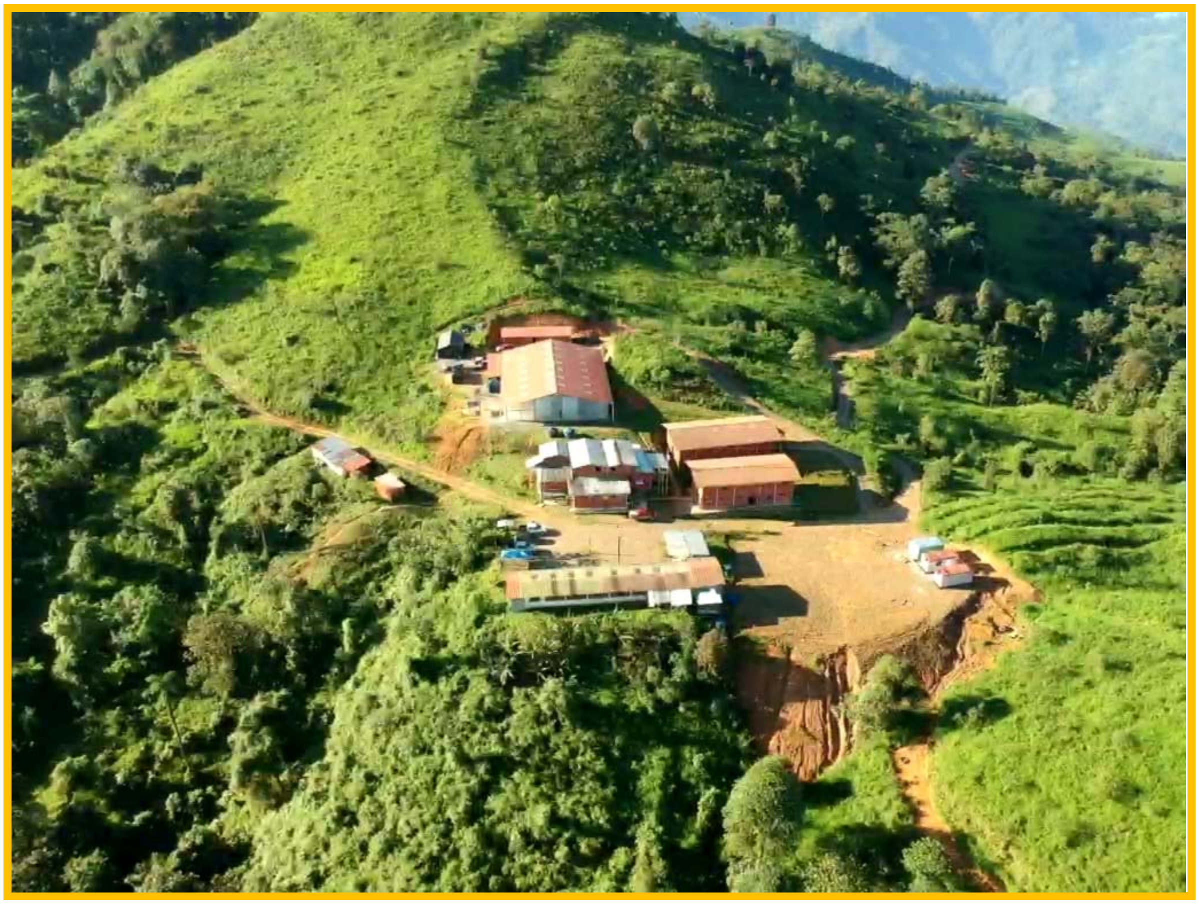
CANGREJOS GOLD-COPPER PROJECT, ECUADOR

NI 43-101 Technical Report



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1 SUMMARY

Introduction

The Cangrejos Gold-Copper Project (the Cangrejos Project or the Project) is located within the El Oro province of southwestern Ecuador and hosts the Cangrejos and the Gran Bestia gold-copper deposits. The Cangrejos concessions are fully owned by Lumina Gold Corp. (Lumina or the Company), based in Vancouver, British Columbia, Canada, through its 100% owned Ecuadorian subsidiary, Odin Mining del Ecuador S.A. (Odin).

Lumina completed a Preliminary Economic Assessment (PEA) study of the Project in August 2018 (Rose et al., 2018). Since that time, infill drilling has continued on the Cangrejos Zone and wide-spaced drilling has tested the Gran Bestia Zone. This technical report (this Technical Report or this Report) incorporates the results of this drilling and provides an updated mineral resource estimate for the Cangrejos Zone and an initial estimate for the Gran Bestia Zone.

This Technical Report was written by Robert Sim, P.Geo., Bruce Davis, FAusIMM, and Nelson King, SME. All are independent “qualified persons” (QPs) as defined by Canadian Securities Administrators (CSA) *National Instrument 43-101 – Standards of Disclosure for Mineral Projects* (NI 43-101) and as described in Section 28 (Date and Signature Pages) of this Technical Report.

Personal inspections of the Cangrejos Project were made by Robert Sim and Nelson King. Bruce Davis did not visit the Project.

Property Description and Location

The Cangrejos Project is located in southwestern Ecuador (Figure 4-1), 30 km southeast of the port city of Machala at 3º 28’ 58’’ south latitude, 79º 49’ 3’’ west longitude. The UTM coordinates for the Cangrejos Zone are 9614300 North and 633200 East (geographic projection: Provisional South American Datum 1956, UTM Zone 17S). Access to the property is provided by paved and gravel roads. The Cangrejos Project consists of ten mining concessions totalling 6,373 ha (the Concessions).

Ownership

The Concessions are fully owned by Lumina through its 100% owned Ecuadorian subsidiary, Odin.

Lumina was previously named Odin Mining and Exploration Ltd. (Odin Mining) before its name change on November 1, 2016.

The Cangrejos 20 concession was awarded to Lumina on November 15, 2016 in the course of the Ecuadorian government’s mining auction process.

History

In 1992, Odin Mining carried out a stream sediment sampling program to locate the source of the Birón alluvial gold deposit that it was mining (69,000 oz Au). A number of good gold stream sediment anomalies were located and mineral concessions were acquired over these areas. In 1994, Odin Mining formed the El Joven Joint Venture with Newmont Overseas Exploration Limited (Newmont) to explore the region. Newmont was the operator and carried out an airborne magnetic-radiometric survey, an IP survey, geological mapping and extensive soil and rock geochemical surveys.

Survey procedures, sampling methodology, and analysis of these samples are described in detail by Mayor and Soria (2000) and Potter (2004, 2010). Detailed information on the geological mapping and airborne and ground geophysics programs are also discussed in the above-mentioned reports.

From these exploration programs, well-defined gold and/or copper soil anomalies have been delineated. A sub-circular, gold-copper soil anomaly with a diameter of approximately 2,700 m occurs at the centre of the property. The Cangrejos and Gran Bestia mineralized zones occur within this area of anomalous gold and copper soil values.

Other mineralized showings on the property also have anomalous,but somewhat less-extensive, gold and copper soil values.

In 1999, Newmont drilled the large gold-copper soil anomaly and discovered a zone of porphyry-style, gold-copper mineralization (Hole C99-14: 1.57 g/t Au, 0.19% Cu over 192 m) (Odin Mining, Dec. 1999) which was subsequently named the Cangrejos Zone. Newmont also discovered another zone of porphyry-style mineralization at Gran Bestia, located 1.2 km northwest of the Cangrejos Zone (Hole C99-06: 1.19 g/t Au over 132 m) (Odin Mining, Sept. 1999).

In 2001, Newmont withdrew from the Joint Venture following a risk and evaluation review of the Project that suggested that it would not meet corporate requirements. Odin Mining retained the northern claims which covered the Cangrejos Zone and several other geochemical anomalies. Between 2004 and 2007, it carried out additional stream sediment and soil sampling.

From April 2008 to November 2009, the Ecuadorian government imposed a country-wide moratorium on exploration, so no work was done on the property during that time.

In 2010, exploration work continued with additional soil sampling.

In 2011 and 2012, drilling tested the extent of the Cangrejos Zone and a gold soil anomaly in the Casique area.

In 2014 and early 2015, additional drilling extended the lateral and depth extents of the Cangrejos Zone and tested the El Capitán copper-molybdenum soil anomaly. Based on the historical and 2014 drilling at the Cangrejos Zone, an initial Inferred mineral resource estimate of 191.8 Mtonnes of mineralized material at 0.64 g/t Au, 0.8 g/t Ag, 0.10% Cu, 31.2 ppm Mo (using a 0.35 g/t Au equivalent cut-off and a $1,250/oz Au pit shell) contained 4.0 million ounces of gold, 4.6 million ounces of silver, 440 million pounds of copper and 13 million pounds of molybdenum (Brepsant et al., 2017).

In 2017, additional drilling of the Cangrejos Zone discovered a deep, high-grade gold-copper zone. An updated mineral resource estimate was published in November 2017 (Sim and Davis, 2017) and was updated for a PEA completed in August 2018 (Rose et al., 2018). The Cangrejos Zone had an Inferred mineral resource estimate of 408 Mtonnes of mineralized material at 0.65 g/t Au, 0.6 g/t Ag, 0.11% Cu and 25 ppm Mo (using a 0.35 g/t Au equivalent cut-off and a $1,400/oz

Au pit shell) which contained 8.5 Moz Au, 1,033 Mlbs Cu, 7.8 Moz Ag and 22.5 Mlbs Mo (Lumina, 2018a).

Drilling continued at Cangrejos to convert the Inferred mineral resource to Indicated and to assess the extent of mineralization at Gran Bestia. The mineral resource estimate described in this Technical Report is based on these drill results.

Status of Exploration

The Cangrejos Project is an advanced exploration project that has seen extensive geological mapping, historical geochemical (streams, soils, top of bedrock soils and rocks) surveys and an airborne magnetic-radiometric survey. This work has defined several exploration targets, and drilling has outlined mineralized zones at Cangrejos and Gran Bestia.

Geology and Mineralization

The Cangrejos Project is underlain by Miocene quartz diorite intrusions which intrude the El Oro metamorphic complex. A large gold-copper soil anomaly is associated with breccia zones located near the contacts of these Miocene intrusions.

The Cangrejos Zone is a northeasterly trending zone of porphyry-style, gold-copper-silver-molybdenum mineralization. It extends for approximately 1,000 m in a northeasterly direction, has widths ranging from 70 m to 600 m, and has been defined to a depth of at least 600 m. The zone remains open to expansion with further exploration to the west and at depth.

At Gran Bestia, the porphyry-style gold-copper mineralization is associated with breccias. The mineralized zone has dimensions of 700 m (north-south) by 600 m (east-west) and has been defined to depths of 700 m. The zone remains open to the north, west, and at depth.

Mineralization consists of finely disseminated chalcopyrite, pyrite and minor bornite, molybdenite and pyrrhotite. The host rocks exhibit patchy secondary biotite (potassic) alteration and a late-stage, calcic-sodic alteration which is characterized by actinolite, chlorite and albite.

Sample Database and Validation

A review of the sample collection and analysis practices used during the various drilling campaigns indicates that this work was conducted using generally accepted industry procedures.

Portions of the data have been validated using several methods, including visual observations and comparisons with the assay results, and direct comparisons with assay certificates. Only the sampling programs conducted by Odin Mining and Lumina (2011–2012; 2014–2015, 2017 and 2018–2019) were monitored using a QA/QC program that is typically accepted in the industry. Newmont's drill core and sample pulps were resampled to confirm the results from this older drilling campaign. The similarities between data from all the drilling campaigns (location, style, and tenor) suggest that there is no reason to question the results from the earlier drill programs. It is the QPs' opinion that the database is sufficiently accurate and precise to generate a mineral resource estimate.

Metallurgy

Metallurgical testing was performed by Newmont Metallurgical Services (NMS) of Englewood, Colorado, USA in 1999 and by C.H. Plenge & CIA. S.A. (Plenge) of Lima, Peru from 2015 to October 2019.

Samples for the Plenge metallurgical test programs have been obtained from 60 drill holes representative of various rock types, alterations, lithologies, metal content, and locations throughout the Cangrejos Project.

Metallurgical investigations completed or directed by Plenge included assaying, material characterization, mineralogy, physical properties and comminution studies, gravity concentration, cyanidation, flotation, solid-liquid separation, and tailings characterization.

Based on the results of the Plenge test programs, the selected and optimum mineralized material processing scheme is crushing, grinding, flotation, cyanidation of cleaner scavenger tails and coarse gold-bearing material floated from rougher tailings, and deposition of filtered plant tailings in a storage facility. The plan is to produce copper-gold flotation concentrate, gold-silver doré and molybdenum flotation concentrate that will all be shipped offsite for further processing.

The whole-ore cyanidation process was not selected even though gold recoveries would be higher. Because copper is also recovered in the flotation-leach process, there is a higher overall recovered value.

The projected plant metallurgical performance is based on an assessment of Plenge test results while using the selected processing scheme.

The overall projected recoveries for average fresh rock of gold, silver, copper, and molybdenum are 82%, 60%, 87%, and 50%, respectively. The overall gold recoveries are estimated to be 73% in float concentrates and 9% in doré.

The overall projected metallurgical recoveries for transitonal oxide material are 81%, 60%, 54%, and 50% for gold, silver, copper, and molybdenum, respectively.

The projected metal contents for concentrate produced from average fresh rock are estimated to be:

- Copper concentrates – 21% Cu; Ag, Au, and Cu recoveries in concentrates of 55%, 73% and 87%, respectively
- Doré – 9% Au and 5% Ag recoveries
- Molybdenum concentrates – 45% Mo; 50% Mo recovery

The projected metal contents for concentrate produced from partially oxidized material are estimated to be:

- Copper concentrates, 16% Cu; Ag, Au, and Cu recoveries in concentrates of 50%, 61%, and 54%, respectively
- Doré – 20% Au and 10% Ag recoveries
- Molybdenum concentrates – same as fresh rock

Gold recoveries from saprock and saprolite, using the float-leach process, are estimated to be 70% into flotation concentrates and a doré product after cyanidation of cleaner tails. Silver recovery is estimated at 60%, while no copper or molybdenum are predicted to be recovered into float concentrates from these materials.

Mineral Resource Estimate

The mineral resource estimate was generated using drill hole sample assay results and the interpretation of a geological model which relates to the spatial distribution of gold, copper, silver, molybdenum and sulphur. Interpolation characteristics were defined based on the geology, drill hole spacing, and geostatistical analysis of the data. Estimations are made from 3D block models based on geostatistical applications using commercial mine planning software (MinePlan® v15.60, formerly called MineSight®).

Grade estimates have been made using ordinary kriging (OK) into a model with a nominal block size of 15 ×15 ×15 m (L×W×H). Potentially anomalous outlier grades have been identified and their influences on the grade models are controlled during interpolation through the use of top-cutting and outlier limitations. Specific gravities are estimated in model blocks using the inverse distance weighting (ID2) interpolation method.

The results of the modelling process were validated using a combination of visual and statistical methods to ensure the grade estimates are approriate representations of the underlying sample data.

The mineral resources were classified according to their proximity to the sample data locations and are reported, as required by NI 43-101, according to the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014). Mineral resources in the Indicated category include zones of consistent mineralization where drill holes are spaced at a maximum distance of 100m. Inferred class mineral resources include areas that are within a maximum distance of 150m from a drill hole.

To ensure that the mineral resource exhibits reasonable prospects for eventual economic extraction, it has been constrained within a floating cone pit shell that has been generated using the following projected economic and technical parameters:

- Mining (open pit) $2.00/t
- Processing $8.00/t
- G&A $1.50/t
- Gold price $1,500/oz
- Silver price $18.00/oz
- Copper price $3.00/lb
- Molybdenum price $7.00/lb
- Gold process recovery 83% fresh rock; 80% part oxidized; 75% SAP&SRK
- Silver process recovery 60% fresh rock; 60% part oxidized;

65% SAP&SRK

- Copper process recovery 87% fresh rock; 50% part oxidized
- Molybdenum process recovery 50% fresh rock and part oxidized
- Pit slope 47.5 degrees

The estimate of mineral resources, contained within the $1,500/oz Au pit shell, is based on gold equivalent grades (AuEq) calculated using the following formula:

AuEq = Au g/t + (Ag g/t × 0.012) + (Cu% × 1.37) + (Mo ppm/10,000 × 3.2)

(Note: there is no contribution from copper or molybdenum in the SAP or SRK units)

Using the assumed metal prices, operating costs and metallurgical recoveries listed above, the base case cut-off grade for mineral resources is estimated to be 0.30 g/t AuEq.

Table 1.1 shows the estimate of mineral resources at Cangrejos. Table 1.2 shows the estimate of mineral resources at Gran Bestia. Table 1.3 shows the combined estimate of mineral resources at Cangrejos and Gran Bestia.

Table 1.1: Estimate of Mineral Resources at Cangrejos

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	14.5	0.61	0.57	0.10	2.9	4.2	0.04	0.3	30	1.3	0.1
TransOxide	14.8	0.71	0.56	0.10	0.8	15.7	0.18	0.3	33	0.4	0.5
Fresh	439.6	0.77	0.59	0.12	0.7	23.2	0.24	8.4	1,163	9.2	22.5
Combined	**468.8**	**0.77**	**0.59**	**0.12**	**0.7**	**22.4**	**0.23**	**8.9**	**1,220**	**10.9**	**23.2**
Inferred											
SAP+SRK	7.5	0.43	0.41	0.07	2.0	2.7	0.07	0.1	11	0.5	0.0
TransOxide	9.6	0.46	0.36	0.07	0.7	11.9	0.38	0.1	15	0.2	0.3
Fresh	237.7	0.56	0.43	0.08	0.7	15.2	0.34	3.3	440	5.0	8.0
Combined	**254.8**	**0.55**	**0.43**	**0.08**	**0.7**	**14.7**	**0.33**	**3.5**	**466**	**5.7**	**8.3**

Note: The estimates in Table 1.1 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Table 1.2: Estimate of Mineral Resources at Gran Bestia

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	2.5	0.55	0.52	0.08	2.4	8.6	0.04	0.0	4	0.2	0.0
TransOxide	4.7	0.69	0.56	0.08	0.6	17.2	0.22	0.1	9	0.1	0.2
Fresh	92.1	0.57	0.45	0.08	0.5	15.7	0.27	1.3	165	1.5	3.2
Combined	**99.4**	**0.58**	**0.46**	**0.08**	**0.6**	**15.6**	**0.26**	**1.5**	**178**	**1.8**	**3.4**
Inferred											
SAP+SRK	4.9	0.45	0.43	0.06	1.6	7.0	0.17	0.1	7	0.2	0.1
TransOxide	8.5	0.50	0.40	0.06	0.8	10.9	0.40	0.1	12	0.2	0.2
Fresh	207.8	0.49	0.38	0.07	0.6	12.2	0.35	2.6	302	3.9	5.6
Combined	**221.2**	**0.49**	**0.39**	**0.07**	**0.6**	**12.0**	**0.35**	**2.7**	**322**	**4.3**	**5.9**

Note: The estimates in Table 1.2 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Table 1.3: Estimate of Mineral Resources at Cangrejos and Gran Bestia

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	17.0	0.60	0.57	0.09	2.8	4.8	0.04	0.3	35	1.5	0.2
TransOxide	19.5	0.71	0.56	0.10	0.7	16.1	0.19	0.4	41	0.5	0.7
Fresh	531.7	0.74	0.57	0.11	0.6	21.9	0.24	9.7	1325	10.8	25.7
Combined	**568.2**	**0.73**	**0.57**	**0.11**	**0.7**	**21.2**	**0.24**	**10.4**	**1,403**	**12.8**	**26.6**
Inferred											
SAP+SRK	12.4	0.44	0.41	0.07	1.8	4.4	0.11	0.2	18	0.7	0.1
TransOxide	18.1	0.48	0.38	0.07	0.7	11.4	0.39	0.2	27	0.4	0.5
Fresh	445.5	0.53	0.41	0.08	0.6	13.8	0.34	5.9	746	8.9	13.6
Combined	**476.0**	**0.52**	**0.41**	**0.08**	**0.7**	**13.4**	**0.34**	**6.3**	**787**	**9.9**	**14.1**

Note: The estimates in Table 1.3 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Conclusions

Based on the evaluation of the data available from the Cangrejos Project, the authors of this Report have drawn the following conclusions:

- At the effective date of this Report (November 7, 2019), Lumina holds 100% interest in the Cangrejos Project.
- The Cangrejos deposit forms a relatively continuous zone of gold-copper-silver-molybdenum, porphyry-style mineralization associated with a sequence of breccias and porphyritic Miocene quartz diorite intrusions. The zone extends for approximately 1,000 m in a northeasterly direction, has widths ranging from 70 m to 600 m, and has been defined to a depth of at least 600 m below surface. The Cangrejos deposit remains open to expansion with further exploration to the west and at depth.
- Drilling to date at the Cangrejos deposit has outlined an Indicated mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 468.8 Mtonnes of mineralized material at 0.59 g/t Au, 0.12% Cu, 0.7 g/t Ag and 22.4 ppm Mo which contains 8.9 million ounces of gold, 1,220 Mlbs of copper, 10.9 million ounces of silver, and 23.2 Mlbs of molybdenum.
- Drilling to date at the Cangrejos deposit has outlined an Inferred mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 254.8 Mtonnes of mineralized material at 0.43 g/t Au, 0.08% Cu, 0.7 g/t Ag and 14.7 ppm Mo which contains 3.5 million ounces of gold, 466 Mlbs of copper, 5.7 million ounces of silver, and 8.3 Mlbs of molybdenum.
- The Gran Bestia deposit is located 700 m northwest of the Cangrejos deposit. Porphyry-style gold-copper mineralization at the Gran Bestia deposit is hosted in breccias. The mineralized zone has dimensions of 700 m by 600 m and has been defined to depths of 700 m. The Gran Bestia deposit remains open to the north, west, and at depth.
- Drilling to date at the Gran Bestia deposit has outlined an Indicated mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 99.4 Mtonnes of mineralized material at 0.46 g/t Au, 0.08% Cu, 0.6 g/t Ag and 15.6 ppm Mo which contains 1.5 million ounces of gold, 178 Mlbs of copper, 1.8 million ounces of silver, and 3.4 Mlbs of molybdenum .
- Drilling to date at the Gran Bestia deposit has outlined an Inferred mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 221.2 Mtonnes of mineralized material at 0.39 g/t Au, 0.07% Cu, 0.6 g/t Ag and 12.0 ppm Mo which contains 2.7 million ounces of gold, 322 Mlbs of copper, 4.3 million ounces of silver, and 5.9 Mlbs of molybdenum..
- Based on the current level of exploration, the Cangrejos and Gran Bestia deposits contain a total Indicated mineral resource of 568.2 Mtonnes of mineralized material at a grade of 0.57 g/t Au, 0.11% Cu, 0.7 g/t Ag and 21.2 ppm Mo containing 10.4 Moz Au, 1,403 Mlbs Cu, 12.8 Moz Ag and 26.6 Mlbs Mo. The deposits contain an additional total Inferred mineral resource of 476 Mtonnes of mineralized material at a grade of 0.41 g/t Au, 0.08% Cu, 0.7 g/t Ag and 13.4 ppm Mo containing 6.3 Moz Au, 787 Mlbs Cu, 9.9 Moz Ag and 14.1 Mlbs Mo.
- Metallurgical work indicates that the mineralization at the Cangrejos deposit can be processed using conventional methods. Doré and separate copper-gold and

molybdenum flotation concentrates can be produced. The overall projected recoveries for average fresh rock are 82%, 60%, 87% and 50% for gold, silver, copper and molybdenum, respectively. The overall projected recoveries for partially oxidized material are 81%, 60%, 54% and 50% for gold, silver, copper and molybdenum, respectively. The overall projected recovery of gold from saprock and saprolite materials is estimated at 70%.

- There are no known factors related to metallurgical, environmental, permitting, legal, title, taxation, socio-economic, marketing or political issues which could materially affect the mineral resource estimates contained in this Report.

Recommendations

The following work is recommended for the project:

- Proceed with a preliminary economic assessment of the Cangrejos Project. The budget for this study is estimated at $1.1 million.
- Conduct additional metallurgical testing and geotechnical studies at the Gran Bestia deposit. The budget for this work is estimated at $200,000.

Cautionary Note Regarding Forward-looking Information and Statements

Information and statements contained in this Technical Report that are not historical facts are “forward-looking information” or “forward-looking statements” within the meaning of Canadian securities legislation and the *U.S. Private Securities Litigation Reform Act of 1995* (hereinafter collectively referred to as “forward-looking statements”) that involve risks and uncertainties. Examples of forward-looking statements in this Report include information and statements with respect to: Lumina’s plans and expectations for the Cangrejos Project, estimates of mineral resources, and possible related discoveries or extensions of new mineralization or increases or upgrades to reported mineral resources estimates and budgets for recommended work programs.

In certain cases, forward-looking statements can be identified by the use of words such as "budget", "estimates", or variations of such words or state that certain actions, events or results "may", "would", or "occur". These forward-looking statements are based, in part, on assumptions and factors that may change, thus causing actual results or achievements to differ materially from those expressed or implied by the forward-looking statements. Such factors and assumptions include, but are not limited to, assumptions concerning base metal and precious metal prices; cut-off grades; accuracy of mineral resource estimates and resource modelling; reliability of sampling and assay data; representativeness of mineralization; accuracy of metallurgical testwork and timely receipt of regulatory approvals.

Forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Lumina to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Such risks and other factors include, among others, fluctuation in the price of base and precious metals; expropriation risks; currency fluctuations; requirements for additional capital; government regulation of mining operations; environmental, safety and regulatory risks; unanticipated reclamation expenses; title disputes or claims; limitations on insurance coverage; changes in project parameters as plans continue to be refined; failure of plant, equipment or processes to operate as anticipated; accidents, labour disputes and other risks of the mining industry; competition inherent in the mining exploration industry; delays in obtaining governmental approvals or financing or in the completion of exploration, development or construction activities, as well as those factors discussed in the sections entitled “Risks and Uncertainties” in Lumina’s annual Management’s Discussion and Analysis. Although Lumina and the authors of this Report have attempted to identify important factors that could affect Lumina and may cause actual actions, events or results to differ, perhaps materially, from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended.

There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. The forward-looking statements in this Report are based on beliefs, expectations and opinions as of the effective date of this Report. Lumina and the authors of this Report do not undertake any obligation to update any forward-looking information and statements included herein, except in accordance with applicable securities laws.

2 INTRODUCTION

Lumina Gold Corp. (Lumina) commissioned Robert Sim, P.Geo., of SIM Geological Inc. (SIM Geological), Bruce Davis, FAusIMM, of BD Resource Consulting Inc. (BDRC), and Nelson King of ND King Consulting LLC to provide an updated mineral resource estimate for the Cangrejos Project. Robert Sim, Bruce Davis and Nelson King are independent “qualified persons” (QPs) within the meaning of National Instrument 43-101 - *Standards of Disclosure for Mineral Projects* (NI 43-101). They are responsible for the preparation of this Technical Report on the Cangrejos Project, which has been prepared in accordance with NI 43-101 and Form 43-101F1 Technical Report (Form 43-101F1).

Robert Sim visited the site from November 28 to 29, 2017. He inspected drill core from numerous holes and visited a number of drill sites and the core storage facility.

Nelson King visited the site from January 16 to 17, 2018. He observed site conditions, examined core, and inspected topography to determine the process-facility site.

Bruce Davis did not visit the site because it was not required to complete the scope of work for which he was retained.

In preparing this Report, the authors relied on geological reports, maps and miscellaneous technical papers listed in Section 27 (References) of this Report.

This Report is based on information known to the authors as of November 7, 2019.

The following QPs are responsible for the information provided in the indicated sections:

- Robert Sim, P. Geo. of SIM Geological, is responsible for all the information provided in this Report, except for Sections 11 (Sample Preparation, Analyses, and Security) and 13 (Mineral Processing and Metallurgical Testing).
- Bruce M. Davis, FAusIMM of BDRC, is responsible for the information provided in Section 11 (Sample Preparation, Analyses, and Security) and portions of Sections 1 (Summary), 12 (Data Verification), and 25 (Interpretation and Conclusions).
- Nelson King, SME Registered Member, of ND King Consulting LLC, is responsible for the information provided in Section 13 (Mineral Processing and Metallurgical Testing) and portions of Sections 1 (Summary) and 25 (Interpretation and Conclusions).

All measurement units used in this report are metric, and currency is expressed in US dollars unless stated otherwise. The currency used in Ecuador is the US dollar.

2.1 Abbreviations and Acronyms

Abbreviations and acronyms used throughout this report are shown in Table 2.1.

Table 2.1: Abbreviations and Acronyms

Description	Abbreviation or Acronym
acid-soluble copper	Cu AS
Agencia de Regulación y Control Minero, Ecuador	ARCOM
amphibole-rich meta-basalt schist	GSC
biotite-feldspar-quartz schist	SCH
biotite-feldspar-quartz schist dominat breccia	SCHD
Bond Work Index	BWi
Canadian Securities Administrators	CSA
Cangrejos Gold-Copper Project	Cangrejos Project or Project
Cangrejos variability study	CVS
day/month/year	dd/mm/yyyy
degrees Celcius	°C
carbon	C
centimetre	cm
C.H. Plenge & CIA. S.A.	Plenge
copper	Cu
digital elevation model	DEM
digital terrain model	DTM
drill core size (diameter 63.5 mm)	HQ (HTW)
drill core size (diameter 85 mm)	PQ
east	E
Environmental Impact Statement	EIS
equigranular quartz diorite	EQD
equigranular quartz diorite dominant breccia	EQDD or EQDDom
exploratory data analysis	EDA
Fellow of the Australasian Institute of Mining and Metallurgy	FAusIMM
fluorine	F
FLSmidth Mineral Lab	FLS
general and administrative	G&A
Global Positioning System	GPS
gold	Au
gold equivalent	AuEq

Description	Abbreviation or Acronym
gram	g
gram per cubic centimetre	g/cc
grams per litre	g/L
grams per tonne	g/t
hectare	ha
high-pressure grinding roll	HPGR
induced polarization	IP
inductively coupled plasma	ICP
inverse distance weighted	IDW
JK Drop Weight Test	JKDWT
kilogram	kg
kilogram per tonne	kg/t
kilometre	km
kilowatt hours per tonne	kWh/t
length x width x height	L x W x H
light detection and ranging	LiDAR
litre	L
lock-cycle test	LCT
Lumina Gold Corp.	Lumina or Company
megapascal	MPa
meta-gabbro	GAB
metre	m
millimetre	mm
million ounces	Moz
million pounds	Mlbs
million tonnes	Mt, Mtonnes
million years	Ma
molybdenum	Mo
National Instrument 43-101	NI 43-101
nearest neighbour	NN
Newmont Metallurgical Services	NMS
Newmont Overseas Exploration Limited	Newmont
north	N
Odin Mining and Exploration Ltd.	Odin Mining
Odin Mining del Ecuador S.A.	Odin

Description	Abbreviation or Acronym
ordinary kriging	OK
ounce	oz
oxidized	ox.
parts per billion	ppb
parts per million	ppm
percent	%
porphyritic diorite to andesite dike	PAD
porphyritic quartz diorite	PQD
porphyritic quartz diorite dominant breccia	PQDD or PQDDom
potassium-argon	K-Ar
pound	lb
pound-force per square inch gauge	psig
pounds per square inch	psi
preliminary economic assessment	PEA
Professional Geoscientist	P.Geo.
qualified person	QP
quality assurance/quality control	QA/QC
recoverable gold equivalent	AuEqR
reduced to pole	RTP
rhenium-osmium	Re-Os
rock quality designation	RQD
saprock	SRK
saprolite	SAP
selective mining unit	SMU
semi-autogenous grinding	SAG
silver	Ag
Society for Mining, Metallurgy and Exploration	SME
sodium cyanide	NaCN
south	S
specific gravity	SG
square metre per tonne per day	sq.m/t/d
square metre per tonne per hour	sq.m/t/hr
standard deviation	Std. Dev.
sulphur	S
three-dimensional	3D

Description	Abbreviation or Acronym
tonne	t
tonnes per cubic metre	t/m^3
uniform compressive strength	UCS
United States dollar	$
Universal Transverse Mercator	UTM
uranium-thorium-lead	U-Th-Pb
west	W
work index	Wi

3 RELIANCE ON OTHER EXPERTS

This Report was prepared by Robert Sim, P.Geo., Bruce Davis, FAusIMM and Nelson King, SME. They are independent qualified persons for the purposes of NI 43-101.

The law firm, Tobar ZVS, completed a title opinion on the Cangrejos Project dated October 1, 2019 (the Tobar Title Opinion) including each of the Concessions except of Cangrejos 20. The results are as follows:

- As of the date of this Opinion, Odin is a corporation duly incorporated and validly existing under the laws of Ecuador. It is in good standing with respect to all applicable filing and regulatory requirements and has all the legal capacity to conduct its business in Ecuador.
- Each of the Concessions is duly registered and in good standing and there are no liens or encumbrances registered on any of the Concessions. There is neither any indication of any potential issue that could result in the termination or caducity of the Concessions, nor any evidence of grounds for the nullification of the ownership of any of the Concessions held by Odin.
- Odin, in accordance with the Ecuadorian mining law, has complied on a timely basis with its obligations to pay the conservation patent fees and to file annual exploration reports with respect to each of the Concessions.
- Odin holds the necessary licenses, permits and registrations, including all necessary environmental licenses and water permits, to carry out advanced exploration activities for all of the Concessions. All such licenses, permits and registrations have been duly granted to and are validly held by Odin. There are no outstanding agreements or operations that may limit the right of Odin to carry out mining activities. There are no agreements for operations with artisanal miners.
- We have been informed that there are no permanent illegal mining activities within the concessions. However, there is sporadic entry of artisanal miners panning alluvial gold and, according to the information provided by Odin, when the presence of such miners is detected, they are asked to leave. In cases where they do not respond to this petition, there are recourses under Ecuadorian legislation in order to shield Odin from legal liability in the unlikely event of any environmental impacts.
- There are no outstanding operations or any other kind of agreements that may limit Odin´s right to carry out mining activities. There are no operation agreements with artisanal miners.
- The mining concession Los Cangrejos was split into 4 different areas with the aim of changing the regime to large-scale mining and then consolidating it with other concessions (Casique, Las Canarias, Los Cangrejos (after the split) and Cangrejos 20) at the Project into one single mining title. The Company already initiated the process of changing the regime of Casique, Las Canarias and Los Cangrejos that are currently in small-scale mining.
- The mining concessions Cangrejos A, Cangrejos B, Cangrejos C and Cangrejos D result from the split of Los Cangrejos and will remain in small-scale mining regime.

- No administrative, legal, or other form of claim or complaint has been made against Odin by communities and/or indigenous groups regarding the Concessions.

The QPs for this Report have not researched the property title or mineral rights for the Cangrejos Project and express no legal opinion as to the ownership status of the Cangrejos Project. Disclosure in this Report related to legal ownership of the Cangrejos Project is based solely on the Tobar Title Opinion.

All other conclusions and recommendations contained herein are based on:

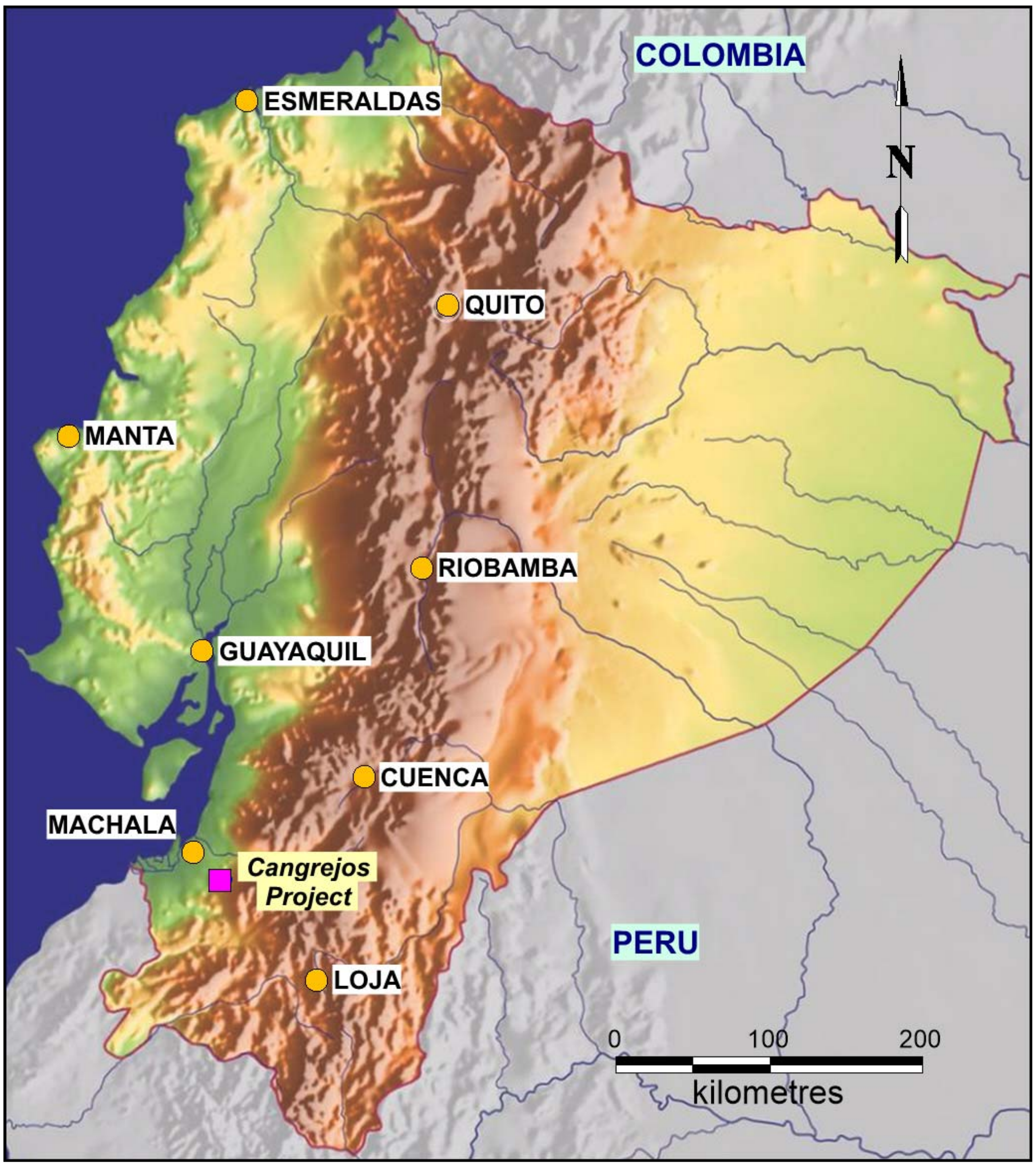
- The field observations of the QPs
- Data, reports, and other information supplied by Lumina and other third parties
- Data, reports, and other information prepared by the QPs for their respective areas

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Cangrejos Project is located in southwestern Ecuador (Figure 4-1), 30 km southeast of the port city of Machala. Access to the property is provided by paved and gravel roads. The approximate centre of the property is located at 3° 28' 58'' south latitude and 79° 49' 3'' west longitude. The UTM coordinates for the Cangrejos Zone are 9614300 North and 633200 East (geographic projection: Provisional South American Datum 1956, UTM Zone 17S).

Figure 4-1: Location Map



Source: Lumina, 2017

4.2 Land Tenure

The Cangrejos Project consists of eight contiguous mining and advanced exploration concessions and two separate advanced exploration concessions located north of the main property, totalling 6,373 ha. These are described in Table 4.1 and shown in Figure 4-2. All of the Concessions are held by Lumina through its 100% owned Ecuadorian subsidiary, Odin.

The Cangrejos 20 concession was awarded to Lumina on November 15, 2016 in the course of the Ecuadorian government's mining auction process.

**Table 4.1: Mining Concessions
Cangrejos Project**

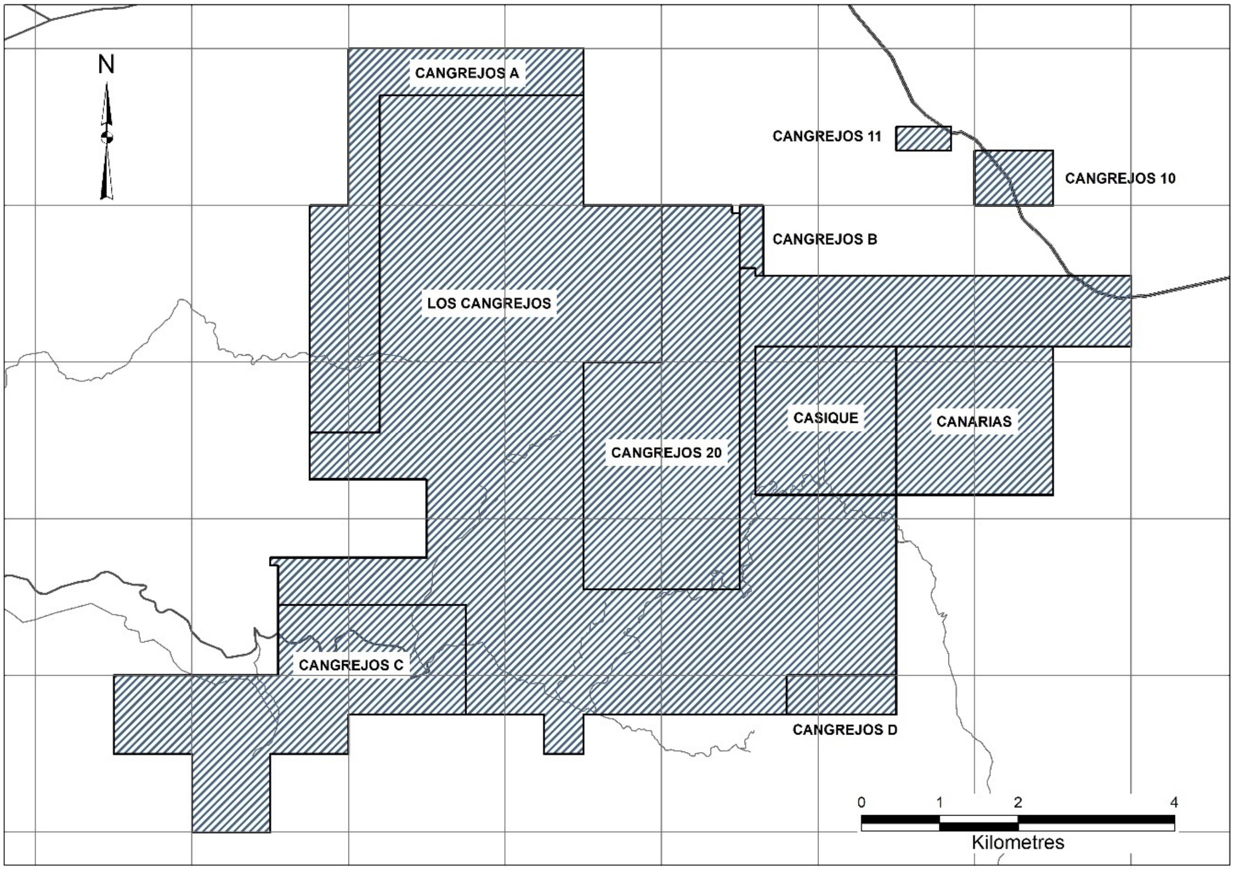
File Number	Concession Name	Date of Concession (dd/mm/yyyy)	Date of Registration (dd/mm/yyyy)	Area (ha)	Regime Phase	Date of Expiration (dd/mm/yyyy)
5114	Casique	17/10/2001	07/11/2001	342	Small Mining**	20/12/2022*
2649.1	Canarias	11/10/2001	05/11/2001	380	Small Mining**	12/05/2022*
300972	Cangrejos 10	02/07/2004	01/07/2004	70	Advanced Exploration	01/11/2028*
300971	Cangrejos 11	02/07/2004	01/07/2004	21	Advanced Exploration	02/11/2028*
2847	Los Cangrejos	04/05/2010	25/05/2010	3,498	Small Mining**	21/08/2022*
30000203	Cangrejos 20	13/07/2017	14/08/2017	779	Advanced Exploration	13/12/2041*
30000695	Cangrejos A	25/04/2019	28/05/2019	497	Small Mining**	19/07/2031
30000694	Cangrejos B	25/04/2019	28/05/2019	25	Small Mining**	19/07/2031
30000693	Cangrejos C	25/04/2019	28/05/2019	691	Small Mining**	19/07/2031
30000692	Cangrejos D	25/04/2019	28/05/2019	70	Small Mining**	19/07/2031

* The mining title is valid for 25 years from the date of registration, and it can be renewed for an additional 25 years.

** "The Medium and Large Mining regime includes three phases: Early Exploration, Advanced Exploration and Economic Evaluation of the Deposit. The Small Mining regime allows for simultaneous exploration and exploitation activities, limited to an installed capacity and production of up to 300 tonnes/day. Concessions in the Small Mining regime may be migrated to Medium and Large Mining."

Source: Lumina, 2019

Figure 4-2: Claim Map



Source: Lumina, 2019

The maintenance of each mining concession requires an annual payment that is due before the 31st of March each year. For 2019, this amount totalled $60,502.64 for the ten mining concessions. These fees have been paid, and all concessions are in good standing. The Small Mining concession royalty for the Los Cangrejos concession has been reported as zero, as instructed by the Mining Control Agency.

