the two. Copper mineralogy comprises, for example, covellite and chalcocite. Such enrichment processes result in elevated hypogene grades.

Other deposit styles that are commonly associated with porphyry deposits (spatially and genetically) include precious metal-rich epithermal and other quartz vein systems, skarns, and exotic secondary copper deposits formed by the lateral migration of metal in low-pH fluids away from the main body of porphyry mineralization.

**Figure 8-1: Porphyry Copper Mineralization and Alteration Model**




Source: Amec (2005), after Gustafson and Hunt (1975)

# 9 EXPLORATION

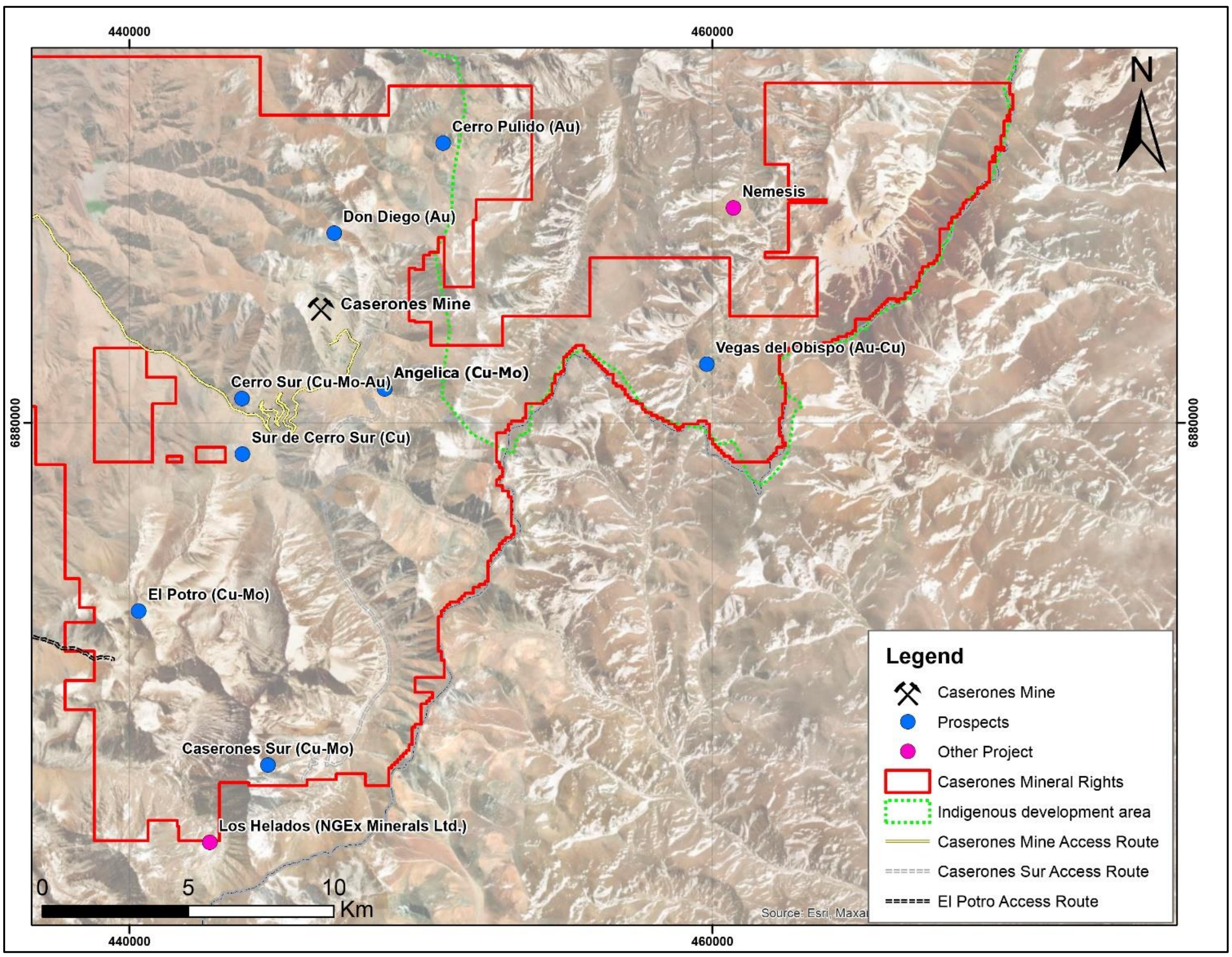
LMC has not completed any exploration activities on the Caserones Project.

## 9.1 MLCC, 2006 – Present

Up until 2011, exploration was limited to the area of the mine in support of pre-feasibility and feasibility studies. Initial prospecting, geophysical surveys and drilling was conducted on the Cerro Sur, Angelica and Caserones Sur prospects to the west and south of Caserones. Between 2011 and 2018, exploration activities were suspended during this period of mine operations. In 2019, exploration was reprised around the Caserones deposit and restarted on the Angelica Project.

Figure 9-1 presents a location map of the exploration prosects in and around Caserones.

**Figure 9-1: Exploration Prospects Location Map**




Source: MLCC(2023) , modified by LMC (2023)

MLCC conducted several of the exploration activities through third party contractors or direct subsidiaries of JX Nippon. These companies include:

- Japan Oil, Gas and Metals National Corporation (JOGMEC)
- JX Nippon Mining & Metals (JX Nippon), part owner of the Caserones Mine
  - JX Nippon Mining Metals Exploration Chile Lda (JXE) is an exploration company; subsidiary of JX Nippon
  - Nikko Exploration & Development Company (NED); subsidiary of JX Nippon
- Pan Pacific Copper (PPC) was created in October 2000, and is a partnership formed by JX Nippon (66%) and Mitsui Mining & Smelting (34%)
  - Pan Pacific Copper Exploration Chile Ltda. (PPCE) is a geological services company and subsidiary of PPC

### 9.1.1 Cerro Sur, Sur de Cerro Sur Prospects

The Cerro Sur and the Sur de Cerro Sur Prospects are situated approximately 4 km southwest of the Caserones operation.

In 2008 and 2009, Nikko Exploration & Development Co. (NED), a subsidiary to Nippon Mining, completed several exploration programs and rock analyses, in the Cerro Sur area. In 2009, MLCC followed up with a limited drill program of 3 diamond drill holes (900 m total). The assay analyses included total copper, sequential copper, and molybdenum.

Table 9-1 presents a summary of the geophysical surveys on the Cerro Sur prospect.

**Table 9-1: Exploration Summary – Cerro Sur Prospect**

| Year | Company | Prospect | Activity | Details |
|---|---|---|---|---|
| 2008 – 2009 | NED | Cerro Sur | Geological Mapping<br>Geochemical Sampling<br>Whole Rock Analysis (ALS)<br>Fluid Inclusion Study (Geocronos)<br>Age Dating Study (Actlabs)<br>Optical microscopy<br>X-ray diffraction | 1:2,500 and 1:10,000 scale mapping<br>470 samples (100 m x 100 m grid)<br>30 samples<br>5 samples<br>3 samples<br>60 thin sections<br>60 thin sections |
| 2009 | MLCC | Cerro Sur | Drilling | 3 DDH, 900 m |
| 2010 | MLCC (Zonge) | Cerro Sur | IP/Resistivity survey | Dipole-Dipole, 5 lines, 12.6-line km |
| 2019 | MLCC (Golder) | Cerro Sur | IP/Resisitivity<br>Resisitivity (vertical electric survey)<br>Seismic Refraction | Pole-dipole, 4.7-line km<br>21 lines, depth 80 m<br>0.87-line km |
| 2020 | MLCC (Southern Rock) | Cerro Sur | Chargeability/Resistivity 3D | Compiled data from Zonge, 2010 and Golder, 2019 |

### 9.1.2 Angelica Prospect

The Angelica Prospect is located approximately 3.5 km southeast of the Caserones operation.

In 2005, MLCC originally completed a geological mapping and surface rock sampling in the Angelica Prospect.

In late 2008, NED, a subsidiary of JX Nippon carried out a more detailed mapping and geochemical sampling program that found several copper and molybdenum anomalies. NED followed up these anomalies by retaining Zonge to complete an IP/resistivity ground geophysical survey.

In 2009, with the support of JOGMEC, MLCC and PPC conducted the first of several exploration diamond drill holes. These were subsequently followed 4 drill holes in 2010 and 12 RC drill holes in 2011. The results intersected an oxide zone at depth.

Between 2020 and 2023, three additional exploration diamond drill campaigns were completed.

Table 9-2 presents a summary of the exploration activities on the Angelica prospect.

**Table 9-2: Exploration Summary – Angelica Prospect**

| Year | Company | Angelica Prospect | Activity |
|---|---|---|---|
| 2005 | MLCC | North, Central South | Geological Mapping, Surface geochemical sampling |
| 2008 | NED | North, Central South | Geological Mapping, Geochemical sampling<br>IP/Resistivity survey (Dipole-Dipole, 12 lines, 25.9-line km |
| 2009 | PPC-JOGMEC | North Central | Drilling (3 DDH, 1,401 m) |
| 2010 | PPC-JOGMEC | Central South | Drilling (4 DDH, 1,618 m) |
| 2011 | PPC | Central South | Drilling (12 RC, 3,310 m) |
| 2020 – 2021 | MLCC-PPC | Central | Drilling (7 DDH, 2,823.15 m) |
| 2021 – 2022 | MLCC-JXE | Central | Drilling (13 DDH, 5,284.4 m) |
| 2022 – 2023 | MLCC-JXE | Central | Drilling (4 DDH, 1,368 m) |

### 9.1.3 Caserones Oeste – Caserones Este Prospects

The Caserones Oeste – Caserones Este Prospect Prospects are located approximately 3.5 km southeast of the Caserones operation.

Table 9-3 presents a summary of the exploration activities on the Caserones Oeste – Caserones Este Prospect.

**Table 9-3: Exploration Summary – Caserones Oeste – Caserones Este Prospects**

| Year | Company | Prospect | Activity |
|---|---|---|---|
| 2020 – 2021 | MLCC-PPCE | Central | Drilling (7 DDH, 2,823.15 m) |
| 2021 – 2022 | MLCC-JXE | Central | Drilling (13 DDH, 5,284.4 m) |
| 2022 – 2023 | MLCC-JXE | Central | Drilling (4 DDH, 1,368 m) |

### 9.1.4 Caserones Sur Prospect

The Caserones Sur Prospect is located approximately 16 km south of the Caserones mine, at the head of the Rio Ramadillas. This area is characterized by outcrops of altered breccias, typically associated with copper-molybdenum porphyry systems.

MLCC, in partnership with JX Nippon and JXE, completed geological surface mapping and rock sampling; and completed an airborne geophysical survey.

Table 9-4 presents a summary of the exploration activities on the Caserones Sur prospect.

**Table 9-4: Exploration Summary – Caserones Sur Prospect**

| Year | Company | Prospect | Activity |
|---|---|---|---|
| 2006 | Rio Tinto | Caserones Sur | Geological Mapping,<br>Drilling (5 drill holes, 214 m) |
| 2008 | NED (JX) | Caserones Sur | Geological Mapping,<br>Geochemical Sampling |
| 2022 | MLCC-New Sense | El Potro<br>Caserones Sur | Geophysical Survey, Airborne magnetics.<br>759.4-line km; covering 136.77 km2 |
| 2008 – 2009 | MLCC-JXE | Caserones Sur | Geological Mapping,<br>Geochemical Sampling |

### 9.1.5 Vegas del Obispo Prospect

The Vegas del Obispo Prospect is situated approximately 14 km east of the Caserones Mine.

The Vegas del Obispo is an area of hydrothermal alteration with potential for hosting for gold or copper mineralization but has not been fully investigated. There is limited historical exploration on this prospect.

Other than a brief site inspection and geology review in 2021, MLCC has not conducted any further exploration activities on this prospect.

Table 9-5 presents a summary of the exploration activities on the Vegas del Obispo prospect.

**Table 9-5: Exploration Summary – Angelica Prospect**

| Year | Company | Prospect | Activity |
|---|---|---|---|
| 1990 - 1994 | Shell | Vegas del Obispo | Drilling (13 RC drill holes) |
| 2005 | Lumina | Vegas del Obispo | Geological Mapping, Geochemical Sampling |
| 2021 | MLCC-PPCE | Vegas del Obispo | Geological Review |

Source: MLCC (2023)

### 9.1.6 Cerro Pulido Prospect

The Cerro Pulido Prospect is situated approximately 6 km northeast of the Caserones Mine.

Cerro Pulido is an area of hydrothermal alteration with potential for hosting gold or copper mineralization but has not been fully investigated. Early exploration was completed in the late 1980's and early 1990's.

MLCC has not conducted any exploration activities on this prospect.

## 9.2 MLCC, 2021 – 2022, Airborne Geophysical Surveys

In 2021 and 2022, MLCC retained New Sense Spa (New Sense), based in Santiago, to complete airborne magnetic surveys over two areas of the Property. The surveys were completed by helicopter, on 200 m spaced flight lines, with infill lines to 100 m spaced lines at the Angelica Prospect, at a height of 100 m and 200 m above ground level.

Table 9-6 presents a summary of the airborne magnetics surveys completed on the Property.

**Table 9-6: Airborne Magnetic Survey – Caserones**

| Year | Company | Prospect | Details |
|---|---|---|---|
| 2021 | MLCC - New Sense | Caserones - Angelica | 815-line km; covering an area of 125 km2 |
| 2022 | MLCC - New Sense | El Potro - Caserones Sur | 759.4-line km; covering an area of 136.77 km2 |

# 10 DRILLING

LMC has not completed any drilling on the Caserones Project

All drill information in the drill hole database was completed by Lumina Canada and MLCC from 2004 to 2006 and 2007 to 2022, respectively.

## 10.1 Summary

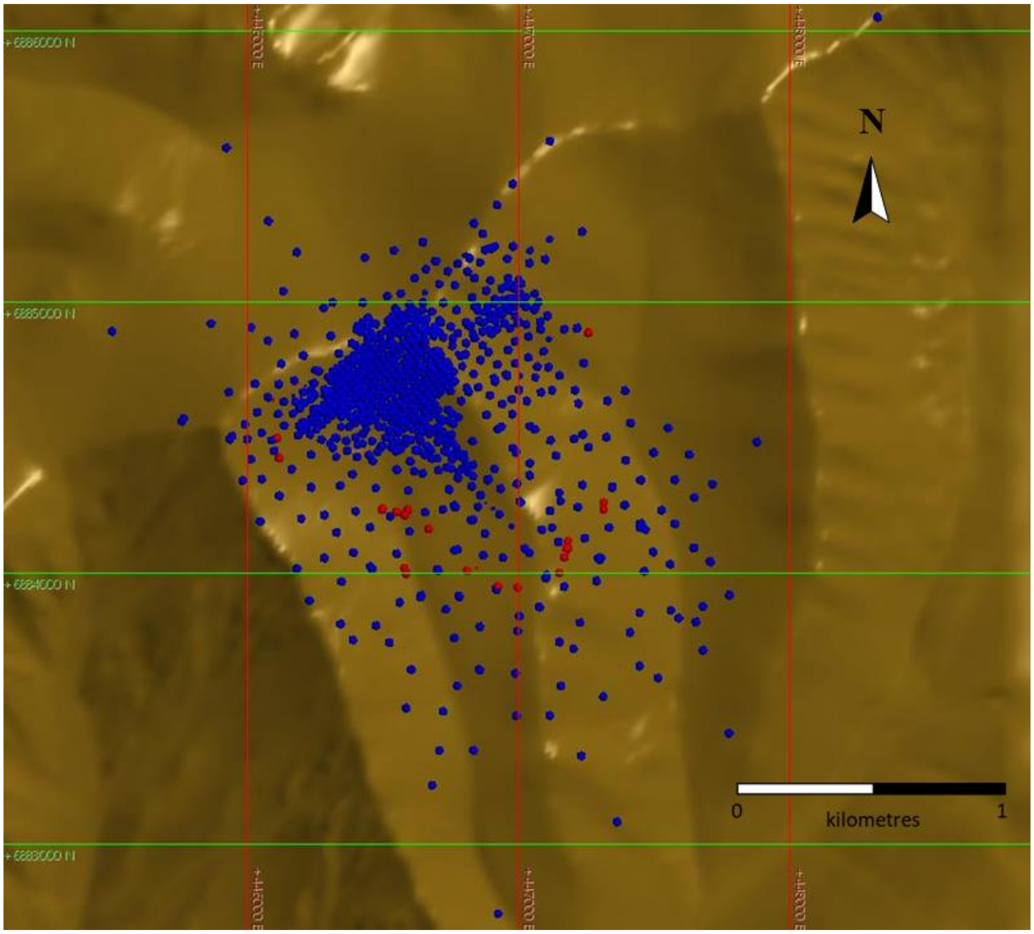
From 2004 to 2022, Lumina Canada and MLCC have conducted all drilling used in the development of the Caserones Project. The current mineral resources for the project employs diamond core and RC drill holes completed between 2004 and 2017.

Table 10-1 summarizes all drilling completed on the Caserones Deposit. Figure 10-1 shows the drill location map at Caserones.

**Table 10-1: Caserones Drill Hole Summary**

| Year | RC Number | RC metres (m) | DDH Number | DDH metres (m) | Total Number | Total metres (m) | Comments |
|---|---|---|---|---|---|---|---|
| **Completed and Used for Mineral Resource Estimate** | | | | | | | |
| 2004 | 68 | 17,930 | 36 | 14,259 | 104 | 32,189 | DDH - mainly HQ, some NQ RC -5-3/8", 5-1/2", and 5-3/4" |
| 2006 | | | 2 | 450 | 2 | 450 | mainly HQ, some NQ |
| 2007 | 33 | 8,452 | 37 | 12,657 | 70 | 21,109 | |
| 2008-2009 | 109 | 10,320 | 78 | 30,746 | 187 | 41,066 | |
| 2010 | 219 | 17,792 | 0 | | 219 | 17,792 | |
| 2011-2012 | | | 54 | 18,295 | 54 | 18,295 | |
| 2013 | 228 | 23,584 | | | 228 | 23,584 | |
| 2015 | 70 | 5,602 | | | 70 | 5,602 | |
| 2016 | 58 | 7,614 | | | 58 | 7,614 | |
| 2017 | 30 | 3,589 | 14 | 3,994 | 44 | 7,583 | |
| **Completed after Mineral Resource Estimate (not yet included)** | | | | | | | |
| 2019 | | | 59 | 11,661 | 59 | 11,661 | |
| 2020 | | | 4 | 1,684 | 4 | 1,684 | |
| 2021 | | | 1 | 398 | 1 | 398 | |
| 2022 | | | 27 | 6,975 | 27 | 6,975 | |

**Figure 10-1: Drill Location Map**




Source: LMC (2023)

## 10.2 Drill Methods

MLCC and Lumina have used both diamond core and reverse circulation (RC) drilling methods. In some cases, drill holes were started as RC and completed as RC.

Table 10-2 summarizes the drill company and equipment used for each drill campaign by year.

Table 10-2: Drilling Company Summary

| Year | RC (Company) | DDH (Company) | Drill Rigs |
|---|---|---|---|
| 2004 – 2006 | Major Drilling | Major Drilling | Ingersoll Rand T-W4 and Schramm T685W (RC)<br>JKS Boyles B-20 and B-56 (DD) |
| 2004 – 2006 | Terra Service | | Drill Tech S40 KX |
| 2007 | Perfomin | Connors SA | |
| 2008 – 2009 | Perfomin | Connors SA | |
| 2010 | Boart Longyear | | |
| 2011 – 2012 | | Boart Longyear | |
| 2013 | Terra Service | | |
| 2015 | Terra Service | | |
| 2016 | Terra Service | | |
| 2017 | Geotec BB | Geotec BB | |
| 2019 - 2022 | | Geotec BB | |

## 10.3 Geological Logging

### 10.3.1 Pre-2004

Drilling and drill information prior to 2004 were excluded from any mineral resource estimate due to a lack of proper collar and downhole surveys, as well as the lack of proper QA/QC procedures.

### 10.3.2 Lumina, 2004 - 2006

Core and cuttings from the drill sites were transported to a sample handling and storage area at the Regalito (Caserones) camp where core and RC cuttings were logged. Lumina geologists used the same forms for both types of drill hole. Lithology, alteration, mineralogy, and mineral zone were routinely logged using abbreviations and very brief descriptions. Logging was performed on 2 m intervals. Alteration styles were noted, but not the intensity of the alteration. Relative or absolute concentrations of mineral species were not noted. The sample number and rig duplicate sample numbers were noted on the logs. The weight of the sample was noted. Sample recovery for core samples was noted. In general drilling recovery was good, averaging around 90% for the core holes and 91% for the RC holes. (Amec, 2005)

Fundamental geotechnical parameters were logged for core. The parameters included core recovery, rock hardness, RQD, fracture frequency, fracture fill, and a rock mass rating (RMR). A density sample was taken every 10 m. One in ten samples was sent to Actlabs for laboratory verification of density. After density measurements (were collected) by immersion in water, the cylinders were sent to the University of La Serena for uniaxial strength testing. (Amec, 2005)

### 10.3.3 MLCC, 2007 – 2022

For each drill campaign, the drill company retained places the core in metal core trays and are marked with metre markers in the core tray. These core trays are then covered and are transported to the core logging facility at Carizalillo, by the drill company, or contracted geological support company. At the core logging facility, the weight of the core (in the core tray) is recorded before core logging and after core cutting and sampling.

Up until May 2021, drill program management, core logging and RC chip logging, sampling and QA/QC and sample transport were coordinated and managed by Geológica Servicios SPA, based in Santiago. From September 2021 to present, these duties and tasks have been managed by Investigaciones Mineras y Geológicas Ltda, based in Santiago.

**RC Logging**

RC logging and sampling occurs at the drill rig. RC samples are collected on 2 m intervals at the drill using a cyclone. The entire sample is riffle split into quarters, where one quarter is bagged for sample analysis, one quarter (at roughly every 20 samples) is bagged as a field duplicate, and the remaining is sent for storage at Carizalillo. The quarter split for assay analysis is weighed, identified, and recorded prior to being sent for analysis (MLCC, 2023).

**Core Logging**

Upon receipt and weighing of the core, a geotechnician from SAM verifies and records the recovery of the core by measuring the accuracy of the metre markers in the core trays. The geotechnician aligns the drill core and marks up the drill core for sampling, at 2 m sample intervals.

Photographs of the core are taken prior to logging. The photographs and drill hole information are logged in the database and stored by drill hole and by campaign. Upon completion of work by the geotechnician, geotechnical logging is completed prior to geological logging.

Drill core logging is completed on paper logs by the contracted geologist, and later entered into the database-by-database technicians. The same paper logs have been in use since 2009. Drill logs consist of descriptions of the lithology, alteration, mineralization, and structure. Codes and symbols are standardized to avoid conflicting descriptions between core loggers (MLCC, 2023).

Drill hole labels are standardized as:

- e.g., **RG 11-400D**: Project Code Year - Hole Number - Drill Type (Diamond or RC)

The drill hole is also entered into a mapping booklet at a 1:2,500 scale using the same standardized codes and symbols.

**Core Cutting and Sampling**

Following the core logging, the core trays are sent to the core sampling facility. The core is split using a hydraulic splitter (Figure 10-2). The half core sample is taken from the left side of the core and placed into a sample bag; and the half core from the left side is placed back in the core tray. A sample tag with a unique number is placed in the sample bag, and the sample number written on the bag. The core tray with the half core is weighed again to compare to the original weight.

Field duplicates are made by collecting the second half of the drill core, leaving no core in the core tray.

**Figure 10-2: Drill Core Splitter**

Source: AGP (2023)

Following the core logging and splitting, the drill log is entered into the database by an analyst and is supervised by the shift manager who has the authority to verify and finalize the entries.

Once the drill core has been split and sampled, core trays covered and are stored in racks at the Carrizalillo core storage facility, at the mine camp, situated 5 km northeast of Juntas del Potro.

MLCC maintains a core logging procedure for company personnel and contract geology support personnel to follow, labeled Procedure for Geological Mapping ("*Protocolo de mapeo geológico*").

No oriented core drilling was used in any drill campaigns.

### 10.3.4 Collar Surveys

Drill hole collar surveys were completed for all drill holes after each drill campaign by MLCC personnel. The surveys were completed using a Trimble R12 GPS unit based on the UTM PSAD-56 datum (Zone 19S).

### 10.3.5 Down Hole Surveys

For both diamond core and RC drilling, where the drillholes are greater than 100 m in length, the downhole survey is measured using a gyroscope, with readings collected at 10 m intervals. The downhole surveys are carried out by Comprobe Spa, based in Santigao. The down hole surveys employ two types of gyroscopic surveys: one stationary north seeking fiber optic gyro, and a continuous mode north seeking gyro (Champ Gyro SRO™). The maximum deviation obtained with respect to the total length of the drilling reaches 6%.

## 10.4 Geotechnical and Metallurgical Drilling

In total, 43 drill holes have been carried out for geotechnical purposes. Of these, 35 drill holes do not have grades and were not used for resources. Geotechnical parameters obtained in the geotechnical logging are included in a separate table from the geological logging database.

In total, 38 drill holes have been carried out for metallurgical purposes. The previous table shows the metallurgical drilling per year.

Table 10-3 summarizes the geotechnical and metallurgical drill holes by year.

**Table 10-3: Caserones Geotechnical Drill Hole Summary**

| Year | Geotech dhs Number | Geotech dhs metres (m) | Met dhs Number | Met dhs metres (m) |
|---|---|---|---|---|
| 2004 – 2006 | | | 8 | 1,860 |
| 2007 | 8 | 2,825 | | |
| 2008-2009 | | | 16 | 4,044 |
| 2010 | - | - | - | |
| 2011-2012 | | | 4 | 670 |
| 2013 | - | - | - | - |
| 2015 | - | - | - | - |
| 2016 | 6 | 1,411 | | |
| 2017 | 9 | 3,215 | | |
| 2019 – 2020 | 14 | 4,525 | 10 | 1,573 |
| 2021 – 2022 | 6 | 1,725 | | |
| **TOTAL** | **43** | **13,722** | **38** | **1,143** |

Note: dhs – drill holes; geotech – geotechnical; met - metallurgical

## 10.5 Grade Control Drilling

Grade control drilling is conducted by MLCC. The drill spacing is nominally 10 m by 10 m grid using a 12.5" diameter percussion drill hole. Drill holes are typically 17 m in depth and a single 15 kg sample is collected and sent to Bureau Veritas for assay analysis. Results are plotted on a plan map to establish dig limits for MLCC's short term planning model.

Quality assurance and quality control measures consist of whole sample recovery testwork performed by weighing the total material recovered per sample interval and comparing the value with theoretical expected weight per interval.

## 10.6 Summary of Drill Intercepts

Drilling is generally perpendicular to the mineralization, and drilled thicknesses approximate true thicknesses.

## 10.7 Drilling Completed Since Database Close-out Date

A total of 91 diamond core drill holes, totalling 20,718 m have been drilled within the Caserones deposit after the database close out date for estimation.

All drill holes are within the resource model area. all drill holes have lithological and assay data available. The information was compared to the existing block model. The QP is of the opinion that although the newer drilling within the resource model will change the grades locally, overall, the new drilling should have a minimal effect on the average grade of the model.

## 10.8 QP Comment on Section 10 "Drilling"

There are no drilling, sampling or recovery factors that could materially impact the accuracy and reliability of the drill results.

In the opinion of the QP, the quantity and quality of the logged geological data, collar, and downhole survey data collected in the drill programs from 2004–2017 are sufficient to support Mineral Resource and Mineral Reserve estimation and mine planning.

# 11 SAMPLE PREPARATION, ANALYSES, AND SECURITY

This section describes the sample preparation, analysis and security for the Lumina drilling programs (2004-2006) described by Amec (2005), and MLCC (2007 – Present) described by Golder (2009) and MLCC (2021).

## 11.1 Sampling Methods

### 11.1.1 Lumina 2004 – 2006

Two drilling methods were employed at Caserones: reverse circulation (RC) drilling and core (DD) drilling. Sampling methodologies differed somewhat between the two methods.

RC samples were collected on 2 m intervals at the drill using a cyclone. In a few areas where water was a problem, a rotary wet splitter was utilized. The entire sample was weighed and then split twice using a Jones splitter, producing four equal splits. One of these splits was sent to the laboratory for analyses, one in twenty was sent to the laboratory as a field duplicate, and the others were archived for possible metallurgical use later. The splitter was carefully levelled prior to use and splits were periodically weighed to ensure that the splitter was working properly.

Core was taken to the core logging facility, logged, and the samples were marked on 2 m intervals. The core was then cut in half using a diamond saw. The core was oriented so that the cut was perpendicular to the major structure with the intention of producing a representative split. One-half of the core was replaced in the core box, the other half was bagged to be sent to the analytical laboratory.

### 11.1.2 MLCC 2007–2022

RC samples are collected on 2 m intervals at the drill using a cyclone. The entire sample is riffle split into quarters, where one quarter is bagged for sample analysis, one quarter (at roughly every 20 samples) is bagged as a field duplicate, and the remaining is sent for storage at Carizalillo. The quarter split for assay analysis is weighed, identified, and recorded prior to being sent for analysis (MLCC, 2023).

After the core is logged, it is sent to the core sampling facility and split using a hydraulic splitter. The half core sample is taken from the left side of the core and placed into a sample bag; and the half core from the left side is placed back in the core tray. A sample tag with a unique number is placed in the sample bag, and the sample number written on the bag. The core tray with the half core is weighed again to compare to the original weight. All details are recorded prior to shipping of the samples.

## 11.2 Density Determinations

A total of 977 bulk density measurements were collected by Lumina and MLCC between 2004 and 2008 (Golder, 2009). Density determinations were made using the wet/dry method.

Bulk density measurements were collected by Lumina from 2004 to 2006 and were made on 15 cm to 20 cm lengths and selected on intervals between 20 m to 40 m (Martlet, 2016).

For use Mineral Resource estimates, a total of 977 measurements from 87 drill holes were completed between 2004 and 2008 (Golder, 2018).

Table 11-1 presents the descriptive statistics for bulk density by mineralized zone. Table 11-2 presents the combined zones where density was estimated.

**Table 11-1: Descriptive Statistics for Bulk Density by Mineralized Zone**

| Zone | Code | Count | Min | Max | Mean | Median | Std Dev | CV |
|---|---|---|---|---|---|---|---|---|
| | -50 | 5 | 2.53 | 2.63 | 2.59 | 2.60 | 0.033 | 0.013 |
| LIX | 1 | 175 | 1.92 | 2.84 | 2.54 | 2.54 | 0.083 | 0.033 |
| OX | 2 | 14 | 2.44 | 2.70 | 2.58 | 2.60 | 0.060 | 0.023 |
| SS | 4 | 398 | 2.06 | 3.01 | 2.58 | 2.58 | 0.089 | 0.035 |
| SP | 5 | 361 | 2.32 | 3.18 | 2.60 | 2.59 | 0.077 | 0.029 |
| SSBL | 6 | 12 | 2.48 | 2.85 | 2.61 | 2.58 | 0.098 | 0.038 |
| OXBL | 7 | 6 | 2.42 | 2.56 | 2.50 | 2.50 | 0.049 | 0.019 |
| ZEP | 90 | 6 | 2.50 | 2.66 | 2.55 | 2.54 | 0.051 | 0.02 |
| | **Total** | **977** | | | | | | |

**Table 11-2: Descriptive Statistics for Bulk Density by Mineralized Zone**

| UEDEN | Mineralized Zone | Lithology | Alteration | Structural Domain |
|---|---|---|---|---|
| 1 | LX (1) | All | All | All |
| 2 | OX (2) + SS (4) + SSBL (6) + OXBL (7) | All | All | All |
| 3 | SP (5) + ZEP (90) | All | All | All |

## 11.3 Analytical and Test Laboratories

The following independent sample preparation and analytical laboratories were used:

- **Activation Laboratories Ltd. (Actlabs) in La Serena, Chile -** used for sample preparation and analysis from 2000–2006. At the time, the laboratory held ISO/IEC 17025 accreditations.
- **SGS Minerals, Copiapó** - used for sample preparation and analysis from 2007–2017. The laboratory holds ISO 14001 and NCh-ISO17065:2013 accreditations.
- **Bureau Veritas Copiapó, Chile -** used for grade control drilling. The laboratory holds ISO/IEC 27001:2013 accreditations.

## 11.4 Sample Preparation and Analysis

### 11.4.1 Lumina, 2004 – 2006

Samples were sent to Activation Laboratories Ltd. (Actlabs) in La Serena, Chile for preparation and analysis. Upon receipt of the samples, Actlabs staff laid the samples out in order and dried samples if necessary. Amec observed these procedures during three visits to the laboratory. Lumina personnel did not perform any aspect of sample preparation or analysis. Sample security at the laboratory consisted of placing the samples in the lockable sample preparation facility. No extraordinary security measures were taken at the project site.

The sample preparation protocol for RC cuttings is as follows:

- 15 kg sample is split
- one quarter split (3-4 kg) is crushed to 95% passing 10 mesh (1.68 mm)
- one 500 g sample is split
- the 500 g split is dried
- the 500 g sample is taken to the pulverizer
- pulverize for 1-1/2 minutes to 95% passing 150 mesh (0.105 mm)

The protocol is the same for core except that all of the core is crushed to 95% passing 10 mesh (1.68 mm) and then the 500 g split is made.

The pulverizer procedure is as follows:

- place the 500 g sample into the pulverizer bowl
- add a small amount of alcohol
- pulverize for 1.5 to 1.67 minutes
- empty the bowl onto a rubber pad
- clean bowl with paint brush
- a scoop is then used to collect pulp from the sample cone for storage (400 g)

The remainder is placed in a pulp envelope for analysis.

- all utensils were then cleaned with compressed air

One in 40 samples at both the crusher and pulverizer were screened to ensure that the particle size was adequate, and protocols were being met. Adjustments were made if the particle size was not within specifications.

One in 40 samples was duplicated after the first crush and passed through the entire sample preparation and analytical process.

A barren silica sand (Ottawa sand) is used to clean the sample preparation equipment. One in 40 samples is Ottawa sand that is used as a preparation blank.

The Activation Laboratories Ltd. (Actlabs) quality system is accredited through ISO/IEC 17025 with CAN-P-1579 for specific registered tests through the Standards Council of Canada (SCC).

Actlabs (La Serena, Chile) provided the following laboratory analytical protocols.

**Total Copper Analysis**

The procedure for total copper (CuT) and molybdenum (Mo) is as follows:

- weigh 0.5 g of sample with sensitivity of 0.1 mg
- place sample in a 250 ml beaker

- add 15 ml of Hydrochloric acid, 10 ml of nitric acid and 2.5 ml of perchloric acid
- boil dry
- remove from hot pad and cool
- add 5 ml of hydrochloric acid and 5 ml of deionized water
- heat almost to boil to dissolve soluble salts
- cool solution, place in 100 ml volumetric flask and dilute to 100 ml
- agitate to homogenize and let it settle to clarify the solution
- read by Atomic Absorption, (AA)

Quality Control at Actlabs for CuT is as follows and every 60-sample analytical batch will be composed of:

- 53 unknown samples
- 5 pulp duplicate samples
- 1 analytical blank
- 1 certified standard sample as an internal control of the lab

**Acid Soluble Copper**

The procedure for total acid soluble copper (CuS(Acid)) is as follows:

- weigh, 0. 5 g of sample with sensitivity of 0.1 g
- place sample in a 250 ml Erlenmeyer flask
- add 20 ml of 5% $H_2SO_4$ solution with a buret
- place flask on the orbital shaker for 60 minutes to 200 rpm
- filter into a 100 ml volumetric flask
- wash the residue 3 times with deionized water into the volumetric flask
- dilute with deionized water to 100 ml
- let the sample stand to clarify the solution
- read by Atomic Absorption (AA)

**Cyanide Soluble Copper**

The procedure for total acid soluble copper (CuS(NaCN)) is as follows:

- move the residue of the CuS (Acid) analysis from the filter into an Erlenmeyer flask with deionized water
- add 20 ml 10% NaCN solution (pH 9.5 min)
- shake for 30 minutes into an orbital shaker at 200 rpm
- filter into a volumetric flask
- wash 3 times with deionized water into the volumetric flask
- dilute with deionized water to 100 ml

- read by Atomic Absorption (AA)

### 11.4.2 MLCC, 2007 – 2017

Caserones' primary laboratory is SGS Minerals, who perform the mechanical preparation and chemical analysis (Atomic Absorption) of the drill samples. The work is carried out at the SGS facilities in the Paipote Industrial District, in Copiapó.

At SGS, the following analyses were implemented:

- copper and molybdenum analysis by acid digestion and atomic absorption finish
- sequential copper analysis and atomic absorption finish
- (copper soluble in 5% sulfuric acid and Cu soluble in NaCN 10%) in mineral samples

Copper content is characterized in the samples by the following methods:

The method consists of adding to 1 g of sample (previously homogenized) 25 ml of 5% sulfuric acid solution to 1 g of sample (previously homogenized). After centrifuging, distilled water is added and shaken for a prolonged period of time, a solid residue is obtained, to which 20 ml of sulfuric acid solution is added.

For cyanide, 20 ml of 10% sodium cyanide solution is added. After centrifuging, distilled water is added and shaken for a period of time, and a cyanide solution is obtained.

In both solutions, acid and cyanide, the copper content is analyzed by atomic absorption.

## 11.5 Quality Assurance and Quality Control

### 11.5.1 Lumina, 2004–2006

Between 2004 and 2006, Lumina maintained a QA/QC protocol throughout their drill programs. Control samples for QA/QC consisted of various blank samples, standard samples, and duplicate samples, as well as check assays sent to a second laboratory.

**Blanks**

Blank samples were inserted into the sample stream to detect contamination due to sample preparation or analytical problems. Two types of blank samples were used during the drilling program: sample preparation blanks and analytical blanks.

Sample preparation blanks are inserted into the sample stream upstream of the first crusher. These blank samples are inserted at a rate of one or two blanks for each sample batch. Most of the blanks returned values of 0.008 %CuT or less. Molybdenum values for these blank samples are generally 8 ppm or less.

Analytical blank samples are vials of reagent, minus analyte that were inserted into the sample stream during the analytical stage. These samples are used to monitor calibration of the equipment, purity of reagents, and possible contamination of samples during analysis. With the exception of two samples, all CuT values were 0.002 %CuT or less. Of the two samples above 0.002%, one was 0.003%, the other was 0.004 %CuT.

### Standards

Standard samples are used to evaluate the accuracy of the laboratory and to monitor possible drift in the laboratory. Accuracy can be evaluated because standards have significant numbers of analyses by several laboratories which allows determination of the "best value" (BV) for the sample which is the analytical result that can be expected for the sample. Drift results when differing reagents and/or calibrations are used during analysis of samples. Drift typically occurs over weeks or months and data should be collected over long time periods to be useful.

Standard samples were inserted into the sample stream by both Lumina and Actlabs. Lumina inserted standards prepared for them by Acme in Santiago from materials submitted to Acme by Lumina. Actlabs inserted a number of certified reference materials (CRM's) as well as internally prepared materials.

Lumina had eight samples prepared as standards (Table 11-3). Standard GBM 997-8 is a commercially prepared material available from Geostats Pty. Ltd., based in Australia. With the exception of STD 1 and STD 2, the other samples were prepared from materials taken from the Project site.

STD 1 and STD 2 were prepared by Acme Labs (Acme), Santiago, using silica sand and variable amounts of Cu-bearing minerals. After the drill program was completed, all of the available data for each standard were compiled and another best value calculated.

The best values were evaluated by compiling all of the available data and excluding obvious outliers. The standard deviation of this data set is reported in Table 11-4.

