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CAPSTONE MINING CORP.

MANTOS BLANCOS MINE

NI 43-101 TECHNICAL REPORT

ANTOFAGASTA / REGIÓN DE ANTOFAGASTA, CHILE

Effective Date: 29 November 2021

The following QPs authored this report:

Carlos Guzmán, RM CMC, FAusIMM, Principal, Project Director, NCL

Gustavo Tapia, RM CMC, Metallurgical and Process Consultant, GT Metallurgy

Ronald Turner, MAusIMM CP(Geo), Golder Associates

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1 Summary

1.1 Property Description and Ownership

The Mantos Blancos mine is located in the north of Chile, in the Antofagasta Province, in the Antofagasta Region. The mine is 45 km northeast of the city of Antofagasta at around 900 masl. The Panamericana highway (Route 5) passes near the Mantos Blancos site which covers an area of approximately 273 km^2.

As result of the depletion of the oxide ore reserves, from January 2020 ore processing in the Mantos Blancos oxide plant decreased and only low-grade ore is processed by ROM dump leaching. In order to maintain copper production, Mantos Blancos is expanding the sulphide ore treatment capacity from 4.2 Mt per year to 7.3 Mt per year.

The two metallurgical processes in operation at Mantos Blancos are:

- Flotation plant (concentrator), for sulphide ore with insoluble copper grade (ICu) greater than 0.22%
- Dump leach process for oxides with soluble copper grade (SCu) greater than 0.10%.

The open pit operation includes one large open pit (Santa Barbara) that provides most of the sulphide material for the concentrator and oxide material for dump leaching. Other sources of material are:

- Flotation: Sulphide stockpile (Cancha 90)
- Dump leach: Oxide stockpile (Mercedes Stockpile).

The Mantos Blancos property is owned 99.993% by Mantos Copper Holding SpA, a Chilean company. Audley Mining Advisors Ltd. and Orion Mine Finance LLP indirectly own Mantos Copper Holding SpA.

The Mantos Blancos property includes 116 mining properties covering an area of 18,818 ha and 82 exploration rights claims totaling 38,800 ha.

1.2 Summary of Geology and Mineralization

Mantos Blancos is a copper-silver deposit located in the Coastal Range of northern Chile, approximately 45 km NE of the coastal city of Antofagasta. The Coastal Range is an important geomorphological feature in Chile because it hosts Cu-Ag-Au stratabound deposits along an early Cretaceous metallogenic belt.

The deposit is mainly characterized by pyroclastic and intrusive host rock units. The pyroclastic rock units are mainly andesite, dacite and rhyolite. The pyroclastic and intrusive units are from the Permo Triassic and Early Jurassic ages. Andesite belonging to the La Negra Formation (Middle-Late Jurassic); and tonalite, granodiorite, aplite and dacite porphyry belonging to El Ancla and Alibaud plutons of Middle to Late Jurassic ages also outcrop along the deposit.

The geometry of the mineralized bodies is irregular lenses and oxidized copper sulphides arranged in tabular form with a 100 m to 200 m thick interval that is strongly controlled by structures. The oxidized copper would have been developed by the in-situ oxidation of primary sulphides, and corresponds to atacamite, chrysocolla and minor malachite, antlerite, tenorite, cuprite and almagres, occurring as dissemination and fracture filling.

The hypogene mineralization includes irregular chalcocite (and/or digenite) rich centre lenses, which decrease towards the edge to predominant bornite, chalcopyrite, pyrite, specularite, magnetite, galena and low sphalerite, occurring in disseminated form, with varying thicknesses. Silver occurs in the crystal structure of the copper sulphides and occasionally as native silver.

1.3 Status of Exploration, Development and Operations

Mantos Blancos has implemented an exploration program that includes the execution of infill drilling campaigns and exploration programs in areas of geological interest located in the surroundings of the current operation and within its mining properties.

1.4 Mineral Processing and Metallurgical Testing

As result of the depletion of the oxide ore reserves, from January 2020 ore processing in the Mantos Blancos oxide plant substantially decreased and only ROM dump leaching of low-grade ore is processed. In order to maintain copper production, Mantos Blancos is expanding the sulphide ore treatment capacity from 4.2 Mt per year to 7.3 Mt per year. The current installations have two lines of crushing and grinding. Line 1 is treating 4.2 Mt per year of sulphide ore via conventional three stage crushing and ball milling followed by a conventional flotation circuit producing copper concentrate. Line 2 also has a conventional three stage crushing circuit for oxide ore ahead of leaching to produce copper cathodes.

Mantos Blancos has completed extensive drilling and sampling campaigns over recent years to characterize the future mineral to be mined. Over 490 samples have been prepared to test the main metallurgical variables including head grade, mineralogy (copper mineral components), Bond work index and response to flotation.

The geometallurgical model has been developed since 2013, the last version dated 2017 includes data from samples tested during 2019. In 2019 the model was externally audited and validated.

The main purpose of the model is to provide data that can be used in the design of the expanded sulphide plant and to predict the operating results to be expected for the life of mine. Mantos Blancos developed a good understanding of how well the models reflect actual operating results (i.e. the accuracy of the models and the value as a forecasting tool).

The Debottlenecking Project will require an expansion in sulphide ore treatment from 4.2 Mt per year (current) to 7.3 Mt per year, with a life of mine (LOM) to 2037. This will be achieved by modifying some equipment and processes and installing new crushers, one new ball mill, four new rougher flotation cells and a new thickener. At the same time, oxide ore treatment will be reduced and eventually end around 2023/2024. The Debottlenecking Project is a brownfield project.

The tonnage will be ramped up during 2021 to 2022 to 7.3 Mt per year and will be maintained at this level until 2037, with an average head grade of 0.69% TCu, an average expected recovery of 82.3% and a copper concentrate grade of 29% Cu long term.

1.5 Mineral Resource Estimate

Mantos Blancos estimated the Mineral Resource using drill data available at 31 December 2020. The Mineral Resource Estimate was based on a three-dimensional geological model in which lithology and structures were interpreted. 15,608 drill holes totalling 2,175,889 m drilled, in combination with surface geological mapping, were used to generate the geological model.

For the construction of the model, High Yield Restriction (HYR) outliers were controlled for high grades and all those within the mineralized zones were composited into 6 m lengths. Total copper

(TCu), insoluble copper (ICu) and silver grades were estimated in a three-dimensional block model using the Ordinary Kriging interpolation method in three nested passes. Additionally, variograms were constructed and used to support the search for ellipsoid anisotropy and linear trends observed in the data.

Mineral Resources have been classified using the indicator method (metal and tonnage). This method allows, for quarterly and annual production volumes, modelling of the acceptable error within a confidence interval.

The Mineral Resource Estimate is reported inclusive of Mineral Resources that have been converted to Mineral Reserves, and uses the definitions set out in the 2014 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (the 2014 CIM Definition Standards) (see Table 1-1 and Table 1-2).

The QP is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political or other relevant factors that could materially affect the Mineral Resource Estimate that are not discussed in this Technical Report.

Table 1-1: Mantos Blancos Sulphide Mineral Resources as of 31 December 2020

Process	Category	Tonnage (Mt) (4)	Grade (% TCu) (2)	Grade (g/t Ag) (2)	Contained Cu (kt) (6)	Contained Ag (koz) (5)
Mantos Blancos Sulphide (Flotation) (1) (3)	Measured	104.4	0.75	6.03	783	20,234
	Indicated	106.5	0.58	4.41	618	15,099
	Total Measured & Indicated	210.9	0.66	5.21	1,400	35,334
	Inferred	20.0	0.48	3.35	96	2,151

Table 1-2: Mantos Blancos Oxide Mineral Resources – Dump Leach as of 31 December 2020

Process	Category	Tonnage (Mt) (4)	Grade (% SCu) (2)	Contained Cu (kt) (5)
Mantos Blancos Oxide (Dump Leach) (1) (3)	Measured	22.8	0.34	78
	Indicated	28.5	0.26	74
	Indicated (Mercedes Stockpile)	6.3	0.18	11
	Indicated (NE Dump Stockpile)	3.9	0.19	7
	Total Measured & Indicated	61.6	0.28	171
	Inferred	8.6	0.25	21
	Inferred Mercedes Stockpile	2.3	0.19	4
	Inferred F2 Este Dump	3.1	0.19	6
	Inferred NE Dump	4.4	0.17	7

Notes to accompany Mineral Resources table:

1. Mineral Resources are reported on a 100% basis and inclusive of Mineral Reserves. The attributable percentage to Mantos Copper Holding SpA is 99.993%
2. Cut-off grade:
   - Dump Leach: 0.10% SCu
   - Flotation: 0.22% ICu
3. Mineral Resource pit is based on a Cu price of US$3.77/lb and a Ag price of US$17.00/oz
4. Tonnes are reported on a dry basis
5. Contained Metal (CM) is calculated by the following formulas:
   a. CM=Tonnage (Mt) * TCu (%) *1,000 for sulphides
   b. CM=Tonnage (Mt) * SCu (%) * 1,000 for oxides
   c. CM=Tonnage (Mt) * Ag (g/t)*1000/31.1035 for sulphides.
6. Flotation recovery is based on a geometallurgical model, 83%, TCu and 76.5% Ag as average. Dump recovery is based on operation data 40% SCu
7. Through the Osisko silver production agreement, Osisko Gold has the right to buy 100% of the silver production in concentrate (less specified deductions) until reaching 19,300,000 ounces and subsequently 40% paying 92% of the market price
8. Tonnage and contained metal have been rounded to reflect the accuracy of the estimate and numbers may not add exactly
9. ICu = insoluble copper
   SCu = soluble copper
   TCu = total copper

1.6 Mineral Reserve Estimate

The conversion of Mineral Resources into Mineral Reserves includes the following input data and activities:

- Mineral Resources statement as of 31 December
- Optimized Mine Design: Mineral Resources as of 31 December 2020, geometallurgical characterization and corresponding recoveries, updated operating and off-site costs, metal prices and geotechnical recommendations are incorporated to generate optimized Lerchs-Grossmann (LG) pit shells implemented in Whittle
- Optimal Pit Selection: The optimal shell used as the guide for mine design is selected based on undiscounted and discounted cash flows
- Cut-off grades calculation: Operating costs, geometallurgical characterization and corresponding recoveries are used to calculate cut-off grades for sulphides to the mill and for dump leaching
- Mine Phasing Sequence: The information provided by the LG algorithm is used to sequence mine extraction phases
- Operational Mine Design: Detail mine design including accesses, ramps, benches configuration and phase connectivity, allowing extraction from the mine
- Mine Production Schedule: The mine production schedule is a combination of detailed mine planning for the first 5 years (monthly and quarterly) and long-term mine planning on a yearly basis for the remaining life of mine. The starting point for the schedule is October 2020 surveyed topography and projected year end 2020, as per the short-term mine plan

Updated Mineral Reserves: It is NCL’s opinion that the mine production schedule defines the Mineral Reserve for the mining operation.

A full review of input data, methodology and results supporting the work done by Mantos Copper was completed by NCL and Carlos Guzmán, the Qualified Person for the Mineral Reserves Estimate. Criteria, methodologies and algorithms used in preparing the Mantos Blancos Mineral Reserves follow industry accepted practices, conform with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM 2014 Definition Standards.

The Mantos Blancos Mineral Reserves are subject to the types of risks common to other open pit copper mining operations in Chile. The risks are reasonably well understood at the feasibility level of study for the concentrator expansion and should be manageable based on the operational experience and record of performance from over 60 years of mine operations. NCL is not aware of any mining, metallurgical, infrastructure, permitting or other relevant factors that could materially affect the Mineral Reserve Estimate.

Mineral Reserves are reported with an effective date of 31 December 2020 and are summarized in Table 1-3. Proven and Probable Mineral Reserves in the table were converted from Measured and Indicated Mineral Resources, respectively.

Table 1-3: Mantos Blancos Mineral Reserves as of 31 December 2020

Process	Category	Tonnage (Mt)	Grade (%TCu)	Grade (%SCu)	Grade (g/t Ag)	Contained Cu (kt)	Contained Ag (koz)
Mantos Blancos - Sulphides (Flotation) (%TCu)	Proven	72.6	0.78	-	6.41	567	14,968
	Probable	50.0	0.57	-	4.57	288	7,339
	Total Mineral Reserves	**122.6**	**0.69**	**-**	**5.66**	**854**	**22,307**
Mantos Blancos - Oxide (Dump Leach) (%SCu)	Proven	2.8	-	0.36	-	10	-
	Probable	1.8	-	0.28	-	5	-
	Total Mineral Reserves	**4.6**	**-**	**0.33**	**-**	**15**	**-**
Mantos Blancos - Mercedes Stockpile (Dump Leach) (%SCu)	Proven	-	-	-	-	-	-
	Probable	6.7	-	0.18	-	12	-
	Total Mineral Reserves	**6.7**	**-**	**0.18**	**-**	**12**	**-**

Notes to accompany Mineral Reserves table:

1. Mineral Reserves are reported effective 31 December 2020
2. The Qualified Person for the estimate is Mr. Carlos Guzmán (RM CMC, FAusIMM)
3. Mineral Reserves are reported on a 100% basis using average off-site costs (selling cost) of US$0.27/lb for sulphides and US$0.42/lb for oxides
4. Mineral Reserves are contained within an optimized pit shell. Mining will use conventional open pit methods and equipment and a stockpiling strategy (direct mining costs are estimated at the base bench at 900 masl, averaging US$1.60/t of material mined)
5. Processing costs average US$9.98/t of milled material, including concentrator, tailings storage facility and port costs.
6. Processing cost for material sent to dump leach is US$1.47/t
7. Total copper recoveries average 83.1% for sulphides and silver recoveries average 77.2%
8. Soluble copper recoveries average 47.9% for material sent to the dump leach
9. Inter-ramp angles vary from 36 to 59º. The life-of-mine strip ratio is 4 to 1
10. Tonnage and contained copper are reported in metric units and grades are reported as percentages. Contained silver is reported in kilograms and grades are reported in grams per tonne
11. Grade %TCu refers to total copper grade in percentage sent to the mill. Grade %SCu refers to soluble copper grade in percentage sent to the dump leach
12. Through the Osisko silver production agreement, Osisko Gold has the right to buy 100% of the silver production in concentrate (less specified deductions) until reaching 19,300,000 ounces and subsequently 40% paying 92% of the market price.
13. Rounding as required by reporting guidelines may result in apparent summation differences in tonnes, grade and contained metal.