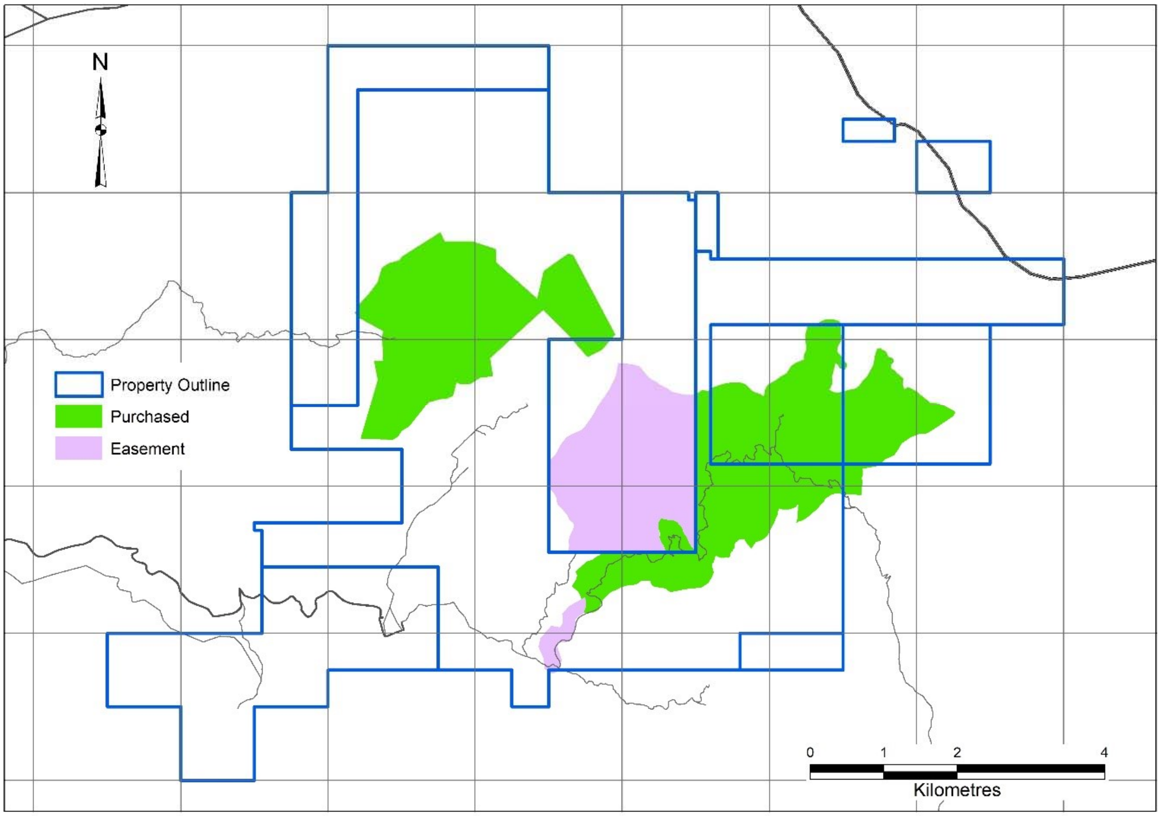
Lumina also owns the surface rights shown in Table 4.2 and Figure 4-3.

Table 4.2: Land Tenure
Surface Rights

No.	Previous Owner	Hectares	Location	Date of Registration (dd-mmm-yy)
1	Víctor Manuel Ramírez Román	54.0	Santa Rosa	10-Apr-07
2	Manuel Abad Ruiz	66.38	Santa Rosa	21-Sep-07
3	Carlos Porfirio Tituana	81.2	Santa Rosa	17-Dec-07
4	Juan Antonio Tituana Torres	76.0	Atahualpa	02-Apr-08
5	Víctor Manuel Ramírez Román	58.75	Santa Rosa	29-May-08
6	Francisco Castro Sanchez	122.4	Atahualpa	22-Aug-16
7	Francisco Castro Sanchez	46.5	Santa Rosa	28-Dec-16
8	Juan Eduardo Venegas Francisco Soria Venegas	95.0	Santa Rosa	17-Feb-17
9	Jose Ernesto Ponton Loaiza	24.69	Santa Rosa	08-Jan-19
10	Jorge Vicente Ponton Loaiza	21.77	Santa Rosa	08-Jan-19
11	Lauro Evaristo Pineda Labanda	79.47	Santa Rosa	24-Apr-19
12	Noblecilla Family	400.50	Santa Rosa	18-Nov-19
	Total Purchased	1,126.66		
13	C20 Easement	359.94	Santa Rosa	27-Mar-18
14	Access Easement	25.70	Santa Rosa	3-Oct-18
	Total Surface Rights	1,512.30		

Source: Lumina, 2019

Figure 4-3: Surface Rights



Source: Lumina, 2019

Following a tax reform in 2018, the royalty tax on mining production payable to the Government of Ecuador has been modified to a range of 3% to 8%. The Cangrejos Project land and mining concessions have no other royalties, back-in rights or any other encumbrances that could affect title. There are also no other known impediments that may affect the ability to perform work on the property. There are no significant risks affecting the normal course of business and exploration efforts on the Project.

The Cangrejos 20 concession requires a mining easement over a significant portion of the surface of the concession to proceed with exploration. Accordingly, on May 11, 2017, Lumina filed an easement request with the Ecuadorian mining regulator, Agencia de Regulación y Control Minero (ARCOM), for the 359.94 ha of private surface rights on the Cangrejos 20 concession in order to access the area and conduct exploration work. On August 9, 2017, ARCOM performed the technical "on site" inspection of the area, and, on September 7, 2017, it issued a technical report in which it concluded that it is technically possible to proceed with the easement over the property and defined a compensation value payable by Lumina to the owner during the advanced exploration phase of the Project, which includes drilling. The report also provided values for a future payment to cover life of the mining title, including mine construction, exploitation, and closure. In December 2017, Lumina was granted a surface access easement to the 359.94 ha on the Cangrejos 20 concession, which facilitates exploration and drilling for the next four years. Terms for the construction and operation periods would be established by ARCOM at the appropriate time.

In October 2018, the Company negotiated an access easement with Ms. Andrea Estefania Armijos, owner of a property in the lowlands, with the primary purpose of constructing an access road to join the pre-existing project road some 500 metres to the north and providing an alternative initial entrance to the Project. To this end, a renewable ten-year access easement has been signed, paid and registered.

4.3 Environmental Liabilities and Permitting

Over the years, informal miners have presented persistent challenges in the Project area. When encountered, they are routinely reported to ARCOM for appropriate action. There are several sites on the Concessions that show traces of historical informal hard rock mining activity, some of which may date back over a decade. Physical damage and environmental degradation from informal alluvial mining in the Gran Bestia ravine has also been reported to ARCOM, as well as from underground mining in the Gran Bestia ravine, the Dos Bocas Sector in Vega Rivera, and the Las Pavas ravine.

At the time of this Report, there is one small illegal operation working in the northeastern part of the Canarias concession. This activity has been reported to the mining authority, with a request that they close it down. Its location is removed from and in no way affects the Cangrejos or Gran Bestia deposits.

With respect to permitting and other regulatory requirements, the Project is being developed in accordance with the Ecuadorian Constitution and the application of the Mining Law and its Regulatory Code, the COA (Organic Environmental Code), the Mining Environmental Regulations and the Unified Text of Secondary Environmental Legislation. Under the Mining Law there are several discrete phases of mining activity, namely initial exploration, advanced exploration, economic evaluation, exploitation, and mine decommissioning and closure.

The mineral resources on the Cangrejos Project are located on the Cangrejos 20, Cangrejos, Las Canarias, and Casique concessions. According to the Tobar Title Opinion, referenced in Section 3 (Reliance on Other Experts), Lumina holds the necessary licenses, permits, and registrations, including all necessary environmental licenses and water permits, to carry out advanced exploration activities for all of the advanced exploration and small mining concessions, except for Cangrejos 20. An Environmental License was applied for under a process that started in 2018 for the Cangrejos 20 concession. Given that this is a lengthy process, in order to advance the Cangrejos 20 concession with exploration drilling, a “Scout Drilling Permit” was obtained. Lumina’s scout drilling permit allows for a total of 40 drilling platforms with an unlimited number of drill holes and metres of drilling. As of the execution date of this Report, Lumina used 29 platforms with 11 platforms available to continue drilling until the Advance Exploration Environmental License is obtained.

As of the execution date of this Report, the permitting process for the advanced exploration phase EIS for the Cangrejos 20 concession remains underway. The Company expanded the scope of the application in September of 2019. The expectation is that this process will be completed in the first half of 2020.

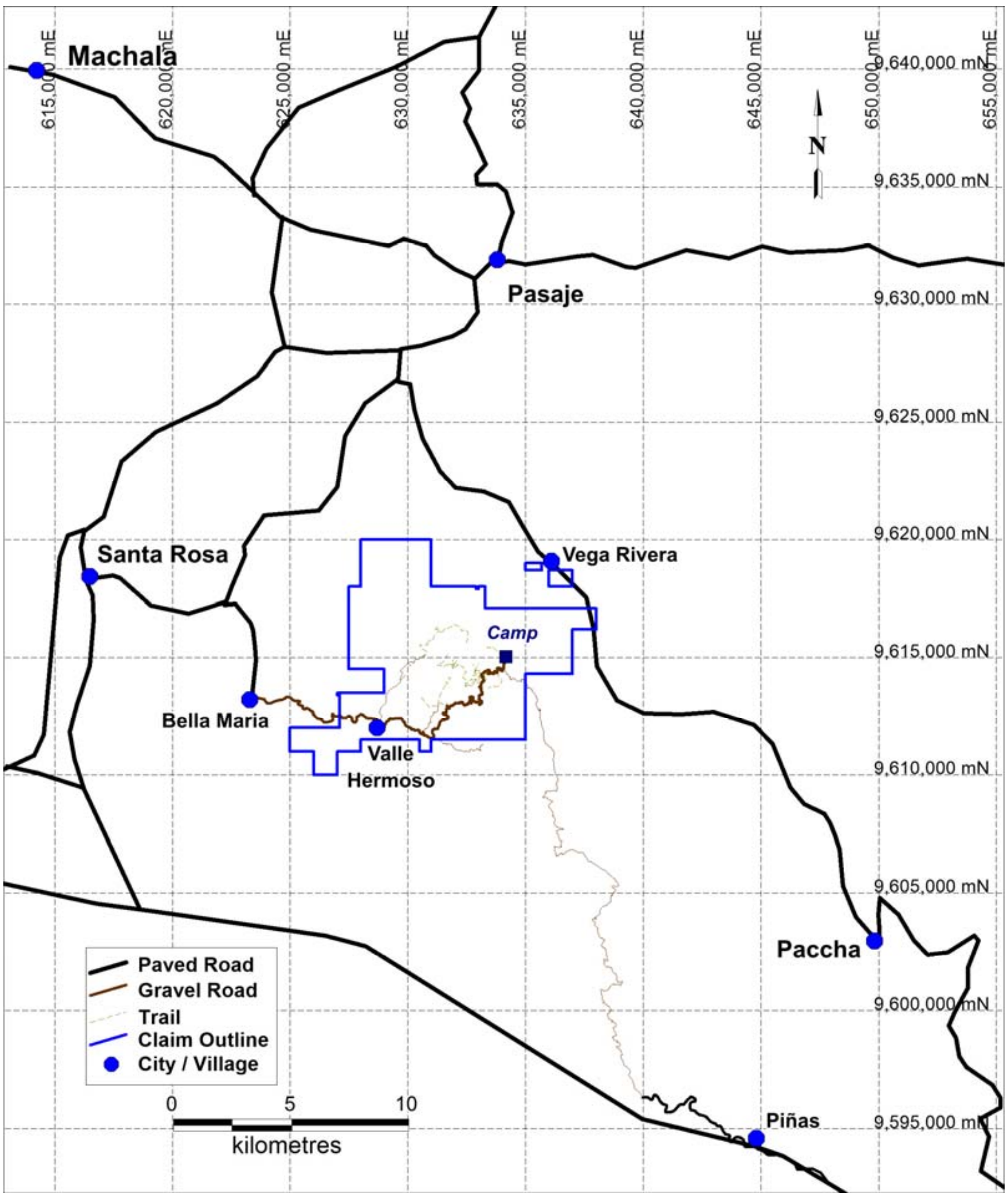
On June 28, 2018, the Minister of Mines of Ecuador signed a Ministerial Agreement, which is a decree that permits “non-systematic” (“Scout”) drilling to be performed on concessions that are in the initial exploration phase. Pursuant to the Ministerial Agreement, test or reconnaissance boreholes can be drilled using a maximum of 40 drilling platforms within each mining concession; these are understood as exploratory wells drilled at various angles and depths, with no limitation on metres drilled, using worker-portable or helicopter-transportable rigs. The platforms must have a maximum size of 10 × 10 m and use efficient water systems and biodegradable drilling fluids. Lumina adhered to this during its drilling campaign on the Cangrejos 20 concession, which included drill testing areas on the west side of the Cangrejos deposit, as well as the Gran Bestia deposit.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Accessibility

The Cangrejos Project is located in southwestern Ecuador, approximately 30 km southeast of the port city of Machala. Access is provided by paved and gravel roads (Figure 5-1). A new road has been constructed from the village of Valle Hermosa to the Project. Driving time from Machala to the Cangrejos Project camp via the town of Santa Rosa and Valle Hermosa is typically two hours.

Figure 5-1: Access to Cangrejos Project



Source: Lumina, 2019

5.2 Climate

The climate varies from tropical at lower elevations to temperate at higher elevations. The average temperatures are relatively constant ranging between 18°C to 22°C.

There is a wet season from January to April and a dry season from May to December. The average annual rainfall for the area ranges between 800 mm and 1,500 mm, with the majority occurring from January through April. Operations can be conducted year-round.

5.3 Local Resources and Infrastructure

Machala, with a population of approximately 250,000, is the largest city in the vicinity of the Project, while Santa Rosa, a small city with a population of approximately 50,000, is closest to the Project. Both Santa Rosa and Machala can provide basic goods and services for the early stages of exploration and mining. Skilled and unskilled labour are available from various small towns and villages in closer proximity to the Project.

The Cangrejos Project is well served by regional infrastructure; Machala and Santa Rosa are located along the Pan-American Highway linking Guayaquil, Ecuador with Lima, Peru. Regular daily flights from Quito, Ecuador arrive at Santa Rosa’s international airport which also serves Machala. Puerto Bolivar, located 9 km west of Machala and approximately 40 km from the Project, is a major deep-water port used mainly for exporting bananas.

A field camp and core-logging and storage facility are located on the property. Power at the camp is supplied from the national grid. Internet and phone services are provided by satellite.

The Concession areas are sufficiently large to sustain mining operations and water is readily available.

5.4 Physiography

The Cangrejos Project is located in moderately hilly terrain located southeast of the coastal plain. Elevations range between 100 m and 1,370 m above sea level. A prominent northwest-trending ridge, Cerro Azul, forms a watershed between Rio Caluguro and Rio San Agustin.

The property has been largely deforested, with cleared areas consisting mostly of grassland plots for raising cattle. Only about 20% of the property is primary forest with minor patches of secondary forest. In the lowlands adjacent to the property, crops of coffee, cacao, and maize are typically grown. Banana plantations are prevalent in the coastal flatlands.

Some endemic fauna species remain in the primary forest areas and along the deep valleys and river creeks. Among these species, the most notable are black, freshwater crabs, howler monkeys, armadillos, and a modest number of bird, reptilian and amphibian species.

6 HISTORY

Previous exploration, disclosure of prior ownership, and changes to ownership at the Cangrejos Project are summarized in Table 6.1. The historical exploration of the property is discussed in greater detail in Potter (2004, 2010).

Results from the drill programs are provided in Section 10 (Drilling) of this Technical Report. To date, no mineral production has occurred at the Cangrejos Project.

Table 6.1: Exploration History of the Cangrejos Project

Year	Company	Description
1992	Odin Mining	Regional stream sediment and geological mapping program to locate the source of the Birón alluvial gold (1987–1995: production; 69,000 oz Au).
1994	Odin Mining/Newmont	Formation of “El Joven Joint Venture” to explore stream anomalies with Newmont as the Operator. The Cangrejos Project is located in the northern part of the Joint Venture area.
1994–2001	Odin Mining/Newmont	Airborne magnetics, radiometrics, soil and rock geochemistry, geological mapping and 29 diamond drill holes (7,509.2 m) completed on the Cangrejos Project.
2001	Odin Mining/Newmont	Newmont withdrew from the Joint Venture, and the original seven concessions were returned to Odin. Odin also acquired Newmont’s drill core and exploration data for the Cangrejos Project.
2004	Odin Mining	Acquired an additional four concessions (3,043 ha).
2007	Odin Mining	Top of bedrock soil sampling, additional stream sediment sampling.
2008–2009	Odin Mining	The Government of Ecuador imposed a moratorium on exploration; no work is done on the Cangrejos Project.
2010	Odin Mining	Top of bedrock, ridge and spur soil sampling.
2011–2012	Odin Mining	Diamond drill testing of gold soil anomalies at Casique (13 holes; 3,296.13 m) and the extent of mineralization at Cangrejos (four holes; 1,402 m).
2014–2015	Odin Mining	Diamond drilling to test the strike and depth extent of the Cangrejos Zone (8 holes; 3,188.5 m) and a Cu-Mo-Au soil anomaly at El Capitán (one hole; 350.15 m).
2017	Lumina	Diamond drilling to infill and test the depth extent of the Cangrejos Zone (15 holes; 7,186.1 m)
2018–2019	Lumina	Diamond drilling to infill and test the extents of the Cangrejos deposit (72 holes; 26,450.9 m) and the Gran Bestia deposit (26 holes; 13,170.8 m)

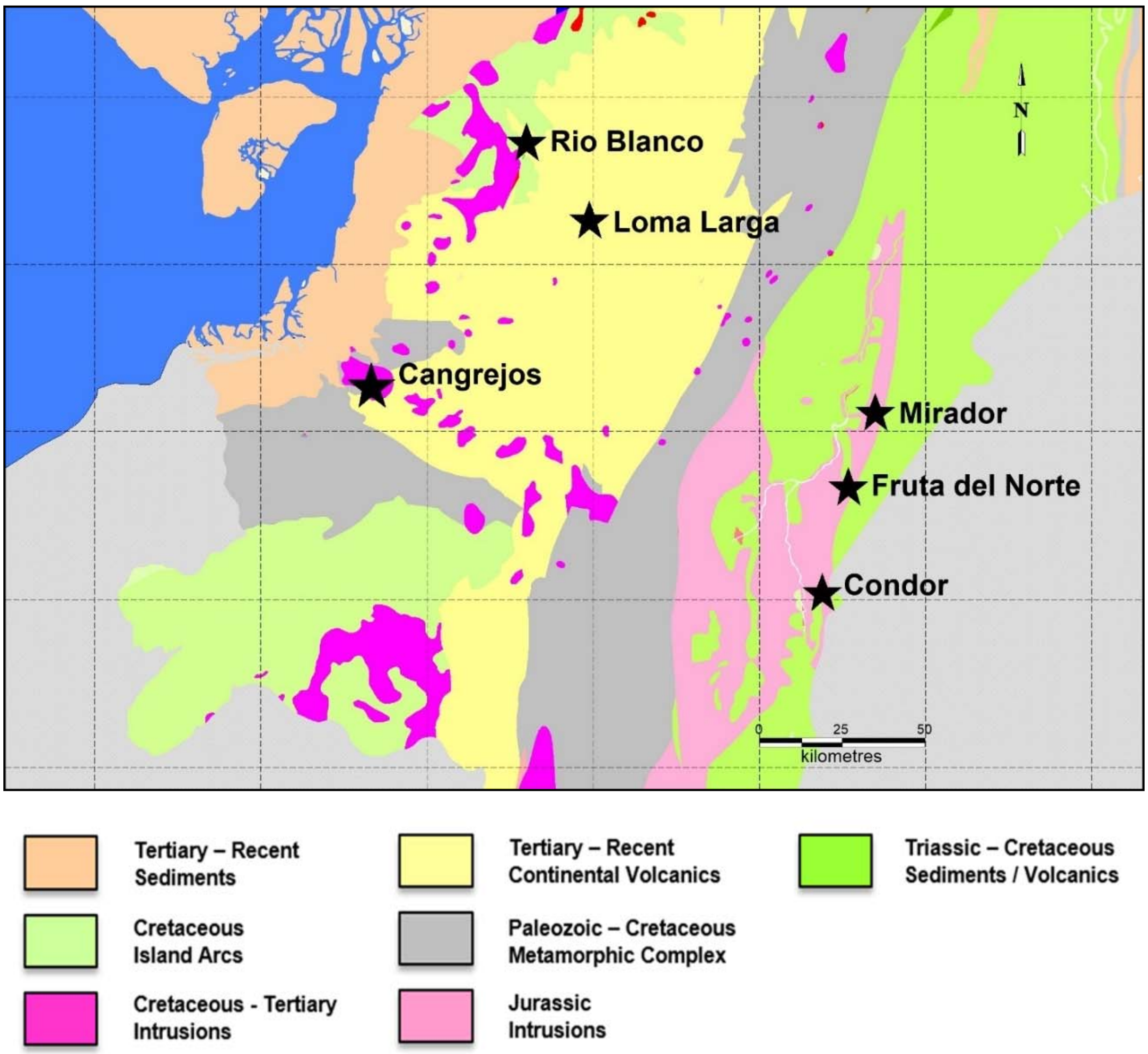
Source: Lumina, 2019

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The regional geology of southern Ecuador is shown in Figure 7-1. There are several north-south-trending domains of volcanic and sedimentary rocks which accreted onto the Amazon Craton from Late Jurassic to Eocene. These terranes are cut by younger magmatic intrusions which locally host porphyry copper/gold and epithermal gold deposits (shown as black stars in Figure 7-1).

Figure 7-1: Regional Geology



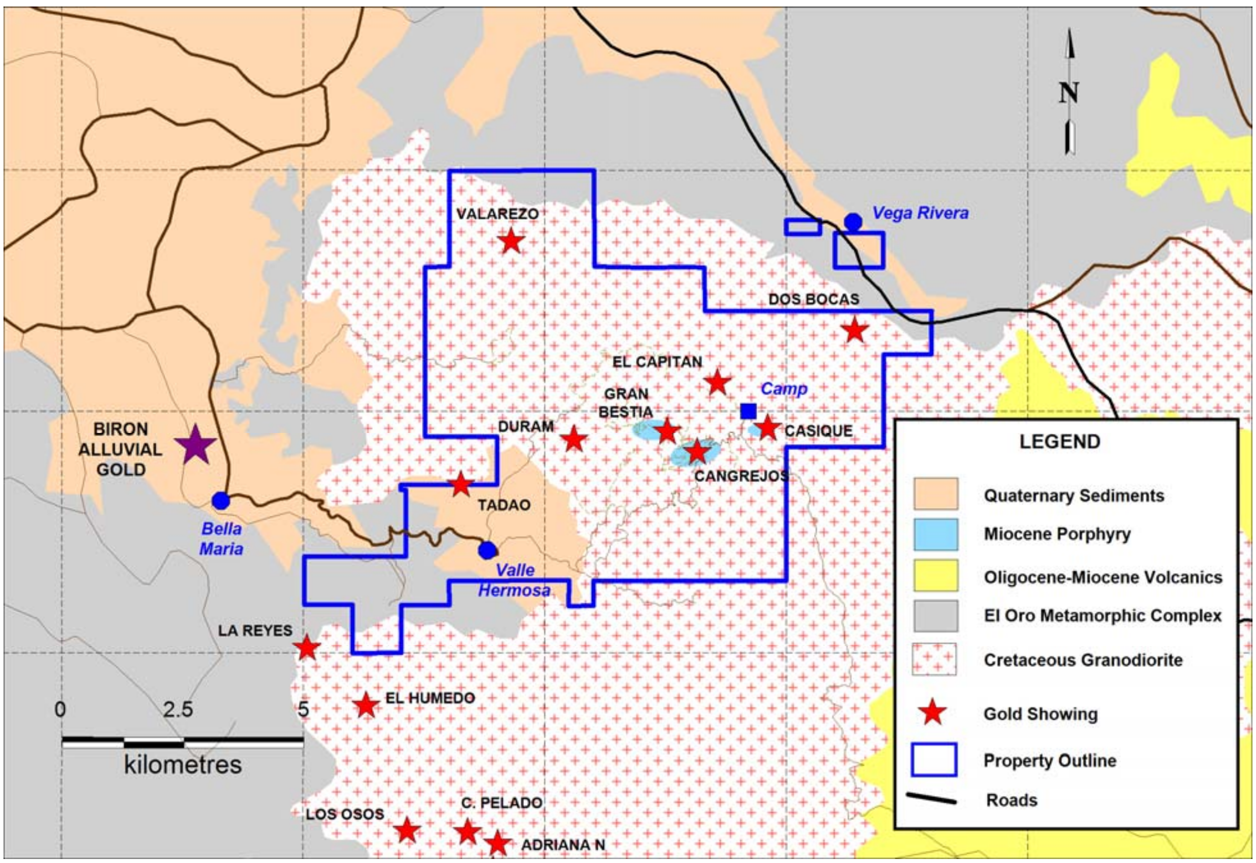
Source: DINAGE, 2001; Lumina, 2017

7.2 Local and Property Geology

A more detailed picture of the geology in the vicinity of the Cangrejos Project is shown in Figure 7-2. Quaternary sediments occur to the northwest in the coastal areas around Machala. Oligocene continental volcanics occur to the east. These two domains are separated by the Late Cretaceous-Paleozoic El Oro metamorphic complex which consists of phyllites, schists, amphibolites, granites and serpentinites.

The Cangrejos Project is largely underlain by a Miocene (K-Ar age, 16.89 Ma and 19.92 Ma (Potter, 2010)) porphyritic quartz diorite and a Cretaceous equigranular diorite which is interpreted as being part of the El Oro metamorphic complex. Gold showings are associated with the Miocene porphyry and adjacent breccias and metamorphic rocks.

Figure 7-2: Local Geology Cangrejos Project



Source: Newmont, 2001; INIGEMM, 2017; Lumina, 2019

7.3 Geological Studies and Age Dating

Additional drilling at Cangrejos and Gran Bestia has helped improve the geological map in these areas. Drill holes were relogged by Pratt et al., (2018) and Gordon and Rowe (2019) to produce a geological model for the gold-copper mineralization.

Age-dating of selected rock types has helped to interpret the geology. Seven samples representing the main rock types were dated at the Geological Institute, Bulgarian Academy of Sciences in Sofia, Bulgaria. U-Th-Pb isotope analyses of zircons were completed using a laser ablation ICP mass spectrometer (LA-ICP-MS) (Lumina, 2018b). The porphyritic quartz diorite (PQD) returned a Miocene age ranging from 21.22 to 22.49 Ma. The foliated and equigranular quartz diorite (SCH and EQD) is Cretaceous with ages ranging from 76.4 to 79.09 Ma which correlates with the El Oro metamorphic complex.

Re-Os ages for two molybdenite samples were determined using Re-Os isotope analyses completed at ALS Labs in North Vancouver, Canada (Lumina, 2018b). The age of the mineralization is 23.40 to 23.52 Ma which is slightly older than the Miocene porphyritic quartz diorite intrusions.

7.4 Lithology

Based on relogging of drill core by Pratt et al. (2018) and Gordon and Rowe (2019), there are four main lithological units:

1. Saprolite (SAP)/Saprock (SRK) – This unit includes weathered bedrock which occurs as a generally thin layer at the top of a drill hole. Clay content varies from 10 to 50% and is dominated by kaolinite and smectite. The base of the saprolite/saprock is generally sharp with an abrupt change into fresh rock.
2. El Oro Metamorphic Complex (EQD, GSC, SCH) – This unit comprises of meta-diorites, amphibolites and schists. An equigranular, medium- to coarse-grained quartz diorite (EQD) is the most common lithology at Cangrejos. The rock is frequently foliated and grain-size reduction is apparent. Feldspars are broken in sheared diorite in contrast to the euhedral crystals seen in the Miocene porphyries. Two types of schists are present: a fine-grained, massive amphibole-rich meta-basalt (GSC) and a fine-grained biotite-feldspar-quartz schist (SCH). Folding and boudinage are common in both schists. Rare intervals of medium- to coarse-grained meta-gabbros (GAB) are also present.
3. Miocene Intrusions (PQD, PAD) – Porphyritic quartz diorite intrusions (PQD) occur as stocks and dikes that intrude the metamorphic complex. The PQD comprises of euhedral, crowded feldspar phenocrysts (1 to 4 mm) and large mafic phenocrysts in a very fine-grained siliceous groundmass. This unit contains early porphyry “A” type barren quartz veins and commonly exhibits strong biotite and calcic-sodic alteration. Late, fine-grained, porphyritic diorite to andesitic dikes (PAD) cross-cut the early PQD intrusions.
4. Breccias – There are three types of magmatic and hydrothermal breccias associated with the quartz diorite porphyritic intrusions:
    - **Igneous breccia**: This unit is pre- and inter-mineralization and can be both clast- and matrix-supported. Subangular to rounded clasts occur in a matrix comprising feldspar phenocrysts, biotite, mafic minerals, and fine-grained igneous material. This type of breccia is common at Gran Bestia.

- **Hydrothermal breccia**: This unit is clast-supported with a matrix comprising actinolite, albite, chlorite, tourmaline, ± sulphides, and ± carbonates. It resembles a jigsaw breccia where the clasts are the same composition as the adjacent porphyry intrusion. The gold and copper mineralization occurs as open-space fillings and veinlets. This unit is common within the porphyry and at contacts with the country rock.
- **Magnetite-biotite hydrothermal breccia**: This unit is angular to subrounded clasts of metamorphic country rock occuring in a matrix of magnetite and subordinate biotite and quartz. Early quartz veins and chalcopyrite-bornite-pyrrhotite veinlets cross-cut this unit. This lithology is associated with some of the highest gold-copper values and dominantly occurs within the metamorphic country rock adjacent to porphyry contacts.

7.5 Alteration

Hydrothermal alteration is associated with the gold-copper mineralization. The main types of alteration include:

1. Potassic – The equigranular and porphyritic quartz diorite intrusions exhibit porphyry-style potassic alteration which is characterized by secondary biotite alteration of the mafic minerals and weakly developed “A” and “D” type veins.
2. Propylitic – Propylitic alteration consists of chlorite and epidote which overprints and is peripheral to the potassic alteration.
3. Calcic-Sodic – Calcic-sodic alteration overprints the early porphyry alteration phases. It is characterized by actinolite replacing hornblende and biotite, albite replacing feldspar crystals and bleaching the matrix, and minor epidote associated with tourmaline and chlorite. It is commonly seen in the breccia units. Most of the sulphide and gold-copper mineralization is associated with this alteration phase.
4. Phyllic/Intermediate Argillic – The Cangrejos and Gran Bestia areas exhibit limited evidence of this style of alteration. Scattered, narrow pyrite-rich veinlets with light green micaceous selvages, illite haloes and minor carbonate may represent an intermediate argillic alteration.

7.6 Mineralization

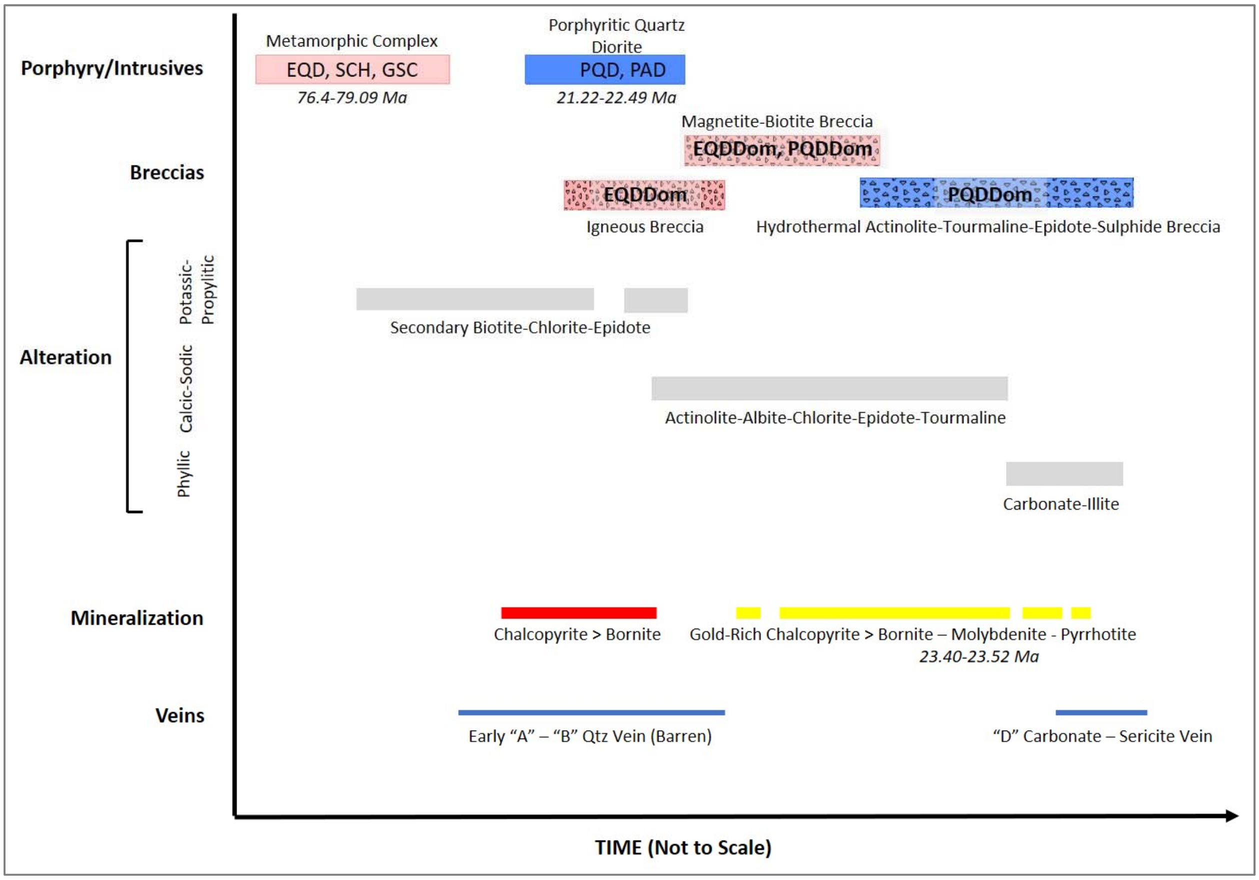
Gold-copper mineralization is associated with sulphides that occur as open-space breccia fill or as disseminations in former mafic phenocrysts. Total sulphide content is generally less than 5% and consists of chalcopyrite and pyrite with minor bornite, molybdenite and pyrrhotite. In drill hole C17-65, native copper is found on fracture surfaces at depths ranging from 142 m to 186 m. This is not very common and is probably due to strong oxidation along a fracture zone.

The highest gold grades occur in calcic-sodic altered breccias at contacts between the PQD and the metamorphic complex. The best gold grades occur in breccias where the dominant clast type is EQD. The EQD is more mafic in composition, and gold is preferentially deposited in reducing (mafic) environments.

7.7 Paragenetic Sequence

A preliminary paragenetic sequence for the lithologies, alteration and mineralization is shown in Figure 7-3.

Figure 7-3: Paragenetic Sequence

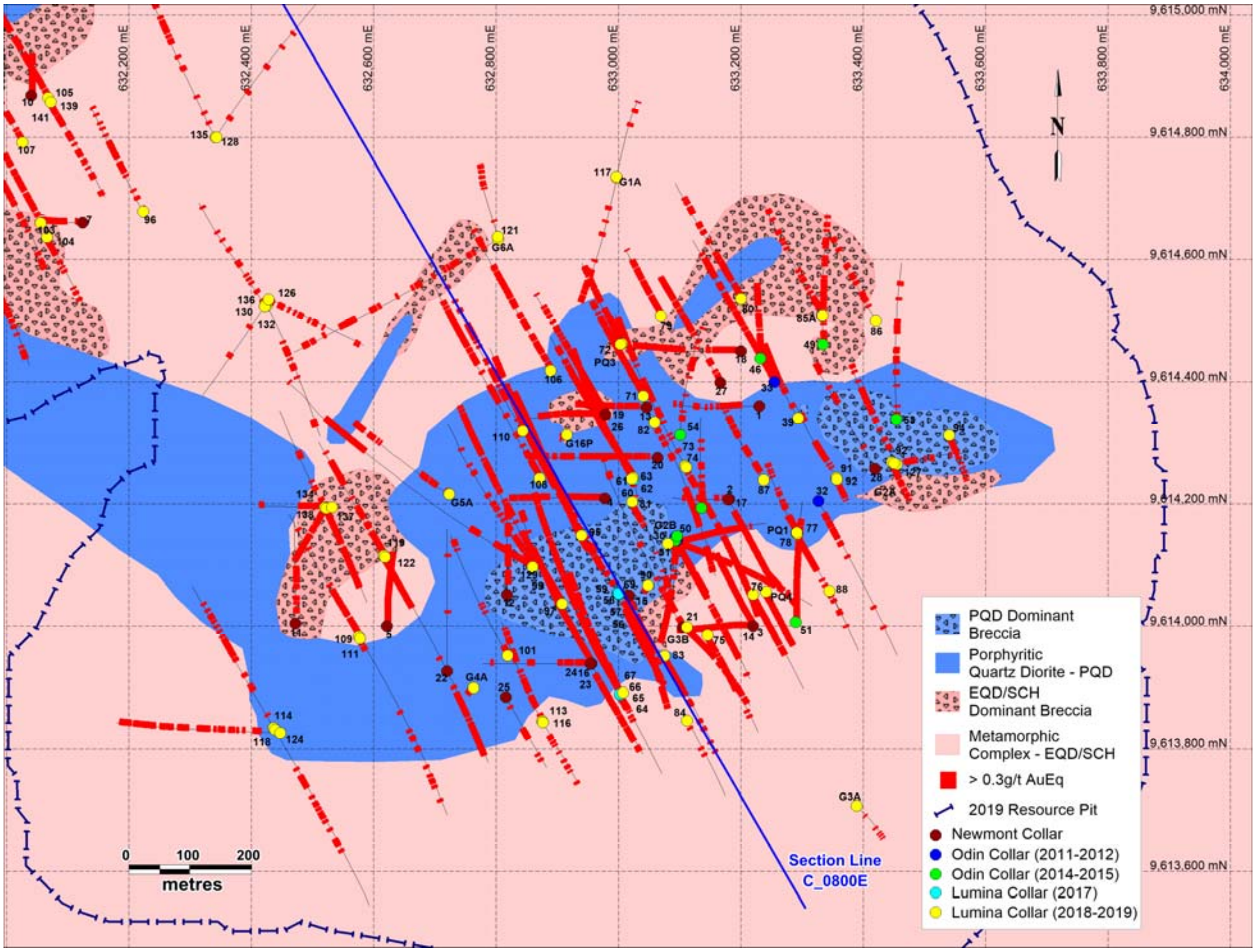


Source: Lumina, 2017, 2019

7.8 Cangrejos Zone

The surface geology of the Cangrejos Zone is not well understood because there is a lack of outcrop exposures. The simplified geological map shown in Figure 7-4 is based primarily on drill hole geological logs and assays. An east-northeasterly trending porphyritic quartz diorite (PQD) intrudes quartz diorites (EQD) and schists (SCH) of the metamorphic complex. The southeastern contact is steep, but the northwestern contact dips approximately 50° to the southeast and is defined by porphyry dikes. The edges of the porphyry are brecciated with dominant PQD clasts. These breccias extend at depth and may relate to breccia pipes that are associated with the intrusion of the porphyry. Breccias with dominant metamorphic clasts (EQD, SCH) occur at the edge of the porphyry.

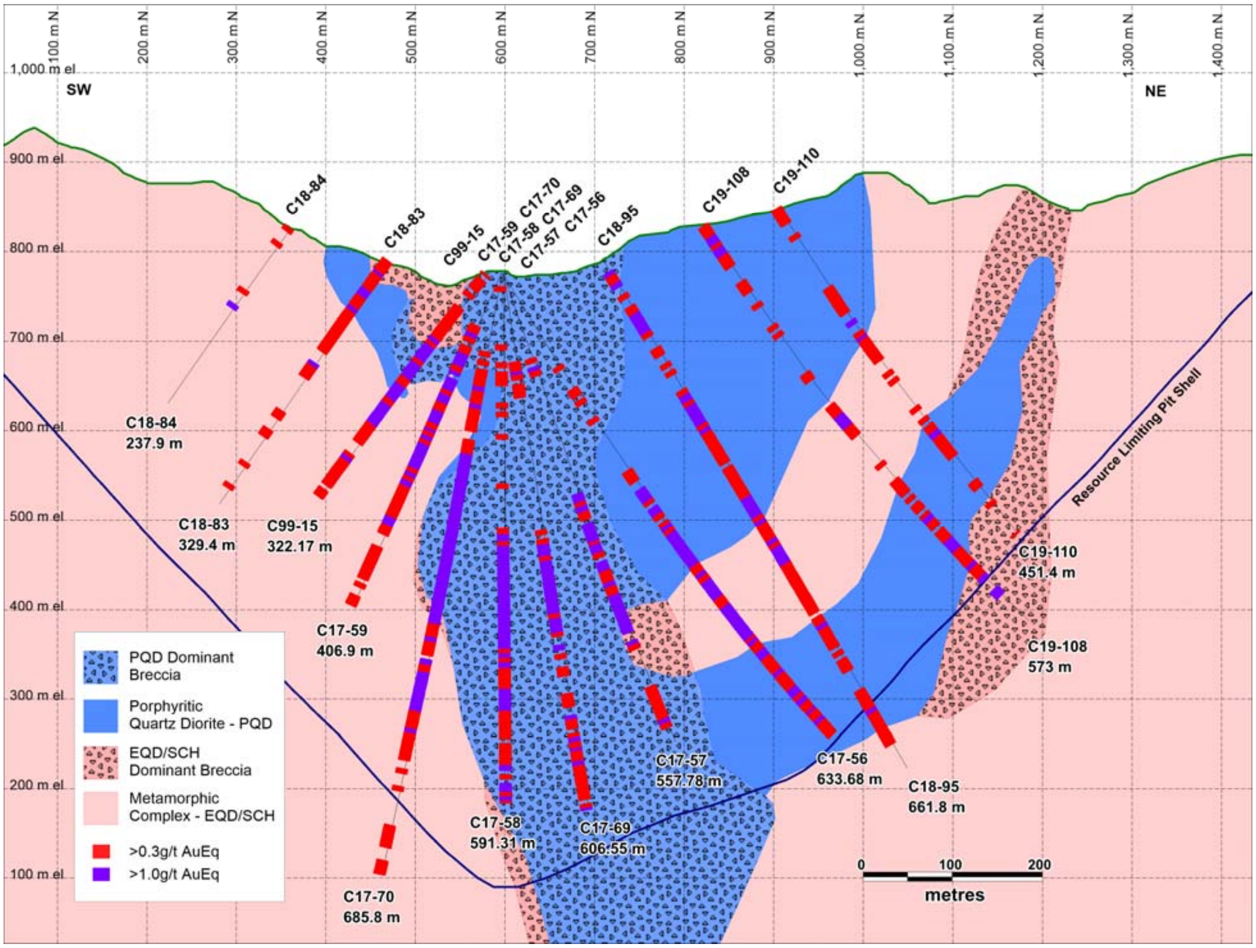
Figure 7-4: Simplified Geology Plan of the Cangrejos Gold – Copper Zone



Source: Lumina, 2019

A vertical cross section across the central part of the deposit is shown in Figure 7-5; a higher grade gold-copper zone is highlighted on this figure.

Figure 7-5: Cross Section 800E – Cangrejos Zone



Source: Lumina, 2019

Drilling has defined a northeast-southwest-trending, steeply dipping zone of gold-copper mineralization which is commonly associated with hydrothermal breccias and quartz vein stockwork in the quartz diorite porphyry (Figure 7-5). Gold-copper values are not restricted to these lithologies and can be found in all units except the late stage dikes.

The mineralized zone extends for approximately 1,000 m in a northeasterly direction, has widths ranging from 70 m to 600 m, and has been defined to a depth of at least 600 m below surface. The zone remains open to expansion with further exploration to the west and at depth.

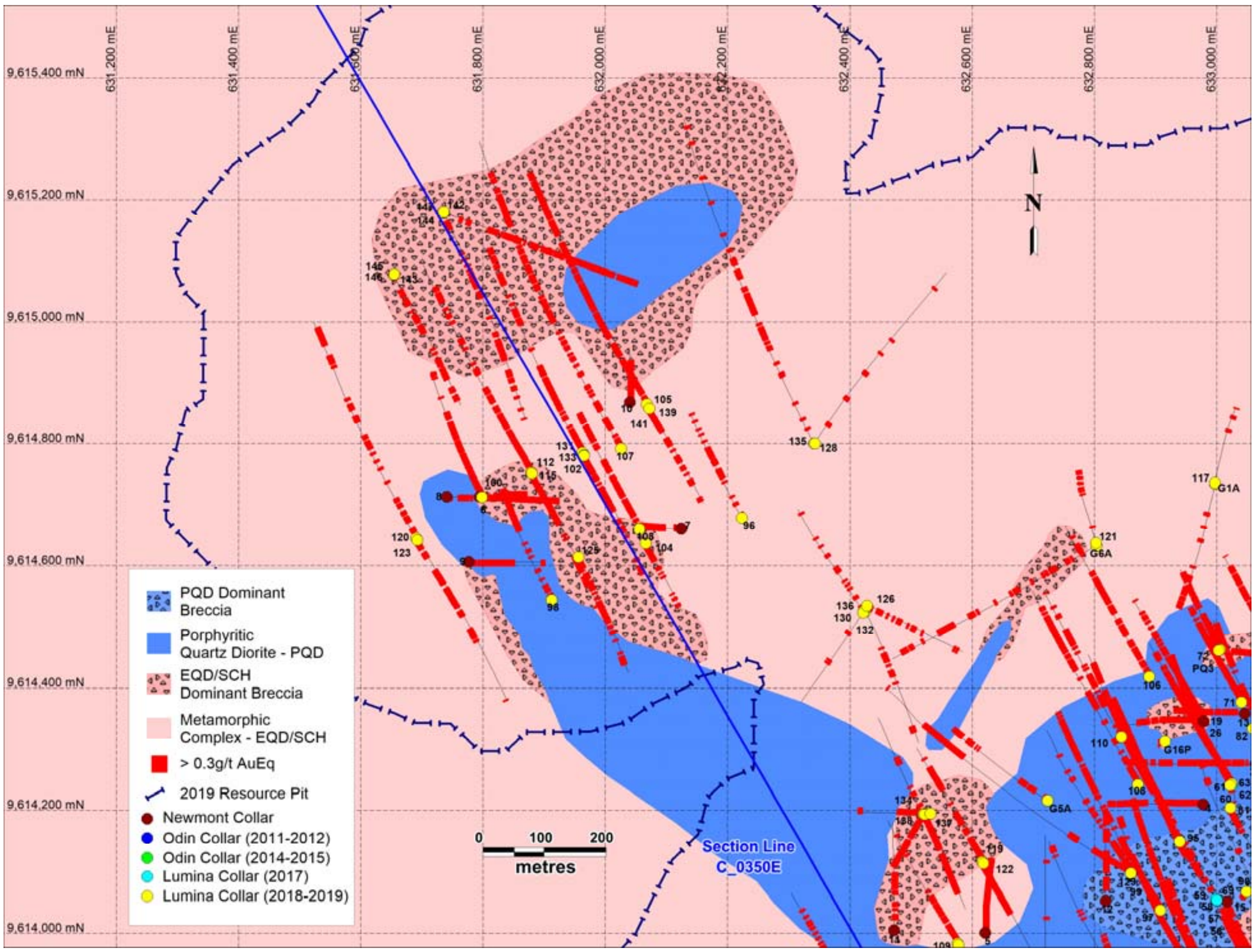
7.9 Gran Bestia Zone

The surface geology of the Gran Bestia Zone is not well understood because there is a lack of outcrop exposures. The simplified geological map shown in Figure 7-6 is based primarily on drill hole geological logs and limited outcrop exposures.