**Table 11-3: Summary of Lumina Standards Used during the 2004 Caserones Drill Program**

| ID | Acme CuT | BV | s | -2s | +2s | n |
|---|---|---|---|---|---|---|
| STD 1 | 0.309 | 0.3 | 0.008 | 0.284 | 0.316 | 78 |
| STD 2 | 0.77 | 0.744 | 0.015 | 0.714 | 0.774 | 78 |
| STD 19 | 0.104 | 0.104 | 0.004 | 0.096 | 0.112 | 39 |
| STD 745 | 1.373 | 1.397 | 0.035 | 1.327 | 1.467 | 57 |
| STD 959 | 0.58 | 0.59 | 0.015 | 0.56 | 0.62 | 66 |
| STD 1035 | 0.493 | 0.502 | 0.011 | 0.48 | 0.524 | 34 |
| STD 1048 | 0.261 | 0.263 | 0.008 | 0.247 | 0.279 | 56 |
| STD 1054 | 0.866 | 0.873 | 0.018 | 0.837 | 0.909 | 59 |
| **ID** | **Acme Mo** | **BV** | **s** | **-2s** | **+2s** | **n** |
| STD 1 | 19 | 13 | 3.9 | 5.2 | 20.8 | 78 |
| STD 2 | 55 | 53 | 6.3 | 40.4 | 65.6 | 78 |
| STD 19 | 262 | 190 | 14.7 | 160.6 | 219.4 | 39 |
| STD 745 | 68 | 65 | 7.4 | 50.2 | 79.8 | 57 |
| STD 959 | 178 | 182 | 22.8 | 136.4 | 227.6 | 66 |
| STD 1035 | 110 | 119 | 5.6 | 107.8 | 130.2 | 34 |
| STD 1048 | 42 | 42 | 5.6 | 30.8 | 53.2 | 56 |
| STD 1054 | 100 | 95 | 9.4 | 76.2 | 113.8 | 59 |

**Table 11-4: Summary of Actlabs Laboratory Standards Used during the 2004 Caserones Drill Program**

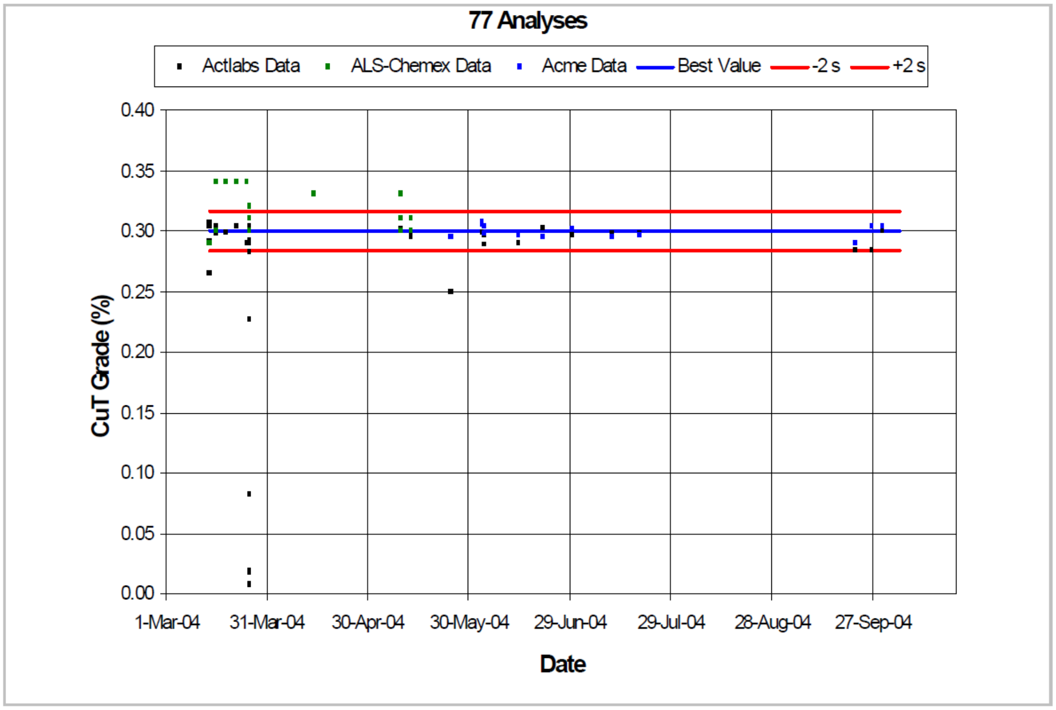
| ID | Cu BV (%) | s | -2s | +2s |
|---|---|---|---|---|
| CH-2 | 2.43 | 0.122 | 2.186 | 2.674 |
| CPB-1 | 0.254 | 0.013 | 0.228 | 0.28 |
| Cu-1 | 0.58 | 0.029 | 0.522 | 0.638 |
| Cu-2 | 1.364 | 0.068 | 1.228 | 1.5 |
| Cu-9 | 0.29 | 0.015 | 0.26 | 0.32 |
| CZN-1 | 0.144 | 0.007 | 0.13 | 0.158 |
| G-1 | 1.364 | 0.068 | 1.228 | 1.5 |
| G-26 | 0.165 | 0.008 | 0.149 | 0.181 |
| KC-1 | 0.122 | 0.006 | 0.11 | 0.134 |
| MP-2 | 0.281 | 0.014 | 0.253 | 0.309 |
| STD-100 | 0.065 | 0.002 | 0.061 | 0.069 |
| STD-109 | 2.223 | 0.111 | 2.001 | 2.445 |
| STD-113 | 2.48 | 0.124 | 2.232 | 2.728 |
| STD-114 | 0.852 | 0.043 | 0.766 | 0.938 |
| UM-1 | 0.43 | 0.022 | 0.386 | 0.474 |
| UM-4 | 0.054 | 0.003 | 0.048 | 0.06 |
| CDN-CGB-1 | 0.596 | 0.03 | 0.536 | 0.656 |
| CDN-CGB-2 | 1.177 | 0.059 | 1.059 | 1.295 |
| CDN-CGB-5 | 0.155 | 0.008 | 0.139 | 0.171 |
| **ID** | **Mo BV (ppm)** | **s** | **-2s** | **+2s** |
| Cu-1 | 110 | 5.5 | 99 | 121 |
| STD-100 | 7 | 0.9 | 5.2 | 8.8 |

STD 1 was used extensively in the program drill program. A large number of CuT and Mo failures occurred on early in the program, attributed to sample label swaps. The batch was re-assayed and found to be acceptable.

STD 2 was used similarly to STD 1, and also found several CuT failures (low) occurred in that were attributed to sample swaps or mislabels and the batch was also re-assayed.

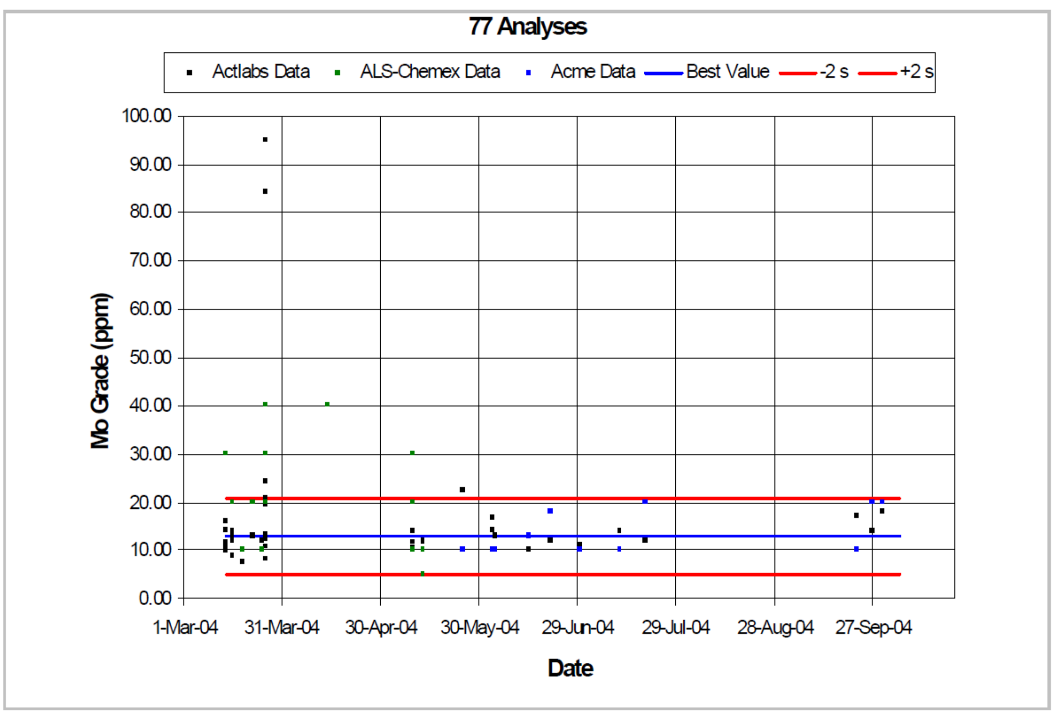
Figure 11-1 and Figure 11-2 present an example control plot for Standard S1, for CuT and Mo grades, respectively.

**Figure 11-1: Standard STD 1 - CuT**




Source: Amec (2005)

**Figure 11-2: Standard STD 1 - MoT**



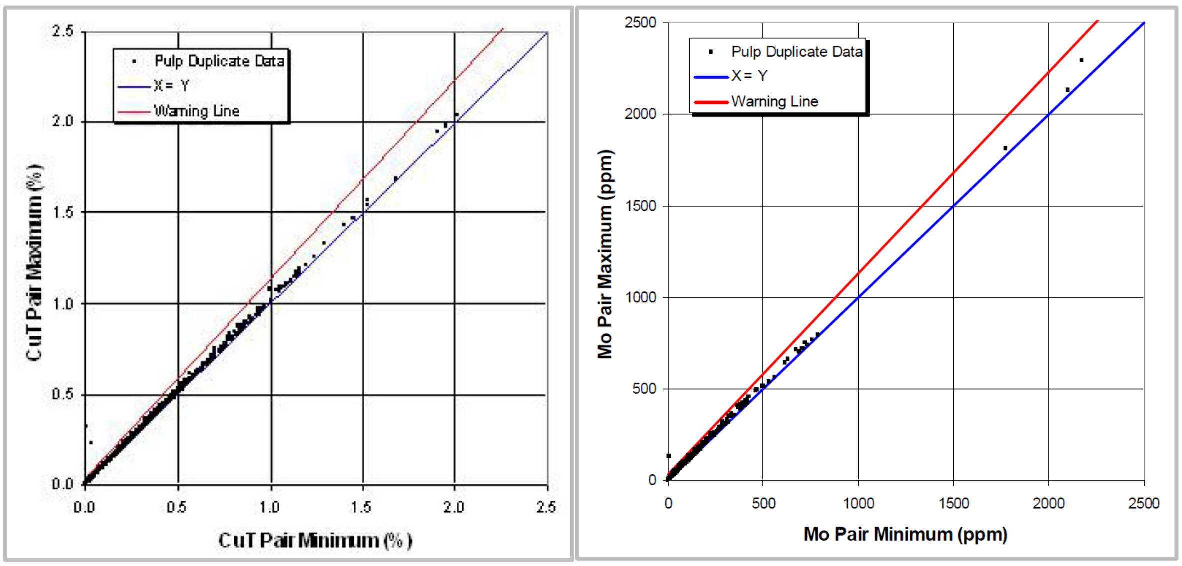

Source: Amec (2005)

## Duplicates

Lumina employed several types of duplicate samples during their drill programs that included pulp, blind, sample preparation and field duplicates.

Pulp duplicate samples consist of two aliquots of the same pulp that are analyzed in the same sample batch. These samples are inserted by the laboratory. Results were found to be acceptable. Figure 11-3 presents the control plots for pulp duplicate data.

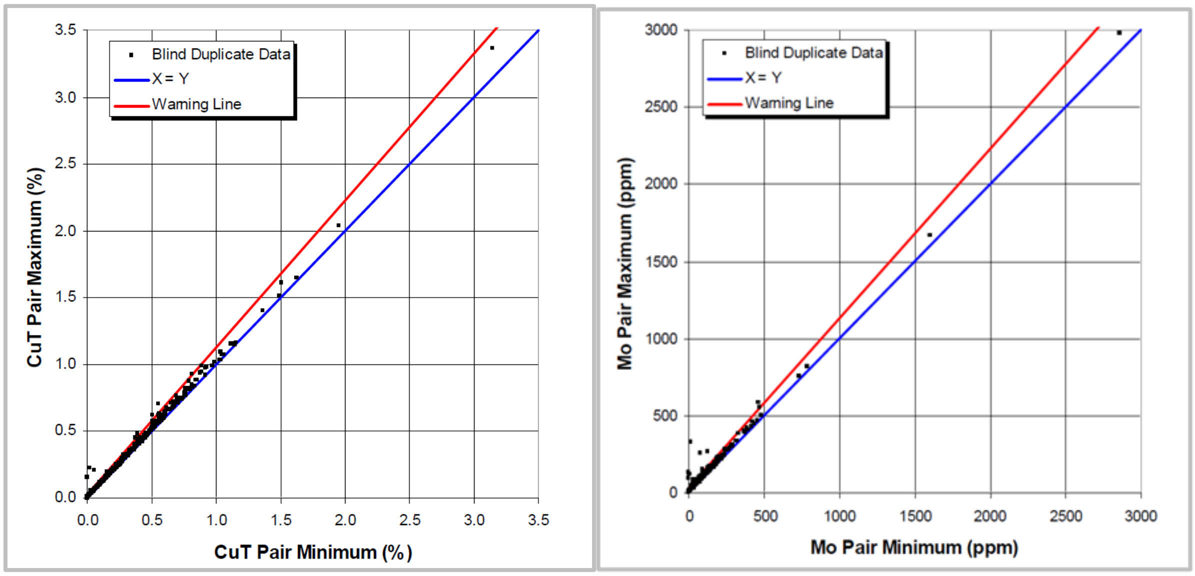
**Figure 11-3: Caserones Pulp Duplicate Control Plots – CuT and Mo**




Source: Amec (2005)

Blind duplicate samples are previously analyzed pulps that were renumbered and inserted into the sample stream by Lumina staff, at the Actlabs laboratory in La Serena. These samples were used as a check on laboratory precision and sample handling procedures. Results were found to be acceptable. Figure 11-4 presents the control plots for blind duplicate data.

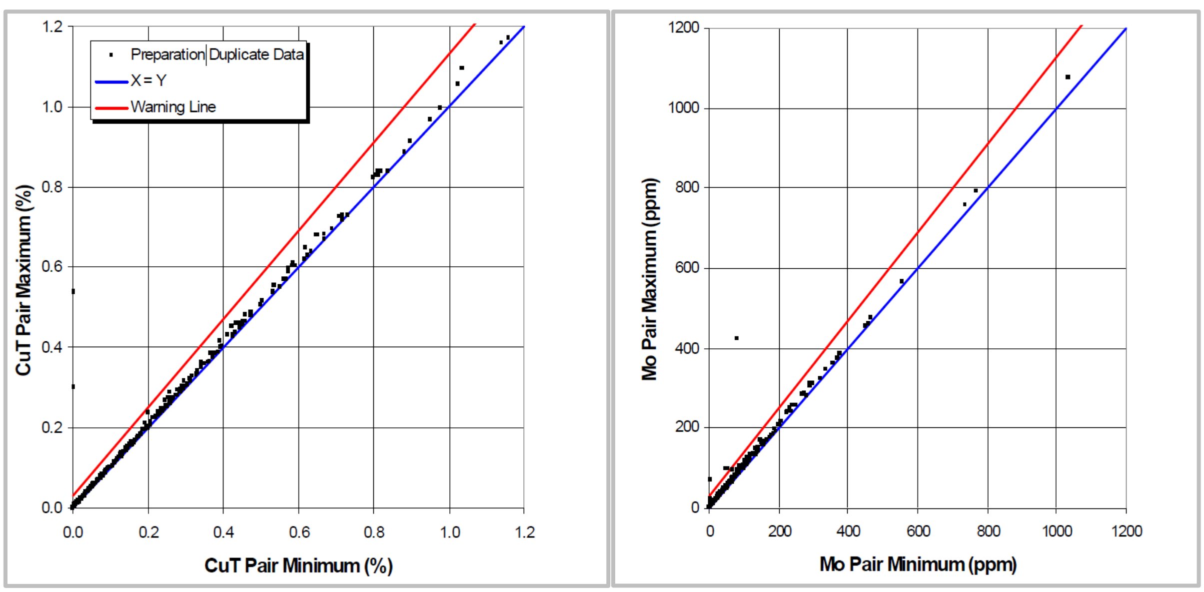
**Figure 11-4: Caserones Blind Duplicate Data Summary – CuT and Mo**




Source: Amec (2005)

Sample preparation duplicates are duplicate samples collected after coarse crushing of the sample. The sample is split, and the original and duplicate samples are prepared and analyzed in the same analytical batch. Results from these duplicates were considered acceptable. Figure 11-5 presents the results of the sample preparation duplicate data.

**Figure 11-5: Caserones Sample Preparation Duplicate Data Summary – CuT and Mo**




Source: Amec (2005)

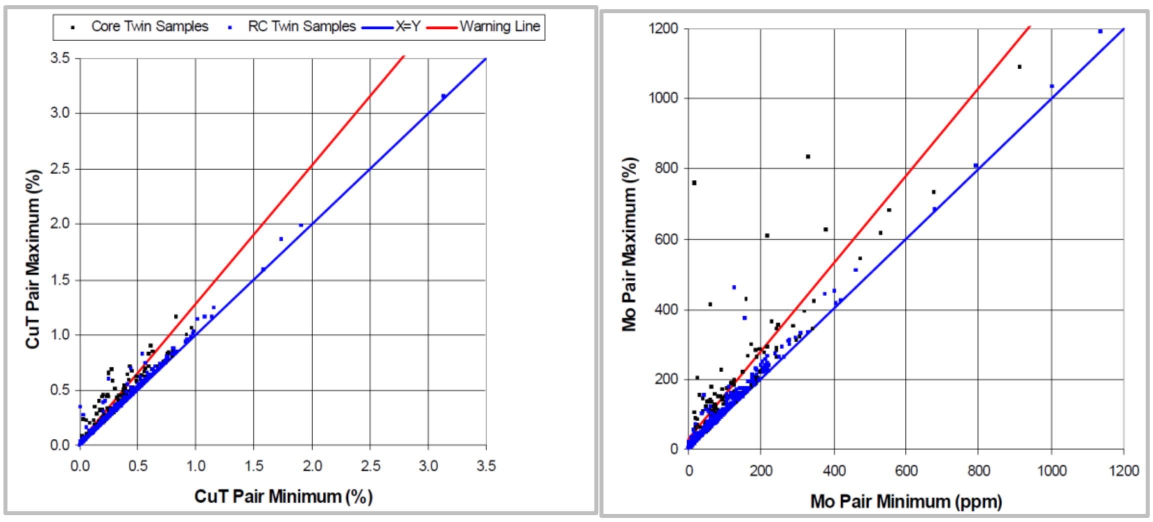
Field duplicate samples were used by Lumina for RC and for diamond core samples. First, two samples are split and collected at the RC drill; where one is the analytical sample, the other is the field duplicate.

These samples are then submitted to the laboratory separately. The field duplicate samples were sent through the laboratory as batches.

The second type of field duplicate was quarter core samples. The drill core was first split into two halves. One half was sent to the laboratory for analysis, the other half was then split into quarters where one-quarter was archived, the other quarter was submitted to the laboratory for analysis. Results were expected to be different comparing half core to quarter core are not equal samples.

Figure 11-6 presents the results of the field duplicate data for CuT and Mo.

**Figure 11-6: Caserones Field Duplicate Data Summary – CuT and Mo**




Source: Amec (2005)

### 11.5.2 MLCC, 2007 – 2022

Throughout 2007 to 2022, MLCC implemented its own QA/QC procedures that included control samples of blank samples, duplicates, and standards.

For blanks and standards, the analyses are performed on total copper (CuT) and molybdenum (Mo). For duplicates, the analysis is performed on total copper (CuT).

The following control samples were used:

**<u>Blanks</u>**

There two types of blank samples that have been routinely utilized during the various drilling programs at Caserones, these are:

- Fine Blanks (BF) STD-1 up to 2016; IN-BMF-233 from 2017
- Coarse Blanks (BG)

Blanks are inserted at a rate approximately one every 20 samples, alternating between a Fine Blank and a Coarse Blank.

Prior to 2016, the expected value of the Fine Blanks was 0.0026 %CuT and 5 ppm Mo. A failure is considered anything greater than 0.016 %CuT or greater than 16 ppm Mo.

In 2016, the Fine Blanks were replaced with a sterile sample, IN-BMF-233, sourced from the Instituto Nacional De Tecnología, Estandarizacion Y Metrología Ltda. (INTEM). The Fine Blank material has a nominal mean of 25 g/t CuT, or 0.0025 %CuT (INTEM, 2016).

### Standards

Three standards were prepared and sourced from Asesoría Minera Geoanalítica Limitada (ASG) in 2007. The ASG laboratory was acquired by Bureau Veritas in 2008.

- Standard 1 (S1): low grade
- Standard 2 (S2): medium grade
- Standard 3 (S3): high grade

As of 2016, a new set of standards were obtained from INTEM as follows:

Estandar 1, 2, 3 and 4 (E1, E2, E3, E4):

- Estándar Bajo (E1) low grade standard
- Estándar Medio (E2) medium grade standard
- Estándar Medio-Alto (E3) medium high grade standard
- Estándar Alto (E4) high grade standard

Insertion frequency rates varied by the type and grade of the standard and the drill program and could range from 0.7–2%.

Table 11-5 presents the updated standards from INTEM used for subsequent QA/QC programs.

**Table 11-5: Control Samples Sourced from INTEM**

| MLCC Code | Control Sample | INTEM Number | Mean | Unit | Uncertainty | 2x Std Dev |
|---|---|---|---|---|---|---|
| E1 | Estándar Bajo | IN-D007-303 | 0.076 | % CuT | 0.002 | 0.007 |
| | | | 0.017 | % CuS | 0.001 | 0.004 |
| | | | 74 | ppm Mo | 1 | 5 |
| | | | 18 | ppm As | 2 | 6 |
| E2 | Estándar Medio | IN-D007-304 | 0.258 | % CuT | 0.003 | 0.010 |
| | | | 0.039 | % CuS | 0.003 | 0.008 |
| | | | 215 | ppm Mo | 5 | 19 |
| | | | < 20 | ppm As | - | - |
| E3 | Estándar Medio-Alto | IN-D007-305 | 0.425 | % CuT | 0.005 | 0.016 |
| | | | 0.063 | % CuS | 0.004 | 0.013 |
| | | | 161 | ppm Mo | 4 | 13 |
| | | | < 20 | ppm As | - | - |
| E4 | Estándar Alto | IN-D007-306 | 0.753 | % CuT | 0.006 | 0.023 |
| | | | 0.180 | % CuS | 0.006 | 0.020 |
| | | | 172 | ppm Mo | 5 | 17 |
| | | | 23 | ppm As | 5 | 15 |

### Duplicates

The following duplicate samples were taken:

- **Twin Samples (MS):** twin samples are obtained in the field and correspond to the second half of the core sample from the core tray
- **Field Duplicate (FD):** is the duplicate sample that is taken in the field
- **Coarse Duplicates (GD):** is the duplicate sample taken in the sample preparation room
- **Pulp Duplicates (PD):** corresponds to the ground material prepared for chemical analysis and which is reanalyzed.
- **External Duplicates (ED):** correspond to pulp duplicates that are sent to external laboratories.

Insertion rates varied by duplicate type and drill program. Typically, coarse and pulp duplicates had a 2% insertion rate, and external duplicates were about 5%.

### QA/QC Program

MLCC has conducted their QA/QC programs throughout their drill campaigns. Table 11-6 to Table 11-12 summarize the insertion rates of control samples for drill campaigns from 2007 – 2022.

**Table 11-6: Control Samples for 2007**

| Year | Control Sample | Number | Frequency |
|---|---|---|---|
| BF | Fine Blanks | n/a | 2% |
| BG | Coarse Blanks | n/a | 2% |
| S1 | Standard 1 | n/a | 2% |
| S2 | Standard 2 | n/a | 2% |
| S3 | Standard 3 | n/a | 2% |
| MG/DC | Duplicate twin/Field Duplicate | n/a | 2% |
| DE | External Duplicates | n/a | 5% |
| DG | Coarse Duplicates | n/a | 2% |
| DP | Pulp Duplicates | n/a | 2% |
| | **TOTAL Control Samples (approx.)** | **899** | **21%** |
| | **TOTAL Samples (approx.)** | **4,300** | |

**Table 11-7: Control Samples for 2008**

| Year | Control Sample | Number (RC) | Frequency | Number (DD) | Frequency |
|---|---|---|---|---|---|
| BF | Fine Blanks | 101 | 1.7% | 268 | 2.0% |
| BG | Coarse Blanks | 101 | 1.7% | 274 | 2.0% |
| S1 | Standard 1 | 122 | 2.0% | 262 | 2.0% |
| S2 | Standard 2 | 121 | 2.0% | 270 | 2.0% |
| S3 | Standard 3 | 122 | 2.0% | 265 | 2.0% |
| MG/DC | Duplicate twin/Field Duplicate | 131 | 2.1% | 270 | 2.0% |
| DE | External Duplicates | 301 | 4.9% | 661 | 4.9% |
| DG | Coarse Duplicates | 129 | 2.1% | 268 | 2.0% |
| DP | Pulp Duplicates | 121 | 3.0% | 269 | 2.0% |
| | **TOTAL Control Samples** | **1,249** | **20.4%** | **2,807** | **20.8%** |
| | **TOTAL Samples** | **6,115** | | **13,466** | |

**Table 11-8: Control Samples for 2009**

| Year | Control Sample | Number | Frequency |
|---|---|---|---|
| BF | Fine Blanks | 94 | 2.0% |
| BG | Coarse Blanks | 94 | 2.0% |
| S1 | Standard 1 | 94 | 2.0% |
| S2 | Standard 2 | 94 | 2.0% |
| S3 | Standard 3 | 96 | 2.0% |
| MG/DC | Duplicate twin/Field Duplicate | 94 | 2.0% |
| DE | External Duplicates | 242 | 5.0% |
| DG | Coarse Duplicates | 96 | 2.0% |
| DP | Pulp Duplicates | 95 | 2.0% |
| | **TOTAL Control Samples** | **999** | **20.8%** |
| | **TOTAL Samples** | **4,812** | |

**Table 11-9: Control Samples for 2015**

| Year | Control Sample | Number | Frequency |
|---|---|---|---|
| BF | Fine Blanks | 66 | 1.4% |
| BG | Coarse Blanks | 19 | 0.4% |
| E1 | Estándar Bajo | 63 | 1.3% |
| E2 | Estándar Medio | 60 | 1.2% |
| E3 | Estándar Alto | 65 | 1.4% |
| MG/DC | Duplicate twin/Field Duplicate | 21 | 0.4% |
| DE | External Duplicates | | |
| DG | Coarse Duplicates | 62 | 1.3% |
| DP | Pulp Duplicates | 61 | 1.3% |
| | **TOTAL Control Samples** | **417** | **14.8%** |
| | **TOTAL Samples** | **2818** | |

**Table 11-10: Control Samples for 2018**

| Year | Control Sample | Number | Frequency |
|---|---|---|---|
| BF | Fine Blanks | 57 | 1.8% |
| BG | Coarse Blanks | 57 | 1.8% |
| E1 | Estándar Bajo | 53 | 1.7% |
| E2 | Estándar Medio | 49 | 1.5% |
| E3 | Estándar Medio Alto | 53 | 1.7% |
| E4 | Estándar Alto | 21 | 0.7% |
| MG/DC | Duplicate twin/Field Duplicate | | 0.0% |
| DE | External Duplicates | 60 | 1.9% |
| DG | Coarse Duplicates | 63 | 2.0% |
| DP | Pulp Duplicates | 58 | 1.8% |
| | **TOTAL Control Samples** | **471** | **14.7%** |
| | **TOTAL Samples** | **3,209** | |

**Table 11-11: Control Samples for 2020 – 2021**

| Year | Control Sample | Number (DD) | Frequency |
|---|---|---|---|
| BF | Fine Blanks | 91 | 5.4% |
| BG | Coarse Blanks | 84 | 5.0% |
| E1 | Estándar Bajo | 36 | 2.1% |
| E2 | Estándar Medio | 85 | 5.0% |
| E3 | Estándar Medio-Alto | 82 | 4.8% |
| E4 | Estándar Alto | 46 | 2.7% |
| MG/DC | Duplicate twin/Field Duplicate | 87 | 5.1% |
| DE | External Duplicates | | 0.0% |
| DG | Coarse Duplicates | 78 | 4.6% |
| DP | Pulp Duplicates | 87 | 5.1% |
| | **TOTAL Control Samples** | **676** | **15.6%** |
| | **TOTAL Samples (approx.)** | **4346** | |

**Table 11-12: Control Samples for 2022**

| Year | Control Sample | Number | Frequency |
|---|---|---|---|
| BF | Fine Blanks | 51 | 3.0% |
| BG | Coarse Blanks | 5 | 0.3% |
| E1 | Estándar Bajo | 62 | 3.7% |
| E2 | Estándar Medio | 85 | 5.0% |
| E3 | Estándar Medio-Alto | 69 | 4.1% |
| E4 | Estándar Alto | 0 | 0.0% |
| MG/DC | Duplicate twin/Field Duplicate | 32 | 1.9% |
| DE | External Duplicates | | 0.0% |
| DG | Coarse Duplicates | 32 | 1.9% |
| DP | Pulp Duplicates | 33 | 2.0% |
| | **TOTAL Control Samples** | **369** | **21.8%** |
| | **TOTAL Samples (approx.)** | **1691** | |

### Blanks Results

Table 11-13 and Table 11-14 show a summary of results for Fine Blanks and Coarse Blanks for QA/QC programs between 2011-2016 and 2018-2022, respectively.

**Table 11-13: Blanks Results Summary from 2011 to 2016**

| Year | | Number | Cu Failure (>0.016%CuT) | Mo Failure (> 16 ppm Mo) | Failure Rate |
|---|---|---|---|---|---|
| 2011 - 2012 | BF | 104 | 0 | 0 | - |
| | BG | 104 | 1 | 0 | 0.9% |
| 2013 | BF | 73 | 0 | 1 | 1.4% |
| | BG | 73 | 1 | 1 | 1.4% |
| 2015 | BF | 66 | 0 | 6 | 9.1% |
| | BG | 19 | 0 | 0 | - |
| 2016 | BF | 47 | 0 | 1 | 2.1% |
| | BG | 48 | 1 | 12 | 25.0% |

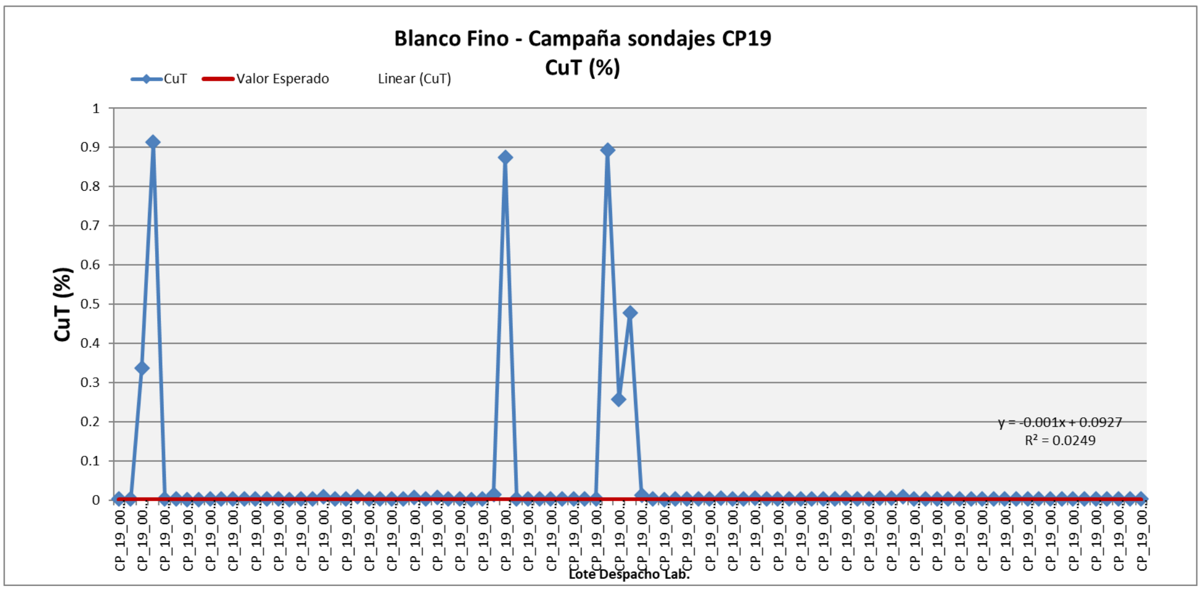
**Table 11-14: Blanks Results Summary from 2016 to 2022**

| Year | | Number | Cu Failure (>0.016%CuT) | Mo Failure | Failure Rate |
|---|---|---|---|---|---|
| 2018 | BF* | 57 | 0 | 0 | - |
| | BG | 57 | 0 | 1 (>12 ppmMo) | 1.8% |
| 2020-2021 | BF* | 91 | 6 | 0 | 10.5% |
| | BG | 84 | 0 | 0 (>12 ppmMo) | - |
| 2022 | BF** | 51 | 0 | 0 | - |
| | BG | 5 | 0 | 0 (>12 ppmMo) | - |

* for BF, the E1 Standard IN-D007-303 (low grade) was used
** for BF, both IN-BMF-233 and E1 Standard IN-D007-303 were used.

It was noted in the QA/QC plots from 2021-2022, the Fine Blanks show six values far above the failure limit and > 0.3 %CuT but were not marked as outliers. It is recommended that this issue be reviewed and addressed. Figure 11-7 shows the BF Blank Control Plot for 2020-2021 drill campaign.

**Figure 11-7: BF Blank Control Plot for CuT (2020 – 2022)**




Source: MLCC (2023)

## Standard Results

The QA/QC control plots do not show any significant outliers for the drill programs between 2011 and 2018. Table 11-15 presents a summary of the Standards results from 2011 to 2017.

**Table 11-15: Standard Results Summary for CuT (%) and Mo (ppm); prior to 2017**

| Year | Standard | Count | Expected Value (%CuT) | CuT Failure ± 3SD | Expected Value (Mo ppm) | Mo ppm Failure ± 3SD | Failure Rate |
|---|---|---|---|---|---|---|---|
| 2011 - 2012 | S1 (STD-2) | 100 | 0.241 | 1 | 77 | 2 | 2.0% |
| | S2 (STD-3) | 102 | 0.527 | 1 | 138 | 0 | 1.0% |
| | S3 (STD-4) | 99 | 0.855 | 0 | 152 | 1 | 1.0% |
| 2013 | S1 | 71 | 0.241 | 1 | 71 | 1 | 1.4% |
| | S2 | 57 | 0.527 | 1 | 57 | 1 | 1.8% |
| | S3 | 66 | 0.855 | 1 | 66 | 1 | 1.5% |
| 2015 | S1 | 63 | 0.241 | 2 | 77 | 3 | 4.8% |
| | S2 | 60 | 0.527 | 0 | 138 | 2 | 3.3% |
| | S3 | 65 | 0.855 | 0 | 152 | 1 | 1.5% |
| 2016 | S1 | 50 | 0.241 | 0 | 77 | 0 | - |
| | S2 | 51 | 0.527 | 0 | 138 | 0 | - |
| | S3 | 50 | 0.855 | 0 | 152 | 0 | - |

The QA/QC control plots do not show any significant outliers for the drill programs between 2011 and 2018. Table 11-16 presents a summary of the Standards results from 2011 to 2018.

**Table 11-16: Standard Results Summary CuT (%) and Mo (ppm); from 2018 to 2022**

| Year | Standard | Count | Expected Value (%CuT) | CuT Failure ± 3SD | Expected Value (Mo ppm) | Mo ppm Failure ± 3SD | Failure Rate (CuT only) |
|---|---|---|---|---|---|---|---|
| 2018 | E1 | 52 | 0.076 | 0 | 74 | 40 | - |
| | E2 | 49 | 0.258 | 5 | 215 | 34 | 10.2% |
| | E3 | 53 | 0.425 | 2 | 161 | 32 | 3.8% |
| | E4 | 21 | 0.752 | 1 | 172 | 13 | 4.8% |
| 2020 – 2021 | E1 | 36 | 0.076 | 0 | 74 | 3 | - |
| | E2 | 85 | 0.258 | 7 | 215 | 2 | 8.2% |
| | E3 | 82 | 0.425 | 4 | 161 | 2 | 4.9% |
| | E4 | 46 | 0.752 | 3 | 172 | 0 | 6.5% |
| 2022 | E1 | 62 | 0.076 | 4 | 74 | 8 | 6.5% |
| | E2 | 85 | 0.258 | 3 | 215 | 5 | 3.5% |
| | E3 | 69 | 0.425 | 12 | 161 | 3 | 17.4% |
| | E4 | 0 | - | - | - | - | - |

MLCC employs several types of control plots depending on the drill campaigns. It is recommended that each of these control plots are standardized to keep all QA/QC data organized and easily recognized and understandable.

**Duplicate Results**

MLCC ran several QA/QC duplicates that included: Field Duplicates (DC – duplicado campo), Coarse Duplicates (DG – duplicado grueso) and Pulp Duplicates (DP – duplicado pulpa).

Table 11-17 summarizes the results for the Field Duplicates, Coarse Duplicates and Pulp Duplicates, respectively.

**Table 11-17: Field Duplicate Results Summary CuT (%)**

| Year | Standard | Count | CuT Failure | Failure Rate | Mo ppm Failure | Failure Rate |
|---|---|---|---|---|---|---|
| 2012 | DC | 111 | 5 | 4.5% | 11 | 9.9% |
| | DG | 99 | 1 | 1.0% | 1 | 1.0% |
| | DP | 99 | 0 | - | 1 | 1.0% |
| 2013 | DC | 64 | 2 | 3.1% | 2 | 3.1% |
| | DG | 55 | 3 | 5.5% | 4 | 7.3% |
| | DP | 66 | 2 | 3.3% | 3 | 5.0% |
| 2015 | DC | 21 | 3 | 14.3% | 1 | 4.8% |
| | DG | 62 | 0 | - | 7 | 11.3% |
| | DP | 61 | 1 | 1.6% | 11 | 18.0% |
| 2016 | DC | 50 | 1 | 2.0% | n/a | n/a |
| | DG | 51 | 2 | 3.9% | n/a | n/a |
| | DP | 53 | 0 | - | n/a | n/a |
| 2017 | DC | 59 | 3 | 5.1% | n/a | n/a |
| | DG | 63 | 0 | - | n/a | n/a |
| | DP | 58 | 0 | - | n/a | n/a |
| 2019 | DC | 87 | 8 | 9.2% | n/a | n/a |
| | DG | 78 | 0 | - | n/a | n/a |
| | DP | 87 | 0 | - | n/a | n/a |
| 2022 | DC | 32 | 10 | 31.3% | n/a | n/a |
| | DG | 32 | 0 | - | n/a | n/a |
| | DP | 33 | 0 | - | n/a | n/a |

MLCC employs several types of control plots depending on the drill campaigns. It is recommended that each of these control plots are standardized to keep all QA/QC data organized and easily recognized and understandable.

## 11.6 Database

MLCC maintains their database in AcQuire by their own company database managers. Only limited authorized MLCC personnel may make changes to the database.

The Caserones database is stored on servers at the mine site and is backed up weekly to company servers hosted in Santiago.

## 11.7 Sample Security

Drill core is stored at a secure site on core racks at the Carizilillo base camp, 5 km from Juntas del Potro, which is fenced, locked, and guarded.

## 11.8 QP Opinion

In the opinion of the QP, sample preparation, security, analytical procedures, QA/QC insertion rates, data validation steps, and core and sample storage meet industry standards.

The data are acceptable to support Mineral Resource and Mineral Reserve estimates and can be used in mine planning.

# 12 DATA VERIFICATION

## 12.1 Third-Party Data Verification—Caserones Due Diligence Review

AGP and LMC personnel completed a due diligence review in support of the proposed acquisition of the Project in the period August 2022 to April 2023. The discipline areas in Table 12-1 were reviewed, with the applicable major findings summarized in the table.