1.7 Mining Methods

The two metallurgical processes in operation at Mantos Blancos are:

- Flotation plant (concentrator), for sulphide with insoluble copper grade (ICu) greater than 0.22%
- Dump leach process for oxides with soluble copper grade (SCu) greater than 0.10%.

The open pit operation includes one large open pit (Santa Barbara) which provides most of the sulphides for the concentrator and the oxides for the dump leach.

Other sources of material are:

- Flotation: Sulphide stockpile (Cancha 90)
- Dump leach process: Oxide stockpile (Mercedes Stockpile).

The Lerchs Grossman algorithm implemented in Whittle was used to obtain the final pit limits using a copper price of US$2.90/lb and updated costs. Only Measured and Indicated Mineral Resources were considered in determining the final pit outline.

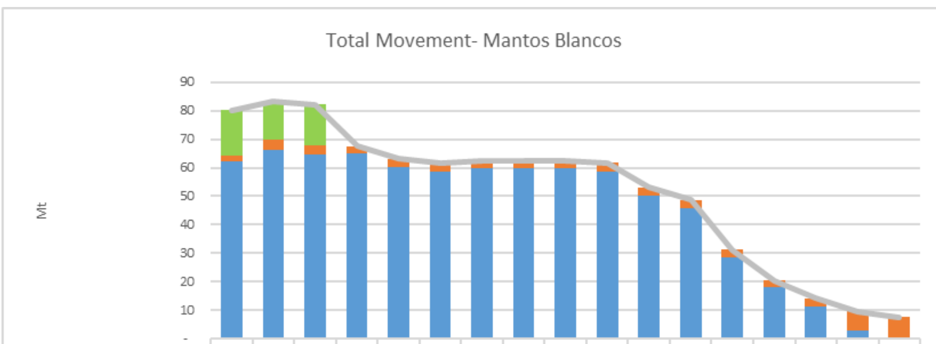
Variable slope angles were used for detailed mine design, with inter-ramp slope values varying between 50° and 59°. A slope angle of 36° (natural slope angle for broken material) is used in areas with historic underground stopes and also for waste dumps.

The mine design includes mine design parameters (such as roads, ramps, benches) and mine development based on eight phases (pushbacks). In general, three or four phases are in operation, with a maximum of nine benches per phase per year (reflecting production in previous years). The total material moved per year for the life of mine will be approximately 60 Mt.

The mine production schedule is based upon a 2021 to 2037 production plan, with associated dumps and stockpiles. From this mine schedule the fleet requirements (trucks, loaders and other equipment) have been estimated for the life of mine.

Figure 1-1 shows the mine production schedule and Table 1-4 shows the feed to the plants and the estimated copper production profile for the life of mine (2021 to 2037). NCL is not aware of any mining, metallurgical, infrastructure, permitting or other relevant factors that could materially affect the budgeted production estimates.

Figure 1-1: Mantos Blancos Total Material Movement 2021 to 2037



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Dump Rehandling	16	14	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stock Rehandling	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	7	8
Mining	62	66	64	65	60	59	60	60	60	59	50	46	28	18	11	3	-
Total Movement	80	83	82	67	63	62	62	62	63	62	53	49	31	21	14	10	8

Note: Figure courtesy Mantos Copper, 2020

Table 1-4: Budgeted Production LOM (2020)

Copper production	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Total LOM
Concentrator																				
Ore to mill	kt	4,503	7,158	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	1,373	122,614
TCu Mill Grade	%	0.82	0.88	0.91	0.92	0.92	0.92	0.83	0.79	0.78	0.74	0.58	0.58	0.54	0.5	0.52	0.43	0.25	0.25	0.69
SCu Mill Grade	%	0.08	0.15	0.12	0.1	0.11	0.11	0.11	0.08	0.08	0.1	0.1	0.1	0.09	0.06	0.06	0.06	0.06	0.06	0.09
Ag Mill Grade	g/t	5.8	8.38	7.31	7.41	9.36	9.34	5.36	4.07	5.58	6.5	4.57	4.54	4.61	3.81	3.74	3.64	2.8	2.8	5.66
Cu Metallurgical Recovery	%	82.01	79.05	78.23	78.58	82.34	82.71	87.66	85.09	82.7	82.09	84.9	87.13	87.85	86.48	84.74	83.89	84.19	84.27	83.1
Cu Concentrate Grade	%	36.17	34.84	32.12	36.04	37.32	36.76	35.87	35.02	35.33	33.39	30.7	30.44	29.27	30.6	32.52	32.31	33.09	33.29	33.57
Fine Copper Production	**kt**	**30.5**	**49.6**	**52.1**	**52.9**	**55.3**	**55.3**	**53.2**	**49.1**	**47.0**	**44.2**	**35.9**	**37.0**	**34.9**	**31.8**	**31.9**	**26.4**	**15.4**	**2,9**	**705.3**
Ag Metallurgical Recovery	%	79.4	80.5	74.79	75.13	75.81	78.71	77.2	76.66	77.23	77.67	76.91	76.9	76.92	76.61	76.58	78.54	78.21	78.21	77.24
Silver Production	kg	21,440	49,892	41,270	42,111	53,509	55,459	31,205	23,632	32,523	38,065	26,531	26,423	26,729	22,042	21,617	21,631	16,532	3,109	553,722
Mercedes Dump																				
Ore to Leach	kt	6,748																		6,748
SCu Leach Grade	%	0.18																		0.18
Cu Metallurgical Recovery	%	56																		56
Cu Cathode Production	**kt**	**6.8**																		**6.8**
Entrefases Dump																				
Ore to Leach	kt	1,661	2,560	367																4,588
SCu Leach Grade	%	0.34	0.32	0.38																0.33
Cu Metallurgical Recovery	%	41	42	42																41.24
Cu Cathode Production	**kt**	**2.3**	**3.3**	**0.6**																**6.2**
Total Copper Production	**kt**	**39.6**	**52.9**	**52.7**	**52.9**	**55.3**	**55.3**	**53.2**	**49.1**	**47.0**	**44.2**	**35.9**	**37.0**	**34.9**	**31.8**	**31.9**	**26.4**	**15.4**	**2.9**	**718.3**

1.8 Recovery Methods

The current sulphide operation treats 4.2 Mt per year of sulphide ore through one line (Line 1) of primary, secondary and tertiary crushing and screening, followed by conventional ball milling and flotation (rougher flotation, concentrate regrinding, cleaner and scavenger flotation) to produce a +/- 30% Cu in concentrate, containing silver as a by-product. This concentrate is clean (no penalty elements) and is thus very acceptable to smelters. The second line (Line 2) is crushing only to reduce the size of oxide material in preparation for leaching and copper recovery by solvent extraction and electro-winning (SX–EW).

The Debottlenecking Project will use Lines 1 and 2 to treat 7.3 Mt per year of sulphide feed. Line 1 will treat 1.8 Mt per year, crushing to 4,000 µm ahead of grinding in the existing N° 3 Ball Mill to a product size P80 of 250 µm. Line 2, with some modifications, will crush 5.5 Mt per year of ore to 11,000 µm ahead of the new N° 8 Ball Mill, that will also grind the material to a P80 of 250 µm.

Four new 300 m^3 rougher flotation cells will be installed to treat the milled product from Lines 1 and 2. The rougher concentrate will be reground in the existing Nº 7 Ball Mill and No 6 Regrind Mill ahead of two cleaner columns (1 new, 1 existing), followed by scavenger flotation in existing flotation cells.

The final flotation concentrate, containing on average of 30.9%Cu (expected range 29% to 33%) will be thickened using the existing three concentrate thickeners that have sufficient capacity for the increased tonnage. The current 48 m^2 concentrate filter capacity will be increased by the addition of one new 31.5 m^2 filter.

Flotation tailings will be cycloned to produce coarse and fine components. The coarse fraction will be dewatered prior to dry stacking, the fine fraction will pass to a thickening stage and will be thickened in the existing three tailings thickeners (only two are currently being used). This available excess capacity and recent testwork provide confidence that the plant does not require any additional thickeners.

It is estimated that the addition of the new ball mill (with a 13,000 kW motor) and the four new flotation cells will allow Mantos Blancos to achieve the design plant throughput of 7.3 Mt per year. The installation of additional new equipment, such as tertiary crushers, a concentrate filter, high rate tailing thickener and tailing screens, pumps and pipeline will also improve plant performance.

1.9 Project Infrastructure

The project is currently in operation and there is existing infrastructure. Road access to the mine from Antofagasta, Antofagasta airport, Calama and the Ruta 5 highway (Panamericana) is by paved roads that are in excellent condition.

Electrical energy is obtained from the National Electric System (Sistema Eléctrico Nacional) through a contract with Guacolda Energía S.A. Fresh water is provided by two companies (FCAB and ADASA) through pipelines that deliver the water to the Mantos Blancos Mine. The mine and plant have adequate, modern offices, workshops and canteen facilities. There is no requirement for on-site accommodation, all staff live off site, mainly in Antofagasta. The mine has modern, state-of-the-art communications systems. Contracts are in place for energy, water and all other mine and process consumables.

Tailings deposition is considered to be infrastructure. The fine tailings, thickened to 60% solids (by weight) are currently pumped to the N° 8 Pit tailings dam. This system will be expanded for the increased throughput (by raising the wall height). The coarse tailings, dewatered by filtration/screening to 20% moisture content, are and will continue to be trucked to the existing and expanded dry stacking facility. Both tailings deposition systems are within property owned by Mantos

Copper. The fine tailings dam design has been developed most recently by Hatch for the period 2019 to 2029. More studies are required for the period 2029 to 2037, to evaluate dam capacity and any potential additional costs. Mantos Blancos has conducted conceptual level studies indicating that the tailings facility can support the LOM to 2037.

1.10 Environmental Studies and Permitting

The Base Case is the Mantos Blancos Debottlenecking Concentrator Project. This Project was submitted to the Environmental Impact Assessment System (SEIA) through an Environmental Impact Statement (DIA) and was approved by Exempt Resolution No. 419 dated 2 November 2017 by the Antofagasta Region Evaluation Commission (RCA No. 419/2017) (RCA comes from Resolución de Calificación Ambiental, resolution of environmental qualification). The approved Project will increase the sulphide processing capacity of the Mantos Blancos operation from 4.2 Mt per year to 7.3 Mt per year and includes:

- Concentrator
- Tailings management and transportation system
- Tailings deposit
- Waste dumps.

RCA 49/2021 recently approved the environmental impact statement (DIA) for the Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit Project. The objectives of this Project are to permanently maintain the alternative of removal and transport of coarse tailings in trucks and to modify the wall construction method for the fine tailings deposit (from a conventional waste rock construction to a reinforced earth construction).

1.10.1 Environmental Considerations

Baseline studies were carried out before the submission of the 2017 Mantos Blancos Debottlenecking Concentrator Project and the 2020 Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit Project. Mantos Blancos has incorporated mitigation measures including dust suppression and collection and dust control on roads.

Low-grade oxide material and secondary leach pad facilities will continue to be used for dump leaching.

There are five dumps at Mantos Blancos for the collection of waste rock material: Mercedes Dump, East Dump, North Argentina, Argentina South (West) and Naranja (Phase 8), these will support the waste disposal from all the phases of the Santa Barbara pit. For the Debottlenecking Project the capacity of the East Dump will be increased, creating a new Argentina Dump (which will overlap with areas currently occupied by the Argentina South (West) and Naranja Dumps) in addition to an adjustment in the design of the Mercedes Dump.

Coarse tailings will be deposited in the coarse tailings deposit, which will reach a total capacity of approximately 68.6 Mt (41.5 Mm^3) at the end of the operation, considering five filling stages, reaching an elevation 942 masl; the maximum deposition rate is 5.5 Mt per year of thickened tailings.

1.10.2 Water Management

Industrial water is provided by authorized external companies (ADASA, FCAB and others) and there is a distribution network on the site. Water is transported in tanker trucks to work areas that are not connected to the distribution system. Some of the process water will be water reclaimed from the fine tailings deposit, this water will be pumped to the reclaimed water distribution tank for re-use. The increase in production and the water removal processes from the tailings will result in an increase in recovered water. The water recovered by sedimentation from the fine tailings thickeners will be recirculated as process water. Additional industrial water may come from the sewage treatment plant after treatment.