The southern portion of the Gran Bestia deposit is similar to the Cangrejos deposit in that porphyritic quartz diorite (PQD) intrusions are present. Gold-copper mineralization occurs at the contact between the porphyries and the surrounding metamorphic country rock, with higher grades associated with breccias and quartz vein stockworks. The southern breccia has dimensions of 400 m (northwest-southeast) by 200 m (northeast-southwest).

The northern part of the Gran Bestia deposit is underlain by a polymictic intrusive breccia. Metamorphic complex clasts are hosted in a fine-grained diorite porphyry matrix. Several massive diorite porphyry dikes also occur within this breccia. The northern breccia has dimensions of 600 m by 400 m.

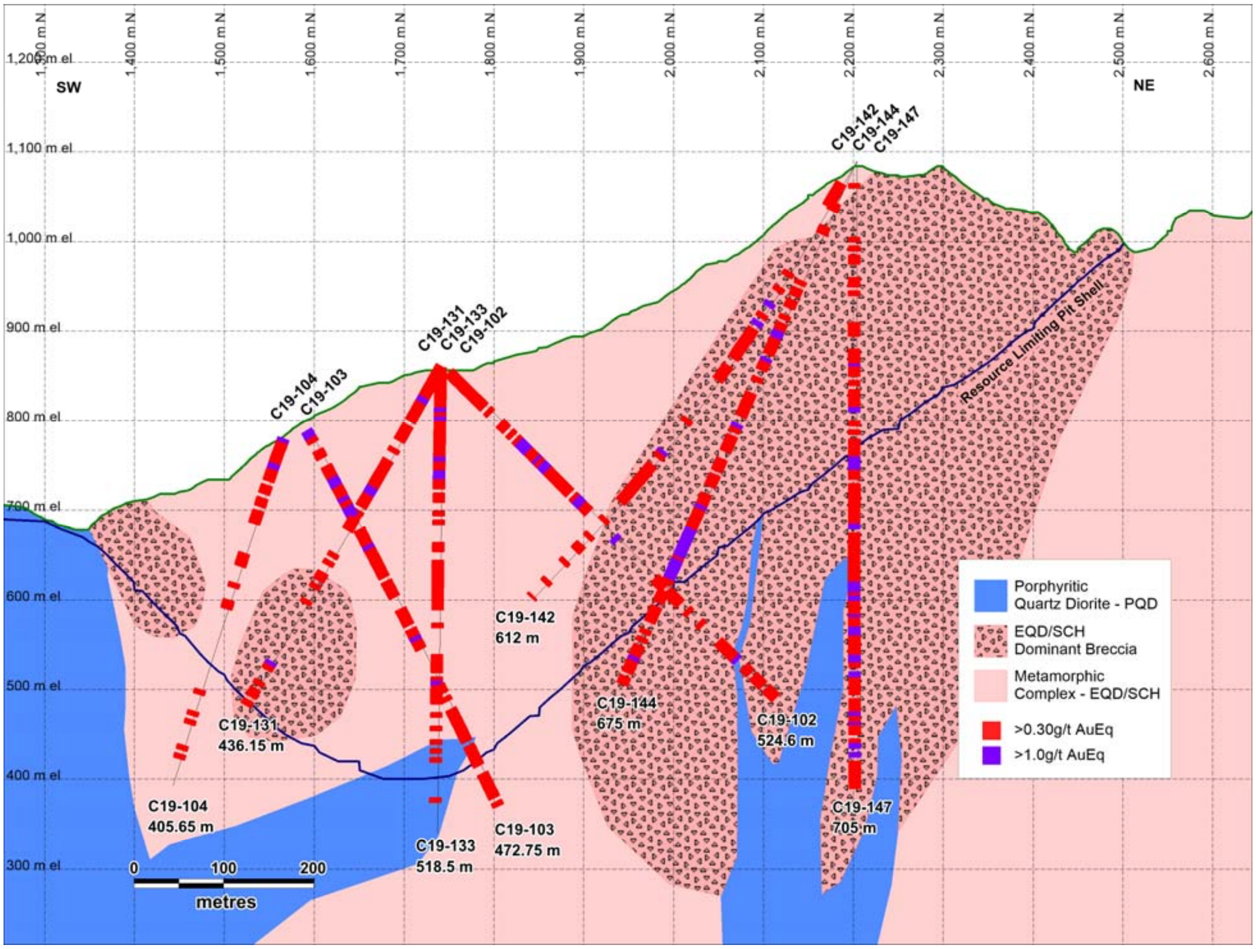
Figure 7-6: Simplified Geology Plan of the Gran Bestia Gold – Copper Zone



Source: Lumina, 2019

A vertical cross section across the central part of the Gran Bestia deposit is shown in Figure 7-7.

Figure 7-7: Vertical Cross Section – Gran Bestia – Section 350E



Source: Lumina, 2019

The gold-copper mineralized zone at Gran Bestia extends for approximately 700 m (north-south) by 600 m (east-west) and has been defined to depths ranging from 200 m in the south to 700 m in the north. The zone remains open to the north, west, and at depth.

8 DEPOSIT TYPES

The Cangrejos and Gran Bestia deposits are gold-copper, silica-saturated, alkalic porphyry-style deposits. This type of deposit is found along paleo-subduction margins (Carter, 1981; Cox et al., 1987).

Other deposits of note within this family include Cadia, Australia; Bingham Canyon, USA; Andacollo, Chile; and Red Chris, Canada. All of these deposits have the following similar chemical affinities and host-rock provenance:

- They are associated with porphyry intrusive rocks that intrude volcanic and sedimentary packages as stocks, plugs, dikes, and dike swarms.
- Mineralization results from late-stage hydrothermal activity driven by remnant heat from the porphyry intrusion. Thermal gradients within these systems give rise to broadly concentric, although often complexly intermingled, zones of alteration and mineralization. Mineralization is generally low grade and consists of disseminated, fractured, veinlet and quartz stockwork-controlled sulphide mineralization. Deposit boundaries are determined by economic factors that outline the zones of mineralized material.
- The distribution of alteration and mineral facies are largely influenced by breccias, dikes, veins, and fracture systems which concentrate and control fluid flow.
- Weathering from percolation of meteoric water can result in the oxidation of the hypogene sulphide mineralization in a portion of the deposit to chalcocite and native copper.

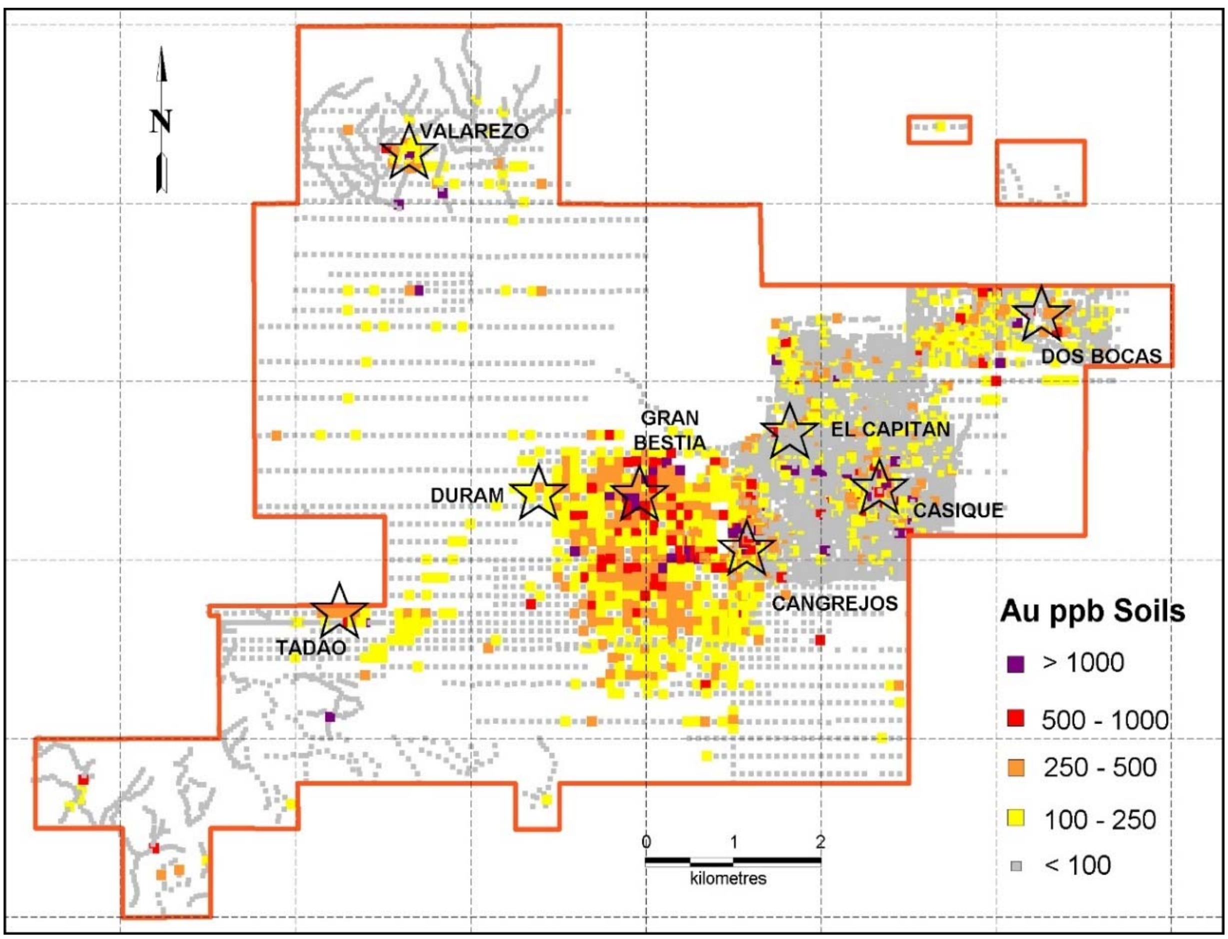
9 EXPLORATION

Extensive geochemical surveys (streams, soils, top of bedrock soils and rocks), geological mapping and airborne and ground geophysical surveys were completed by Odin Mining and the Odin Mining-Newmont El Joven Joint Venture during the period between 1992 to 2010.

Survey procedures, sampling methodology and analysis of these samples are described in detail by Mayor and Soria (2000) and Potter (2004, 2010). Detailed information on the geological mapping and airborne and ground geophysics programs is also discussed in the above-mentioned reports.

Well-defined gold and/or copper soil anomalies have been defined by this previous work and are shown in Figures 9-1 and 9-2. A sub-circular, gold-copper soil anomaly with a diameter of approximately 2,700 m occurs at the centre of the property. The Cangrejos and Gran Bestia mineralized zones occur within this area of anomalous gold and copper soil values. The other mineralized showings on the property also have anomalous, but somewhat less-extensive, gold and copper soil values.

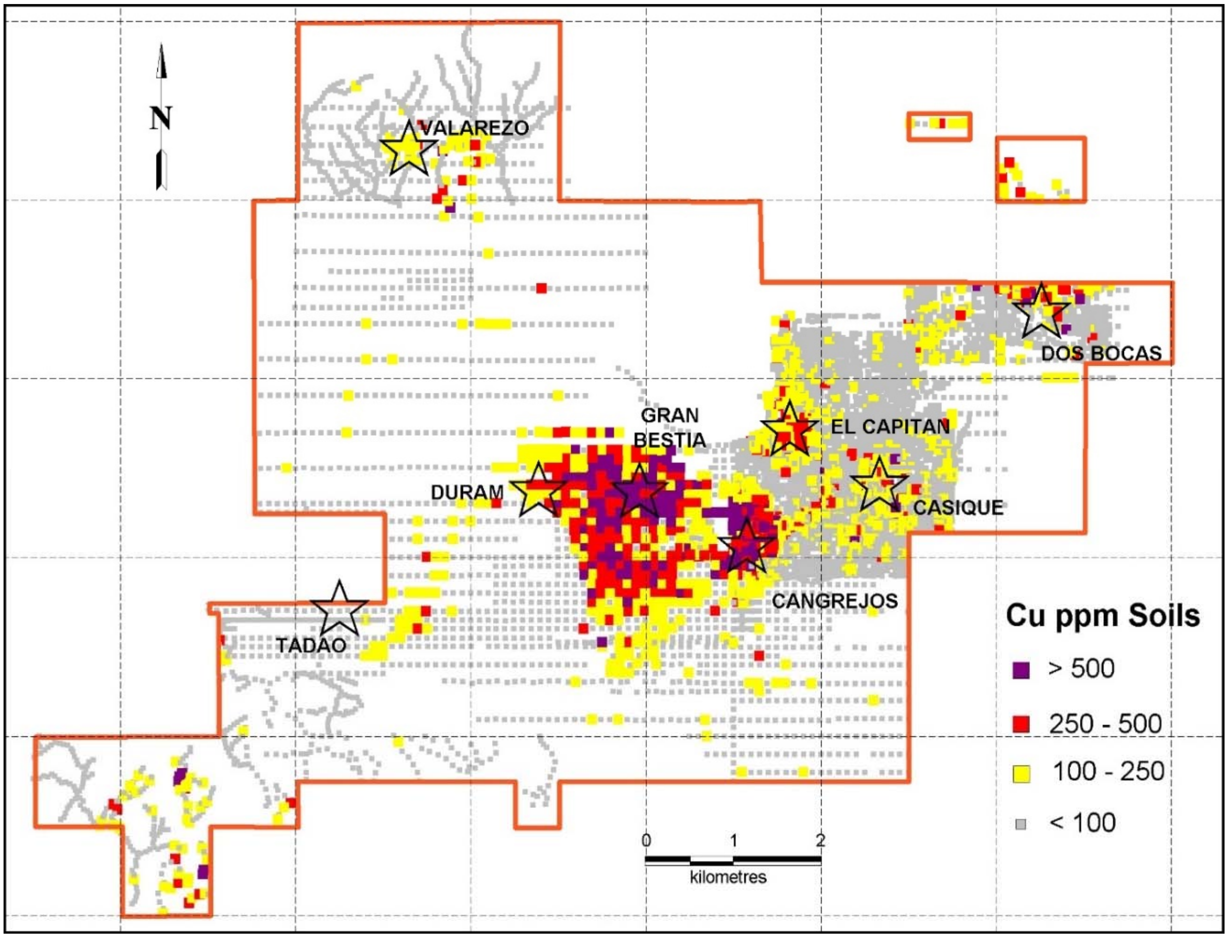
Figure 9-1: Soil Geochemistry – Gold



Note: Cangrejos Project is outlined in orange.

Source: Lumina, 2017

Figure 9-2: Soil Geochemistry – Copper

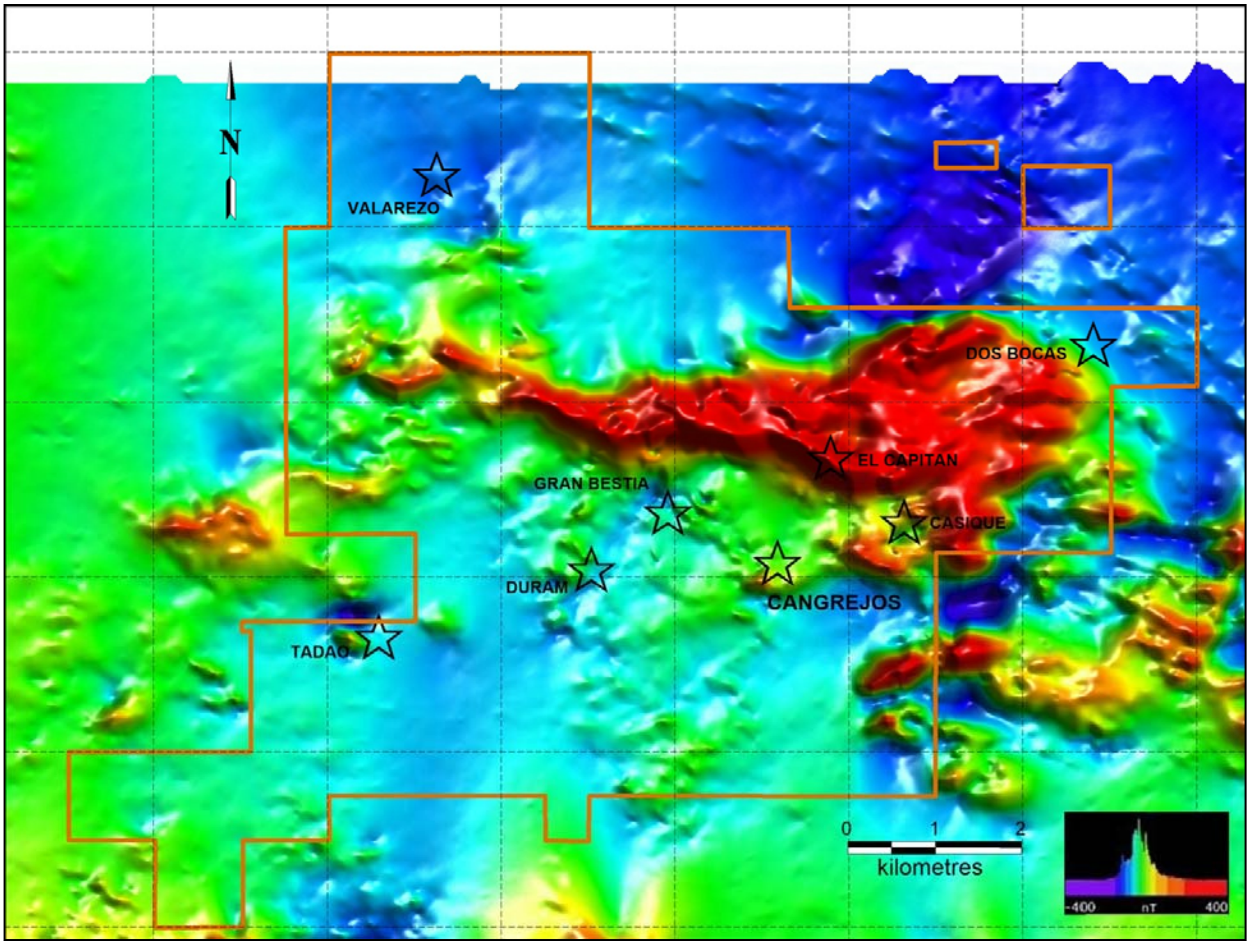


Note: Cangrejos Project is outlined in orange.

Source: Lumina, 2017

The airborne magnetic survey was used to help define structures. In addition, small circular magnetic highs are interpreted as breccia pipes. The location of exploration targets other than the Cangrejos and Gran Bestia deposits are shown in Figure 9-3 and described in Table 9.1.

Figure 9-3: Exploration Targets – Cangrejos Project – RTP Magnetics



Note: Cangrejos Project is outlined in orange.

Source: Encom, 2007; Lumina, 2017

Table 9.1: Untested Exploration Targets – Cangrejos Project

Target	Geochemistry	Magnetics	Geology
TADAO	Anomalous gold: rocks, soils and local streams	Circular magnetic high	Breccia pipes
DURAM	Anomalous gold, copper: rocks, soils	North-trending series of magnetic highs	Breccia pipes
DOS BOCAS	Anomalous gold, copper: streams, soils, rocks	Several magnetic highs and lows	Unknown
VALAREZO	Anomalous gold, copper, arsenic: rocks, soils	Weak to moderate magnetic anomaly south of the geochemical anomaly	Unknown

Source: Lumina, 2017

Other than diamond drilling, Lumina has not conducted any other exploration on the Cangrejos Project.

Terra Remote Sensing completed a light detection and ranging (LiDAR) orthophotographic survey over part of the Project area from February 24, 2019 to March 31, 2019. This helicopter survey covered an area of 76.82 km^2 with a point density of 12 points per square metre and a 10 cm orthophoto resolution. The purpose of the survey was to provide an accurate digital terrain model (DTM) for the area covering the Cangrejos and Gran Bestia deposits.

10 DRILLING

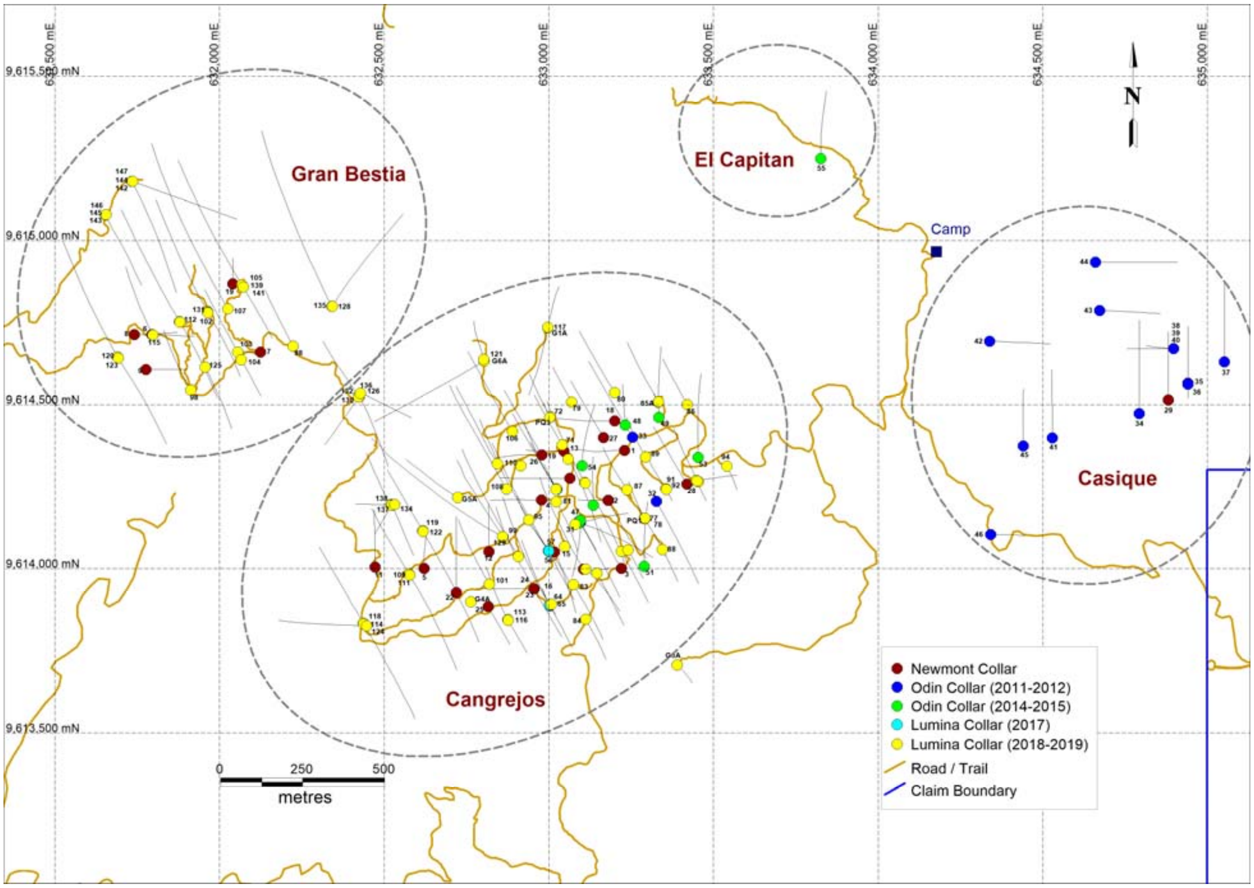
Since 1999, a total of 168 holes, totalling 62,553.75 m has been completed on the Project. This is summarized in Table 10.1 and shown in Figure 10-1. Seven additional drill holes totalling 408 m were drilled by Lumina in 2019 for metallurgical and condemnation purposes. These holes were not assayed and have not been used for the resource calculation.

Table 10.1: Summary of Drilling
Cangrejos Project

Zone	Year	Operator	# of Holes	Metres
Cangrejos	1999	Odin Mining-Newmont JV	17	4,617.10
	2000	Odin Mining-Newmont JV	6	1,620.30
	2011–2012	Odin Mining	4	1,402.00
	2014	Odin Mining	8	3,188.50
	2017	Lumina	15	7,186.07
	2018–2019	Lumina	72	26,450.85
		TOTAL	122	44,464.82
Gran Bestia	1999	Odin Mining-Newmont JV	5	977.81
	2018–2019	Lumina	26	13,170.84
		TOTAL	31	14,148.65
Casique	2000	Odin Mining-Newmont JV	1	294.00
	2011–2012	Odin Mining	13	3,296.13
		TOTAL	14	3,590.13
El Capitán	2015	Odin Mining	1	350.15
		GRAND TOTAL	168	62,553.75

Source: Lumina, 2019

Figure 10-1: Drill Collar Plan Map
Cangrejos Project



Source: Lumina, 2019

10.1 Drill Programs

Details of the various drill programs are presented in the following sections.

10.1.1 Newmont (1999–2000)

In 1999–2000, Newmont used Connors Perforaciones S.A. to drill 29 HQ holes totalling 7,509.2 m in the northern part of the El Joven Joint Venture area (Potter, 2004).

Drills were mobilized by helicopter and moved between sites by large crews of local workers. 23 holes (6,237.4 m) tested the Cangrejos gold-copper porphyry zone; five holes (977.8 m) tested the gold-copper, porphyry-style mineralization at Gran Bestia; and one hole (294 m) tested a gold soil anomaly at Casique.

A Tropari was used to provide down-hole deviation data. This was available for the 1999 drill program but not for the 2000 drill program.

Cangrejos Zone

Hole C99-14 intersected a wide zone of porphyry-style, gold-copper mineralization associated with the soil anomalies (Hole C99-14: 1.57 g/t Au, 0.19% Cu over a core length of 192 m; this may not represent the true width of the zone because additional drilling is required to determine the exact geometry of the mineralized zone) (Odin Mining, Dec. 1999).

Additional drilling delineated two sub-parallel northeasterly trending zones: Trinchera (southern zone) and Paloma (northern zone). These zones appear to have steep to sub-vertical dips. The Newmont drilling indicated that the mineralized zones have a lateral extent of 850 m, horizontal widths ranging from 100 m to 250 m and extend to depths of approximately 250 m.

Gran Bestia Zone

Five holes tested a gold-copper soil anomaly in the Gran Bestia area, approximately 1.2 km northwest of the Cangrejos Zone. All holes intersected wide zones of low-grade, gold mineralization associated with intrusive breccias containing fragments of diorite, porphyritic diorite and quartz diorite. The rocks exhibit silica-chlorite alteration with patchy biotite, albite and silica overprints. Sulphide mineralization consisting of pyrite, chalcopyrite and traces of molybdenite occurs in quartz veins and as disseminations. Overall, sulphide content is low (<5%). Hole C99-06 returned values of 1.19 g/t Au over 132 m (based on a 1 g/t Au cut-off) (Odin Mining, Sept. 1999). Due to the widely spaced drilling, the true width of this mineralization is unknown, and additional drilling is required to determine the exact geometry of the mineralized zone.

Casique

One hole (C00-29) tested a gold soil anomaly in the Casique area. A 22 m wide zone with 2.56 g/t Au is associated with a silicified fracture or fault zone (Potter, 2010).

10.1.2 Odin Mining (2011–2012)

In 2011 and 2012, Odin Mining used Terranova Drilling S.A.C. to drill 17 HQ holes on the Cangrejos Project. A Hydracore 2000 drill was used, and drill moves were completed using a small tractor. A Reflex EZ-SHOT™ was used to provide down-hole deviation data.

Four holes (1,402 m) tested the extent of the Cangrejos Zone, and the remaining 13 holes (3,296.13 m) tested a gold soil anomaly in the Casique area. The mineralization at Casique is confined to relatively narrow, discontinuous zones related to silicified diorite, hydrothermal breccias, faults or fracture zones.

Significant results from this drill program have been included in several press releases (Odin Mining; January 2012, April 2012, June 2012). Highlights include the following holes:

- C12-37: 8.96 g/t Au, 0.23% Cu over 6 m
- C12-39: 2.55 g/t Au, 0.18% Cu over 18 m
- C12-40: 1.65 g/t Au, 0.08% Cu over 24 m
- C12-45: 14.2 g/t Au, 0.24% Cu over 2 m

10.1.3 Odin Mining (2014–2015)

In 2014 and early 2015, Odin Mining used Hubbard Perforaciones S.A. (Hubbard) to complete nine HTW (HQ) drill holes (3,538.65 m) on the Cangrejos Project. A Hydracore 2000 drill was used and drill moves were completed using a small tractor. A Reflex EZ-SHOT™ was used to provide down-hole orientation data at 50 m intervals.

Eight holes (3,188.5 m) tested the lateral and down-dip extent of the Cangrejos Zone and confirmed the grade as previously defined by Newmont (Odin Mining, 2015). In addition, one hole (350.15 m) tested the El Capitán copper-molybdenum soil anomaly. It intersected unaltered granodiorite with thin andesite dikes and intrusive breccia zones. No significant mineralization was present.

10.1.4 Lumina (2017)

In 2017, Lumina used Hubbard to complete 15 HTW (HQ) drill holes (7,186.1 m) on the Cangrejos Zone. A Hydracore 2000 drill was used and drill moves were completed using a small tractor. A Reflex EZ-SHOT™ was used to provide down-hole orientation data at 50 m intervals.

This drilling discovered a zone of higher grade gold-copper mineralization associated with hydrothermal breccias which occurs at depth below the resource pit used for the November 2017 mineral resource estimate (Sim and Davis, 2017).

10.1.5 Lumina (2018–2019)

In 2018 and 2019, Lumina continued to use Hubbard to complete 63 HTW (HQ) drill holes (26,457.31 m) on the Project. Two Hydracore 2000 drills were used and drill moves were completed using a small tractor. A Reflex EZ-SHOT™ was used to provide down-hole orientation data at 50 m intervals. In February 2019, two more Hydracore 2000 drills owned by Rumi Drilling Company (Rumi) were mobilized to the Project. Rumi completed 35 HQ drill holes (13,164.38 m) on the Project. It used a small tractor to make drill moves. A Reflex EZ-SHOT™ was used to provide down-hole orientation data at 50 m intervals.

A total of 72 holes (26,450.85 m) were completed on the Cangrejos Zone. This included infill resource holes (52 holes; 21,129.77 m) that have been used for the updated mineral resource estimate contained in this Report, geotechnical holes (11 holes; 4,590.25 m), metallurgical holes (4 holes; 585.0 m) and condemnation holes in areas of planned infrastructure (5 holes; 145.83 m).

Wide-spaced drilling (26 holes; 13,170.84 m) was completed at Gran Bestia to assess the significance of this mineralized zone and provide an initial mineral resource estimate.

10.2 Drill Collar Coordinates

Drill hole collars were initially located using a hand-held Garmin GPS. Since 2017, all of the holes at the Cangrejos and Gran Bestia deposits have been surveyed by a local contractor, Victor Tobar. He used a Trimble differential GPS and base station which is accurate to 0.005 m horizontal and 0.010 m vertical.

10.3 Diamond Drill Core Logging Procedures

There is no documentation for the logging procedures used in Odin Mining's 2011–2012 drill program. However, except for the introduction of geotechnical logging during the 2014–2015 drill program, procedures were similar to what is currently in place.

With respect to both the Odin Mining and Lumina drill programs, drill core was logged in the core logging facility located at the Cangrejos exploration camp. Upon receipt from the drill, Lumina field assistants checked the depth and recorded the "FROM_TO" intervals on the outside of the core box. Photos were taken of both dry and wet core. Lumina geologists then examined the core and prepared geotechnical and geological logs. The geotechnical log includes RQD, core recovery, fracture and vein quantity, and vein angles. Point-load tests were taken at 5 m intervals and density measurements were taken at 10 m intervals. For the 2017 and 2018–2019 drill programs, every 10th density sample was shipped to ALS Labs in Lima, Peru for a second density measurement using paraffin-coated samples.

All drill data from the Newmont (1999–2000), Odin Mining (2011–2012), (2014–2015) and Lumina (2017 to March 2018) drill programs were compiled in Excel® spreadsheets. In March 2018, Lumina purchased the GeoSpark ACCESS®-based database management system. All previous drill data were imported into GeoSpark. Since March 2018, drill data have been entered directly into GeoSpark's core logging form which includes data validation and pick lists for collar information, down-hole surveys, lithology, alteration, mineralization and geotechnical information. Assay sample numbers and intervals were also entered in the field, and, when assay data were received from the lab, they were imported directly into the GeoSpark database.

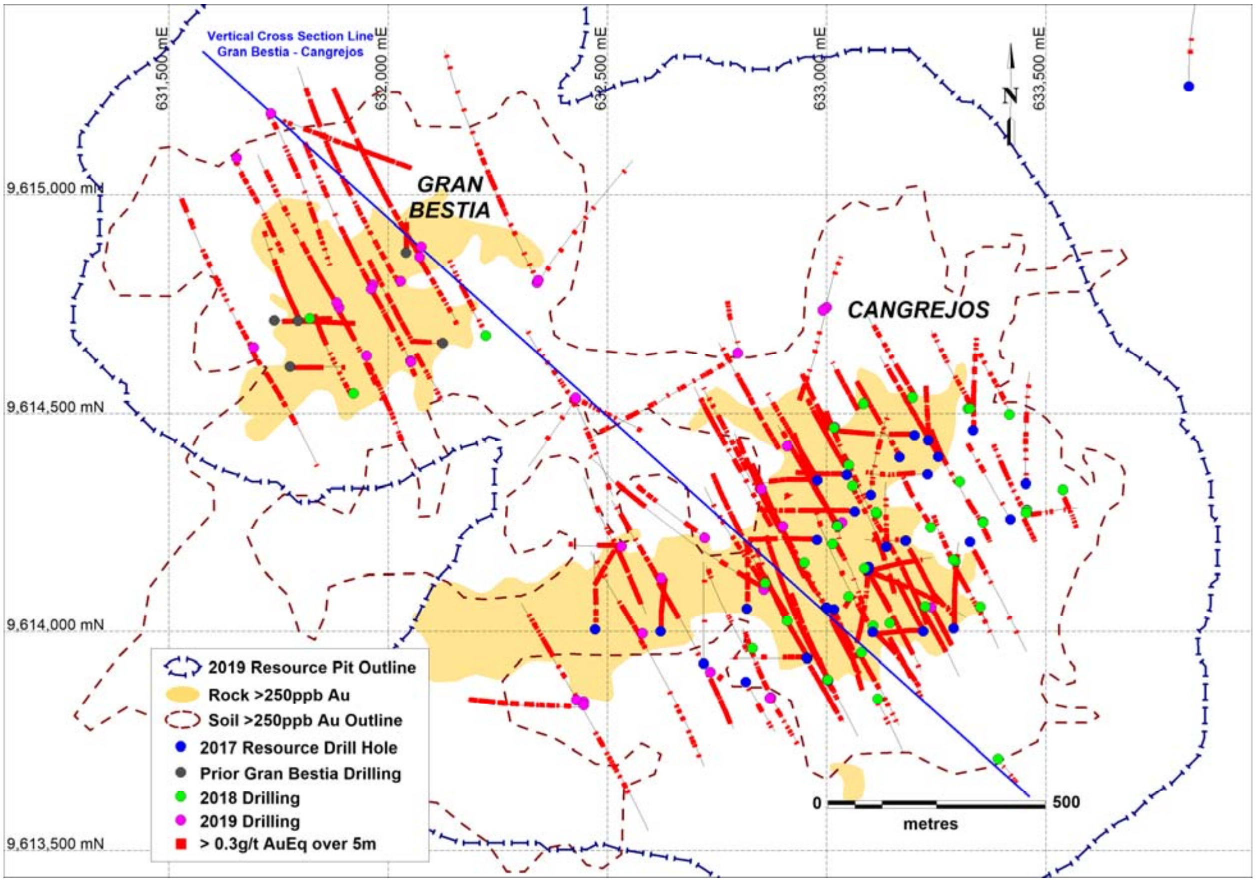
10.4 Drill Core Storage

All drill core from the Cangrejos Project is stored in a dry, secure building at Lumina's field camp, located at the Cangrejos Project. The drill core from the 1999 drill program on the Cangrejos 20 concession is stored in Machala at a warehouse owned by the previous concession owner.

10.5 Summary of Drill Results

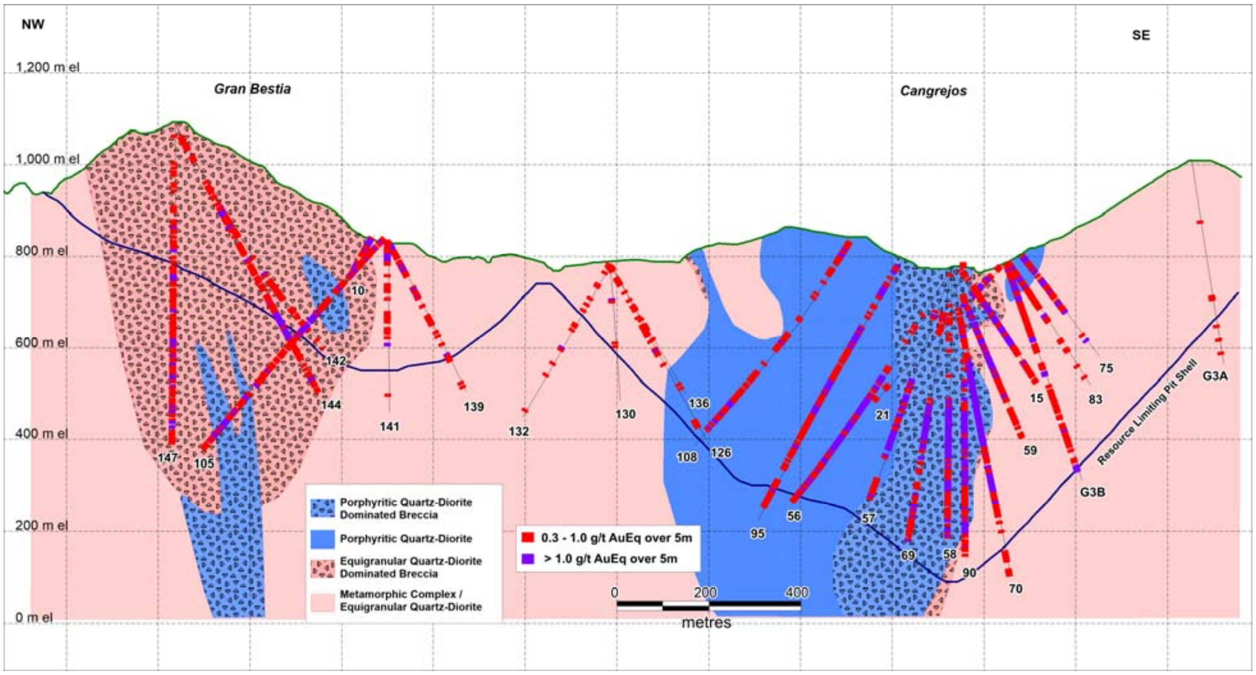
Drilling at the Cangrejos Project has defined two zones of porphyry-style gold-copper mineralization. The Cangrejos Zone has dimensions of 1,000 m by 70 to 600 m and has been tested to depths of at least 600 m. It is open to the west and at depth. The Gran Bestia Zone is located approximately 700 m northwest of Cangrejos (Figure 10-2). It has dimensions of 700 m by 600 m and has a vertical extent of 200 m in the south to at least 700 m in the north. Figure 10-3 is a vertical cross section showing the relationship of the two mineralized zones. Gran Bestia remains open to the north, west, and at depth.

Figure 10-2: Plan Map – Cangrejos, Gran Bestia



Source: Lumina, 2019

Figure 10-3: Vertical Cross Section – Gran Bestia to Cangrejos



Source: Lumina, 2019

10.6 Qualified Person’s Opinion on Drilling Procedures

In the QPs’ opinion, the core handling, logging, sampling and core storage protocols in place on the Cangrejos Project meet or exceed common industry standards, and the authors are not aware of any drilling, sampling or recovery factors that could materially impact the accuracy and reliability of these results.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Drill Hole Sampling

Drill hole sampling, analytical, QA/QC and security procedures for each of the drilling phases is described in the following sections.

11.1.1 Newmont Drilling (1999–2000)

Mayor and Soria (2000) and Potter (2004, 2010) describe the sampling procedures used by Newmont. The core was cut in half using a diamond saw and 2 m samples were sent to Bondar Clegg (now ALS Chemex) for sample preparation in Quito, Ecuador and analysis in Vancouver, Canada. Pulps were analyzed for gold using a fire assay procedure with an atomic absorption finish on a 30 g charge. Samples with Au > 0.5 g/t were analyzed for copper, lead, zinc, molybdenum and silver by atomic absorption after a 4-acid digestion.

Newmont also selected some samples for “blaster” gold analysis. This method is similar to conducting a screen metallic gold assay where the coarse (+150 mesh) and fine (-150 mesh) fractions are analyzed for gold. This method tests for coarse gold. The results from the fire assay and “blaster” analyses were similar, which suggests that, if coarse gold exists, it is not being liberated in the preparation process.

Newmont inserted its own standards every 25 samples to control the analytical quality.

There is no record of any special measures taken to monitor the security of the samples during their transportation to the preparation lab in Quito.

Rejects and pulps from this drill program were stored in a house in Santa Rosa, but most of this material was damaged and is no longer available.

11.1.2 Odin Mining Drilling (2011–2012)

Section 11.1.4 (Lumina Drilling) describes core handling procedures that were similar to those used during Odin Mining’s 2011–2012 drill program.

Drill core samples from the 2011–2012 drill program were assayed by Acme Labs (now Bureau Veritas) in Vancouver. Samples were prepared at LAC y Asociados Cia. Ltda. (LAC), which has ISO 9001:2008 accreditation and is Acme Labs’ preparation lab in Cuenca, Ecuador. Pulps were sent to Acme Labs in Vancouver for analysis. All samples were analyzed for gold using a fire assay technique on a 30 g charge. In addition, a 35-element ICP analysis was done using a 4-acid digestion.

QA/QC samples were inserted on a random basis, but, generally, insertion averaged every 10 samples. These included six certified standards, a blank, and duplicate samples.

During this drill program, 2,563 samples were analyzed: 83 were blanks, 75 were certified reference material, 74 were duplicates, and 2,331 were core samples.

Remaining reject and pulp material from the 2011–2012 drill program was returned to Odin Mining and is stored in a secure warehouse located in Quito.

11.1.3 Odin Mining Drilling (2014–2015)

Section 11.1.4 (Lumina Drilling) describes core handling procedures that were similar to those used during Odin Mining's 2014–2015 drill program.

Drill core samples from the 2014–2015 drill program were assayed by Acme Labs (now Bureau Veritas) in Vancouver. Sample shipments were picked up by a representative from LAC and delivered to its lab in Cuenca where the samples were processed. Approximately 250 g of pulverized material was shipped for analysis at Acme Labs. Certified reference standards, purchased from CDN Resource Laboratories Ltd., were hand-delivered to Acme Labs and inserted into each sample batch. All samples were analyzed for gold using a fire assay technique on a 30 g charge. In addition, a 35-element ICP analysis was done using a 4-acid digestion.

Remaining reject and pulp material from the 2014–2015 drill program was returned to Odin Mining and is stored in a secure warehouse located in Quito.

11.1.4 Lumina Drilling (2017–2019)

The core handling and sample procedures described here were used for Lumina's 2017 and 2018–2019 drill programs and all previous drill campaigns by Odin Mining.

The drillers placed the HQ drill core in plastic boxes (four rows; total approximately 2.5 m per box). Wooden tags marked with the down-hole depth were placed in the box. Lids were placed on the box and taped shut. The core was then transported by tractor to the nearest road and then trucked to Lumina's core facility at the Cangrejos Project exploration camp. Upon receipt, Lumina field assistants checked the depth and recorded the "FROM_TO" intervals on the outside of the box. Photos were taken of both dry and wet core. Lumina geologists then examined the core and prepared geotechnical and geological logs.

The geologist marked up samples at 2 m intervals and the core was cut in half using a diamond saw. For each 2 m sample, half the core was put into a plastic bag, and the other half was returned to the plastic box and stored on site. Bar-coded sample tags were included in each sample bag, and a duplicate sample tag was stapled into the core box. Sample bags were secured with a tamper-proof plastic tag and put into larger mesh sacks which were also tied with a numbered, tamper-proof nylon tie.

These large sample sacks were driven to a secure warehouse in Santa Rosa. When a large batch of samples accumulated in the warehouse or a drill hole was complete, a representative from Carlos Puig & Asociados S.A. (ALS Labs' preparation lab in Quito, Ecuador) picked up the samples from the secure warehouse and drove them directly to the preparation lab in Quito. The secure tamper-proof plastic tag was checked against a list emailed to the lab. Note: No irregularities were detected in any sample shipment. The samples were then crushed and pulverized. From September 2018 onwards, samples were sent to ALS Corplabec S.A. which is ALS Lab's new preparation lab in Quito.

For each sample, approximately 250 g of pulverized material was placed in a kraft paper bag and shipped to ALS, Lima, Peru for analysis. All samples were analyzed for gold using a fire assay technique on a 30 g charge. In addition, a 33-element ICP analysis was done using a 4-acid digestion.

QA/QC samples were inserted after every eight core samples. These include three certified standards (high, medium and low gold grades) and a coarse blank, fine blank, coarse duplicate and fine duplicate.

Remaining reject and pulp material from the 2017–2019 drill programs has been returned to Lumina and is stored in a dry secure warehouse in Quito.