**Table 12-1: Due Diligence Review**

| Discipline | Areas Reviewed | Findings |
|---|---|---|
| Geology, data collection, and Mineral Resource estimation | Core drilling, sample preparation, analytical, QA/QC procedures, Mineral Resource estimation methods and procedures, confidence classifications | The drill spacing is denser close to surface, with the lower portions of the deposit becoming relatively sparsely intersected. RC drilling (79%) dominates over core drilling (21%).<br>Sampling, assay, QA/QC, and data management is reported to be generally consistent with industry practices. The process as described for sampling and analysis appears to be reasonable. For samples that were only assayed for CuT but not CuAS and CUCNS, regressions were used to calculate these values prior to grade estimation.<br>Compositing is acceptable for open pit estimation.<br>Considering the relatively sparse intersection of drill holes with depth the Measured and Indicated Mineral Resources may have been overly extended with depth. It is possible that the reconciliation of the resource model with actual production will decline as mining goes deeper.<br>Although the described Mineral Resource estimation process is relatively complex, it appears to have been diligently performed and the results are considered reasonable. |
| Mineral Reserves and mine planning | Production schedule; reconciliation; equipment numbers and utilization forecasts; mine operating cost models; fixed and variable cost assumptions; sustaining capital costs; sensitivity to key inputs such as diesel price | The Mineral Reserves reasonably align with the production schedule included within the Business Plan.<br>A check optimization completed using the due diligence metal pricing and cost assumptions supports the current Caserones reserve pit.<br>Based on theoretical loading calculations, the mine loading fleet has a capacity of 134 Mtpa, including the contract PC5500 shovel, which is adequate for the peak requirement in the LOM plan of 96.7 Mtpa.<br>Caserones is currently negotiating a new maintenance and repair contract (MARC) for the Komatsu trucks that is likely to improve mechanical availability.<br>The project is most sensitive to maintenance and repair costs (M&R).<br>Based on reconciliation results, the resource model appears to underpredict actual copper grades. |
| Geotechnical | Structural and geotechnical models; third-party consultant reports; factors of safety; monitoring results; waste dump designs | Pit wall assumptions reviewed by third-party consultants. The northwest walls are most critical. There is a good coverage of both prisms and radars of at-risk high walls. The monitoring data provided by the site does not show any major concerns. |

| Discipline | Areas Reviewed | Findings |
|---|---|---|
| | | Wall buttressing, as required, has been used successfully to stabilize movement.<br>The pit geotechnical program is using best practices for both design and monitoring.<br>Waste dump design meets LMC's acceptance criteria |
| Metallurgy and process | Plant feed characteristics; plant utilization forecasts; process production schedule; plant water usage; plant operating and capital costs; recoverability forecasts | Increases in hourly throughput would depend on parameters such as ore hardness profile evolution over time and effect of such on capability of mine-to-mill efforts to maintain or improve the feed size distribution of material fed to the SAG mill.<br>Copper and molybdenum recoveries are likely to be lower than BP forecasts. The later LOM feed is primary (fresh) ore.<br>Achieving the incremental plant throughput rate requires, in part, an improved plant efficiency from historical levels.<br>Water requirements need changes to water extraction permits.<br>Low levels of any impurities for smelting reported although arsenic in feed is projected at 5-6 times higher for 2028-2029 than previous years and is likely to see similarly higher levels in the final concentrate |
| Tailings and water management | Construction methods; storage capacity; drainage, seepage, and water management; seismicity; tailings transport; monitoring and governance; review of third-party reports | The La Brea TSF includes a robust downstream constructed dam. A tailings beach should be established. Water management infrastructure and protocols for storm events should be updated. |
| Infrastructure and sustaining capital | Access; water; power; accommodations camp; sustaining capital | Well served by power and transportation infrastructure.<br>Future expansion may be limited by potential restrictions in water usage permits.<br>The LOM appears to carry adequate sustaining capital provisions |

## 12.2 Data Verification by Qualified Persons

### 12.2.1 Mr. Paul Daigle

Mr. Daigle did not complete a site visit.

Mr. Daigle reviewed the geological, drilling, assay, and QA/QC documentation made available to AGP and LMC as part of the due diligence process and discussed results of the AGP due diligence review with the due diligence report authors.

He also reviewed the following: the exploratory data analysis results for the key payable and penalty elements in the block model; the geological interpretation used in the block models; domaining assumptions; selection of composite length in relation to the selective mining unit used in operations; interpolation criteria; confidence classifications; considerations used when assessing reasonable prospects of eventual economic extraction; and the resulting Mineral Resource tabulations.

He reviewed the database and resource model documentation made available to AGP and LMC as part of the due diligence process and discussed results of the AGP due diligence review with the due diligence report authors.

As a result of the data verification, Mr. Paul Daigle considers that the geological, drill, assay and QA/QC data are acceptable in use in Mineral Resource estimation, and that the Mineral Resource estimate was appropriately constructed, is appropriately constrained within a reasonable mineable shape, and is sufficient to support Mineral Reserve estimation and mine planning.

### 12.2.2 Mr. Pierre Lacombe

Mr. Lacombe completed a site visit as discussed in Section 2.3.

Mr. Lacombe performed reviews of the available metallurgical testwork data supporting the metallurgical recoveries used in the LOM plan and amenability of the mineralization within the LOM plan to the current process facilities; reviewed equipment availabilities and utilization rates to assess validity of historical information to future production; assessed process plant consumable requirements for suitability for LOM plan purposes; reviewed sustaining and operating cost predictions for the process plant in the LOM plan; and reviewed saleability assumptions.

He reviewed the metallurgical and process documentation made available to AGP and LMC as part of the due diligence process and discussed results of the AGP due diligence review with the due diligence report authors.

As a result of the data verification, Mr. Lacombe considers that the metallurgical recovery forecasts used in the Mineral Resource, Mineral Reserve and economic analysis supporting the Mineral Reserves are appropriate. The process portion of the LOM plan, as modified, can be used to support the Mineral Reserve estimates. Some changes will be required to equipment to allow the forecasts in the design to be achieved.

### 12.2.3 Mr. Kirk Hanson

Mr. Hanson completed a site visit as discussed in Section 2.3.

Mr. Hanson performed a number of reviews in support of the Mineral Reserves and cost assumptions that included: open pit design parameters and pit stages; haul roads and accesses; pit shells and optimization; equipment numbers and utilization rates; consumables costs; sustaining capital and operating costs; and sensitivity of costs to key input parameters.

He reviewed the mining and cost estimation, and LOM input documentation made available to AGP and LMC as part of the due diligence process. He led the AGP due diligence review.

As a result of the data verification, Mr. Hanson considers that Mineral Reserves are supported, and the mine plan is achievable. Based on the cost estimates reviewed, and modifications made by the QP to certain aspects of the inputs, the economic analysis supports Mineral Reserves.

### 12.2.4 Mr. Andre Gagnon

Mr. Andre Gagnon completed a site visit as discussed in Section 2.3.

Mr. Gagnon reviewed the design and operations of the El Tambo and La Brea tailings storage facilities. He also reviewed the construction methods, storage capacity, drainage, seepage, and water management, seismicity, tailings transport, monitoring and governance, and review of third-party reports.

As a result of the data verification, Mr. Gagnon considers that the construction and operations of the tailings storage facilities are sufficiently well understood to support Mineral Resource and Mineral Reserve estimates and the LOM plan.

## 12.3 Site Visit

### 12.3.1 Mr. Oscar Retto

The most recent site inspection was conducted by the QP Oscar Retto from 27 April to 28 April 2023 for two days. The QP was accompanied on the site visit by:

- Cole Mooney, P.Geo., LMC Director, Resource Geology
- Fernando Dibona Briones, MLCC Geology Superintendent
- Alvaro Vela Roberts, MLCC Senior Geologist
- Rodrigo Santelices Oyarce, MLCC Ore Control Geologist

The site visit included an inspection of core logging and sampling facilities, core storage facilities, and reviewing drill core logs against selected drill core.

### 12.3.2 Drill Core Logging and Sampling Facilities

Drill core for the Caserones mine is logged, sampled, and stored in the core logging facility (locally known as 'Bodega Testigoteca').

Figure 12-1 shows the warehouse used for core logging and sampling. Figure 12-2 shows the interior of the core logging facility.

**Figure 12-1: Drill Core Logging and Sampling Facility**

Source: AGP (2023)

**Figure 12-2: Drill Core Logging tables**

Source: AGP (2023)

The interior of the core logging and sampling facility is kept clean and well-maintained. All field and sampling and supplies are kept orderly and organized on shelves and in filing cabinets. Figures 12-3 shows the administrative centre and core shack.

**Figure 12-3: Centre Administrative (left) and Core Shack (right)**

Source: AGP (2023)

### 12.3.3 Core Storage Area/Facilities

The core storage area is situated next to the logging zone. The boxes were found in metallic racks aligned appropriately even thought some boxes were found on the floor waiting to be re-accommodated to save space according to what was explained by geologist.

The racks are covered from awnings material to be protected from the environment, even though most of them have been affected by dust and weather. Figure 12-4 shows the core storage area. The sample rejects material is stored in metallic containers in the same area as the carton boxes. This area appears cluttered and unorganized.

**Figure 12-4: Core Storage Area; Core Racks**

Source: AGP (2023)

### 12.3.4 Mine Office Facilities

The mine office is located at the mine site near the open pit. Figure 12-5 to Figure 12-7 show the mine office, open pit, and processing plant, respectively.

**Figure 12-5: Mine Office Facility**

Source: AGP (2023)

**Figure 12-6: Caserones Open Pit Mine**

Source: AGP (2023)

**Figure 12-7: Caserones Processing Plant; near the open pit**

Source: AGP (2023)

### 12.3.5 Geology/Exploration Facilities

The exploration and geology activities have their own facility located next to the core shack at Carizalillo. There is another geology office located adjacent to the mine operations for mine support.

### 12.3.6 Drill Hole Collars

The QP Oscar Retto selected a list of drill holes (RG09-370D, RG07-155DG, CP17_30R, RG04-069R, RG11-415D, RG17_435DH, CP13_078, RG11-407D, RG08-187D, RG08-209D, RG07-165D, RG11-376D, RG07-149DT, RG08-202DM), located across the deposit, however, due mining operations and excavation, the collars are no longer in evidence.

### 12.3.7 Drill Core/ RC Chip Log Review

A review of the drill core and drill core logs was made on selected drill core intervals in the core logging facility (known as 'bodega testigoteca') for the Project. The lithology descriptions and sample intervals in the drill logs were compared and found to be consistent. All sample tag numbers in the core boxes match very close with the intervals in the database.

Table 12-2 lists the selected drill core intervals examined during the site visit.

**Table 12-2: Selected Drill Core Intervals Examined**

| Drill Hole | From (m) | To (m) | Interval (m) | Core Boxes | Mineral Zone / Lithology |
|---|---|---|---|---|---|
| RG08-192D | 70 | 140 | 70 | 18 | SS/MZG |
| | 236 | 270 | 34 | 9 | SS/PDA |
| | 360 | 400 | 40 | 10 | SS/BXC |
| | 600 | 640 | 40 | 10 | SP/BXC |
| RG09-365D | 12 | 40 | 28 | 7 | OX/BXC |
| | 150 | 190 | 40 | 10 | SP/BXC |
| | 280 | 320 | 40 | 10 | SS/BXC |
| | 410 | 460 | 50 | 13 | SS/PDA |
| RG07-161DG | 20 | 50 | 30 | 8 | SS/PDA-BXC |
| | 240 | 280 | 40 | 10 | SS/BXC-PDA |
| | 460 | 496.5 | 36.5 | 10 | SS to SP/PDA-BXC |
| RG08-200D | 100 | 140 | 40 | 10 | SS/MZG |
| | 340 | 380 | 40 | 10 | SS to SP/MZG-PDA |
| | 440 | 480 | 40 | 10 | SP/BXC |
| | 710 | 754 | 44 | 11 | SP/BXC-PDA |
| RG04-003RD | 230 | 270 | 40 | 10 | SS/MZG |
| | 320 | 360 | 40 | 10 | SS/BXC |
| CP17_25R | 0 | 270 | 270 | 7 | - |
| RG04-36R | 0 | 240 | 240 | 6 | - |
| RG04-62RD | 0 | 200 | 200 | 5 | - |
| RG04-63 | 0 | 210 | 210 | 6 | - |
| CP13-075 | 0 | 150 | 150 | 4 | - |
| SS-2001 | 0 | 80 | 80 | 2 | - |
| CP22-21DG | 100 | 180 | 80 | 24 | - |
| CP21-12D | 150 | 248 | 98 | 26 | - |

Source: AGP (2023)

# 13 MINERAL PROCESSING AND METALLURGICAL TESTING

## 13.1 Overview

The Caserones SX-EW plant produced cathodes since early 2013 while the mineral processing facilities associated with the concentrator have been producing copper and molybdenum concentrates since 2014. Ore feed grade has historically been 0.37% Cu to the flotation plant (concentrator) and 0.24% Cu to the dump leach. Primary and secondary sulphide ores are generally fed to the flotation plant and oxides and mixed with some secondary sulphides are directed to the dump leach area. LOM yearly feed grade is expected to be 0.13–0.25% Cu (dump leach) and 0.31–0.44% Cu (flotation)

Average monthly copper concentrate grade from the flotation circuit has been 33.4% ± 3% Cu over the 2020–2022 period. LOM projection for copper concentrate grade is expected to be 28–32% Cu and reflects the gradual increase in the amount of primary mineralization (carrying mostly chalcopyrite as the Cu-bearing mineral) as plant feed.

Historical overall copper recovery for the flotation circuit has been 80–85% and approximately 54% for the dump leach. Average overall plant copper recoveries in 2021 and 2022 were 83% and 88% respectively. The projected LOM copper recovery for the flotation plant and dump leach has been fixed at 82.7% and 53.7% respectively.

Projected molybdenum production is based on a 110–170 ppm Mo head grade, a fixed 50% Mo concentrate grade and fixed 60% recovery. Actual molybdenum recovery over the 2020–2022 period was 50.5% with a concentrate grade of 51.5% Mo; the lower molybdenum recovery was due to not fully operating the molybdenum circuit due to personnel constraints. For 2022, average monthly recovery was 55.2% at 52.6% Mo concentrate grade.

## 13.2 Main Ore Types

The main ore types are monzogranite (MZG) and dacitic porphyry (PDA), and mineralization is found in two breccias, i.e.: with PDA crust (BXC1) and without (BXC2). The main geometallurgical lithology types are summarized in Table 13-1.

**Table 13-1: Main Geometallurgical Lithologies**

| UGM | Lithology – Alteration |
|---|---|
| 1 | PDA1/PDA2 - dacitic porphyry – all alterations |
| 2 | MZG – monzogranite – all alterations |
| 3 | BXC/BXH – ARGSUP/TSC – breccia – argillitic supergene/transitional |
| 4 | BXC/BXH – QS1/QS2 – breccia -quartz/sericite alteration |

## 13.3 Comminution Test Work

Various historical comminution tests have been completed on core samples. Relevant SAG Mill Comminution (SMC) test work results (breakage parameters Axb) for 300 samples tested are summarized in Table 13-2. A higher representation of the two predominant rock types, breccia and monzogranite, was tested.

**Table 13-2: Select Comminution Test Results**

| UGM | # tests | Avg Axb | Std. Dev. | Min | P25 | Median | P75 | Max | CV | Distribution |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **300.0** | **53.9** | **12.2** | **30.1** | **45.2** | **51.5** | **60.3** | **98.4** | **0.2** | **100.0** |
| 1 | 23.0 | 46.4 | 7.4 | 31.9 | 42.6 | 46.9 | 48.6 | 73.0 | 0.2 | 7.7 |
| 2 | 74.0 | 56.4 | 12.2 | 38.0 | 47.5 | 54.4 | 62.3 | 98.4 | 0.2 | 24.7 |
| 3 | 10.0 | 57.7 | 8.4 | 46.0 | 50.2 | 60.0 | 64.3 | 70.3 | 0.1 | 3.3 |
| 4 | 193.0 | 53.7 | 12.5 | 30.1 | 44.7 | 51.8 | 60.3 | 95.0 | 0.2 | 64.3 |

The Axb results show that the ore lithologies have similar hardness. UGM 1 ore (PDA ore type, dacitic porphyry) has slightly lower Axb values (harder ore). Based on the LOM, there is a small percentage of the PDA lithology, and grinding capacity is thus not expected to significantly vary year on year.

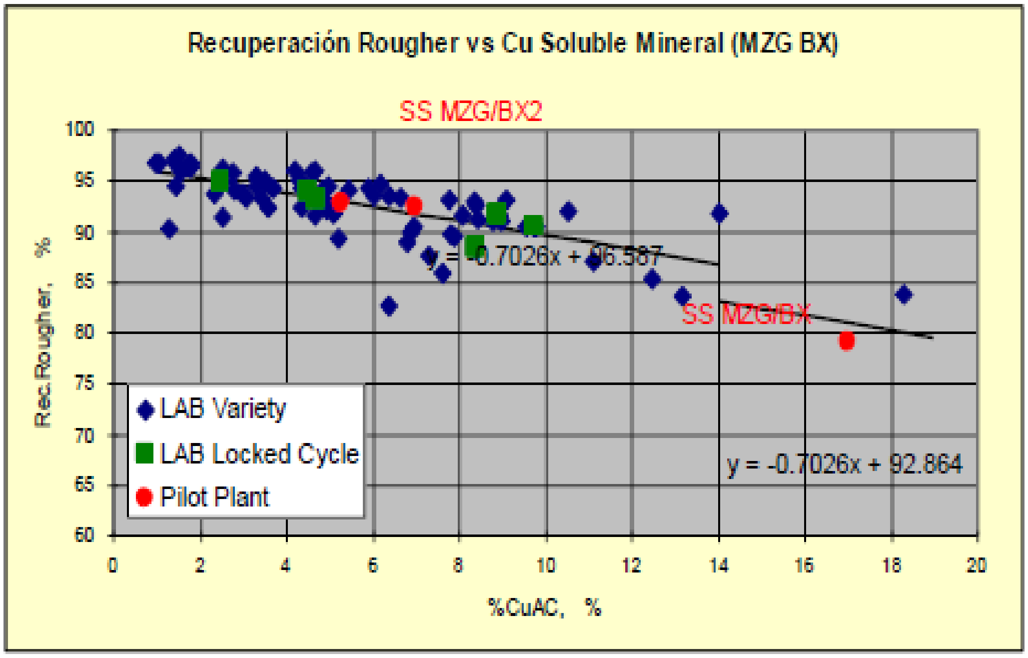
## 13.4 Copper Speciation Work

Caserones metallurgy is classified via copper speciation. Copper speciation provides an inexpensive and relatively quick indication of ore mineralogy throughout the deposit. Copper speciation was conducted on prepared core samples to provide an indication of the deposit's mineralogy and measured the following:

- Acid-soluble copper (CuAS), as obtained by dissolution in sulphuric acid, provides an indication of azurite, malachite, tenorite, chrysocolla and approximately 50% of the cuprite content. CuAS provides an indication of the copper available for heap leaching recovery as it indicates the proportion present in oxides and sulfates, as well as partial dissolution expected from some secondary copper minerals.
- Cyanide-soluble copper (CuCNS) provides an indication of chalcocite and bornite.
- Acetic acid soluble copper (CuAC) provides an indication of copper oxides, such as azurite and malachite, and sulfates that are not recoverable by flotation.

Copper speciation provides a proxy for copper recovery as shown in Figure 13-1, i.e.: the effect of variable CuAC content on rougher copper recovery for MZG ore, with a loss of about 0.7% for every increment of 1% in CuAC.

**Figure 13-1: Copper Recovery vs Soluble Copper Content (MZG)**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

For Caserones, total soluble copper (CuS) is reported as CuAS plus CuCNS. The suite of mineralization definition used in the block model and the applicable criteria is summarized in Table 13-1.

**Table 13-3: Copper Speciation Definition and Criteria**

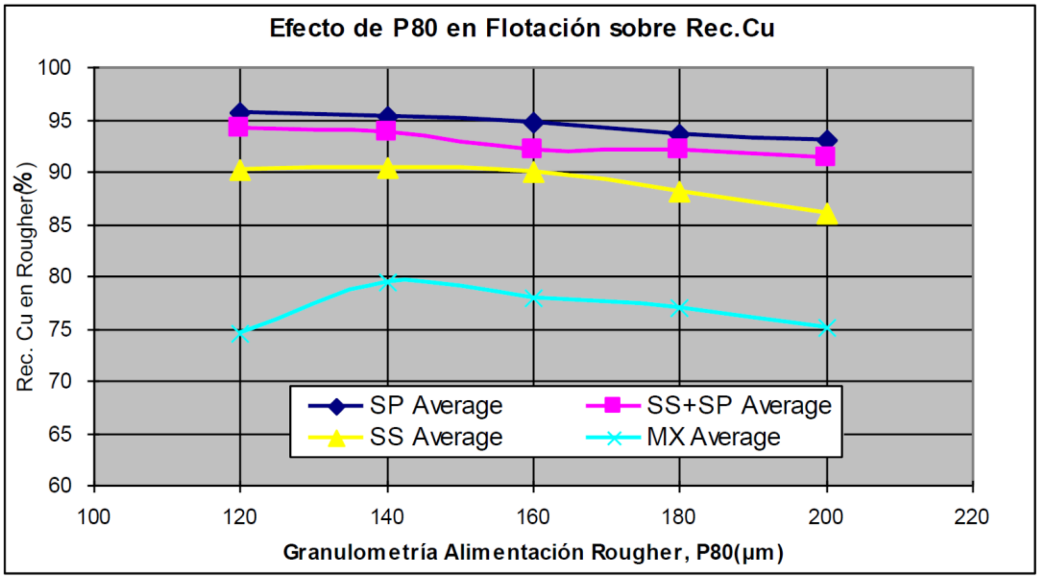
<table>
<tr><th>Definition</th><th>UGM (Lithology)</th><th colspan="5">Criteria</th></tr>
<tr><td>Overburden</td><td>S</td><td colspan="5">ZM = S</td></tr>
<tr><td rowspan="5">Leached</td><td>LX</td><td rowspan="5">ZM = LX</td><td rowspan="4">CuS%/CuT%>-50%</td><td colspan="3">CuS%<0.1%</td></tr>
<tr><td>LXOX</td><td rowspan="3">CuS%>=0.1%</td><td colspan="2">CuAS%>=CuCNS%</td></tr>
<tr><td>LXMX</td><td rowspan="2">CuAS%<CuCNS%</td><td>CuAS%/CuS%>-30%</td></tr>
<tr><td>LXSS</td><td>CuAS%/CuS%<30%</td></tr>
<tr><td>LXSP</td><td colspan="4">CuS%/CuT%<50%</td></tr>
<tr><td>Oxides</td><td>OX</td><td colspan="3" rowspan="3">CuS%/CuT%>=50%</td><td>CuAS%>=CuCNS%</td><td></td></tr>
<tr><td>Mixed</td><td>MX</td><td rowspan="2">CuAS%<CuCNS%</td><td>CuAS%/CuS%>=30%</td></tr>
<tr><td>Secondary Sulphides</td><td>SS</td><td>CUAS%/CuS%<30%</td></tr>
<tr><td>Primary Sulphides</td><td>SP</td><td colspan="5">CuS%/CuT%<50%</td></tr>
</table>

CuAS%: Cu soluble in sulphuric acid
CuCNS%: Cu soluble in cyanide, from residual Cu after CuAS determination (sequential Cu procedure)
CuS%: CuAS% + CuCNS%

## 13.5 Primary Grind Size

Historical test work has shown that, for primary sulphides treated in the flotation circuit, copper recovery is slightly influenced by the primary grind size as shown in Figure 13-2. Mixed ore (MX) has a lower flotation recovery potential and is thus preferentially directed to the dump leach.

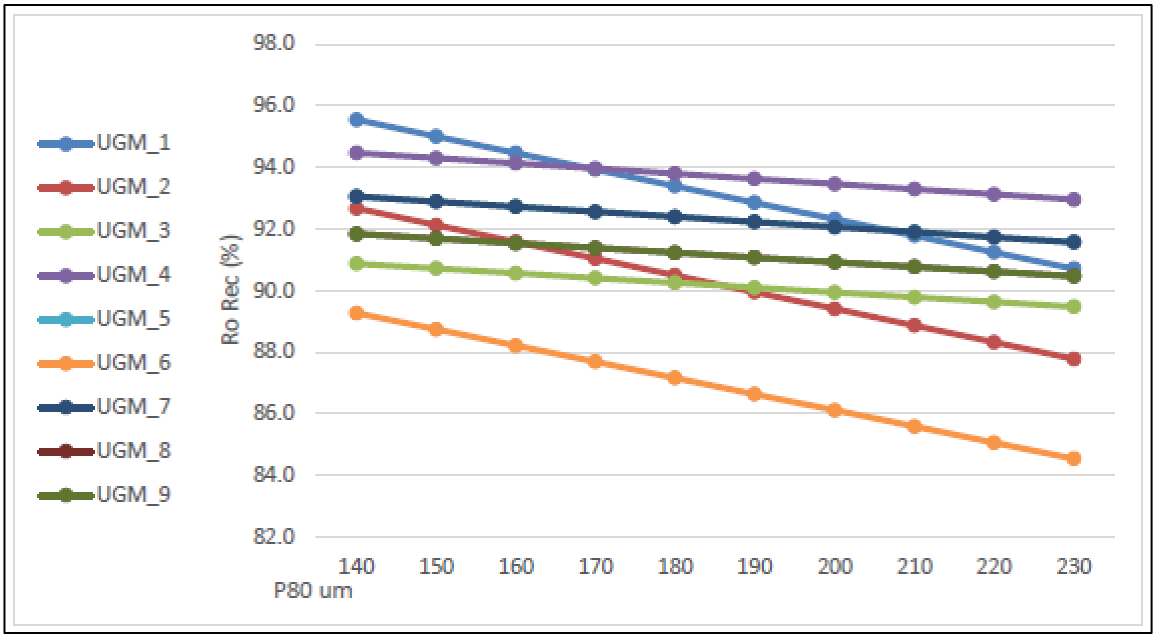
**Figure 13-2: Effect of Primary Grind Size (P80) on Copper Rougher Recovery (Historical Test Work)**




Legend: SP=primary sulphides (hypogene mineralization); SS=secondary sulphides (supergene mineralization); MX=mixed ore

Metallurgical test work completed in 2017 on discrete lithologies has shown that MZG is the most sensitive to grind size and then, to a lesser extent, BXC and PDA lithologies (refer to Figure 13-3 and Table 13-1).

**Figure 13-3: Effect of Primary Grind Size on Copper Rougher Recovery (2017 Test Work)**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Table 13-4: Sample Description Codes for Figure 13-3**

| UGMR | Lithology | Alteration | Clays | Definition |
|---|---|---|---|---|
| UGMR_1 | BXIC | Primary Breccia | Primary Breccia | Primary Breccia |
| UGMR_2 | BXC | Secondary Weak Breccia | Secondary Weak Breccia | Secondary Weak Breccia |
| UGMR_3 | BXC | Secondary Breccia | Secondary Breccia | Secondary Breccia |
| UGMR_4 | MZG | Secondary Weak Monzogranite | Secondary Weak Monzogranite | Secondary Weak Monzogranite |
| UGMR_5 | MZG | Secondary Monzogranite | Secondary Monzogranite | Secondary Monzogranite |
| UGMR_6 | PDA | Secondary Porphyry | Secondary Porphyry | Secondary Porphyry |
| UGMR_7 | MZG | Secondary Monzogranite | Secondary Monzogranite | Secondary Monzogranite |
| UGMR_8 | PDA | Secondary Weak Porphyry | Secondary Weak Porphyry | Secondary Weak Porphyry |
| UGMR_9 | UNC | | | Discontinuous geological units |

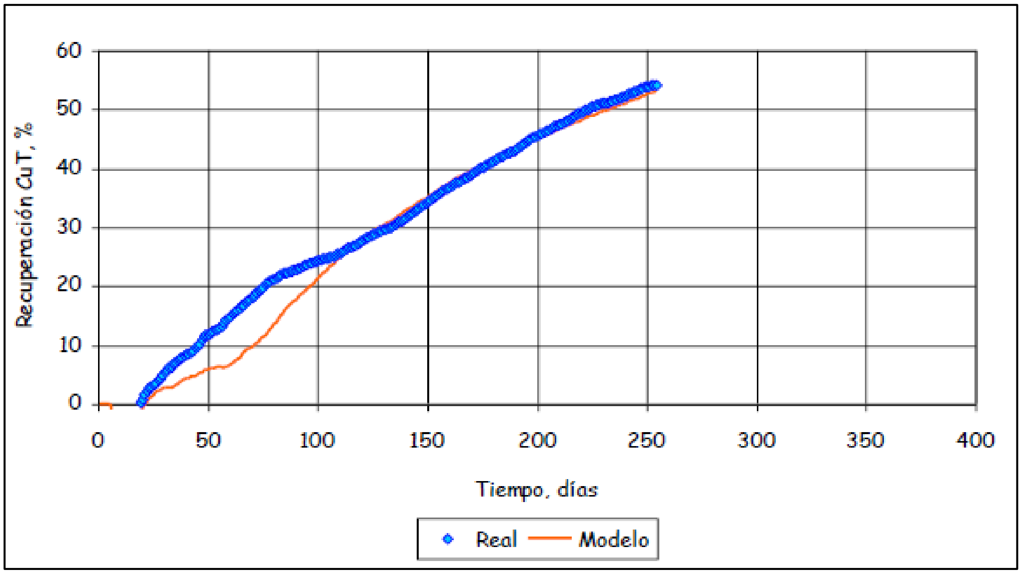
Actual operations (2017–2021) have achieved monthly P80 averages in the 160–220 µm range, with the finer product not necessarily yielding higher recovery, likely due to variable CuAC:CuT ratios. In 2022, monthly averages were restricted to the 180–190 µm range.

## 13.6 Dump Leaching Test Work

Column test work was completed in 2009 to establish kinetic curves and estimate metallurgical recoveries. Oxide, sulphide, and mixed material was tested. Heap leaching recovery profiles, per ore type, were derived from column and gabion leaching trials, for simulation work on the basis of 40-m lifts and with corrections for size distribution, residence time and elevation.

Copper recoveries of >50% were achieved for oxide material after 250 days (Figure 13-4). Low copper recoveries of approximately 25% were achieved for mixed material after 200 days.

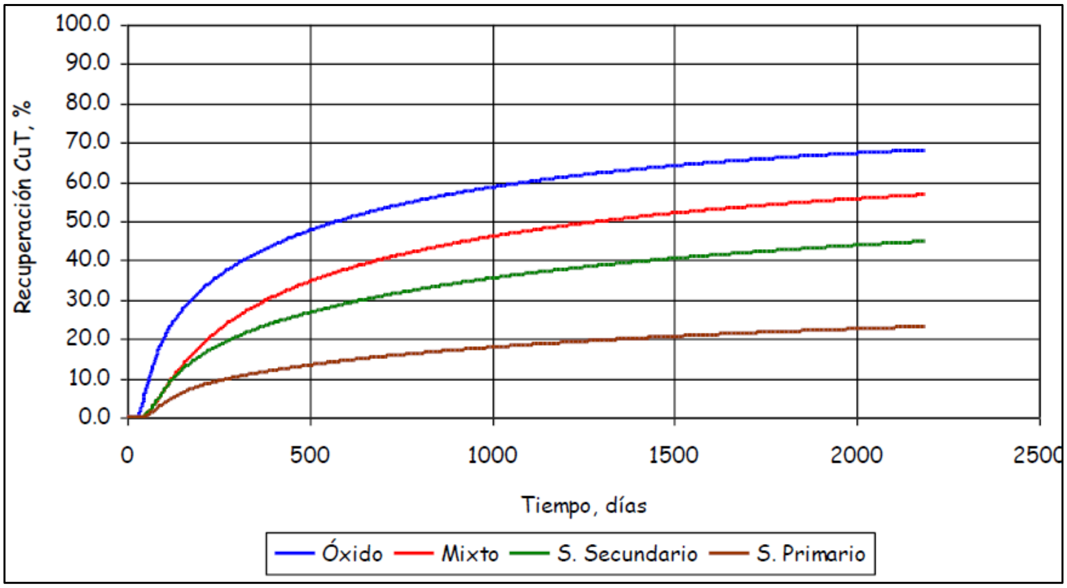
**Figure 13-4: Heap Leach Kinetics for Oxide Material (Days CuT %recovery)**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

Overall heap leach kinetic profiles over a six-year leach have estimated copper recoveries (Figure 13-5) for oxide, mixed ore, secondary sulphides, and primary sulphides of 68.1%, 56.7%, 44.8% and 23.1% respectively. Actual dump leach recoveries are approximately 54%.

**Figure 13-5: Heap Leach Kinetics for all Weathering Types (Days vs CuT %recovery vs. days of active leach)**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

## 13.7 Deleterious Elements

There are certain areas of the orebody that contain increased levels of antimony, arsenic, and mercury, which can lead to slightly higher contents in the copper concentrate.

## 13.8 QP Comments on Section 13 "Mineral Processing and Metallurgical Testing"

Eight ore types are processed: oxide (OX), mixed (MX), secondary sulfides (SS), primary sulfides (SP), leached oxide (LX-OX), leached mixed (LX-MX), leached secondary sulfides (LX-SS), and leached primary sulfides (LX-SP).

The much poorer response of the mixed ore (MX) makes it a candidate for heap leaching. The following materials are preferentially routed to the leach pad: OX, MX, and LX-OX.

Copper recovery from the leach pad is fixed at 53.7% over the LOM. For the concentrator, Cu recovery is fixed at a conservative level of 82.7% and Mo recovery is fixed at 60% over the LOM. The actual flotation recovery of copper is expected to vary over time, reflecting the variability of the CuAC over total copper. This is favouring expectation of a higher copper recovery as the proportion of primary mineralization increases in the plant feed. Conversely, the gradual replacement of copper minerals bearing higher proportions of copper in their mineralogical matrix (as prevalent in supergene ore) by chalcopyrite, the main copper carrier in primary mineralization (and with a lower copper content in the mineral matrix), will put more pressure on the concentrate copper grade achieved in the future.

# 14 MINERAL RESOURCE ESTIMATES

The mineral resource estimate for Caserones was carried out by Golder in 2018 and has been reviewed by the QP. The mineral resource estimate is based on open pit mining methods and are constrained by an optimized pit which is based on copper and molybdenum block value (BV) cut-off. The QP has reviewed the estimation methodologies, classification criteria and mineral resource reporting. Mineral resources are inclusive of mineral reserves.

The mineral resource estimate was prepared using Maptek Vulcan® software using industry standard techniques and in accordance with the CIM Standards and Definitions for Mineral Resources and Mineral Reserves (2014). The QP responsible for these resource estimates is Mr. Paul Daigle, P.Geo., Principal Geologist for AGP. The effective date of this mineral resource is 31 December 2022.

## 14.1 Available Data

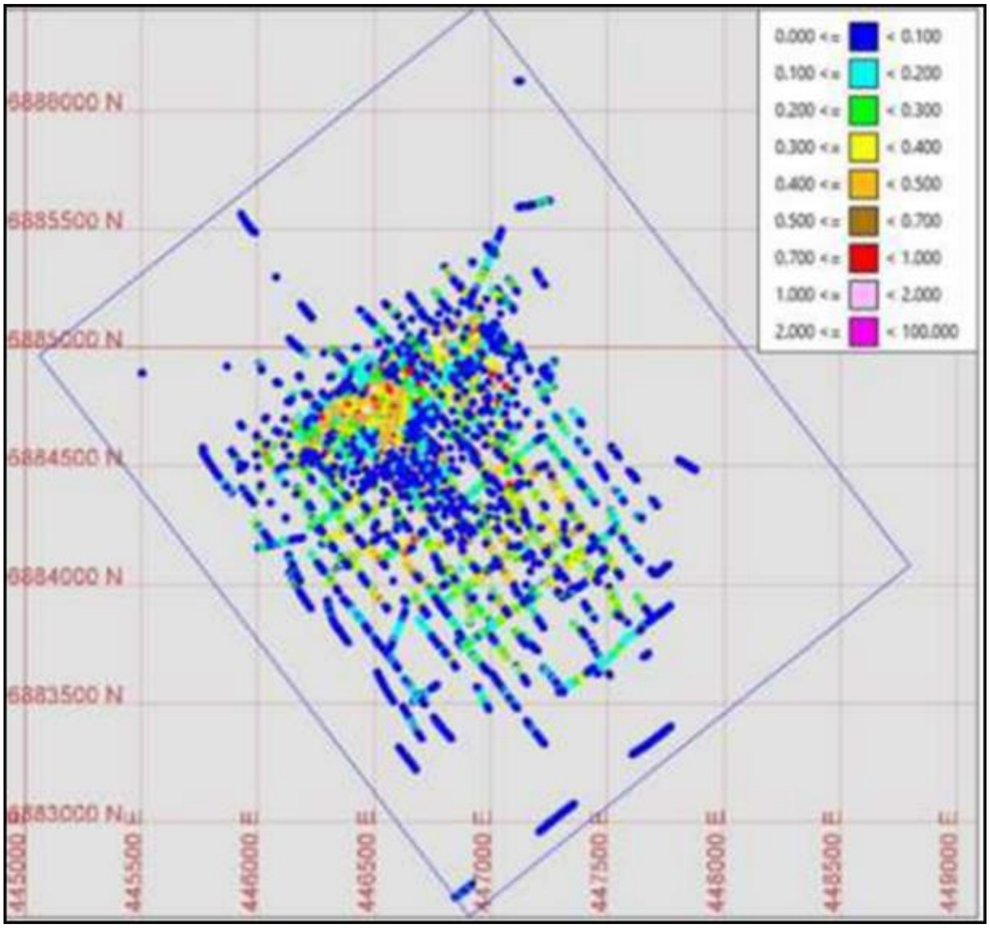
The mineral resource estimate is based on 1,045 drillholes totalling 175,280 m and includes all drilling completed up until the end of 2017. The drillhole database contains both RC and DDH. Table 14-1 summarizes the drilling by year and by type. Available drilling and the model extents are presented in Figure 14-1.

**Table 14-1: Drillhole Database Summary by Year**

| Year | RC Holes | RC (m) | RC-DD Holes | RC-DDH (m) | DD Holes | DDH (m) | Count | Metres (m) |
|---|---|---|---|---|---|---|---|---|
| 2004 | 68 | 17930.00 | 8 | 2928.60 | 38 | 11330.50 | 114 | 32189.10 |
| 2006 | | | | | 2 | 450.00 | 2 | 450.00 |
| 2007 | 33 | 8451.67 | | | 37 | 12657.07 | 70 | 21108.74 |
| 2008 | 109 | 10320.00 | | | 59 | 22628.25 | 168 | 32948.25 |
| 2009 | | | | | 19 | 8117.45 | 19 | 8117.45 |
| 2010 | 219 | 17792.00 | | | | | 219 | 17792.00 |
| 2011 | | | | | 50 | 17625.20 | 50 | 17625.20 |
| 2012 | | | | | 4 | 670.00 | 4 | 670.00 |
| 2013 | 228 | 23585.00 | | | | | 228 | 23585.00 |
| 2015 | 69 | 5600.00 | | | | | 69 | 5600.00 |
| 2016 | 58 | 7612.00 | | | | | 58 | 7612.00 |
| 2017 | 30 | 3589.00 | | | 14 | 3993.75 | 44 | 7582.75 |
| **Sub total** | **814** | **94,879.67** | **8** | **2,928.6** | **223** | **77,472.22** | **1,045** | **175,280.49** |

Note: DD- Diamond Drill; RC – Reverse Circulation

**Figure 14-1: Plan View of Caserones Project Showing Drill Hole Traces (colour-coded by copper assay values)**




Source: MLCC (2022)

## 14.2 Geological Models

MLCC interpreted three wireframe models for the Caserones deposit: mineralization, lithology, and alteration. The models were created in Maptek Vulcan® v9.1 software. The interpretation of the models was performed by MLCC personnel by modeling polylines on 15 m benches and plan sections then tying the polylines together to create solid wireframe meshes. The overburden was not updated and remains unchanged from the 2014 model. Table 14-2 to Table 14-4 present the modelled geological interpretations and their codes in the block model.