1.10.3 Permitting

The Base Case Mantos Blancos Debottlenecking Concentrator Project was approved by RCA 419/2017 to increase production from 4.2 Mt per year to 7.3 Mt per year of sulphide material.

Mantos Blancos has developed a Master Plan for Sectoral Permits to ensure that the supporting documentation is provided when required to the regulatory authorities so that the permits are obtained and maintained in force. It is estimated that at least 41 separate permits will be required for the Debottlenecking Project. Mantos Blancos has reasonable prospects of obtaining the environmental and sectoral permits in time. Sectoral permits have been granted covering potable water, sewage and sanitation, landfill, and closure planning.

1.10.4 Closure Plan

The Mine Closure Plan was approved by SERNAGEOMIN on 24 June 2019 by Exempt Resolution N° 1670/2019. This Closure Plan follows the provisions of the RCAs issued for the Mantos Blancos operation and describes the measures that must be undertaken for closure and reclamation. However, it does not include the RCAs for the Concentrator Debottlenecking (RCA 419/2017) and the Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit (RCA 49/2021). The Closure Plan (2019) will need to be updated to incorporate the changes approved by RCA 419/2017 and RCA 49/2021. The existing Closure Plan (2019) for Mantos Blancos has an estimated closure and post-closure cost of 1,735,927 UF or US$79.3 million for the existing installations[1].

1.10.5 Considerations of Social and Community Impacts

The Mantos Blancos area of influence includes the city of Antofagasta and the village of Baquedano (this is a small community of 900 people located 26 km north of the mine). Mantos Blancos does not intervene, use or restrict access to natural resources that could be used as economic sustenance for any human group or for any other traditional use, such as medicinal, spiritual or cultural use. There are no indigenous communities or indigenous human groups in the vicinity, nor does it affect the exercise or manifestation of traditions, culture or community interests.

1.11 Capital and Operating Costs

The capital cost estimate for Mantos Blancos was prepared by Mantos Copper and reviewed by NCL.

The capital cost for the expansion is estimated to be US$71.2 M between 2021 and 2022, divided between US$11.9 M for pre-stripping and US$59.3 M for other fixed assets.

[1] At exchange rates at 18 June 2021

Over the LOM the sustaining capital cost is estimated to be US$220.6 M, divided between US$36.5 M for mine equipment and US$184.1 M for other fixed assets (mainly tailing dam, infrastructure, deferred investment and long-term stay in business (SIB) costs).

The total operating cost is estimated to be US$3,016 M for the life of mine, corresponding to US$1.90/lb Cu, as summarized in Table 1-5.

Table 1-5: Operating Cost Summary

Item	US$M	Value	Unit
Mining	1,436	1.65	US$/t-moved
Processing (Oxides)	74	257.6	cUS$/lb (cathodes)
Processing (Sulphides)	1,306	10.7	US$/t-milled
G&A	243	15.9	cUS$/lb (total)
Other Operating Expenses	14	0.9	cUS$/lb (total)
TOTAL	3,074	200.5	cUS$/lb (total)

1.12 Economic Analysis

Certain information and statements contained in this section are "forward looking" in nature. Forward-looking statements include, but are not limited to, statements with respect to the economic and feasibility-level parameters of the Project; Mineral Reserve Estimates; the cost and timing of any Project development; the proposed mine plan and mining method; dilution and mining recoveries; processing method, production rates; projected metallurgical recoveries; infrastructure requirements; capital, operating and sustaining cost estimates; the projected life of mine and other expected attributes of the Project; the net present value (NPV) and payback period of capital; future metal prices; the timing of the environmental assessment process; changes to the Project configuration that may be requested as a result of stakeholder or government input to the environmental assessment process; government regulations and permitting timelines; reclamation obligations estimates; requirements for additional capital; environmental risks; general business and economic conditions.

All forward-looking statements in this Technical Report are necessarily based on opinions and estimates made as of the date such statements are made and are subject to important risk factors and uncertainties, many of which cannot be controlled or predicted. Material assumptions regarding forward-looking statements are discussed in this section, where applicable. In addition to, and subject to, such specific assumptions discussed in more detail elsewhere in this Technical Report, the forward-looking statements are subject to the following assumptions:

- There being no significant disruptions affecting the development and operation of the Project
- Exchange rates being approximately consistent with the assumptions in the financial analysis
- The availability of certain consumables and services and the prices for power and other key supplies being approximately consistent with assumptions in the financial analysis
- Labour and materials costs being approximately consistent with assumptions in the financial analysis
- Permitting and arrangements with stakeholders being consistent with current expectations
- All environmental approvals, required permits, licences and authorizations will be obtained from the relevant governments and other relevant stakeholders within the expected timelines
- Certain tax rates, including the allocation of certain tax attributes, being applicable to the Project
- The availability of financing for the planned development activities

- The timelines for development activities on the Project.

The production schedule and financial analysis annualized cash flow table are presented with conceptual years, the years shown in these tables are for illustrative purposes only and are based on the anticipated project schedule.

The Project has been valued using a discounted cash flow (DCF) approach. Estimates have been prepared for all of the individual elements of cash revenue and cash expenditures for ongoing operations.

Capital cost estimates include remaining development and construction of the Debottlenecking Project, which started in 2019. In addition to the initial capital cost, an ongoing operations capital was included (sustaining capital) from 2021. Cash flows are assumed to occur at the mid-point of each period.

The resulting net annual cash flows are discounted back to the date of valuation of 31 December 2020. The currency used to document the cash flow is the US$ in Q4 2020, because the estimate was developed during the fourth quarter of 2020.

NCL and the QP have reviewed the Base Case developed by Mantos Copper. NCL's review of the financial model focused on consistency and specific changes, such as: valuation date, long-term prices for copper and silver, long-term exchange rate CLP/USD. Additionally, amendments to the existing Osisko Silver Purchase Agreement and the copper royalty agreement with Anglo Pacific Group plc were estimated in the model, as detailed later in this Technical Report.

Table 1-6 presents the pre-tax and after-tax cumulative cash flows, on an undiscounted basis, and with the NPV at the 8% discount rate applied. The after-tax NPV is US$670 M. The cumulative, undiscounted, incremental cash flow after-tax is US$1,103 M.

Table 1-6: LOM Cash Flow Summary

Item	Pre-Tax ($M)	After-Tax ($M)
Net Cash Flow, Cumulative, Undiscounted	1,515	1,103
Net Present Value at 8% discount rate (valuation start-off-year 2021)	907	670

Cash flow details over the LOM are presented in Table 1-7. These are undiscounted real values, which include escalation factors provided by Mantos Copper. The table includes production data, revenues and costs (operation, deductions, sales costs and non-operational), taxes and capital expenditures. Undiscounted cash flows derived using this information are shown at the base of the table.

Table 1-7: LOM Cash Flow Summary Statement

Item	Units	2021 to 2037
Metal Price		
Copper (Long Term after fifth year)	US$/lb	3.45
Silver (Long Term after fifth year)	US$/oz	21.55
Metal in Concentrate		
Copper	M lbs	1,555
Silver	M oz	17.2
Extracted Metal Value		
Copper (Cathodes)	US$M	117
Copper (Concentrate)	US$M	5,525
Silver	US$M	385
Hedge Revenue	US$M	-28
Total	**US$M**	**$5,998**
Smelter Deduction		
Copper Deduction	US$M	179
Silver Deduction	US$M	38
Total	**US$M**	**217**
Treatment and Refining Charges	US$M	
Copper Concentrate (treatment)	US$M	167
Copper (refining)	US$M	120
Silver (refining)	US$M	5.4
Selling Cost (Sulphide)	US$M	125
Selling Cost (Oxide)	US$M	1
Total	**US$M**	**126**
Production Costs (Sulphide and Oxide)		
Mining	US$M	1,436
Oxide Plant	US$M	74
Sulphide Plant	US$M	1,306
G&A	US$M	243
Other Non-Operating (exploration)	US$M	14
Total	**US$M**	**3,074**
Net Income before Tax		
Earnings before taxes, depreciation & amortization	**US$M**	**2,289**
Corporate Income and Mining Taxes		
Corporate Income Tax	US$M	308
Specific Mining Tax (Royalty)	US$M	104
Total Income Taxes and Royalty	**US$M**	**412**
Capital Expenditure		
Initial Capital	US$M	104
SIB	US$M	222
Closure Costs	US$M	61
Total Capital Expenditure	**US$M**	**386**
Change in Working Capital	US$M	1
Silver Stream	US$M	308
Cu Royalty	US$M	80
Total Undiscounted Cash Flow		
Pre-tax	US$M	1,515
After tax	US$M	1,103

Note: Totals may not sum due to rounding. SIB = stay in business. All costs in real terms.

1.13 Other Relevant Information

Mantos Copper is analyzing the expansion of the concentrator throughput from 7.3 Mt per year to 10.0 Mt per year using existing ball mills and other process equipment, starting in 2023. This expansion also considers additional cathode production through to 2032. This expansion is known as Mantos Blancos Phase II. Mantos Copper is carrying out a Pre-Feasibility Study to estimate the total additional capital cost and develop an Execution Plan.

1.14 Risk and Opportunities

The most significant risks evaluated in a risk review were:

- Increased equipment and labour costs
- Delay in mine equipment and supplies availability due to the Covid-19 pandemic
- Contractor engagement and price uncertainty
- Political and environmental changes not identified at the time of release of this Report
- Further studies and expenditures related to highway deformation.

Opportunities that were identified include:

- Increase the concentrator capacity using stand-by ball mills
- Enhance recovery through further metallurgical testing
- Extension of the dump leach process with oxide from mineralized waste dumps (per existing operational practice since 2012)
- Additional oxide and sulphide feed from new exploration areas such as Rosario
- Additional copper production from brownfield exploration and mineralization open at depth.

Risks and opportunities will be continuously assessed and reviewed through the various phases of the Project in accordance with Mantos Copper's Risk Management Framework.

1.15 Interpretation and Conclusions

The estimation of the Mantos Blancos Mineral Resources and Mineral Reserves follow industry accepted practices, conform with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM 2014 Definition Standards.

The Mantos Blancos pit has been in operation for over 30 years and the mining and processing of this orebody is well understood.

Under the assumptions outlined in this Report, the Mantos Blancos De-bottlenecking Project shows positive economics.

2 Introduction

2.1 Introduction

The Mantos Blancos mine is located in the north of Chile, in the Antofagasta Province, in the Antofagasta Region. The mine is 45 km to the northeast of the city of Antofagasta and approximately 20 km southwest of the village of Baquedano (Figure 2-1) at around 900 masl. The Panamericana highway (Route 5) passes near the Mantos Blancos site which covers an area of approximately 273 km^2.

As result of the depletion of the oxide ore reserves, from January 2020 oxide ore processing in the Mantos Blancos oxide plant decreased and only low-grade ore is processed by ROM dump leaching. In order to maintain copper production, Mantos Blancos is expanding the sulphide ore treatment capacity from 4.2 Mt per year to 7.3 Mt per year.

The two metallurgical processes in operation at Mantos Blancos are:

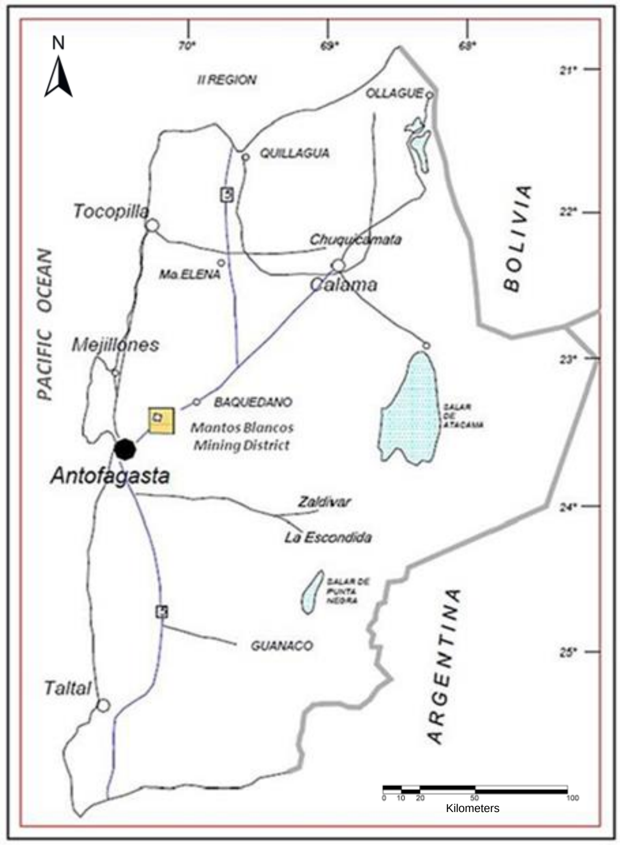
- Flotation plant (concentrator), for sulphide ore with insoluble copper grade (ICu) greater than 0.22%
- Dump leach process for oxides with soluble copper grade (SCu) greater than 0.10%.

The open pit operation includes one large open pit (Santa Barbara) that provides most of the sulphide material for the concentrator and oxide material for dump leaching. Other sources of material are:

- Flotation: Sulphide stockpile (Cancha 90)
- Dump leach: Oxide stockpile (Mercedes Stockpile).