11.2 Quality Assurance and Quality Control

A review of the QA/QC protocols was conducted prior to drilling and formalized in a detailed QA/QC manual developed by Lumina. Each drilling phase was reviewed by a QP who was on site during the drill program. The procedures for core processing and the insertion of blanks and standards were examined. The QA/QC program was conducted in accordance with industry best practice.

No quality control issues were discovered with the Odin Mining (2011–2012) and Newmont (1999–2000) drill programs.

During the 2014–2015 drill program, 2,139 samples were analyzed: 60 blanks, 60 certified reference material, 60 coarse duplicates, 59 fine duplicates, and 1,900 drill core samples drill core. After each batch of analytical results came in, the QA/QC samples were reviewed by a Odin Mining geologist. Odin Mining's QA/QC consultant also reviewed the data on a regular basis.

QA/QC monitoring of the gold assays from Odin Mining's 2014–2015 drill program indicated that the gold assays were apparently biased. Based on Odin Mining's QA/QC consultant's recommendation, any sample with > 0.1 g/t Au was re-assayed at a second lab. This resulted in 1,215 samples being re-assayed at the ALS Chemex laboratory in Lima, Peru. The re-assayed results replaced the original assays in the Project database.

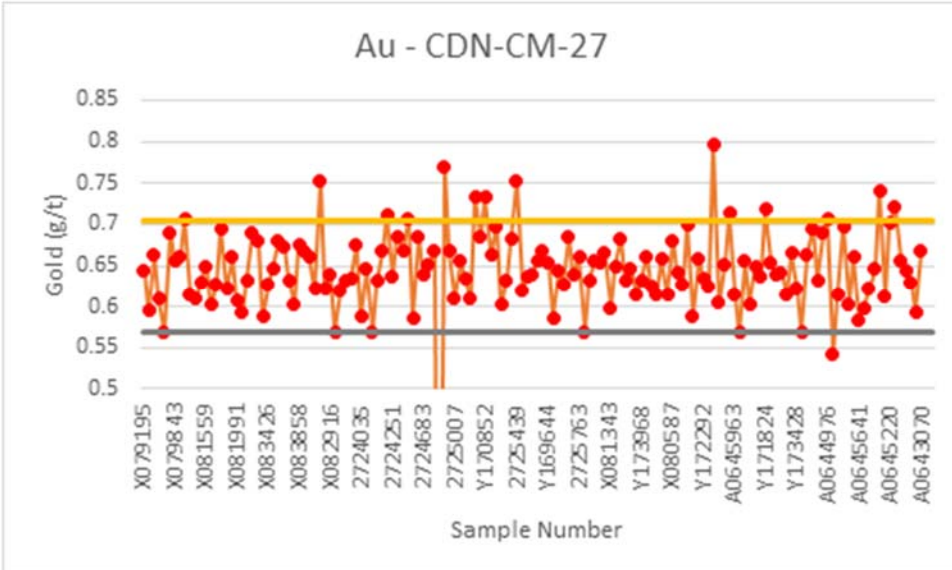
During the 2017 drill program, 4,036 samples were analyzed: 112 blanks, 114 certified reference materials, 112 coarse duplicated, 112 fine duplicates, and 3,586 drill core samples. After each batch of analytical results was released by the lab, the QA/QC samples were reviewed by a Lumina geologist. Lumina's QA/QC consultant also reviewed these data.

Lumina's QA/QC consultant indicated that the results from the 2017 drill program were acceptable and no further action was required.

During the 2018–2019 drill program, 22,036 samples were analyzed: 615 blanks, 619 certified reference materials, 611 coarse duplicates, 612 fine duplicates, and 19,579 drill core samples. After each batch of analytical results was released by the lab, the QA/QC samples were reviewed by a Lumina geologist. Lumina's QA/QC consultant also reviewed these data.

Two of the CDN standards used in the 2018–2019 drill program were suspected of being more heterogeneous than certified and have been replaced. All other standards performed adequately. Figure 11-1 shows an example of a control chart for gold in standard CM-27. The failure rate for CM-27 is approximately 7%.

Figure 11-1: Au g/t for CDN-CM-27

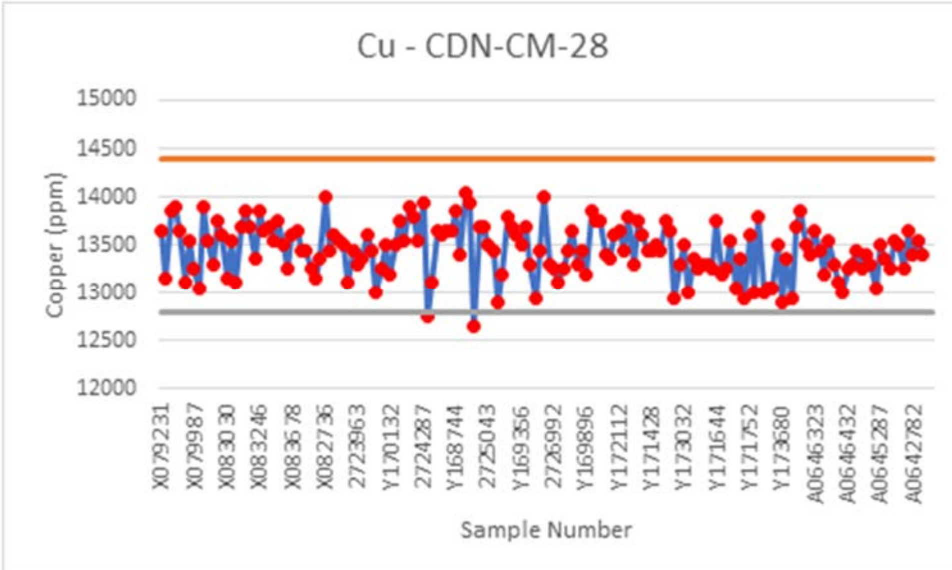


Source: Lumina, 2019

All failures trigger the assaying of duplicates for three samples immediately before and after the standard failure. The duplicates were submitted for assay, including another sample of the same standard that failed. Averages of the original and duplicate sets were never more than 2% different, and the original assays were, therefore, accepted.

All standards, including CM-28 and CM-43, performed well for copper with failure rates well below 10%. An example of a control chart for CM-28 is shown in Figure 11-2.

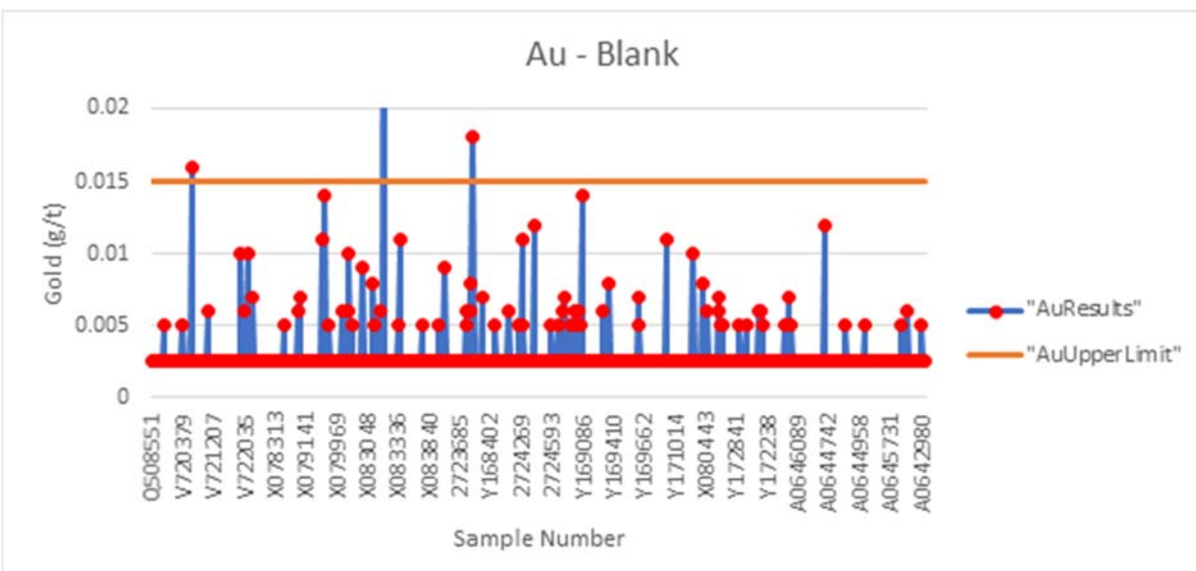
Figure 11-2: Cu ppm for CDN-CM-28



Source: Lumina, 2019

The control limit for gold in sample blanks is 0.015 g/t (3× the detection limit of 0.005 g/t). There are very few failures as shown in Figure 11-3. All failures were investigated by assaying duplicates and more blank material. No abnormalities in the preparation or assay processes were identified.

Figure 11-3: Au g/t - Blank



Source: Lumina, 2019

Lumina's QA/QC consultant indicated that the results from the 2018–2019 drill program were acceptable and no further action was required.

11.3 Qualified Person's Opinion on Sample Preparation, Analytical and Security Procedures

In the QPs' opinion, the analytical procedures are appropriate and consistent with common industry practice. The laboratories are recognized, accredited commercial assayers which are independent from Lumina and previous operators. Lumina analyzed its samples at ALS Chemex in Lima, Peru which has ISO/IEC 17025:2005 accreditation. Odin Mining (2011–2012) used Acme Labs (now Bureau Veritas) in Santiago, Chile which had an ISO 9001:2000 accreditation at the time the work was done. Newmont/Odin Mining (1999–2000) used Bondar Clegg (now ALS Chemex) which has an ISO/IEC 17025:2017 accreditation.

The sampling has been carried out by trained technical staff under the supervision of a QP and in a manner that meets or exceeds common industry standards. Samples are properly identified and transported in a secure manner from site to the lab.

A sample bias in the gold assays was identified by the QPs during the review of the drill data and assays for the 2014–2015 drill program. This bias was corrected. There were no significant issues with the assays from the other drill programs.

12 DATA VERIFICATION

12.1 Database Validation

12.1.1 Collar Coordinate Validation

All drill collars at the Cangrejos and Gran Bestia deposits have been surveyed using a Trimble differential GPS and base station. Collar elevation data are validated by comparing surveyed elevations with the LiDAR digital elevation model (DEM). Most elevation differences in the collars were less than one metre.

12.1.2 Down-hole Survey Validation

The down-hole survey data were validated by identifying any large discrepancies between sequential dip and azimuth readings. No significant discrepancies were found.

12.1.3 Assay Verification

All the collars, surveys, geology and assays were exported from GeoSpark into Excel® files which were then imported into MinePlan® software. No identical sample identifications exist; all FROM_TO data are either zero or a positive value; and, no interval exceeds the total depth of its hole.

To validate the data, the following checks were confirmed:

- The maximum depth of a sample was checked against the depth of the hole.
- The less-than-the-detection-limit values were converted into a positive number equal to one-half the detection limit.
- All gold values greater than 0.1 g/t from each drill hole were checked against the original assay certificate. No errors were found.

The core recovery for the 2018–2019 drill program averaged just over 95%. There is no indication that grade is related to core recovery.

12.2 Geological Data Verification and Interpretation

Several geological variables were captured during core logging. The geological data were verified by confirming that the geological designations were correct in each sample interval. This process included the following:

- Examine FROM_TO intervals for gaps, overlaps and duplicated intervals.
- Look for collar and sample identification mismatches.
- Verify correct geological codes.

A geological legend was provided, and it was used to compare the values logged in the database. The geological model was found to be reasonable and adequate for use.

12.3 Conclusion

Inspection of the drill core during the site visit and validation of the collected data indicate that the drill data are adequate for interpretation.

In the QPs' opinion, the database management, validation and assay QA/QC protocols are consistent with common industry practices. Therefore, the database is acceptable for use in this Report.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

Metallurgical testing programs discussed in this section were performed by NMS of Englewood, Colorado, USA in 1999 and by Plenge of Lima, Peru from 2015 to October 2019.

Laboratory reports reviewed for this report include:

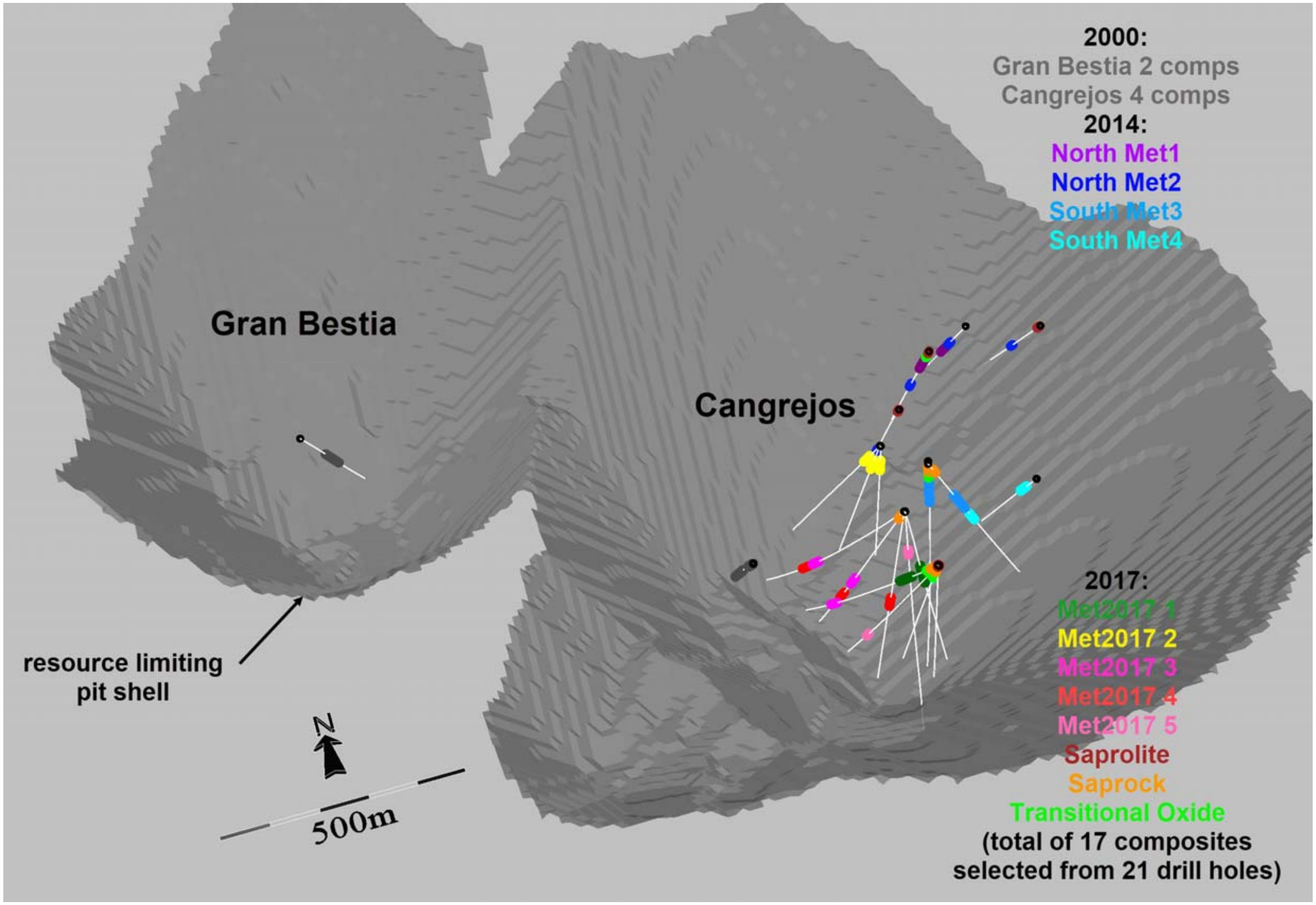
- Metallurgical Study for Cangrejos (Ecuador) Ores – Progress Report 1 – NMS Project No. 11802, by NMS and dated September 30, 1999
- Metallurgical Study for Cangrejos (Ecuador) Ores – Progress Report 2 – NMS Project No. 11802, by NMS and dated November 3, 1999
- Metallurgical Investigation No. 16596-99, Odin Mining and Exploration Ltd., Cangrejos Project, Progress Report (with Appendices), by Plenge and dated November 11, 2015
- Report of Investigation No.18278-81, Lumina Gold, Cangrejos Project, MET 2017-01, -02, -03, and -04, "Comminution, Gravity, Cyanidation and Flotation" (with Appendices), by Plenge and dated July 10, 2018
- Report of Investigation No. 18412-13, Lumina Gold, Cangrejos Project, "Comminution, Head Assays and XRD", by Plenge and dated May 8, 2018
- Report of Investigation No. 18417-19, Lumina Gold, Cangrejos Project, "Saprolite, Sap-Rock and Oxide Screening Tests, Gravity, Cyanidation and Flotation" by Plenge dated June 12, 2018
- Report of Investigation No. 18417, Lumina Gold, Cangrejos Project, "Primary Optimization and Variability; Oxide and Saprock Progress Report" by Plenge dated October 2019
- FLSmidth Minerals Testing and Research Center report, "Lumina Gold – Cangrejos, HPGR and Comminution Suite" by Rucci dated July 1, 2019.

13.2 Metallurgical Samples

Samples for the Plenge metallurgical test programs completed to date have been obtained from 45 drill holes representing various rock types, alterations, lithologies, metal content, and locations within the potential pit area and mainly from the eastern half of the Cangrejos deposit. These test samples are consided to be representative of the various types and styles of mineralization and the Cangrejos deposit as a whole. Testing of samples from an additional 15 drill holes from the western portion of the Cangrejos deposit and the nearby Gran Bestia deposit is in progress.

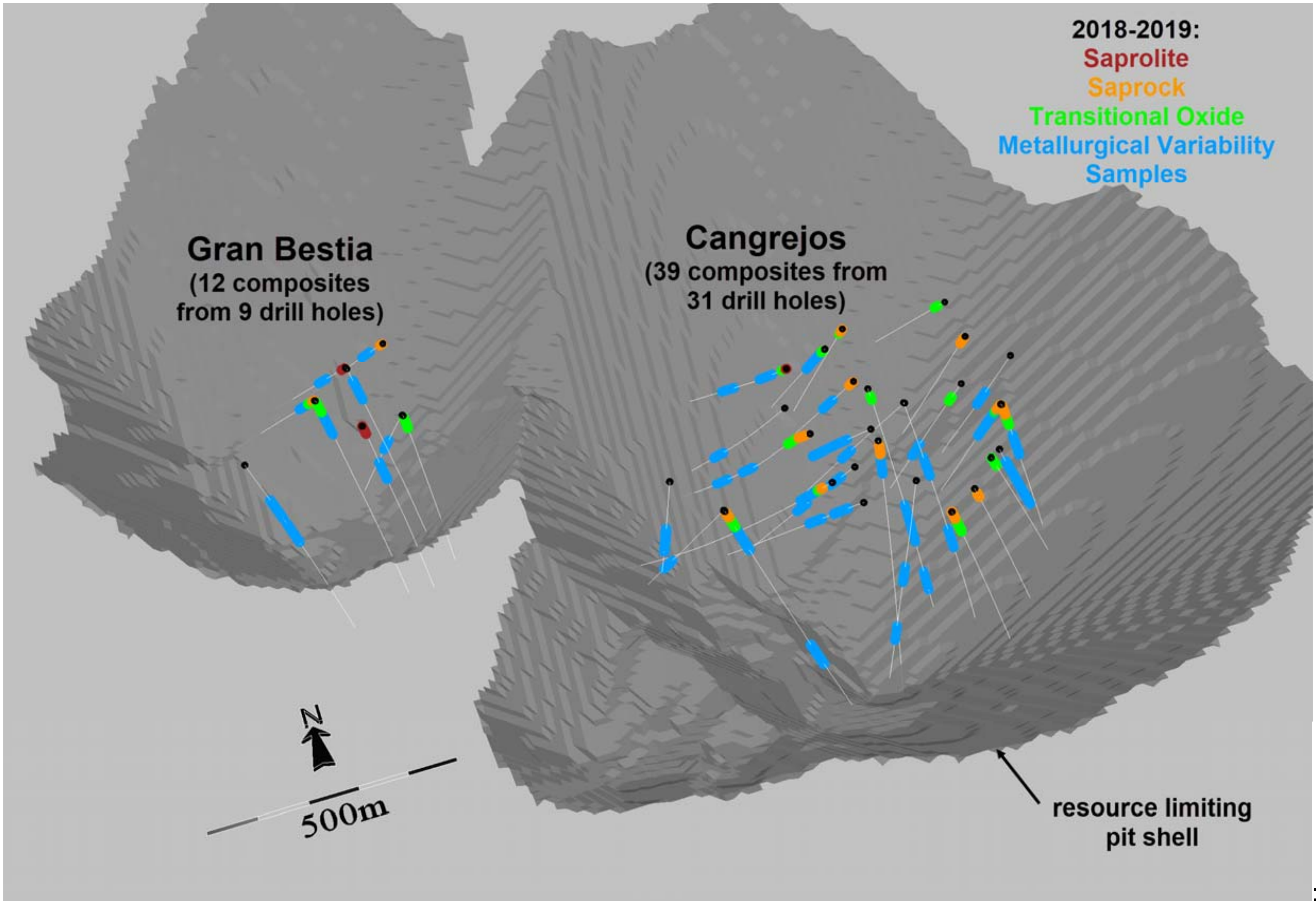
Figures 13-1 and 13-2 show isometric views of all the metallurgical drill holes in relation to the potential pit.

Figure 13-1: Isometric View of the Metallurgical Drill Holes in Relation to the Potential Pit (2000–2017)



Source: SIM Geological, 2019

Figure 13-2: Isometric View of the Metallurgical Drill Holes in Relation to the Potential Pit (2018–2019)



Source: SIM Geological, 2019

13.3 Metallurgical Testing

Metallurgical investigations completed or directed by Plenge include assaying, material characterization, mineralogy, physical properties and comminution studies, gravity concentration, cyanidation, flotation, solid-liquid separation, and tailings characterization.

Based on results of the test programs to date, the optimum mineralized material processing scheme is crushing, grinding, flotation, cyanidation of cleaner scavenger tailings and coarse gold-bearing material floated from rougher tailings, and deposition of filtered plant tailings in a storage facility. The plan is to produce copper-gold flotation concentrate, gold-silver doré and molybdenum flotation concentrate that will all be shipped offsite for further processing.

The whole-ore cyanidation process is not considered the optimum processing scheme even though gold recoveries would be higher. Because copper is also recovered in the flotation-leach process, there is a higher overall recovered value than when using only whole-ore cyanidation.

The projected plant metallurgical performance is based on an assessment of Plenge test results while using the optimum processing scheme.

13.3.1 NMS Testing

NMS performed metallurgical testing on six composites prepared from sample intervals of two drill holes. Table 13.1 shows the composite assays. Gold content ranged from 1.0 g/t to 2.1 g/t and copper ranged from 0.08% to 0.28%. The composites are low in sulphur and are not considered preg-robbing”.

Table 13.1: NMS Metallurgical Samples (1999) Composite Head Assays

Hole No.	Composite No.	Au (g/t)	Ag (g/t)	Cu (%)	S (Sulphide) (%)	C (Org) (%)
C99-05	1*	1.22	3.87	0.09	0.03	0.11
C99-05	2	1.49	3.24	0.10	0.08	0.05
C99-05	3	1.56	3.66	0.18	0.16	0.04
C99-05	4	1.00	3.17	0.08	0.10	0.08
C99-06	5	1.30	2.79	0.20	0.17	0.06
C99-06	6	2.10	2.77	0.28	0.18	0.04

* Composite No. 1 noted as oxidized material

Source: Lumina, 2019

Testing by NMS consisted of grindability, bottle-roll cyanidation, flotation, and gravity separation. NMS test results are summarized as follows:

- Composites No. 4 and No. 6 were subjected to Bond Work Index (BWi) determination with indices 18.8 and 15.9 kWh/t, respectively. The materials are considered hard.
- Ninety-six-hour whole-ore bottle-roll cyanidation tests were performed on all six composites at various cyanide strengths (0.5 g/L and 2 g/L) and crush sizes (<10 mesh and 200 mesh). Gold extractions ranged from 54% to 98%. Gold extractions increased significantly with finer crushing and higher cyanide concentration. Cyanide consumptions ranged from 0.47 to 3.90 kg/t while lime consumptions were high (9 to 16 kg/t) when treating saprolite material.
- Gravity concentration tests, using a Gemini Table, were performed on all six composites at two crush sizes (<10 mesh and 100 mesh). Gold recoveries ranged from 6% to 15% for the coarse-crushed materials and from 14% to 33% for the fine-crushed materials. The lowest gold recoveries were from composite No. 1.
- Kinetic flotation tests were performed on the five "sulphide" composites (No. 2 through No. 6). The materials were ground to a p80 of 200 mesh and floated for 15 minutes using standard flotation reagents at a natural pH. Metal recoveries into the rougher concentrates ranged from 83% to 92% for gold and 90% to 97% for copper.
- Material from composites No. 3 and No. 4 were combined and material from composites No. 5 and No. 6 were combined to make up two additional samples to investigate the potential for producing a copper-gold flotation concentrate. Samples were ground to a p80 of 200 mesh and floated for 15 minutes at a natural pH; rougher concentrates were reground, then two stages of cleaner flotation at a pH of 11.5 were performed. Results from both tests indicated there was potential for producing saleable concentrates (15% to 21% Cu content) at reasonable metal recoveries, 90% for copper and 83% for gold, similar to the Plenge test program results discussed in Section 13.3.2.

13.3.2 Plenge Testing

Plenge performed testing from 2015 to October 2019 on 39 composites prepared from 45 different drill holes. Table 13.2 shows the various composite head assays. Gold content has ranged from 0.24 g/t to 1.73 g/t and copper from 0.03% to 0.44%. Molybdenum content has ranged from <5 ppm to 85 ppm. The composites are low in sulphur (0.01% to 0.64%) and organic carbon (0.01% to 0.38%) and are not considered preg-robbing. Sequential copper assays indicate that fresh rock has about 3% of the total copper as "acid-soluble copper" (Cu AS), while the partially oxidized and saprolitic materials contain 25% to 30% as Cu AS. The lithologies of the 30 fresh rock samples tested to date are approximately 40% EQD, 25% Bx and 35% PQD.

Mineralogical investigations indicate that the fresh rock materials contain chalcopyrite and bornite with minor amounts of chrysocolla. Gold is mostly free or exposed at a 74-micron grind with gravity concentrates containing gold sizes ranging from 30 to 40 microns, float concentrates containing gold sizes of about 20 microns, and float tailings containing gold particles encapsulated in non-sulphides at about 5 microns in size. Refractory gold exists and is locked in pyrite and pyroxene. Copper mineral liberation is about 150 microns for 50% liberation and 36 microns for 100%

liberation. Copper mineralization in partially oxidized materials is primarily chalcopyrite with minor amounts of bornite and tenorite (copper oxide). Saprock materials contain copper minerals primarily as copper chlorite.

**Table 13.2: Plenge Metallurgical Samples (All Years)
Composite Head Assays**

Composite	Au (g/t)	Ag (g/t)	Cu (%)	Fe (%)	Mo (ppm)	S (Sulphide) (%)	C (Org) (%)
2015 Program							
North Met - 1	0.97	1.20	0.20	3.76	52	0.29	0.01
North Met - 2	0.45	0.60	0.08	3.09	32	0.03	0.01
South Met - 3	1.26	0.60	0.16	1.99	76	0.10	0.01
South Met - 4	0.50	0.60	0.09	2.83	38	0.08	0.01
2017 and 2018 Programs							
Met 2017 - 1	0.74	0.60	0.28	3.24	11	0.23	0.07
Met 2017 - 2	0.57	0.60	0.05	1.78	26	0.01	0.04
Met 2017 - 3	0.90	0.60	0.24	2.89	18	0.18	0.03
Met 2017 - 4	1.55	1.20	0.39	2.91	30	0.18	0.04
Met 2017 - Master (1-4)	0.96	0.60	0.25	2.68	20	0.15	0.04
C17 - 65	0.78		0.04				
C17 - 70	0.51		0.32				
C18 - JK - 01	0.65	0.30	0.06	1.19	30	0.04	0.04
C18 - JK - 02	0.56	1.19	0.24	3.90	40	0.41	0.13
Saprolite	0.44	1.20	0.13	6.18	< 5	< 0.01	0.05
Saprock	0.71	2.40	0.15	3.75	< 5	< 0.01	0.05
Partially Oxidized	1.05	1.20	0.19	3.88	12	0.02	0.02
2019 Program (Variability)							
CVS-01	0.625	0.20	0.034	2.52	25	0.040	0.08
CVS-02	0.628	0.20	0.091	3.87	64	0.119	0.20
CVS-03	0.871	0.20	0.062	3.18	16	0.047	0.11
CVS-04	0.757	0.20	0.106	2.69	50	0.104	0.04
CVS-05	0.371	0.20	0.089	3.90	30	0.115	0.08
CVS-06	0.241	0.20	0.042	3.23	17	0.067	0.11
CVS-07	0.747	0.20	0.061	1.84	55	0.060	0.05
CVS-08	1.046	0.20	0.077	3.37	22	0.079	0.06
CVS-09	1.540	0.20	0.102	3.53	13	0.103	0.06
CVS-10	0.734	0.20	0.029	2.50	12	0.035	0.11
CVS-11	0.480	0.20	0.062	3.25	10	0.091	0.08
CVS-12	0.373	0.20	0.046	1.66	57	0.048	0.20
CVS-13	0.645	0.20	0.168	3.38	22	0.199	0.04
CVS-14	0.969	0.20	0.127	2.83	18	0.372	0.30
Master Comp CVS 01-14	0.728	0.20	0.076	3.27	24	0.103	0.08
CVS-15 (PQ-1)	0.685	1.33	0.152	2.74	57	0.204	0.29

Composite	Au (g/t)	Ag (g/t)	Cu (%)	Fe (%)	Mo (ppm)	S (Sulphide) (%)	C (Org) (%)
CVS-16 (PQ-2)	1.265	0.30	0.169	2.22	29	0.136	0.04
CVS-17 (PQ-3)	1.068	0.30	0.323	3.41	85	0.344	0.06
CVS-18 (PQ-4)	0.977	1.04	0.415	4.74	7	0.644	0.15
CVS-19 (C20)	0.685	0.60	0.151	2.76	44	0.212	0.17
CVS-20 (C20)	1.265	0.45	0.13	3.56	17	0.281	0.09
CVS-21 (C20)	1.733	1.48	0.443	1.90	9	0.436	0.38
CVS-22 (C20)	1.107	1.93	0.377	2.34	22	0.486	0.24
Saprock	0.611	11.54	0.094	3.07	4	0.010	0.05
Partially Oxidized	1.005	2.38	0.167	3.71	16	0.230	0.06

Source: Lumina, 2019

Plenge test results are summarized as follows:

- Comminution tests indicate that the materials are hard and moderatively abrasive. Fresh rock and partially oxidized samples have ball mill BWis ranging from 14 to 17 kWh/t, abrasion indices averaging 0.26 g, JK specific energy values averaging 12 kWh/t and JK A×b values averaging about 26. Saprolitic materials are softer and have BWis ranging from 5 to 8 kWh/t.
- In 2017, gravity concentration tests on the fresh rock master composite indicated that 37% of the gold and 9% of the silver were recovered into a gravity gold concentrate that assayed 143 g/t gold. An average of 17% of the gold was recovered by gravity concentration from the saprolite, saprock, and partially oxidized materials.
- In 2019, gravity concentration tests on a lower grade master composite of fresh rock recovered 24% of the gold and 17% of the silver into a concentrate that assayed 74 g/t Au.
- In 2017, lock-cycle flotation of fresh rock gravity tailings produced a bulk copper-gold-molybdenum concentrate that assayed 21% Cu. Copper, gold, and molybdenum recoveries in the concentrate were 86%, 43%, and 65%, respectively. Overall gold recovery for this test (gravity + float) was 82%.
- In 2019, lock-cycle flotation of a fresh rock composite, without prior gravity concentration, produced a bulk copper-gold-molybdenum concentrate that assayed 21.5% Cu. Copper, gold and molybdenum recoveries in the concentrate were 87%, 73% and 67%, respectively. Cyanidation of cleaner tails and a flotation concentrate produced by floating +200 mesh gold and sulphide materials from the rougher tailings is estimated to recover an additional 9% of the gold. Overall gold recovery for this test is estimated to be 82% from this material, similar to the results from the 2017 test program.
- In 2015, a separate molybdenum concentrate was produced by flotation from the bulk copper-gold-molybdenum concentrate. The final concentrate assayed 43% molybdenum at a recovery of 51%.
- In 2017, flotation of partially oxidized material resulted in a saleable concentrate that assayed 16% Cu. After modifications were made to flotation reagent schemes in 2019

tests, it is now estimated that 81% of the gold and 54% of the copper will be recovered by the float-leach process.

- In 2019, rougher flotation recoveries from saprock materials were 70% for gold and 22% for copper, also an improvement over 2017 results due to reagent changes. Cleaner flotation of the saprock in 2017 did not produce saleable float concentrates. However, it was noticed during 2019 flotation tests, when blending saprock with fresh rock, that the gold in saprock reported to copper concentrates and cleaner tails where it could be recovered by cyanide leaching. It is estimated that 70% of the gold, but none of the copper, will be recovered from saprock.
- In 2017, rougher flotation of saprolite materials indicated that gold and copper recoveries were 43% and 32%, respectively, similar to the saprock rougher recoveries that year. A saleable copper concentrate was not produced by cleaning. More work is required on saprolite to better determine gold recoveries by the float-leach process; however, it is estimated that 70% of the gold will be recovered due to its similar rougher flotation response to that of saprock.
- Cyanidation tests on fresh rock recovered 90% of the gold and 45% of the silver. For near-surface rock (partially oxidized, saprock and saprolite), gold recoveries were similar; however, silver recoveries increased to 84% due to oxidation of sulphide minerals.
- The selected processing scheme produces separate copper-gold and molybdenum flotation concentrates and doré. The estimated overall recoveries into the various products from average grade fresh rock for gold, silver, copper, and molybdenum are 82%, 60%, 87%, and 50%, respectively.

13.3.2.1 Comminution Tests

Table 13.3 shows results from various comminution tests and physical determinations, including JK Drop Weight Test (JKDWT), SAGdesign™, Bond rod and ball mill work index, crushing work index, abrasion, specific gravity (SG), and uniform compressive strength (UCS). Results indicate that the fresh rock materials are considered hard and moderately abrasive. JKDWTs and ball mill work index results can be used to determine comminution circuit equipment requirements with work index and abrasion values used to estimate steel wear calculations.

In 2019, FLSmidth (FLS) Mineral Lab in Utah performed basic comminution and HPGR crusher testing on a composite made from the four PQ drill holes. These data are used in a trade-off study to compare the application of a conventional SAG/Ball Mill grinding circuit to an HPGR/Ball Mill circuit for this material. FLS comminution data are included in Table 13.3, and the HPGR test results are stated as “very positive, showing a specific energy of 1.8 kWh/t at a recirculating load of 65% to reduce the material from 16.5 mm to below 1 mm” (Rucci, 2019).

**Table 13.3: Plenge Metallurgical Samples (All Years)
Physical Properties and Comminution Test Results**

Composite	SAGdesign™ SAG pinion (kWh/t)	SAGdesign™ Ball Wi (kWh/t)	JK A × b (units)	JK SCSE (kWh/t)	Rod Wi (kWh/t)	Ball Wi (kWh/t)	Crush Wi (kWh/t)	Abrasion (g)	UCS (MPa)	Specific Gravity (g/cc)
2015 Program										
North Met - 1	17.07	16.39			19.05	15.98		0.1537		2.76
North Met - 2	17.14	16.69			19.30	16.22		0.2089		2.79
South Met - 3	16.11	15.53			17.96	15.06		0.3117		2.72
South Met - 4	16.53	16.00			18.73	15.82		0.2390		2.75
2017 and 2018 Programs										
Met 2017 - 1*						15.10				2.63
Met 2017 - 2*						14.80				2.61
Met 2017 - 3*						15.23				2.62
Met 2017 - 4*						16.53				2.69
Met 2017 - Master						16.04		0.2457		2.67
C17 - 65	18.00	19.53							108	2.69
C17 - 70									89	
C18 - JK - 01	14.32	15.95	25.0	12.42	14.59			0.3050		2.70
C18 - JK - 02	16.79	21.13	26.6	12.12	20.04			0.3015		2.73
Saprolite						4.69				2.52
Saprock						7.66				2.56
Partially Oxidized						14.05				2.58
2019 Program (Variability)										
CVS-01 to -14 (Ave.)			30.0	11.56		13.73				2.76
Master Comp (CVS-01 to -14)			28.0	11.90	17.90	13.89	8.4	0.2475		2.76
CVS-15 to -18 (PQ - JKDWT)			24.0	12.85	18.36	14.52	17.3	0.1752	97	2.73
Comp PQ 1 -4 (FLS-JKDWT)			27.4	12.05	18.10	17.10	10.0	0.3511	139	2.76
Comp PQ 1 - 4 (FLS-post HPGR)						16.20				
CVS-19 to -22 (C-20 Ave.)			24.8	12.54		16.50				2.71

Note: Index values are per metric tonne; *Bond Work Index determinations by grind comparison; MPa = megapascals (1 MPa = 145 psi); Wi = work index. Source: Lumina, 2019

13.3.2.2 Gravity Concentration

Table 13.4 shows selected results from gravity concentration tests. The Met 2017 master composite values represent an average of five concentration tests. The initial centrifugal concentrates from the 2017 master, saprolite, saprock, and partially oxidized composites were all cleaned on a Mozley Shaking Table as was the 2019 master.

The 2017 master composite gravity concentrates averaged 0.25% of the feed weight and assayed 143 g/t gold. Gold and silver recoveries were 37% and 9%, respectively. Gold recoveries for the saprolite, saprock, and oxidized composites were lower and averaged only 17%.

The 2019 master composite gravity concentrate was 0.24% of the feed weight and assayed 74 g/t Au. Gold and silver recoveries at 24% and 17%, respectively.

Gravity concentrate mineralogy indicates that the gold particles contain about 6% silver and are generally 40 microns or less in size.

**Table 13.4: Plenge Metallurgical Samples (All Years)
Gravity Concentration Test Results (grind p80 of 210 microns)**

Composite	Gravity Concentrate. Wt %	Gravity Concentrate		Gravity Recovery	
		Ag (g/t)	Au (g/t)	Ag (%)	Au (%)
2015 - Rougher Only Tests					
North Met - 1	0.90	3.8	30.8	4.9	33.6
North Met - 2	1.10	11.2	16.4	16.8	40.5
South Met - 3	1.10	3.5	32.0	6.3	39.3
South Met - 4	1.00	9.3	20.6	13.6	40.3
2017 - Rougher Cleaned on Mozley Table					
Met 2017 - Master	0.25	28.0	143.0	8.7	37.4
Saprolite	0.49	62.5	10.5	20.5	11.9
Saprock	0.53	71.8	29.1	13.8	20.5
Partially Oxidized	0.51	70.0	32.6	23.3	19.3
2019 - Rougher Cleaned on Mozley Table					
Master Comp (CVS-01 to -14)	0.24	17.6	74.1	17.3	24.2

Source: Lumina, 2019

13.3.2.3 Cyanidation Tests

In 2015, the variability composites and a blended composite were leached for 72 hours, at a grind p80 of 74 microns and a cyanide solution concentration of 0.1% sodium cyanide (NaCN). The silver and gold recoveries in the five tests averaged 42% and 93%, respectively, with NaCN and lime consumptions averaging 2 kg/t and 0.3 kg/t, respectively. Coarser grinding resulted in reduced recoveries.

Intensive cyanidation of gravity concentrates and leaching of gravity tails was also performed on the 2015 blended composite. Silver and gold leach recoveries from the gravity concentrates were

97% and 99%, respectively. Silver and gold leach recoveries from the gravity tails were 64% and 88%, respectively, and overall (gravity + tails leach) silver and gold recoveries were 66% and 91%, respectively.

The 2017 master composite was ground to a p80 of 210 microns and subjected to gravity concentration, intensive cyanidation of gravity concentrates, grinding of the gravity tails to a p80 of 90 microns and leaching of gravity tails. Silver and gold intensive leach recoveries were 86% and 97%, respectively. Leaching of the gravity tails resulted in overall (gravity + tails leach) silver and gold recoveries of 11% and 88%, respectively. As a comparison, whole-ore leaching of the same composite resulted in overall silver and gold recoveries of 45% and 90%, respectively. Gravity tails from the saprolite, saprock, and oxidized gravity tests were also leached. Silver and gold recoveries averaged 84% and 92%, respectively.

The 2019 master composite (CVS-01 to CVS-14) was subjected to grinding, gravity concentration, intensive cyanidation of gravity concentrates, and leaching of gravity tails. Overall silver and gold recoveries (gravity + tails leach) were 15% and 90%, respectively. Whole-ore leaching of the same composite resulted in a gold recovery of 92% after grinding to a p80 of 90 microns and leaching for 24 hours with 1 kg/t of cyanide. Composites CVS-15 to CVS-22 were also cyanide leached with silver and gold recoveries averaging 44% and 89%, respectively, while also consuming 1 kg/t cyanide. Saprock and partially oxidized materials tested in 2019 were cyanide leached. Silver and gold recoveries for saprock were 97% and 93%, respectively. Silver and gold recoveries for partially oxidized materials were 88% and 93%, respectively. Cyanide consumptions averaged 1.5 kg/t.

Cyanide leaching of scavenger cleaner tails from a lock-cycle flotation test of the 2019 master composite resulted in the recovery of 87% of the contained gold from the cleaner tails after consuming 2 kg/t of cyanide. Leaching of rougher flotation tails from the same lock-cycle test resulted in the recovery of 72% of the contained gold from the rougher tails after consuming 0.5 kg/t cyanide.

13.3.2.4 Flotation Tests

Table 13.5 shows selected flotation test results from the 2015 to 2018 test programs.

Table 13.6 shows selected flotation test results from the 2019 test program.

**Table 13.5: Plenge Metallurgical Samples (2015 through 2018)
Flotation Test Results**

Composite No.	Concentrate Assays					Recoveries			
	Wt %	Ag (g/t)	Au (g/t)	Cu (%)	Mo (ppm)	Ag (%)	Au (%)	Cu (%)	Mo (%)
2015 Test Program									
Open Circuit Flotation - Whole Ore									
N/S Met Master Blend - Ro Conc	6.6	9.6	9.4	1.8	631	77.3	79.2	86.5	81.7
N/S Met Master Blend - 3rd Clnr Conc	0.5	82.8	93.3	20.7	5806	48.9	60.6	73.8	57.4
Lock-Cycle Flotation - Whole Ore									
N/S Met Master Blend - Bulk Cu/Mo Conc	0.5	59.3	109	21.9	9300	57.2	68.6	82.7	80.0
N/S Met Master Blend - Tails Leach							19.9		
Pre-Gravity, Lock-Cycle, Cu-Mo Sepn									
N/S Met Master Blend - Gravity Conc	0.2	21.0	108			4.7	22.5		
N/S Met Master Blend - Bulk Cu/Mo Conc	0.4	54.6	90	25.7	7320	28.6	42.9	82.0	65.4
N/S Met Master Blend - Moly Conc	0.005	17.1		2.8	432000	0.01		0.01	51.0
2017 and 2018 Test Programs									
Open Circuit Flotation - Whole Ore									
Met 2017 Master - Ro Conc	10.2		8.7	2.1	205		86.1	93.1	76.9
Met 2017 Master - 3rd Clnr Conc	1.0		81.5	20.5	1833		78.6	86.6	66.8
Pre-Gravity, Lock-Cycle									
Met 2017 Master - Gravity Conc	0.25	31.0	143	2.0	369	9	38.9	2.2	3.3
Met 2017 Master - Bulk Cu/Mo Conc	0.93	59.3	43	21.2	1976	71	42.7	85.9	65.2
Met 2017 Master - Total Recovery						80	81.6	88.1	68.5
Open Circuit Flotation - Gravity Tls Float									
Saprolite - Ro Conc	28.5		0.51	0.15	6		42.6	32.4	38.0

Composite No.	Concentrate Assays					Recoveries			
	Wt %	Ag (g/t)	Au (g/t)	Cu (%)	Mo (ppm)	Ag (%)	Au (%)	Cu (%)	Mo (%)
Saprolite - 3rd Clnr Conc	0.12		41.8	0.98	56		15.1	0.9	1.5
Saprock - Ro Conc	19.1		1.6	0.18	8		49.9	21.9	31.3
Saprock - 3rd Clnr Conc	0.32		42.6	0.66	143		28.6	1.4	9.9
Oxidized - Ro Conc	11.4		4.91	0.85	114		68.8	48.3	74.7
Oxidized - 3rd Clnr Conc	0.3		102	16.4	2599		43.7	28.6	51.9

Source: Lumina, 2019

Table 13.6: Plenge Metallurgical Samples (2019)
Flotation Test Results

Composite	Concentrate Assays					Recoveries			
	Wt %	Ag (g/t)	Au (g/t)	Cu (%)	Mo (ppm)	Ag (%)	Au (%)	Cu (%)	Mo (%)
2019 Test Program									
Open Ckt Rougher Flotation (Ave results)									
12 Tests - Mstr Comp CVS-01 to -14 (w/ pre-gravity)	7.60		5.2	0.9	218		79.5	89.7	56.7
13 Tests - Mstr Comp CVS-01 to -14 (whole ore)	7.80		7.8	0.9	284		80.5	90.1	80.9
Open Ckt Rougher and 3-Clnr Flotation (Ave results)									
8 Tests - Mstr Comp CVS-01 to -14 - Rougher Conc	4.10		13.6	1.65	432		78.9	89.8	67.3
8 Tests - Mstr Comp CVS-01 to -14 - 3rd Cleaner Conc	0.25		175	23.3	6705		71.0	84.0	65.9
Lock-Cycle Test No. 1 (Mstr Comp CVS-01 to -14)									
Rougher Concentrate	5.40	5.8	10.3	1.33	408	62.2	79.1	91.3	76.4
Final Bulk Cu/Au/Mo Concentrate	0.45	60.6	116	14.7	4442	55.7	74.2	86.4	70.8
Final Scav Clnr Tails	4.92		0.7	0.1			4.9	4.7	
Sand Tails (+200 mesh) Float Conc	2.10		1.3				3.9		
Lock-Cycle Test No. 2 (Mstr Comp CVS-01 to -14)									
Rougher Concentrate	8.59	3.6	6.5	0.81	249	63.0	79.2	91.2	73.8
Final Bulk Cu/Au/Mo Concentrate	0.30	92.7	170	21.5	6421	58.4	73.3	87.2	66.9

Composite	Concentrate Assays					Recoveries			
	Wt %	Ag (g/t)	Au (g/t)	Cu (%)	Mo (ppm)	Ag (%)	Au (%)	Cu (%)	Mo (%)
Final Scav Clnr Tails	8.26		0.5	0.03			5.9	3.8	
Sand Tails (+200 mesh) Float Conc	1.60		1.6				3.7		
Open Ckt Rougher and 3-Clnr Flotation (Ave results)									
Variability Samples (CVS-01 to -14) - Ro Conc	6.6		8.6	1.1	336		78.1	86.3	66.5
Variability Samples (CVS-01 to -14) - 3rd Clnr Conc	0.4		153	18.6	6201		64.3	76.8	51.6
Variability Samples (CVS-15 to -18 - PQ) - Ro Conc	15.4		5.5	1.58	351		86.5	94.9	89.7
Variability Samples (CVS-15 to -18 - PQ) - 3rd Clnr Conc	0.9		83	23.4	4162		54.7	78.9	50.2
Variability Samples (CVS-19 to -22 - C20) - Ro Conc	14.5		5.3	1.59	147		86.6	89.7	75.7
Variability Samples (CVS-19 to -22 - C20) - 3rd Clnr Conc	1.1		68	19.8	1927		77.6	81.4	60.8
Open Ckt Rougher Flotation (Ave Results)									
6 Tests - Saprock Comp DOE 1 - Rougher Conc	10.9		4.0	0.21			70.3	22.0	
6 Tests - Part Oxide Comp DOE 1 - Rougher Conc	12.3		6.6	0.97			83.8	65.2	
32 Tests - Part Oxide Comp DOE 2 - Rougher Conc	15.3		5.9	0.81			84.5	68.7	

Source: Lumina, 2019

During 2015, the master composite was subjected to whole-ore open circuit flotation testing. Third cleaner concentrate assayed 21% Cu with gold and copper recoveries of 61% and 74%, respectively. A whole-ore lock-cycle test (LCT) was also performed on the master composite. Final flotation concentrate assayed 22% Cu with gold, copper, and molybdenum recoveries at 69%, 83%, and 80%, respectively. Leaching of the float tails and scavenger cleaner tails recovered another 20% of the total gold; however, the operating cost for cyanidation of these streams, separately or combined, appear to be higher than the recovered gold value.