Table 14-2: Modelled Mineralization Types and Codes

| Logging Code | Mineralization Type | Espanol | Model Code | Integer |
|---|---|---|---|---|
| S | Overburden | Sobrecarga | S | -50 |
| LX | Leach | Lixiviado | LX | 1 |
| LX | Leach (low grade) | Lixiviado baja ley | LX | 1 |
| OX | Oxide | Oxidos | OX | 2 |
| LXOX | Leach in Oxides | Lixiviado en oxido | | |
| OXBL | Oxides (low grade) | Oxidos baja Ley | OXBL | 7 |
| SS | Secondary Sulphides | Sulfuro Secundario | SS | 4 |
| LXSS | Leach in SS | Lixiviado en sulfuro secundario | | |
| SSBL | Secondary Sulphides (low grade) | Sulfuro Secundario Baja Ley | SSBL | 6 |
| LXSP | Leach in SP | Lixiviado en primario | SP | 5 |
| SP | Primary Sulphides | Sulfuro Primario | | |
| SPBL | Primary Sulphides (low grade) | Sulfuro Primario Baja Ley | | |
| ZEP | Epithermal Zone | Zona Epitermal | ZEP | 90 |

Table 14-3: Modelled Lithology Types and Codes

| Logging Code | Lithology Type | Espanol | Model Code | Integer |
|---|---|---|---|---|
| S | Overburden | Sobrecarga | S | -50 |
| MZG | Monzogranite | Monzogranito | MZG | 20 |
| PDA | Dacite Porphyry, Dacite Breccia | Porfido Dacítico o Brecha Dacítica | PDA | 30 |
| BXC1 | Caserones Breccia 1 | Brecha Caserones 1 | BXC1 | 41 |
| BXC2 | Caserones Breccia 2 | Brecha Caserones 2 | BXC2 | 42 |
| DIO | Diorite | Diorita | DIO | 80 |
| ZEP | Epithermal Zone | Zona Epitermal | ZEP | 90 |
| BXH | Hydrothermal Breccia | Brecha Hidrotermal | BXH | 100 |
| MD | Microdiorite (not interpreted) | Microdiorita | MD | |
| GRD | Granodiorite (not interpreted) | Granodiorita | GRD | |
| S/R | No recovery (not interpreted) | Sin Recuperación | S/R | |
| ZF | Fault Zone (not interpreted) | Zona Falla | ZF | |

Table 14-4: Modelled Alteration Types of Codes

| Logging Code | Alteration Type | Espanol | Model Code | Integer |
|---|---|---|---|---|
| S | Overburden | Sobrecarga | S | -50 |
| ZEP | Epithermal Zone | Zona Epitermal | ZEP | 90 |
| AR | Argillite | Argílica | AR | 100 |
| BT | Biotite | Biotítica | BT | 200 |
| CL | Chlorite | Clorítica | CL | 300 |
| KF | Potassic Feldspar | Potasica Feldespato | KF | 400 |
| QS1 | Quartz-sericite 1 | Cuarzo-sericita 1 | QS1 | 500 |
| QS2 | Quartz-sericite 2 | Cuarzo-sericita 2 | QS2 | 600 |
| SI | Silica | Silicea | SI | 800 |
| SER | Sericiated | Sericítica | QS2 | 600 |
| QST | Quartz-sercited-transitional | Cuarzo Sericítico Transicional | QS2 | 600 |
| S/R | No recovery (not interpreted) | Sin Recuperación | S/R | |

## 14.3 Exploratory Data Analysis

Exploratory data analysis (EDA) is used to review the estimation domains following infill drilling and inclusion of additional drilling and updated geological interpretation. Estimation domains for all elements are based on EDA analysis of CuT. Based on the statistical and geological review, the definition of estimation domains did not change for this model update.

- The main control is determined by the mineralization type, with a secondary control by the alteration type.
- There are 14 estimation domains.
- The ZEP zone was estimated separately due to its high arsenic content and high copper grades.
- The low-grade mineralization zones were not subdivided by the secondary controls due to the low number of available data.

### 14.3.1 Assay Statistics

- Grade estimation was carried out for CuT, CuAS, CuAC, CuCNS, and Mo. Table 14-5 to Table 14-9 present the descriptive assay statistics for CuT, CuAS, CuAC, CuCNS and Mo assays.

**Table 14-5: Descriptive Statistics for Raw Assay Values for CuT by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 5052 | 0.001 | 2.36 | 0.07 | 0.04 | 0.12 | 1.86 |
| 102 | LX (1) | 11669 | 0.001 | 2.08 | 0.05 | 0.02 | 0.09 | 2.02 |
| 130 | PDA (30) | 2144 | 0.002 | 1.30 | 0.08 | 0.05 | 0.10 | 1.27 |
| 200 | OX (2) | 12674 | 0.011 | 7.77 | 0.47 | 0.40 | 0.36 | 0.78 |
| 220 | OX (2) | 2 | 0.069 | 0.66 | 0.36 | 0.36 | 0.29 | 0.81 |
| 450 | SS (4) | 19966 | 0.004 | 6.11 | 0.48 | 0.43 | 0.31 | 0.64 |
| 460 | SS (4) | 17909 | 0.001 | 3.71 | 0.36 | 0.29 | 0.27 | 0.74 |
| 520 | SP (5) | 4013 | 0.001 | 3.87 | 0.15 | 0.09 | 0.20 | 1.31 |
| 540 | SP (5) | 3365 | 0.003 | 4.11 | 0.20 | 0.15 | 0.19 | 0.98 |
| 550 | SP (5) | 2810 | 0.002 | 6.54 | 0.34 | 0.28 | 0.28 | 0.82 |
| 560 | SP (5) | 5873 | 0.004 | 1.99 | 0.28 | 0.24 | 0.21 | 0.73 |
| 600 | SSBL (6) | 1865 | 0.002 | 0.65 | 0.07 | 0.05 | 0.06 | 0.90 |
| 700 | OXBL (7) | 666 | 0.001 | 0.88 | 0.07 | 0.05 | 0.08 | 1.17 |
| 900 | ZEP (90) | 484 | 0.003 | 4.73 | 0.51 | 0.27 | 0.68 | 1.33 |

**Table 14-6: Descriptive Statistics for Raw Assay Values for CuAS by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 4440 | 0.001 | 1.51 | 0.04 | 0.01 | 0.09 | 2.36 |
| 102 | LX (1) | 9116 | 0.001 | 2.03 | 0.02 | 0.01 | 0.07 | 3.16 |
| 130 | PDA (30) | 1427 | 0.001 | 1.26 | 0.04 | 0.02 | 0.09 | 2.22 |
| 200 | OX (2) | 12583 | 0.002 | 3.91 | 0.35 | 0.28 | 0.29 | 0.85 |
| 220 | OX (2) | 2 | 0.033 | 0.29 | 0.16 | 0.16 | 0.13 | 0.79 |
| 450 | SS (4) | 19892 | 0.001 | 1.64 | 0.10 | 0.08 | 0.08 | 0.86 |
| 460 | SS (4) | 17603 | 0.001 | 1.28 | 0.07 | 0.05 | 0.06 | 0.91 |
| 520 | SP (5) | 3780 | 0.001 | 0.23 | 0.01 | 0.00 | 0.02 | 1.50 |
| 540 | SP (5) | 3214 | 0.001 | 0.15 | 0.01 | 0.01 | 0.01 | 1.31 |
| 550 | SP (5) | 2794 | 0.001 | 0.27 | 0.02 | 0.02 | 0.02 | 1.02 |
| 560 | SP (5) | 5781 | 0.001 | 0.42 | 0.02 | 0.01 | 0.02 | 1.10 |
| 600 | SSBL (6) | 1780 | 0.001 | 0.15 | 0.02 | 0.01 | 0.02 | 0.97 |
| 700 | OXBL (7) | 656 | 0.001 | 0.56 | 0.04 | 0.03 | 0.05 | 1.17 |
| 900 | ZEP (90) | 442 | 0.001 | 0.39 | 0.04 | 0.02 | 0.04 | 1.18 |

**Table 14-7: Descriptive Statistics for Raw Assay Values for CuCNS by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 4440 | 0.001 | 1.85 | 0.03 | 0.01 | 0.07 | 2.62 |
| 102 | LX (1) | 9116 | 0.001 | 1.18 | 0.02 | 0.01 | 0.05 | 2.34 |
| 130 | PDA (30) | 1427 | 0.001 | 0.47 | 0.03 | 0.01 | 0.05 | 1.76 |
| 200 | OX (2) | 12583 | 0.001 | 4.02 | 0.12 | 0.07 | 0.15 | 1.28 |
| 220 | OX (2) | 2 | 0.012 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |
| 450 | SS (4) | 19892 | 0.001 | 4.82 | 0.36 | 0.31 | 0.26 | 0.71 |
| 460 | SS (4) | 17603 | 0.001 | 3.26 | 0.24 | 0.18 | 0.21 | 0.86 |
| 520 | SP (5) | 3780 | 0.001 | 1.03 | 0.04 | 0.01 | 0.08 | 2.15 |
| 540 | SP (5) | 3214 | 0.001 | 1.30 | 0.03 | 0.01 | 0.06 | 1.91 |
| 550 | SP (5) | 2794 | 0.001 | 1.77 | 0.09 | 0.05 | 0.12 | 1.37 |
| 560 | SP (5) | 5781 | 0.001 | 1.04 | 0.06 | 0.03 | 0.08 | 1.29 |
| 600 | SSBL (6) | 1780 | 0.001 | 0.56 | 0.04 | 0.03 | 0.04 | 1.09 |
| 700 | OXBL (7) | 656 | 0.001 | 0.38 | 0.02 | 0.01 | 0.03 | 1.54 |
| 900 | ZEP (90) | 442 | 0.001 | 1.21 | 0.15 | 0.09 | 0.18 | 1.18 |

**Table 14-8: Descriptive Statistics for Raw Assay Values for CuAC by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 4440 | 0.001 | 1.45 | 0.02 | 0.01 | 0.06 | 3.03 |
| 102 | LX (1) | 9116 | 0.001 | 1.15 | 0.02 | 0.01 | 0.05 | 2.79 |
| 130 | PDA (30) | 1427 | 0.001 | 0.41 | 0.03 | 0.01 | 0.05 | 1.89 |
| 200 | OX (2) | 12583 | 0.001 | 3.77 | 0.09 | 0.04 | 0.13 | 1.56 |
| 220 | OX (2) | 2 | 0.017 | 0.34 | 0.18 | 0.18 | 0.16 | 0.91 |
| 450 | SS (4) | 19892 | 0.001 | 4.76 | 0.32 | 0.27 | 0.24 | 0.74 |
| 460 | SS (4) | 17603 | 0.001 | 3.08 | 0.22 | 0.17 | 0.19 | 0.86 |
| 520 | SP (5) | 3780 | 0.001 | 0.91 | 0.03 | 0.01 | 0.07 | 2.17 |
| 540 | SP (5) | 3214 | 0.001 | 0.51 | 0.02 | 0.01 | 0.05 | 1.90 |
| 550 | SP (5) | 2794 | 0.001 | 1.86 | 0.08 | 0.05 | 0.11 | 1.36 |
| 560 | SP (5) | 5781 | 0.001 | 1.01 | 0.06 | 0.03 | 0.08 | 1.32 |
| 600 | SSBL (6) | 1780 | 0.001 | 0.55 | 0.03 | 0.02 | 0.04 | 1.17 |
| 700 | OXBL (7) | 656 | 0.001 | 0.62 | 0.02 | 0.01 | 0.05 | 2.64 |
| 900 | ZEP (90) | 442 | 0.002 | 1.17 | 0.15 | 0.08 | 0.18 | 1.25 |

**Table 14-9: Descriptive Statistics for Raw Assay Values for Mo by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 5009 | 1 | 6596 | 137 | 102 | 163.63 | 1.19 |
| 102 | LX (1) | 11640 | 1 | 3688 | 89 | 54 | 135.20 | 1.51 |
| 130 | PDA (30) | 2144 | 1 | 3046 | 92 | 50 | 148.98 | 1.63 |
| 200 | OX (2) | 12661 | 1 | 4530 | 106 | 69 | 134.87 | 1.27 |
| 220 | OX (2) | 2 | 62 | 117 | 90 | 90 | 27.50 | 0.31 |
| 450 | SS (4) | 19754 | 1 | 8583 | 117 | 75 | 182.62 | 1.56 |
| 460 | SS (4) | 17909 | 1 | 20799 | 89 | 49 | 229.70 | 2.57 |
| 520 | SP (5) | 4012 | 1 | 6113 | 85 | 21 | 194.71 | 2.30 |
| 540 | SP (5) | 3365 | 1 | 2565 | 107 | 55 | 169.13 | 1.58 |
| 550 | SP (5) | 2810 | 1 | 8149 | 176 | 103 | 289.01 | 1.65 |
| 560 | SP (5) | 5873 | 1 | 4313 | 163 | 97 | 234.34 | 1.44 |
| 600 | SSBL (6) | 1865 | 1 | 2857 | 30 | 7 | 90.32 | 3.02 |
| 700 | OXBL (7) | 663 | 1 | 936 | 108 | 63 | 139.48 | 1.29 |
| 900 | ZEP (90) | 484 | 9 | 1756 | 139 | 96 | 155.18 | 1.12 |

### 14.3.2 Grade Capping/Outlier Restrictions (2014)

For the estimation of CuT, CuAS and CuCNS a two-stage approach was used to define and treat the outlier samples:

1. The impact of raw assays values on the interpolated block value is assessed by comparing the block value with and without the outlier value. Blocks are interpolated using a minimum of 8, maximum of 32 samples within a 40 m x 40 m x 30 m neighbourhood. If the block grade using the outlier sample is more than 3 standard deviations different than the block grade without the outlier sample, a top cut is applied to the raw assay. The capping value is calculated to reduce the difference in block grades to within the acceptable threshold.
2. After compositing to 15 m support, a global capping threshold is applied on the upper 1% of samples as defined by the cumulative probability distribution.

For the oxide domains, only step 1 was carried out. No additional capping was applied on the 15 m composites in order to preserve the observed variability within the oxide mineralization domains.

### 14.3.3 Contact Analysis

Contact analysis was performed to determine the type of contacts (soft or hard) between the different estimation domains. Samples are coded with a distance from the contact surface then binned. Samples from one domain are compared to samples from the neighbouring domain on a bin-by-bin basis. A contact was coded as soft when the graph when the grade shows a gradual transition across the domain boundary. A contact was coded as hard when the transition is abrupt. Figure 14- summarizes the results of the contact analysis. Note: Green cells reveal a soft boundary between domains, and the number the distance in metres considered. Figure 14- and Figure 14- presents examples of soft and hard boundaries, respectively.

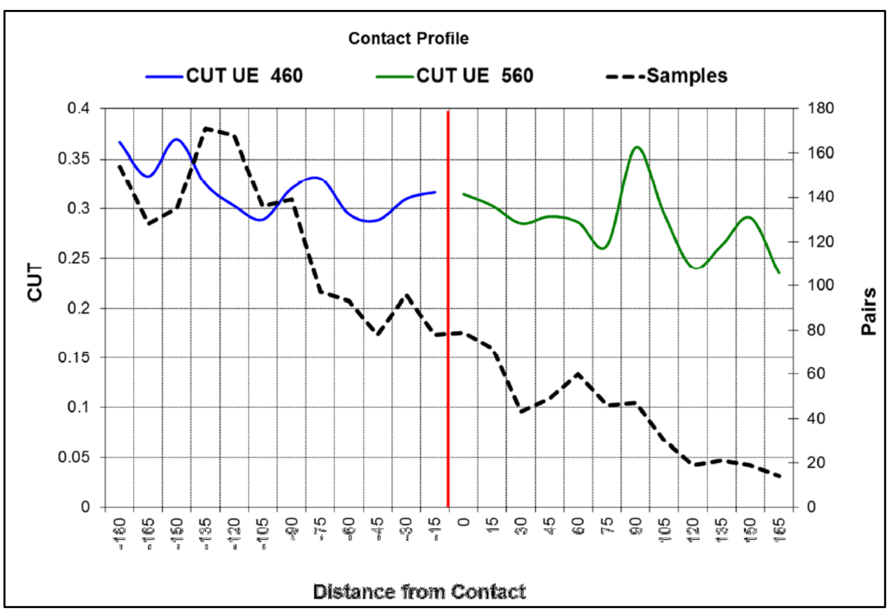
**Figure 14-2: Contact Analysis Profile Summary, Numerical Values Represent Soft Boundary Distance**

| UE | 101 | 102 | 130 | 220 | 240 | 450 | 460 | 520 | 540 | 550 | 560 | 600 | 700 | 900 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | | 15 | 15 | | | | | | | | | | | |
| 102 | 15 | | 15 | | | | | | | | | | | |
| 130 | 15 | 15 | | | | | | | | | | | | |
| 220 | | | | | 15 | | | | | | | | | |
| 240 | | | | 15 | | | | | | | | | | |
| 450 | | | | | | | 15 | | | 15 | | | | |
| 460 | | | | | | 15 | | | | 15 | 30 | | | |
| 520 | | | | | | | | | | 15 | | 15 | | |
| 540 | | | | | | | | | | | 15 | 30 | | |
| 550 | | | | | | 15 | 15 | 15 | | | | | | |
| 560 | | | | | | | 30 | | 15 | | | | | |
| 600 | | | | | | | | 15 | 30 | | | | | |
| 700 | | | | | | | | | | | | | | |
| 900 | | | | | | | | | | | | | | |

Hard boundary
Soft boundary
No contact

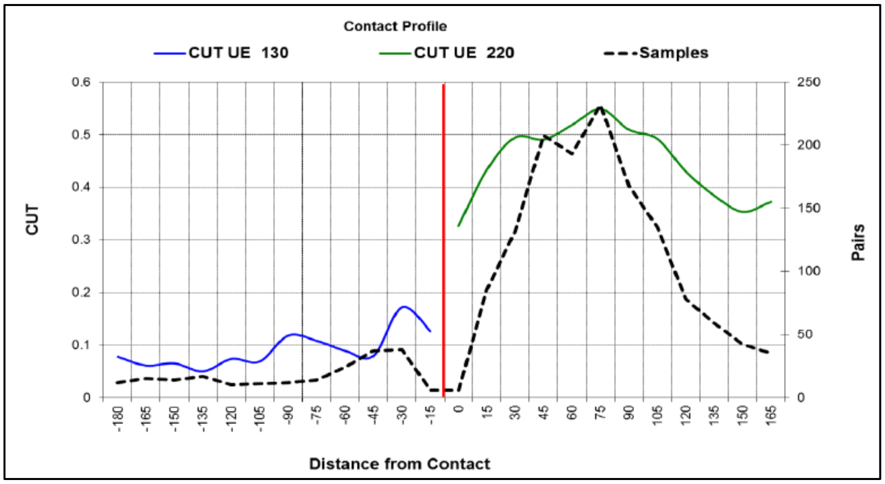
Source : Golder (2014); UE – Mineralized Zone

**Figure 14-3: Contact Analysis Profile, Domain 460 vs. Domain 560 (soft boundary)**




Source : Golder (2014)

**Figure 14-4: Contact Analysis Profile, Domain 130 vs. Domain 220 (hard boundary)**




Source : Golder (2014)

### 14.3.4 Composites

For purposes of estimation, drillhole samples were composited from top to bottom to the bench height of 15 m. Any residual samples of less than 7.5 m were discarded. Table 14-10 to Table 14-13 present the descriptive statistics for the 15 m composites by estimation domain for the CuT, CuAS, CuCNS, and Mo grades.

**Table 14-10: Descriptive Statistics for 15 m Composite Values for CuT by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 655 | 0.002 | 1.13 | 0.07 | 0.04 | 0.10 | 1.39 |
| 102 | LX (1) | 1519 | 0.001 | 1.23 | 0.05 | 0.03 | 0.08 | 1.51 |
| 130 | PDA (30) | 292 | 0.003 | 0.78 | 0.08 | 0.06 | 0.08 | 0.96 |
| 200 | OX (2) | 1745 | 0.029 | 2.47 | 0.47 | 0.44 | 0.28 | 0.59 |
| 450 | SS (4) | 2669 | 0.013 | 2.21 | 0.49 | 0.45 | 0.25 | 0.51 |
| 460 | SS (4) | 2371 | 0.014 | 1.62 | 0.36 | 0.31 | 0.21 | 0.59 |
| 520 | SP (5) | 533 | 0.001 | 1.75 | 0.16 | 0.11 | 0.19 | 1.18 |
| 540 | SP (5) | 431 | 0.016 | 0.92 | 0.20 | 0.17 | 0.14 | 0.72 |
| 550 | SP (5) | 343 | 0.023 | 1.78 | 0.33 | 0.31 | 0.18 | 0.56 |
| 560 | SP (5) | 775 | 0.014 | 1.11 | 0.29 | 0.26 | 0.16 | 0.57 |
| 600 | SSBL (6) | 240 | 0.007 | 0.32 | 0.07 | 0.07 | 0.04 | 0.58 |
| 700 | OXBL (7) | 91 | 0.003 | 0.37 | 0.07 | 0.06 | 0.05 | 0.76 |
| 900 | ZEP (90) | 64 | 0.007 | 2.92 | 0.51 | 0.31 | 0.55 | 1.08 |

**Table 14-11: Descriptive Statistics for 15 m Composite Values for CuAS by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 606 | 0.001 | 0.90 | 0.04 | 0.02 | 0.07 | 1.84 |
| 102 | LX (1) | 1240 | 0.001 | 1.11 | 0.03 | 0.01 | 0.06 | 2.26 |
| 130 | PDA (30) | 226 | 0.001 | 0.74 | 0.05 | 0.03 | 0.08 | 1.61 |
| 200 | OX (2) | 1744 | 0.009 | 1.49 | 0.34 | 0.31 | 0.22 | 0.65 |
| 450 | SS (4) | 2669 | 0.003 | 0.69 | 0.10 | 0.08 | 0.07 | 0.71 |
| 460 | SS (4) | 2369 | 0.001 | 0.97 | 0.07 | 0.05 | 0.06 | 0.83 |
| 520 | SP (5) | 512 | 0.001 | 0.12 | 0.01 | 0.01 | 0.02 | 1.27 |
| 540 | SP (5) | 421 | 0.001 | 0.10 | 0.01 | 0.01 | 0.01 | 1.14 |
| 550 | SP (5) | 343 | 0.001 | 0.17 | 0.02 | 0.02 | 0.02 | 0.84 |
| 560 | SP (5) | 770 | 0.001 | 0.19 | 0.02 | 0.01 | 0.02 | 0.95 |
| 600 | SSBL (6) | 238 | 0.001 | 0.09 | 0.02 | 0.02 | 0.01 | 0.70 |
| 700 | OXBL (7) | 91 | 0.001 | 0.19 | 0.04 | 0.04 | 0.03 | 0.77 |
| 900 | ZEP (90) | 60 | 0.001 | 0.11 | 0.03 | 0.03 | 0.03 | 0.89 |

**Table 14-12: Descriptive Statistics for 15 m Composite Values for CuCNS by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 606 | 0.001 | 0.49 | 0.02 | 0.00 | 0.04 | 1.79 |
| 102 | LX (1) | 1240 | 0.001 | 0.63 | 0.02 | 0.00 | 0.04 | 2.10 |
| 130 | PDA (30) | 226 | 0.001 | 0.38 | 0.03 | 0.00 | 0.05 | 1.55 |
| 200 | OX (2) | 1744 | 0.004 | 0.86 | 0.09 | 0.01 | 0.10 | 1.11 |
| 450 | SS (4) | 2669 | 0.004 | 1.63 | 0.32 | 0.04 | 0.19 | 0.59 |
| 460 | SS (4) | 2369 | 0.006 | 1.29 | 0.22 | 0.02 | 0.15 | 0.70 |
| 520 | SP (5) | 512 | 0.001 | 0.58 | 0.04 | 0.01 | 0.07 | 1.88 |
| 540 | SP (5) | 421 | 0.001 | 0.25 | 0.02 | 0.00 | 0.04 | 1.50 |
| 550 | SP (5) | 343 | 0.002 | 0.59 | 0.08 | 0.01 | 0.08 | 1.02 |
| 560 | SP (5) | 770 | 0.001 | 0.36 | 0.06 | 0.00 | 0.06 | 1.05 |
| 600 | SSBL (6) | 238 | 0.002 | 0.26 | 0.04 | 0.00 | 0.03 | 0.81 |
| 700 | OXBL (7) | 91 | 0.001 | 0.40 | 0.02 | 0.00 | 0.05 | 2.23 |
| 900 | ZEP (90) | 60 | 0.002 | 0.55 | 0.14 | 0.02 | 0.13 | 0.93 |

**Table 14-13: Descriptive Statistics for 15 m Composite Values for Mo by Estimation Domain**

| Domain | Min Zone | Count | Min | Max | Mean | Median | StDev | CV |
|---|---|---|---|---|---|---|---|---|
| 101 | LX (1) | 654 | 8 | 1260 | 139 | 119 | 108.35 | 0.78 |
| 102 | LX (1) | 1516 | 1 | 1276 | 90 | 67 | 104.85 | 1.16 |
| 130 | PDA (30) | 292 | 6 | 1244 | 93 | 61 | 110.81 | 1.19 |
| 200 | OX (2) | 1743 | 4 | 1434 | 105 | 77 | 97.68 | 0.93 |
| 450 | SS (4) | 2647 | 3 | 1455 | 115 | 89 | 108.01 | 0.94 |
| 460 | SS (4) | 2371 | 1 | 3203 | 90 | 63 | 125.22 | 1.39 |
| 520 | SP (5) | 533 | 1 | 1056 | 81 | 30 | 123.97 | 1.54 |
| 540 | SP (5) | 431 | 1 | 1005 | 106 | 74 | 108.83 | 1.03 |
| 550 | SP (5) | 343 | 5 | 1359 | 176 | 139 | 153.79 | 0.88 |
| 560 | SP (5) | 775 | 1 | 1682 | 159 | 121 | 140.83 | 0.88 |
| 600 | SSBL (6) | 240 | 1 | 614 | 29 | 9 | 58.28 | 2.00 |
| 700 | OXBL (7) | 91 | 1 | 498 | 101 | 74 | 110.30 | 1.09 |
| 900 | ZEP (90) | 64 | 26 | 506 | 136 | 112 | 93.52 | 0.69 |

## 14.4 Spatial Analysis

Variography was reviewed following infill drilling. Infill drilling is on a denser drilling grid and introduces more detail on the experimental variograms because additional data is available on the intermediate lag distances. Variograms need to be reviewed and updated to reflect this new information.

Experimental variogram were calculated and fitted for the 3 copper variables (CuT, CuAS, CuCNS) within each estimation domain then fit with a variogram model. The nugget effect for each estimation domain was derived from the downhole variogram. In estimation domains with a clear trend, the variogram models were truncated to a maximum distance according to a local window to reduce the impact of the trend.

Table 14-14 to Table 14-17 summarize the variogram models for CuT, CuAS and CuCNS, and Mo by estimation domain.

**Table 14-14: CuT Variogram Parameters by Estimation Domain**

| UECUT | C0 | Bearing | Plunge | Dip | Type | C1 | Maj | Smaj | Min | C2 | Maj | Smaj | Min | C3 | Maj | Smaj | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 0.2 | 135 | 0 | 0 | sph | 0.44 | 30 | 30 | 30 | 0.36 | 250 | 250 | 150 | | | | |
| 102 | 0.3 | 140 | 0 | 0 | sph | 0.22 | 26 | 26 | 26 | 0.23 | 110 | 70 | 140 | 0.25 | 300 | 150 | 99999 |
| 130 | 0.2 | 0 | 0 | 0 | sph | 0.67 | 24 | 24 | 24 | 0.23 | 200 | 200 | 200 | | | | |
| 220 | 0.3 | 135 | 0 | 0 | sph | 0.32 | 31 | 31 | 70 | 0.38 | 300 | 150 | 150 | | | | |
| 240 | 0.3 | 0 | 0 | 0 | sph | 0.55 | 30 | 30 | 30 | 0.15 | 150 | 150 | 150 | | | | |
| 450 | 0.2 | 0 | 0 | 0 | sph | 0.25 | 39 | 39 | 80 | 0.11 | 132 | 132 | 200 | 0.44 | 350 | 350 | 250 |
| 460 | 0.15 | 45 | 0 | 0 | sph | 0.38 | 35 | 35 | 180 | 0.34 | 200 | 200 | 190 | 0.13 | 300 | 99999 | 200 |
| 520 | 0.1 | 0 | 0 | 0 | sph | 0.15 | 120 | 120 | 120 | 0.75 | 300 | 300 | 300 | | | | |
| 540 | 0.1 | 0 | 0 | 0 | sph | 0.9 | 250 | 250 | 250 | | | | | | | | |
| 550 | 0.2 | 0 | 0 | 0 | sph | 0.36 | 85 | 85 | 85 | 0.44 | 200 | 200 | 200 | | | | |
| 560 | 0.15 | 120 | 0 | 0 | sph | 0.3 | 77 | 60 | 120 | 0.36 | 300 | 390 | 190 | 0.19 | 99999 | 400 | 200 |
| 600 | 0.15 | 45 | 0 | 0 | sph | 0.38 | 35 | 35 | 180 | 0.34 | 200 | 200 | 190 | 0.13 | 300 | 99999 | 200 |
| 700 | 0.3 | 0 | 0 | 0 | sph | 0.55 | 30 | 30 | 30 | 0.15 | 150 | 150 | 150 | | | | |
| 900 | 0.2 | 0 | 0 | 0 | sph | 0.41 | 53 | 53 | 53 | 0.54 | 120 | 120 | 120 | | | | |

Source: Golder (2018)

**Table 14-15: CUAS Variogram Models by Estimation Domain**

| UECUT | Nugget C0 | Bearing | Plunge | Dip | Type | Struc. C1 | Maj | Smaj | Min | Struc. C2 | Maj | Smaj | Min | Struc. C3 | Maj | Smaj | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 0.2 | 125 | 0 | 0 | sph | 0.44 | 30 | 30 | 70 | 0.86 | 250 | 200 | 100 | | | | |
| 102 | 0.3 | 130 | 0 | 0 | sph | 0.22 | 26 | 50 | 120 | 0.23 | 110 | 110 | 160 | 0.25 | 300 | 200 | 99999 |
| 130 | 0.2 | 0 | 0 | 0 | sph | 0.47 | 45 | 45 | 45 | 0.43 | 200 | 200 | 200 | | | | |
| 220 | 0.25 | 135 | 0 | 0 | sph | 0.59 | 40 | 40 | 60 | 0.16 | 300 | 150 | 120 | | | | |
| 240 | 0.25 | 0 | 0 | 0 | sph | 0.46 | 68 | 68 | 68 | 0.49 | 250 | 250 | 250 | | | | |
| 450 | 0.15 | 0 | 0 | 0 | sph | 0.36 | 36 | 35 | 170 | 0.28 | 160 | 300 | 180 | 0.21 | 99999 | 99999 | 190 |
| 460 | 0.1 | 45 | 0 | 0 | sph | 0.56 | 33 | 33 | 160 | 0.34 | 350 | 240 | 170 | | | | |
| 520 | 0.15 | 0 | 0 | 0 | s h | 0.08 | 154 | 154 | 154 | 0.77 | 250 | 250 | 250 | | | | |
| 540 | 0.1 | 0 | 0 | 0 | sph | 0.9 | 160 | 160 | 160 | | | | | | | | |
| 550 | 0.1 | 0 | 0 | 0 | sph | 0.54 | 90 | 90 | 90 | 0.36 | 300 | 300 | 300 | | | | |
| 560 | 0.1 | 120 | 0 | 0 | sph | 0.38 | 77 | 90 | 160 | 0.28 | 500 | 350 | 170 | 0.24 | 99999 | 99999 | 180 |
| 600 | 0.1 | 45 | 0 | 0 | sph | 0.56 | 33 | 33 | 160 | 0.34 | 350 | 240 | 170 | | | | |
| 700 | 0.25 | 0 | 0 | 0 | sph | 0.46 | 68 | 68 | 68 | 0.49 | 250 | 250 | 250 | | | | |
| 900 | 0.2 | 0 | 0 | 0 | sph | 0.41 | 53 | 53 | 53 | 0.54 | 120 | 120 | 120 | | | | |

Source: Golder (2018)

**Table 14-16: CUCN Variogram Models by Estimation Domain**

| UECUT | Nugget C0 | Bearing | Plunge | Dip | Type | Struc. C1 | Maj | Smaj | Min | Struc. C2 | Maj | Smaj | Min | Struc. C3 | Maj | Smaj | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 0.1 | 0 | 0 | 0 | sph | 0.32 | 34 | 34 | 34 | 0.74 | 190 | 190 | 190 | | | | |
| 102 | 0.2 | 140 | 0 | 0 | sph | 0.36 | 20 | 20 | 20 | 0.27 | 56 | 50 | 140 | 0.17 | 200 | 160 | 160 |
| 130 | 0.15 | 30 | 0 | 0 | sph | 0.69 | 54 | 35 | 50 | 0.16 | 200 | 140 | 100 | | | | |
| 220 | 0.2 | 120 | 0 | 0 | sph | 0.52 | 31 | 35 | 80 | 0.28 | 400 | 280 | 200 | | | | |
| 240 | 0.2 | 160 | 0 | 0 | sph | 0.29 | 50 | 40 | 30 | 0.51 | 400 | 130 | 200 | | | | |
| 450 | 0.15 | 140 | 0 | 0 | sph | 0.32 | 55 | 70 | 30 | 0.56 | 240 | 180 | 130 | | | | |
| 460 | 0.2 | 120 | 0 | 0 | sph | 0.5 | 55 | 70 | 40 | 0.3 | 170 | 190 | 100 | | | | |
| 520 | 0.2 | 30 | 0 | 0 | sph | 0.8 | 120 | 150 | 30 | 0.2 | 130 | 200 | 80 | | | | |
| 540 | 0.25 | 140 | 0 | 0 | sph | 0.35 | 40 | 40 | 35 | 0.39 | 160 | 100 | 200 | | | | |
| 550 | 0.2 | 40 | 0 | 0 | sph | 0.45 | 80 | 80 | 150 | 0.22 | 220 | 220 | 220 | | | | |
| 560 | 0.15 | 120 | 0 | 0 | sph | 0.47 | 39 | 80 | 50 | 0.38 | 150 | 120 | 120 | | | | |
| 600 | 0.2 | 0 | 0 | 0 | sph | 0.35 | 40 | 40 | 40 | 0.35 | 90 | 60 | 180 | 0.1 | 150 | 350 | 450 |
| 700 | 0.15 | 30 | 0 | 0 | sph | 0.15 | 50 | 40 | 30 | 0.4 | 180 | 130 | 130 | | | | |
| 900 | 0.2 | 40 | 0 | 0 | sph | 0.35 | 80 | 80 | 42 | 0.45 | 250 | 250 | 180 | | | | |

Source: Golder (2018)

**Table 14-17: Mo Indicator Variogram Models by Cut-off Threshold**

| UECUT | Nugget C0 | Bearing | Plunge | Dip | Type | Struc. C1 | Maj | Smaj | Min | Struc. C2 | Maj | Smaj | Min |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 0.2 | 140 | 0 | 0 | sph | 0.5 | 50 | 20 | 190 | 0.3 | 400 | 200 | 600 |
| 50 | 0.2 | 0 | 0 | 0 | sph | 0.3 | 70 | 100 | 100 | 0.5 | 450 | 200 | 600 |
| 120 | 0.3 | 0 | 0 | 0 | sph | 0.3 | 100 | 120 | 120 | 0.4 | 550 | 160 | 500 |

Source: Golder (2018)

## 14.5 Block Model

The block model for the Caserones deposit was set up to cover the entire deposit and a distance beyond. The block model was created with dimensions of 20 m x 20 m x 15 m and is rotated 54° clockwise. Block size was selected based on the mining selectivity, drill spacing, bench height and open pit mining scenario. Table 14-18 summarizes the block model parameters. Table 14-19 summarizes the geological parameters used to define the estimation domains, and Figure 14-5 shows a plan and section view of the block model limits.

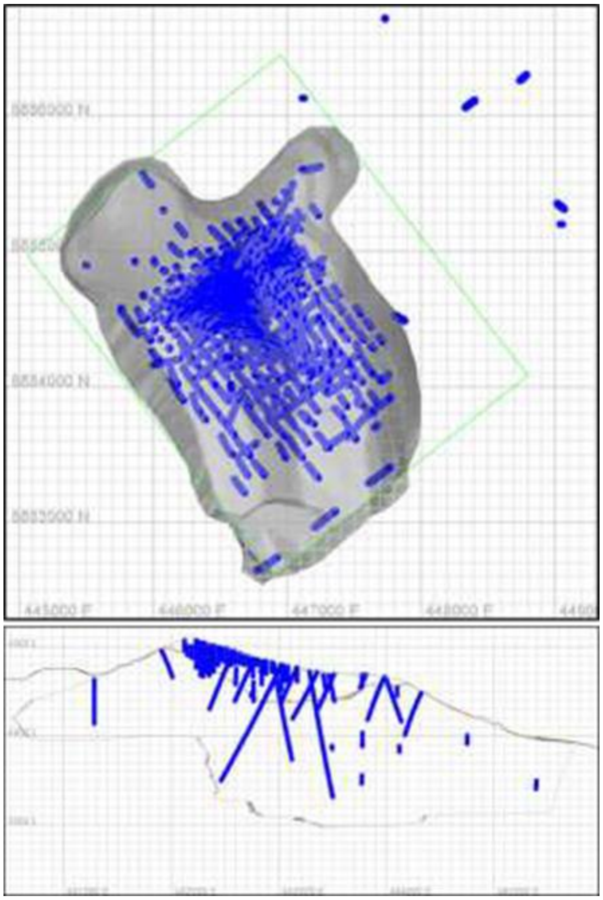
**Table 14-18: Block Model Setup Parameters**

| Parameter | Value |
|---|---|
| Easting | 446,907.74mE |
| Northing | 6,882,603.106 mN |
| Maximum Elevation | 3,200.00 m |
| Rotation Angle | 52° (clockwise) |
| Block Size (X, Y, Z in metres) | 20 m x 20 m x 15 m |
| Number of blocks in the X direction | 120 |
| Number of blocks in the Y direction | 150 |
| Number of blocks in the Z direction | 100 |

**Table 14-19: Domain Codes and Incorporated Geological Models**

| Domain | Min Zone | Lithology | Alteration | Structure |
|---|---|---|---|---|
| 130 | PDA (30) | PDA (30) | All | All |
| 101 | LX (1) | BXC1 (41) | All | All |
| 102 | LX (1) | MZG (20), BXC2 (42), DIO (80) | All | All |
| 220 | OX (2) | All | All | 2, 4, 5 |
| 240 | OX (2) | All | All | 1, 3 |
| 450 | SS (4) | All | AR (100), QS1 (500), SI (800) | All |
| 460 | SS (4) | All | BT, CL, KF, QS2, SA | All |
| 520 | SP (5) | MZG (20), DIO (80) | All | All |
| 540 | SP (5) | BXC2 (41), BXC2 (42), PDA (30) | BT, CL, KF, QS2, SA | All |
| 550 | SP (5) | BXC2 (41), BXC2 (42), PDA (30) | QS1 (500) | All |
| 560 | SP (5) | BXC2 (41), BXC2 (42), PDA (30) | QS2 (600) | All |
| 600 | SSBL (6) | All | All | All |
| 700 | OXBL (7) | All | All | All |
| 900 | ZEP (90) | ZEP (90) | ZEP (90) | All |

**Figure 14-5: Plan and Section View of the Block Model Limits**



Source : MLCC (2021)

### 14.5.1 Estimation/Interpolation Methods

Block grades were estimated separately in each estimation domain using Ordinary Kriging (OK) with three nested search passes. In some cases, a fourth search pass was implemented to fill all blocks within the Limit of Geological Information.

The estimation strategy was setup considering the following:

- search strategy (radii of search neighbourhood, number of samples, use of octants, maximum number of samples per drillhole)
- anomalous sample restrictions (high grade outliers)
- hard/soft boundaries
- discretization of 4 x 4 x 1
- composites with a length less than 7.5m are not considered in the estimation
- for total copper estimation domains associated with secondary oxides and sulfides, a local (restricted) pass was implemented to incorporate blast hole data

- same sample selection scheme was used for soluble coppers to minimize order relation inconsistencies

Each pass required the same minimum and maximum number of composites with a maximum of three composites per drill hole, therefore, two drill holes were required to populate a block. Table 14-20 shows estimation parameters for each pass used to estimate metal grades.

There was no strong geological control on the distribution of Mo mineralization. Instead, the estimation domains are based on an Indicator Kriging (IK) method which calculates the probability of occurrence for each grade bin. Following domain definition by IK, Mo was interpolated in two passes using the 2 m capped composites using OK interpolation method in two passes. The search ellipse ranges resemble the variogram ranges.