The Mantos Blancos property is owned 99.993% by Mantos Copper Holding SpA, a Chilean company. Audley Mining Advisors Ltd. and Orion Mine Finance LLP indirectly own Mantos Copper Holding SpA. Mantos Copper Holding SpA also owns 69.993% of Mantoverde S.A: which operates the Mantoverde Mine.

Figure 2-1: Location of the Mantos Blancos Mine



Note: Figure courtesy Mantos Copper, 2020

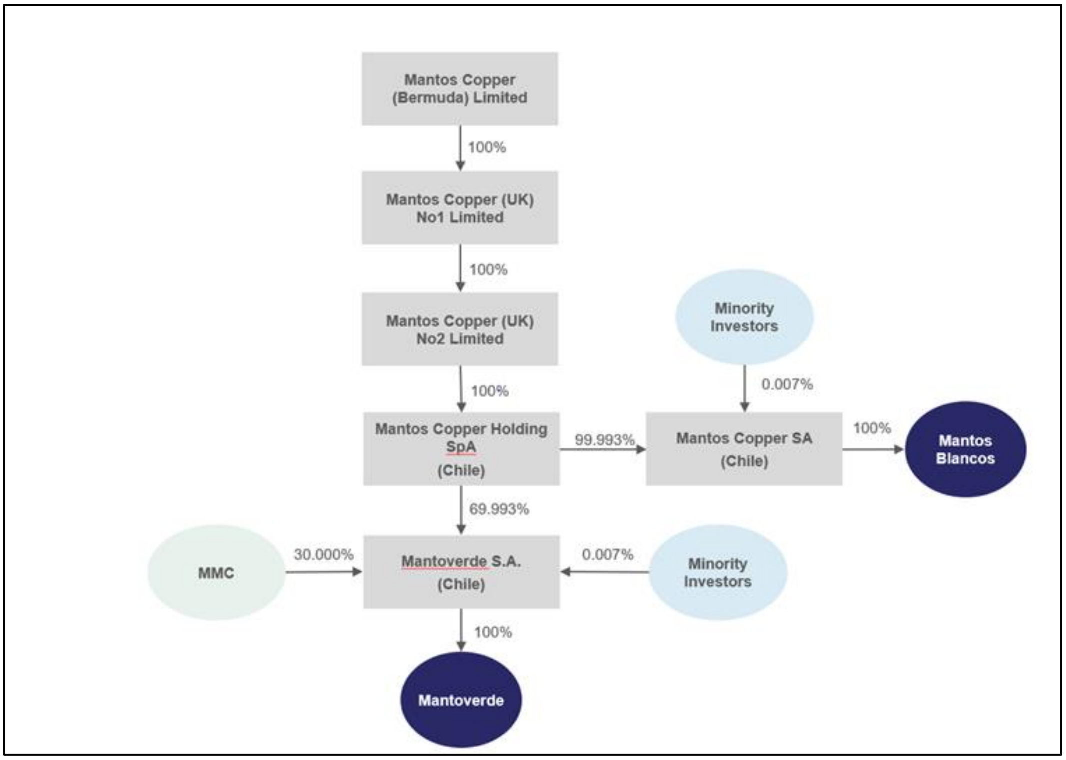
2.2 Terms of Reference

This Technical Report has been prepared by NCL and Mantos Blancos and has been addressed to Capstone to support its disclosure under applicable Canadian securities laws in connection with the Transaction described below.

On 30 November 2021 Capstone Mining Corp. (Capstone) and Mantos Copper (Bermuda) Limited (Mantos), the indirect parent company of Mantos Copper Holding SpA, entered into a definitive agreement to combine pursuant to a plan of arrangement under the Business Corporations Act (British Columbia) (the “Transaction”). Upon completion of the Transaction, Mantos would be renamed Capstone Copper Corp. (Capstone Copper). Pursuant to the Agreement, each Capstone shareholder would receive one newly issued Capstone Copper share per Capstone share and the existing Mantos shareholders would continue to hold Capstone Copper shares. Upon completion of the Transaction, former Capstone and Mantos shareholders would collectively own 60.75% and 39.25% of Capstone Copper, respectively, on a fully diluted share basis and Capstone would be a wholly owned subsidiary of Capstone Copper.

The ownership of Mantos, Mantos Blancos and Mantoverde prior to the Transaction is shown in Figure 2-2.

Figure 2-2: Ownership Structure



Note: Figure courtesy Mantos Copper, 2020

The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in NCL's services, based on 1) information available at the time of preparation, 2) data supplied by outside sources and 3) the assumptions, conditions and qualifications set forth in this report.

This Technical Report contains estimates of Mineral Resources and Mineral Reserves prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM Standards, 10 May 2014.

The project is a brownfield project, with a long history of operating data from the mine and existing process plant. Future process plant criteria have been developed from the historical data, as well as geometallurgical models for Bond work index, copper recovery and copper concentrate grade. However, samples and testwork relating to production beyond 2025 are limited and there is some risk; in the QP's opinion this risk is limited and would currently apply to the production numbers in the later years of the LOM plan.

2.3 Qualified Persons

The consultants preparing this Technical Report (Report) are specialists in the fields of geology, mining, mineral resource and reserve estimation and classification, geotechnical, metallurgical testing and process plant design, capital and operating cost estimation and mineral economics.

None of the consultants or any NCL personnel employed in the preparation of this Report have any beneficial interest in Mantos Copper. The consultants are being paid a fee for their work in accordance with normal professional consulting practice.

The following serve as the QPs for this Report as defined in National Instrument 43 - 101, Standards of Disclosure for Mineral Projects, and in compliance with Form 43 – 101 F1:

- Mr. Carlos Guzmán, RM CMC, FAusIMM, Principal/Project Director, NCL
- Mr. Gustavo Tapia, RM CMC, Metallurgical and Process Consultant, GT Metallurgy
- Mr. Ronald Turner, MAusIMM CP(Geo), Senior Resource Geologist, Golder Associates.

2.4 Site Visits and Scope of Personal Inspection

Mr. Ronald Turner visited the site several times, the last visit was on 9 November 2021. During those visits Mr. Turner inspected the current mining operations, discussed geology and mineralization and reviewed geological interpretations with staff. Also, he inspected core, sample cutting and logging areas, drilling, geological sampling and logging procedures and the current conditions of the sample storage. Mr. Turner also checked that data collection was being conducted in accordance with Mantos Copper procedures and industry standards.

Mr. Carlos Guzmán visited the site on 9 November 2021. During the visit he inspected the area planned for the mine and process infrastructure to assess topography and reviewed the layout and general site with respect to mine planning and execution. He also viewed drill core.

Mr. Gustavo Tapia visited the site on 9 November 2021. During the visit he inspected the area planned for the process infrastructure and tailings facilities to assess topography and general ground conditions.

2.5 Effective Dates

The Report has a number of effective dates as follows:

- Date of Mineral Resource Estimates: 31 December 2020
- Date of Mineral Reserve Estimates: 31 December 2020
- Date of supply of latest information on mineral tenure and surface rights: 3 November 2021
- Date of supply of latest information on Project ownership: 29 November 2021
- Date of financial analysis: 15 November 2021
- Date of QPs' site visits: 9 November 2021.

The overall effective date of the Report is taken to be the date of the information supply on ownership and is 29 November 2021.

2.6 Units of Measurement

The metric system has been used throughout this report, except where clearly stated otherwise. For example, process equipment, such as screens and crushers are frequently sized and recognized in the industry using imperial units (ft and inches).

Tonnes are metric units consisting of 1,000 kg, or 2,204 lb. All currency is in US Dollars (US$) unless otherwise stated.

2.7 Information Sources and References

Information sources supporting the Report include the 2018 Mantos Blancos Feasibility Study, Concentrator De-bottlenecking Project Report.

Information used to support this Report was also derived from expert documents cited in Section 3 and from the reports and documents listed in Section 27. Additional information was sought from Mantos Copper personnel where required.

Mr. Carlos Guzmán, the NCL QP, has reviewed and summarized information supplied by Fernando Toledo, General Manager of GS3 Consultores, Santiago, Chile, a company specializing in environmental, permitting and social issues. Information supplied by Mr. Toledo was used in support of the information presented in Section 20 of the Report. Mr. Toledo was provided with information supplied by Alejo Gutiérrez, Mantos Copper's Environmental Manager, regarding the status of Mantos Blancos permitting and social issues. Mr. Jim Varas, Investment Director for Mantos Copper, was the source of information that Mr. Guzmán used for the economic model presented in Section 22 of the Report.

Mr. Gustavo Tapia, the GT Metallurgy QP, has reviewed and summarized information contained in the 2018 Mantos Blancos Feasibility Study, Concentrator De-bottlenecking Project Report, issued by Hatch, to support the information presented in Section 17 and Section 18 of this Report, concerning aspects of the concentrator and tailings facility engineering designs and cost estimates pertaining to the plant and tailings facilities, as well as estimated closure and reclamation costs.

3 Reliance on Other Experts

3.1 Introduction

The QPs have relied upon the following expert reports which provided information regarding mineral rights, surface rights, property agreements and marketing to complete sections of this Report as noted below.

3.2 Project Ownership

The QPs have not reviewed the Project ownership, nor independently verified the ownership legal status. The QPs have fully relied upon and disclaim responsibility for, information derived from experts retained by Mantos Copper in documents noted below:

- Ortuzar, A., 2021: Ownership: letter prepared by Baker McKenzie for Mantos Copper, 29 November, 2021, 2 p.

This information is used in Section 4 of the Report. It is also used in support of the Mineral Resource statement in Section 14, the Mineral Reserve statement in Section 15 and the financial analysis results in Section 22.

3.3 Mineral Tenure, Rights of Way and Easements

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

- Ortuzar, A., 2021: Mantos Copper S.A.: title opinion prepared by Baker McKenzie for Mantos Blancos, 3 November, 2021, 3 p. plus appendices.

This information is used in Section 4 of the Report. It is also used in support of the Mineral Resource statement in Section 14, the Mineral Reserve statement in Section 15 and the financial analysis result in Section 22.

3.4 Taxation

The QPs have fully relied upon and disclaim responsibility for, information supplied by Mantos Copper staff and experts retained by Mantos Copper for information related to taxation as applied to the financial model as follows:

- Fischer y Cia., 2021 – Certification of the Mantos Blancos and Mantoverde Financial Models for Technical Reports - Taxation Narrative, 29 November, 2021, 4 p.

This information is used in the financial model in Section 22 of the Report.

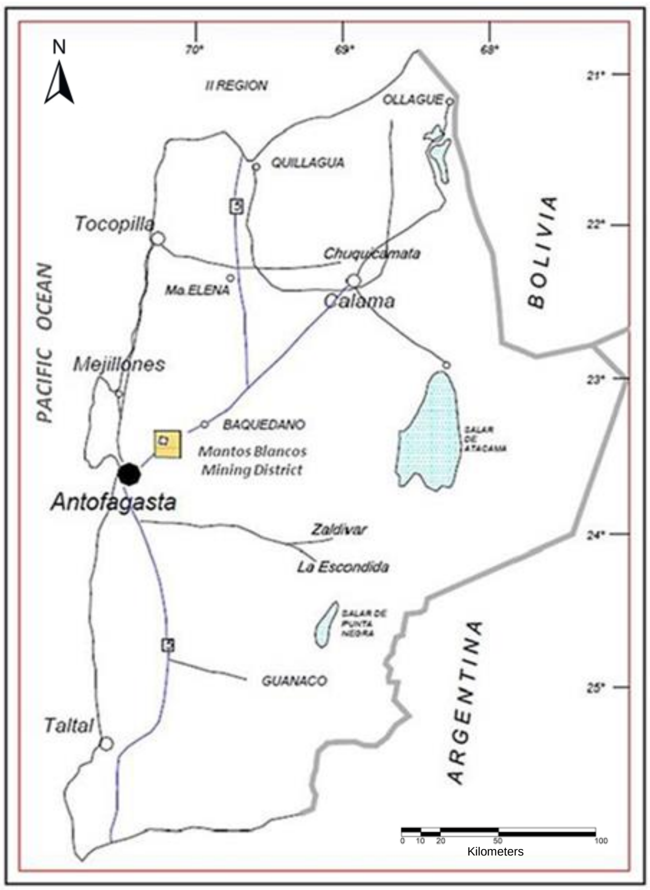
4 Property Description and Location

4.1 Location

The Mantos Blancos mine is located on the eastern flank of the Coastal Range (900 masl) in the north of Chile, 45 km to the northeast of the city of Antofagasta and approximately 20 km southwest of the village of Baquedano (Figure 4-1). The Mantos Blancos deposit is a stratabound hydrothermal copper deposit with subordinate silver content emplaced in a Jurassic volcanic sequence.

The Panamericana highway (Route 5) passes near the Mantos Blancos District. The District covers an area of approximately 273 km^2 and the UTM coordinates are 7,401,000 N to 7,414,000 N and 376,000 to 397,000 E.

Figure 4-1: Location of the Mantos Blancos Mine



Note: Figure courtesy Mantos Copper, 2020

4.2 Project Ownership

All legal title to and ownership of the mine are in the name of Mantos Copper S.A., which in turn is 99.993% owned by Mantos Copper Holding SpA, a Chilean company. Audley Mining Advisors Ltd. and Orion Mine Finance LLP indirectly own Mantos Copper Holding SpA. Capstone Mining Corp. (Capstone) and Mantos Copper (Bermuda) Limited (Mantos), the indirect parent company of Mantos Copper Holding SpA, announced that they have entered into a definitive agreement to combine pursuant to a plan of arrangement under the Business Corporations Act (British Columbia).