A large-scale test of the master composite was performed and included pre-gravity concentration, lock-cycle flotation of the gravity tails, and copper-molybdenum separation flotation to produce separate copper and molybdenum concentrates. Twenty-three percent of the gold was recovered in the gravity concentrate. Copper concentrate assayed 26% Cu and contained 43% of the gold and 82% of the copper. The overall gold recovery was 66%. Molybdenum concentrate assayed 43% Mo and 3% Cu and contained 51% of the molybdenum. Future testing plans will include optimization of the molybdenum concentrate grade and recovery.

During 2017, a master composite was subjected to whole-ore open circuit and lock-cycle flotation testing. The open circuit third cleaner flotation concentrate assayed 21% Cu and contained 79% of the gold and 87% of the copper. For the LCT, gravity concentrates were collected prior to lock-cycle flotation and contained 39% of the gold. Final copper flotation concentrates assayed 21% Cu. Gold, copper and molybdenum recoveries in the final float concentrate were 43%, 86%, and 65%, respectively. The overall gold recovery was 82%.

During 2018, saprolite, saprock, and partially oxidized composites were subjected to gravity concentration followed by open circuit flotation of gravity tails. Gold recoveries by gravity averaged 17%. Saprolite and saprock materials did not produce saleable cleaner copper concentrates with grades of less than 1% Cu, and gold and copper recoveries in the concentrates averaged 22% and 1%, respectively. Recoveries were low due to the lack of sulphide minerals in the materials. Flotation of partially oxidized material showed better results with the copper cleaner concentrate grade at 16% Cu, and gold and copper rougher recoveries were 69% and 48%, respectively. Sulphidation reagents added to the float test did not improve gold or copper recoveries.

During 2019, the master composite (CVS-01 to CVS-14) was subjected to whole-ore open circuit and lock-cycle flotation tests. The open circuit third cleaner concentrate assayed 23% Cu and contained 71% of the gold and 84% of the copper. The best LCT had the final copper concentrate assay 21.5% Cu. Gold, copper and molybdenum recoveries in the final concentrate were 73%, 87% and 67%, respectively. Six percent of the gold was contained in the scavenger cleaner tails and 4% of the gold was recovered by floating a “sand” concentrate from the coarse fraction of the rougher tails. Assuming 87% of the gold can be recovered by cyanidation of the cleaner tails and sand concentrates, as indicated in cyanidation testing, then the overall gold recovery is estimated to be 82% (73% in float concentrate and 9% in doré).

Variability samples containing higher values of gold, copper and sulphur (CVS-15 to CVS-22) were also subjected to whole-ore open circuit flotation. The average assay of the third cleaner concentrates was 22% Cu that contained 66% of the gold and 78% of the copper. Rougher concentrates, prior to cleaning, contained 86% of the gold and 93% of the copper. More testwork is required with this higher grade material to determine how to minimize gold and copper losses during cleaner flotation while maintaining acceptable copper concentrate grades. It is also necessary to further determine the impact on gold recoveries when leaching cleaner tails and “sand” flotation concentrates.

Saprock and partially oxidized composites were subjected to whole-ore open circuit rougher float testing with gold recoveries of 70% and 84%, respectively. Copper recoveries were 22% and 67%, respectively. The 2019 gold recoveries were improved by 15% to 20% over 2017 tests due to an improved reagent scheme. Blending partially oxidized material (5% to 20% by weight) with the master composite increased the concentrate mass pull by 3% without affecting the gold recovery, but the copper recovery decreased in proportion to the amount of partially oxidized material. The slurry viscosity increased only slightly as the blend increased. Blending saprock (5% to 20% by weight) with the master composite increased the mass pull by 5% to 10% and decreased the copper and gold recovery linearly by 6% for the 20% dilution. The slurry viscosity increased by 25% at the 20% blend which appears to be an acceptable viscosity limit.

Acid Base Accounting (ABA) tests on the tails from three separate lock-cycle flotation tests indicate that the tailings have a greater potential to neutralize acid than they do to generate acid by 1.8 kg to 3.1 kg calcium carbonate per tonne. Because the values are less than 20 kg/t, a humidity cell test may be required to determine neutralization potential over time.

Table 13.7 shows typical assays for the two fresh rock float concentrates. These concentrates are planned for production and will be shipped offsite for further processing. The concentrates contain low levels of deleterious elements and are readily marketable. The molybdenum concentrate is currently low-grade but has potential to be improved with more testing.

**Table 13.7: Plenge Metallurgical Samples
Flotation Concentrate Assays**

Element	Unit	Copper Float Conc. 2019 LCT 58	Molybdenum Float Conc. 2015 LCT
Au	g/t	170	-
Ag	g/t	91	17
Cu	%	21.5	2.8
Mo	ppm	6,400	43.2
Fe	%	24.6	3.2
S total	%	28.9	33.0
F	%	0.07	-
As	%	0.19	0.02
Insolubles	%	19.2	15.1

Source: Lumina, 2019

13.3.2.5 Solid Liquid Separation

Sedimentation tests were performed on samples of fresh rock copper-molybdenum flotation concentrate and tailings and oxide float tails. Results were as follows:

- Copper-molybdenum concentrate (2015) settled to 60% solids by weight using 10 g/t anionic flocculant (0.11 sq.m/t/d concentrate).
- Rougher tails (2015) settled to 62% solids by weight using 6 g/t anionic flocculant (0.08 sq.m/t/d tails).
- Combined rougher and cleaner scavenger tails (2017) settled to 57% solids by weight using 10 g/t anionic flocculant (0.215 sq.m/t/d tails).
- Partially oxidized material flotation tails (2018) settled to 51% solids by weight using 10 g/t anionic flocculant (0.28 sq.m/t/d tails).
- Rougher tails (2019) from all 22 variability float tests settled to about 70% solids by weight using 20 g/t of Magnafloc 338. The average static settling area was determined to be 0.09 sq.m/t/d tails.
- Cleaner scavenger tails (2019) settled to about 56% solids by weight. The static settling area was determined to be 0.25 sq.m/t/d tails.

Pressure filtration tests were performed on five rougher tail samples from the 2019 variability float tests. The filter cloth used was 2-in. diameter with a 10-micron opening. Filter pressures were 80 psig. Feed solids were 67% by weight and final cake moistures were 11% by weight. The filter ratio was 0.29 sq.m/t/hr after 1.33 minutes of filter time.

13.4 Projected Metallurgical Performance

The 2019 Plenge tests used to estimate the copper and gold recoveries for processing of fresh rock were the open circuit 3-cleaner flotation tests for variability samples (CVS-01 to CVS-14 and CVS-19 to CVS-22) and results from cyanidation of cleaner flotation tails and “sand” flotation concentrates.

The following were established from Plenge’s analysis of test data using Design-Expert™ software:

- Copper recoveries appear to be a function of copper head grade and total sulphur head assay. The recovery equation can be expressed as:
    - $\% \text{ Cu Rec} = (22 \times St) + 84$.

  In rougher float concentrates, copper recoveries average 90% at a head grade of 0.08% Cu and 93% at head grades of 0.27% Cu. Copper recoveries in final concentrates were 86% for the lower grade and estimated to be 89% at the higher grade.

- Gold rougher flotation recoveries appear to be a function of gold head grade and total sulphur head assay. The recovery equation can be expressed as:
    - $\text{Ln}(\%\text{Au Ro Rec}) = 4.439 - (0.122 \times St) - (0.1923 \times Au) + (0.682 \times St \times Au)$.

  In rougher float concentrates, gold recoveries average 79% at the lower head grades and 87% at the higher head grades. Gold recoveries in final concentrates were 73% for the lower grade and estimated to be 81% at the higher grade. Additional gold recoveries into doré, after cyanidation of cleaner tails and "sand" float concentrates, are estimated to range from 3% to 9%, depending on head grades (higher gold recoveries into doré when head grades are lower).

- Copper concentrate grades are estimated to average about 21% Cu.

The projected metal contents for concentrate produced from average fresh rock are estimated to be:

- Copper concentrates – 21% Cu grade; Ag, Au, and Cu recoveries in concentrates of 55%, 73% and 87%, respectively
- Doré – 9% Au and 5% Ag recoveries
- Molybdenum concentrates – 45% Mo grade in concentrate; 50% Mo recovery

The metallurgical response of the partially oxidized material is estimated to be:

- Copper concentrates – 16% Cu grade; Ag, Au, and Cu recoveries in concentrates of 50%, 61%, and 54%, respectively
- Doré – 20% Au and 10% Ag recoveries
- Molybdenum concentrates – same as fresh rock

The metallurgical response of the saprock and saprolite materials is estimated to be:

- 70% of the gold and 60% of the silver are recovered in concentrates and doré when blended with fresh rock in the float-leach process.
- No copper or molybdenum are recovered into float concentrates.

There are no known deleterious elements that could have a significant effect on potential economic extractions.

14 MINERAL RESOURCE ESTIMATES

14.1 Introduction

The mineral resource estimate was prepared under the direction of Robert Sim, P.Geo, with the assistance of Bruce Davis, PhD, FAusIMM. This section of the Report describes the mineral resource estimation methodology and summarizes the key assumptions considered by the QP to prepare the mineral resource model for the gold, copper, silver, molybdenum and sulphur mineralization at the Cangrejos Project. This is the fourth estimate of mineral resources for the Cangrejos deposit. The most recent estimate was presented in a Preliminary Economic Assessment (PEA) technical report, *Cangrejos Gold-Copper Project, Ecuador, NI 43-101 Technical Report Preliminary Economic Assessment,* dated August 10, 2018, with an effective date of June 27, 2018. The mineral resource model presented in the August 2018 PEA technical report was originally created in November 2017, and this model formed the basis of the PEA that was completed in the fall of 2017 through to mid-2018. The effective date of the block model used to generate the estimate of mineral resources in the PEA was November 6, 2017.

Lumina continued to conduct infill delineation drilling on the Cangrejos and Gran Bestia deposits in 2018 through to August 2019, drilling an additional 91 holes on the property. The new estimate presented in this Report includes all available drilling information on the property.

In the opinion of the QP, the mineral resource estimate reported herein is a reasonable representation of the mineralization found at the Cangrejos Project at the current level of sampling. The mineral resource was estimated in conformity with generally accepted guidelines stated in CIM *Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines* (November 23, 2003) and is reported in accordance with NI 43-101.

Mineral resources are not mineral reserves, and they do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into a mineral reserve upon application of modifying factors.

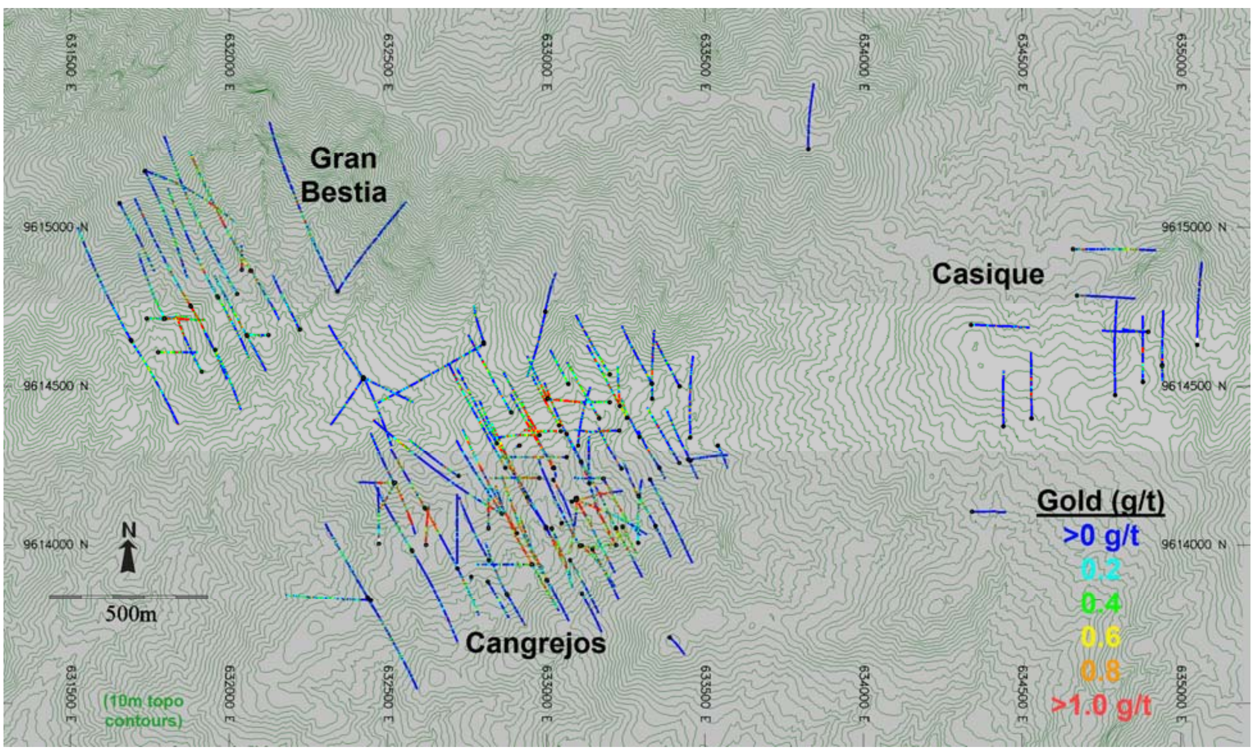
Estimations are made from 3D block models based on geostatistical applications using commercial mine planning software (MinePlan® v15.60, formerly called MineSight®). The Project limits are based in the UTM coordinate system (Provisional South American Datum 1956, UTM Zone 17S) using a nominal block size measuring 15 m x 15 m x 15 m. Drill holes penetrate the Cangrejos deposit at a variety of orientations to depths approaching 750 m below surface. The mineral resource estimate was generated using drill hole sample assay results and the interpretation of a geological model which relates to the spatial distribution of gold, copper, silver, molybdenum and sulphur. Interpolation characteristics were defined based on the geology, drill hole spacing, and geostatistical analysis of the data. The mineral resources were classified according to their proximity to the sample data locations and are reported, as required by NI 43-101, according to the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014).

14.2 Available Data

Lumina provided the drill hole sample data for the Cangrejos Project on October 8, 2019. This comprised a series of Excel® (spreadsheet) files containing collar locations, down-hole survey results, geologic information, and assay results for a total of 161 drill holes representing 62,146 m of drilling. (Note: This database excludes seven holes (408.15m) included in Table 10.1 that were drilled for condemnation purposes or were drilled to collect additional material for metallurgical testing. These seven holes were not assayed.) Of these, 115 drill holes, totalling 43,998 m of drilling, test the Cangrejos deposit. An additional 31 drill holes, totalling 14,207 m of drilling, were completed in the vicinity of the Gran Bestia deposit. The remainder of the drilling, 15 holes totalling 3,941 m, tested for mineralization approximately 1.5 km east of the Cangrejos deposit in an area called Casique. All holes are HQ diamond drill holes. The distribution of gold grades in all drill holes is shown in plan view in Figure 14-1.

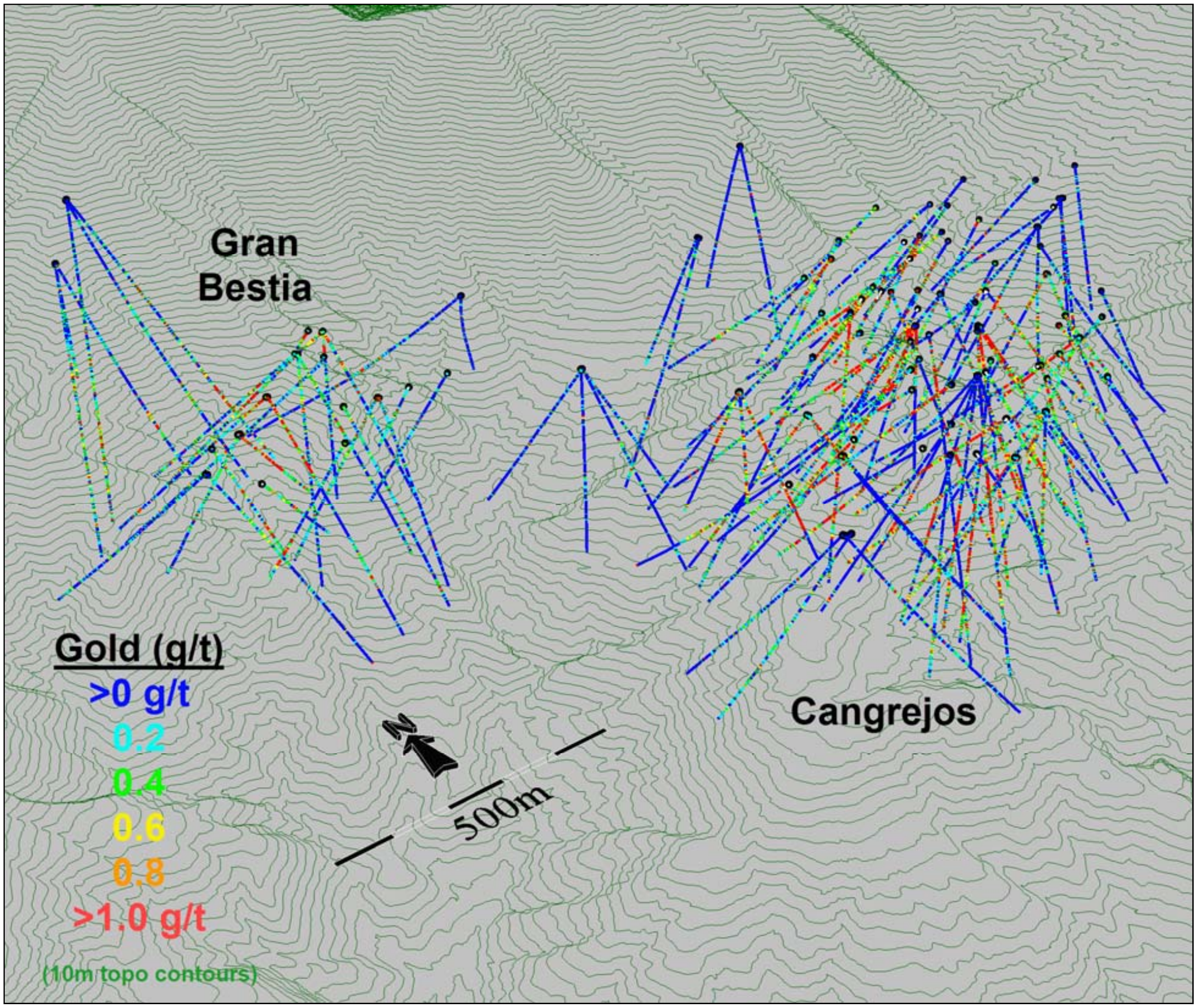
In the opinion of the QP, Lumina has completed sufficient drilling at the Cangrejos and Gran Bestia deposits to support estimates of mineral resources, but there is not enough delineation drilling at Casique to support a mineral resource estimate at this time. The distribution of gold grades in drilling at the Cangrejos and Gran Bestia deposits is shown in an isometric view in Figure 14-2.

Figure 14-1: Plan View of Gold Grades in Drilling



Source: SIM Geological, 2019

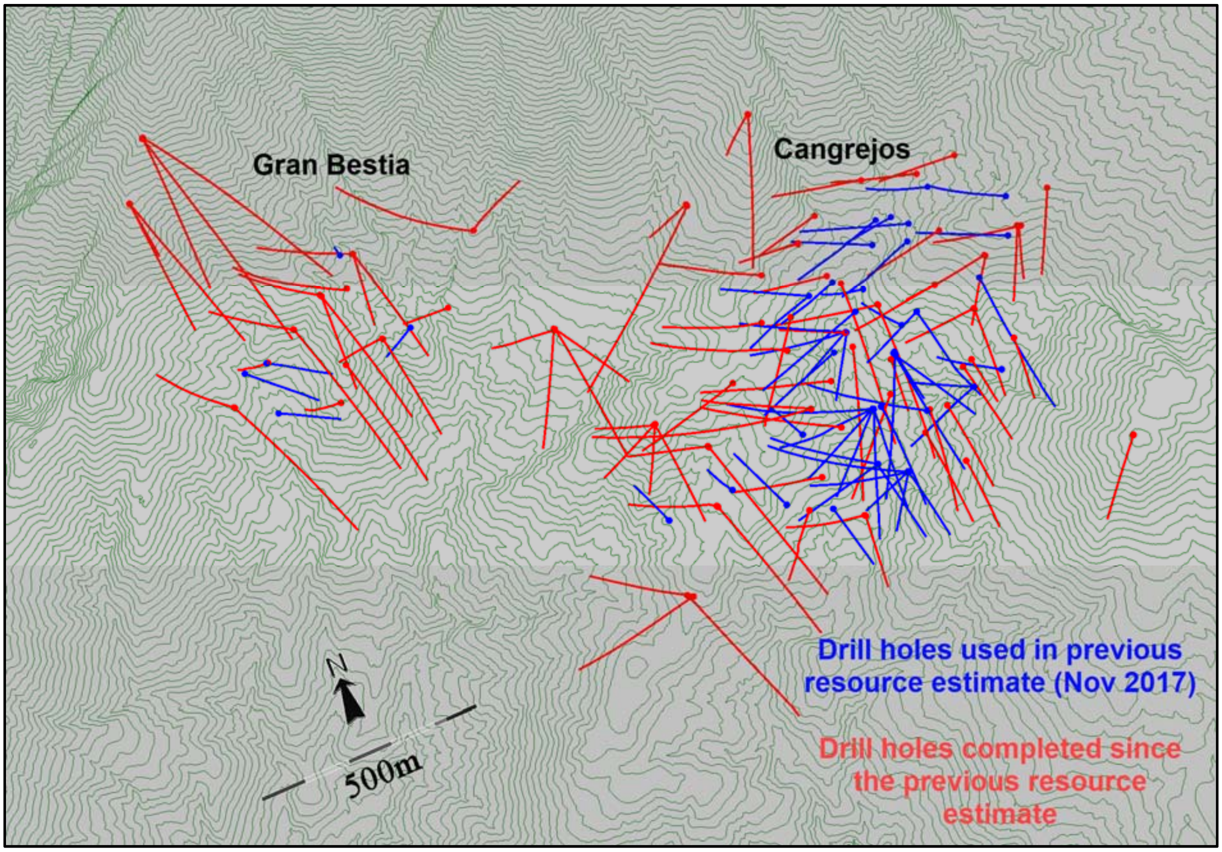
Figure 14-2: Isometric View of Gold Grades in Drilling at Cangrejos and Gran Bestia Deposits



Source: SIM Geological, 2019

Figure 14-3 shows the location of drill holes completed on the Cangrejos Project since the previous estimate of mineral resources in November 2017.

Figure 14-3: Isometric View of Drilling Completed Since the Previous Estimate of Mineral Resources

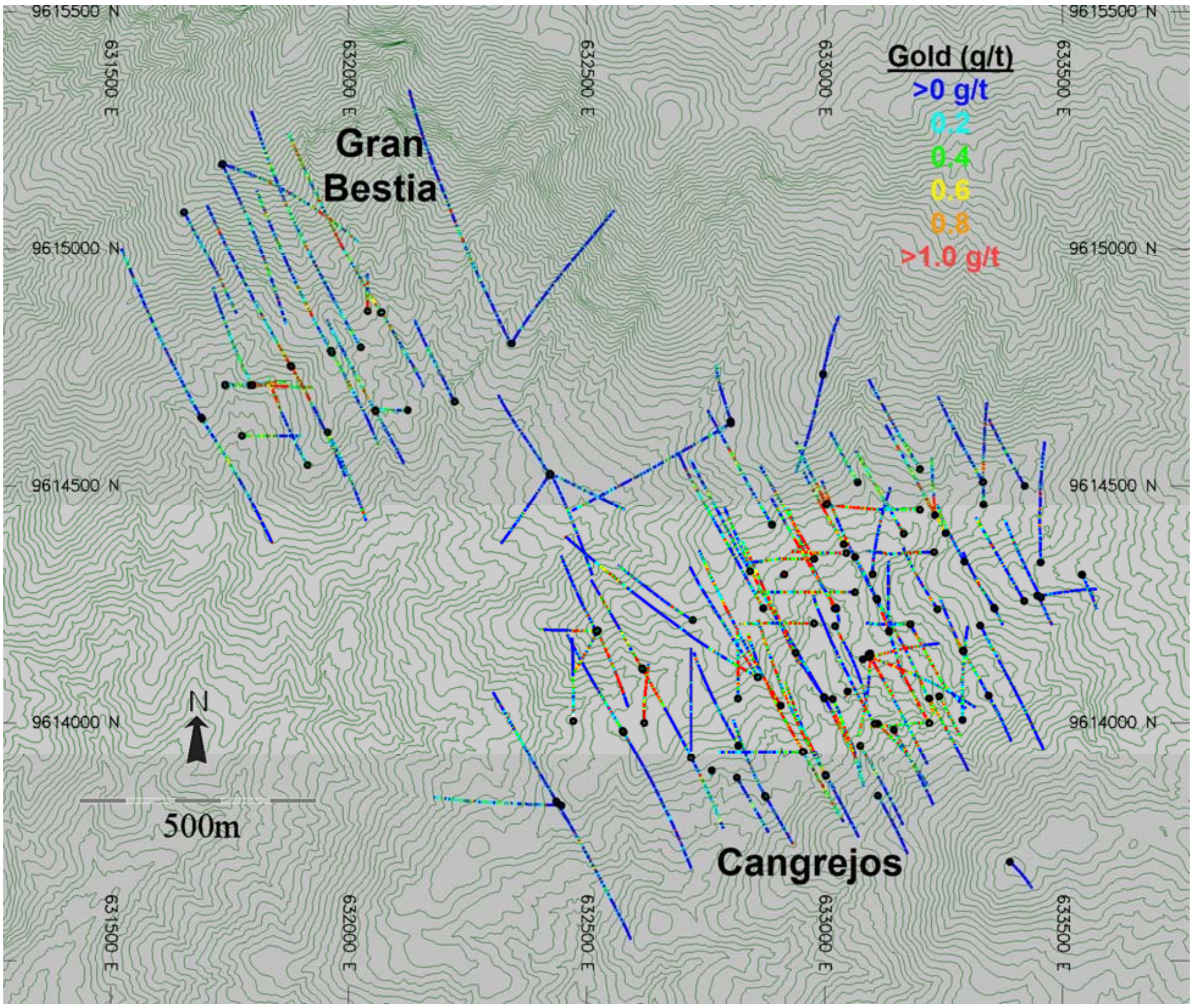


Source: SIM Geological, 2019

There are a total of 30,893 individual samples in the Project database, the majority of which were analyzed for a variety of elements (as part of a multi-element package). Individual sample intervals range from a minimum of 0.35 m to a maximum of 9 m and average 2 m long, and >98% of the samples in the database are exactly 2 m long. Sample data for gold, silver, copper, molybdenum and sulphur have been extracted from the main database and imported into MinePlan® to develop the mineral resource model.

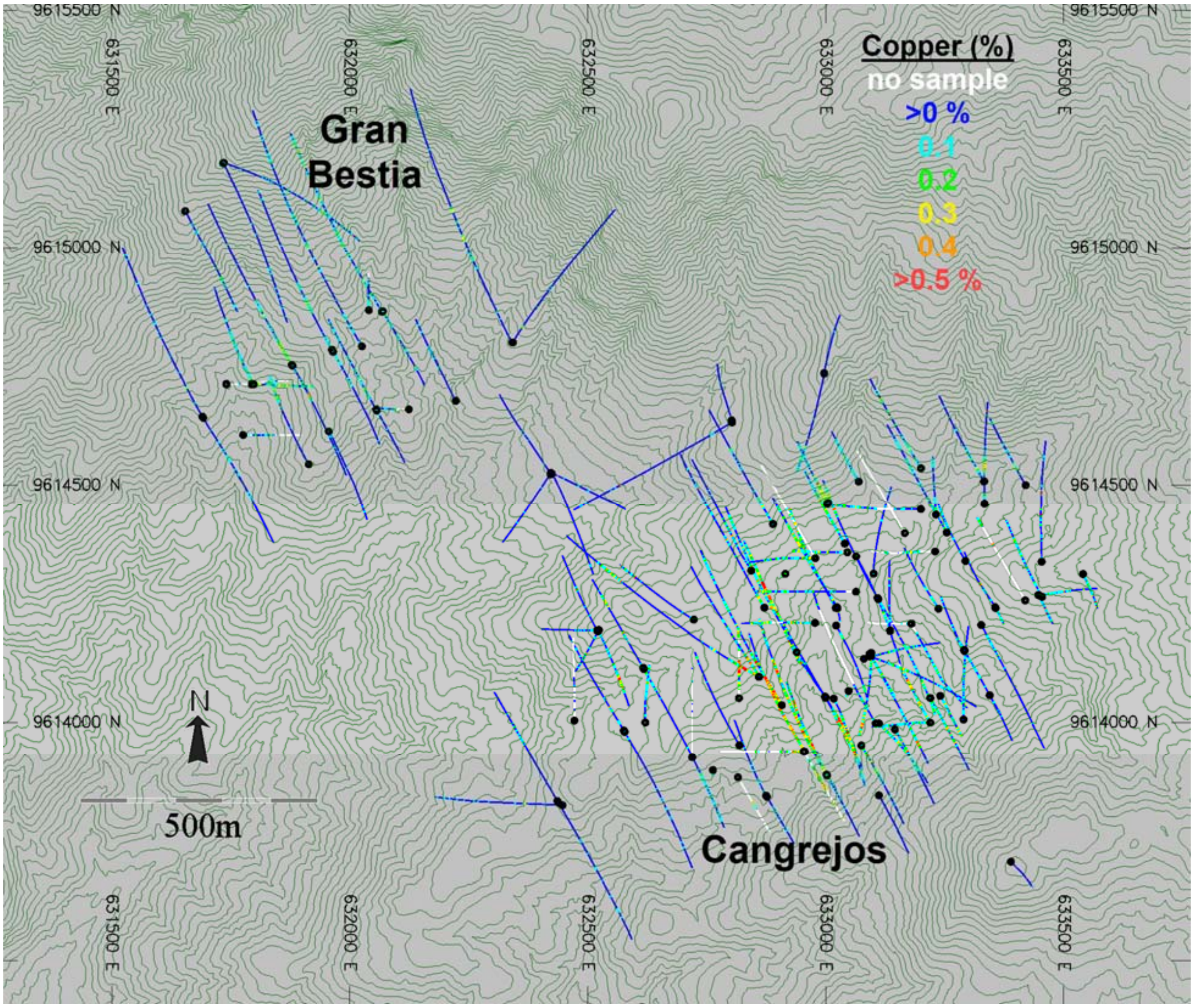
All cored intervals were sampled and analyzed for gold content except for 289 m, which mainly represents intervals of overburden or saprolitic material that were not originally sampled and assayed. In some rare instances, these missing samples represent intervals of poor core recovery. With respect to holes drilled by Newmont in 1999 and 2000, not all samples were analyzed for copper, silver, molybdenum or sulphur, and, as a result, this information is missing (about 6% of core intervals in the database are missing copper, silver and molybdenum data, and about 12% of core intervals are missing sulphur data). The distributions of gold data and available copper, silver, molybdenum and sulphur data are shown in plan view in Figures 14-4 through 14-8, respectively. The distribution of core intervals, where sample data are missing, correlates reasonably well with low-grade (copper, silver and molybdenum) zones encountered in the more recent drilling. It is assumed that these intervals were not sampled because they do not show visible signs of significant mineralization. Based on this assumption, core intervals without sample assay results were been assigned the following default grades: Cu = 0.01%; Ag = 0.1 g/t; and, Mo = 5 ppm. No adjustments were made to account for missing sulphur data. Resampling and analyzing for these missing elements are recommended if core or sample rejects are available.

Figure 14-4: Plan View of Gold Sample Data in Drilling



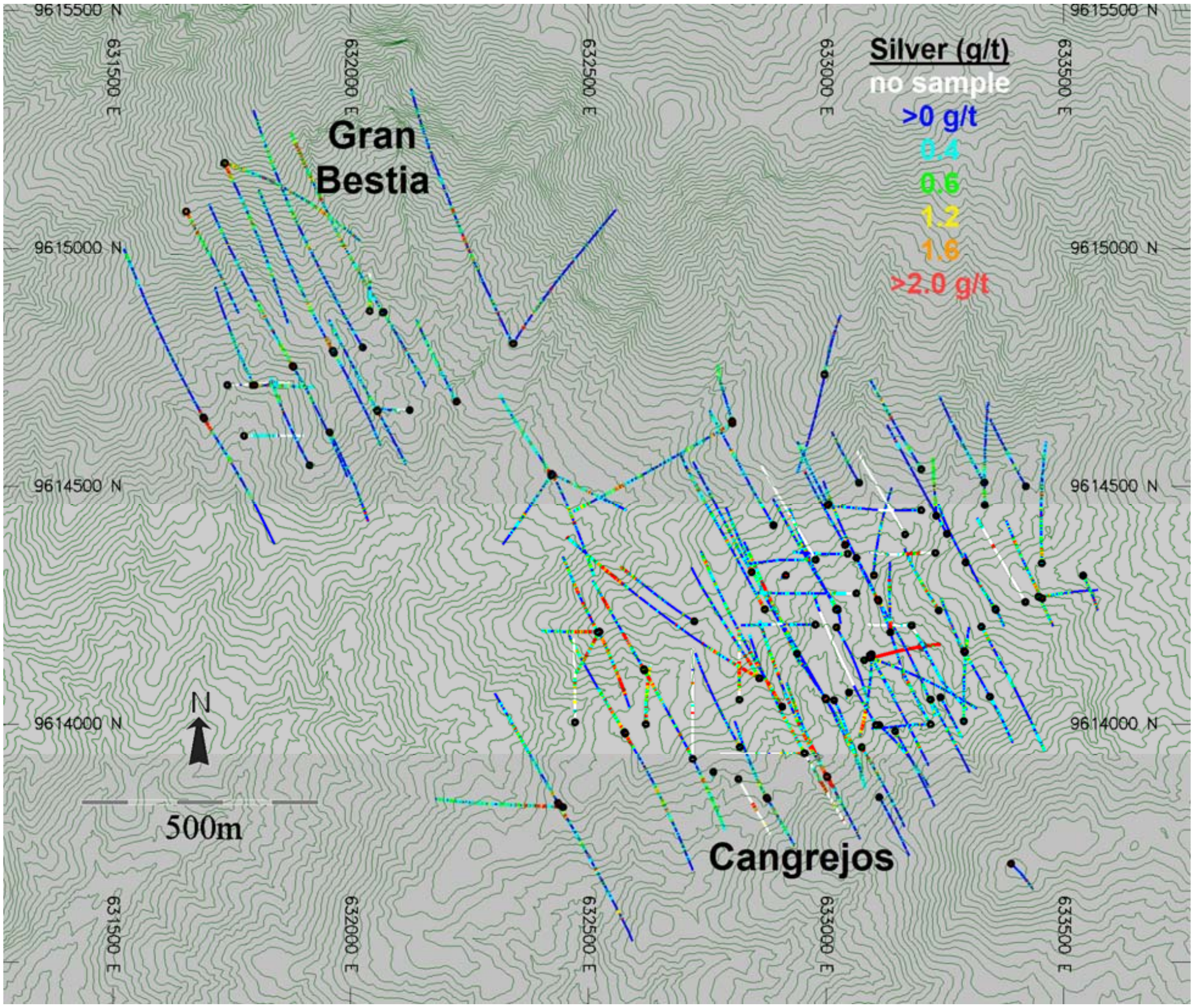
Source: SIM Geological, 2019

Figure 14-5: Plan View of Copper Sample Data in Drilling



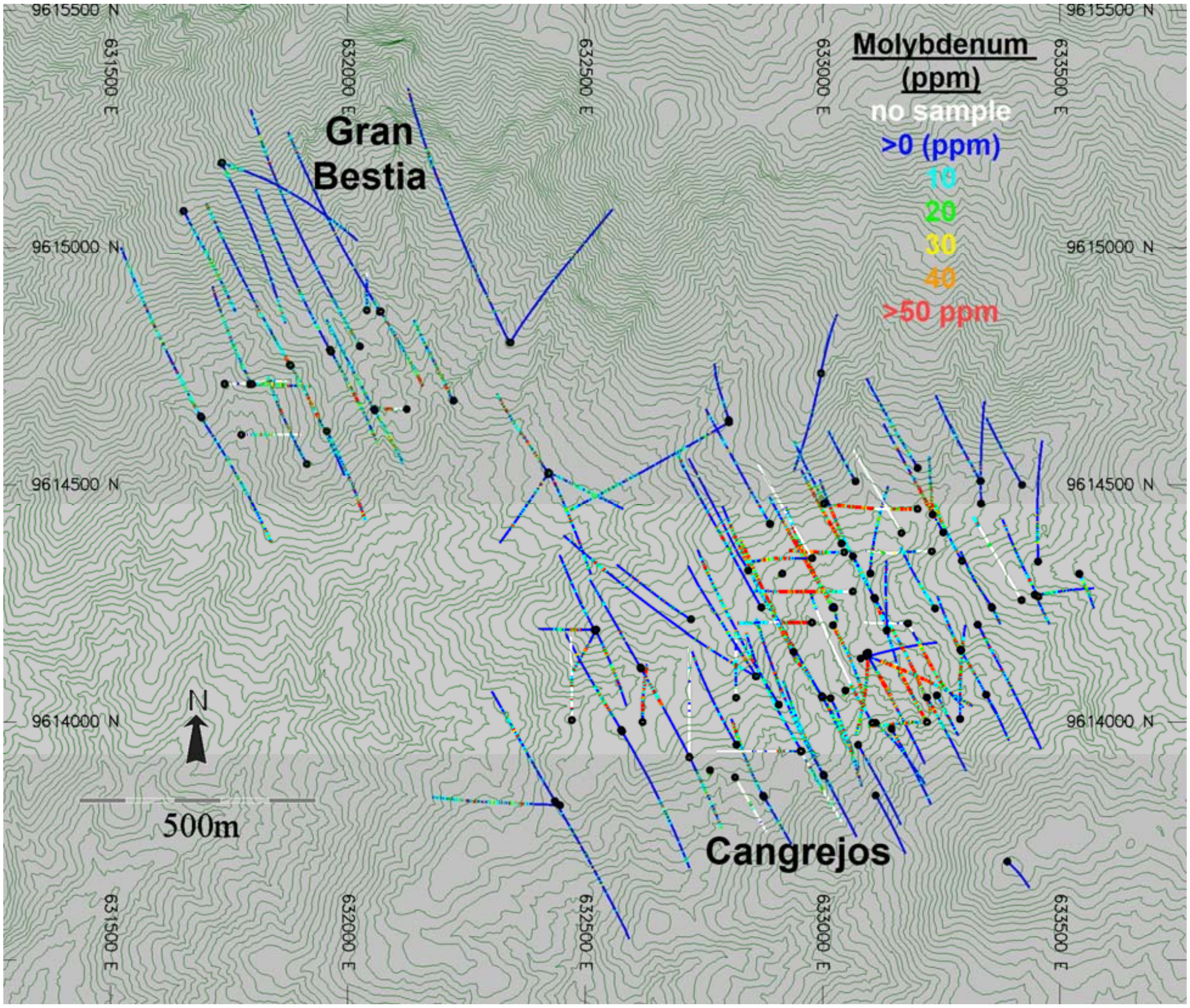
Source: SIM Geological, 2019

Figure 14-6: Plan View of Silver Sample Data in Drilling



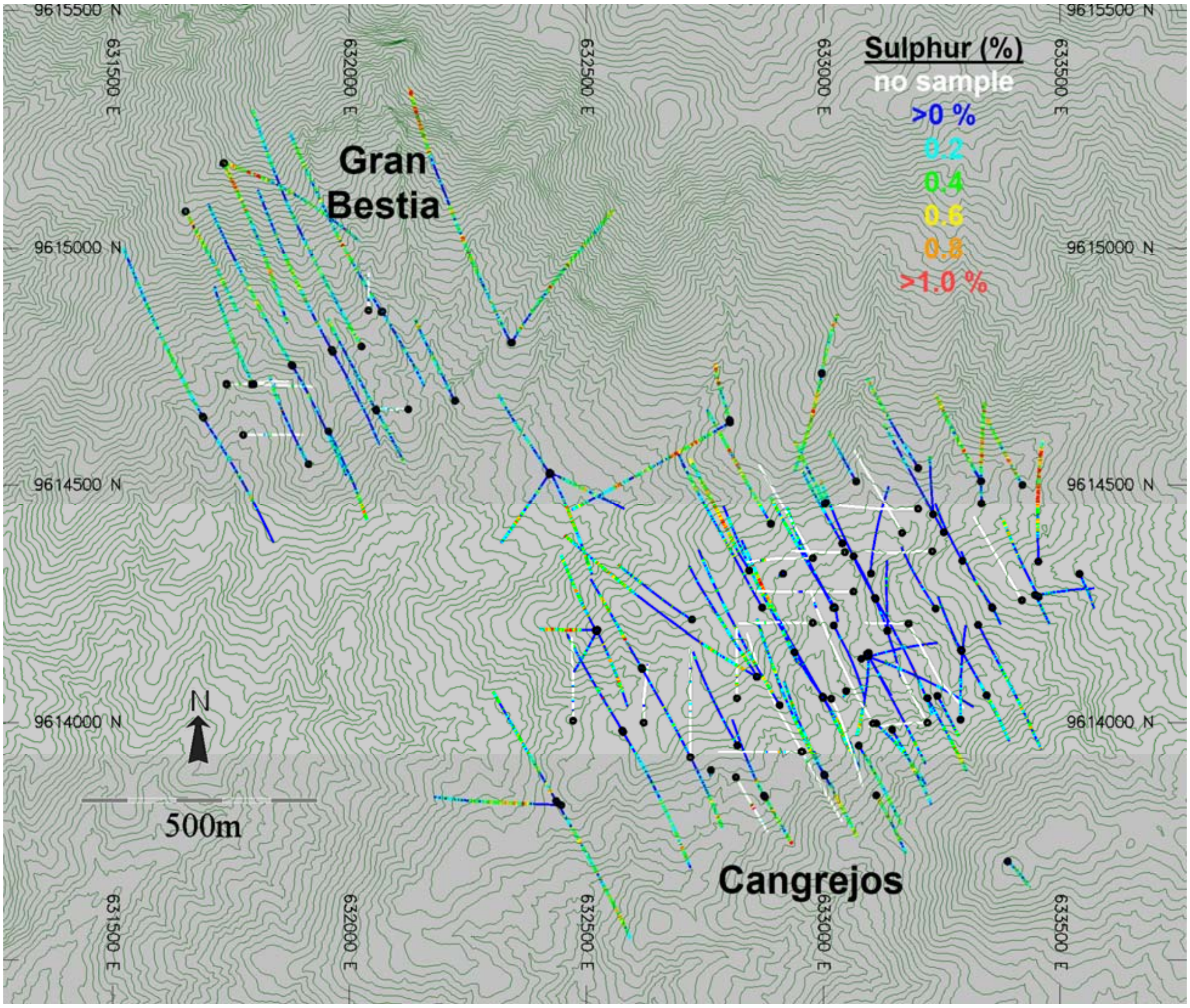
Source: SIM Geological, 2019

Figure 14-7: Plan View of Molybdenum Sample Data in Drilling



Source: SIM Geological, 2019

Figure 14-8: Plan View of Sulphur Sample Data in Drilling



Source: SIM Geological, 2019

Specific gravity (SG) data are available for 111 holes that were drilled by Lumina and Odin Mining between 2014 and 2019. Newmont did not conduct SG measurements on holes drilled in 1999 and 2000, and Odin Mining also did not conduct SG measurements on holes drilled during the initial drill programs in 2011 and 2012. Samples selected for SG measurements are spaced at 10 m intervals down each drill hole. The volume and distribution of SG data are considered sufficient to interpolate density values in the transitional (partial oxidized) rocks and fresh rocks. There are only a few SG measurements recorded for the saprolite and saprock zones, and this is not enough to support SG estimation in these upper, highly oxidized units.