**Table 14-20: Ordinary Kriging Estimation Parameters by Domain**

| Estimation Domain | Pass | Bearing (°) | Plunge (°) | Dip (°) | X Range (m) | Y Range (m) | Z Range (m) | Min Samples | Max Samples | Max per Octant | Min Sampled Octants | Min Octant Samples | Max Samples per DDH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 1 | 135 | 0 | 0 | 50 | 50 | 35 | 4 | 8 | | | | 3 |
| 101 | 2 | 135 | 0 | 0 | 125 | 125 | 85 | 4 | 8 | | | | 3 |
| 101 | 3 | 135 | 0 | 0 | 240 | 240 | 125 | 3 | 12 | | | | 2 |
| 102 | 1 | 140 | 0 | 0 | 100 | 60 | 60 | 4 | 8 | | | | 3 |
| 102 | 2 | 140 | 0 | 0 | 160 | 100 | 100 | 4 | 8 | | | | 3 |
| 102 | 3 | 140 | 0 | 0 | 300 | 150 | 150 | 3 | 12 | | | | 2 |
| 130 | 1 | 0 | 0 | 0 | 75 | 75 | 75 | 4 | 8 | | | | 3 |
| 130 | 2 | 0 | 0 | 0 | 100 | 100 | 100 | 4 | 8 | | | | 3 |
| 130 | 3 | 0 | 0 | 0 | 200 | 200 | 200 | 3 | 12 | | | | 2 |
| 220 | 1 | 135 | 0 | 0 | 30 | 30 | 30 | 4 | 8 | | | | 3 |
| 220 | 2 | 135 | 0 | 0 | 80 | 40 | 40 | 4 | 8 | | | | 3 |
| 220 | 3 | 135 | 0 | 0 | 200 | 100 | 100 | 3 | 12 | | | | 2 |
| 240 | 1 | 0 | 0 | 0 | 50 | 50 | 50 | 4 | 8 | | | | 3 |
| 240 | 2 | 0 | 0 | 0 | 75 | 75 | 75 | 4 | 8 | | | | 3 |
| 240 | 3 | 0 | 0 | 0 | 150 | 150 | 150 | 3 | 12 | | | | 2 |
| 450 | 1 | 0 | 0 | 0 | 50 | 50 | 50 | 4 | 8 | | | | 3 |
| 450 | 2 | 0 | 0 | 0 | 100 | 75 | 75 | 4 | 8 | | | | 3 |
| 450 | 3 | 0 | 0 | 0 | 250 | 250 | 200 | 3 | 12 | | | | 2 |
| 460 | 1 | 45 | 0 | 0 | 50 | 50 | 50 | 4 | 8 | | | | 3 |
| 460 | 2 | 45 | 0 | 0 | 100 | 100 | 75 | 4 | 8 | | | | 3 |
| 460 | 3 | 45 | 0 | 0 | 200 | 200 | 150 | 3 | 12 | | | | 2 |
| 520 | 1 | 0 | 0 | 0 | 150 | 150 | 150 | 4 | 12 | 3 | 3 | 1 | 3 |
| 520 | 2 | 0 | 0 | 0 | 200 | 200 | 200 | 4 | 12 | 3 | 3 | 1 | 3 |
| 520 | 3 | 0 | 0 | 0 | 300 | 300 | 300 | 3 | 16 | 3 | 3 | 1 | 2 |
| 540 | 1 | 0 | 0 | 0 | 125 | 125 | 125 | 4 | 12 | 3 | 3 | 1 | 3 |
| 540 | 2 | 135 | 0 | 0 | 175 | 175 | 175 | 4 | 12 | 3 | 3 | 1 | 3 |

| Estimation Domain | Pass | Bearing (°) | Plunge (°) | Dip (°) | X Range (m) | Y Range (m) | Z Range (m) | Min Samples | Max Samples | Max per Octant | Min Sampled Octants | Min Octant Samples | Max Samples per DDH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 540 | 3 | 135 | 0 | 0 | 250 | 250 | 250 | 3 | 16 | 3 | 3 | 1 | 2 |
| 550 | 1 | 0 | 0 | 0 | 75 | 75 | 75 | 4 | 12 | 3 | 3 | 1 | 3 |
| 550 | 2 | 0 | 0 | 0 | 125 | 125 | 125 | 4 | 12 | 3 | 3 | 1 | 3 |
| 550 | 3 | 0 | 0 | 0 | 200 | 200 | 200 | 3 | 16 | 3 | 3 | 1 | 2 |
| 560 | 1 | 120 | 0 | 0 | 100 | 100 | 75 | 4 | 12 | 3 | 3 | 1 | 3 |
| 560 | 2 | 120 | 0 | 0 | 150 | 150 | 100 | 4 | 12 | 3 | 3 | 1 | 3 |
| 560 | 3 | 120 | 0 | 0 | 300 | 300 | 200 | 3 | 16 | 3 | 3 | 1 | 2 |
| 600 | 1 | 45 | 0 | 0 | 100 | 100 | 100 | 4 | 12 | 3 | 3 | 1 | 3 |
| 600 | 2 | 45 | 0 | 0 | 125 | 125 | 125 | 4 | 12 | 3 | 3 | 1 | 3 |
| 600 | 3 | 45 | 0 | 0 | 250 | 250 | 250 | 3 | 16 | 3 | 3 | 1 | 2 |
| 700 | 1 | 0 | 0 | 0 | 100 | 100 | 100 | 4 | 12 | 3 | 3 | 1 | 3 |
| 700 | 2 | 0 | 0 | 0 | 150 | 150 | 150 | 4 | 12 | 3 | 3 | 1 | 3 |
| 700 | 3 | 0 | 0 | 0 | 250 | 250 | 250 | 3 | 16 | 3 | 3 | 1 | 2 |
| 900 | 1 | 0 | 0 | 0 | 50 | 50 | 50 | 4 | 8 | | | | 3 |
| 900 | 2 | 0 | 0 | 0 | 80 | 80 | 80 | 4 | 8 | | | | 3 |
| 900 | 3 | 0 | 0 | 0 | 120 | 120 | 120 | 3 | 12 | | | | 2 |

### 14.5.2 Molybdenum Estimation

Molybdenum grade estimation was based on an indicator kriging (IK) method that calculated the probability of occurrence of each indicator. To obtain the same number of estimated blocks for each indicator, only one estimation pass was used.

### 14.5.3 Density Estimation

The database contained 977 bulk density records from 87 drill holes. Table 14-21 presents the descriptive statistics of the density records.

**Table 14-21: Descriptive Statistics for Density Records in the Database**

| Zone | Code | Count | Min | Max | Mean | Median | Std Dev | CV |
|---|---|---|---|---|---|---|---|---|
| S | -50 | 5 | 2.53 | 2.63 | 2.59 | 2.60 | 0.033 | 0.013 |
| LIX | 1 | 175 | 1.92 | 2.84 | 2.54 | 2.54 | 0.083 | 0.033 |
| OX | 2 | 14 | 2.44 | 2.70 | 2.58 | 2.60 | 0.060 | 0.023 |
| SS | 4 | 398 | 2.06 | 3.01 | 2.58 | 2.58 | 0.089 | 0.035 |
| SP | 5 | 361 | 2.32 | 3.18 | 2.60 | 2.59 | 0.077 | 0.029 |
| SSBL | 6 | 12 | 2.48 | 2.85 | 2.61 | 2.58 | 0.098 | 0.038 |
| OXBL | 7 | 6 | 2.42 | 2.56 | 2.50 | 2.50 | 0.049 | 0.019 |
| ZEP | 90 | 6 | 2.50 | 2.66 | 2.55 | 2.54 | 0.051 | 0.02 |

Density was estimated into the model using Inverse Distance Squared (ID2) on combined estimation domains (Table 14-22). Density estimation was carried out using the same parameters as the 2017 block model. The estimation was by ID2, using a single pass and by considering the lithology groups as hard boundaries. Table 14-23 presents the estimation parameters used for density interpolation. Unestimated blocks were assigned to the data the mean density as follows:

- overburden: 1.85 g/cm$^3$
- leachate: 2.54 g/cm$^3$
- secondary oxides and sulphides: 2.584 g/cm$^3$
- primary sulphides and ZEP: 2.595 g/cm$^3$

**Table 14-22: Mineralized Zones used for Density Interpolation**

| Density Domain | Mineralized Zone | Lithology | Alteration | Structure |
|---|---|---|---|---|
| 1 | LX (1) | All | All | All |
| 2 | OX (2), SS (4), SSBL (6), OXBL (7) | All | All | All |
| 3 | SP (5), ZEP (90) | All | All | All |

**Table 14-23: Estimation Parameters for Density Interpolation (ID$^2$)**

| Density Domain | Rotation | | | Axes | | | No. Sample | | Max No. of Samples per Drill Hole |
|---|---|---|---|---|---|---|---|---|---|
| | Bearing | Plunge | Dip | Maj | Semi | Min | Min | Max | |
| 1 | 0 | 0 | 0 | 150 | 150 | 100 | 5 | 15 | 3 |
| 2 | 0 | 0 | 0 | 150 | 150 | 100 | 5 | 15 | 3 |
| 3 | 0 | 0 | 0 | 150 | 150 | 100 | 5 | 15 | 3 |

## 14.6 Block Model Validation

Various methods to validate the block model included:

1. Statistical comparison of input composite and block grade distributions (Tables 14-24 to 14-26).
2. Visual inspection and comparison of block grades with composite grades.
3. Inspection of swath plots with composites and block grades elevations and northings.

**Table 14-24: Table of Comparative Statistics for CuT**

| Domain | Num Data | | Minimum | | Maximum | | Median | | | Std Dev. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Comp | Block | Comp | Block | Comp | Block | Comp | Block | % Diff | Comp | Block |
| 101 | 787 | 9,959 | 0.002 | 0.003 | 1.546 | 0.346 | 0.065 | 0.052 | -20.0% | 0.115 | 0.034 |
| 102 | 1,625 | 54,385 | 0.001 | 0.002 | 1.668 | 0.563 | 0.043 | 0.043 | 0.5% | 0.067 | 0.031 |
| 130 | 370 | 7,568 | 0.004 | 0.003 | 0.741 | 0.361 | 0.071 | 0.07 | -0.8% | 0.071 | 0.032 |
| 220 | 1,822 | 5,088 | 0.016 | 0.120 | 2.733 | 1.134 | 0.46 | 0.421 | -8.4% | 0.276 | 0.149 |
| 240 | 132 | 1,192 | 0.019 | 0.050 | 1.119 | 0.894 | 0.217 | 0.219 | 0.7% | 0.145 | 0.076 |
| 450 | 2,997 | 25,717 | 0.010 | 0.107 | 1.972 | 1.411 | 0.415 | 0.401 | -3.3% | 0.229 | 0.15 |
| 460 | 2,685 | 56,362 | 0.010 | 0.089 | 3.855 | 1.107 | 0.309 | 0.301 | -2.5% | 0.208 | 0.127 |
| 520 | 608 | 69,559 | 0.001 | 0.001 | 1.217 | 0.866 | 0.12 | 0.122 | 1.6% | 0.152 | 0.108 |
| 540 | 505 | 25,553 | 0.015 | 0.024 | 3.577 | 0.668 | 0.179 | 0.178 | -0.5% | 0.198 | 0.091 |
| 550 | 423 | 12,910 | 0.032 | 0.068 | 1.766 | 1.302 | 0.294 | 0.319 | 8.7% | 0.185 | 0.117 |
| 560 | 912 | 63,877 | 0.005 | 0.030 | 1.113 | 0.912 | 0.225 | 0.24 | 6.9% | 0.152 | 0.094 |
| 600 | 288 | 12,569 | 0.002 | 0.017 | 0.34 | 0.236 | 0.074 | 0.071 | -3.0% | 0.035 | 0.015 |
| 700 | 110 | 654 | 0.002 | 0.033 | 0.506 | 0.22 | 0.66 | 0.066 | 0.1% | 0.054 | 0.024 |
| 900 | 75 | 1,640 | 0.006 | 0.007 | 2.384 | 2.141 | 0.468 | 0.527 | 12.6% | 0.47 | 0.283 |

**Table 14-25: Table of Comparative Statistics for CuAS**

| Domain | Num Data | | Minimum | | Maximum | | Median | | | Std Dev. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Comp | Block | Comp | Block | Comp | Block | Comp | Block | % Diff | Comp | Block |
| 101 | 787 | 9,959 | 0.001 | 0.001 | 0.824 | 0.256 | 0.026 | 0.002 | -16.1% | 0.054 | 0.026 |
| 102 | 1,625 | 54,385 | 0.001 | 0.001 | 1.359 | 0.52 | 0.018 | 0.017 | -5.3% | 0.038 | 0.017 |
| 130 | 370 | 7,568 | 0.001 | 0.001 | 0.705 | 0.412 | 0.032 | 0.031 | -0.7% | 0.042 | 0.023 |
| 220 | 1,822 | 5,306 | 0.003 | 0.057 | 1.538 | 0.895 | 0.317 | 0.300 | -5.2% | 0.215 | 0.138 |
| 240 | 132 | 1,194 | 0.008 | 0.024 | 1.013 | 0.708 | 0.149 | 0.158 | 5.6% | 0.104 | 0.064 |
| 450 | 3,063 | 26,472 | 0.001 | 0.008 | 1.044 | 0.447 | 0.073 | 0.071 | -3.1% | 0.059 | 0.044 |
| 460 | 2,709 | 56,485 | 0.001 | 0.007 | 0.666 | 0.522 | 0.055 | 0.053 | -3.0% | 0.040 | 0.029 |
| 520 | 634 | 69,554 | 0.001 | 0.001 | 0.141 | 0.11 | 0.010 | 0.008 | -16.9% | 0.018 | 0.008 |
| 540 | 505 | 25,509 | 0.001 | 0.001 | 0.092 | 0.144 | 0.007 | 0.007 | -1.2% | 0.009 | 0.006 |
| 550 | 450 | 12,910 | 0.001 | 0.002 | 0.168 | 0.186 | 0.017 | 0.018 | 7.5% | 0.016 | 0.012 |
| 560 | 912 | 63,866 | 0.001 | 0.001 | 0.305 | 0.134 | 0.012 | 0.012 | -2.6% | 0.018 | 0.009 |
| 600 | 288 | 12,569 | 0.001 | 0.001 | 0.074 | 0.048 | 0.018 | 0.018 | -2.6% | 0.009 | 0.005 |
| 700 | 110 | 651 | 0.001 | 0.013 | 0.156 | 0.104 | 0.039 | 0.04 | 4.8% | 0.032 | 0.015 |
| 900 | 75 | 1,561 | 0.001 | 0.001 | 0.138 | 0.096 | 0.029 | 0.026 | -10.7% | 0.031 | 0.019 |

**Table 14-26: Table of Comparative Statistics for CuCN**

| Domain | Num Data | | Minimum | | Maximum | | Median | | | Std Dev. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Comp | Block | Comp | Block | Comp | Block | Comp | Block | % Diff | Comp | Block |
| 101 | 787 | 9,959 | 0.001 | 0.001 | 0.933 | 0.204 | 0.022 | 0.017 | -23.0% | 0.064 | 0.016 |
| 102 | 1,625 | 54,385 | 0.001 | 0.001 | 0.841 | 0.2 | 0.013 | 0.013 | -1.5% | 0.030 | 0.013 |
| 130 | 370 | 7,568 | 0.001 | 0.001 | 0.441 | 0.236 | 0.021 | 0.016 | -23.6% | 0.040 | 0.014 |
| 220 | 1,822 | 5,373 | 0.009 | 0.009 | 0.944 | 0.376 | 0.105 | 0.092 | -12.4% | 0.119 | 0.050 |
| 240 | 132 | 1,194 | 0.005 | 0.005 | 0.351 | 0.182 | 0.039 | 0.033 | -17.3% | 0.054 | 0.026 |
| 450 | 3,063 | 25,762 | 0.013 | 0.013 | 1.309 | 0.892 | 0.263 | 0.252 | -4.0% | 0.174 | 0.117 |
| 460 | 2,709 | 56,398 | 0.011 | 0.011 | 1.564 | 0.996 | 0.175 | 0.171 | -2.2% | 0.131 | 0.088 |
| 520 | 634 | 69,541 | 0.001 | 0.001 | 0.556 | 0.419 | 0.026 | 0.024 | -5.6% | 0.056 | 0.030 |
| 540 | 505 | 25,553 | 0.002 | 0.002 | 0.552 | 0.173 | 0.017 | 0.019 | 7.6% | 0.033 | 0.019 |
| 550 | 450 | 12,901 | 0.003 | 0.003 | 0.630 | 0.467 | 0.059 | 0.065 | 9.3% | 0.078 | 0.056 |
| 560 | 912 | 63,877 | 0.002 | 0.002 | 0.730 | 0.381 | 0.034 | 0.034 | 0.0% | 0.054 | 0.035 |
| 600 | 288 | 12,565 | 0.005 | 0.005 | 0.277 | 0.201 | 0.036 | 0.035 | -2.7% | 0.022 | 0.010 |
| 700 | 110 | 654 | 0.004 | 0.004 | 0.319 | 0.129 | 0.015 | 0.015 | -0.9% | 0.024 | 0.015 |
| 900 | 75 | 1,561 | 0.003 | 0.003 | 0.683 | 0.464 | 0.114 | 0.106 | -7.5% | 0.125 | 0.071 |

## 14.7 Mineral Resources

The Mineral Resources are classified based on spatial parameters related to drill density and configuration and the generation of an optimized conceptual pit shell. To ensure appropriate classification of contiguous blocks, classification was homogenized within solid volumes.

### 14.7.1 Classification of Mineral Resources

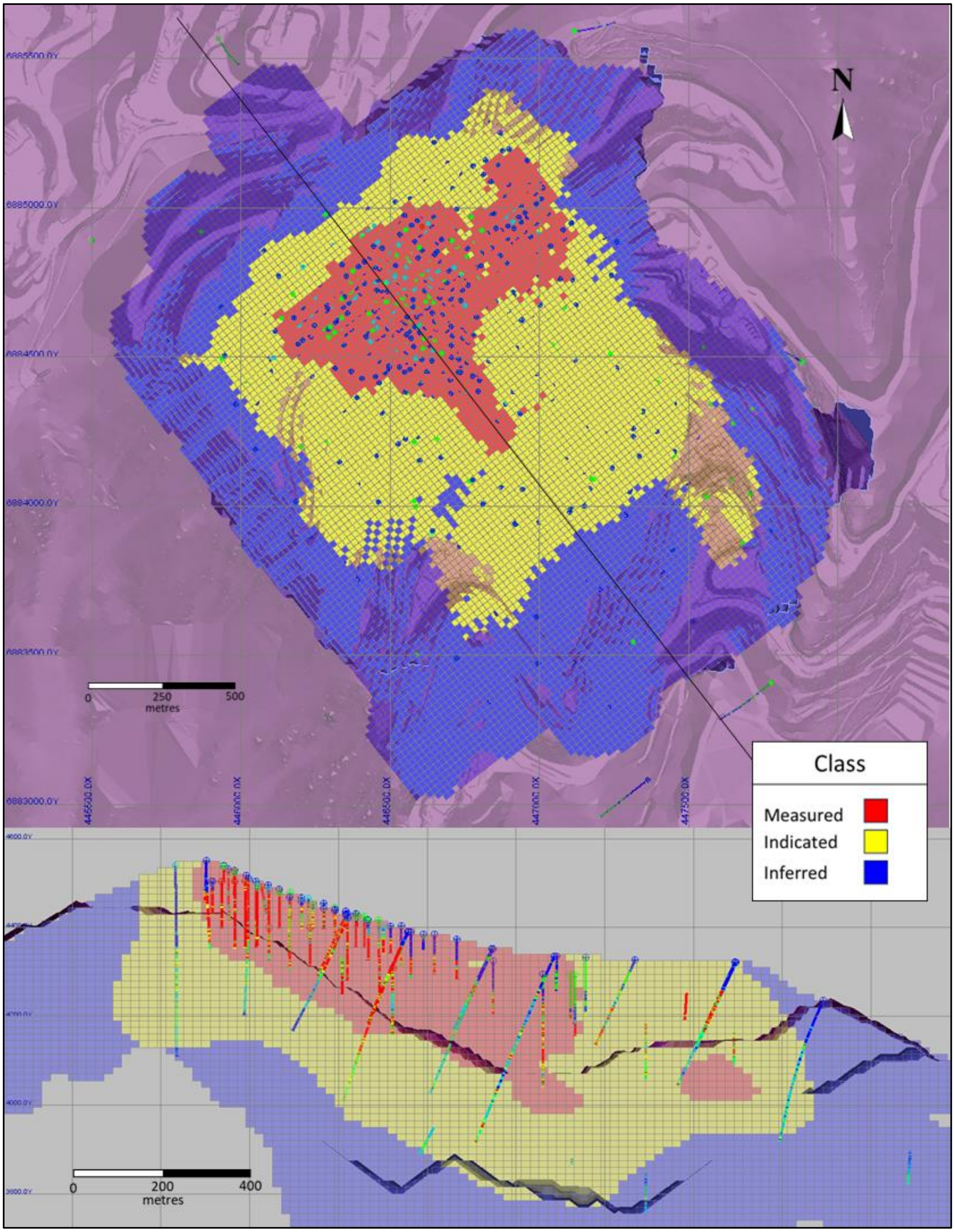
The estimated blocks were classified as Measured, Indicated, and Inferred according to the following criteria:

- **Measured Resources**: Blocks nominally estimated blocks with a minimum of four drill holes and 80 m average distance, in a search radius of 50 m x 50 m x 50 m for oxide and leach domains, 100 m x 100 m x 100 m for secondary sulphides and 100 m x 100 m x 100 m for primary sulphides and a kriging efficiency of greater than 0.75 were classified as Measured.
- **Indicated Resources**: Blocks nominally estimated blocks with a minimum of three drill holes in a search radius of 100 m x 100 m x 100 m for leach and oxides, 150 m x 150 m x 150 m for secondary sulphides and 225 m x 225 m x 225 m for primary sulphide; were classified as Indicated.
- **Inferred Resources**: Estimated blocks with a minimum of two drill holes with a nearest distance to composite of less than 200 m were classified as Inferred.

The class blocks were groomed to remove the majority of isolated blocks of Indicated blocks in the Measured category and Inferred blocks in the Indicated category.

- Figure 14-6 shows the distribution of class blocks in plan view and cross-section.

**Figure 14-6: Class Blocks; Plan and Cross-section (looking northeast); Shows Drill Holes and Constraining Shell**




Source : AGP (2023)

### 14.7.2 Reasonable Prospects of Eventual Economic Extraction

To satisfy reasonable prospects of eventual economic extraction, the mineral resources are constrained by an optimized conceptual pit on Measured, Indicated, and Inferred blocks. The model was exported in ASCII format and imported into Hexagon MineSight to developing the constraining shell for the reported mineral resources. Table 14-27 lists the parameters and assumptions used for the optimized pit constraint.

**Table 14-27: Pit Optimization Parameters**

| Description | Unit | Cost |
|---|---|---|
| **Metal Prices** | | |
| Copper | $/lb. | 3.65 |
| Molybdenum | $/lb. | 11.45 |
| **Process Recovery** | | |
| Copper Concentrator | % | 83 |
| Molybdenum | % | 60 |
| Dump leach | % | 54 |
| **Costs** | | |
| Average Mining | $/t | 2.32 |
| Concentrator | $/t | 8.89 |
| Molybdenum Plant | $/t | 0.25 |
| Dump leach | $/t | 1.47 |
| G&A | $/t | 3.83 |
| **Royalties** | | |
| NSR Royalty Rate | % | 2.88 |

### 14.7.3 Mineral Resource Statement

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) defines a Mineral Resource as:

*"A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such a form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated, or interpreted from specific evidence or knowledge, including sampling."*

The Mineral Resources are reported in constraining pit shell. The Mineral Resources for the Caserones Deposit, inclusive of reserves, at a 0.13% CuT cut-off grade are: Measured Resources of Indicated Resources of 173.1 Mt at 0.36 %CuT, 0.012 %Mo; Indicated Resources of 850.0 Mt at 0.30 %CuT and 0.010 %Mo; and Inferred Resources of 121.0 Mt at 0.26 %CuT and 0.012 %Mo. The effective date of the Mineral Resources is 31 December 2022.

Table 14- below presents the Mineral Resources for the Caserones Project, effective 31 December 2022.

**Table 14-28: Mineral Resource Statement**

| Mineral Resource Statement | | | | | |
|---|---|---|---|---|---|
| Categorized | Tonnes (Mt) | Grade | | Contained Metal | |
| | | CuT (%) | Mo (%) | CuT (kt) | Mo (kt) |
| Measured | 173 | 0.36 | 0.012 | 617 | 21 |
| Indicated | 850 | 0.30 | 0.010 | 2,532 | 84 |
| Measured & Indicated | 1,023 | 0.31 | 0.010 | 3,150 | 105 |
| Inferred | 121 | 0.26 | 0.012 | 317 | 14 |

Notes:

1. Mineral Resources have an effective date of 31 December 2022
2. Mineral Resources are presented on a 100% basis.
3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
4. The Qualified Person for the mineral resource estimate is Mr. Paul Daigle, P.Geo
5. The Mineral Resources were estimated using the CIM Definition Standards for Mineral Resources and Reserves, as prepared by the CIM Standing Committee and adopted by CIM Council
6. Mineral Resources are inclusive of Mineral Reserves
7. All figures are rounded to reflect the relative accuracy of the estimate
8. Totals may not sum due to rounding as required by reporting guidelines
9. Open pit Mineral Resources are reported within optimized constraining shell
10. Open pit cut-off grade is 0.13% CuT

## 14.8 Factors That May Affect the Mineral Resource Estimate

Factors that may affect the Mineral Resource estimates include:

- metal price and exchange rate assumptions
- changes to the assumptions used to generate the copper grade cut-off grade
- changes in local interpretations of mineralization geometry and continuity of mineralized zones
- changes to geological and mineralization shape and geological and grade continuity assumptions
- density and domain assignments
- geometallurgical and oxidation assumptions
- changes to geotechnical, mining, and metallurgical recovery assumptions
- change to the input and design parameter assumptions that pertain to the conceptual pit and stope designs constraining the estimates
- assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate

There are no other known environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that would materially affect the estimation of Mineral Resources that are not discussed in this Report.

## 14.9 Reconciliation Results

MLCC performs monthly reconciliations between the long-term resource model and the short-term model, which is generated from blast hole data. The reconciliation results for 2022 are reported in Table 14-29 for total in-situ ore mined. The results register low differences between the short- and long-term models with the long-term model being slightly underestimated relative to the short-term model. Table 14-30 presents yearly reconciliation results from 2016 to 2020. A similar underestimation trend is observed over time. Monthly reconciliation results for the year 2020 are presented in Table 14-31. The difference does not typically exceed 10%.

**Table 14-29: Summary of Total Reconciliation and Reconciliation by Destination for 2020**

| Concentrator | Long-Term | Short-Term | Diff (%) |
|---|---|---|---|
| Tonnage | 27,498,434 | 29,545,633 | -6.9% |
| Cu Metal | 130,752 | 128,059 | 2.1% |
| CuT (%) | 0.475 | 0.433 | 9.7% |
| CuS (%) | 0.302 | 0.262 | 15.1% |
| CuAC (%) | 0.020 | 0.023 | -12.2% |
| As (ppm) | 20 | 15 | 36.5% |
| Mo (ppm) | 169 | 141 | 20.1% |
| **Dump Leach** | **Holes** | **Short-Term** | **Diff (%)** |
| Tonnage | 8,833,321 | 5,755,201 | 53.5% |
| Cu Metal | 20,862 | 15,265 | 36.7% |
| CuT (%) | 0.236 | 0.265 | -11.0% |
| CuS (%) | 0.170 | 0.186 | -8.7% |
| CuAC (%) | 0.028 | 0.038 | -25.6% |
| As (ppm) | 16 | 12 | 35.2% |
| Mo (ppm) | 82 | 63 | 28.6% |
| **Total Mineral** | **Holes** | **Short-Term** | **Diff (%)** |
| Tonnage | 36,331,755 | 35,300,835 | 2.9% |
| Cu Metal | 155,614 | 143,325 | 5.8% |
| CuT (%) | 0.420 | 0.410 | 2.8% |
| CuS (%) | 0.270 | 0.250 | 8.0% |
| CuAC (%) | 0.020 | 0.030 | -12.8% |
| As (ppm) | 19 | 14 | 33.2% |
| Mo (ppm) | 148 | 128 | 15.3% |

**Table 14-30: Yearly Reconciliation Summary Table**

| Model | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| Long-term | 0.473 | 0.449 | 0.411 | 0.402 | 0.434 |
| Short-term | 0.535 | 0.500 | 0.460 | 0.464 | 0.418 |
| Difference | 13.1% | 11.4% | 11.9% | 15.4% | -3.7% |

**Table 14-31: Monthly CuT Reconciliation Table between March 2020 and February 2021**

| Model | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Long-term | 0.426 | 0.468 | 0.466 | 0.400 | 0.431 | 0.410 | 0.393 | 0.413 | 0.360 | 0.349 | 0.374 | 0.385 |
| Short-term | 0.444 | 0.458 | 0.451 | 0.417 | 0.407 | 0.400 | 0.373 | 0.444 | 0.370 | 0.415 | 0.399 | 0.426 |
| Difference | 4.2% | -2.1% | -3.2% | 4.2% | -5.6% | -2.4% | -5.1% | 7.5% | 2.8% | 18.9% | 6.7% | 10.6% |

# 15 MINERAL RESERVE ESTIMATES

## 15.1 Introduction

Mineral Reserves have been estimated for Caserones assuming open pit methods with conventional methods for drilling, blasting, loading and haulage by large trucks. The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in Section 15.3 and in Section 25. The assumptions used in the Mineral Reserve estimates are summarized in the footnotes of the Mineral Reserve table and are discussed in the following sub-sections and in Section 16.

## 15.2 Mineral Reserve Statement

Mineral Reserves are reported on a 100% basis in Table 15-1 using the 2014 CIM Definition Standards and have an effective date of 31 December 2022. LMC beneficially holds a 51% interest and JX beneficially holds the remaining 49% interest in MLCC which owns the Project.

Mineral Reserves are reported based on calculated block values with blocks routed to the process that generates the greatest revenue. In the case where material does not generate positive revenue in either of the processes (dump leach or concentrator), it is routed as waste.

The QP responsible for the Mineral Reserves estimate is Mr. Kirk Hanson, P.E., Principal Mining Engineer with AGP.

**Table 15-1: Mineral Reserve Statement**

| Category | Tonnes (Mt) | Grade | | Contained Metal | |
|---|---|---|---|---|---|
| | | CuT (%) | Mo (%) | CuT (kt) | Mo (kt) |
| Proven | 144 | 0.36 | 0.016 | 518 | 13 |
| Probable | 706 | 0.29 | 0.013 | 2,036 | 63 |
| **Total Reserves** | **850** | **0.30** | **0.014** | **2,554** | **76** |

Notes to Accompany Mineral Reserves Table:

1. The Mineral Reserves have an effective date of 31 December 2022 and are reported at the point of delivery to the process plant. The Qualified Person responsible for the estimate is Mr. Kirk Hanson, P.E., Principal Mining Engineer with AGP.
2. Mineral Reserves are reported within a design pit based on an optimized Lerchs–Grossmann pit shell. Input parameters include the following: long term copper price of US$3.65/lb and long term molybdenum price of US$11.45/lb; a 2.88% net smelter return (NSR) royalty rate; average life-of-mine (LOM) mining cost of US$2.32/t mined, average LOM copper concentrate processing cost of US$8.20/t processed, average LOM general and administrative (G&A) costs of US$3.83/t processed and average desalinated water cost of $0.75/t processed; average LOM molybdenum concentrate processing cost of US$24.93/t of concentrate; average LOM dump leach cost of $1.47/t placed; bench face angles that range from 60–70º; fixed metallurgical recoveries of 82.7%, 53.7%, and 60% for copper concentrate, copper dump leach, and molybdenum concentrate respectively. Cut-off grades are based on block values with positive value blocks classified as ore. Dilution and ore loss are accounted for in the resource model blocks, and no additional ore loss or dilution is applied.
3. Mineral Reserves are presented on a 100% basis. MLCC owns the Project. LMC beneficially holds a 51% interest in MLCC and JX beneficially holds the remaining 49% interest in MLCC.
4. Tonnages are metric tonnes rounded to the nearest 100,000. Copper grade is rounded to the nearest 0.01 % Copper. CuT (Kt) are estimates of metal contained in tonnages and do not include allowances for processing losses. Contained copper is reported as kilo tonnes, rounded to the nearest 1,000.
5. Rounding of tonnes and contained metal content as required by reporting guidelines may result in apparent differences between tonnes, grade and contained metal content.

## 15.3 Factors that May Affect the Mineral Reserves

Areas of uncertainty that may materially impact the Mineral Reserve estimates include:

- changes to long-term metal price assumptions
- changes to metallurgical recovery assumptions
- changes to the operating cut-off assumptions for mill feed or stockpile feed
- changes to the input assumptions used to derive the open pit outlines and the mine plan that is based on those open pit designs
- changes to include operating and capital assumptions used, including changes to input cost assumptions such as consumables, labor costs, royalty, and taxation rates
- variations in geotechnical, mining, dilution, and processing recovery assumptions; including changes to pit phase designs as a result of changes to geotechnical, hydrogeological, and engineering data used
- changes to the cut-off grades used to constrain the estimates
- changes to the assumed permitting and regulatory environment under which the mine plan was developed

- ability to maintain mining permits and/or surface rights
- ability to maintain social and environmental license to operate

## 15.4 Key Assumptions/Basis of Estimate

The basis for the Mineral Reserve estimate is the ore grade material contained within a set of operational phase designs currently being used at the site to guide mining operations. The phase designs include phases 5 through 10. Phases 5 and 6 are the active phases.

To determine if the phase designs are current given long-term consensus metal pricing and costs, the QP completed a check optimization to ensure that the phase designs are interior to an optimization pit shell derived from consensus metal prices and current cost assumptions.

The ultimate pit limit and the pit shells used to support the phase designs were derived using the Lerchs–Grossmann (LG) pit optimization algorithm. This process considers the information stored in the geological block model, the pit slope angles, the commodity prices, the mining and processing costs, the process recoveries and the smelter terms for the copper and molybdenum concentrates produced. Table 15-2 provides a summary of the primary optimization inputs.

Table 15-2: Optimization Inputs

| Parameter | Units | Value |
|---|---|---|
| **Metal Prices** | | |
| Cu | US$/lb. | 3.65 |
| Mo | US$/lb. | 11.45 |
| **Royalty Cost** | | |
| NSR Royalty Rate | % | 2.88% |
| **Mining Cost** | | |
| Average Mining Cost | US$/T | 2.32 |
| Base Elevation | m | 4,340 |
| Base Cost | US$/T | 1.94 |
| Increment for Benches Above Base | US$/t/bench | 0.02 |
| Increment for Benches Below Base | US$/t/bench | 0.03 |
| **Process Recovery** | | |
| Copper Concentrator | % | 82.7 |
| Molybdenum | % | 60.0 |
| Dump Leach | % | 53.7 |
| **Concentrator Cost** | | |
| Variable concentrator | US$/t | 2.96 |
| Fixed concentrator | $M | 98.86 |
| Tailings fixed | $M | 40.00 |
| Other fixed | $M | 135.00 |
| Concentrator Cost | US$/t | 8.20 |
| G&A | US$/t | 3.83 |
| Desal Water Cost | US$/t | 0.75 |
| Total Concentrator Cost | US$/t | 12.78 |
| **Molybdenum Plant Cost** | | |
| Variable | US$/t concentrate | 8.20 |
| Fixed | $M | 5.77 |
| Total Moly Cost | $M | 8.60 |
| Implied unit cost | $/t concentrate | 24.93 |
| Implied unit cost | $/t feed | 0.26 |
| **Dump Leach Cost** | | |
| Variable | US$/t cathode | 681.20 |
| Variable | $M | 10.41 |
| Cathode Plant fixed | $M | 7.10 |
| Leaching fixed | $M | 6.38 |
| EW fixed | $M | 1.10 |
| Total DL Cost | $M | 24.99 |
| Implied unit cost | $/t cathode | 1,635 |
| Implied unit cost | $/t feed | 1.47 |

The optimization runs were carried out using Whittle™ software for only Measured and Indicated Mineral Resources to define the mining limits. Inferred material was treated as waste.

### 15.4.1 Metal Price and Royalties

The long-term guidance copper price of $3.65/lb and the long-term guidance molybdenum price of $11.45/lb were provided by LMC's commercial team.

At the Reserve metal prices, a 2.88% NSR royalty applies to all metal production from Caserones.

### 15.4.2 Mining Costs

Based on historical costs adjusted for current cost trends, the average LOM mining cost is estimated at $2.32/t mined. To account for incremental uphill hauling costs of $0.03/t*bench and downhill loaded hauling costs of $0.02/t*bench from the pit exit elevation of 4,340, a reference mining cost at the pit exit of $1.94/t was calculated.

### 15.4.3 Process Recoveries

Process recoveries for the copper concentrator, moly circuit and dump leach are based on historical results. A flat metallurgical recovery across all grades is used within the pit optimization routine according to Table 15-3.

**Table 15-3: Metallurgical Recovery by Material Type**

| Lithology | Dump Leach Cu Recovery (%) | Concentrator | |
|---|---|---|---|
| | | Cu Recovery (%) | Mo Recovery (%) |
| Oxide (OX) | 53.7 | - | - |
| Mixed (MX) | 53.7 | - | - |
| Secondary Sulfides (SS) | - | 82.7 | 60.0 |
| Primary Sulfides (SP) | - | 82.7 | 60.0 |
| Leached Oxide (LX-OX) | 53.7 | - | - |
| Leached Mixed (LX-MX) | - | 82.7 | 60.0 |
| Leached Secondary Sulfides (LX-SS) | - | 82.7 | 60.0 |
| Leached Primary Sulfides (LX-SP) | - | 82.7 | 60.0 |

### 15.4.4 Process Costs

Process costs are based on historical averages adjusted for current cost trends. For each process, both a fixed and variable cost component is estimated.

The G&A costs of $3.83/t and desalinated water costs of $0.75/t are added to the copper concentrator cost of $8.20/t to arrive at a combined cost of $12.78/t for the copper concentrator. Because the copper concentrator is the constraining process, it carries the full site G&A cost and desalinated water cost.

### 15.4.5 Smelting, Refining, and Transportation Costs

Caserones produces a 30.0% Cu concentrate that contains 9% moisture. The copper concentrate is paid at 96.5% contained copper. A $90/t treatment cost and a $0.09/lb refining cost is applied to the concentrate tonnes and payable copper respectively. Inland freight costs of $49.96/wt cover the transportation costs from the mine to the port of Totoralillo. From the port of Totoralillo to Asia, an additional ocean freight cost of $47.47 is incurred. An annual fixed cost of $0.78 M is required to cover miscellaneous port fees and handling costs. On average, the Cu concentrate transportation costs are $1.11 per tonne processed.

Likewise, the molybdenum concentrate is paid at 97.5% contained molybdenum. To cover the cost of treatment and refining, a $1.35/lb payable molybdenum is applied. Although the molybdenum concentrate is sold locally, it still incurs an inland freight cost of $57.87/wt and a fixed handling cost of $0.3 M per year.

Cathodes produced at site are shipped to Antofagasta, approximately 700 km away. The inland freight costs are $81.96/wt, the ocean freight costs are $82.91/wt, and the fixed costs are $0.18 M per year. The cathodes receive a premium price of $0.016/lb payable copper.

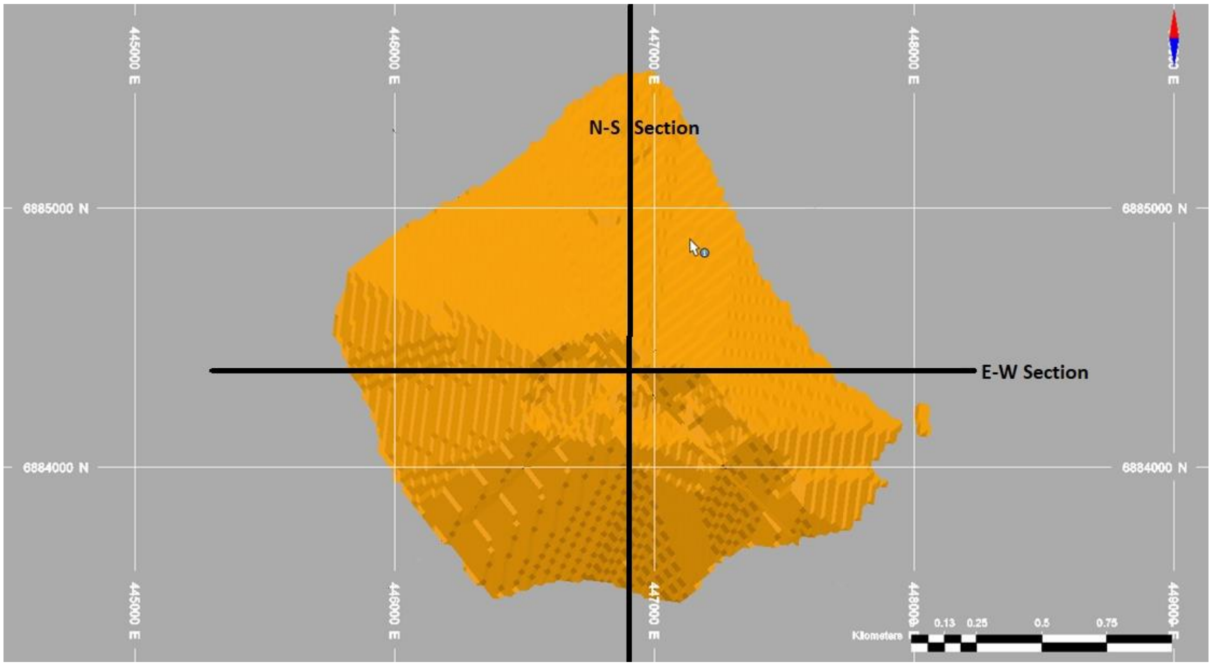
### 15.4.6 Optimization Slope Angles

To account for ramp access and geotechnical berms, the slope angles by sector were measured from the current LOM 2021 design pit and used for the pit optimization.