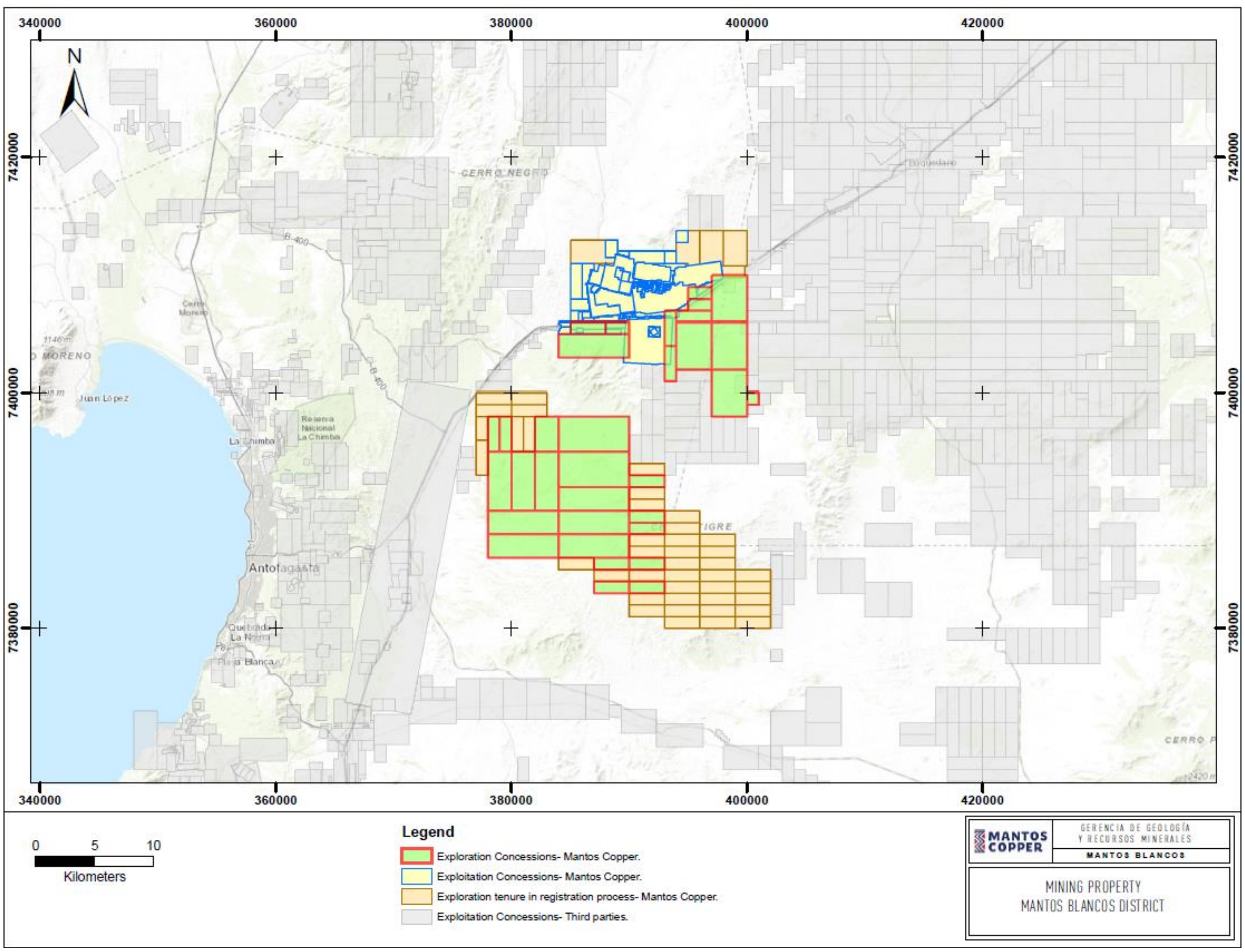
4.3 Mineral Tenure

The Mantos Blancos site is fully covered by 116 mining properties covering an area of 18,818 ha and 82 exploration claims totaling 38,800 ha (**Error! Reference source not found.**). There are additional exploration permits, which cover other target areas (Figure 4-2). The properties are listed in Table 4-2 and Table 4-3. All concessions are held in the name of Mantos Copper S.A.

Table 4-1: Exploration and Exploitation Licences Summary

Concession	Status	N° Licences	Area (Hectares)
Exploitation	Constituted	90	8,198
	In Progress	26	10,620
Exploration	Constituted	54	27,800
	In Progress	28	11,000
Total		198	57,618

Figure 4-2: Mantos Blancos Mining Properties



Note: Figure courtesy Mantos Copper, 2020

Table 4-2: Mantos Blancos Exploration Licences

N°	ROL*	Concession	Owner	Ha	Page	Number	Year	Type	Status
1	02201-R881-0	ROSARIO H 84	Mantos Copper S.A.	300	2790	1678	2019	Exploration	Constituted
2	02201-I354-5	ROSARIO H 95	Mantos Copper S.A.	300	2792	1679	2019	Exploration	Constituted
3	02201-R879-9	ROSARIO H 104	Mantos Copper S.A.	300	2796	1681	2019	Exploration	Constituted
4	02201-R878-0	ROSARIO H 114	Mantos Copper S.A.	300	2798	1682	2019	Exploration	Constituted
5	02201-R876-4	ROSARIO H 127	Mantos Copper S.A.	300	2802	1684	2019	Exploration	Constituted
6	02201-R883-7	ROSARIO H 44	Mantos Copper S.A.	300	2786	1676	2019	Exploration	Constituted
7	02201-R880-2	ROSARIO H 99	Mantos Copper S.A.	300	2794	1680	2019	Exploration	Constituted
8	02201-R683-4	ROSARIO H 25	Mantos Copper S.A.	300	2784	1675	2019	Exploration	Constituted
9	02201-R882-9	ROSARIO H 48	Mantos Copper S.A.	200	2788	1677	2019	Exploration	Constituted
10	02201-R877-2	ROSARIO H 118	Mantos Copper S.A.	300	2800	1683	2019	Exploration	Constituted
11	02201-S468-3	ROSARIO H 4	Mantos Copper S.A.	300	5018	2896	2019	Exploration	Constituted
12	02201-S467-5	ROSARIO H 8	Mantos Copper S.A.	300	5026	2899	2019	Exploration	Constituted
13	02206-I778-8	CUEVITA H 1	Mantos Copper S.A.	100	5031	2901	2019	Exploration	Constituted
14	02201-S471-3	ROSARIO H 3	Mantos Copper S.A.	1800	5016	2895	2019	Exploration	Constituted
15	02201-S470-5	ROSARIO H 7	Mantos Copper S.A.	200	5024	2898	2019	Exploration	Constituted
16	02201-S472-1	CONA G 1	Mantos Copper S.A.	200	5029	2900	2019	Exploration	Constituted
17	02201-S465-9	ROSARIO H 5	Mantos Copper S.A.	300	5021	2897	2019	Exploration	Constituted
18	02201-S466-7	ROSARIO H 1	Mantos Copper S.A.	1200	5013	2894	2019	Exploration	Constituted
19	02201-S832-8	ROSARIO H 2	Mantos Copper S.A.	1800	1987	1076	2020	Exploration	Constituted
20	02201-S831-K	ROSARIO H 6	Mantos Copper S.A.	200	1907	1038	2020	Exploration	Constituted
21	02201-T253-8	JAVIERA H 12	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
22	02201-T548-0	ROSARIO I 14	Mantos Copper S.A.	1000	-	-	-	Exploration	Constituted
23	02201-T547-2	ROSARIO I 18	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
24	02201-T551-0	ROSARIO I 22	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
25	02201-T546-4	ROSARIO I 30	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
26	02201-T545-6	ROSARIO I 38	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
27	02201-T567-7	ROSARIO I 19	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
28	02201-T566-9	ROSARIO I 23	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
29	02201-T543-K	ROSARIO I 17	Mantos Copper S.A.	1000	-	-	-	Exploration	Constituted
30	02201-T542-1	ROSARIO I 21	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
31	02201-T541-3	ROSARIO I 27	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
32	02201-T540-5	ROSARIO I 35	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
33	02201-T605-3	ROSARIO I 15	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
34	02201-T615-0	ROSARIO I 16	Mantos Copper S.A.	1000	-	-	-	Exploration	Constituted
35	02201-T612-6	ROSARIO I 34	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
36	02201-S830-1	ROSARIO H 9	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
37	02201-T669-K	ROSARIO I 13	Mantos Copper S.A.	600	-	-	-	Exploration	Constituted
38	02201-T614-2	ROSARIO I 20	Mantos Copper S.A.	1200	-	-	-	Exploration	Constituted
39	02201-T613-4	ROSARIO I 26	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
40		JAVIERA I 2	Mantos Copper S.A.	600	-	-	-	Exploration	Constituted
41		JAVIERA I 4	Mantos Copper S.A.	200	-	-	-	Exploration	Constituted
42		JAVIERA I 6	Mantos Copper S.A.	100	-	-	-	Exploration	Constituted
43		JAVIERA I 8	Mantos Copper S.A.	800	-	-	-	Exploration	Constituted
44		ROSARIO I 103	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
45		ROSARIO I 112	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
46		ROSARIO I 115	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
47		ROSARIO I 125	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
48		ROSARIO I 128	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
49		ROSARIO I 24	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
50		ROSARIO I 33	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted

N°	ROL*	Concession	Owner	Ha	Page	Number	Year	Type	Status
51		ROSARIO I 37	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
52		ROSARIO I 45	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
53		ROSARIO I 72	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
54		ROSARIO I 98	Mantos Copper S.A.	300	-	-	-	Exploration	Constituted
55	02201-T585-5	ROSARIO I 31	Mantos Copper S.A.	300	1809	990	2020	Exploration	In Process
56		JAVIERA I 10	Mantos Copper S.A.	800	4429	2450	2020	Exploration	In Process
57		JAVIERA I 11	Mantos Copper S.A.	800	4236	2348	2020	Exploration	In Process
58		JAVIERA I 3	Mantos Copper S.A.	600	4232	2346	2020	Exploration	In Process
59		JAVIERA I 7	Mantos Copper S.A.	300	4234	2347	2020	Exploration	In Process
60		ROSARIO I 101	Mantos Copper S.A.	300	4407	2439	2020	Exploration	In Process
61		ROSARIO I 102	Mantos Copper S.A.	300	4226	2343	2020	Exploration	In Process
62		ROSARIO I 113	Mantos Copper S.A.	300	4228	2344	2020	Exploration	In Process
63		ROSARIO I 117	Mantos Copper S.A.	300	4415	2443	2020	Exploration	In Process
64		ROSARIO I 124	Mantos Copper S.A.	300	4230	2345	2020	Exploration	In Process
65		ROSARIO I 28	Mantos Copper S.A.	300	4391	2431	2020	Exploration	In Process
66		ROSARIO I 32	Mantos Copper S.A.	300	4218	2339	2020	Exploration	In Process
67		ROSARIO I 39	Mantos Copper S.A.	300	4220	2340	2020	Exploration	In Process
68		ROSARIO I 47	Mantos Copper S.A.	300	4399	2435	2020	Exploration	In Process
69		ROSARIO I 49	Mantos Copper S.A.	300	4222	2341	2020	Exploration	In Process
70		ROSARIO I 96	Mantos Copper S.A.	300	4403	2437	2020	Exploration	In Process
71		ROSARIO I 97	Mantos Copper S.A.	300	4224	2342	2020	Exploration	In Process
72		JAVIERA I 1	Mantos Copper S.A.	600	4453	2462	2020	Exploration	In Process
73		JAVIERA I 5	Mantos Copper S.A.	800	4455	2463	2020	Exploration	In Process
74		JAVIERA I 9	Mantos Copper S.A.	800	4457	2464	2020	Exploration	In Process
75		ROSARIO I 100	Mantos Copper S.A.	300	4445	2458	2020	Exploration	In Process
76		ROSARIO I 111	Mantos Copper S.A.	300	4447	2459	2020	Exploration	In Process
77		ROSARIO I 116	Mantos Copper S.A.	300	4449	2460	2020	Exploration	In Process
78		ROSARIO I 126	Mantos Copper S.A.	300	4451	2461	2020	Exploration	In Process
79		ROSARIO I 29	Mantos Copper S.A.	300	4437	2454	2020	Exploration	In Process
80		ROSARIO I 36	Mantos Copper S.A.	300	4439	2455	2020	Exploration	In Process
81		ROSARIO I 46	Mantos Copper S.A.	300	4441	2456	2020	Exploration	In Process
82		ROSARIO I 85	Mantos Copper S.A.	300	4443	2457	2020	Exploration	In Process