A Lidar survey was conducted in 2019; it provides detailed topographic information for the Cangrejos property.

Geologic information, derived from observations during core logging, provide lithology code designations for the various rock units present on the property.

The statistical properties of the data in the vicinity of the Cangrejos mineral resource model, excluding exploration drill holes, are shown in Table 14.1; this table shows the statistics for the initial sample data and the statistics for copper, silver and molybdenum following the assignment of default grades for missing data.

Table 14.1: Summary of Basic Statistics of Data Proximal to the Cangrejos Mineral Resource Model

Element	# of Samples	Total Sample Length (m)	Min	Max	Mean	Std. Dev.	Co. of Variation
Gold (g/t)	39,960	43,767	0.001	38	0.443	0.8762	1.98
Copper1 (%)	38,304	41,101	0	4.76	0.092	0.135	1.47
Copper2 (%)	39,960	43,767	0	4.76	0.087	0.132	1.523
Silver1 (g/t)	38,304	41,101	0.1	114	0.78	2.69	3.44
Silver2 (g/t)	39,960	43,767	0.1	102.1	0.74	2.59	3.5
Molybdenum1 (ppm)	38,304	41,101	0	2,696.00	19.8	52.6	2.7
Molybdenum2 (ppm)	39,960	43,767	0	2,696.00	18.9	51.1	2.7
Sulphur (%)	36,205	37,912	0.01	10	0.238	0.334	1.408
SG	3,537	n/a	1.34	3.61	2.747	0.114	0.041

Note: Original sample data are weighted by sample length. The data used in Table 14.1 are restricted to drill holes in the vicinity of the Cangrejos deposit. An Element suffix of "1" denotes initial sample data; a suffix of "2" includes default grades assigned to missing sample data (copper, silver and molybdenum).

Source: SIM Geological, 2019

The statistical properties of the data in the vicinity of the Gran Bestia mineral resource model, excluding exploration drill holes, are shown in Table 14.2; this table shows the statistics for the initial sample data and the statistics for copper, silver and molybdenum following the assignment of default grades for missing data.

Table 14.2: Summary of Basic Statistics of Data Proximal to the Gran Bestia Mineral Resource Model

Element	# of Samples	Total Sample Length (m)	Min	Max	Mean	Std. Dev.	Co. of Variation
Gold (g/t)	13,001	14,189	0.003	32.3	0.364	0.7349	2.022
Copper1 (%)	12,755	13,752	0	1.33	0.066	0.066	0.994
Copper2 (%)	13,001	14,189	0	1.33	0.065	0.066	1.016
Silver1 (g/t)	12,755	13,752	0.1	100	0.77	2.63	3.41
Silver2 (g/t)	13,001	14,189	0.1	100	0.75	2.59	3.46
Molybdenum1 (ppm)	12,755	13,752	1	1,890.00	13.9	37.7	2.7
Molybdenum2 (ppm)	13,001	14,189	1	1,890.00	13.6	37.2	2.7
Sulphur (%)	12,494	13,306	0.01	3.32	0.322	0.295	0.918
SG	1,231	na	1.19	3.54	2.759	0.087	0.032

Note: Original sample data are weighted by sample length. The data used in Table 14.2 are restricted to drill holes in the vicinity of the Gran Bestia deposit. An Element suffix of “1” denotes initial sample data; a suffix of “2” includes default grades assigned to missing sample data (copper, silver and molybdenum).

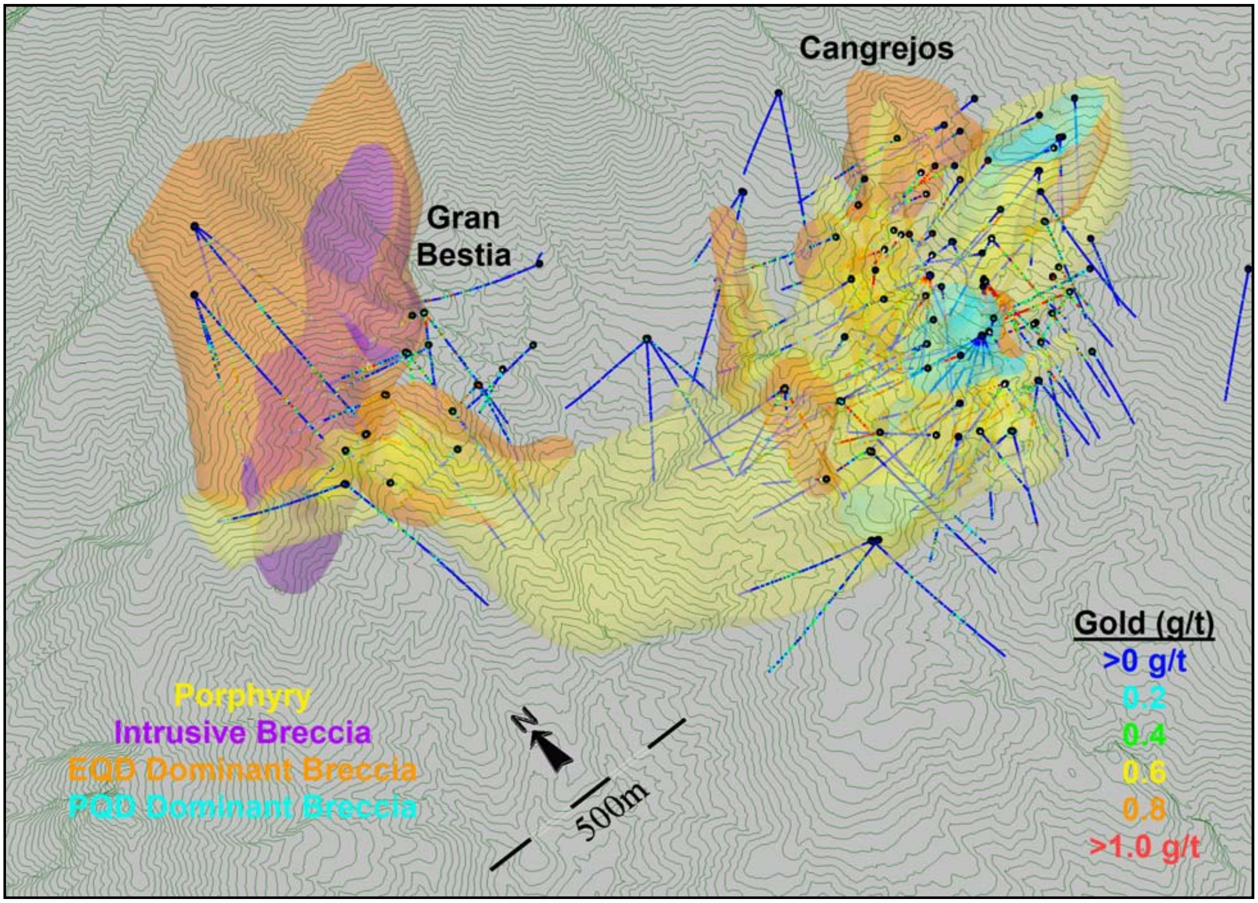
Source: SIM Geological, 2019

14.3 Geological Model, Domains and Coding

The Cangrejos deposit is interpreted as a gold-copper porphyry deposit with mineralization resulting from the intrusion of quartz-dioritic rocks in host of metamorphosed schistose volcanic rocks, also of dioritic composition. A series of brecciated zones were identified that generally straddle the contact between the intrusive porphyry and the schistose host rocks. Sulphide mineralization is present in all rock types but generally tends to occur in the vicinity of the contact between the porphritic and metamorphic host rocks.

Figure 14-9 shows the shape and extent of the intrusive porphyry and the various breccia units in relation to the gold grades encountered in drilling. The rocks surrounding these interpreted lithologic domains (not shown on Figure 14-9) represent the metamorphic host rocks.

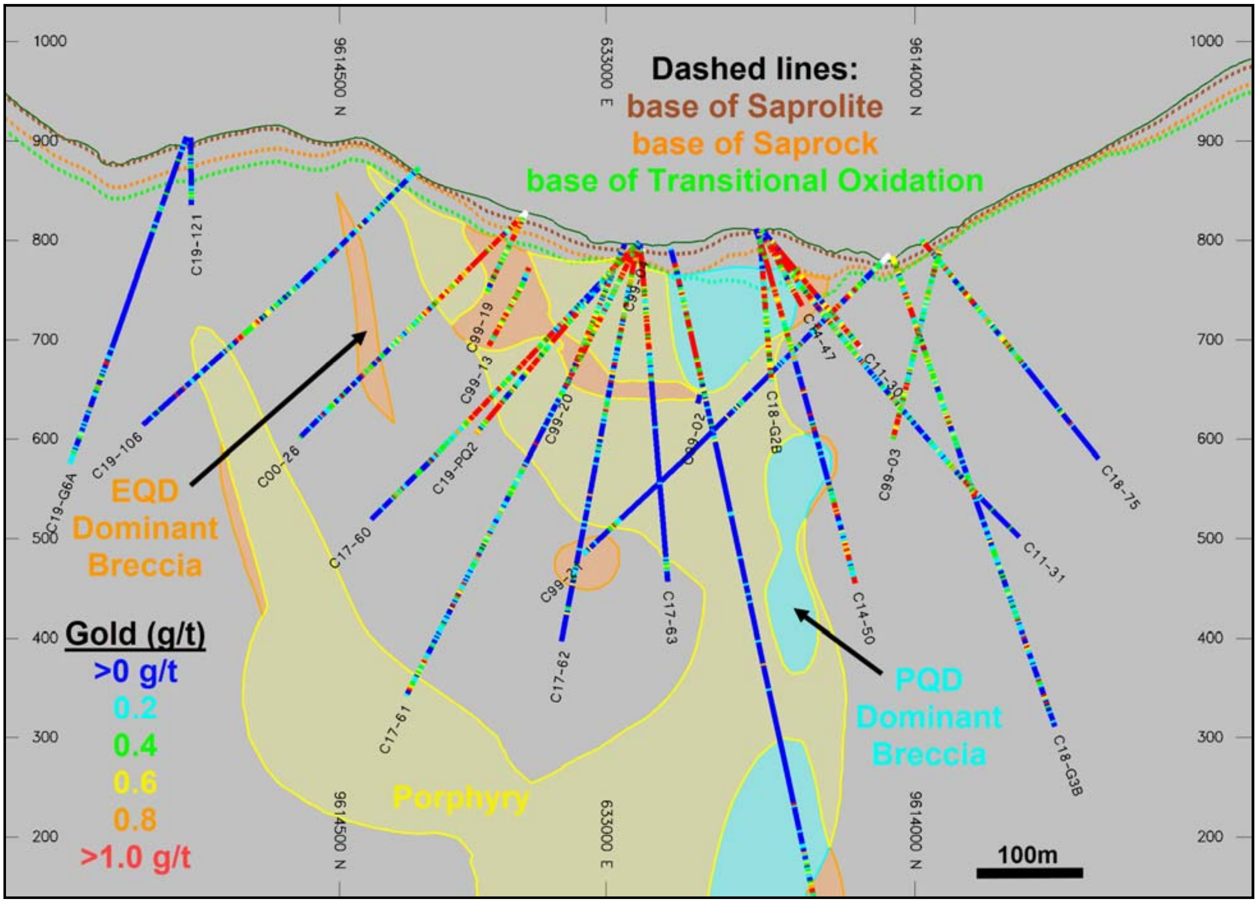
Figure 14-9: Isometric View of Interpreted Lithologic Units in the Cangrejos and Gran Bestia Deposit Areas



Source: SIM Geological, 2019

The type of surface oxidation recorded is also based on observations during drill core logging. *Saprolite* comprises a clay-like texture in which no original textures have been retained. *Saprock* is partially altered material that contains remnants of the original rock texture in a clay-rich host. Transitional, partially oxidized rocks, *Transitional Oxidation*, exhibit some signs of minor oxidation, typically along fracture surfaces. There is only a thin layer of organic overburden material on the surface, and this material is included in the interpreted Saprolite unit. Surfaces representing the base of Transitional Oxidation, Saprock and Saprolite were interpreted over the deposit areas. These surfaces are used to assign oxide-material types to model blocks on a majority basis. An example of the oxidation surfaces, relative to the gold grades in drilling and the interpreted lithologic domains, are shown in vertical cross section in Figure 14-10.

Figure 14-10: Vertical Cross Section through the Cangrejos Deposit Showing Oxidation Surfaces and Lithologic Domains Relative to Gold Grades in Drilling



Source: SIM Geological, 2019

14.4 Specific Gravity Data

There are 4,843 individual measurements for SG taken from samples in 111 holes drilled by Lumina between 2014 and 2019. SG is measured using the water immersion method (weight in air vs. weight in water) with unwaxed core samples (Note: there is little or no evidence of porosity in the rocks from the Cangrejos Project). During the 2017 drill program, approximately 10% of the samples were sent to ALS Chemex for SG determinations using waxed samples. These results show reasonable comparison with the results obtained by Lumina.

Samples for SG measurement were initially taken at 5 m intervals throughout the length of the drill holes, but this distance was increased to 10 m intervals for the majority of drill holes. SG values range from a minimum of 1.19 to a maximum of 3.61 and average 2.75. A series of 13 SG measurements taken from the top 150 m of hole C17-56 are anomalously low (SG <2). It appears there may have been an error in these measurements, and, as a result, they were removed from the database. A review of the remaining SG data showed that several anomalous high and low SG values were still present, and, as a result, three samples with SG values less than 1.85 and five samples with SG greater than 3.40 were also removed from the database.

There are very few SG measurements taken from the near-surface oxidized units (only one from Saprolite and three from Saprock material). The volume and distribution of SG data are considered sufficient to support the estimation of SG values in the Transitional Oxide and Fresh rocks at the Cangrejos and Gran Bestia deposits. However, there are not enough data to support estimation in the Saprolite and Saprock units; therefore, these units are assigned default values of 1.50 and 1.90, respectively.

14.5 Compositing

Compositing the drill hole samples helps standardize the database for further statistical evaluation. This step eliminates any effect that inconsistent sample lengths might have on the data.

To retain the original characteristics of the underlying data, a composite length was selected that reflects the average, original sample length. The generation of longer composites can result in some degree of smoothing which could mask certain features of the data. A composite length of 2 m was selected for both the Cangrejos and Gran Bestia deposits, reflecting the fact that >98% of the original samples were selected on 2 m intervals.

Drill hole composites are length-weighted and were generated down-the-hole; meaning that composites begin at the top of each hole and are generated at 2 m intervals down the length of the hole.

14.6 Generation of a Gold Probability Shell Domain

A probability shell domain was generated based on the distribution of gold in the deposit. Indicator values are assigned to 2 m composited sample data based on a threshold grade of 0.15 g/t Au. Probability estimates are made in model blocks using OK. A 3D domain was then produced in which the areas inside the probability shell represent areas where there is a >50% probability that the grade will be greater than 0.15 g/t Au. In areas where gold mineralization is not bounded by drill holes, this shell domain extends for a maximum distance of 200 m from drilling.

The probability shell domain tends to be quite large and extensive at depth at the Cangrejos deposit and in parts of the Gran Bestia deposit because the lateral and depth extents of the mineralization have not been defined by the current drilling. The probability shell domain does, however, outline the low-grade zone in the centre of the Cangrejos deposit.

14.7 Exploratory Data Analysis

Exploratory data analysis (EDA) involves the statistical summarization of the database to better understand the characteristics of the data that may control grade. One of the main purposes of this exercise is to determine if there is evidence of spatial distinctions in grade which may require the separation and isolation of domains during interpolation. The application of separate domains prevents unwanted mixing of data during interpolation, and, therefore, the resulting grade model will better reflect the unique properties of the deposit. However, applying domain boundaries in areas where the data are not statistically unique may impose a bias in the distribution of grades in the model.

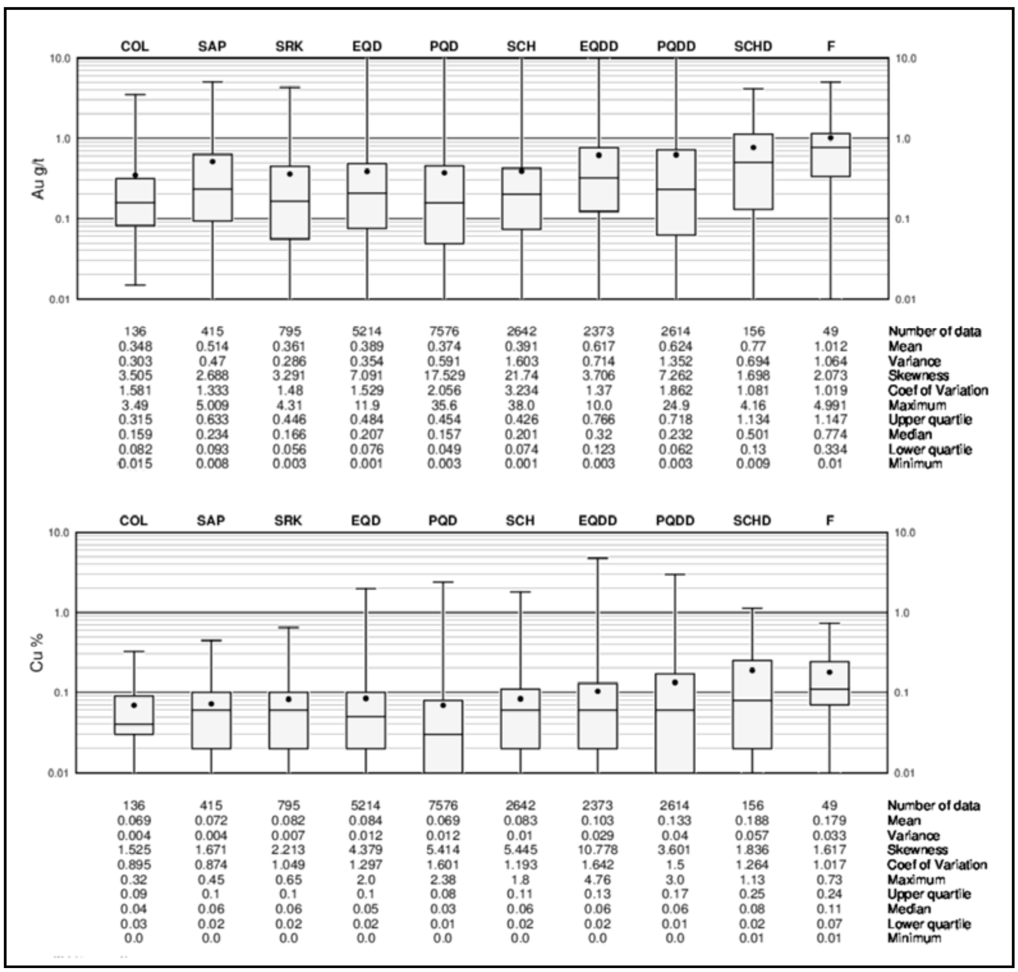
A domain boundary, which segregates the data during interpolation, is typically applied if the average grade in one domain is significantly different from that of another domain. A boundary may also be applied if there is evidence that a significant change in the grade distribution has occurred across the contact.

14.7.1 Basic Statistics by Domain

The basic statistics for the distribution of gold, copper, silver, molybdenum and sulphur were evaluated by reviewing the original, logged lithology codes and also by evaluating the various interpreted lithologic domains shown in Figure 14-9. The results are quite similar, suggesting the interpreted lithology model is an appropriate representation of the underlying geology data. The results based on the logged geology information are presented in this section.

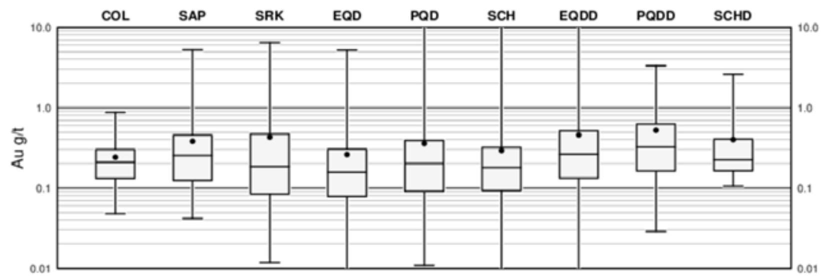
The boxplot in Figure 14-11 shows similar distributions of gold and copper in essentially all of the logged lithology types. Elevated average grades occur in the breccia rocks (EQDD, PQDD and SCHD), but there remains a wide interquartile range of grades within each of these units that tends to coincide with grades in other units. Similar trends are also seen at Gran Bestia (Figure 14-12).

Figure 14-11: Boxplots of Gold and Copper by Logged Lithology Type at Cangrejos

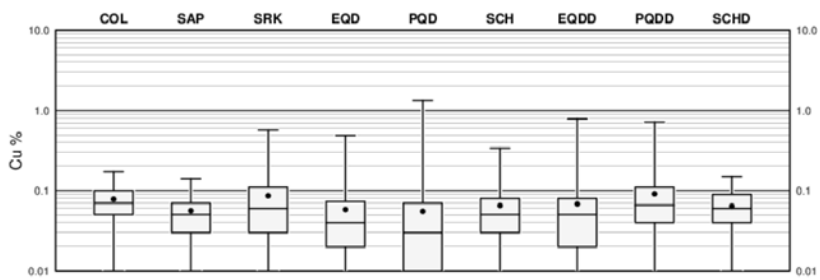


Source: SIM Geological, 2019

Figure 14-12: Boxplots of Gold and Copper by Logged Lithology Type at Gran Bestia



	COL	SAP	SRK	EQD	PQD	SCH	EQDD	PQDD	SCHD
Number of data	32	74	155	1614	858	1323	2306	399	41
Mean	0.242	0.383	0.432	0.262	0.359	0.294	0.459	0.525	0.402
Variance	0.027	0.381	0.528	0.137	0.516	0.698	0.818	0.319	0.261
Skewness	2.046	6.53	4.734	5.762	11.737	18.821	21.234	2.086	3.227
Coef of Variation	0.683	1.609	1.68	1.415	2.004	2.837	1.971	1.076	1.272
Maximum	0.88	5.22	6.46	5.2	14.95	21.2	32.3	3.331	2.61
Upper quartile	0.302	0.458	0.472	0.305	0.392	0.32	0.515	0.633	0.408
Median	0.21	0.255	0.186	0.157	0.202	0.18	0.265	0.322	0.226
Lower quartile	0.132	0.125	0.085	0.079	0.091	0.093	0.133	0.163	0.164
Minimum	0.048	0.042	0.012	0.009	0.011	0.006	0.003	0.029	0.106

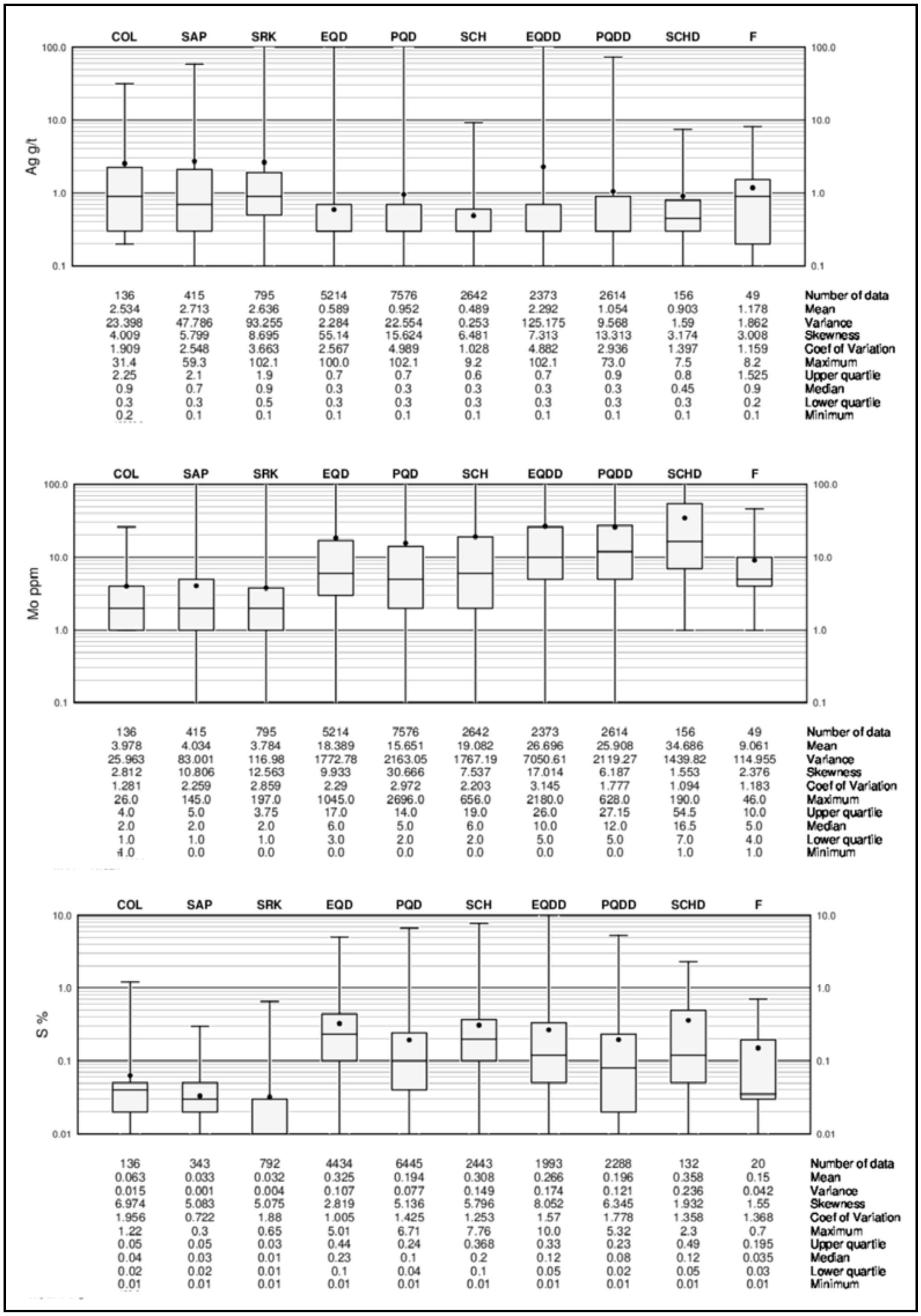


	COL	SAP	SRK	EQD	PQD	SCH	EQDD	PQDD	SCHD
Number of data	32	74	155	1614	858	1323	2306	399	41
Mean	0.078	0.056	0.086	0.058	0.055	0.065	0.068	0.091	0.064
Variance	0.002	0.001	0.007	0.003	0.006	0.003	0.005	0.009	0.001
Skewness	0.685	0.958	2.866	2.712	6.971	1.923	2.915	2.738	0.56
Coef of Variation	0.51	0.512	0.99	0.883	1.437	0.801	1.017	1.018	0.583
Maximum	0.17	0.14	0.57	0.49	1.33	0.34	0.79	0.72	0.15
Upper quartile	0.1	0.07	0.11	0.073	0.07	0.08	0.08	0.11	0.09
Median	0.07	0.05	0.06	0.04	0.03	0.05	0.05	0.066	0.06
Lower quartile	0.05	0.03	0.03	0.02	0.01	0.03	0.02	0.04	0.04
Minimum	0.01	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.01

Source: SIM Geological, 2019

Figure 14-13 shows that the distributions of silver, molybdenum and sulphur are relatively consistent in rock units above and below the oxidation layer. The Saprolite and Saprock units show elevated silver grades, and lower molybdenum and sulphur grades compared to the deeper (fresh) rocks. Similar trends are also seen at Gran Bestia.

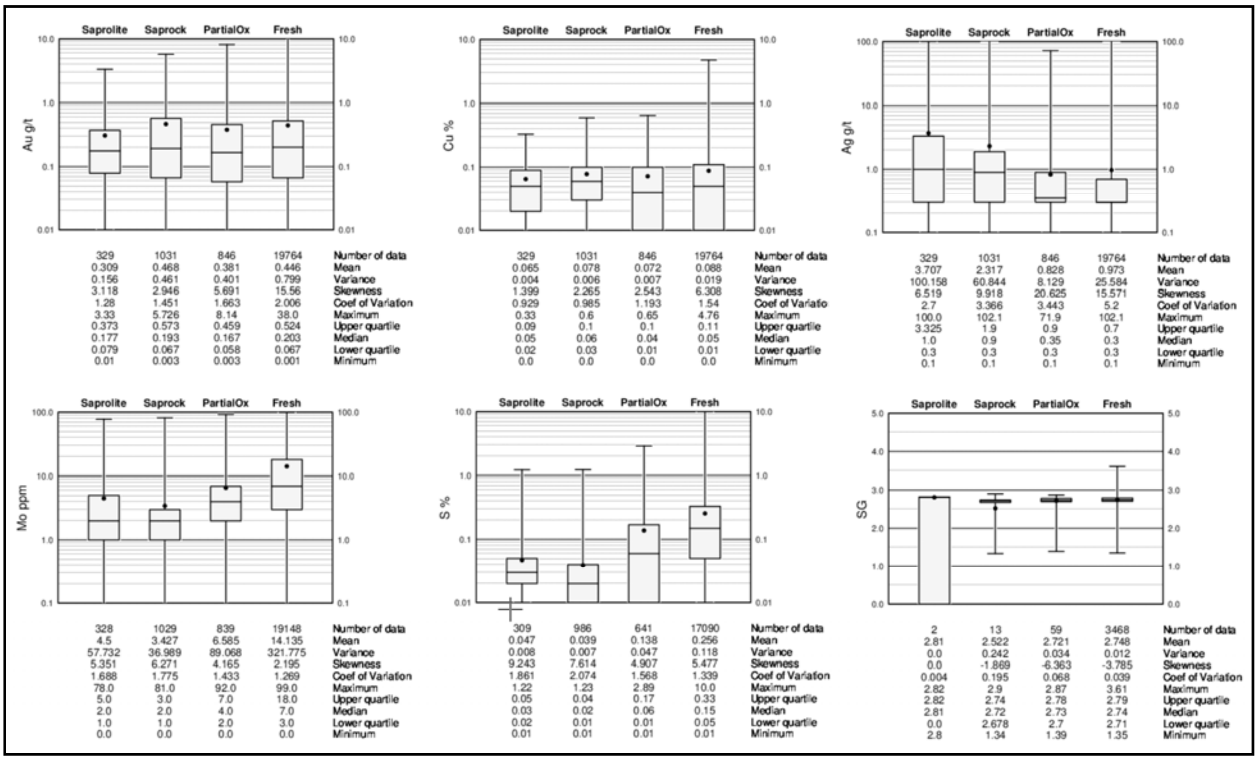
Figure 14-13: Boxplots of Silver, Molybdenum and Sulphur by Logged Lithology Type at Cangrejos



Source: SIM Geological, 2019

Figure 14-14 shows the distributions of all elements across the oxidation domains at Cangrejos. There are no significant changes in gold or copper grades between these units. However, silver is elevated and molybdenum and sulphur are depressed in the Saprolite and Saprock units. There are almost no SG samples in the upper units. The SG of Transitional Oxide and Fresh rocks are very similar. Similar trends are also seen at Gran Bestia.

Figure 14-14: Boxplots Comparing Sample Data Between Oxidation Domains at Cangrejos



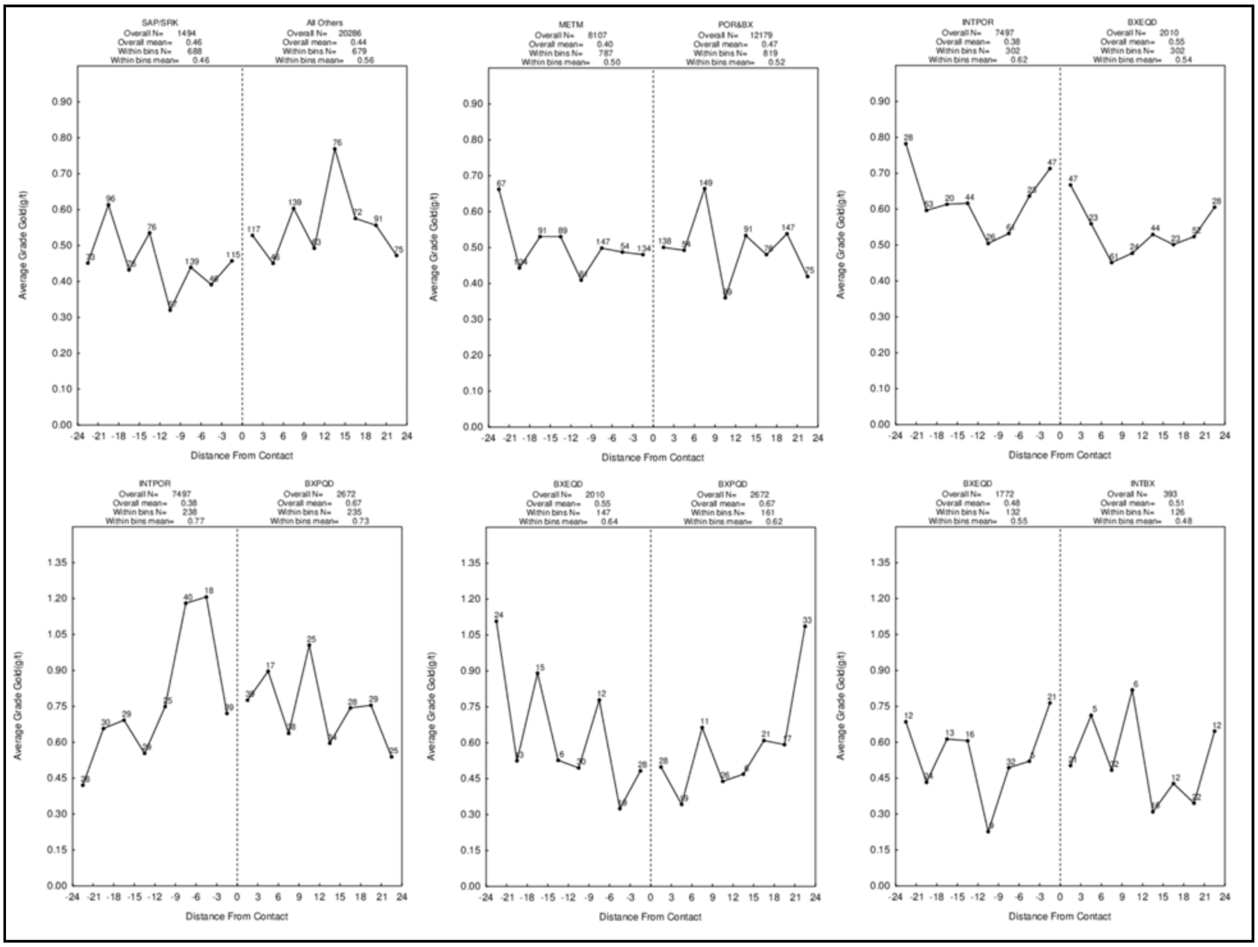
Source: SIM Geological, 2019

14.7.2 Contact Profiles

Contact profiles evaluate the nature of grade trends between two domains: they graphically display the average grades at increasing distances from the contact boundary. Those contact profiles that show a marked difference in grade across a domain boundary indicate that the two datasets should be isolated during interpolation. Conversely, if a more gradual change in grade occurs across a contact, the introduction of a hard boundary (e.g., segregation during interpolation) may result in a much different trend in the grade model; in this case, the change in grade between domains in the model is often more abrupt than the trends seen in the raw data. Finally, a flat contact profile indicates no grade changes across the boundary; in this case, hard or soft domain boundaries will produce similar results in the model.

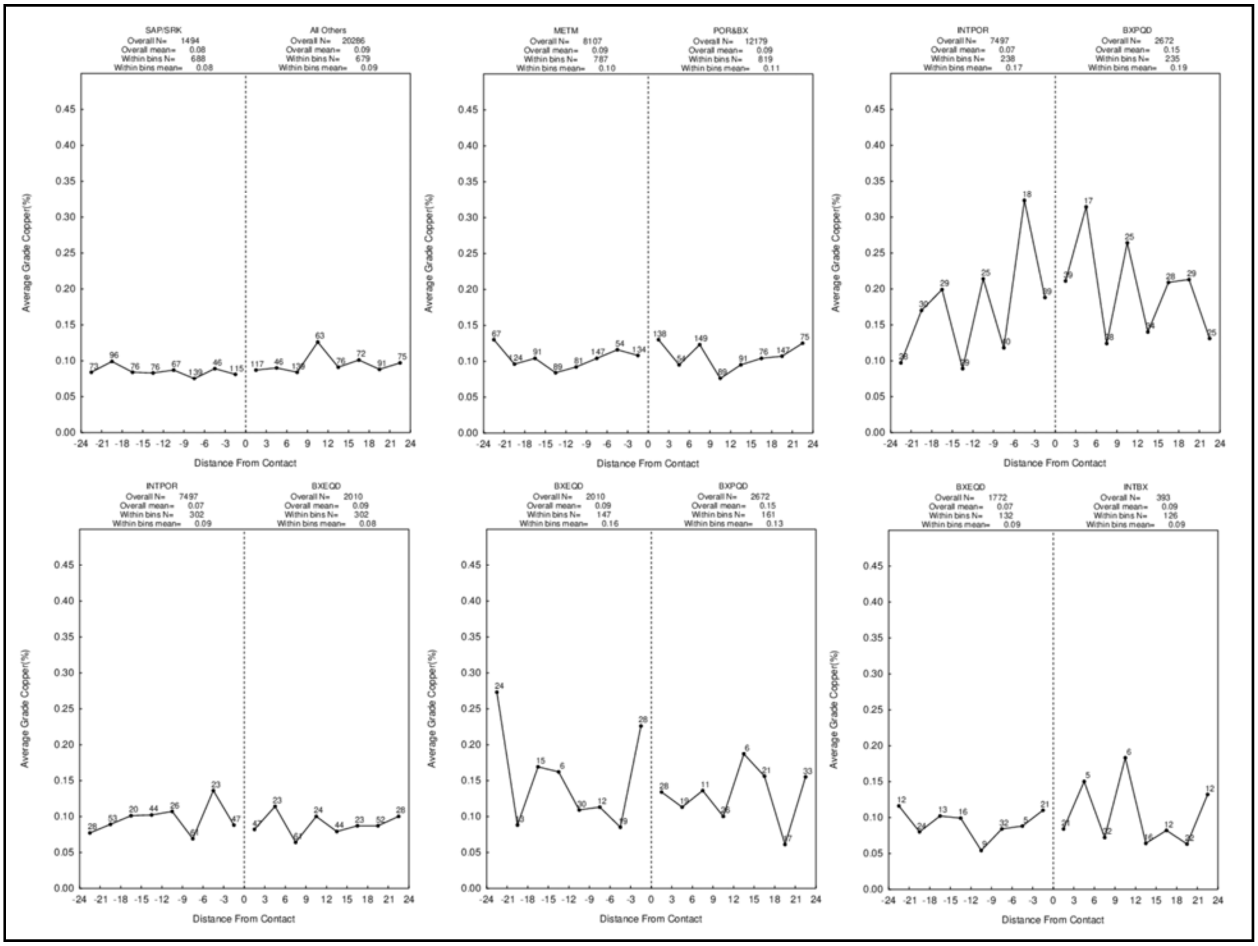
A series of contact profiles were produced to evaluate the nature of gold and copper grades across the lithologic and oxidation domain boundaries. Figure 14-15 shows gold, and Figure 14-16 shows copper, in a series of contact profiles between various domains, and, in all cases, the gold and copper grades are either constant or marginally transitional across all contacts. This suggests that these domains have no distinct influence on the distribution of gold or copper in these deposits.

Figure 14-15: Contact Profiles for Gold Samples Between Interpreted Geology Domains at Cangrejos



Source: SIM Geological, 2019

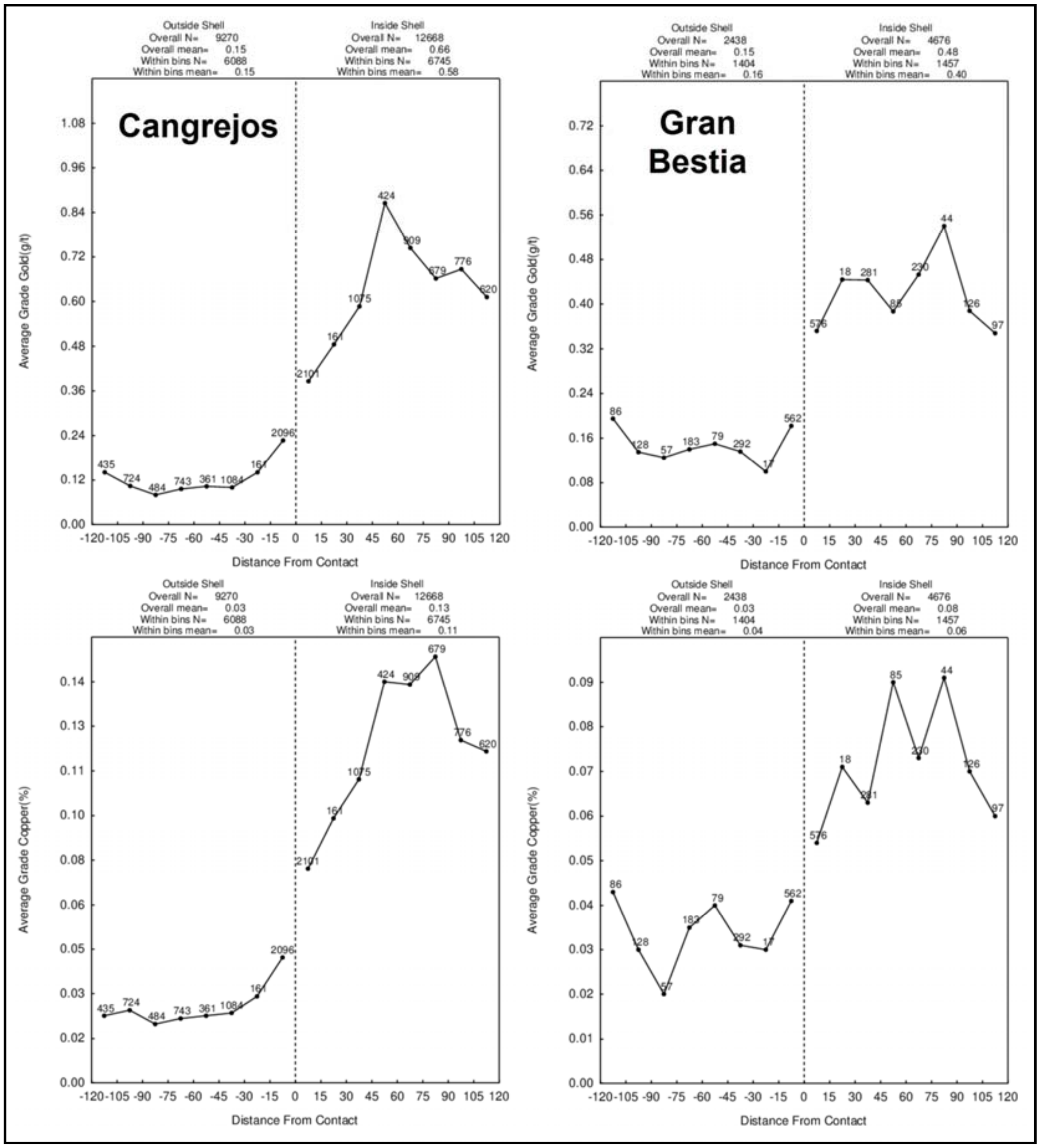
Figure 14-16: Contact Profiles for Copper Samples Between Interpreted Geology Domains at Cangrejos



Source: SIM Geological, 2019

Figure 14-17 shows the change in grade for both gold and copper moving across the contact of the grade probability shell domain. The change in grade is considered significant. Note that the distributions of gold and copper in the deposits are quite coincident, and, as a result, the gold probability shell domain also encompasses areas with elevated copper mineralization. In the absence of geologic controls, the probability shell domain essentially segregates mineralized from unmineralized rocks for estimation purposes.

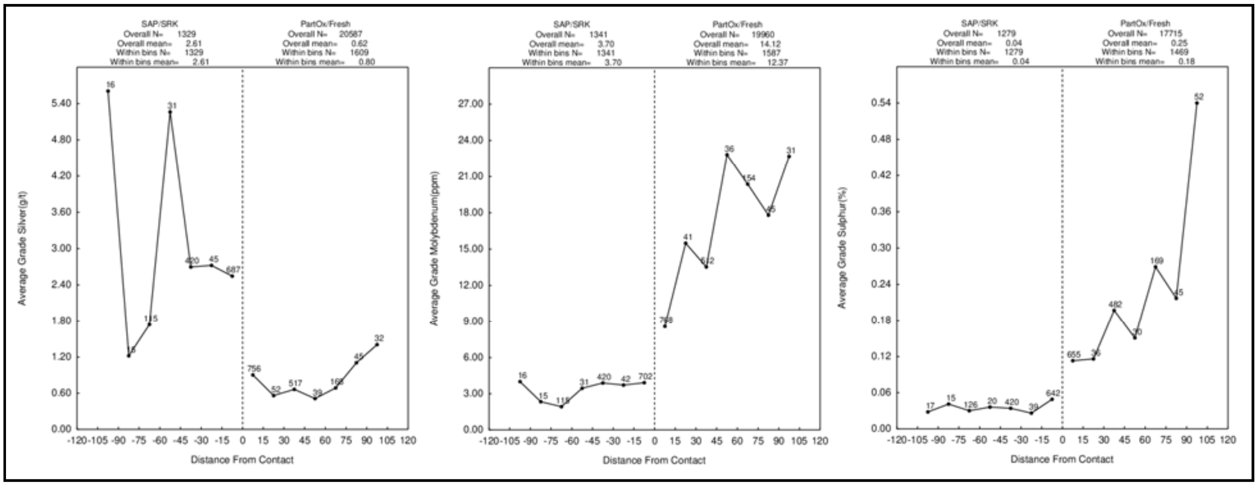
Figure 14-17: Contact Profiles for Gold and Copper Across the Probability Grade Shell Domain



Source: SIM Geological, 2019

Figure 14-18 shows contact profiles of silver, molybdenum and sulphur across the contact between Saprolite plus Saprock (SAP+SRK) and the underlying Transitional Oxide plus Fresh (TransOxide+Fresh) rocks in the Cangrejos deposit. Similar trends are also seen at the Gran Bestia deposit. In all cases, the change in grade for all three elements is relatively abrupt.This suggests the data should not be mixed across this boundary during grade estimation in the mineral resource model.