## 15.5 Pit Optimization

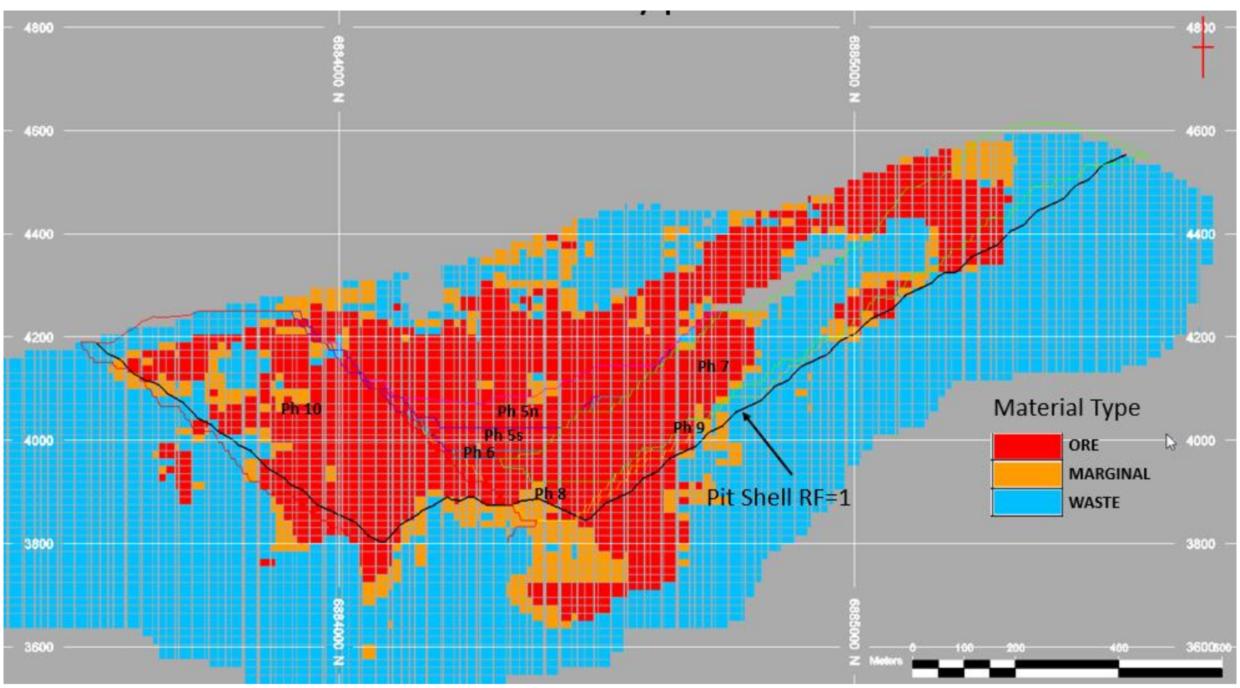
Using the optimization inputs discussed above, Whittle™ software was used to calculate pit shells at multiple revenue factors (RF). The pit shell generated at a RF 1 is of particular interest because this is the break-even pit shell at the long-term commodity prices. Figure 15-1 shows a plan view of the mining area and corresponding section lines, Figure 15-2 shows the N-S section and Figure 15-3 shows the E-W section.

**Figure 15-1: Plan View**



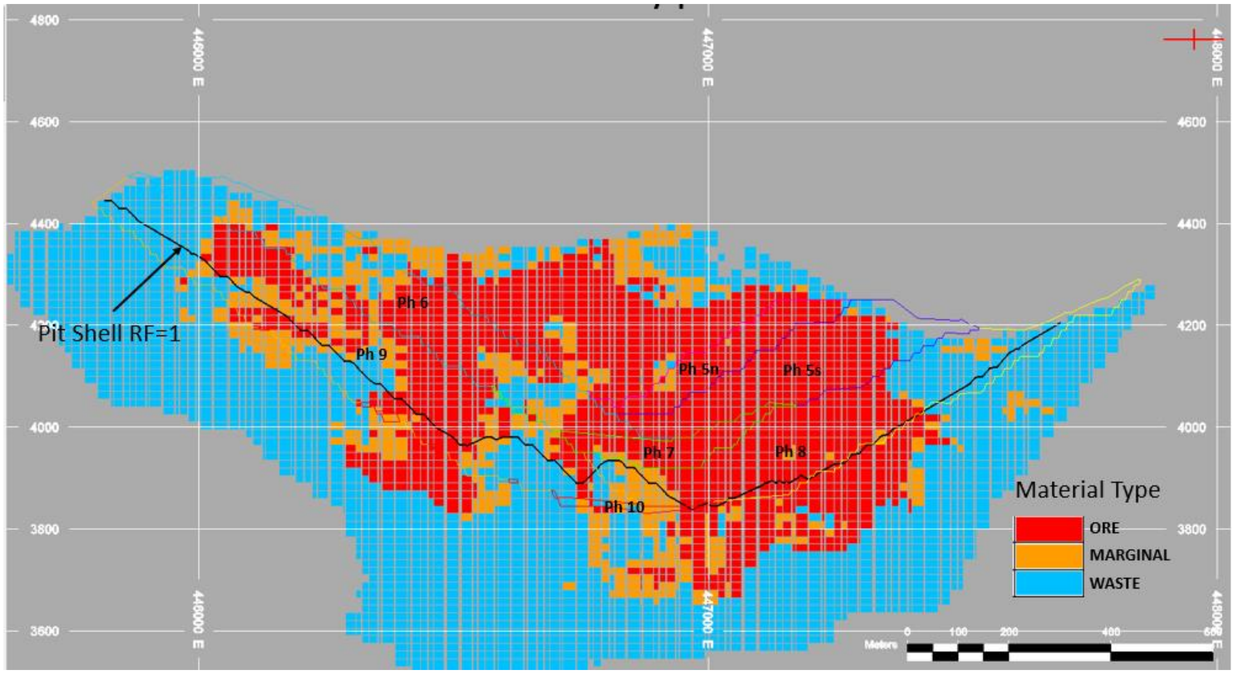

Source: AGP March 2023

**Figure 15-2: North–South Cross-Section**




Source: AGP March 2023

**Figure 15-3: East–West Cross-Section**




Source: AGP March 2023

Based on a visual inspection of the cross sections by the QP, the 2021 LOM pit designs are largely contained within the RF 1 pit. Consequently, the 2021 LOM pit designs remain current and are used in production planning.

## 15.6 Dilution and Mining Losses

Caserones is a large, disseminated orebody with an ongoing reconciliation program. Dilution and ore loss are accounted for in the resource model blocks, and no additional ore loss or dilution is applied.

# 16 MINING METHODS

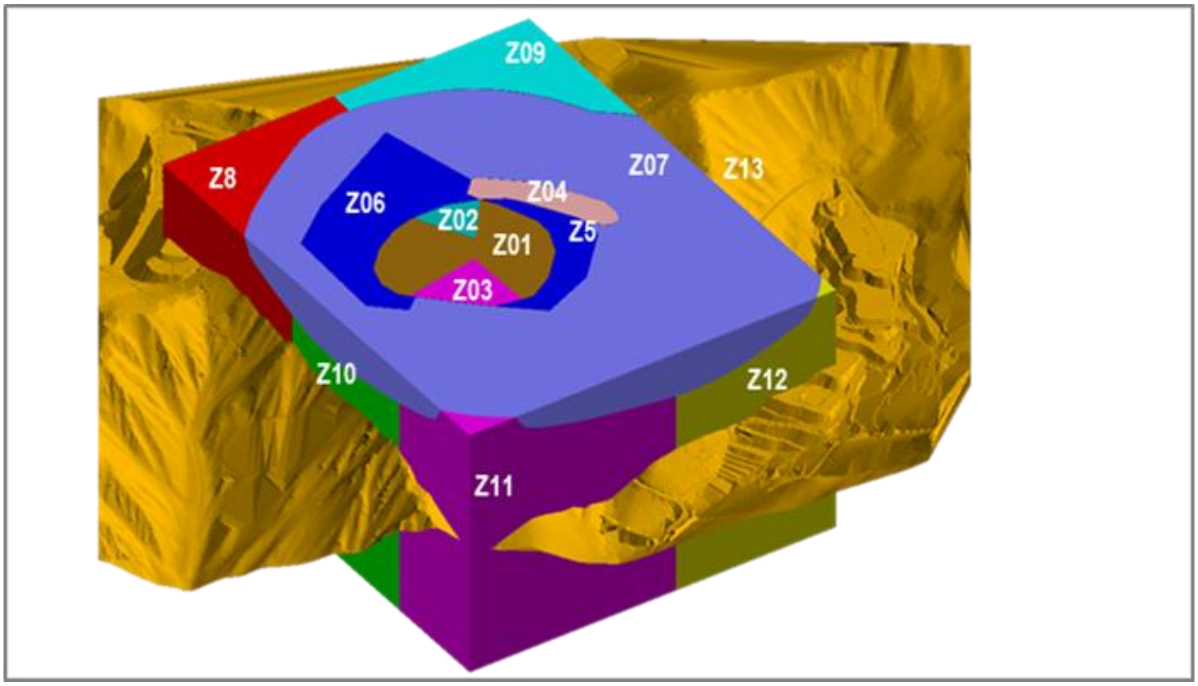
The Caserones mine is a large low-grade copper–molybdenum mine with a low ore to waste strip ratio. It is an operating mine with mature mining practices. Mining is done via open pit using a conventional truck and shovel fleet. The fleet is management via a mine dispatch system. All equipment is manned.

## 16.1 Pit Design

### 16.1.1 Geotechnical Parameters

The geotechnical design parameters were defined according to geotechnical zones shown in Figure 16-1.

**Figure 16-1: Geotechnical Zones**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

Thirteen zones are defined with the following parameters:

- 15 m bench height
- 90 m inter-ramp height
- 70° bench face angle with the exception of Zone 4
- variable berm widths are calculated depending on the inter-ramp angle assigned to the zone (Table 16-1)

Table 16-1: Open Pit Geotechnical Design

| Design Zone | Obs. | OSA - Overall Slope Angle (°) Best Case | IRA (°) Inter-ramp Angle | Face Slope (°) | Bench Height (m) | Berm Width (m) | Max. IRA Height (m) |
|---|---|---|---|---|---|---|---|
| 1 | | 36 | 45 | 70 | 15 | 9.5 | 90 |
| 2 | | 38 | 40 | 70 | 15 | 12.4 | 90 |
| 3 | | 40 | 52 | 70 | 15 | 6.3 | 90 |
| 4 | Buttress removal | 29 | 35 | 60 | 15 | 12.8 | 90 |
| 5 | | 37 | 47 | 70 | 15 | 8.5 | 90 |
| 6 | | 36 | 45 | 70 | 15 | 9.5 | 90 |
| 7 | | 37 | 48 | 70 | 15 | 8.0 | 90 |
| 8 | | 36 | 45 | 70 | 15 | 9.5 | 90 |
| 9 | | 36 | 48 | 70 | 15 | 8.0 | 90 |
| 10 | | 38 | 50 | 70 | 15 | 7.1 | 90 |
| 11 | | 39 | 52 | 70 | 15 | 6.3 | 90 |
| 12 | | 33 | 44 | 70 | 15 | 10.1 | 90 |
| 13 | | 35 | 46 | 70 | 15 | 9.0 | 90 |

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

### 16.1.2 Pit Design Parameters

The following design parameters were used to generate the pit phases:

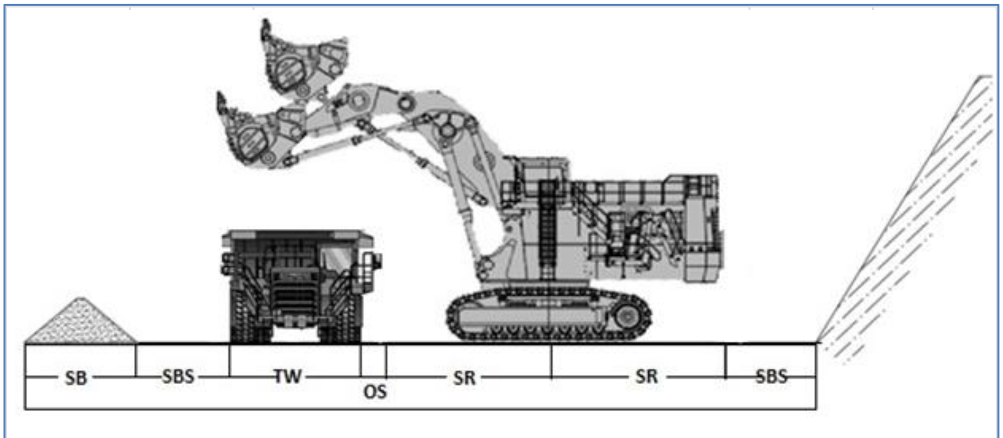
- ramp width: 35 m total with an effective width of approximately 29 m approx. (Figure 16-2)
- maximum ramp slope: 10%
- minimum operational width: 50 m (Figure 16-3)
- minimum phase width: 90 m except for bench ends (Figure 16-4)
- double ramp access to ensure plan operability

**Figure 16-2: Ramp Width**


| | | |
|---|---|---|
| SB: | Safety Berm | 5.8 m |
| STB: | Space Between Truck and Safety Berm | 3.2 m |
| TW: | Truck Width | 8.7 m |
| ST: | Space Between Trucks | 4.4 m |
| TW: | Truck Width | 8.7 m |
| STD: | Space Between Truck and Ditch | 3.2 m |
| DW: | Ditch Width | 1.0 m |
| RW: | Ramp Width | 35.0 m |

Source: AGP March 2023

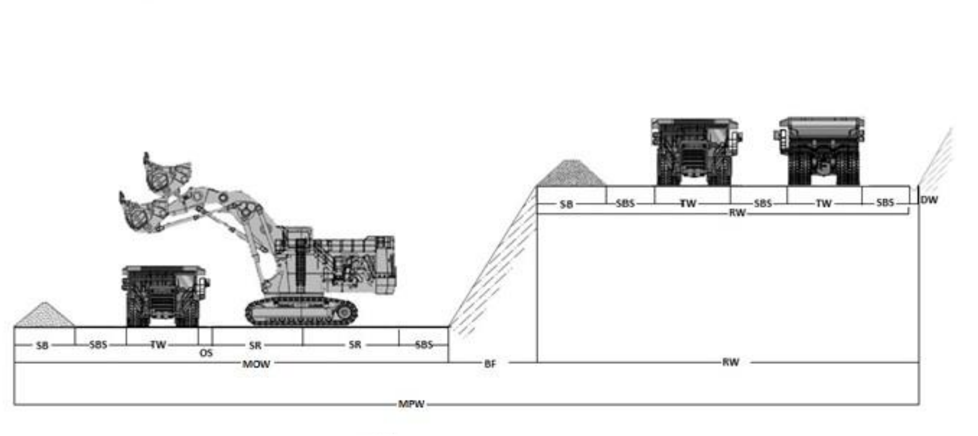
**Figure 16-3: Minimum Operational Width**




| | | |
|---|---|---|
| SB: | Safety Berm | 5.8 m |
| SBS: | Space Between Truck and Safety Berm | 8.0 m |
| TW: | Truck Width | 8.7 m |
| OS | Offset From Shovel | 2.0 m |
| SR: | Shovel Radius | 8.8 m |
| SR: | Shovel Radius | 8.8 m |
| SBS: | Space Between Truck and Highwall | 8.0 m |
| MOW: | Minimum Operational Width | 50.0 m |

Source: AGP March 2023

**Figure 16-4: Minimum Phase Width**



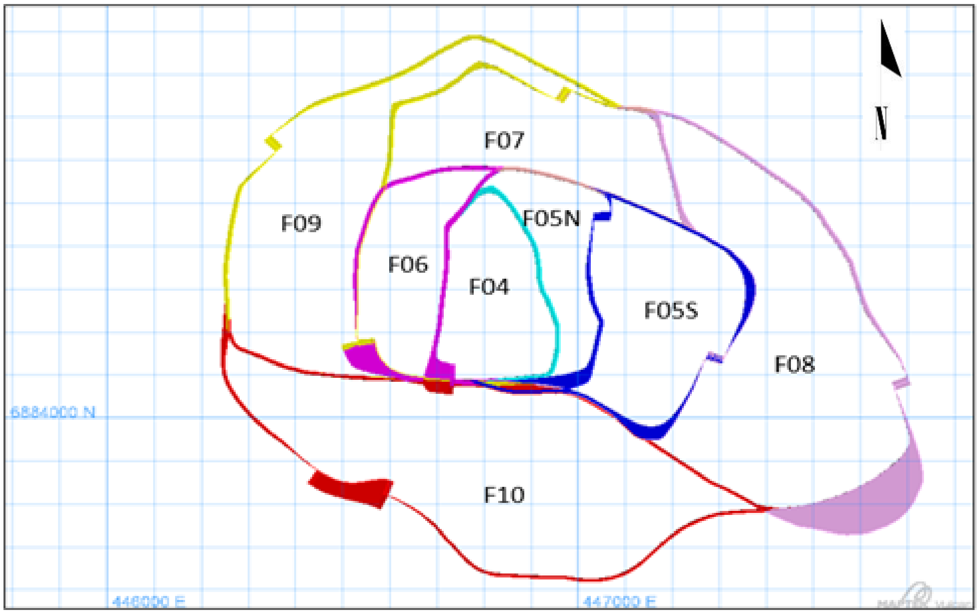

| | | | |
|---|---|---|---|
| MOW: | Minimum Operational Width | 50.0 | m |
| BF: | Bench Face Width | 5.2 | m |
| RW: | Ramp Width | 35.0 | m |
| MPW: | Minimum Phase Width | 90.1 | m |

Source: AGP March 2023

## 16.2 Phase Designs

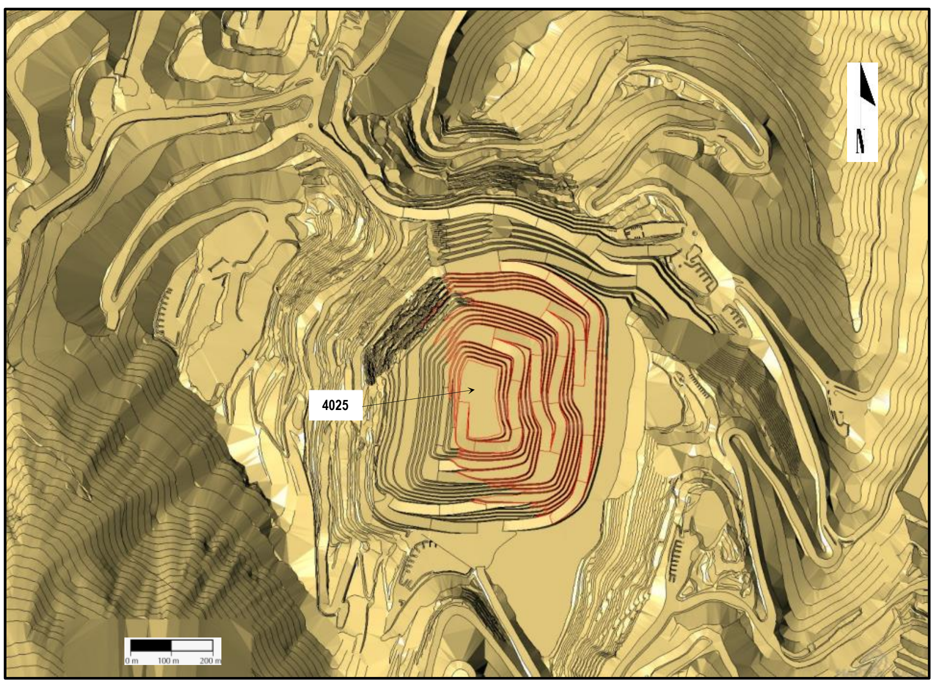
The phase designs are based on the optimized pit shells with the highest value material mined in the earlier phases and lower-grade higher strip ratio material mined in the later phases. Each phase is designed with double ramp access where possible. Figure 16-5 is a plan view of the phases and Figure 16-6 to Figure 16-12 show the phase designs for Phases 5 to 10. Phases 1–4 are mined out; Phases 5 and 6 are the currently active phases.

**Figure 16-5: Phase Plan View**



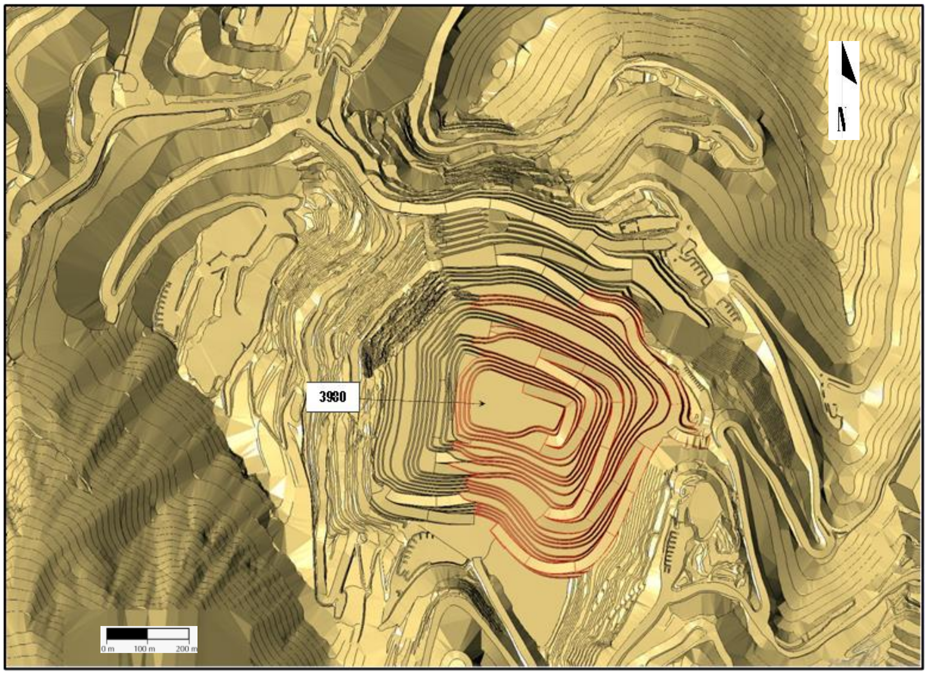

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-6: Phase 5 North**



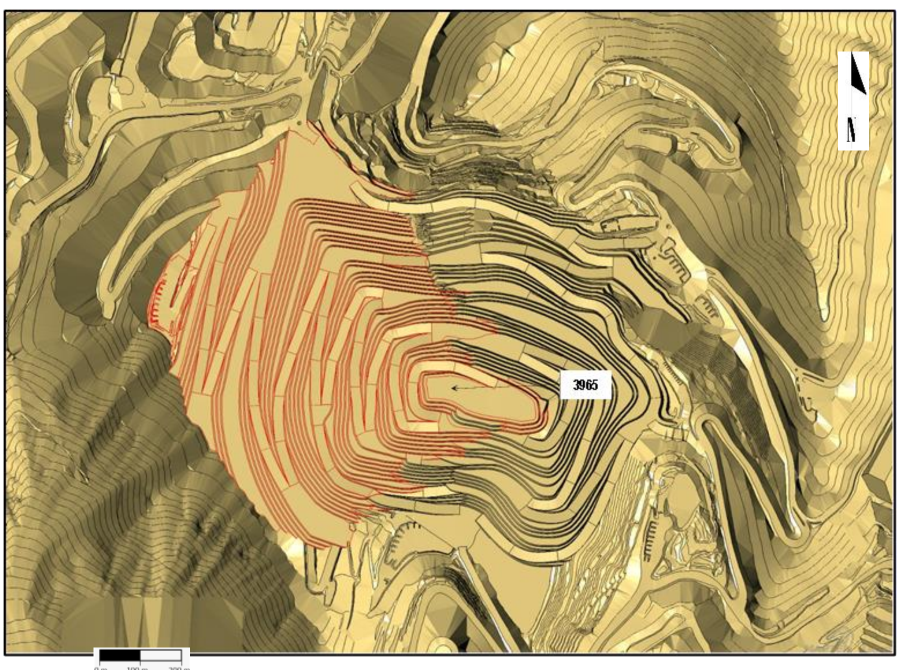

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-7: Phase 5 South**



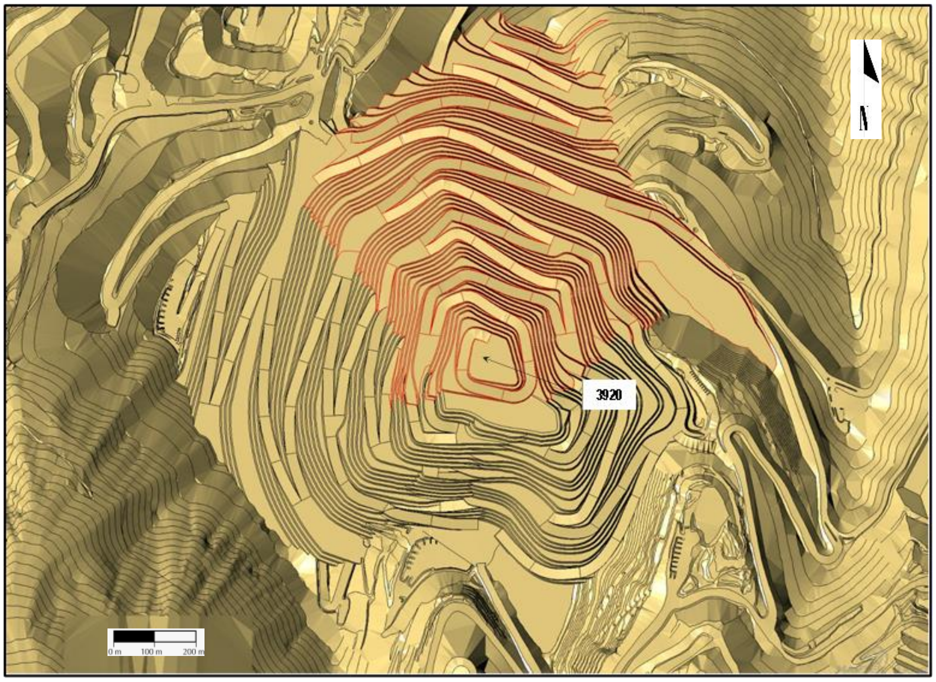

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-8: Phase 6**



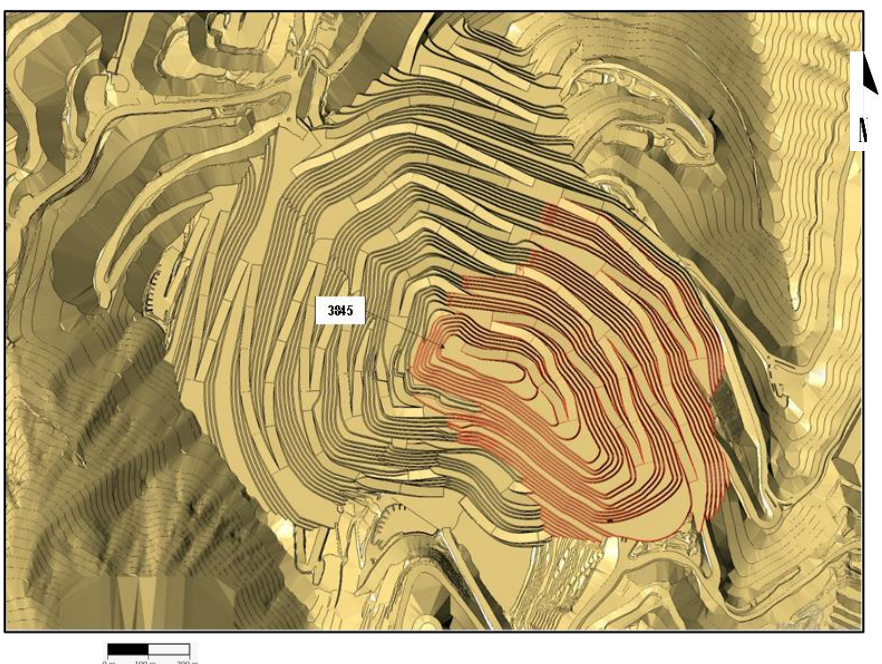

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-9: Phase 7**



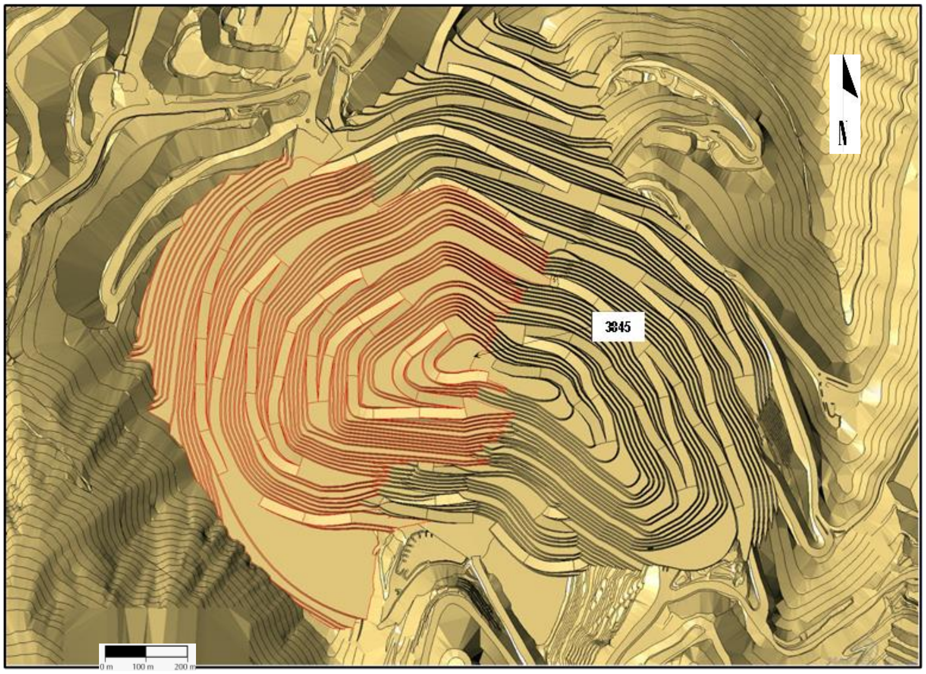

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-10: Phase 8**



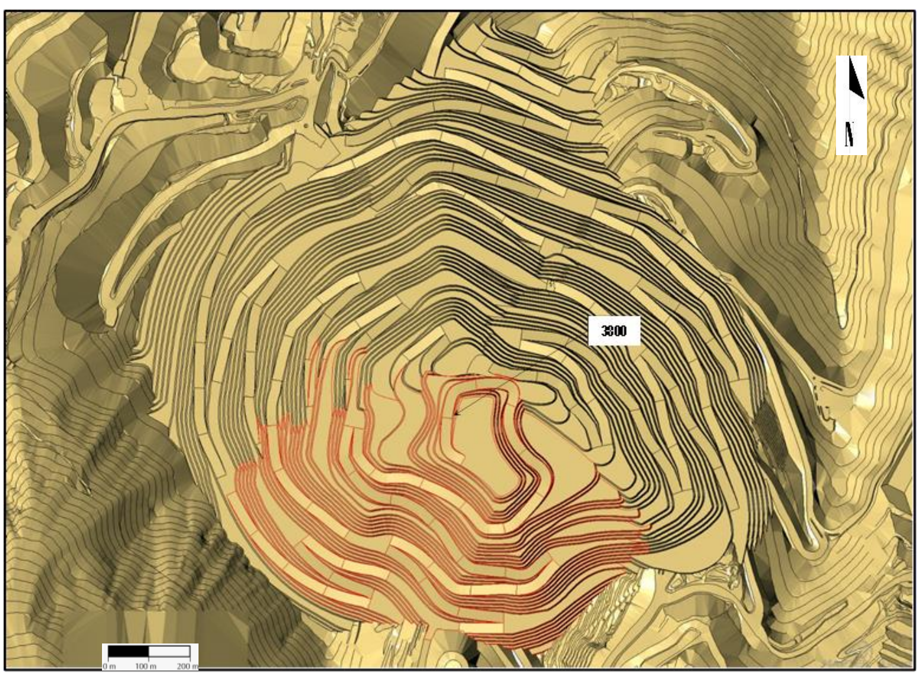

Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-11: Phase 9**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

**Figure 16-12: Phase 10 & Ultimate Pit**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

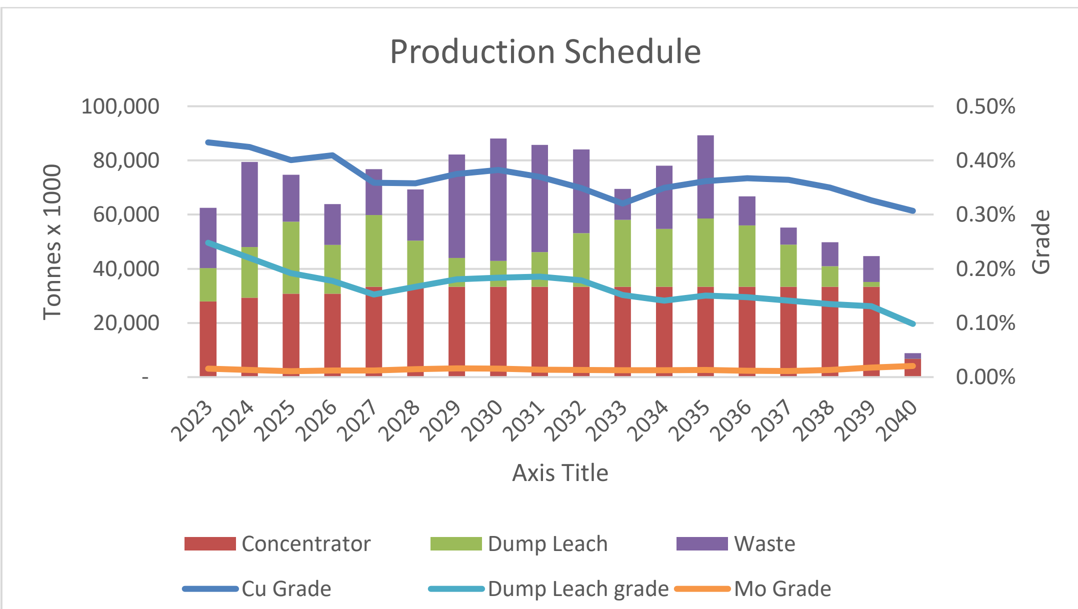
## 16.3 Production Schedule

For the mine plan, a maximum vertical extraction of 10 benches or a maximum movement of 60 Mt ton per year is considered as a restriction for each phase. The concentrator is scheduled at 27.9 Mt in 2023 ramping up to 33.4 Mt by 2027. Oxide material is placed on the dump leach in the period it is mined. The production schedule is shown in Table 16-2 and Figure 16-13.

**Table 16-2: Mine Production Schedule**

| Mine Production Schedule | Unit | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 to 2032 | 2033 to 2037 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Plant Feed | kt | 27,900 | 29,300 | 30,800 | 30,800 | 33,400 | 167,000 | 167,000 | 559,741 |
| | Cu% | 0.43% | 0.42% | 0.40% | 0.41% | 0.36% | 0.37% | 0.35% | 0.37% |
| | Mo% | 0.016% | 0.013% | 0.011% | 0.012% | 0.012% | 0.015% | 0.012% | 0.014% |
| Dump Leach | kt | 12,328 | 18,708 | 26,584 | 17,967 | 26,432 | 69,544 | 109,208 | 290,021 |
| | Cu% | 0.25% | 0.22% | 0.19% | 0.18% | 0.15% | 0.18% | 0.15% | 0.17% |
| Waste | kt | 22,316 | 31,429 | 17,329 | 15,140 | 16,948 | 172,767 | 82,505 | 378,932 |
| Total Movement | kt | 62,544 | 79,437 | 74,713 | 63,907 | 76,780 | 409,311 | 358,713 | 1,228,693 |
| Strip Ratio (W:O) | | 0.55 | 0.65 | 0.30 | 0.31 | 0.28 | 0.73 | 0.30 | 0.45 |

**Figure 16-13: Mine Production Schedule**




Source: AGP March 2023

## 16.4 Mine Operations

Operators work a seven day on seven days off schedule while staff/supervisors work a four day on three days off schedule. Due to the commute from the camp to the mine, days are 14.5 hours including a 12-hour shift, half hour lineout, and two hours of commuting from the camp to the mine. Shifts are scheduled from 8 a.m. to 8 p.m. Shift change takes approximately 20 minutes. The mine averages 15 days of inclement weather a year which varies between 3 and 45 days depending on the year. Mill operations are not impacted because the primary crusher is fed from stockpile during inclement weather. The mine blasts 3 to 5 days per week. During blasts, the mine operators are scheduled for lunch.

## 16.5 Geotechnical Design

The primary design consultant for the current pit phases (up to Phase 10) is Golder and Associates (now WSP) based in Chile. Bench design is driven by kinematics and stability of inter-ramps and final walls are driven by the quality of the lithologic model, the shear strength or rock mass strength as assessed using limit equilibrium. Key inputs to those analyses are the quality of the rock strength database, the rock quality database, the joint/fault strength database, the structural model (joints and faults) and the hydrogeologic model (pore pressures and dewatering).

## 16.6 Geotechnical Monitoring

Monitoring is currently being performed by land-based radar (radar) and robotic total station (RTS). Reports are prepared for each shift and a monthly summary report is prepared. The monitoring is sub-contracted to external contractors GroundProbe who have global expertise in mine monitoring. There is good coverage of both prisms and radars of at-risk high walls. The monitoring data does not show any major concerns at this time; however, major movement was reported and observed on the West Wall of Phase 4 in the past. This movement was reviewed by Piteau and Associates and was ultimately stabilized using a buttress placed at the toe of the instability.

## 16.7 Blasting and Explosives

Orica Chile S.A. provides a full blasting service to Caserones including explosive supply, down the hole delivery, shot design and monitoring, and shot initiation.

The average powder factor (P.F.) for oxide is 0.26 kg/t and for sulfide is 0.32 kg/t. Overall, the average P.F. is 0.3 kg/t. The powder factor was increased during 2022 to improve fragmentation to a P80 of 8.4”. The P80 of 8.4” is targeting a primary crusher throughput of 4,700 tph and 4100 shovel dig rates of 11,000 tph. Fragmentation is monitored at the face using cameras.

## 16.8 Mine Roads

The mine roads are maintained by contract. The contractor provides both equipment and personnel. The mine also has a 300 tph crusher located at site that produces stemming (-2”), road capping material (-2”) and road base (-4”). The contract support equipment includes CAT 16 motor graders, CAT D10 dozers, Komatsu 785 water trucks, and small loaders for cleanup.

## 16.9 Mining Equipment

Caserones operates 33 Komatsu 930 (300 t) haul trucks loaded by a combination of two electric rope shovels, one electric-hydraulic shovel, and two large front-end loaders. In addition to the mine-owned fleet, a second smaller diesel shovel (PC5500 – 38yd$^3$) is operated by a contractor to supplement loading capacity. Table 16-3 shows the loading capacity by shovel and the total shovel fleet loading capacity. Caserones operates in an over-shoveled configuration most years, which allows for minimal truck queueing time.

**Table 16-3: Loading Capacity**

| Loading Unit | Capacity (cuyds) | Passes # | Shovel Capacity (Mt/yr) |
|---|---|---|---|
| 4100XPC AC | 73 | 3 | 30 |
| 4100XPC AC | 73 | 3 | 30 |
| PC8000 FS E | 55 | 4 | 24 |
| L2350 | 50 | 5 | 18 |
| L2350 | 50 | 5 | 18 |
| PC5500 | 38 | 7 | 14 |
| | | **Total** | **134** |

A list of the major mine equipment is shown in Table 16-4.

**Table 16-4: Major Mine Equipment**

| Equipment | Make | Type | Capacity | No. of Units |
|---|---|---|---|---|
| Drill | P&H (JoyGlobal) | 320XPC | 270 - 444 mm | 3 |
| Cable shovel | P&H (JoyGlobal) | 4100XPC AC | 73yd$^3$ | 2 |
| Hydraulic shovel | Komatsu | PC8000 FS E | 55yd$^3$ | 1 |
| Front-end loader | Le Tourneau | L2350 | 50yd$^3$ | 2 |
| Dump truck | Komatsu | 930E-4 | 300t | 33 |
| Bulldozer | Komatsu | D375A-5 | 455 kW | 4 |
| Bulldozer | Komatsu | D475A-5E0 | 664 kW | 2 |
| Wheeldozer | Komatsu | WD600-3 | 396 kW | 3 |
| Wheeldozer | Komatsu | WD900-3 | 637 kW | 1 |
| Motor grader | Komatsu | GD825A-2 | 4.9 M | 4 |
| Water truck | Komatsu | HD785-7 | 75,000 l | 3 |
| Backhoe | Komatsu | PC300-8 | 1.8yd$^3$ | 1 |
| Mini front-end loader | Komatsu | WA500-6 | Cable Reeler | 2 |

## 16.10 Mine Automation Systems

Caserones uses a mine dispatch system to coordinate equipment movement and to provide truck assignments. To date, high precision GPS is not used at site due to reliability concerns with the communication system; nonetheless, site engineers are working to resolve the communication reliability issues. Once resolved, Caserones will test drill automation with the aim of implementing semi-autonomous drilling.