Note: *ROL is a unique number used in Chile to identify properties

Table 4-3: Mantos Blancos Mining Licences

N°	ROL*	Concession	Owner	Ha	Page	Number	Year	Type	Status
1	02201-0525-3	ADRIANA	Mantos Copper S.A.	4	28 Vta.	25	1954	Exploitation	Constituted
2	02201-0523-7	AIDA	Mantos Copper S.A.	2	775 Vta.	500	1905	Exploitation	Constituted
3	02201-0524-5	ALEX	Mantos Copper S.A.	5	81 Vta.	47	1958	Exploitation	Constituted
4	02201-8072-7	ALIBAUD I 1/30	Mantos Copper S.A.	277	3057	1110	2016	Exploitation	Constituted
5	02201-8073-5	ALIBAUD II 1/10	Mantos Copper S.A.	100	3298	572	2014	Exploitation	Constituted
6	02201-8074-3	ALIBAUD III 1/28	Mantos Copper S.A.	82	3063	1111	2016	Exploitation	Constituted
7	02201-0135-5	ANA	Mantos Copper S.A.	1	221	60	1957	Exploitation	Constituted
8	02201-0516-4	ANEXION	Mantos Copper S.A.	2	769 Vta.	517	1905	Exploitation	Constituted
9	02201-0522-9	ARGENTINA	Mantos Copper S.A.	2	765	513	1905	Exploitation	Constituted
10	02201-0596-2	ARGENTINA	Mantos Copper S.A.	5	48	20	1953	Exploitation	Constituted
11	02201-3264-1	BARBARA I 1/30	Mantos Copper S.A.	300	242	74	1997	Exploitation	Constituted
12	02201-3265-K	BARBARA II 1/40	Mantos Copper S.A.	177	248	75	1997	Exploitation	Constituted
13	02201-3266-8	BARBARA III 1/36	Mantos Copper S.A.	156	255 Vta.	76	1997	Exploitation	Constituted
14	02201-3267-6	BARBARA IV 1/32	Mantos Copper S.A.	121	262	77	1997	Exploitation	Constituted
15	02201-0146-0	BUENA ESPERANZA 1/30	Mantos Copper S.A.	50	134	59	1954	Exploitation	Constituted
16	02201-0526-1	CARMEN	Mantos Copper S.A.	2	36	48	1900	Exploitation	Constituted
17	02201-0528-8	CHOLITA	Mantos Copper S.A.	5	768 Vta.	516	1905	Exploitation	Constituted
18	02201-0527-K	CUARTA	Mantos Copper S.A.	5	397 Vta.	405	1900	Exploitation	Constituted
19	02201-0529-6	DELIRIO	Mantos Copper S.A.	2	780 Vta.	526	1905	Exploitation	Constituted
20	02201-0210-6	DESEADA 1/100	Mantos Copper S.A.	500	37 Vta.	17	1958	Exploitation	Constituted
21	02201-0530-K	DOÑA CLOTA	Mantos Copper S.A.	1	31 Vta.	18	1956	Exploitation	Constituted
22	02201-0531-8	ELVIRA	Mantos Copper S.A.	2	35	47	1900	Exploitation	Constituted
23	02201-0444-3	EMA 3A	Mantos Copper S.A.	5	2	28	1937	Exploitation	Constituted
24	02201-0533-4	EMILIA	Mantos Copper S.A.	2	763 Vta.	512	1905	Exploitation	Constituted
25	02201-0220-3	EMMA 1/3	Mantos Copper S.A.	5	56	28	1937	Exploitation	Constituted
26	02201-0532-6	ERNESTINA	Mantos Copper S.A.	2	774 Vta.	521	1905	Exploitation	Constituted
27	02201-0534-2	FORTUNA	Mantos Copper S.A.	3	760 Vta.	509	1905	Exploitation	Constituted
28	02201-0334-K	FRESIA	Mantos Copper S.A.	4	6 Vta.	4	1954	Exploitation	Constituted
29	02201-0535-0	IFMIA 80/82	Mantos Copper S.A.	14	71	37	1948	Exploitation	Constituted
30	02201-0322-6	IFMIA 83	Mantos Copper S.A.	5	59	36	1948	Exploitation	Constituted
31	02201-0459-1	JAQUELINE	Mantos Copper S.A.	5	2 Vta.	2	1954	Exploitation	Constituted
32	02201-8757-8	JAVIERA F1 1/20	Mantos Copper S.A.	100	22	4	2018	Exploitation	Constituted
33	02201-8758-6	JAVIERA F5 1/30	Anglo American Norte S.A.	150	96	54	2018	Exploitation	Constituted
34	02201-0324-2	JESUS 1/3 (II)	Mantos Copper S.A.	4	56	28	1937	Exploitation	Constituted
35	02201-0290-4	JOSE SEXTO	Mantos Copper S.A.	1	235	68	1957	Exploitation	Constituted
36	02201-0329-3	JOSE TERCERO	Mantos Copper S.A.	1	232	67	1957	Exploitation	Constituted
37	02201-0465-6	LA REVUELTA 1/160	Mantos Copper S.A.	800	268 Vta.	61	1958	Exploitation	Constituted
38	02201-0536-9	LALITA	Mantos Copper S.A.	2	777	523	1905	Exploitation	Constituted
39	02201-6853-0	LATORRE I 1/10	Mantos Copper S.A.	27	3136	673	2013	Exploitation	Constituted
40	02201-6854-9	LATORRE II 1/25	Mantos Copper S.A.	5	3142	674	2013	Exploitation	Constituted
41	02201-6855-7	LATORRE III 1/20	Mantos Copper S.A.	46	3148	675	2013	Exploitation	Constituted
42	02201-6856-5	LATORRE IV 1/24	Mantos Copper S.A.	107	1920	407	2013	Exploitation	Constituted
43	02201-6861-1	LATORRE IX 1/10	Mantos Copper S.A.	56	583	115	2013	Exploitation	Constituted
44	02201-6857-3	LATORRE V 1/10	Mantos Copper S.A.	36	1927	408	2013	Exploitation	Constituted
45	02201-6858-1	LATORRE VI 1/30	Mantos Copper S.A.	174	1934	409	2013	Exploitation	Constituted
46	02201-6859-K	LATORRE VII 1/14	Mantos Copper S.A.	23	811	161	2013	Exploitation	Constituted
47	02201-6860-3	LATORRE VIII 1/17	Mantos Copper S.A.	85	2068	554	2012	Exploitation	Constituted
48	02201-8691-1	LATORRE X 1/18	Mantos Copper S.A.	102	576	151	2017	Exploitation	Constituted
49	02201-8756-K	LATORRE XI 1/20	Mantos Copper S.A.	52	780	194	2017	Exploitation	Constituted
50	02201-0468-0	LUCY 1/300	Mantos Copper S.A.	1500	426	107	1968	Exploitation	Constituted
51	02201-0627-6	MALA SUERTE 1/20	Mantos Copper S.A.	100	130	58	1954	Exploitation	Constituted
52	02201-0608-K	MARINA	Mantos Copper S.A.	5	242 Vta.	111	1937	Exploitation	Constituted
53	02201-0537-7	MERCEDES	Mantos Copper S.A.	3	766	514	1905	Exploitation	Constituted
54	02201-0538-5	MODESTA	Mantos Copper S.A.	5	242 Vta.	111	1937	Exploitation	Constituted
55	02201-0471-0	MOLLIE 1/400	Mantos Copper S.A.	1983	77	41	1954	Exploitation	Constituted
56	02201-0541-5	NINFA	Mantos Copper S.A.	5	74	41	1953	Exploitation	Constituted
57	02201-0260-2	NORA 1/4	Mantos Copper S.A.	20	460	570	1935	Exploitation	Constituted
58	02201-0561-K	OCTAVA	Mantos Copper S.A.	3	399 Vta.	407	1900	Exploitation	Constituted
59	02201-0560-1	OLGA	Mantos Copper S.A.	5	10	10	1954	Exploitation	Constituted

N°	ROL*	Concession	Owner	Ha	Page	Number	Year	Type	Status
60	02201-0557-1	PABLA	Mantos Copper S.A.	3	779 Vta.	525	1905	Exploitation	Constituted
61	02201-1622-0	PANCHO 1	Mantos Copper S.A.	1	63 Vta.	30	1989	Exploitation	Constituted
62	02201-0554-7	PANCRACIO	Mantos Copper S.A.	2	1	1	1957	Exploitation	Constituted
63	02201-0244-0	PILAR	Mantos Copper S.A.	4	4 Vta.	3	1954	Exploitation	Constituted
64	02201-0555-5	PIRULA	Mantos Copper S.A.	5	12	7	1954	Exploitation	Constituted
65	02201-0556-3	PORFIA	Mantos Copper S.A.	3	774	520	1905	Exploitation	Constituted
66	02201-0558-K	PRIMERA	Mantos Copper S.A.	3	394 Vta.	402	1900	Exploitation	Constituted
67	02201-0559-8	PROTECTORA	Mantos Copper S.A.	2	231 Vta.	166	1896	Exploitation	Constituted
68	02201-0552-0	QUELITA	Mantos Copper S.A.	5	8 Vta.	5	1954	Exploitation	Constituted
69	02201-0553-9	QUINTA	Mantos Copper S.A.	5	398 Vta.	406	1900	Exploitation	Constituted
70	02201-0548-2	RAQUEL	Mantos Copper S.A.	1	32 Vta.	13	1939	Exploitation	Constituted
71	02201-0551-2	REMOLINO	Mantos Copper S.A.	3	401	409	1900	Exploitation	Constituted
72	02201-0549-0	RESGUARDO	Mantos Copper S.A.	1	761 Vta.	510	1905	Exploitation	Constituted
73	02201-0426-5	RESGUARDO 1/10	Mantos Copper S.A.	50	53	26	1956	Exploitation	Constituted
74	02201-0550-4	RIVERA GARCES	Mantos Copper S.A.	2	771	518	1905	Exploitation	Constituted
75	02201-0429-K	RUCIA 1/3	Mantos Copper S.A.	11	70	37	1954	Exploitation	Constituted
76	02201-0977-1	SAN PANCRACIO 1/7	Mantos Copper S.A.	35	136	40	1969	Exploitation	Constituted
77	02201-0546-6	SEGUNDA	Mantos Copper S.A.	3	395 Vta.	403	1900	Exploitation	Constituted
78	02201-0545-8	SEXTA	Mantos Copper S.A.	5	400 Vta.	408	1900	Exploitation	Constituted
79	02201-0371-4	SOLEDAD 1/100	Mantos Copper S.A.	464	110	63	1953	Exploitation	Constituted
80	02201-0401-K	TARAMARU 1/10	Mantos Copper S.A.	50	43 Vta.	19	1953	Exploitation	Constituted
81	02201-0544-K	TERCERA	Mantos Copper S.A.	3	396 Vta.	404	1900	Exploitation	Constituted
82	02201-0543-1	TERESA	Mantos Copper S.A.	2	772	511	1905	Exploitation	Constituted
83	02201-1249-7	TORNADO 1/5	Mantos Copper S.A.	24	44 Vta.	16	1982	Exploitation	Constituted
84	02201-0503-2	TRES MARIA	Mantos Copper S.A.	5	772	519	1905	Exploitation	Constituted
85	02201-1043-5	UNION 1/60	Mantos Copper S.A.	213	38	8	1972	Exploitation	Constituted
86	02201-0430-3	VEINTITRES	Mantos Copper S.A.	5	239 Vta.	110	1937	Exploitation	Constituted
87	02201-0431-1	VEINTIUNO	Mantos Copper S.A.	5	239 Vta.	110	1937	Exploitation	Constituted
88	02201-0575-K	VERONICA	Mantos Copper S.A.	3	79	29	1956	Exploitation	Constituted
89	02201-1623-9	YOYO 1/2	Mantos Copper S.A.	2	57 Vta.	29	1989	Exploitation	Constituted
90	02201-8759-4	JAVIERA F6 1/20	Mantos Copper S.A.	32	1728	729	2018	Exploitation	Constituted
91	02201-8065-4	VIDAURRE DEL RIO 1/55	Mantos Copper S.A.	520	8135	4645	2012	Exploitation	In Process
92		ROSARIO H 3B, 1 AL 90	Mantos Copper S.A.	900	2932	1647	2020	Exploitation	In Process
93		ROSARIO H 3A, 1 AL 90	Mantos Copper S.A.	900	2929	1646	2020	Exploitation	In Process
94		ROSARIO H 2B, 1 AL 90	Mantos Copper S.A.	900	2926	1645	2020	Exploitation	In Process
95		ROSARIO H 2A, 1 AL 90	Mantos Copper S.A.	900	2923	1644	2020	Exploitation	In Process
96		CONA G 1, 1 AL 40	Mantos Copper S.A.	200	4174	2305	2020	Exploitation	In Process
97		JAVIERA H 4, 1 AL 40	Mantos Copper S.A.	200	4176	2306	2020	Exploitation	In Process
98		ROSARIO H 1 A, 1 AL 60	Mantos Copper S.A.	600	4178	2307	2020	Exploitation	In Process
99		ROSARIO H 1 B, 1 AL 60	Mantos Copper S.A.	600	4154	2295	2020	Exploitation	In Process
100		ROSARIO H 24, 1 AL 60	Mantos Copper S.A.	300	4180	2308	2020	Exploitation	In Process
101		ROSARIO H 25, 1 AL 60	Mantos Copper S.A.	300	4162	2299	2020	Exploitation	In Process
102		ROSARIO H 34, 1 AL 60	Mantos Copper S.A.	300	4113	2274	2020	Exploitation	In Process
103		ROSARIO H 36, 1 AL 60	Mantos Copper S.A.	300	4164	2300	2020	Exploitation	In Process
104		ROSARIO H 37, 1 AL 60	Mantos Copper S.A.	300	4182	2309	2020	Exploitation	In Process
105		ROSARIO H 39, 1 AL 60	Mantos Copper S.A.	300	4166	2301	2020	Exploitation	In Process
106		ROSARIO H 4, 1 AL 60	Mantos Copper S.A.	300	4156	2296	2020	Exploitation	In Process
107		ROSARIO H 44, 1 AL 60	Mantos Copper S.A.	300	4115	2275	2020	Exploitation	In Process
108		ROSARIO H 45, 1 AL 60	Mantos Copper S.A.	300	4168	2302	2020	Exploitation	In Process
109		ROSARIO H 46, 1 AL 60	Mantos Copper S.A.	300	4170	2303	2020	Exploitation	In Process
110		ROSARIO H 48, 1 AL 40	Mantos Copper S.A.	200	4117	2276	2020	Exploitation	In Process
111		ROSARIO H 49, 1 AL 60	Mantos Copper S.A.	300	4172	2304	2020	Exploitation	In Process
112		ROSARIO H 5, 1 AL 60	Mantos Copper S.A.	300	4158	2297	2020	Exploitation	In Process
113		ROSARIO H 8, 1 AL 60	Mantos Copper S.A.	300	4111	2273	2020	Exploitation	In Process
114		ROSARIO H 22, 1 AL 60	Mantos Copper S.A.	300	4160	2298	2020	Exploitation	In Process
115		ROSARIO H 47, 1 AL 60	Mantos Copper S.A.	300	4435	2453	2020	Exploitation	In Process
116		ROSARIO H 7, 1 A 40	Mantos Copper S.A.	200	4568	2516	2020	Exploitation	In Process

Note: *ROL is a unique number used in Chile to identify properties

4.4 Property Agreements

There are no property agreements relevant to the Project other than those described in this Section.