Figure 14-18: Contact Profiles for Silver, Molybdenum and Sulphur Across the SAP+SRK vs. TransOxide+Fresh Rock Boundary at Cangrejos



Source: SIM Geological, 2019

14.7.3 Conclusions and Modelling Implications

The results of the EDA indicate that the gold and copper grades are not distinctly controlled by any of the interpreted lithologic domains. This is not that uncommon in porphyry-type deposits where mineralization is often present in both the intrusive (porphyry) as well as the host rocks, and grades tend to be gradational or transitional in nature. The oxidation domains are quite recent events and have little to no influence on the distribution of gold or copper in the deposits.

The distributions of silver, molybdenum and sulphur are moderately influenced by the presence of the Saprolite and Saprock layers. These boundaries should be recognized during grade estimation for these elements.

A summary of estimate domains are shown in Table 14.3.

Table 14.3: Summary of Estimation Domains

Element	Domain	Boundary Type
Gold	ProbShell	Hard
Copper	ProbShell	Hard
Silver	SAP+SRK, TransOxide+Fresh	Hard
Molybdenum	SAP+SRK, TransOxide+Fresh	Hard
Sulphur	SAP+SRK, TransOxide+Fresh	Hard
SG	TransOxide+Fresh only (assign SG to SAP and SRK)	Hard

Source: SIM Geological, 2019

14.8 Evaluation of Outlier Grades

Histograms and probability plots for the distribution of gold, copper, silver, molybdenum and sulphur were reviewed to identify the presence of anomalous outlier grades in the composited (2 m) database. Following a review of the physical location of potentially erratic samples in relation to the surrounding sample data, it was decided that these would be controlled during block grade interpolations using a combination of traditional top-cutting and the application of outlier limitations. An outlier limitation controls the distance of influence of samples above a defined grade threshold. During grade interpolations, samples above the outlier thresholds are limited to a maximum distance-of-influence of 35 m.

The grade thresholds are shown in Table 14.4 for Cangrejos and Table 14.5 for Gran Bestia. These tables also list the reduction in contained metal (as a percentage) resulting from the treatment of anomalous high-grade sample data. These reductions are considered appropriate for projects at this stage of exploration.

Table 14.4: Treatment of Outlier Sample Data at Cangrejos

Element	Domain	Maximum	Top-cut Limit	Outlier Limit	Contained Metal Lost (%)
Gold (g/t)	Inside Shell	24.90	-	10	-8
	Outside Shell	38.000	-	4	
Copper (%)	Inside Shell	4.76	2.5	1.50	-1
	Outside Shell	3.00	-	0.50	
Silver (g/t)	All	102.1	-	80	-3
Molybdenum (ppm)	All	2696	1500	700	-5
Sulphur (%)	All	10.00	8	3	-1

Note: Table 14.4 reflects 2 m composited drill hole data.

Source: SIM Geological, 2019

Table 14.5: Treatment of Outlier Sample Data at Gran Bestia

Element	Domain	Maximum	Top-cut Limit	Outlier Limit	Contained Metal Lost (%)
Gold (g/t)	Inside Shell	32.300	-	5	-7
	Outside Shell	4.000	-	2	
Copper (%)	Inside Shell	1.33	-	0.45	-2
	Outside Shell	0.49	-	0.20	
Silver (g/t)	All	100.0	-	15	-5
Molybdenum (ppm)	All	1890	1000	300	-4
Sulphur (%)	All	3.20	-	2	-2

Note: Table 14.5 reflects 2 m composited drill hole data.

Source: SIM Geological, 2019

14.9 Variography

The degree of spatial variability in a mineral deposit depends on both the distance and direction between points of comparison. Typically, the variability between samples increases as the distance between those samples increases. If the degree of variability is related to the direction of comparison, then the deposit is said to exhibit *anisotropic* tendencies which can be summarized with the search ellipse. The semi-variogram is a common function used to measure the spatial variability within a deposit.

The components of the variogram include the nugget, the sill and the range. Often samples compared over very short distances, even samples compared from the same location, show some degree of variability. As a result, the curve of the variogram often begins at some point on the y-axis above the origin: this point is called the *nugget*. The nugget is a measure of not only the natural variability of the data over very short distances but also a measure of the variability which can be introduced due to errors during sample collection, preparation, and the assay process.

The amount of variability between samples typically increases as the distance between the samples increases. Eventually, the degree of variability between samples reaches a constant, maximum value: this is called the *sill*, and the distance between samples at which this occurs is called the *range*.

In this Report, the spatial evaluation of the data was conducted using a correlogram rather than the traditional variogram. The correlogram is normalized to the variance of the data and is less sensitive to outlier values, generally giving better results.

Variograms using the commercial software package Sage 2001© developed by Isaaks & Co. Multidirectional variograms for gold, copper, silver, moybdenum and sulphur were generated from the sample data located inside the pertinent estimation domains. The results are summarized in Tables 14.6 and 14.7.

Table 14.6: Variogram Parameters for Cangrejos

Element				1st Structure			2nd Structure		
	Nugget	Sill 1	Sill 2	Range (m)	Azimuth (°)	Dip	Range (m)	Azimuth (°)	Dip
Gold Inside Prob Shell	0.375	0.443	0.182	60	11	7	230	302	16
	Spherical			19	99	-18	216	139	73
				18	123	71	72	33	5
Gold Outside Prob Shell	0.600	0.350	0.050	132	338	1	435	277	71
	Spherical			25	248	19	197	149	12
				8	72	71	36	236	-15
Copper Inside Prob Shell	0.300	0.433	0.267	39	94	23	967	313	26
	Spherical			31	15	-23	473	175	56
				23	324	56	141	53	19
Copper Outside Prob Shell	0.341	0.456	0.203	220	177	2	591	177	10
	Spherical			42	267	0	449	67	63
				12	3	88	328	92	-25
Silver	0.349	0.250	0.400	164	86	-59	257	256	61
	Spherical			30	340	-10	18	27	20
				5	64	29	17	125	21
Molybdenum	0.532	0.357	0.111	98	77	-59	592	66	74
	Spherical			27	45	27	211	26	-13
				11	142	14	149	118	-10
Sulphur	0.300	0.437	0.263	147	298	25	805	97	-66
	Spherical			143	4	-41	462	66	21
				50	50	39	300	340	-11

Note: Correlograms were conducted on 2 m composite sample data.

Source: SIM Geological, 2019

Table 14.7: Variogram Parameters for Gran Bestia

Element				1st Structure			2nd Structure		
	Nugget	Sill 1	Sill 2	Range (m)	Azimuth (°)	Dip	Range (m)	Azimuth (°)	Dip
Gold Inside Prob Shell	0.419	0.427	0.154	202	92	-8	282	318	21
	Spherical			20	17	60	145	57	22
				7	178	29	70	189	59
Gold Outside Prob Shell	0.121	0.255	0.624	106	78	-39	684	145	4
	Spherical			32	43	45	12	55	-3
				7	152	19	7	355	85
Copper Inside Prob Shell	0.595	0.205	0.200	36	72	24	718	266	54
	Spherical			36	285	62	228	135	26
				25	348	-13	46	33	24
Copper Outside Prob Shell	0.470	0.359	0.171	152	120	-44	473	261	1
	Spherical			120	51	21	197	357	75
				8	159	39	85	171	15
Silver	0.187	0.762	0.051	96	296	-23	1289	169	-27
	Spherical			22	350	54	341	134	58
				6	218	26	272	71	-16
Molybdenum	0.550	0.377	0.073	80	78	-3	1126	267	30
	Spherical			21	136	84	544	107	59
				13	348	5	321	182	-9
Sulphur	0.300	0.317	0.383	30	286	12	1242	16	57
	Spherical			30	21	21	492	67	-22
				13	167	65	189	147	23

Note: Correlograms were conducted on 2 m composite sample data.

Source: SIM Geological, 2019

14.10 Model Setup and Limits

A block model was initialized in MinePlan®, and the dimensions are defined in Table 14.8. This block model covers the extents of both the Cangrejos and Gran Bestia deposits. The selection of a nominal block size measuring 15 m x 15 m x 15 m is considered appropriate with respect to the current drill hole spacing as well as the selective mining unit (SMU) size typical of an operation of this type and scale.

Table 14.8: Block Model Limits

Direction	Minimum	Maximum	Block Size (m)	# of Blocks
X (east)	631200	633900	15	180
Y (north)	9613300	9615700	15	160
Z (elevation)	0	1500	15	100

Source: SIM Geological, 2019

Blocks in the model were coded on a majority basis with the gold probability shell domain and the oxidation domains. During this stage, blocks along a domain boundary are coded if more than 50% of the block occurs within the boundaries of that domain.

The proportion of blocks that occur below the topographic surface is also calculated and stored within the model as individual percentage items. These values are used as weighting factors to determine the in-situ mineral resources for the deposit.

14.11 Interpolation Parameters

The block model grades for gold, copper, silver, molybdenum and sulphur were estimated using OK. The results of the OK estimation were compared with the Hermitian Polynomial Change of Support model (also referred to as the Discrete Gaussian Correction). This method is described in more detail in Section 14.12.2. Estimates for SG were made using the inverse distance weighting (ID2) interpolation method.

The Cangrejos OK model was generated with a relatively limited number of samples to match the change of support or Herco (*Her*mitian *Co*rrection) grade distribution. This approach reduces the amount of smoothing or averaging in the model, and, while there may be some uncertainty on a localized scale, this approach produces reliable estimates of the recoverable grade and tonnage for the overall deposit.

The estimation parameters for the various elements in the mineral resource block model are shown in Table 14.9 for the Cangrejos deposit and in Table 14.10 for the Gran Bestia deposit. All grade estimations use length-weighted composite drill hole sample data.

Table 14.9: Interpolation Parameters for Cangrejos

Element	Search Ellipse[1] Range (m)			# of Composites			Other
	X	Y	Z	Min/Block	Max/Block	Max/Hole	
Gold Inside Prob Shell	500	500	200	8	44	11	1 DH per octant
Gold Outside Prob Shell	500	500	200	8	33	11	1 DH per octant
Copper Inside Prob Shell	500	500	200	8	44	11	1 DH per octant
Copper Outside Prob Shell	500	500	200	8	44	11	1 DH per octant
Silver	500	500	200	8	27	9	1 DH per octant
Molybdenum	500	500	200	8	44	11	1 DH per octant
Sulphur	500	500	200	8	44	11	1 DH per octant
SG	500	500	200	3	12	3	1 DH per octant

Note: [1] Ellipse orientation with long axis north-south and west-east and vertical short axis. DH = drill hole.

Source: SIM Geological, 2019

Table 14.10: Interpolation Parameters for Gran Bestia

Element	Search Ellipse[1] Range (m)			# of Composites			Other
	X	Y	Z	Min/Block	Max/Block	Max/Hole	
Gold	500	500	200	8	44	11	1 DH per octant
Gold Inside Prob Shell	500	500	200	8	44	11	1 DH per octant
Gold Outside Prob Shell	500	500	200	8	44	11	1 DH per octant
Copper Inside Prob Shell	500	500	200	8	44	11	1 DH per octant
Copper Outside Prob Shell	500	500	200	8	33	11	1 DH per octant
Silver	500	500	200	8	33	11	1 DH per octant
Molybdenum	500	500	200	8	33	11	1 DH per octant
Sulphur	500	500	200	8	44	11	1 DH per octant
SG	500	500	200	3	12	3	1 DH per octant

Note: [1] Ellipse orientation with long axis north-south and west-east and vertical short axis. DH = drill hole

Source: SIM Geological, 2019

14.12 Validation

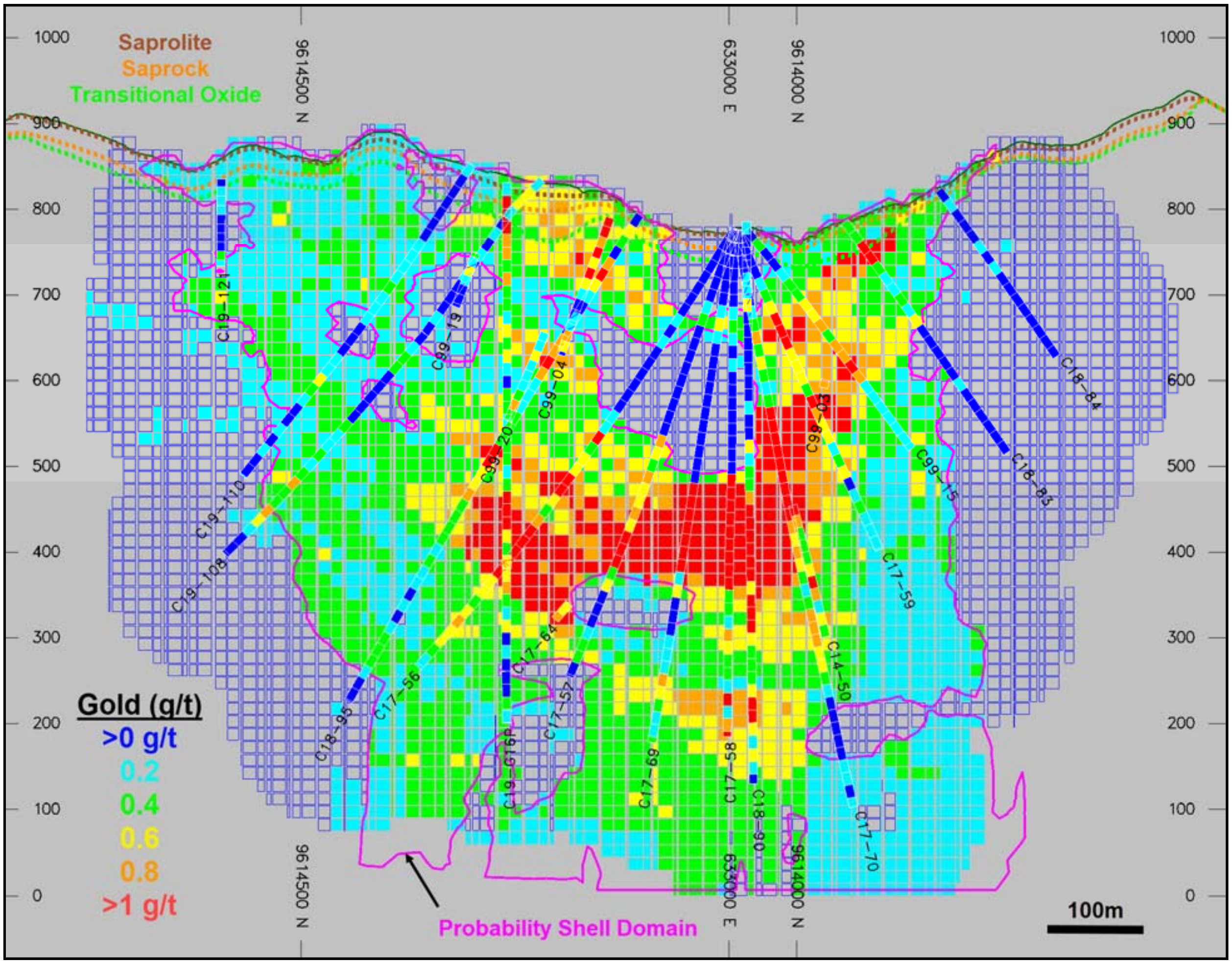
The results of the modelling process were validated using several methods. These include a thorough visual review of the model grades in relation to the underlying drill hole sample grades, comparisons with the change of support model, comparisons with other estimation methods, and grade distribution comparisons using swath plots.

14.12.1 Visual Inspection

A detailed visual inspection of the block model was conducted in both section and plan to ensure the desired results following interpolation. This includes confirmation of the proper coding of blocks within the gold grade probability shell domain. The estimated gold, copper, silver and molybdenum grades in the model appear to be a valid representation of the underlying drill hole sample data.

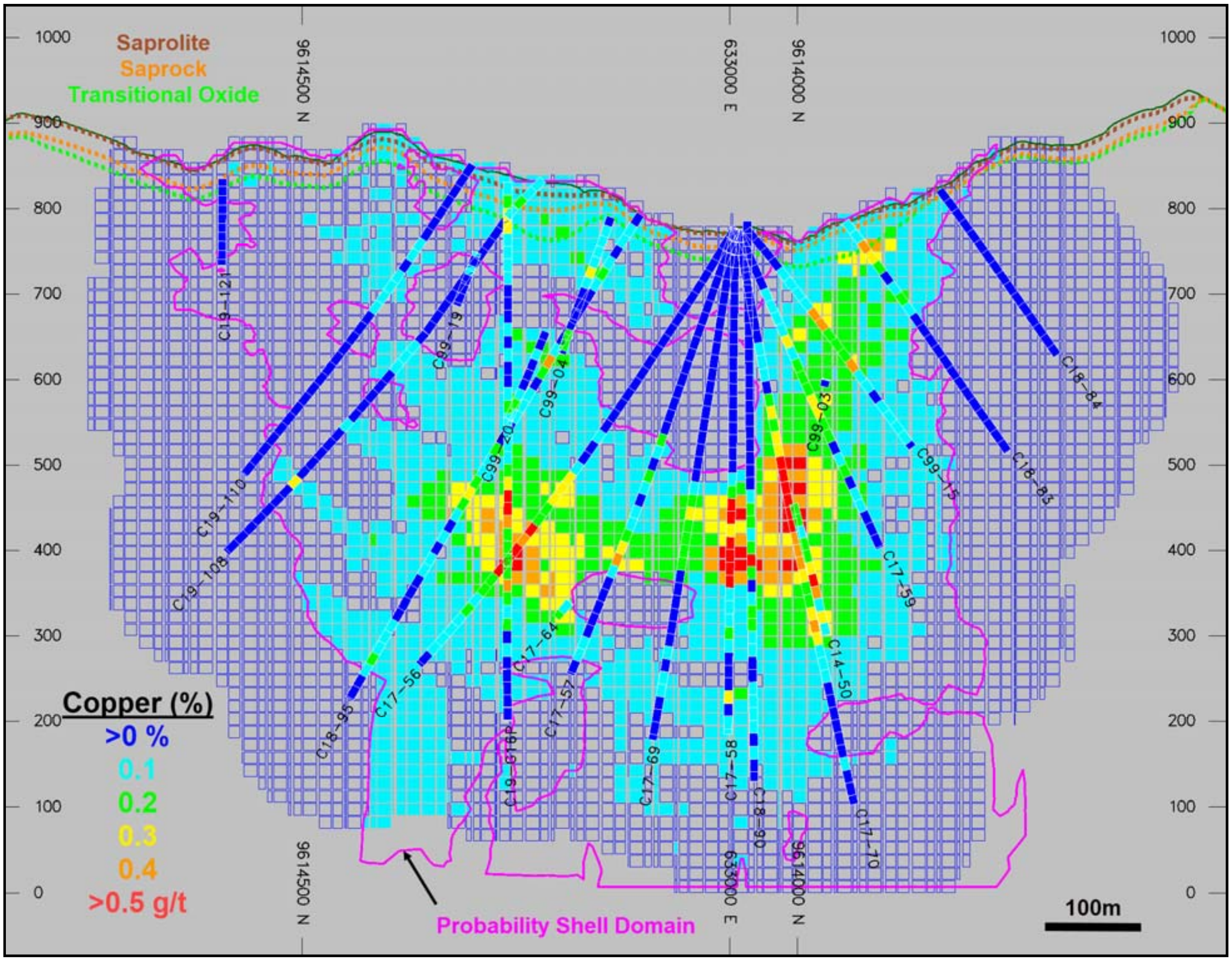
Examples of the distribution of gold and copper grades in model blocks compared to the drill hole sample data at Cangrejos are shown in Figures 14-19 and 14-20, respectively. Examples of the distribution of gold and copper grades in model blocks compared to the drill hole sample data at Gran Bestia are shown in Figures 14-21 and 14-22, respectively.

Figure 14-19: Vertical Cross Section Showing Gold Grades in Drilling and Block Model at Cangrejos



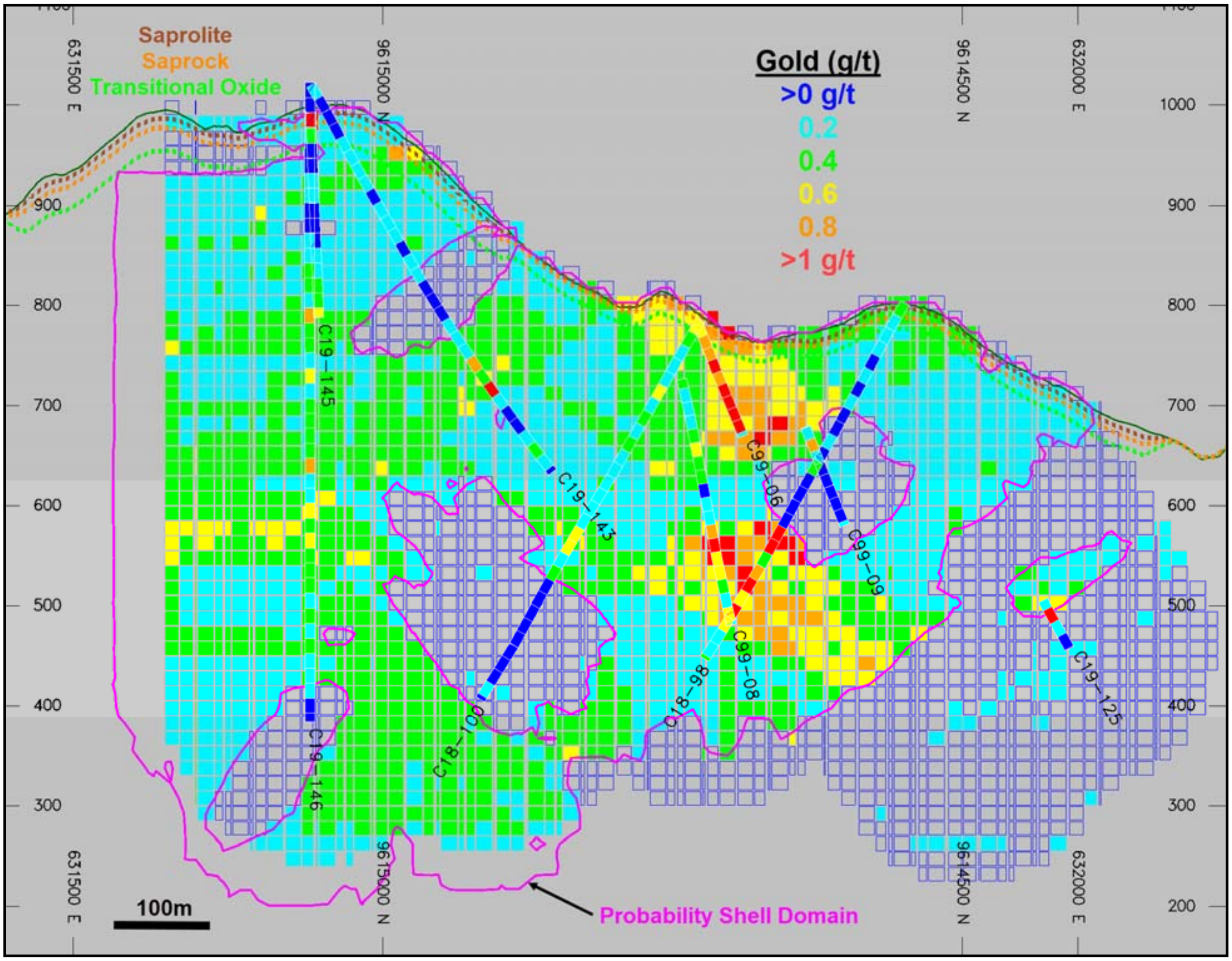
Source: SIM Geological, 2019

Figure 14-20: Vertical Cross Section Showing Copper Grades in Drilling and Block Model at Cangrejos



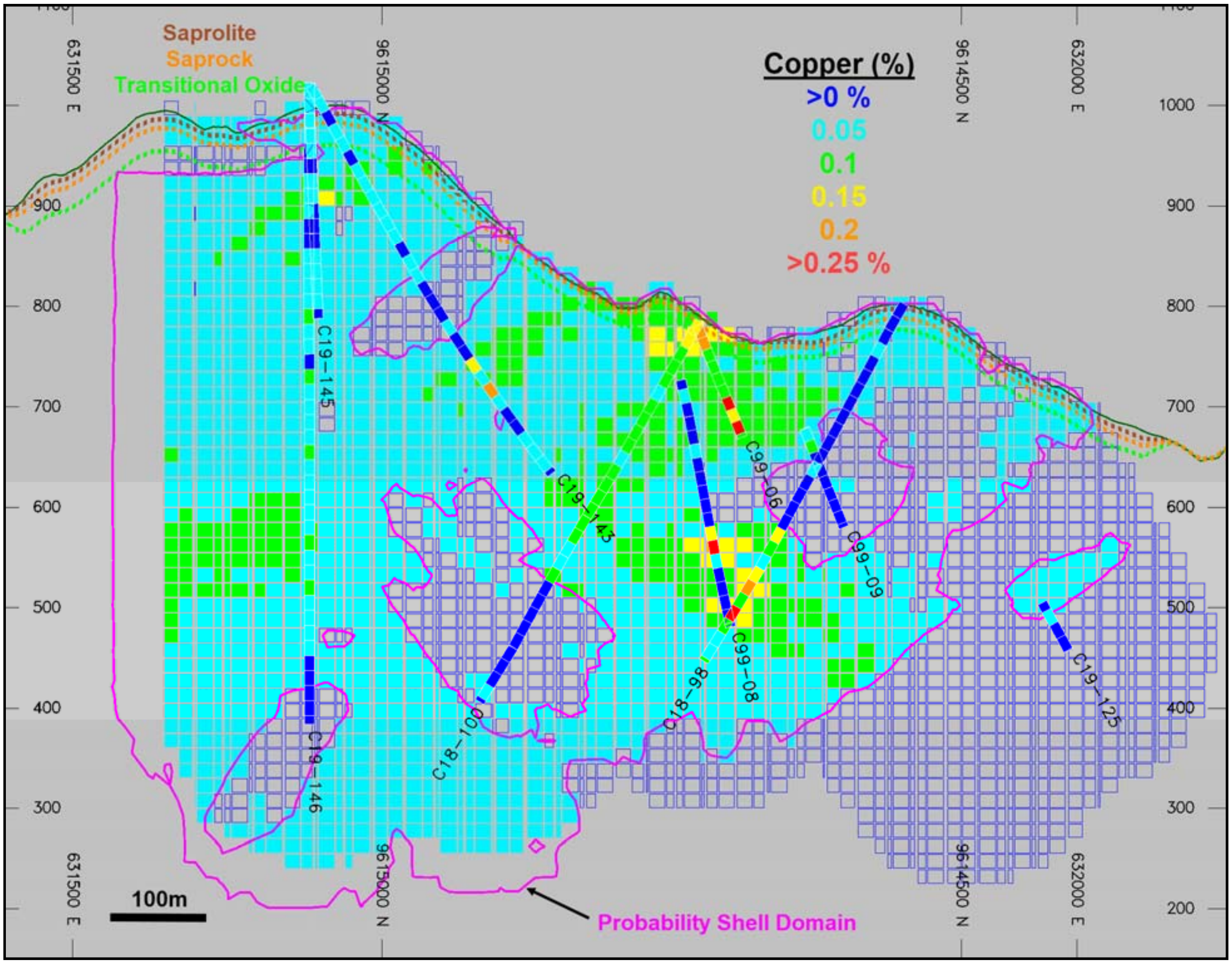
Source: SIM Geological, 2019

Figure 14-21: Vertical Cross Section Showing Gold Grades in Drilling and Block Model at Gran Bestia



Source: SIM Geological, 2019

Figure 14-22: Vertical Cross Section Showing Copper Grades in Drilling and Block Model at Gran Bestia



Source: SIM Geological, 2019

14.12.2 Model Checks for Change of Support

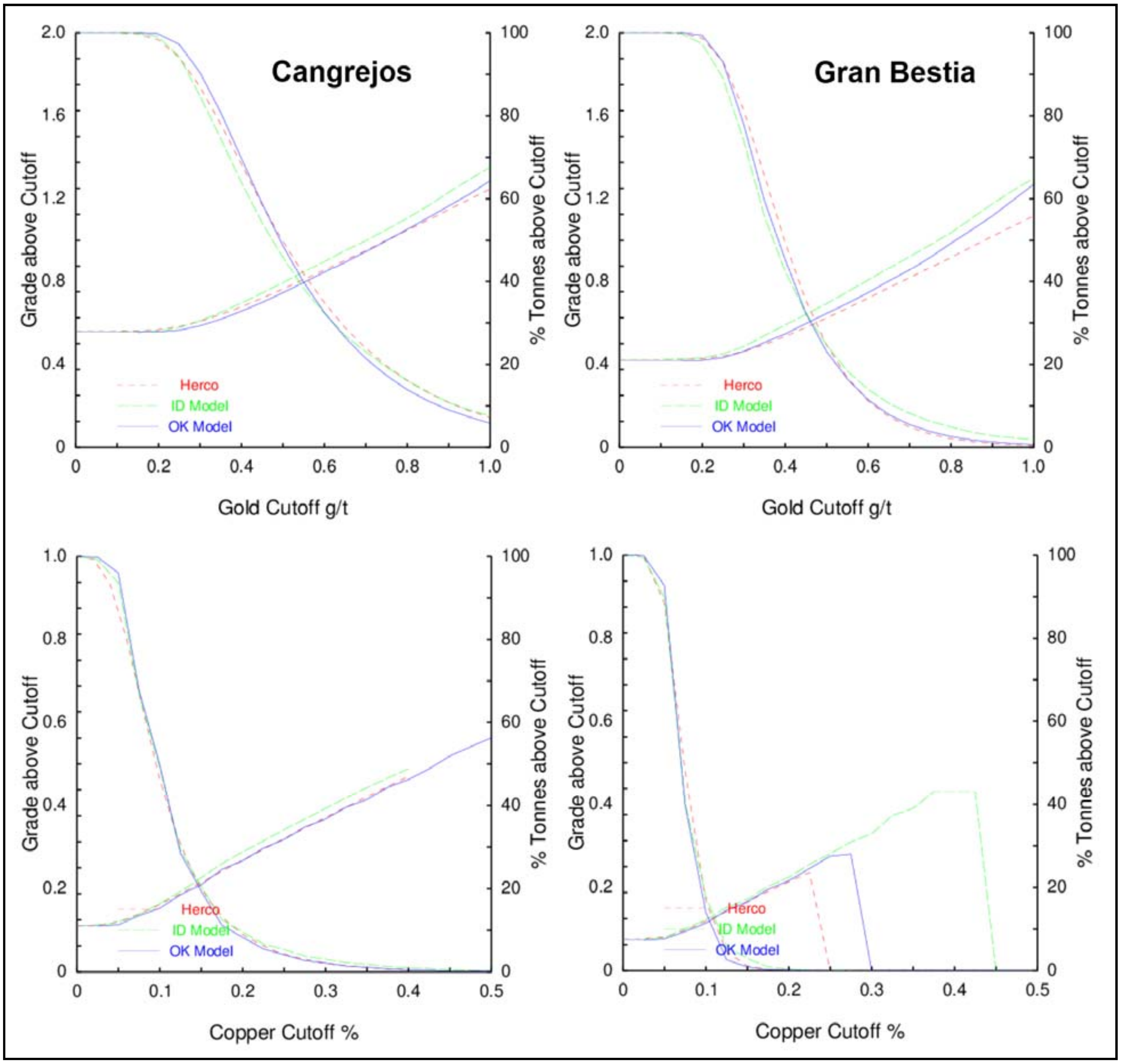
The relative degree of smoothing in the block model estimates were evaluated using the Discrete Gaussian of Hermitian Polynomial Change of Support method (described by Rossi and Deutsch, Mineral Resource Estimation, 2014).

Using this method, the distribution of the hypothetical block grades can be directly compared to the estimated (OK) model through the use of pseudo-grade/tonnage curves. Adjustments are made to the block model interpolation parameters until an acceptable match is made with the Herco distribution. In general, the estimated model should be slightly higher in tonnage and slightly lower in grade when compared to the Herco distribution at the projected cut-off grade. These differences account for selectivity and other potential ore-handling issues which commonly occur during mining.

The Herco distribution is derived from the declustered composite grades which have been adjusted to account for the change in support, going from smaller drill hole composite samples to the large blocks in the model. The transformation results in a less skewed distribution but with the same mean as the original declustered samples.

Examples showing the distributions of the gold and copper models at Cangrejos and Gran Bestia models are shown in Figure 14-23.

Figure 14-23: Herco Grade/Tonnage Plot for Gold and Copper Models



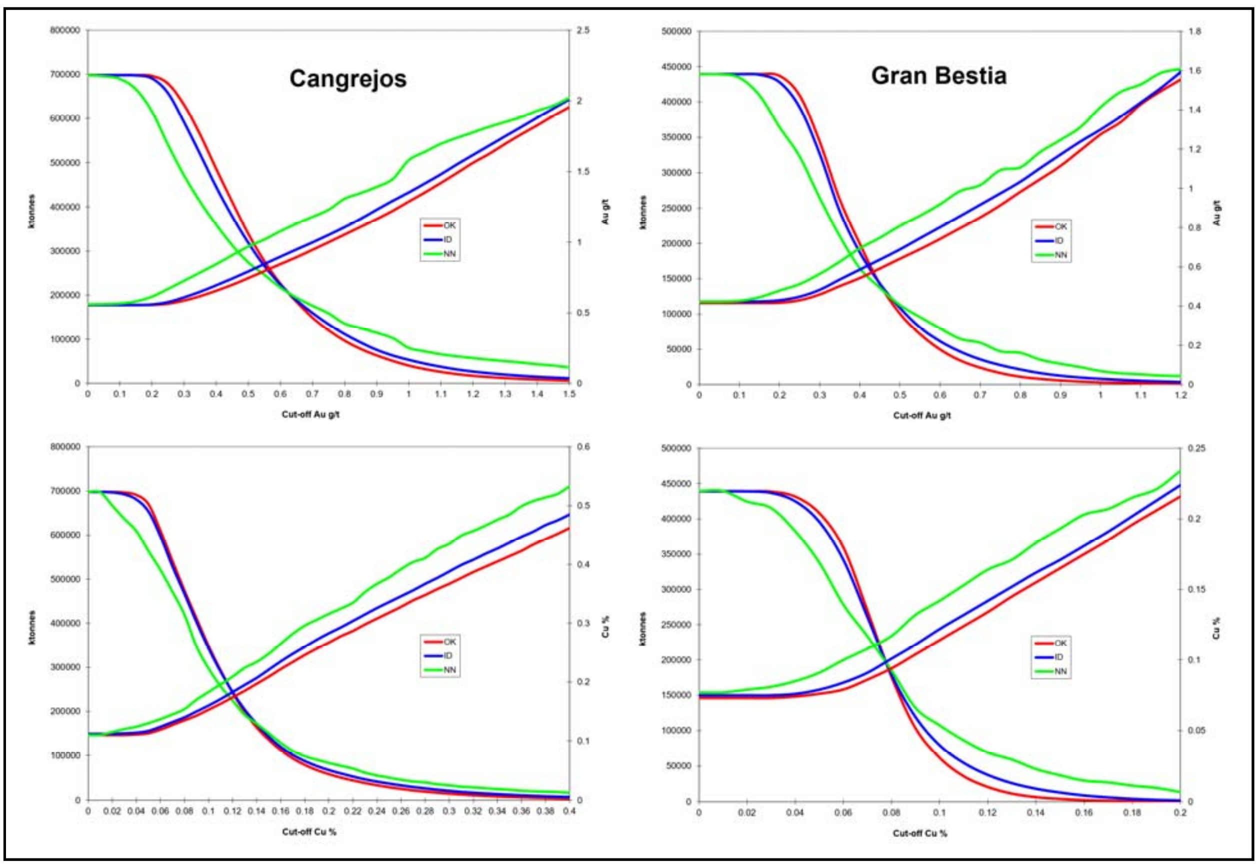
Source: SIM Geological, 2019

14.12.3 Comparison of Interpolation Methods

For comparison purposes, additional models for gold, copper, silver, molybdenum and sulphur were generated using both the inverse distance weighted (IDW) and nearest neighbour (NN) interpolation methods (the NN model was generated using data composited to 15 m intervals).

Comparisons are made between these models on grade/tonnage curves. Examples of the grade/tonnage curves for gold and copper at Cangrejos and Gran Bestia are shown in Figure 14-24. There is good correlation between the OK and ID models throughout the range of cut-off grades. The NN distribution, generally showing less tonnage and higher grade, is the result of the absence of smoothing in this modelling approach. Similar results were achieved with the silver, molybdenum and sulphur models. Reproduction of the model using different methods tends to increase the confidence in the overall mineral resource estimate.

Figure 14-24: Grade/Tonnage Comparison of Gold Models



Source: SIM Geological, 2019

14.12.4 Swath Plots (Drift Analysis)

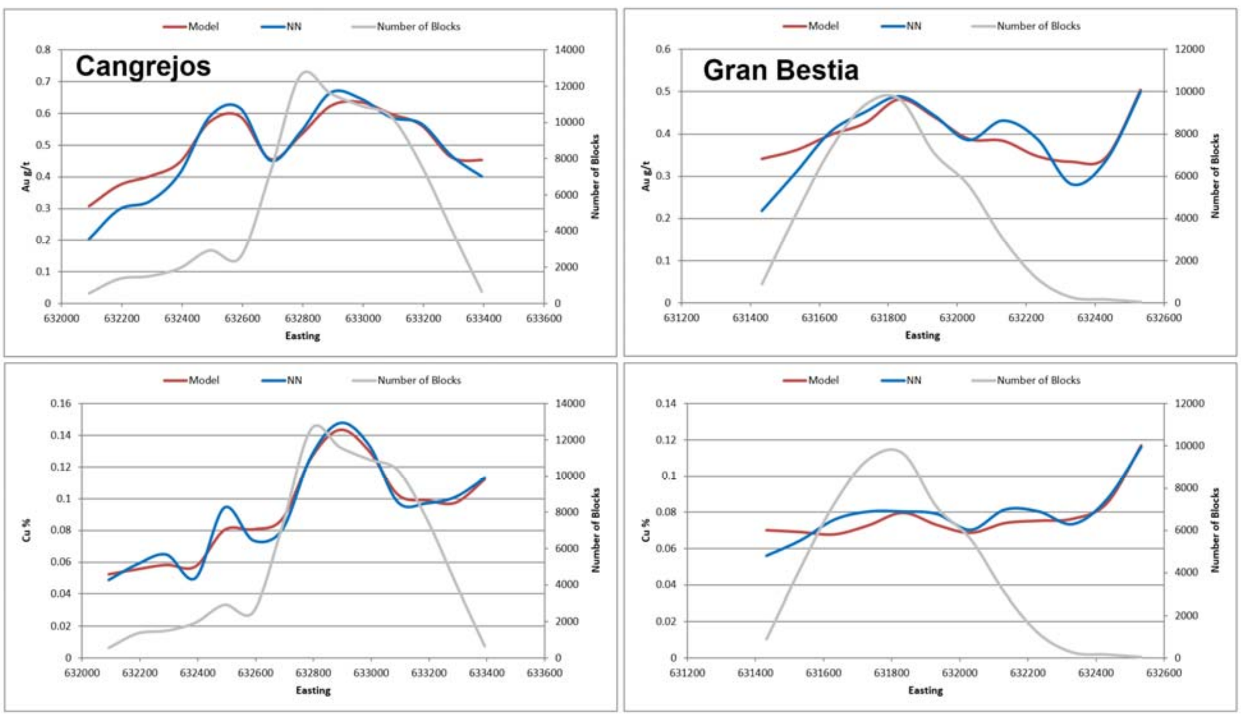
A swath plot is a graphical display of the grade distribution derived from a series of bands, or swaths, generated in several directions through the deposit. Using the swath plot, grade variations from the OK model are compared to the distribution derived from the declustered (NN) grade model.

On a local scale, the NN model does not provide reliable estimations of grade, but, on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. Therefore, if the OK model is unbiased, the grade trends may show local fluctuations on a swath plot, but the overall trend should be similar to the NN distribution of grade.

Swath plots were generated in three orthogonal directions for all models. An example of the gold distribution in north-south swaths is shown in Figure 14-25.

There is good correspondence between the models in most areas. The degree of smoothing in the OK model is evident in the peaks and valleys shown in the swath plots. Areas indicating large differences between the models tend to be the result of “edge” effects, where there are less available data to support a comparison. The validation results indicate that the OK model is a reasonable reflection of the underlying sample data.

Figure 14-25: Swath Plot of Gold and Copper OK and NN Models by Easting



Source: SIM Geological, 2019

14.13 Mineral Resource Classification

The mineral resources for the Cangrejos and Gran Bestia deposits were classified in accordance with the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014). The classification parameters are defined relative to the distance between gold sample data and are intended to encompass zones of reasonably continuous mineralization that exhibit the desired degree of confidence. These parameters are based on visual observations and statistical studies. Classification parameters are based primarily on the nature of the distribution of gold data as it is the main contributor to the relative value of this polymetallic deposit.

The following criteria were used to define mineral resources in the Indicated and Inferred categories.

Indicated Mineral Resources

Mineral resources in the Indicated category include relatively large volumes that show consistent zones of mineralization and are delineated with drilling spaced at a maximum distance of 100 m.

Inferred Mineral Resources

Mineral resources in the Inferred category include model blocks that are located within a maximum distance of 150 m from a drill hole.

Domains were interpreted to encompass model blocks that are included in the Indicated and Inferred categories. This step ensures consistency of classification across the deposit. Some drill holes were terminated in appreciable mineralization, and there are some instances where the lateral extents of mineralization have not been defined with current drilling. In these instances, the lateral extents of mineralization were manually truncated at 100 m from drilling, and the depth extent of Inferred mineral resources is limited to 50 m vertically below drill holes.

14.14 Mineral Resources

CIM *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014) define a mineral resource as:

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

The "reasonable prospects for eventual economic extraction" requirement generally implies that quantity and grade estimates meet certain economic thresholds and that mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recovery.

The economic viability of the mineral resource was tested by constraining it within a floating cone pit shell; the pit shell was generated using the following projected economic and technical parameters:

- Mining (open pit) $2.00/t
- Processing $8.00/t
- G&A $1.50/t
- Gold price $1,500/oz
- Silver price $18.00/oz
- Copper price $3.00/lb
- Molybdenum price $7.00/lb
- Gold process recovery 83% fresh rock; 80% part oxidized;
  75% SAP&SRK

- Silver process recovery: 60% fresh rock; 60% part oxidized; 65% SAP&SRK
- Copper process recovery: 87% fresh rock; 50% part oxidized
- Molybdenum process recovery: 50% fresh rock and part oxidized
- Pit slope: 47.5 degrees

Based on the metal prices and recoveries listed here, recoverable gold equivalent (AuEqR) grades are calculated using the following formulas:

SAP&SRK: AuEqR = (Au g/t × 0.75) + (Ag g/t × 0.65 × 0.012)

Part Oxidized: AuEqR = (Au g/t × 0.80) + (Ag g/t × 0.60 × 0.012) + (Cu% × 0.50 × 1.37) + (Mo ppm/10,000 × 0.50 × 3.2)

Fresh Rock: AuEqR = (Au g/t × 0.83) + (Ag g/t × 0.60 × 0.012) + (Cu% × 0.87 × 1.37) + (Mo ppm/10,000 × 0.50 × 3.2)

The pit shell is generated using a floating cone algorithm based on the AUEqR block grades. There are no adjustments for mining recoveries or dilution. This test indicates that some of the deeper mineralization may not be economic due to the increased waste stripping requirements. It is important to recognize that these discussions of surface mining parameters are used solely to test the "reasonable prospects for eventual economic extraction," and that they do not represent an attempt to estimate mineral reserves. There are no mineral reserves calculated for this Project. These preliminary evaluations are used to prepare the mineral resource estimate contained in this Report and to select appropriate reporting assumptions.

The estimate of mineral resources, contained within the $1,500/oz Au pit shell, are based on gold equivalent grades (AuEq) calculated using the following formula:

AuEq = Au g/t + (Ag g/t × 0.012) + (Cu% × 1.37) + (Mo ppm/10,000 × 3.2)

(Note: there is no contribution from copper or molybdenum in the SAP or SRK units.)

Using the assumed metal prices, operating costs and metallurgical recoveries, the base case cut-off grade for mineral resources is estimated to be 0.30 g/t AuEq. Table 14.11 shows the estimate of mineral resources at Cangrejos. Table 14.12 shows the estimate of mineral resources at Gran Bestia. Table 14.13 shows the combined estimate of mineral resources at Cangrejos and Gran Bestia.

The distribution of the base case mineral resource within the $1,500/oz Au pit shell is shown from a series of isometric viewpoints in Figures 14-26 to 14-29.

There are no known factors related to environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors which could materially affect the mineral resource estimate contained in this Report. Mineral resources in the Inferred category have a lower level of confidence than that applied to Indicated mineral resources, and, although there is sufficient evidence to imply geologic grade and continuity, these characteristics cannot be verified based on the current data. It is reasonably expected that the majority of Inferred mineral resources could be upgraded to Indicated mineral resources with continued exploration.