Caserones is also planning to implement a collision avoidance system on the trucks that will allow the trucks to spot on the blind side of the shovels; thus saving 1 to 1.5 minutes of spotting time per truck loading cycle.

The Komatsu 930 trucks have onboard scales that allow for efficient payload management. These scales are calibrated annually.

## 16.11 Mining Infrastructure

Caserones is an operating mine with well established mine infrastructure.

### 16.11.1 Waste Rock Facilities

The waste rock facility is built in 150 m lifts from bottom up. Trucks end dump over a berm maintained by a dozer.

### 16.11.2 Dump Leach

The LOM plan includes an additional 390 Mt of material placed on the dump leach. The dump leach material is placed in lifts, ripped and cross ripped, and then leached using drip lines. The leach solution is heated to 6–7ºC in the winter to keep it from freezing.

The LOM plan includes capital on an annual to semi-annual basis to extend the liner system, which is composed of 80 mil liner and onsite quarry material.

### 16.11.3 Truck Shop

Three contractors and Caserones staff operate out of the truck shop. The contractors include Komatsu Chile, Komatsu Mining Corp., and Kaltire:

- Komatsu Mining Corporation – maintains electric shovels, L2350 loaders, and large drills
- Komatsu Chile – maintains Komatsu 930 trucks, PC8000 shovel, and Komatsu dozers responsible for equipment washing and planned maintenance
- Kaltire – manages tire changes and repairs
- Caserones – manages contracts, coordinates miscellaneous maintenance (radios, accident repair), and manages truck shop facilities

The truck shop includes seven bays including five equipment bays, one welding bay, and one tire bay. The bay on the west side of the truck shop can accommodate two pieces of support equipment. There are two overhead cranes (25 t each), one on each side of the truck shop.

### 16.11.4 Wash Bay

The wash bay is adjacent to the truck shop and includes one large bay for washing the mine mobile equipment including the Komatsu 930 haul trucks.

### 16.11.5 Fuel Station

There are three remote semi-mobile fuel stations strategically located around the pit. The stations have one fuel bay allowing one truck to fuel at time. Each bay is staffed with a full time fueler. Truck fueling takes approximately 15 minutes.

### 16.11.6 Explosive Facilities

On site explosive facilities include two loadout areas each consisting of two 50 t emulsion silos and one 54 t AN silo. AN is transported to site in one ton super sacks and emulsion is transported via tankers. Diesel and waste oil are located across from the silos so that it can be mixed with the AN to form ANFO. Detonators and caps (electronic) are stored near the site according to Chilean offset and bunding requirements.

# 17 RECOVERY METHODS

## 17.1 Overview

The Caserones mineral processing facilities currently treat copper oxides and sulphides via two treatment routes. Run-of-mine (ROM) oxide and mixed ores treated via a conventional dump heap leach. Pregnant leach solution (PLS) from the dump leach is treated at a SX-EW plant to produce copper cathodes. ROM sulphide ore is treated via a conventional primary gyratory crusher and Semi-Autogenous (SAG)-ball comminution circuit followed by a flotation circuit to produce separate copper and molybdenum concentrates. Flotation tailings are cycloned before storing the cyclone underflow and overflow in separate tailings sands and tailings slime management facilities, respectively.

The heap leaching and SX-EW processing facilities have been in commercial operation since 2013 while the concentrator has reached this level in 2014. The grinding-flotation plant has a stated design capacity of 4,700 t/h operated (105 kt/d based on 93% availability) but historically treated 3,800–4,000 t/h of operation. The SX-EW plant has a nominal capacity of 34.5 kt/y.

The processing facilities historically produced approximately 100-120 kt/y of copper concentrate, 1,700-2,500 t/y of molybdenum concentrate and approximately 25 kt/y of copper cathodes.

A simplified process flowsheet of the processing areas is shown in Figure 17-1 and consists of the following unit operations:

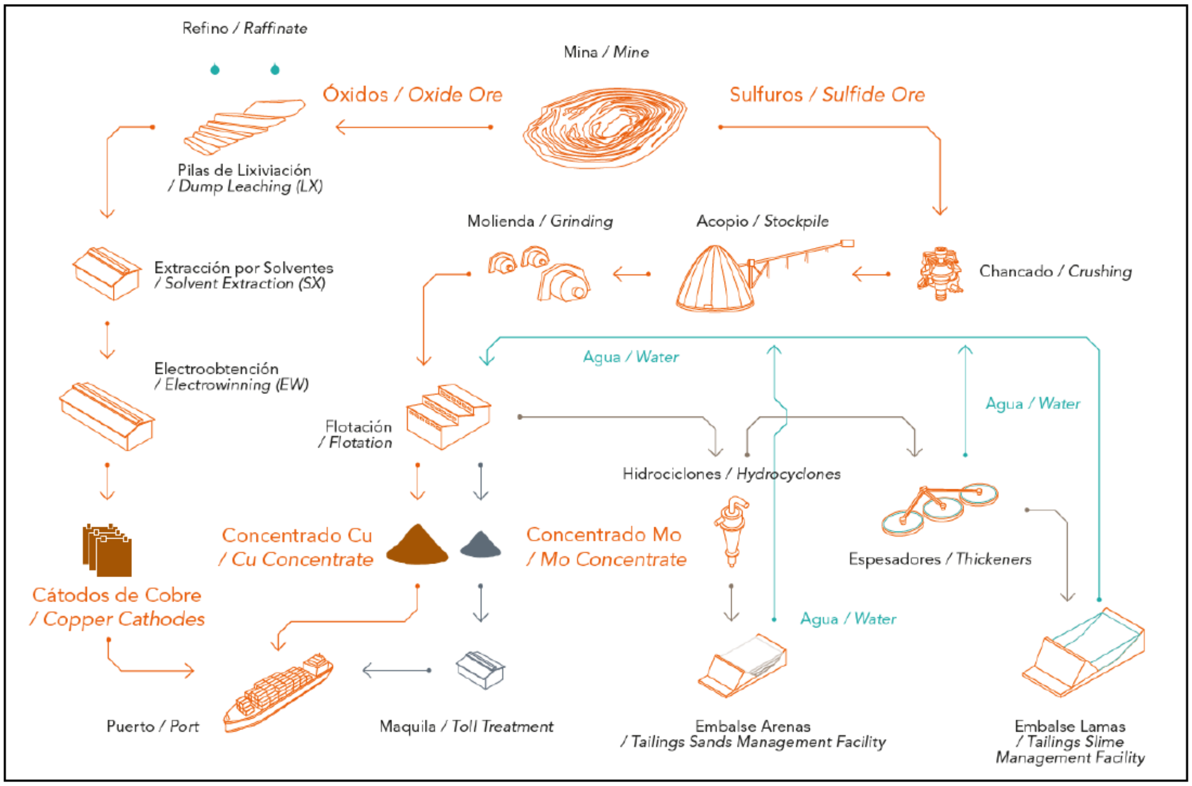
**Oxide Circuit:**

- dump heap leach pad
- PLS and barren solution ponds and pumps
- SX-EW plant to produce copper cathodes

**Sulphide Circuit:**

- primary crushing using a gyratory crusher and associated material handling equipment
- covered crushed ore stockpile and associated feed and reclaim systems
- grinding circuit consisting of a SAG mill, ball mills, cyclone classification and associated pumping and material handling systems
- copper and molybdenum bulk rougher and cleaner flotation circuits
- selective molybdenum flotation circuit producing separate molybdenum and copper concentrates
- copper concentrate dewatering (thickener and filters) and concentrate loadout in trucks
- molybdenum concentrates dewatering (thickener, filter, and dryer) and concentrate bagging system, for delivery by flat-bed trucks
- flotation tailings dewatering (cyclones and thickeners) to produce coarse and fine tailings for storage in two separate deposition sites: El Tambo and La Brea TSF, respectively

**Figure 17-1: Simplified Process Flowsheet**




Source: EMX Royalty Corp NI 43-101 Technical Report, March 2021

## 17.2 Process Description

### 17.2.1 Sulphide Primary Crushing and Grinding

ROM ore is crushed in a 60" x 113" primary gyratory crusher and stored in a covered coarse ore stockpile with a live capacity of 105 kt (approximately one day storage, at design throughput). Crushed ore is reclaimed using apron feeders and conveyed to a SAG mill (40' diameter x 26' length) with 32,000 hp (24 MW) of installed power. The SAG mill operates in closed circuit with three 1,000 hp (750 kW) pebble crushers.

Secondary grinding is achieved via two parallel ball mills (27' diameter x 46' length), each with 27,000 hp (20 MW) of installed power.

### 17.2.2 Copper and Molybdenum Flotation Circuits

Product from the grinding circuit is first treated in a rougher flotation circuit consisting of two lines of 8 x 300 m$^3$ conventional tank cells. Rougher concentrate is reground together with recirculated intermediate concentrate from within the cleaner flotation circuit via two vertical mills. The concentrate is then sent to a 1$^{st}$ cleaner and cleaner scavenger flotation circuit consisting of 2+5 x 300 m$^3$ flotation cells. The concentrate from this circuit is pumped to a 2$^{nd}$ cleaner flotation circuit consisting of 2 x 4.1 m diameter column flotation cells. Concentrate from the 2$^{nd}$ cleaner circuit is dewatered in a 30 m diameter thickener to produce a copper/molybdenum concentrate for further separation.

The copper/molybdenum concentrate is further treated via an additional cleaner flotation circuit consisting of 11 x 28 $m^3$ rougher/1st cleaner and 7 x 8.5 $m^3$ 1st/2nd/3rd/4th cleaner cells. The resulting tailings from this circuit, representing the copper concentrate, is dewatered via a 30 m diameter thickener and two Larox vertical filter presses. The concentrate from this circuit is thickened in a 15 m diameter thickener, then treated in a 5th cleaner flotation column and dewatered in another 15 m diameter thickener and Larox vertical filter press to produce a molybdenum concentrate.

The copper concentrate is bulk loaded into shipping containers for delivery to the port and eventual loading onto ships, for export. The molybdenum concentrate is dried and bagged before being trucked for sale locally.

### 17.2.3 Dump Leach and SX-EW Plant

ROM oxide ore is dumped onto a leach pad and leached with sulphuric acid to produce a PLS. The PLS is delivered via ponds and pumps to a SX-EW plant located east of the flotation plant. Copper cathodes are produced from the SX-EW plant and loaded onto trucks for export.

### 17.2.4 Flotation Tailings Handling and Storage

Rougher flotation tailings are deslimed via cyclones and the resulting coarse tailings fraction stored in the El Tambo sand TSF. Flotation tailings from the cleaner-scavenger and fines from the rougher tailings cyclones are thickened in three 45 m diameter thickeners and underflow from the thickeners pumped to the La Brea slime TSF.

### 17.2.5 Water

The processing facility has fresh (raw) water and process water systems. Process water from the various thickener overflows is collected in a process water pond and reused in the plant. Reclaim water from the tailings management facilities is also reused as process water, through this pond. Approximately 80% of process water is reclaimed water. Fresh water is drawn from underground sources.

### 17.2.6 Plant and Instrument Air

Plant air and instrument air is provided by air compressors. Low pressure blowers provide air for the flotation cells.

### 17.2.7 Power

Electrical power is supplied by Chile’s national grid via a 190 km double circuit 220 kV line. Power is supplied under a long-term contract for up to 153 MW. The flotation plant facilities represented 60% of the power consumption in 2021, with the handling and disposal of tailings at 20%, the hydrometallurgical plant at 9%.

### 17.2.8 Consumables

Grinding media and mill liners utilized in the crushing and grinding circuit account for approximately 80% of the concentrator consumables cost. Flotation reagents such as: lime, primary and secondary collectors, kerosene and frother; sodium hydrosulphide for molybdenum separation; and flocculants used in the various thickeners, complete the list of the main consumables.

For the dump leach, the primary consumable is sulphuric acid which is consumed at a rate of approximately 4 kg/t leached. Ferrous sulphate is also used to control the iron in the leach solution and sodium chloride for chlorine level in the EW plant. The SX-EW plant also uses an organic solvent, for capture of the dissolved copper from the pregnant leach solution, and kerosene, guar gum and cobalt sulphate in the EW tank house, as a diluent and to reduce emission of fugitive hydrogen sulphide gas, enhance the release of the cathode from permanent stainless-steel sheets, and reduce the rate of oxidation of the lead anodes, respectively.

### 17.2.9 Plant Support Infrastructure

The mineral processing facility has the following support infrastructure:

- plant offices
- control room
- metallurgical laboratory
- plant maintenance workshops
- reagent storage
- warehouse for spares and maintenance items
- security
- mess facilities for personnel

## 17.3 Production Schedule Description

The process schedule follows in Table 17-1.

**Table 17-1: Process Schedule**

| Process Schedule | Unit | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 to 2032 | 2033 to 2037 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Plant Feed | kt | 27,900 | 29,300 | 30,800 | 30,800 | 33,400 | 167,000 | 167,000 | 559,741 |
| | Cu% | 0.43% | 0.42% | 0.40% | 0.41% | 0.36% | 0.37% | 0.35% | 0.37% |
| | Mo% | 0.016% | 0.013% | 0.011% | 0.012% | 0.012% | 0.015% | 0.012% | 0.014% |
| Plant Recoveries | %Cu | 82.7% | 82.7% | 82.7% | 82.7% | 82.7% | 82.7% | 82.7% | 82.7% |
| | %Mo | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% |
| Plant Cu Concentrate | kt | 313 | 332 | 322 | 342 | 330 | 1,654 | 1,666 | 5,686 |
| | Cu% | 32.0% | 31.0% | 31.7% | 30.5% | 30.0% | 30.6% | 29.2% | 30.0% |
| Plant Mo Concentrate | kt | 5.2 | 4.7 | 4.0 | 4.5 | 5.0 | 29.6 | 24.6 | 91.6 |
| | Mo% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% |
| Plant Recovered Metal | Cu (kt) | 100.0 | 102.9 | 102.1 | 104.3 | 99.2 | 506.4 | 486.8 | 1,705.6 |
| | Mo (kt) | 2.6 | 2.3 | 2.0 | 2.3 | 2.5 | 14.8 | 12.3 | 45.8 |
| Plant Payable Metal | Cu (kt) | 96.5 | 99.3 | 98.5 | 100.7 | 95.7 | 488.7 | 469.8 | 1,645.9 |
| | Mo (kt) | 2.5 | 2.3 | 2.0 | 2.2 | 2.4 | 14.4 | 12.0 | 44.6 |
| Dump Leach | kt | 12,328 | 18,708 | 26,584 | 17,967 | 26,432 | 69,544 | 109,208 | 290,021 |
| | Cu% | 0.25% | 0.22% | 0.19% | 0.18% | 0.15% | 0.18% | 0.15% | 0.17% |
| Dump Leach Recovery | %Cu | 53.7% | 53.7% | 53.7% | 53.7% | 53.7% | 53.7% | 53.7% | 53.7% |
| Copper Cathode | Cu (kt) | 19 | 18 | 16 | 32 | 21 | 101 | 81 | 318 |

## 17.4 QP Comments

The copper concentrator is scheduled to treat 27.9 Mtpa in 2023; however, with on-going improvements in plant availability and utilization coupled with mine-to-mill efforts to improve the fragmentation obtained from blasting, throughput is planned to ramp up to 33.4 Mtpa by 2027.

Standard flowsheets are employed for both the copper and molybdenum flotation circuits.

The LOM schedule shows that the proportion of the plant feed made up of primary ore mineralization content will be generally increasing through the LOM, although one residual major pushback in the pit will generate a drop in this on-going trend as putting in play a higher proportion of near-surface supergene ore. This long-term trend is nevertheless positive for Cu recovery.

As the proportion of primary mineralization fed to the plant will generally increase over the LOM, likely along with the pyrite content (per Feasibility Study-era data, as such metric is not available in the current LOM), it can be expected that current levels of copper grade in the concentrate will be more difficult to hold than with more secondary mineralization in the plant feed. A cap on the copper concentrate grade target - to 30% Cu, from 2030, and then to 28% Cu after 2034 - is justified on this basis.

If the LOM plan is executed, a large amount of oxide material is slated to be placed on the leach pad from 2034 to 2036, with each year showing more than 20 Mt to be put under leach. This is complemented by only slightly lower amounts of secondary sulphides. It may warrant keeping the SX-EW plant running past 2037 as additional metal could be won over the 5–6-year nominal leach cycle required to reach maximum recovery potential.

Rinsing of residual acid concentration from leach pad may be required for the closure plan. Its cost may be largely covered by the residual copper displaced from the pad.

# 18 PROJECT INFRASTRUCTURE

Caserones is an operating mine with well established infrastructure. The following sections provide a summary of the project infrastructure.

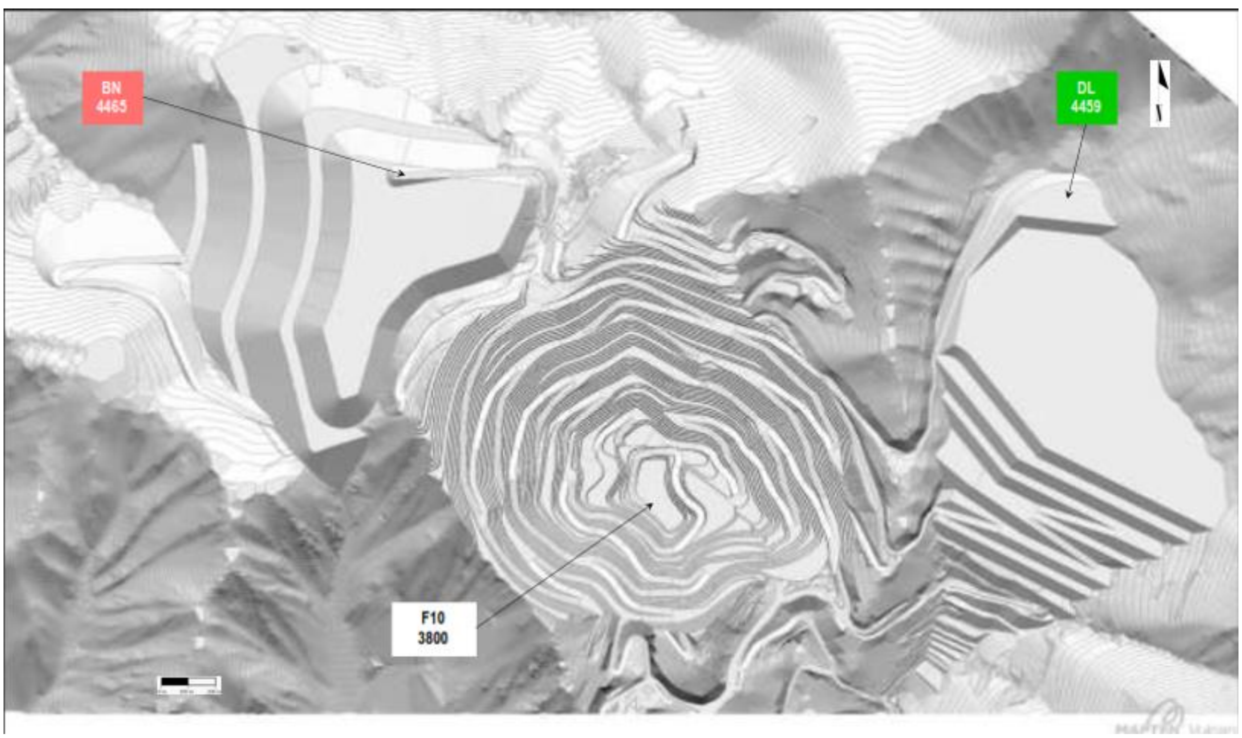
## 18.1 Road and Logistics

Caserones is located 160 km southeast of Copiapó in the Andes mountains and is accessible via paved and gravel public roads. Drive time is approximately 3.5 hours. Production areas are located between 3800–4200 masl, and the camp is located 42 km away at an elevation of 2000 masl. The lower camp elevation provides more hospitable sleeping conditions. Concentrate is shipped by 29 t transport trucks to the port of Totoralillo, approximately 285 km by road, and cathodes are shipped to Antofagasta, approximately 700 km away.

## 18.2 Waste Rock and Dump Leach Facilities

Figure 18-1 shows the ultimate configuration for the pit, dump leach, and waste rock facility.

**Figure 18-1: Caserones Ultimate Pit, Dump Leach, and Waste Rock Facility**




Source: Caserones Statement of Resources and Reserves in the LOM – 2021

Section 16.9 describes the operation of the waste rock and dump leach facility.

## 18.3 Tailings Storage Facilities

Caserones operates two tailings facilities: El Tambo and La Brea. The El Tambo TSF is a coarse sands tailings facility. Coarse sand tailings are spiggotted in paddock-style cells, allowed to drain, and then spread and compacted to achieve density specifications.

The La Brea TSF receives the fine fraction of the tailings. The coarse fraction of the tailings is sent to the El Tambo sand stacking facility immediately downstream and to the south of the flotation plant.

The La Brea TSF is the main tailings facility and is located about 9 km west of the flotation plant. The El Tambo sand stacking facility is located immediately to the south of the flotation plant. La Brea includes one main dam. Tailings facility operations are discussed in Section 20.

## 18.4 Fresh Water Supply

The Caserones fresh water supply comes from a wellfield connected to the Copiapó river basin. Water consumption is 409 L/s on average. Caserones has a 518 L/s water usage permit and 1,280.5 L/s of water rights. The site wide water supply, water balance, and water quality are discussed in Section 20.

## 18.5 Camps and Accommodation

The camp is located 41 km from the active mine area, at an elevation of 2000 masl. The bussing distance from the camp to the mine is approximately one hour.

The camp is equipped with accommodation for 2,450. Occupancy rate is between 80 to 90% which not only allows for current usage, but also allows for staffing to support potential expansion projects.

## 18.6 Power and Electrical

Caserones is connected to Chile's national grid via a 190 km double circuit 220 kV line that connects to the Jorqueria substation near Vallenar, close to the main north–south high voltage corridor.

Power is supplied under a long-term contract to 2037 with ENEL. The supply is from 100% renewable resources for up to 153 MW of demand under an average price of approximately $0.07/kWh (before consumer price index (CPI) adjustment).

## 18.7 Mining Infrastructure

Mine infrastructure is covered in Section 16.9.

## 18.8 Process Infrastructure

Process infrastructure is discussed in Section 17.

# 19 MARKET STUDIES AND CONTRACTS

Caserones production consists of copper concentrates, copper cathodes and molybdenum concentrates. As an existing operation with long-term sales agreements in place, no market entry strategies are discussed for the Project.

## 19.1 Concentrate Characteristics

The copper concentrate produced at Caserones has the following characteristics: its copper content varies between 29.0% and 32.0%, gold content varies from 0.9 g/t to 1.2 g/t and silver content varies from 30 g/t to 55 g/t.

There are certain areas of the orebody that contain increased levels of antimony, arsenic, and mercury, which can lead to slightly higher contents in the copper concentrate. In the event some of this quality of concentrate is produced, it can be sold spot or blended with other cleaner concentrate. In general, however, the material has a low impurity content.

## 19.2 Market Studies

The copper concentrate produced at Caserones is marketable worldwide. The low level of elements detrimental to copper smelting and refining makes the concentrate a valued quality for the feed mix at many smelters.

Currently, 100% of the copper concentrate production is sold under a long-term offtake agreement, with the destination in Asia. By exception, Caserones makes third-party sales to other counterparts in the event of off-spec quality.

The copper concentrate is currently shipped from Compañía Minera del Pacífico's (CAP) private port in Totoralillo to Asian destinations.

Copper cathodes produced at Caserones are an LME approved brand (CASER), and total production is about 97% Grade A material and 3% Off Grade.

Cathode production is currently sold through a long-term offtake agreement. Cathodes are shipped in containers through the ports of Antofagasta and Angamos to various destinations, mainly in Asia.

The molybdenum concentrate has a molybdenum content of around 50% and is considered clean and does not contain significant amount of any deleterious elements.

Almost 100% of the molybdenum concentrates are sold locally through an evergreen contract.

No market studies are required, considering that 100% of sales are based on existing long-term agreements with normal market terms.

## 19.3 Contracts

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational and technical services, mining and process equipment, and administrative support services. Such contracts are negotiated and renewed as needed.

## 19.4 Commodity Price Projections

LMC's long-term guidance copper price for Mineral Reserves is $3.65/lb. The guidance metal price is based on a January 20, 2023, update.

Copper cathode is sold at a $35/t premium over the $3.65/lb Mineral Reserve price.

Molybdenum long term pricing is $11.45/lb. The current molybdenum price is $17.20/lb, and this reverts to long-term pricing after 2028 (Table 19-1).

**Table 19-1: Molybdenum Long Term Pricing ($/lb)**

| 2023 | 2024 | 2025 | 2026 | 2027 | 2028+ |
|---|---|---|---|---|---|
| $17.20 | $15.65 | $13.15 | $12.80 | $11.85 | $11.45 |

## 19.5 QP Comments on Section 19 "Market Studies and Contracts"

Metal prices were set by LMC and are aligned with consensus metal pricing and therefore are appropriate to support Mineral Reserve estimates.

The QP reviewed the marketing assumptions, and those assumptions, based on long-term contracts, support the marketability assumptions in the Report.

100% of Caserone's copper concentrate production is sold under long-term offtake agreements with normal market terms. Following LMC's acquisition of the Project, a new long-term offtake agreement with normal market terms will be put in place whereby 100% of Caserones' copper concentration production will be sold to MLCC's shareholders or their affiliates on a pro rata basis tied to their equity interest in MLCC. By exception, Caserones will be able to make third-party sales to other counterparts in the event of off spec quality.

The terms contained within the copper and molybdenum concentrate and copper cathode sales contracts are typical of, and consistent with, standard industry practice and are similar to contracts for the supply of copper and molybdenum concentrate and copper cathode elsewhere in the world.

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational and technical services, mining and process equipment, and administrative support services. Such contracts are negotiated and renewed as needed.

# 20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

## 20.1 Environmental Studies and Regulatory Framework

Chile has a comprehensive regulatory framework in place governing both environmental approvals and associated construction and operating permits, generally referred to as Environmental Sectorial Permits (*Permisos Ambientales Sectoriales*, or PAS). The Environmental Impact Evaluation System *(Sistema de Evaluación de Impacto Ambiental*, or SEIA) is administered by the Environmental Evaluation Service (*Servicio de Evaluación Ambiental*, or SEA), an arm of the Environment Ministry (*Ministerio del Medio Ambiente*, or MMA).

Mining and other activities (with the notable exception of agriculture) in Chile are subject to environmental review and can be approved via three mechanisms:

1. A "Pertinencia de Ingreso" (or pertinencia) is a document prepared for small projects or minor modifications to existing projects, which demonstrates that the effects of the proposed action are below the threshold requiring formal environmental review. Once approved by the SEA the project or modification can proceed without undergoing environmental review (although sectorial permits, or modifications to existing permits, may be required).
2. An Environmental Impact Declaration (Declaración de Impacto Ambiental, or DIA) is required for projects or project modifications that are significant enough to warrant environmental review, but which are not expected to result in significant environmental impacts, as these are legally defined.
3. An Environmental Impact Study (Estudio de Impacto Ambiental, or EIA) is required for projects or project modifications where significant environmental impacts are expected to occur, and where specific measures for impact avoidance, mitigation or compensation will need to be agreed upon.

The SEA approves DIAs and EIAs following regulatory review and, in the case of EIAs, formal public consultation (although DIAs can also include public consultation based on certain conditions), by issuing an Environmental Qualification Resolution (Resolución de Calificación Ambiental, RCA). RCAs can be several hundred pages in length for complex projects, and typically contain numerous conditions of approval related to both environmental and social aspects of project development. These conditions must be met by the proponent during all project life cycle phases.

Once a proponent receives an RCA it must then obtain sectorial permits for construction and operation of the new or modified project. These are described in Section 20.2.2.

The original EIA for Caserones was approved in 2010, which included baseline and supporting environmental studies (including soil, water, waste, air, noise, and closure), as well as potential project impacts and the respective reparation or compensation measures. Additional environmental evaluations (Pertinencia, DIA and EIA) have been completed to change or adjust certain Project aspects. An Environmental and Social Management System (ESMS) was put in place in 2018 to monitor all commitments during the construction and operational stages. The ESMS has been updated as needed to reflect changes to the environmental, permitting, and social aspects that the Project has undergone.

Plans were developed and implemented to address aspects of operations such as waste and fugitive dust management, spill prevention and contingency planning, water management, and noise levels.

## 20.2 Permitting and Compliance

### 20.2.1 Environmental Approvals

**Minera Caserones**

The EIA for the Caserones project was approved by resolution ORD No. 13/10 during January 2010. Subsequent changes and modifications have been permitted through a combination of pertinencias, DIAs, and EIAs as shown in Table 20-1 and Table 20-2). DIAs and EIAs were approved via RCAs. Pertinencias were approved by a resolution or letter.

Caserones has all permits required for the continuous development of the LOM until 2037. In case an extension is needed, an additional EIA will have to be submitted not later than 2033, due to the long process needs to approve an EIA and its sectorial permits, that usually will take around 3 years. No permits need to be renewed until that date, except for the Mine Closure Permit which needs to be renewed every five years or every time a material change takes place. Currently the closure permit is under review. The expectation is that it will be approved during 2023 or early 2024.

A new EIA, related to a disciplinary process and that is not related to its operational permits, is in the regulatory approvals process and was initiated to address disciplinary action brought by the SMA (Superintendencia de Medio Ambiente or Environmental Superintendency) in 2019 (see Section 20.2.3.). The EIA documents were submitted to the SEIA in June 2020. Currently, Caserones is preparing a response for “Informe Consolidado de Aclaraciones, Rectificaciones o Ampliaciones (ICSARA) 3” which will be submitted in December 2023. Approval of the new EIA is expected in late 2023.

**Table 20-1: Changes at Caserones Approved Under Pertinencias**

| Project / Activity | Legal Reference |
|---|---|
| Bypass Los Loros | Resolution N° 427/2010, SEA Atacama |
| Request to extend deadline for delivering information regarding engineering | Resolution N° 848/2010, SEA Atacama |
| Road improvement between Pulido River ad Quebrada La Brea sector | Resolution N° 102/2011,SEA Atacama |
| Change of camp capacity for construction | Resolution N°09/2012,SEA Atacama |
| Extension of deadline for design and validation of passive treatment of ARD | Resolution N°386/2013, SEA Atacama |
| Multipurpose road | Resolution N°094/2013, SEA Atacama |
| No implementation of parts of the chemical lab | Resolution N°14/2014, SEA Atacama |
| Changes to the water deviation channels | Resolution N°59/2016, SEA Atacama |
| UFA Filter Unit | Resolution N°79/2016, SEA Atacama |
| Improvement Rainwater management system Quebrada Caserones | Resolution N°82/2016, SEA Atacama |
| Exhibition room for Archeology | Resolution N°13/2016, SEA Atacama |
| Improvement superficial water management system Lixiviation Deposit | Resolution N°129/2016, SEA Atacama |
| Archeological Exhibition room Caserones in Regional Museum in Atacama | Resolution N°03/2018, SEA Atacama |
| Irrigation control measures for alluvium risk in Quebrada Angelica | Resolution N°08/2019, SEA Atacama |

**Table 20-2: Minera Caserones Environmental Approvals (RCAs from EIAs and DIAs*)**

| Project | Legal Reference* |
|---|---|
| EIA “Proyecto Caserones” (Caserones Project). January 13, 2010 | RCA 13/2010 |
| EIA “Línea de Transmisión 2x220 Kv Maitencillo – Caserones “. (Transmission Line 2x220 Kv Maitencillo-Caserones) July 11, 2011, | RCA 151/2011 |
| EIA “Modificación Línea de Transmisión 2x220 Kv Maitencillo – Caserones, Variante Maitencillo Norte “. (Modification Transmission Line 2x220 Kv Maitencillo-Caserones, Maitencillo Norte Variant) January 19, 2012 | RCA 17/2012 |
| DIA "Regularización Torres Linea de Transmisión Electrica 2x220 Maitencillo - Caserones “. (Regularization Transmission Line 2x220 Maitencillo-Caserones Towers. February 26, 2014 | RCA 48/2014 |
| DIA “Actualizacion Mina Caserones” (Update Mine Caserones) March 7, 2014 | RCA 57/2014 |

*Environmental Approval Resolution (RCA)

### 20.2.2 Sectorial Permits

PAS authorizing the construction and operation of new or modified facilities must be obtained following environmental approval. These permits are granted by as many as ten different public agencies however, typically the key departments are the Water Agency (Dirección General de Aguas, or DGA), SERNAGEOMIN and the Health Ministry (*Ministerio de Salud*).

The Caserones Mine currently holds the relevant sectorial permits to operate. An Environmental Management System is used to record each permit and its compliance status. Since 2010, the mine has obtained over 800 sector-specific permits, including construction permits granted by SERNAGEOMIN and DGA for waste disposal facilities.

### 20.2.3 Environmental Compliance

Under the terms and conditions outlined in RCA 13/2010, Caserones retains the services of local consultants to perform bimonthly independent Project environmental audits. Once the EIA submitted in 2020 is approved (most likely in the first half of 2024), this practice will be discontinued because this requirement of the 2010 RCA will no longer be valid. The SMA, created in 2014, is now in responsible for environmental commitment audits. The audits are scheduled every second month and include all Project phases, including construction, operation, and closure. Currently, Knight Piesold Chile S. A. (KP) conducts these audits.

Based on KP's most recent audit reports (2022), Caserones has a high degree of compliance with the RCA terms and conditions.

**SMA Charges**

SMA filed 18 charges against Caserones in February 2019 for infractions to the provisions established in its RCA for the mine and the electric transmission line. Eleven of the charges were classified as serious, and seven as light. The most serious charges are the following:

- Breach of conditions established in the Remediation Plan associated with the operation of both tailings management facilities, while (a) extracting groundwater at a higher flow rate than authorized during the activation of the Remediation Plan and (b) constructing and operation of additional 14 remediation groundwater wells.
- Operation of the infrastructure associated with the tailings management facility in a manner that was inconsistent with what was previously authorized.
- Lack of remediation of the area affected by tailings in March 2018.
- The tailings composition did not meet design criteria between 2015 and 2017.
- Lack of installation of bird anti-electrocution components along the power transmission line.
- Partial compliance with the measure of reforestation contained in the Preservation Management Plan.
- Did not execute the actions established in the Hydrological Monitoring Plan.
- Lack of water monitoring, and submission of corresponding results, downstream of the TMF cut-off wall between April 2015 and May 2016.
- Partial compliance with actions ordered by the SMA concerning (a) delay in remediating Quebrada Variante 2 and (b) not having captured and relocated individuals of herpetofauna and micromammals within the specified time frame.

Caserones provided a plan to address 16 of the charges through a Compliance Program (CP), which the SMA approved in February 2021 (Res. Exenta Nº15/2021). The CP includes 51 remedial actions, including an EIA. All remediation must be completed by February 2024.

In 2019, local farmers challenged the CP; however, on April 18, 2022, the Supreme Court rejected their objections.

If Caserones complies with the CP, enforcement proceedings will be suspended and, once all terms within the CP are met, the SMA disciplinary actions will be terminated. However, if Caserones does not comply with the CP, the enforcement proceeding suspension would no longer apply, and the SMA would determine a sanction for each of the 16 charges that were part of the CP program.

Caserones submitted defence arguments concerning two charges that were not addressed in the CP. No final decision had been received at the Report effective date. If Caserones fails to win its case, SMA may sanction the Project through (i) revocation of the Project RCA, (ii) temporary or permanent closure of the Project, or (iii) a fine of up to 5,000 annual tax units for each violation (~US$4 million for each violation). Caserones considers that sanctions (i) and (ii) are very unlikely, and that the most likely outcome would be a fine. Should the environmental authority acquit the company, there will likely be legal challenges to this decision before the Environmental Court. Conversely, if Caserones is sanctioned, and environmental damage is declared, the Project may be exposed to environmental damage claims and subsequent tort liability claims.

**Ongoing Critical Permitting Process**

Caserones agreed to prepare project modifications in an EIA, and the EIA was submitted to the SEA in June 2020.

Rejection of the EIA by SEA would imply a violation of the CP terms and conditions. To date, Caserones has received three sets of comments on the EIA from the SEA, on April 8, 2021, March 15, 2022, and December 27, 2022, with the primary issues being water, including water quality and water measures. An extension on reply was granted until December 31, 2023.

## 20.3 Environmental Management

### 20.3.1 Key Environmental Issues

Caserones has implemented, or is in the process of implementing, several management systems, including ISO 9,000: ISO 45,000, ISO 14,000, and the Copper Mark.

**Protected Areas and Priority Sites for Conservation**

There are nine environmentally sensitive sites within the general Project area of influence considered in the environmental impact assessments prepared for the Project. These include:

- The Nevado Tres Cruces National Park and the Laguna del Negro Francisco-Santa Rosa RAMSAR (Convention on Wetlands of International Importance of 1971) are located approximately 80 km to the northeast of the mining operations.
- Historical monuments are located along the upper reaches of the Copiapó River.
- The *Desierto Florido* (Desert Bloom) Priority Site comprises approximately 1% of the overall Project area of influence and is located about 90 km NW of the Project.

Excluding six national monuments that consist of old and abandoned manmade structures, none of these environmentally sensitive or protected areas are located within the mine footprint area.

**Air Quality, Noise and Vibrations**

There are no nearby communities. There is a residential dwelling located approximately 12 km from Caserones.

Based on the results of air quality monitoring which started in 2015 and due to continuous monitoring, air quality standards have not been exceeded, nor are latency levels reached (80% of the standard value) for any parameters measured. Regarding the Respirable Particulate Matter (PM10), the highest values reached were 31% of the daily limits and 65% of the annual norm. Likewise, the concentrations of gases monitored ($NO_2$ and $SO_2$) were not measured above local standards.

Noise and vibrations studies performed to support the 2020 EIA environmental permitting processes indicated that the noise and vibration levels at sensitive receptor locations do not exceed the corresponding local standards.

**Tailings Storage Facilities**

Tailings are managed in two separate facilities. The La Brea TSF, located about 9 km west of the flotation plants, receives the fine fraction of the tailings. The coarse fraction of the tailings is sent to the El Tambo sand stacking facility immediately downstream to the south of the flotation plants. Tailings deposition into the La Brea TSF commenced in 2014 followed by tailings sand stacking at El Tambo in 2016.

The La Brea TSF is a valley tailings facility with one embankment (Main Dam). The Main Dam is constructed following the downstream construction method. The La Brea TSF also includes a tailings distribution system, non-contact water diversion channels, and a contact water recovery system. The Main Dam is constructed with permeable, compacted rockfill sourced from a nearby quarry. A transition layer and geomembrane/geotextile liner are placed on the upstream slope of the dam. The drainage system underlying the Main Dam comprises multiple lateral drains connected to a main drain. The purpose of these drains is to collect seepage from the tailings impoundment and direct this seepage to the contact water recovery system.

The La Brea TSF design includes 5 m freeboard to manage the supernatant pond and to store the probable maximum precipitation extreme flood event inclusive of wind and wave run-up, and seismic settlement. The maximum credible earthquake for the La Brea TSF corresponds to an intraplate earthquake with 8.5 moment magnitude and a peak ground acceleration of 0.44g.

The La Brea TSF receives cyclone overflow thickened tailings at about 60% solids content. The thickened tailings are transported by gravity flow through pipelines and an open channel to a distribution box. From the discharge box, tailings are discharged to the TSF through five main points.

The La Brea TSF is authorized to provide 478 Mt of tailings storage capacity. The current phase under construction is Stage 10 with a design crest elevation of 2,927 m. The Stage 14 final design (crest elevation of 2,979 m) will provide tailings storage capacity until around 2036. Stages 15 and 16 (crest elevation of 3,005 m) have been requested to meet the LOM tailings storage requirements and are currently under evaluation. Conceptual design evaluations have been completed for the La Brea TSF up to 2050. The current La Brea TSF closure plan concept includes a dry cover graded to direct storm water through a spillway designed to pass extreme flood events.