4.4.1 Streaming and Royalty Agreements

Under a contract signed with Orion Titheco Ltd. on 22 August 2015, the contained silver in the Mantos Blancos concentrates (the Silver Stream) was sold for a total advance payment of US$82,250,000. This contract was subsequently sold by Orion Titheco Ltd to Osisko Gold Royalties in 2017 and amended on 31 August 2019 for an additional US$25,000,000 advance payment. In return for the upfront payments Osisko received the right to purchase an amount of refined silver equivalent to the number of ounces of silver delivered under concentrate offtake contracts less specified deductions until 19,300,000 ounces of silver have been sold under the agreement and thereafter an amount equal to 40% of the number of ounces of silver delivered under concentrate offtake contracts less specified deductions. Osisko is obliged to pay in cash 8% of the market price of the silver upon each delivery and to give credit against the advance of 92% of the market price upon each delivery, according to the contract terms. The initial term of the Silver Production Agreement is 40 years and shall automatically renew thereafter for successive 10 year periods. The amount of silver estimated to have been derived from the copper concentrate is the amount calculated as due under the terms of the contract. Upon receipt, the upfront amount was recognized as a financial liability, which contains an embedded derivative. The entire agreement was designated at fair value through profit or loss (FVTPL). Based on the mark to marketing of this financial liability to FVTPL at each period-end, income or expense is recorded in other income (expenses). The economic results delivered in this Report and as shown in the financial models assume a revenue equivalent to only 8% of the silver production based on the above information.

In connection with the financing of the Debottlenecking Project, Mantos Blancos entered into the Southern Cross Royalty Agreement with Southern Cross on 31 August 2019. Under the Southern Cross Royalty Agreement, Southern Cross paid US$50.25 million for a 1.525% royalty on the NSR of copper production at Mantos Blancos, paid quarterly. The royalty is for a period initially through to 1 January 2035 and may be extended by Southern Cross at its sole discretion through the duration of the mining rights, and is subject to Mantos Blancos' option to buy back and reduce the royalty amount by 50% at any time after 1 January 2023 subject to the payment of a buy back fee and the satisfaction of certain conditions. The Southern Cross Royalty grants Southern Cross security interests over related mining concessions and includes certain covenants with respect to the conduct of mining operations, the preservation of mining rights and maintenance of offtake arrangements, among other terms.

NCL has not reviewed these agreements. Details have been supplied by Mantos Copper.

No other royalties or encumbrances currently known on the Project are applied to the financial model other than the requirement to pay Chilean mining tax.

4.4.2 Offtake Agreements

Mantos Blancos and Mantoverde have entered into offtake agreements relating to cathode production with Anglo American, both of which were amended and re-stated on 31 August 2019.

Under the agreements, Mantos Blancos and Mantoverde are required to sell, and Anglo American is required to buy, all of the Mantos Copper Holdings production of copper cathodes, until the aggregate sum of cathodes delivered from Mantoverde and Mantos Blancos reaches 275,000 tonnes, which is expected to occur by 31 December 2025. If this amount is not delivered by 31 December 2025, the agreement can be extended through to 31 December 2027 subject to a 20% increase in the amount of cathodes required to be delivered. The price for cathodes is determined based on the monthly average LME copper price.

As part of the financing for the Debottlenecking Project, Mantos Blancos entered into an offtake agreement with Glencore International AG and Complejo Metalurgico Altonorte S.A. (the Glencore Buyers) on 31 August 2019 for 75% of Mantos Blancos' annual production of copper concentrates subject to a minimum total quantity of 900,000 tonnes of copper concentrates over the term of the agreement. The agreement is for a 7 year term but may be extended until the minimum total quantity is delivered and the financial obligations are met.

Under the agreement, the Glencore Buyers are required to pay for a portion of the full copper content based on the average monthly LME copper price, subject to certain adjustments based on the percentage of copper content. The Glencore Buyers are also required to pay in relation to silver content in excess of 30 g/t at a price based on the official London Bullion Market Association (LBMA) silver price.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The Mantos Blancos Mine is located in the Antofagasta Region of Chile, approximately 45 km northeast of the city of Antofagasta and 20 km southwest of the village of Baquedano, at an average elevation of 900 masl. (Figure 5-1).

The property is accessible via Route 5 Panamericana highway. The nearest airport is Cerro Moreno that has daily flights to and from Santiago and other destinations. The airport is located about 17 km north of Antofagasta. Antofagasta is located on the Panamericana highway, a well-maintained, multi-lane highway. There is a railway line running through Antofagasta, which is used for freight transport.

Figure 5-1: Mantos Blancos Mine (from Mantos Blancos internal report)

Note: Figure courtesy Mantos Copper, 2020

5.2 Climate

The climate is coastal desert with frequent cloud cover that extends from the coast up to an altitude of 900 m on the western slope of the Coastal Range. The average annual temperature is 15.8°C, with February being the warmest month (19.6°C) and July being the coldest month (11.6°C). In normal years the most important meteorological phenomenon is a mist called the "camanchaca". This occurs throughout the year although it is more frequent in spring and winter. The relative humidity is high throughout the year, reaching maximum values in the month of August and minimum values in November.

The vegetation is typical of the coastal desert of Taltal. These vegetation types manifest themselves discontinuously, occupying the middle and upper slopes of the Coastal Range.

5.3 Local Resources

The Antofagasta Region has a long history of mining activity, hence many mining suppliers and contractors are locally available. Most of the Mantos Blancos workforce lives in Antofagasta or Baquedano.

Overall, Mantos Copper has been successful in recruiting and retaining experienced staff with good mining skills, despite the often tight labour markets experienced industry wide. The Mantos Copper activities also bring local employment opportunities to people from the surrounding communities.

The process plant and mine facilities operate on a 24 hour, 7 day a week schedule, with four crews rotating in two 12 hour shifts, providing an appropriate balance between work and rest time. Most maintenance personnel work day shift only, with a small breakdown crew on the night shift to provide 24 hour coverage. Middle and senior management have a schedule of 4 days on and 3 days off.

The Mantos Blancos Mine is supported by the local communities. Mantos Copper has a progressive social policy framework, stressing communication and respect, which is inclusive of the local population as well as employees. Environmental, health and safety, and social responsibilities are the cornerstones of the program.

5.4 Infrastructure

The infrastructure for the Mantos Blancos Mine is fully developed and in service. The main facilities at the Mantos Blancos Mine are: Santa Barbara pit, Argentina North dump, East dump, West dump, concentrator, coarse tailings deposit, fine tailings deposit, Mercedes stockpile, Mercedes dump, secondary leach piles (SL) and SX-EW plant.

The water supply is provided by Ferrocarriles Antofagasta Bolivia (FCAB) and Aguas de Antofagasta (ADASA). The water is pumped and transported by pipelines from Siloli and Toconce, located approximately 250 km away from the Mantos Blancos Mine in the Andes Mountains. As of the effective date of this Report, the water consumption at the Mantos Blancos site is 10,000 m^3/d and the maximum storage capacity on site is 17,000 m^3.

Water consumption will be reduced following termination of oxide ore treatment and implementation of the Debottlenecking Project.

Electrical energy is provided by Guacolda Energía S.A. and delivered to the Mantos Blancos Mine through a 220 kV power line that is connected to the National Electric System (Sistema Eléctrico Nacional). The contract will expire in December 2034.

The mine site has a communication network of telephones and licenced UHF radio repeaters within the main mining area. Outside this area, communication is by means of UHF CB radio, satellite phone and cell phone.

5.5 Physiography

The geographical relief of the Antofagasta Region is characterized by coastal plains which are especially extensive in the area of the Mejillones Peninsula, where they are interrupted by the high mountains of the Coastal Range, reaching an altitude over 2,000 m.

Hydrography presents a strong contrast between the lack of run-off water due to the predominantly arid climate, and the existence of the Loa River, whose waters are intensely used for irrigation, mining and general water consumption. The region is in an active seismic zone.

6 History

The economic importance of this mining district has been known since 1883, when David Cervantes and Carlos Mercado discovered veins of oxidized copper ore in the hills located north of the road connecting Antofagasta and Lomas Bayas (Route 5 Panamericana Highway).

In 1953, after various exploration programs, the Hochschild Group acquired part of this deposit. Subsequently, in 1955 and after the first exploration work started using churn drilling, the Hochschild Group, together with other investors and CORFO (Chilean governmental industry development entity) formed Empresa Minera de Mantos Blancos S.A.

Mantos Blancos has been in production since 1960 commencing with an open pit mine, oxide plant and smelting operation. It has long been one of the major copper mines in the region, with annual refined copper output reaching 20 kt in 1962 (ingots and a minor amount of cement copper). In 1961 the exploitation of oxide ore began using open pit mining. The oxide ore was treated in a leach plant, with a capacity of 100,000 t per month. The gradual decline of the grades led the company to expand the plant to maintain production, and by 1967 the capacity increased to 200,000 t per month. With some modifications, the plant reached a capacity of 250,000 t per month in 1978.

Between 1963 and 1964 the Mala Suerte mine, property of Andromeda Mining Company (owned by Mr. Bartolomé Marré) and located in the same area as the current Mantos Blancos properties, supplied the Mantos Blancos plant with 2,000 t per month of feed with grades around 3.5% soluble copper (SCu). Between 1965 and 1968 production in Mantos Blancos averaged 3,000 t per month, with an average grade of 2.5% SCu.

In 1974 the underground exploitation of Mantos Blancos began, following the discovery of large reserves of high-grade sulphide ore. Between 1968 and 1980 average fine copper production was 32 kt per year.

The construction of the flotation plant to treat sulphide ores commenced at the beginning of 1980. In that year Anglo American acquired 40% of the mine and 4 years later became the controlling shareholder of the company. The flotation plant began operation in March 1981, with a capacity of 4,000 tpd and a head grade of 1.90% Cu (insoluble) and 19 ppm of Ag, reaching a fine copper production of 45 kt per year in 1981. From 1981 onwards fine copper production included concentrates, ingots and cement copper.

By the middle of 1993 pre-stripping began for the Santa Barbara open pit, which joined the four existing pits (Elvira, Marina, Tercera and Quinta and the underground workings) with the purpose of maximizing the recovery from the mineralized zones of the deposit. In December 1996 the underground exploitation at Mantos Blancos ended.

In 2000 Anglo American had 99.97% ownership of EMMB, which also included the Mantoverde Division in Chañaral. In that year fine copper production reached a peak of 102 kt per year.

In 2012 the Santa Barbara expansion project began, which fed the leach and SX-EW plant with 4.5 Mt of copper oxide ore (head grade of 0.70% SCu) and the flotation plant with 4.5 Mt of copper sulphide ore (head grade of 1.10% insoluble Cu (ICu)).