Table 14.11: Estimate of Mineral Resources at Cangrejos

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	14.5	0.61	0.57	0.10	2.9	4.2	0.04	0.3	30	1.3	0.1
TransOxide	14.8	0.71	0.56	0.10	0.8	15.7	0.18	0.3	33	0.4	0.5
Fresh	439.6	0.77	0.59	0.12	0.7	23.2	0.24	8.4	1,163	9.2	22.5
Combined	**468.8**	**0.77**	**0.59**	**0.12**	**0.7**	**22.4**	**0.23**	**8.9**	**1,220**	**10.9**	**23.2**
Inferred											
SAP+SRK	7.5	0.43	0.41	0.07	2.0	2.7	0.07	0.1	11	0.5	0.0
TransOxide	9.6	0.46	0.36	0.07	0.7	11.9	0.38	0.1	15	0.2	0.3
Fresh	237.7	0.56	0.43	0.08	0.7	15.2	0.34	3.3	440	5.0	8.0
Combined	**254.8**	**0.55**	**0.43**	**0.08**	**0.7**	**14.7**	**0.33**	**3.5**	**466**	**5.7**	**8.3**

Note: The estimates in Table 14.11 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.12: Estimate of Mineral Resources at Gran Bestia

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	2.5	0.55	0.52	0.08	2.4	8.6	0.04	0.0	4	0.2	0.0
TransOxide	4.7	0.69	0.56	0.08	0.6	17.2	0.22	0.1	9	0.1	0.2
Fresh	92.1	0.57	0.45	0.08	0.5	15.7	0.27	1.3	165	1.5	3.2
Combined	**99.4**	**0.58**	**0.46**	**0.08**	**0.6**	**15.6**	**0.26**	**1.5**	**178**	**1.8**	**3.4**
Inferred											
SAP+SRK	4.9	0.45	0.43	0.06	1.6	7.0	0.17	0.1	7	0.2	0.1
TransOxide	8.5	0.50	0.40	0.06	0.8	10.9	0.40	0.1	12	0.2	0.2
Fresh	207.8	0.49	0.38	0.07	0.6	12.2	0.35	2.6	302	3.9	5.6
Combined	**221.2**	**0.49**	**0.39**	**0.07**	**0.6**	**12.0**	**0.35**	**2.7**	**322**	**4.3**	**5.9**

Note: The estimates in Table 14.12 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

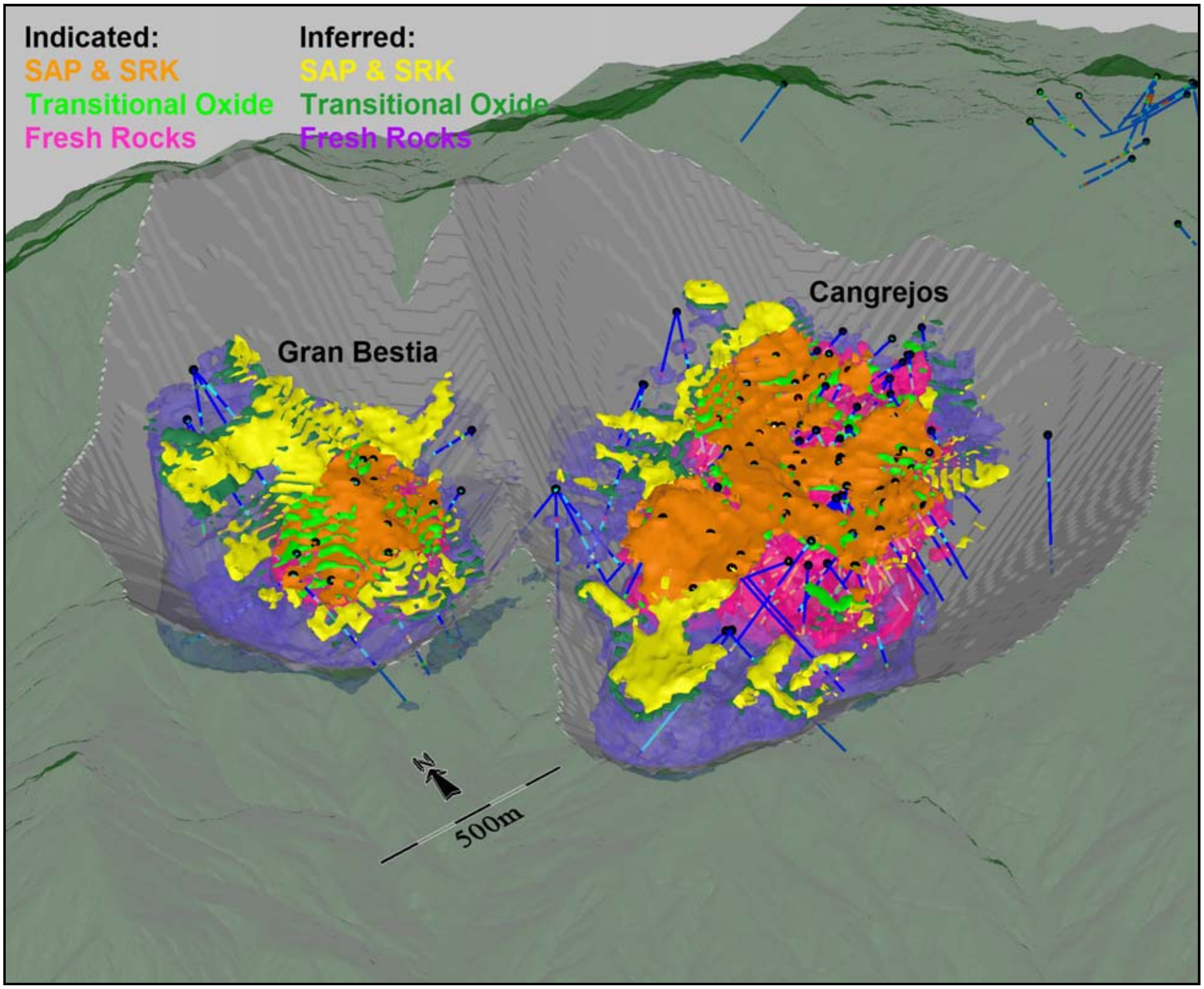
Table 14.13: Estimate of Mineral Resources at Cangrejos and Gran Bestia

Type	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated											
SAP+SRK	17.0	0.60	0.57	0.09	2.8	4.8	0.04	0.3	35	1.5	0.2
TransOxide	19.5	0.71	0.56	0.10	0.7	16.1	0.19	0.4	41	0.5	0.7
Fresh	531.7	0.74	0.57	0.11	0.6	21.9	0.24	9.7	1325	10.8	25.7
Combined	**568.2**	**0.73**	**0.57**	**0.11**	**0.7**	**21.2**	**0.24**	**10.4**	**1,403**	**12.8**	**26.6**
Inferred											
SAP+SRK	12.4	0.44	0.41	0.07	1.8	4.4	0.11	0.2	18	0.7	0.1
TransOxide	18.1	0.48	0.38	0.07	0.7	11.4	0.39	0.2	27	0.4	0.5
Fresh	445.5	0.53	0.41	0.08	0.6	13.8	0.34	5.9	746	8.9	13.6
Combined	**476.0**	**0.52**	**0.41**	**0.08**	**0.7**	**13.4**	**0.34**	**6.3**	**787**	**9.9**	**14.1**

Note: The estimates in Table 14.13 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

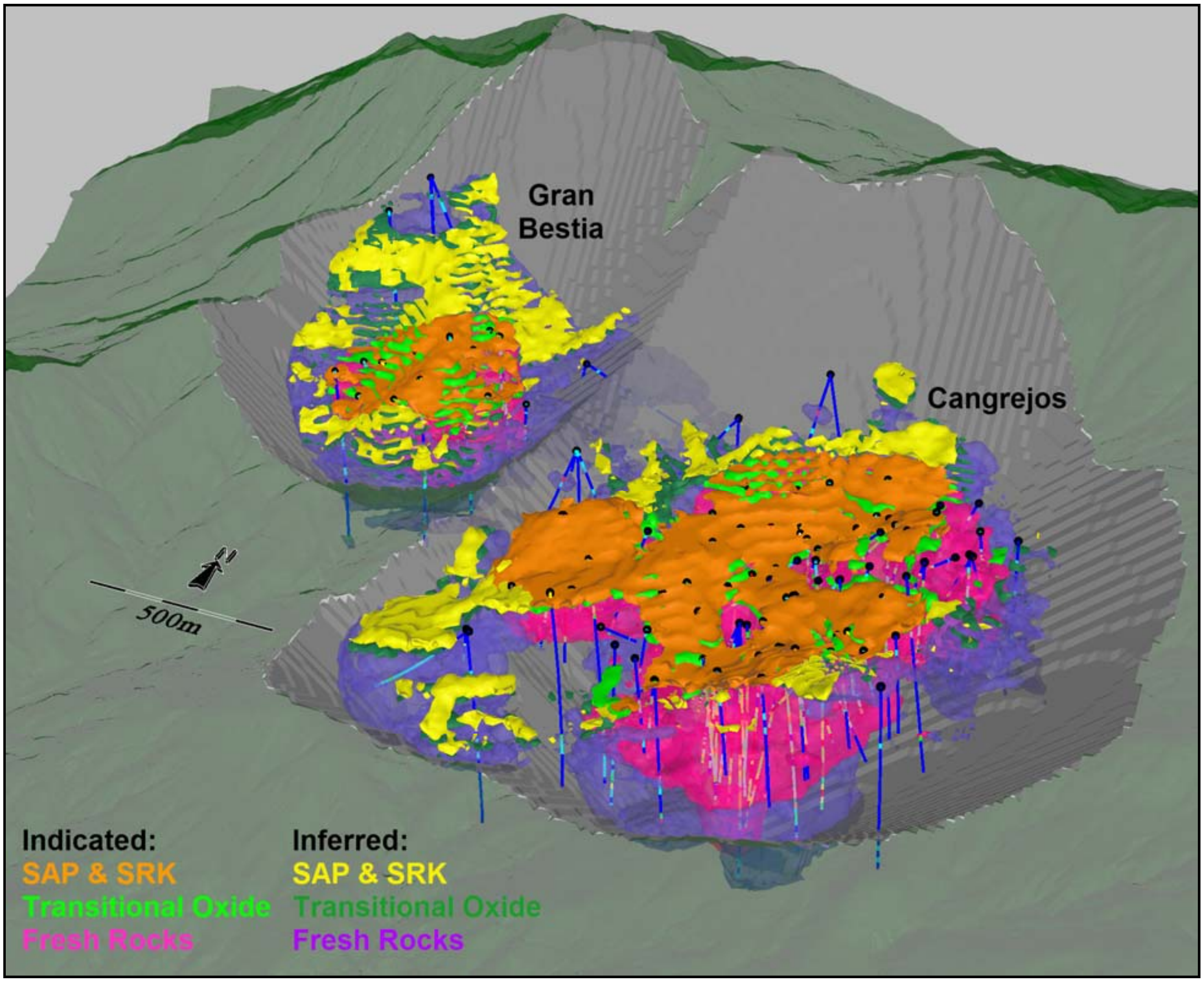
Source: SIM Geological, 2019

Figure 14-26: Isometric Views of Base Case Mineral Resource with Resource Limiting Pit Shell



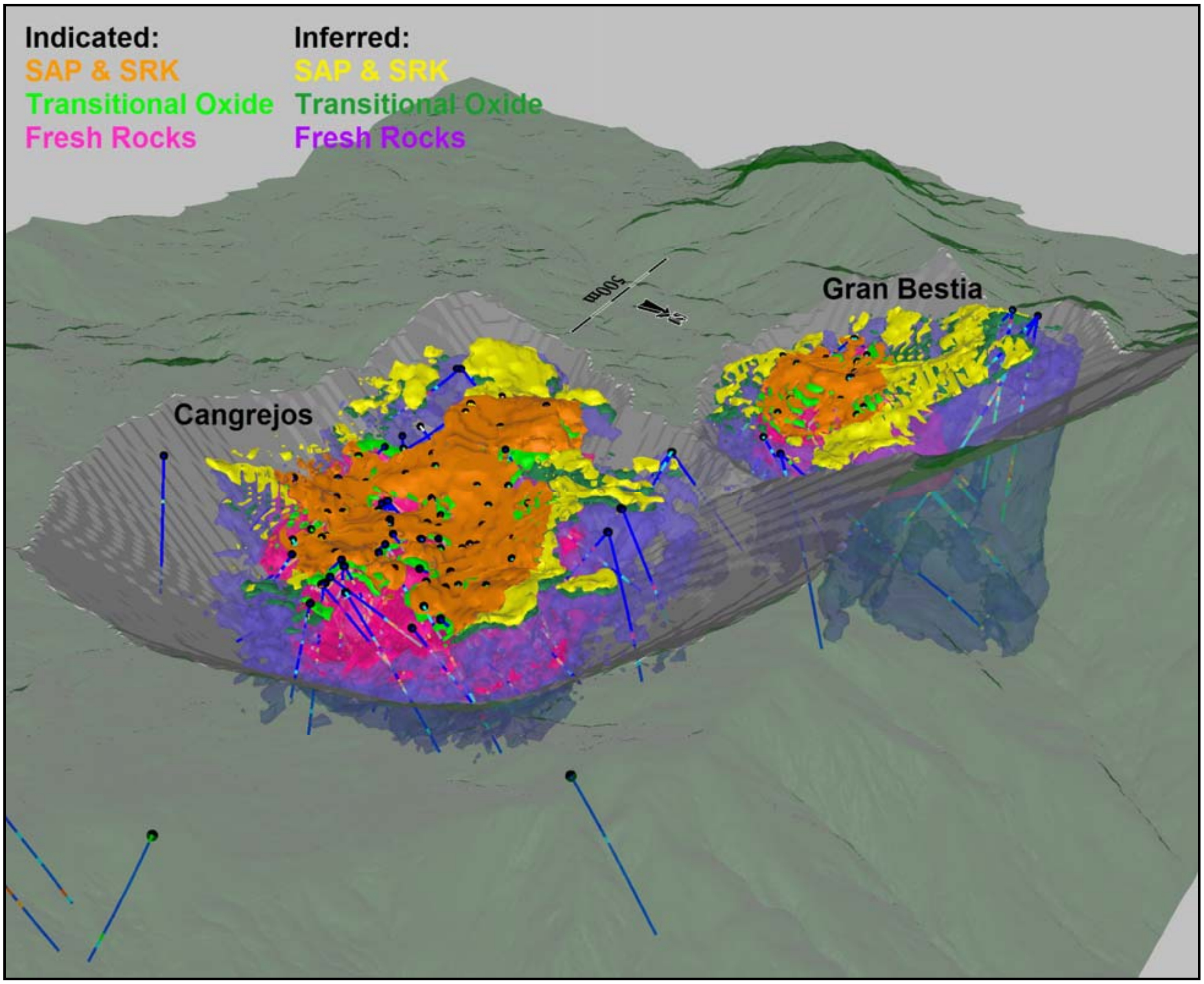
Source: SIM Geological, 2019

Figure 14-27: Isometric Views of Base Case Mineral Resource with Resource Limiting Pit Shell



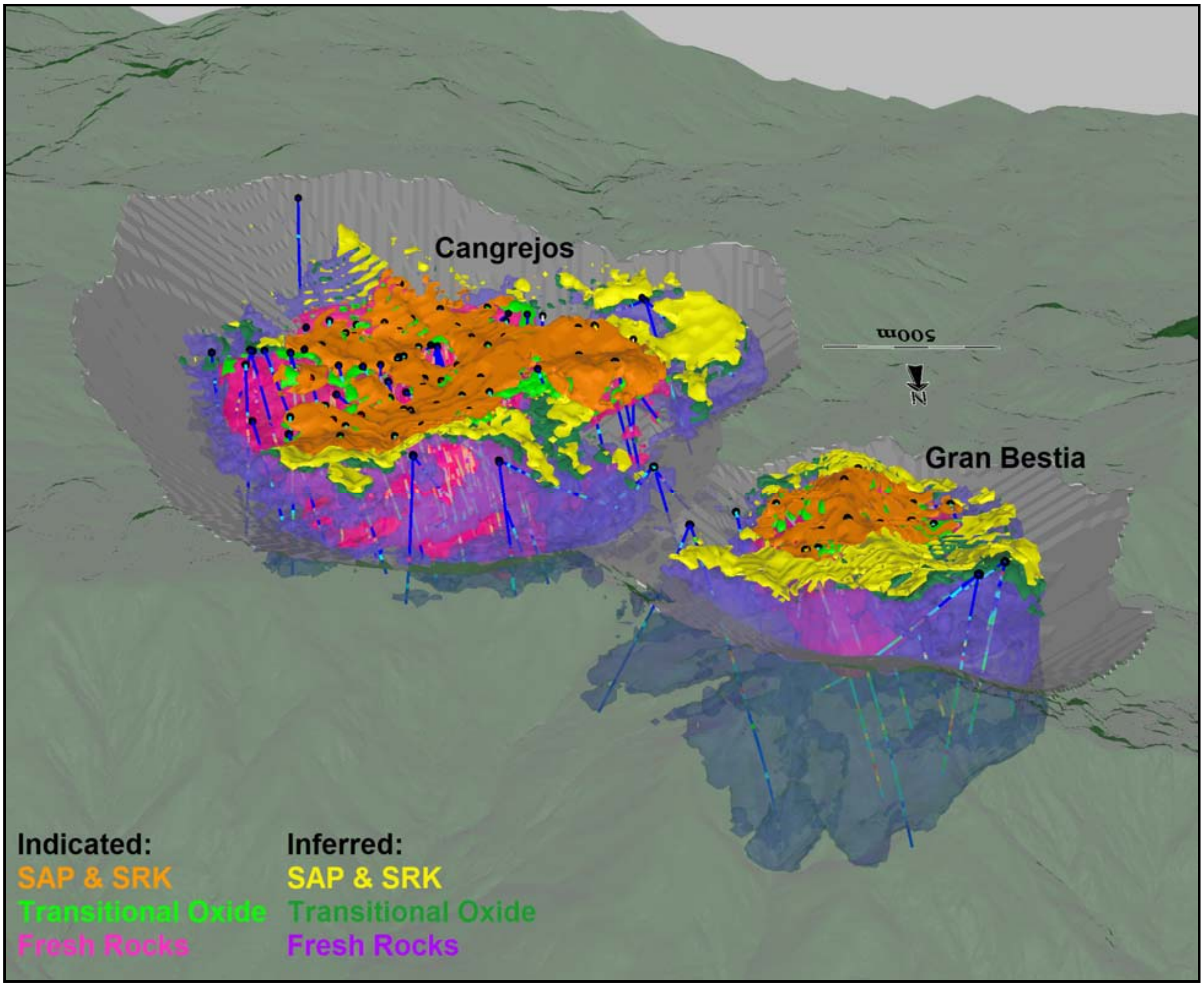
Source: SIM Geological, 2019

Figure 14-28: Isometric Views of Base Case Mineral Resource with Resource Limiting Pit Shell



Source: SIM Geological, 2019

Figure 14-29: Isometric Views of Base Case Mineral Resource with Resource Limiting Pit Shell



Source: SIM Geological, 2019

14.15 Sensitivity of Mineral Resources

The sensitivity of mineral resources, contained within the $1,500/oz Au pit shell, is demonstrated by listing mineral resources at a series of cut-off thresholds. Tables 14.14 and 14.15 show the sensitivity of Indicated and Inferred mineral resources at Cangrejos, respectively. Tables 14.16 and 14.17 show the sensitivity of Indicated and Inferred mineral resources at Gran Bestia, respectively. Tables 14.18 and 14.19 show the sensitivity of total Indicated mineral resources at Cangrejos and Gran Bestia and Inferred mineral resources at Cangrejos and Gran Bestia, respectively.

Table 14.14: Sensitivity of Indicated Mineral Resource to Cut-off Grade at Cangrejos

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	604.3	0.64	0.49	0.10	0.7	20.1	0.23	9.6	1332	13.8	26.8
0.20	535.4	0.70	0.54	0.11	0.7	21.1	0.23	9.3	1287	12.6	24.9
0.25	494.7	0.74	0.57	0.12	0.7	21.9	0.23	9.1	1254	11.6	23.9
0.30	**468.8**	**0.77**	**0.59**	**0.12**	**0.7**	**22.4**	**0.23**	**8.9**	**1220**	**10.9**	**23.2**
0.35	449.8	0.78	0.61	0.12	0.7	22.8	0.23	8.8	1200	10.4	22.6
0.40	428.3	0.81	0.62	0.12	0.7	23.3	0.23	8.6	1171	10.1	22.0
0.45	399.5	0.83	0.65	0.13	0.7	24.0	0.23	8.3	1119	9.5	21.1
0.50	366.7	0.86	0.67	0.13	0.8	24.8	0.23	7.9	1067	8.8	20.1
0.55	331.0	0.90	0.70	0.14	0.8	25.6	0.23	7.4	1000	8.1	18.7
0.60	294.8	0.94	0.73	0.14	0.8	26.4	0.23	6.9	929	7.4	17.2

Note: The estimates in Table 14.14 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.15: Sensitivity of Inferred Mineral Resource to Cut-off Grade at Cangrejos

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	580.1	0.36	0.27	0.06	0.7	11.4	0.34	5.1	742	12.9	14.6
0.20	417.5	0.43	0.33	0.07	0.7	12.6	0.34	4.4	626	9.5	11.6
0.25	313.6	0.50	0.38	0.08	0.7	13.8	0.33	3.9	532	7.1	9.5
0.30	**254.8**	**0.55**	**0.43**	**0.08**	**0.7**	**14.7**	**0.33**	**3.5**	**466**	**5.7**	**8.3**
0.35	217.6	0.59	0.46	0.09	0.7	15.3	0.33	3.2	422	4.8	7.3
0.40	183.5	0.63	0.49	0.09	0.7	16.0	0.33	2.9	380	4.1	6.5
0.45	151.0	0.68	0.53	0.10	0.7	16.6	0.32	2.6	333	3.4	5.5
0.50	123.9	0.72	0.56	0.11	0.7	17.3	0.31	2.2	292	2.8	4.7
0.55	101.9	0.77	0.60	0.11	0.7	17.8	0.31	2.0	254	2.3	4.0
0.60	83.8	0.81	0.63	0.12	0.7	18.3	0.30	1.7	220	2.0	3.4

Note: The estimates in Table 14.15 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.16: Sensitivity of Indicated Mineral Resource to Cut-off Grade at Gran Bestia

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	120.3	0.51	0.40	0.07	0.6	15.6	0.26	1.6	194	2.1	4.1
0.20	112.8	0.54	0.42	0.08	0.6	15.3	0.27	1.5	189	2.0	3.8
0.25	104.0	0.56	0.44	0.08	0.6	15.5	0.26	1.5	181	1.9	3.6
0.30	**99.4**	**0.58**	**0.46**	**0.08**	**0.6**	**15.6**	**0.26**	**1.5**	**178**	**1.8**	**3.4**
0.35	91.6	0.60	0.47	0.08	0.6	15.6	0.27	1.4	168	1.7	3.2
0.40	77.7	0.64	0.51	0.09	0.6	15.7	0.27	1.3	149	1.5	2.7
0.45	63.5	0.68	0.55	0.09	0.6	16.1	0.27	1.1	127	1.3	2.3
0.50	51.0	0.73	0.59	0.10	0.6	16.3	0.27	1.0	108	1.1	1.8
0.55	41.4	0.78	0.64	0.10	0.7	16.6	0.27	0.8	90	0.9	1.5
0.60	33.6	0.83	0.68	0.10	0.7	16.9	0.28	0.7	77	0.7	1.3

Note: The estimates in Table 14.16 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.17: Sensitivity of Inferred Mineral Resource to Cut-off Grade at Gran Bestia

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	309.9	0.41	0.32	0.06	0.6	12.2	0.34	3.2	396	6.4	8.3
0.20	274.0	0.44	0.34	0.06	0.6	12.2	0.35	3.0	368	5.5	7.4
0.25	237.4	0.47	0.37	0.07	0.6	12.1	0.35	2.9	340	4.7	6.3
0.30	**221.2**	**0.49**	**0.39**	**0.07**	**0.6**	**12.0**	**0.35**	**2.7**	**322**	**4.3**	**5.9**
0.35	196.0	0.51	0.40	0.07	0.6	12.0	0.35	2.5	294	3.8	5.2
0.40	156.3	0.54	0.43	0.07	0.6	11.8	0.35	2.2	245	3.1	4.1
0.45	112.3	0.58	0.47	0.07	0.6	11.6	0.35	1.7	183	2.3	2.9
0.50	78.2	0.63	0.52	0.08	0.7	11.4	0.36	1.3	133	1.6	2.0
0.55	54.2	0.68	0.56	0.08	0.7	11.1	0.36	1.0	97	1.2	1.3
0.60	37.5	0.73	0.61	0.08	0.7	11.1	0.36	0.7	69	0.8	0.9

Note: The estimates in Table 14.17 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.18: Sensitivity of Indicated Mineral Resource to Cut-off Grade at Cangrejos and Gran Bestia

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	724.6	0.62	0.48	0.10	0.7	19.3	0.24	11.1	1534	15.8	30.8
0.20	648.2	0.67	0.52	0.10	0.7	20.1	0.24	10.8	1486	14.6	28.7
0.25	598.7	0.71	0.55	0.11	0.7	20.8	0.24	10.6	1439	13.5	27.5
0.30	**568.2**	**0.73**	**0.57**	**0.11**	**0.7**	**21.2**	**0.24**	**10.4**	**1403**	**12.8**	**26.6**
0.35	541.4	0.75	0.58	0.12	0.7	21.6	0.24	10.2	1373	12.2	25.8
0.40	505.9	0.78	0.61	0.12	0.7	22.2	0.24	9.9	1316	11.6	24.8
0.45	462.9	0.81	0.63	0.12	0.7	22.9	0.24	9.4	1245	10.7	23.4
0.50	417.8	0.85	0.66	0.13	0.7	23.7	0.24	8.9	1170	9.9	21.8
0.55	372.4	0.89	0.69	0.13	0.8	24.6	0.24	8.3	1092	9.0	20.2
0.60	328.4	0.93	0.73	0.14	0.8	25.5	0.24	7.7	1006	8.1	18.5

Note: The estimates in Table 14.18 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

Table 14.19: Sensitivity of Inferred Mineral Resource to Cut-off Grade at Cangrejos and Gran Bestia

Cut-Off AuEq (g/t)	Mtonnes	Average Grade						Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	S (%)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
0.15	890.0	0.38	0.29	0.06	0.7	11.7	0.34	8.2	1138	19.2	23.0
0.20	691.4	0.43	0.33	0.07	0.7	12.4	0.34	7.4	991	15.1	18.9
0.25	551.0	0.49	0.38	0.07	0.7	13.0	0.34	6.7	875	11.9	15.8
0.30	**476.0**	**0.52**	**0.41**	**0.08**	**0.7**	**13.4**	**0.34**	**6.3**	**787**	**9.9**	**14.1**
0.35	413.5	0.55	0.43	0.08	0.7	13.7	0.34	5.8	720	8.6	12.5
0.40	339.8	0.59	0.47	0.08	0.7	14.1	0.34	5.1	622	7.1	10.6
0.45	263.4	0.64	0.51	0.09	0.7	14.5	0.34	4.3	517	5.7	8.4
0.50	202.1	0.69	0.55	0.10	0.7	15.0	0.33	3.5	423	4.4	6.7
0.55	156.2	0.74	0.58	0.10	0.7	15.5	0.33	2.9	351	3.5	5.3
0.60	121.2	0.78	0.62	0.11	0.7	16.1	0.32	2.4	289	2.8	4.3

Note: The estimates in Table 14.19 are limited inside the $1,500/oz Au pit shell. The base case cut-off grade used is 0.30 g/t gold equivalent (AuEq). Mineral resources are not mineral reserves because the economic viability has not been demonstrated.

Source: SIM Geological, 2019

14.16 Comparison with the Previous Estimate of Mineral Resources

Table 14.20 compares the current and previous estimates of mineral resources.

Table 14.20: Comparison of Current and Previous Estimate of Mineral Resources

Date	Mtonnes	Average Grade					Contained Metal			
		AuEq (g/t)	Au (g/t)	Cu (%)	Ag (g/t)	Mo (ppm)	Au (Moz)	Cu (Mlbs)	Ag (Moz)	Mo (Mlbs)
Indicated										
June2018	0.0	-	-	-	-	-	-	-	-	-
Nov2019	568.2	0.73	0.57	0.11	0.7	21.2	10.4	1,403	12.8	26.6
Inferred										
June2018	408.0	0.85	0.65	0.11	0.6	25.0	8.5	1,033	7.8	22.5
Nov2019	476.0	0.52	0.41	0.08	0.7	13.4	6.3	787	9.9	14.1

Source: SIM Geological, 2019

There is a significant increase in the total mineral resource estimate compared to the previous estimate presented in June 2018. The changes that have taken place since that time are summarized as follows:

- Drilling at Cangrejos on 100 m spacing has delineated a large portion of the mineral resource resulting in 8.9 Moz of contained gold in the Indicated category. Additional more widely spaced drilling at Cangrejos has outlined an additional 3.5 Moz of contained gold in the Inferred mineral resource category.
- There were no mineral resources reported for the Gran Bestia deposit in June 2018. Drilling at Gran Bestia on 100 m spacing has resulted in an additional 1.5 Moz of contained gold in the Indicated mineral resource category. More widely spaced drilling at Gran Bestia has outlined an additional 2.7 Moz of contained gold in the Inferred mineral resource category.
- The additional drilling completed since the previous mineral resource estimate at Cangrejos has expanded the deposit to the west, south, east and at depth. It is estimated that this new drilling has increased the contained gold in mineral resources at Cangrejos by about 13% compared to the previous mineral resource estimate.

There have been numerous changes to the technical and economic parameters used to generate the mineral resource limiting pit shell. The economic parameters are compared in Table 14.21.

Table 14.21: Comparison of Economic Parameters

Parameter	November 2019	June 2018
Mining (open pit)	\$2.00/t	\$3.00/t
Processing	\$8.00/t	\$11.00/t
G&A	\$1.50/t	\$2.00/t
Gold Price	\$1,500/oz	\$1,400/oz
Silver Price	\$18.00/oz	\$17.00/oz
Copper Price	\$3.00/lb	\$3.25/lb
Molybdenum Price	\$7.00/lb	\$10.00/lb
Gold Process Recovery	83% fresh, 80% part ox., 75% SAP&SRK	82% fresh, 65% ox. Waste
Silver Process Recovery	60% fresh, 60% part ox., 65% SAP&SRK	78% fresh, 50% ox. Waste
Copper Process Recovery	87% fresh, 50% part ox.	82% fresh, 50% ox.
Molybdenum Process Recovery	50% fresh and part ox.	50% fresh and ox.
Pit Slope	47.5 degrees	45 degrees

It is estimated that the increase in gold price from $1,400/oz to $1,500/oz, and a corresponding decrease in the cut-off grade from 0.35 g/t to 0.30 g/t AuEq, have resulted in an increase of about 9% contained gold in the mineral resources at the Cangrejos deposit compared to the previous estimate. Similarly, reductions in the projected operating costs and the increased pit slope angle have increased the contained gold in mineral resources at Cangrejos deposit by about 22% compared to the previous estimate.

14.17 Summary and Conclusions

Based on the current level of exploration, the Cangrejos and Gran Bestia deposits contain a total Indicated mineral resource of 568.2 Mtonnes of mineralized material at a grade of 0.57 g/t Au, 0.11% Cu, 0.7 g/t Ag and 21.2 ppm Mo containing 10.4 Moz Au, 1,403 Mlbs Cu, 12.8 Moz Ag and 26.6 Mlbs Mo. There is an additional total Inferred mineral resource of 476 Mtonnes of mineralized material at a grade of 0.41 g/t Au, 0.08% Cu, 0.7 g/t Ag and 13.4 ppm Mo containing 6.3 Moz Au, 787 Mlbs Cu, 9.9 Moz Ag and 14.1 Mlbs Mo.

The Cangrejos deposit remains open to expansion with further exploration to the west and at depth. The Gran Bestia deposit remains open to the north, west, and at depth.

15 MINERAL RESERVE ESTIMATES

At present, there are no mineral reserve estimates for the Cangrejos Project.

16 MINING METHODS

This section is not applicable.

17 RECOVERY METHODS

This section is not applicable.

18 PROJECT INFRASTRUCTURE

This section is not applicable.

19 MARKET STUDIES AND CONTRACTS

This section is not applicable.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Lumina has the necessary permits to conduct its drill programs. Baseline environmental studies are ongoing, and discussions have been initiated with the local communities and government agencies. Refer to Section 4.3 (Environmental Liabilities and Permitting) of this Report for additional information.

21 CAPITAL AND OPERATING COSTS

This section is not applicable.

22 ECONOMIC ANALYSIS

This section is not applicable.

23 ADJACENT PROPERTIES

Although there are several gold showings and small mines in the area, there are no nearby published mineral reserves. No information from any adjacent properties has been used in the estimate of mineral resources at the Cangrejos Project.

24 OTHER RELEVANT DATA AND INFORMATION

There are no other relevant data or information.

25 INTERPRETATION AND CONCLUSIONS

Based on the evaluation of the data available from the Cangrejos Project, the authors of this Report have drawn the following conclusions:

- At the effective date of this Report (November 7, 2019), Lumina holds 100% interest in the Cangrejos Project.
- The Cangrejos deposit forms a relatively continuous zone of gold-copper-silver-molybdenum, porphyry-style mineralization associated with a sequence of breccias and porphyritic Miocene quartz diorite intrusions. The zone extends for approximately 1,000 m in a northeasterly direction, has widths ranging from 70 m to 600 m, and has been defined to a depth of at least 600 m below surface. The Cangrejos deposit remains open to expansion with further exploration to the west and at depth.
- Drilling to date at the Cangrejos deposit has outlined an Indicated mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 468.8 Mtonnes of mineralized material at 0.59 g/t Au, 0.12% Cu, 0.7 g/t Ag and 22.4 ppm Mo which contains 8.9 million ounces of gold, 1,220 Mlbs of copper, 10.9 million ounces of silver, and 23.2 Mlbs of molybdenum.
- Drilling to date at the Cangrejos deposit has outlined an Inferred mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 254.8 Mtonnes of mineralized material at 0.43 g/t Au, 0.08% Cu, 0.7 g/t Ag and 14.7 ppm Mo which contains 3.5 million ounces of gold, 466 Mlbs of copper , 5.7 million ounces of silver, and 8.3 Mlbs of molybdenum.
- The Gran Bestia deposit is located 700 m northwest of the Cangrejosdeposit. Porphyry-style gold-copper mineralization at the Gran Bestia deposit is hosted in breccias. The mineralized zone has dimensions of 700 m by 600 m and has been defined to depths of 700 m. The Gran Bestia deposit remains open to the north, west, and at depth.
- Drilling to date at the Gran Bestia deposit has outlined an Indicated mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 99.4 Mtonnes of mineralized material at 0.46 g/t Au, 0.08% Cu, 0.6 g/t Ag and 15.6 ppm Mo which contains 1.5 million ounces of gold, 178 Mlbs of copper , 1.8 million ounces of silver, and 3.4 Mlbs of molybdenum.
- Drilling to date at the Gran Bestia deposit has outlined an Inferred mineral resource estimate (at a 0.30 g/t AuEq cut-off) of 221.2 Mtonnes of mineralized material at 0.39 g/t Au, 0.07% Cu, 0.6 g/t Ag and 12.0 ppm Mo which contains 2.7 million ounces of gold, 322 Mlbs of copper , 4.3 million ounces of silver, and 5.9 Mlbs of molybdenum.
- Based on the current level of exploration, the Cangrejos and Gran Bestia deposits contain a total Indicated mineral resource of 568.2M tonnes of mineralized material at a grade of 0.57 g/t Au, 0.11% Cu, 0.7 g/t Ag and 21.2 ppm Mo containing 10.4 Moz Au, 1,403 Mlbs Cu, 12.8 Moz Ag and 26.6 Mlbs Mo. is the deposits contain an additional total Inferred mineral resource of 476M tonnes of mineralized material at a grade of 0.41 g/t Au, 0.08% Cu, 0.7 g/t Ag and 13.4 ppm Mo containing 6.3 Moz Au, 787 Mlbs Cu, 9.9 Moz Ag and 14.1 Mlbs Mo.
- Metallurgical work indicates that the mineralization at Cangrejos can be processed using conventional methods. Doré and separate copper-gold and molybdenum flotation concentrates can be produced. The overall projected recoveries for average fresh rock

are 82%, 60%, 87% and 50% for gold, silver, copper and molybdenum, respectively. The overall projected recoveries for partially oxidized material are 81%, 60%, 54% and 50% for gold, silver, copper and molybdenum, respectively. The overall projected recovery of gold from saprock and saprolite materials is estimated at 70%.

- There are no known factors related to metallurgical, environmental, permitting, legal, title, taxation, socio-economic, marketing or political issues which could materially affect the mineral resource estimates contained in this Report.

26 RECOMMENDATIONS

The following work is recommended for this project:

- Proceed with a preliminary economic assessment of the Cangrejos Project. The budget for this study is estimated at US$ 1.1 million.
- Conduct additional metallurgical testing and geotechnical studies at the Gran Bestia Zone. The budget for this work is estimated at US$ 200,000.

27 REFERENCES

Brepsant, M.R., Sim, R., Davis, B., 2017. NI 43-101 Technical Report, Cangrejos Gold-Copper Project, Ecuador, 77p.

Carter, N.C., 1981. Porphyry Copper and Molybdenum Deposits, West-Central British Columbia. B.C. Ministry of Energy, Mines and Petroleum Resources, Bulletin 64, 150p.

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014).

Cox, D.P., Singer, D.A., Rodriguez, 1987. Mineral Deposit Models, USGS open file report, 87-48, 336p.

DINAGE, 2001. Mapa Geologico de Ecuador, digital version.

Encom Technology, 2007. Greater Cangrejos Project – Ecuador – Data Interpretation. Internal Lumina report and data package, 15p.

Gordon, C., Rowe, T., 2019. Lithological Modelling of Cangrejos & Gran Bestia, Ecuador, Unpublished internal report, 28p.

Instituto Nacional de Investigación Geológico Minero Metalúrgico (INIGEMM) 2017. Hoja Geológica Santa Rosa de El Oro, escala 1: 100,000.

Lumina, 2017. Internal company documents.

Lumina, 2018a. June 28, 2018, Press release, 9 pages.

Lumina, 2018b. Age Dating, internal company document.

Lumina, 2019a. November 7, 2019, Press release, 7 pages.

Lumina, 2019. Internal company documents.

Mayor, J.N. and Soria, F., 2000. Cangrejos Project, El Oro Province, Ecuador, Unpublished internal Newmont company report, 9p.

Metallurgical Investigation No. 16596-99, Odin Mining & Exploration Ltd, Cangrejos Project, Progress Report (with Appendices), by Plenge and dated November 11, 2015.

Metallurgical Study for Cangrejos (Ecuador) Ores – Progress Report 1 – NMS Project No. 11802, by NMS and dated September 30, 1999.

Metallurgical Study for Cangrejos (Ecuador) Ores – Progress Report 2 – NMS Project No. 11802, by NMS and dated November 3, 1999.

Newmont, 2001. Information package on the Cangrejos area, El Joven Joint Venture.

Odin Mining, September 1999. Press release, 2 pages.

Odin Mining, December 1999. Press release, 2 pages.

Odin Mining, January 2012. Press release, 8 pages.

Odin Mining, April 2012. Press release, 7 pages.

Odin Mining, June 2012. Press release, 6 pages.

Odin Mining, March 2015. Press release, 2 pages.

Plenge, G., 2015. Metallurgical Testwork, Cangrejos Project, Ecuador, 53p.

Potter, M., 2004. NI 43-101 Summary Report on the Cangrejos Property. Odin Mining and Exploration Limited, 70p.

Potter, M., 2010. NI 43-101 Summary Report on the Greater Cangrejos Property. Odin Mining and Exploration Limited, 142p.

Pratt, W., Gordon, C., Rowe, T. 2018. Mineralization at Los Cangrejos, Ecuador. Unpublished internal report, 67 p.

Report of Investigation No.18278-81, Lumina Gold, Cangrejos Project, MET 2017- 01, -02, -03, and -04, “Comminution, Gravity, Cyanidation and Flotation” (with Appendices), by Plenge and dated January 17, 2018.

Report of Investigation No. 18412-13, Lumina Gold, Cangrejos Project, “Comminution, Head Assays and XRD” by Plenge and dated May 8, 2018.

Report of Investigation No. 18417, Lumina Gold, Cangrejos Project, “Primary Optimization and Variability; Oxide and Saprock Progress Report”, by Plenge dated October 2019.

Report of Investigation No. 18417-19, Lumina Gold, Cangrejos Project, “Saprolite, Sap-Rock and Oxide Screening Tests, Gravity, Cyanidation and Flotation”, by Plenge dated June 12, 2018.

Rose, W., Breckenridge, L., Sim, R., Davis, B., Michel, R., King, N., Norrish, N., Elfen, S., 2018: Cangrejos Gold-Copper Project, Ecuador. NI 43-101 Technical Report Preliminary Economic Assessment. 274 p.

Rossi, M. and Deutsch, C., 2014 Edition. Mineral Resource Estimation, , New York, NY, Springer.

Rucci, D. 2019. FLSmidth Minerals Testing and Research Center report, “Lumina Gold – Cangrejos, HPGR and Comminution Suite”. Internal Report.

Sim, R. and Davis, B.D., 2017: Cangrejos Gold-Copper Project, Ecuador. NI 43-101 Technical Report. 79 p.

Sim Geological, 2019. Internal figures.

28 DATE AND SIGNATURE PAGES

CERTIFICATE of QUALIFIED PERSON
Bruce M. Davis, FAusIMM, BD Resource Consulting, Inc.

I, Bruce M. Davis, FAusIMM, do hereby certify that:

1. I am an independent consultant of BD Resource Consulting Inc., and have an address at 4253 Cheyenne Drive, Larkspur, Colorado USA 80118.
2. I graduated from the University of Wyoming with a Doctor of Philosophy (Geostatistics) in 1978.
3. I am a Fellow of the Australasian Institute of Mining and Metallurgy, Number 211185.
4. I have practiced my profession continuously for 40 years and have been involved in mineral resource and mineral reserve estimations and feasibility studies on numerous underground and open pit base metal and gold deposits in Canada, the United States, Central and South America, Europe, Asia, Africa and Australia.
5. 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 certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of Section 11 and portions of Sections 1, 12 and 25 of the technical report titled *Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report*, dated December 12, 2019, with an effective date of November 7, 2019 (the "Technical Report").
7. I have not visited the Cangrejos Project.
8. I am independent of Lumina Gold Corp. applying all of the tests in Section 1.5 of NI 43-101.
9. I have had prior involvement with the property that is the subject of the Technical Report. I was a co-author of previous Technical Reports titled "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report" dated March 6, 2017 with an effective date of January 25, 2017, "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report" dated December 15, 2017 with an effective date of November 6, 2017 and "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report Preliminary Economic Assessment" dated August 10, 2018 with an effective date of June 27, 2018.
10. I have read NI 43-101, Form 43-101F1 Technical Report ("Form 43-101F1) and the Technical Report and confirm the portions of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.
11. 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 the Technical Report not misleading.

Dated this 12th day of December, 2019.

"original signed and sealed"

Bruce M. Davis, FAusIMM

CERTIFICATE of QUALIFIED PERSON
Robert Sim, P.Geo, SIM Geological Inc.

I, Robert Sim, P.Geo, do hereby certify that:

1. I am an independent consultant of: SIM Geological Inc. and have an address at 508–1950 Robson Street, Vancouver, British Columbia, Canada V6E 1E8.
2. I graduated from Lakehead University with an Honours Bachelor of Science (Geology) in 1984.
3. I am a member, in good standing, of Engineers and Geoscientists British Columbia, Licence Number 24076.
4. I have practiced my profession continuously for 35 years and have been involved in mineral exploration, mine site geology and operations, mineral resource and reserve estimations and feasibility studies on numerous underground and open pit base metal and gold deposits in Canada, the United States, Central and South America, Europe, Asia, Africa and Australia.
5. 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 certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of all the information provided in the technical report titled "*Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report"* dated December 12, 2019, with an effective date of November 7, 2019 (the "Technical Report"), except for Sections 11 and 13.
7. I visited the Cangrejos Project from November 28 to 29, 2017.
8. I am independent of Lumina Gold Corp. applying all of the tests in Section 1.5 of NI 43-101.
9. I have had prior involvement with the property that is the subject of the Technical Report. I was a co-author of previous Technical Reports titled "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report" dated March 6, 2017 with an effective date of January 25, 2017, "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report" dated December 15, 2017 with an effective date of November 6, 2017 and "Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report Preliminary Economic Assessment" dated August 10, 2018 with an effective date of June 27, 2018.
10. I have read NI 43-101, Form 43-101F1 Technical Report ("Form 43-101F1") and the Technical Report and confirm the portions of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101 and Form 43-101F1.
11. 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 the Technical Report not misleading.

Dated this 12th day of December, 2019.

"original signed and sealed"

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Robert Sim, P.Geo.

CERTIFICATE of QUALIFIED PERSON
Nelson D. King, SME Registered Member

I, Nelson D. King, SME Registed Member, do hereby certify that:

1. I am a Principal Consultant (Metallurgical Engineer) with N D King Consulting LLC and have an address at 8317 Devinney Street, Arvada, Colorado, U.S.A.
2. I graduated from Colorado School of Mines with a B.Sc. degree in Metallurgical Engineering in 1972.
3. I am a member, in good standing, of the Society for Mining, Metallurgy and Exploration, Inc (SME) and am an SME Registered Member, No. 4152661RM.
4. I have 44 years of relevant experience including work in copper, gold, silver, lead, zinc and molybdenum operations in the U.S.A., engineering and construction company experience in the U.S.A. and Canada and metallurgical consulting experience on global mining projects from offices located in the U.S.A. and Australia.
5. 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 certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. I am responsible for the preparation of Sections 13 and portions of Sections 1 and 25 of the technical report titled *Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report*, dated December 12, 2019, with an effective date of November 7, 2019 (the “Technical Report”).
7. I visited the Cangrejos Project from January 16 to 17, 2018.
8. I am independent of Lumina Gold Corp. applying all of the tests in Section 1.5 of NI 43-101.
9. I have had prior involvement with the property that is the subject of the Technical Report. I was a co-author of a previous Technical Report titled “Cangrejos Gold-Copper Project, Ecuador NI 43-101 Technical Report Preliminary Economic Assessment” dated August 10, 2018 with and effective date of June 27, 2018.
10. I have read NI 43-101, Form 43-101F1 Technical Report (“Form 43-101F1”), and the Technical Report and confirm the portions of the Technical Report for which I am responsible have been prepared in compliance with that instrument and form.
11. 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 the Technical Report not misleading.

Dated this 12th day of December, 2019.

“original signed and sealed”

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Nelson D. King, SME Registed Member