The coarse fraction of the tailings is sent to the El Tambo sand stacking facility where tailings are spiggotted in paddock-style cells, allowed to drain, and then spread and compacted to achieve density specifications. The El Tambo TSF includes a starter dam (i.e., toe berm), drainage system, collection pond and a cut-off trench. The current approved design includes a maximum stack height of 300 m and a final estimated total area of 300 ha. The El Tambo TSF is authorized to provide 570 Mt of tailings storage capacity.

**Water Supply**

The site water balance indicates that approximately 75% of the total processing water needs (about 1,700 l/s) is provided by recirculated water (within the mill, TSF pond and seepage collection). The remaining makeup water (about 400 L/s) is supplied through a series of groundwater wells located in Sectors 1 and 2 of the Copiapo aquifer.

This groundwater supply is sufficient to support the current and projected production levels of up to 33.4 Mt/a through the end of the mine life. However, recent severe drought events have made it difficult to pump additional water. Caserones intends to relocate and redrill some wells to make them more efficient and increase their pumping capacity. Preliminary studies have been undertaken to review supplementing water supply with desalinated water sourced from the coast.

**Groundwater**

The Copiapo aquifer is a sand and gravel alluvial system that extends along the Copiapo River valley and has limited recharge and production capacity. The annual aquifer recharge is highly variable. In high precipitation years, recharge can have values several times greater than the average, as in 2015 and 2017 when extreme precipitation events generated a significant increase in the water levels across the aquifer.

The Copiapo aquifer is the main water source for agricultural, mining, and human consumption in the region. Due to the intense competition for this scarce resource, and a complex regulatory water management system, the groundwater has been severely overexploited in many areas across the Copiapo valley. In 1993, the Copiapo valley was designated as Zone of Prohibition, restricting the issuances of new water rights.

Management of the groundwater extraction is regulated by the Dynamic Management Plan defined in the Project's RCA, which allows for the relocation of the production wells to reduce the impact of water extraction in the aquifer water levels.

Water levels are measured monthly at 31 locations across the aquifer. Twelve of those monitoring stations are control points with established water level thresholds to evaluate the overall impact of the groundwater extraction. The water levels at these locations are compared against the modeled water levels to decide whether actions must be taken to prevent further decline in the water levels in the local area. Actions typically include reduction in pumping rates or relocation of production wells.

The groundwater monitoring shows a steep decline of the groundwater levels in most of the locations ranging from 4 m to 60 m in the last four years, across all the extraction areas.

Arcadis, a third-party consultant retained by Caserones, updated the hydrogeological model based on conservative assumptions (recharge every few years, in combination with dry years). The model shows water availability for Caserones up to 2037, based on the wells located in the upper part of the valley. Periodic drought conditions may result in the authorities imposing water conservation measures for mining and agriculture users. Caserones is evaluating alternative sources of water supply as a risk mitigation measure to reduce dependency on groundwater resources. Such measures may include desalinated water supply from existing infrastructure installed at Candelaria.

### Fresh Water

The fresh water supply system for Caserones consists of about 36 production wells (including wells downgradient of the TSF to control migration of impacted groundwater), and six pumping stations located along the upper Copiapo valley over a distance of about 60 km. The current maximum permitted extraction rate is 518 L/s.

### Water Quality

The surface and groundwater quality within the Project area is generally good with stable and neutral pH (Golder 2020).

Sulphate has been frequently detected in several surface and groundwater samples collected at locations downstream of the TSF at concentrations as high as 300 ppm and 2,100 ppm, respectively.

Golder performed an assessment of historical surface and groundwater quality data in 2020, for the La Brea water sub-basin and the Ramadillas River sub-basin.

Based on that assessment, additional measures were included in the current EIA, as part of the additional seepage control measures.

Caserones has been conducting pilot tests to assess the potential for acid rock drainage and metal leaching (ARD/ML) since 2017. Provisional results from static tests completed in 2017, and field barrel tests in 2019, indicate that there is potential for ARD/ML to be generated from certain facilities.

The closure plan assumes that ARD/ML will be generated for several decades after closure (i.e., after *circa* 2048) in certain locations, such as from the open pit, waste rock facilities, and the coarse sand TSF.

These results will not have a material impact on the LOM or operation. However, the Mine Closure Plan permit will have to be adjusted to include the additional costs of treating ARD at closure. Caserones is evaluating the potential treatment options, including both passive and active methods, and will submit a revised plan once that process is completed.

### Environmental Monitoring Program

The environmental monitoring program covers groundwater quality and levels, dust, noise, biodiversity, archaeological protection, and waste generation. Monitoring frequency is dependent on the parameter being monitored, and ranges from daily to annually.

An Environmental Compliance Program (PdC) was approved by the SMA (Res. Exenta Nº15/2021) in 2021, which included additional monitoring requirements and quarterly reporting to the Environmental Authorities, such as:

- additional and enhanced water quality monitoring program
- submitting the monitoring results to the authorized environmental monitoring online platform
- submit an EIA to formalize the extraction wells and other measures (EIA submitted in June 2020)
- monitor the water volume in the TMF pond, so that it does not exceed 750,000 $m^3$ of water.
- improve the recovery wells monitoring system.

- develop protocols for the assurance of the Dynamic Water Management Plan and Robust Water Monitoring Plan
- set up and implement monitoring and reporting procedures and periodic training for the new system

## 20.4 Mine Closure Planning

Caserones has developed a closure plan in accordance with applicable legal requirements, specifically Law 20.551/2011 and Supreme Decree N°41/2012. The competent authority for approving Mine Closure Plans in Chile is SERNAGEOMIN. Under current laws, mining projects with an extraction capacity of over 10,000 tonnes per month must provide a financial guarantee, the amount of which is determined based on periodic (five-yearly) re-evaluation of closure plan implementation and management costs.

Caserones has a SERNAGEOMIN-approved mine closure plan, approved originally in 2015. Caserones regularly updates its mine closure plan, most recently in 2022. The plan is still under regulatory review. The Mine Closure Plan permit includes all facilities included in the current operation. For the mine areas, such as water dumps, pit, and the TSFs, the requirement is to secure the area and avoid any contamination once the facilities are closed. Installations below ground, such as pipelines, will be emptied and left underground. Installations above ground, such as the plant, camps, and transmission lines, will be dismantled. Monitoring and management of environmental measures will be maintained as long as necessary.

The mine closure costs in 2022 are estimated to be approximately US$182 M, excluding taxes. There is an expectation that in the future this estimate will increase when the following are included:

- long-term management of and/or treatment of ARD/ML; specifically, Caserones does not consider any costs associated with placing clean/impermeable covers on structures likely to generate ARD/ML (such as the heap leach pad, and the El Tambo TSF)
- treatment of potential off-site groundwater contamination from both TSFs; recent groundwater modelling predicts that sulphate will remain in groundwater downstream of the La Brea TSF at concentrations that are above baseline conditions until circa 2100
- backfilling or regrading/recontouring with clean material (as needed)

## 20.5 Social and Community Issues

There are no communities within the Project footprint area or its immediate surroundings. There are, however, indigenous communities within the Project area of influence. Caserones has good working relationships with most local communities and the mine has successfully operated without any major community issues since it was constructed.

Chile adopted the “Convention on Indigenous Peoples and Tribals in Independent Countries” on October 2, 2008. Until 2019, none of the socioenvironmental assessments to which the Project has been subjected have incorporated indigenous consultation processes.

The current EIA included an indigenous consultation process with the following indigenous communities to be consulted in the EIA:

- Colla Indigenous Community of Río Jorquera and its tributaries
- Colla Community Vizcacha del Pulido and its tributaries
- Colla Community of Juntas del Potro and its tributaries

Caserones has signed various agreements with indigenous communities and the Municipality of Tierra Amarilla, including:

- an agreement to supply a Community Investment Fund (for a total annual amount of approximately US$50,000 to each of the three communities)
- an agreement to fund different activities identified by the municipality of Tierra Amarilla (for a total amount of approximately US$400,000)

Caserones is working in parallel with the Government-run indigenous consultation process to merge Caserones´ indigenous communities' agreement process with that of the Government. The indigenous consultation process is restricted to environmental impacts and therefore Caserones must negotiate additional agreements to address any social issues.

Two communities have requested to be included in the agreements. The SEA is evaluating those requests and has required Caserones to gather firsthand baseline information to determine if the communities should be part of the indigenous consultation process. There is a risk that if the communities are excluded, the Project could be taken to court to require their inclusion. If this were to occur, it could result in a delay to the EIA process or cause the EIA to be suspended if approval was received prior to such action. The final decision will be made by SEA as to whether to incorporate these additional communities. The result of this situation will not impact the LOM as this process is not related to the operation itself, but to specific environmental measures.

# 21 CAPITAL AND OPERATING COSTS

Caserones is an operating mine with well-established mining and processing practices. The major infrastructure is in place with no major capital projects planned. Nonetheless, sustaining capital is required for ongoing mine, dump leach, and tailings expansions.

Operating cost estimates to support the LOM plan are well understood and supported by first-principal estimates, current pricing, and historical costs.

## 21.1 Capital Cost Estimate

### 21.1.1 Basis of Estimate

Capital cost estimates were developed by the QPs, based on the Caserones 2021 LOM plan, and factored as appropriate to address additional capital requirements identified during the due diligence review.

The major sustaining capital cost items are built up from the following key input areas:

- **Compliance:** environmental compliance program to comply with all the provisions stated in the charges filed by the SMA in March 2019
- **Mining:** equipment replacement, major component replacements, and general mine capital purchases
- **Mine Phases:** development capital associated with mining each phase including dump leach, tailings, and infrastructure expansions
- **Piping:** general, direct, and indirect piping costs
- **Risk Management:** capital costs for unplanned capital spend
- **Improvement:** capital for ongoing improvement initiatives

### 21.1.2 Capital Cost Summary

The majority of the sustaining capital costs is attributable to mine equipment replacements and for dump leach, tailings, and infrastructure expansions to support the mine plan. Table 21-1 summarizes the LOM sustaining capital costs.

Starting in 2025, the Komatsu 930 truck fleet is replaced as the trucks reach the end of their operational lives. In total, 27 Komatsu 930 trucks are replaced. In addition to the Komatsu truck replacements, two additional Komatsu 930 trucks and a second PC8000 shovel are purchased in 2023 to mitigate the risk of poor mechanical availability.

Additional lifts on the dump leach facilities are built to accommodate fresh material mined throughout the LOM. Major expenses for irrigation piping and extension of the leach solution delivery systems are planned over the 2026–2028 period.

The adjusted LOM capital costs are estimated at $945.1 M.

**Table 21-1: Caserones Sustaining Capital Cost Summary (US$M)[1]**

| Cost Area | 2023 | 2024 | 2025 | 2026 | 2027 | 2028-2032 | 2033-2037 | Total LOM |
|---|---|---|---|---|---|---|---|---|
| Mine Equipment | 40.2 | 11.9 | 12.9 | 71.1 | 37.8 | 185.4 | 40.4 | 416.1 |
| Mine/Plant | 70.2 | 39.9 | 31.2 | 38.1 | 19.4 | 129.2 | 66.5 | 418.4 |
| Other | 12.0 | 8.0 | 8.0 | 7.0 | 7.0 | 35.0 | 23.1 | 110.6 |
| **Total** | **122.3** | **59.8** | **52.0** | **116.2** | **64.2** | **349.7** | **130.0** | **945.1** |

[1] Sustaining Capital Excludes Capitalized Stripping

## 21.2 Operating Cost Estimate

### 21.2.1 Basis of Estimate

Operating costs were developed by the QPs based on the Caserones 2021 LOM plan, factored as appropriate. A combination of historical costs and current pricing for consumables was used to develop operating costs. The QPs made the following adjustments to the 2021 LOM plan operating costs to bring them current and to better reflect historical operating performance:

- **Mining**: Mining variable costs were increased by 10% to account for additional drilling and blasting costs required to complete mine-to-mill initiatives for delivering a finer size distribution to the SAG mill.
- **Concentrator:** Recalculated the proportions of fixed and variable costs to reflect operations using maximum power draw available from all grinding and regrinding mills.
- **General & Administrative:** Costs have been increased to $123 M per annum to align with actual G&A costs.

### 21.2.2 Operating Cost Summary

The adjusted LOM operating costs are estimated at $12,419 M (Table 21-2).

**Table 21-2: Caserones Operating Cost Summary**

| Cost Area | 2023 | 2024 | 2025 | 2026 | 2027 | Average 2028–2032 | Average 2033–2037 | Average LOM |
|---|---|---|---|---|---|---|---|---|
| Mining US$/t mined | 2.62 | 2.30 | 2.38 | 2.61 | 2.34 | 2.26 | 2.43 | 2.50 |
| Dump Leach US$/t leached | 2.18 | 1.42 | 0.94 | 2.01 | 1.08 | 2.02 | 1.16 | 1.64 |
| Concentrator US$/t milled | 12.75 | 12.54 | 12.30 | 12.50 | 11.49 | 11.42 | 11.41 | 11.85 |
| G&A US$/t milled | 4.40 | 4.24 | 4.06 | 4.07 | 3.73 | 3.73 | 3.73 | 4.01 |

# 22 ECONOMIC ANALYSIS

## 22.1 Cash Flow Analysis

LMC is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration for the Caserones Operations is supported by a positive LOM after-tax cash flow on a discounted basis.

## 22.2 Methodology Used

An economic analysis was performed in support of estimation of Mineral Reserves; this indicated a positive LOM after-tax cash flow on a discounted basis using the assumptions detailed in this Report.

# 23 ADJACENT PROPERTIES

This section is not relevant to this Report.

# 24 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data and information for this Report.

# 25 INTERPRETATION AND CONCLUSIONS

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

## 25.1 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

Information obtained from LMC experts supports that the mineral tenure held is valid, and sufficient to support a declaration of Mineral Resources and Mineral Reserves.

Surface rights are sufficient to allow mining and process operations. Portions of the power transmission line and the desalination water pipeline are not covered by easements and this omission should be rectified.

Water rights are granted, and sufficient to support mining operations. MLCC is analysing alternatives to extend mine life beyond the tenure of the water rights in 2037, or in case of imposition of water restrictions, such as obtaining desalinated water from different regional sources. One option is to extend the water pipelines from Candelaria.

A sliding scale net smelter royalty is payable, which ranges from 1 to 2.88%, depending on the LME copper price. At the forecast copper prices used for the Mineral Reserve estimate, the royalty would be 2.88%. The Project is not subject to any other back-in rights payments, agreements, or encumbrances.

To the extent known, there are no other significant factors and risks that may affect access, title, or the right or ability to perform work on the Project that have not been discussed in this Report.

## 25.2 Geology and Mineralization

The Caserones deposit is interpreted to be an example of a copper–molybdenum porphyry deposit.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization is sufficient to support estimation of Mineral Resources and Mineral Reserves. The geological knowledge of the area is also considered sufficiently acceptable to reliably inform mine planning.

The mineralization style and setting are well understood and can support declaration of Mineral Resources and Mineral Reserves.

## 25.3 Exploration, Drilling and Analytical Data Collection in Support of Mineral Resource Estimation

The drill programs completed to date are appropriate for porphyry deposit style. Drill sampling methods are acceptable for Mineral Resource and Mineral Reserve estimation.

Sample preparation, analysis and security are generally performed in accordance with industry standards.

The quantity and quality of the lithological, geotechnical, collar and down-hole survey data collected during the drilling programs from 2004–2017, when the database was closed for estimation purposes, are sufficient to support Mineral Resource and Mineral Reserve estimation. The collected sample data adequately reflect deposit dimensions, and the true widths of mineralization. Sampling is representative of the copper and molybdenum grades in the deposits, reflecting areas of higher and lower grades.

The QA/QC programs adequately address issues of precision, accuracy, and contamination. Drilling programs typically included blanks, duplicates, and CRM samples. QA/QC submission rates meet industry-accepted standards.

The data verification programs concluded that the data collected from the Project adequately support the geological interpretations and constitute a database of sufficient quality to support the use of the data in Mineral Resource and Mineral Reserve estimation.

## 25.4 Metallurgical Test Work

Metallurgical test work and associated analytical procedures were appropriate to the mineralization type and were performed using samples that are typical of the geometallurgical domains.

Samples selected for testing were representative of the various types and styles of mineralization. Samples were selected from a range of depths within the deposit. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Recovery factors estimated are based on the actual performance of the plant to date, and appropriate metallurgical test work related to the mineralization types that will be more prevalent in the future. Based on performance to date, and considering variability in placed ore types, head grades, proportion of acid-soluble copper and the kinetics under a long leach cycle, copper recovery from the leach pad is fixed at 53.7% over the LOM, which is representative of the average recovery achieved to date. For the concentrator, copper recovery is fixed at 82.7% and molybdenum recovery is fixed at 60% over the LOM. There is an expected upside to the level of copper recovery thus adopted as it is more reflecting the performance of earlier years, with a high proportion of supergene in the concentrator feed mix, whereas the trend for the latter years of the LOM is to see this proportion decrease, to the benefit of primary (Hypogene) mineralization. The ore types related to such material were shown in test work to provide higher expectation of copper recovery than the supergene material at equivalent feed grade.

At times, and within some confined mineralized areas, there are deleterious elements such as arsenic and antimony that are expected to potentially result in smelting penalties, albeit without affecting the process activities or metallurgical recoveries. The levels of such penalties are not expected to be significant nor sustained, given the ability to blend such ore sources in the plant feed and blend the resulting concentrate stream that may be suffering from higher contaminant loads. LMC also has the benefit of producing copper concentrate devoid of such contaminants from the near-by Candelaria operations, providing the possibility of a further blending the products of the two mines at the port, if and when commercially justified.

## 25.5 Mineral Resource Estimates

Mineral Resources are reported using the 2014 CIM Definition Standards and assume open pit mining methods.

Factors that may affect the estimates include: metal price and exchange rate assumptions; changes to the assumptions used to generate the copper grade cut-off grade; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological and mineralization shape and geological and grade continuity assumptions; variations in density and domain assignments; geometallurgical and oxidation assumptions; changes to geotechnical, mining and metallurgical recovery assumptions; change to the input and design parameter assumptions that pertain to the conceptual pit constraining the estimate; and assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environment and other regulatory permits, and maintain the social license to operate.

There is upside potential for the estimates if mineralization that is currently classified as Inferred can be upgraded to higher-confidence Mineral Resource categories.

The 2018 Mineral Resource estimation by Golder appears to be reasonably robust and currently reconciles well with mine production. However, the classification model appears to be generous at the base of the deposit and should be revisited during the next Mineral Resource update.

It is possible that the reconciliation of the Mineral Resource model with actual production will decline as mining goes deeper.

## 25.6 Geotechnical

Current pit performance is typical of copper porphyry with weathering in high alteration and better performance in low alteration rock. The key area of stability concern is the West Wall in Phase 4, and it is clear that it is driven by structural control.

Current monitoring results from both prisms and radars indicate overall stability. Multiple accesses to the ore have been planned for all phases of mining – a key strategy to minimize risk.

Waste dump design meets LMC’s acceptance criteria.

## 25.7 Mineral Reserve Estimates

Mineral Reserves are reported using the 2014 CIM Definition Standards and are based on open pit mining methods.

The Mineral Reserves are forward-looking information and actual results may vary. The risks regarding Mineral Reserves are summarized in Section 15.3 and in this sub-section.

Areas of uncertainty that may materially impact the Mineral Reserve estimates include: changes to long-term metal price assumptions; changes to include operating, and capital assumptions used, including changes to input cost assumptions such as consumables, labor costs, royalty and taxation rates; variations in geotechnical, mining, dilution, and processing recovery assumptions; including changes to pit phase designs as a result of changes to geotechnical, hydrogeological, and engineering data used; changes to the cut-off grades used to constrain the estimates; and changes to environmental, permitting and social license assumptions.

## 25.8 Mining Method

Mineral Reserves were estimated for Caserones assuming open pit methods with conventional methods for drilling, blasting, loading and haulage by large trucks.

Conversion of Mineral Resources to Mineral Reserves was supported by a detailed mine plan, an engineering analysis, and consideration of appropriate modifying factors. These included the consideration of dilution and ore losses, open pit mining methods, metallurgical recoveries, permitting and infrastructure requirements.

Mining is based on a phased approach. The phase designs are based on the optimized pit shells with the highest value material mined in the earlier phases and lower-grade higher strip ratio material mined in the later phases. The LOM mine plan includes Phases 5 to 10. Phases 1–4 are mined out. Phases 5 and 6 are the currently active phases.

For the mine plan, a maximum vertical extraction of 10 benches or a maximum movement of 60 Mt ton per year is considered as a restriction for each phase. The concentrator is scheduled at 27.9 Mt in 2023 ramping up to 33.4 Mt by 2027. Oxide material is placed on the dump leach in the period it is mined.

Mining equipment is conventional for open pit operations. Caserones operates in an over-shoveled configuration most years, which allows for minimal truck queueing time.

## 25.9 Mineral Processing Method

The copper concentrator is scheduled to treat 27.9 Mtpa in 2023; however, with on-going improvements in plant availability and utilization, as well as optimization of the SAG mill size distribution through better blasting fragmentation, throughput is planned to ramp up to 33.4 Mtpa by 2027.

Standard flowsheets are employed for both the copper and molybdenum flotation circuits.

Eight ore types are processed: OX, MX, SS, SP, LX-OX, LX-MX, LX-SS and LX-SP.

The much poorer response of the MX (mixed oxide-sulphide) material makes it a candidate for heap leaching, which is what the mine plan is calling for. The following materials are thus preferentially routed to the leach pad: OX, MX, and LX-OX.

The LOM schedule shows that the proportion of the plant feed made up of primary (hypogene) ore mineralization content will be generally increasing through the LOM. This is positive for the copper recovery outlook, relative to historical levels, as this material has been shown to provide a better flotation response than the secondary (supergene) ore types.

As the proportion of primary mineralization fed to the plant will increase over the LOM, likely along with the pyrite content based on the assessment made from tested samples, it can be expected that current copper grade levels in the copper concentrate, as achieved with the secondary mineralization still being preponderant, will be difficult to hold on to in the later years. This outlook justified applying a cap on the copper concentrate grade target to 30% Cu, from 2030, and then to 28% Cu after 2034.

Per the LOM plan is executed, a large amount of oxide material is slated to be placed from 2030 to 2034, with each year having more than 20 Mt processed. This is complemented by only slightly lower amounts of secondary sulphides. It may warrant keeping the SX-EW plant running past 2037 as additional metal could be won over the 5–6-year nominal leach cycle required to reach cumulative recovery potential.

Rinsing of residual acid concentration from leach pad may be required for the closure plan. Its cost may be largely covered by the residual copper displaced from the pad.

## 25.10 Infrastructure

Caserones is an operating mine with well established infrastructure. The infrastructure includes waste rock facilities, dump leach and SX-EW facilities, truck shop, wash bay, fuel stations, explosive facilities, El Tambo and Tai La Brea TSF, camps and accommodations, power infrastructure, reagents storage facilities; administration building; mine and mill office building; sulphide concentrator (crushing, grinding, Cu and Mo flotation circuits), and assay/metallurgical laboratory.

Caserones is connected to Chile's national grid via a 190 km double circuit 220 kV line which connects to the Jorqueria substation near Vallenar, close to the main north-south high voltage corridor. Power is supplied under a long-term contract to 2037 with ENEL.

The existing infrastructure, staff availability, existing power, water, and communications facilities, and the methods whereby goods are transported to the mine are all in place and well-established and can support the estimation of Mineral Resources and Mineral Reserves.

## 25.11 Markets and Contracts

Long-term contracts are in place for the copper and molybdenum concentrates and copper cathode.

LMC's long-term guidance copper price for Mineral Reserves is $3.65/lb. The guidance metal price is based on a January 20, 2023, update. Copper cathode is sold at a $35/t premium over the $3.65/lb Mineral Reserve price. Molybdenum long term pricing is $11.45/lb. The current molybdenum price is $17.20/lb, and this reverts to long-term pricing after 2028.

The terms contained within the copper and molybdenum concentrate and copper cathode sales contracts are typical of, and consistent with, standard industry practice and are similar to contracts for the supply of copper and molybdenum concentrate and copper cathode elsewhere in the world.

The largest in-place contracts other than for product sales cover items such as bulk commodities, operational, maintenance, and technical services, mining and process equipment, and administrative support services. Such contracts are negotiated and renewed as needed.

## 25.12 Environment and Permitting

Caserones has all permits required for the continuous development of the LOM until 2037.

The mine closure costs are estimated to be approximately US$182 M, excluding taxes.

The Project RCA expires in 2037. The mine plan extends to 2040. A new RCA must be obtained to support the remaining three years of mine life.

Caserones has good working relationships with most local communities and the mine has successfully operated without any major community issues since it was constructed.

SMA filed 18 charges against Caserones in February 2019 for infractions to the provisions established in its RCA for the mine and the electric transmission line. Eleven of the charges were classified as serious, and seven as light. Caserones provided a plan to address 16 of the charges through a Compliance Program (CP), which the SMA approved in February 2021. The CP includes 51 remedial actions, including an EIA. All remediation must be completed by February 2024. If Caserones complies with the CP, enforcement proceedings will be suspended and, once all terms within the CP are met, the SMA disciplinary actions will be terminated. However, if Caserones does not comply with the CP, the enforcement proceeding suspension would no longer apply, and the SMA would determine a sanction for each of the 16 charges that were part of the CP program.

## 25.13 Capital and Operating Costs

Capital and operating cost estimates were developed by the QPs based on the Caserones 2021 LOM plan and factored as appropriate to address additional capital requirements identified during the due diligence review.

The adjusted LOM capital costs are estimated at $945.1 million, and the adjusted LOM operating costs are estimated at $12,419 million.

The adjusted capital and operating cost estimates have a level of accuracy commensurate with pre-feasibility level costs, at ±20%.

## 25.14 Economic Analysis

LMC is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration for the Caserones Operations is supported by a positive after-tax cash flow on a discounted basis.

## 25.15 Conclusions

Under the assumptions presented in this Report, the Project has a positive after-tax discounted cash flow, and Mineral Reserve estimates can be supported.

## 25.16 Risks and Uncertainties

The following risks and uncertainties have been identified:

- The Indicated and Inferred portions of the Mineral Resource estimate include a significant portion of blocks which extend below the limit of regular drilling. There is a risk that the confidence classifications currently assigned may not be supported once additional drill information on material at depth is available
- Copper reconciliation of the long-term model versus the process plant feed appears to indicate that the long-term model is underestimating copper grade by up to 12% relative to the process plant feed grade.
- The open pit is typical of copper porphyry with weathering in high alteration and better performance in low alteration rock. A pit wall movement in Phase 4 was reviewed by a third-party consultant and mitigation measures include step-outs and buttresses. The risk to future production due to pit instability is low as there are multiple access points to ore.
- Mine truck and shovel availability has historically been below industry average. Failure to improve equipment performance in the long term could result in failing to meet the projected increase to mine movement included in the life of mine plan. Improvements to operating practices may lead to a meaningful decrease in mining costs.
- The production plan includes a forecast for sulphide ore mill throughput of 33.4 Mtpa by 2027, above the historically achieved figures. The plan will require improvements to plan efficiency and mine-to-mill processes. Improvements to the maintenance program in place putting emphasis on breakdown prevention, with equipment tracking and preventive maintenance programs, plus incentives for employees retention, are needed. Mine-to-mill improvements are considered in the mining costs, with incremental explosive consumption, to provide a finer feed to the SAG mill and thus increase its throughput.
- Higher concentrator metal recoveries may be achievable as the proportion of primary versus secondary ores increase in the LOM. Historical test work data indicates potential for higher copper recovery with primary ore, with limited pressure downward on resulting concentrate grade.
- Underperformance of wells and water delivery system may limit the processing capability of the mill and heap leach facility. Maintenance and repair of existing wells is required to prevent interruption to supply.
- Groundwater may be unavailable to sustain production levels. This may be a result of ongoing drought conditions leading to restrictions on water usage or limitations to pumping. Long term mitigations may include supplementing or replacing groundwater supply with desalinated water from the coast.
- The mine plan considers a production plan beyond the expiry of the RCA in 2037. A new environmental permit will be required which may or may not allow continued access to groundwater supply.
- If Caserones does not comply with the CP, the enforcement proceeding suspension would no longer apply, and the SMA would determine a sanction for each of the 16 charges that were part of the CP program.
- Caserones submitted defence arguments concerning two charges that were not addressed in the CP. No final decision had been received at the Report effective date. If Caserones fails to win its case, SMA may sanction the Project. Caserones considers that the most likely

outcome would be a fine. Should the environmental authority acquit the company, there will likely be legal challenges to this decision before the Environmental Court. Conversely, if Caserones is sanctioned, and environmental damage is declared, the Project may be exposed to environmental damage claims and subsequent tort liability claims.

## 25.17 Opportunities

Caserones could benefit from cost savings due to its proximity to LMC's Candeleria project. For example, some G&A tasks could be shared, additional purchasing power could be leveraged, and Caserones could utilization Candelaria's port for concentrate shipments.

# 26 RECOMMENDATIONS

It is recommended that Caserones undertake the following initiatives:

## 26.1 Mineral Tenure

- Apply for easements to cover those areas of the power transmission line and desalinated water pipeline that were identified as having gaps in easement coverage in the legal opinion.

## 26.2 Geology

- Complete additional diamond drill holes to confirm continuity of mineralization at depth and to twin several RC drill holes in the northwest of the deposit where RC drill hole were stopped in mineralization. The initial proposed drill program would consist of approximately 50 drill holes (~10,000 m) where 10 of these drill holes may be used to twin and extend RC drill holes.

## 26.3 Resource

- Update the Mineral Resources to include more recent drill information.
- Remove blocks from the resource block model which have been over extrapolated. An independent audit is recommended.
- Improve reconciliation of the long-term model by updating the block model with updated topography to improve predictive capabilities.

## 26.4 Reserves

- Assess geotechnical data for the ultimate pit shape.
- Develop calibrated hydrogeological model.
- Identify and implement operational and maintenance improvements to the mine fleet to increase availability and utilization.
- Implement drill and blast initiatives to improve the proportion of fines sent to the milling circuit.
- Improve mill preventative maintenance programs. Include task-forced maintenance programs for freshwater wells and pumping systems.

## 26.5 Process/Metallurgy

- Continue metallurgical sampling of future ore types to improve metallurgical performance forecasts.

- Refine flotation recovery projections to integrate the expectations of grind size delivered to flotation (driven by throughput capacity, as limited by SAG milling, and Bond ball mill work index) along with the effect on ore type.
- Review the dump leach dynamic simulations' parameters to align the assumptions with actual dump performance.

## 26.6 Infrastructure

- Initiate engineering studies to evaluate supplementing and replacing groundwater supply with desalinated water if required.

Table 26.1 summarizes the estimated development budget for the Caserones Project.

**Table 26.1: Study Development Budget**

| Area | Activity | Estimated Cost (CAD$) |
|---|---|---|
| Geology | Update Mineral Resources | 100,000 |
| | Drill Hole Program | 2,000,000 |
| Metallurgical Test Work | Metallurgical Sampling | 100,000 |
| Mine Improvements | Geotechnical Program | 1,000,000 |
| | Drill & Blast Initiatives | 250,000 |
| | Maintenance Improvements | 100,000 |
| Process Improvements | Dump Leach Dynamic Simulation | 200,000 |
| Site Infrastructure | Desalination Studies | 500,000 |
| | **Total** | **4,250,000** |

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# 28 CERTIFICATE OF AUTHORS

## 28.1 Paul J. Daigle, P. Geo.

### CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled "NI 43-101 Technical Report on the Caserones Mining Operation" dated 13 July 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Paul J. Daigle, P.Geo. do hereby certify that:

- I am a Principal Resource Geologist with AGP Mining Consultants Inc., with a business address at #246-132K Commerce Park Dr., Barrie ON L4N 0Z7, Canada.
- I am a graduate of Concordia University, Montreal, Canada (B.Sc. Geology) in 1989.
- I am a member in good standing of the Geoscientists of Ontario (No. 1592).
- I have practiced my profession in the mining industry continuously since graduation.
- My relevant experience includes over 33 years in a wide variety of mineral exploration projects, with my most recent experience in copper porphyry deposits include: the Josemaría deposit, Argentina, and the Antilla and Cotabambas copper projects, Peru.
- I am independent of Lundin Mining Corporation as defined by Section 1.5 of the Instrument.
- I am responsible for Sections 1.1, 1.2, 1.4 to 1.8, 1.11, portions of 1.22, 4, 6 to 11, 12.1, 12.2, 14, 25.1 to 25.3, 25.5, portions of 25.16, 26.2, 26.3, and 27 of the Technical Report and accept professional responsibility for those sections of the Technical Report.
- I have had no prior involvement with the Caserones Project that is the subject of the Technical Report.
- I have not completed a site visit to the Caserones Project.
- As of the effective date of the technical report, to the best of my knowledge, information, and belief, the sections of the technical report that I am responsible for, contain all scientific and technical information that is required to be disclosed to make those sections of the technical report not misleading.
- I have read NI 43-101 and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and as a result of my experience and qualifications, I meet the definition of a qualified person as defined in NI 43-101.

Signed and dated this 13th day of July 2023, at Toronto, Ontario.

"*electronically signed*"

______________________________

Paul J. Daigle, P. Geo.

## 28.2 Oscar Retto Magellanes, MAIG

### CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: "NI 43-101 Technical Report on the Caserones Mining Operation", dated 13 July 2023 with an effective date of 31 December 2022 (the "Technical Report").

I, Oscar Retto Magellanes, MAIG, do hereby certify that:

- I am a Principal Mineral Resource Associate with AGP Mining Consultants Inc., with a business address at #246-132K Commerce Park Drive, Barrie ON L4N 2V5 Canada
- I am a graduate of the Universidad Nacional Mayor de San Marcos of Lima, Peru with a degree in Mining Engineering in 1994 and a graduate of Ecole des Mines de Paris, Fontainebleau, France with a diploma in Geostatistics (CFSG) in 1995.
- I am a member in good standing of the Australian Institute of Geoscientists (membership number 5295).
- I have practiced my profession in the mining industry since graduation. My relevant experience includes over 28 years and has covered various operational, technical and consultancy functions on early stages projects through to production mines in Peru, Canada, and Australia. I have worked as senior deposit modeler engineer in Minera Yanacocha and mineral resource chief in Cerro Corona mine and lately as an independent mineral resource consultant. I have completed resource estimates for a variety of deposit types such as porphyry copper and molybdenum deposits, porphyry gold and copper deposits, gold, and copper epithermal high sulfidation deposits and polymetallic veins.
- I am independent of the Lundin Mining Corporation as defined in Section 1.5 of NI 43-101.
- I am responsible for Sections 1.3, 2.2, 2.3.1, 5 and 12.3 of the Technical Report and accept professional responsibility for those sections of the Technical Report.
- I have had no prior involvement with the Caserones Mining Operation that is the subject of the Technical Report.
- My most recent site visit to the Caserones Mining Operation was from April 27 to 28, 2023 for two days.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and as a result of my experience and qualifications, I meet the definition of a qualified person as defined in NI 43-101.

Dated this 13th day of July 2023, in Lima, Peru.

*"signed electronically"*

Oscar Retto Magellanes, MAIG

## 28.3 Pierre Lacombe, P. Eng.

**CERTIFICATE OF QUALIFIED PERSON**

To accompany the technical report entitled "NI 43-101 Technical Report on the Caserones Mining Operation" 13 July 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Pierre Lacombe, P.Eng., do hereby certify that:

- I am Group Metallurgist with Lundin Mining Corporation ("Lundin"), with a business address at 150 King St. E., Suite 2200, Toronto, ON, M5H1J9.
- I graduated from École Polytechnique de Montréal with a degree in Mining Engineering in 1984
- I am a member in good standing of the Order des Ingénieurs of Québec, #39496.
- I have practiced my profession in the mining industry continuously since graduation. My relevant experience includes over 38 years on mineral processing plants' operations and design, either with mining companies or consulting firms.
- I am not independent of Lundin as defined by Section 1.5 of the Instrument.
- I am responsible for Sections 1.9, 1.13, portions of 1.17 and 1.18, portions of 1.20 and 1.21, 13, 17, 18.8, portions of 21, 25.4, 25.9, portions of 25.10, portions of 25.13, 26.4 and portions of 26.5 of this Technical Report, and accept professional responsibility for those sections of the Technical Report.
- I have participated in Lundin's technical review team of the Caserones mine property, prior to the acquisition of an interest in said property by Lundin.
- My most recent visit to the Caserones mine site was from August 31 to September 1, 2022.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and as a result of my experience and qualifications, I meet the definition of a qualified person as defined in NI 43-101.

Signed and dated this 13th day of July 2023, at Toronto, Ontario.

*"electronically signed"*

______________________________

Pierre Lacombe, P.Eng.

## 28.4 Kirk Hanson, P.E.

**CERTIFICATE OF QUALIFIED PERSON**

To accompany the technical report entitled "NI 43-101 Technical Report on the Caserones Mining Operation" 13 July 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Kirk Hanson, P.E. do hereby certify that:

- I am a Principal Mining Engineer with AGP Mining Consultants Inc., with a business address at #246-132K Commerce Park Dr., Barrie, Ontario L4N 0Z7, Canada.
- I graduated with a B.Sc. degree from Montana Tech of the University of Montana, Butte, Montana in 1989 and from Boise State University, Boise, Idaho with an MBA degree in 2004.
- I am registered as a Professional Engineer in the State of Idaho (#11063).
- I have practiced my profession for 33 years. I was Engineering Superintendent at Barrick's Goldstrike operation, where I was responsible for all aspects of open-pit mining, mine designs, mine expansions and strategic planning. After earning an MBA in 2004, I was assistant manager of operations and maintenance for the largest road department in Idaho. In 2007, I joined AMEC (now Wood) as a principal mining consultant. After leaving Wood in 2022, I went to work for AGP as an associate principal mining engineer. Over the past 19 years, I have been the mining lead for multiple scoping, pre-feasibility, and feasibility studies.
- I am independent of the Issuer and related companies in accordance with Section 1.5 of NI 43-101.
- I am responsible for Sections 1.11, 1.12, 1.14, 1.15, portions of 1.17 and 1.18, 1.19, portions of 1.20 and 1.21, 2, 3, 15, 16, 18.1, 18.2, 18.5 to 18.7, 19, portions of 21, 22 to 24, 25.6 to 25.8, portions of 25.10, 25.11, portions of 25.13, 25.14, 26.3, and portions of 26.5 of the Technical Report and accept professional responsibility for those sections of the Technical Report.
- I have had no previous involvement with the Caserones property.
- My most recent site visit to the Caserones property was on 01 September 2022 for a one day site visit.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.
- I have read NI 43-101 and the Technical Report has been prepared in accordance with NI 43-101 and Form 43-101F1. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and as a result of my experience and qualifications, I meet the definition of a qualified person as defined in NI 43-101.

Dated this 13th day of July 2023, in Boise, Idaho USA.

*"signed electronically"*

Kirk Hanson, P.E.

## 28.5 Andre Gagnon

### CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: "NI 43-101 Technical Report on the Caserones Mining Operation" dated 13 July 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Andre Gagnon, P.Eng., do hereby certify that:

- I am employed as the Director, Tailings with Lundin Mining Corporation, with a business address at the Corporate office situated at 150 King Street West, Suite 2200, Toronto, Canada M5H 1J9.
- I graduated from Queen's University with a Bachelor of Applied Science degree in Geological Engineering in 2006. I also graduated from Imperial College London in 2014 with a Master of Science degree in Engineering Geology.
- I am a registered Professional Engineer in good standing with Professional Engineers Ontario (PEO) with License No. 100173442.
- I have practiced my profession in the mining industry continuously since 2006. My relevant experience includes over 16 years in tailings facility design, construction, and corporate tailings management. I have relevant international experience ranging from exploration camps to operational mine sites located throughout Canada, USA, Mexico, Chile, Brazil, Guatemala, Argentina, Sweden, Portugal, and Greenland.
- I am not independent of Lundin Mining Corporation as independence is defined in Section 1.5 of NI 43-101.
- I am the co-author of this report and responsible for Sections 18.3 and 20.3.1 of the Technical Report and accept professional responsibility for those sections of the Technical Report.
- I have had no previous involvement with Caserones Mining Operation.
- My most recent site visit to the Caserones mine was on 01 September 2022, for one day.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.
- I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in accordance with NI 43-101 and Form 43-101F1. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and as a result of my experience and qualifications, I meet the definition of a qualified person as defined in NI 43-101.

Dated this 13th day of July 2023, in Toronto, Ontario, Canada.

*"signed electronically"*

Andre Gagnon, P.Eng.