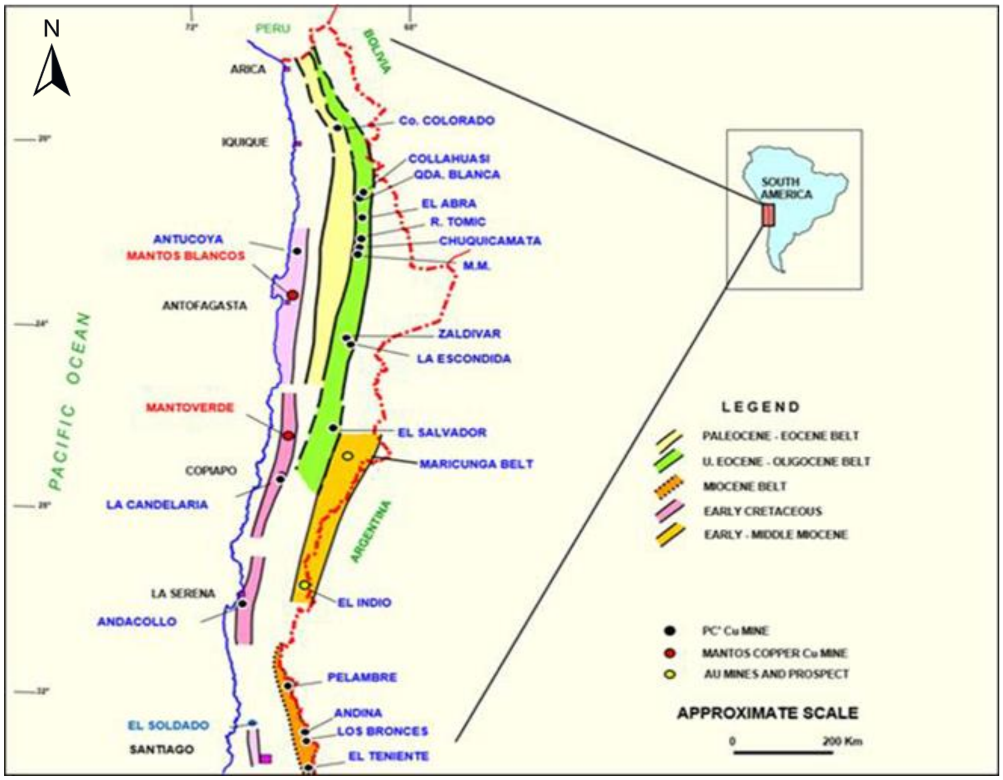
In 2015 the Mantos Blancos Mine was acquired by Mantos Copper which is owned by Audley Mining Advisors Ltd. and Orion Mine Finance LLP.

7 Geological Setting and Mineralization

7.1 Introduction

Mantos Blancos is a copper-silver deposit located in the Coastal Range of northern Chile. The Coastal Range is an important geomorphological feature in Chile because it hosts Cu-Ag-Au stratabound deposits along an early Cretaceous metallogenic belt (Figure 7-1). Currently Mantos Blancos is the biggest known Cu-Ag stratabound deposit in this belt, it has been mined since 1960.

Figure 7-1: Chilean Metallogenic Belt



Note: Figure courtesy Mantos Copper, 2020

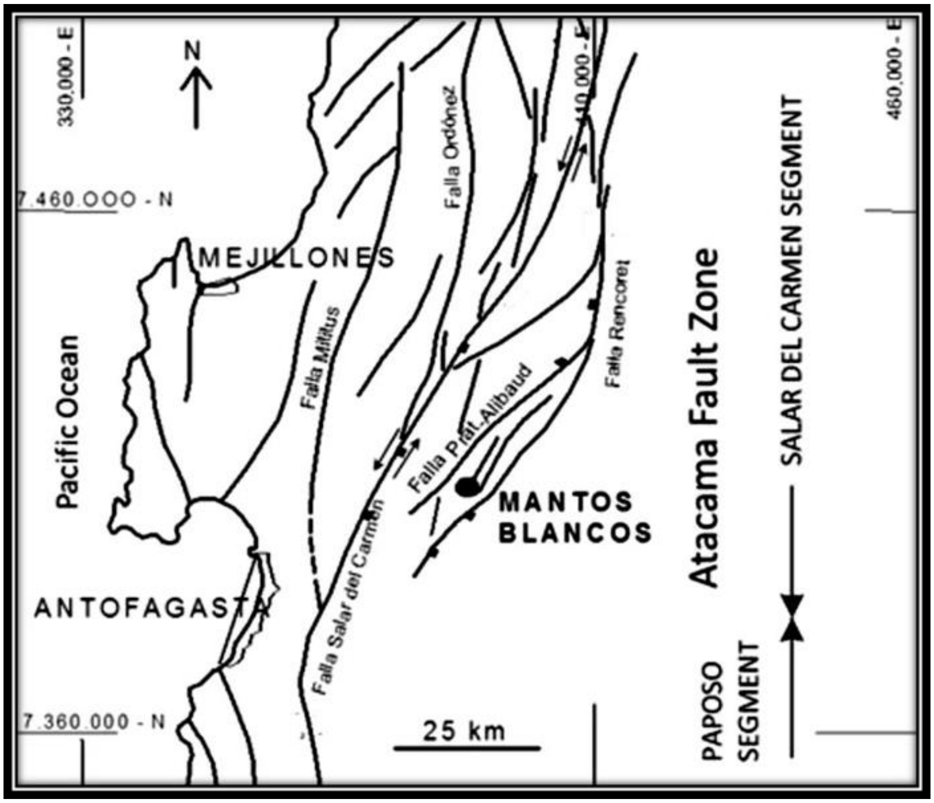
7.2 Regional Geology

The Coastal Range hosts Jurassic to Cretaceous volcanic-hosted stratabound and Cretaceous porphyry type copper deposits. In general terms stratabound refers to the fluid channel of the hydrothermal system that deposited mineralization in a stratigraphic layer.

In the Coastal Range the volcanic-hosted stratabound deposits are mainly associated with hydrothermal breccia feeder structures in which the hydrothermal breccias contain at least 50% of the economic mineralization and the highest grades. The hydrothermal breccias are overlain by barren altered stocks and sills of mainly dioritic composition which are intruded by late mineralized dioritic dikes.

According to Ulloa (2007), Mantos Blancos mineral continuity is controlled by the Salar del Carmen segment of the Atacama Fault System. The deposit is limited to the East by the Rencoret Fault and to the West by the Salar del Carmen Fault serving as bounding faults defining an extensional setting which was the path to the emplacement of the deposit (Figure 7-2). Structurally the deposit is part of an extensional pull-apart extensional basin controlled by the Prat-Alibaud and La Torre major dextral faults. All internal and local features of the mine are influenced by this extensional setting. Horst and graben features can be seen on the mine site.

Figure 7-2: Atacama Fault System Salar del Carmen Segment



Note: (Ulloa 2007), Figure courtesy Mantos Copper, 2020

Falta = Fault

The mining and exploration districts in the neighbourhood of Mantos Blancos include different deposit types and mining operations; these are shown in Figure 7-3 and summarized as follows:

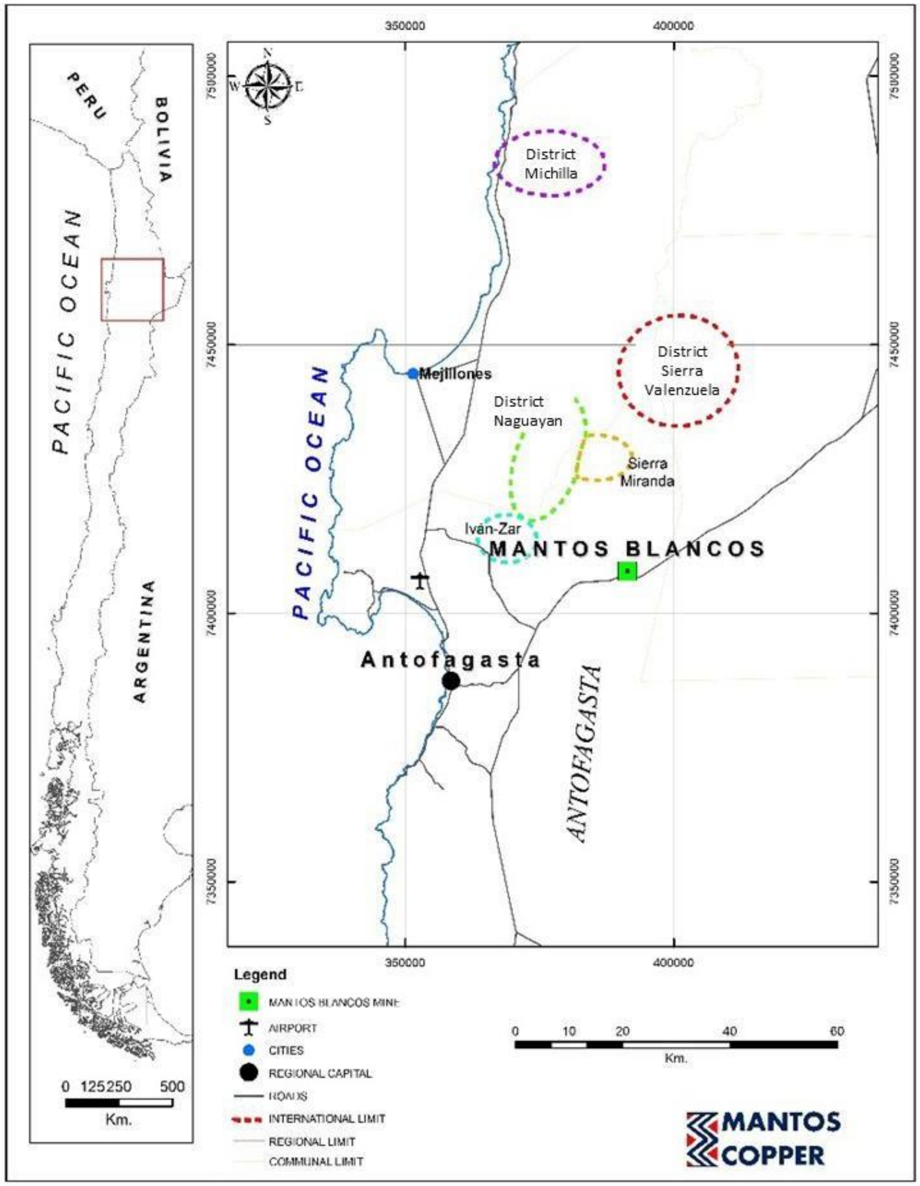
1. Iron, oxide, copper, gold (IOCG) deposits related to Lower Jurassic age (170 My): Naguayan district and Sierra Miranda mining operations

2. Vein systems and stratabound deposits formed during the Middle Jurassic age (160 My to 165 My): examples include the Tocopilla, Gatico, Buena Esperanza, Mantos del Pacífico and Mantos de la Luna mining operations

3. Breccia and stratabound deposits formed during the Lower Jurassic age (147 My to 145 My): examples include the Michilla, Mantos Blancos and Iván-Zar mining operations

4. Porphyry copper deposits formed during the Lower Cretaceous age (between Berriasian and Valanginian, 142 My to 136 My): examples include the Antucoya mining operation.

Figure 7-3: Mining and Exploration Districts in the Mantos Blancos Area



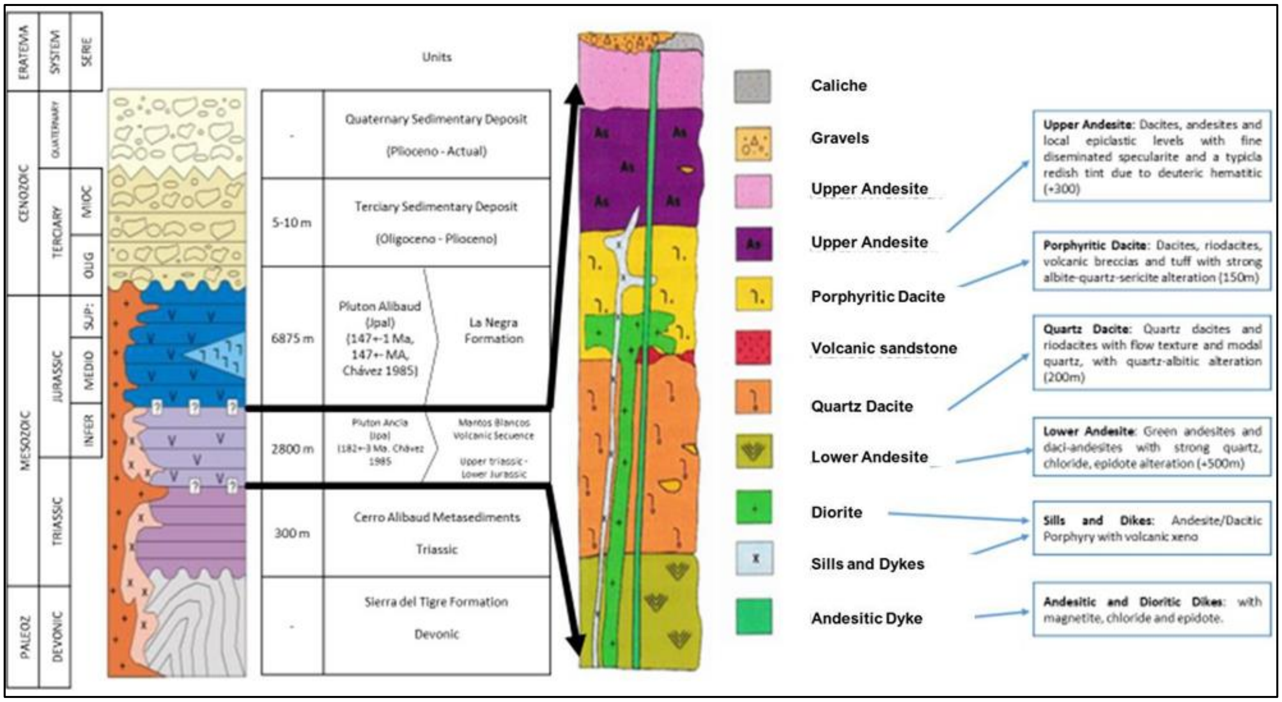
Note: Figure courtesy Mantos Copper, 2020

7.3 Local Geology

Mantos Blancos is located in the Jurassic-Early Cretaceous extensional magmatic arc of northern Chile. Radiometric ages of volcanic and intrusive rocks in the district range from 186 My to 149 My. The Atacama Fault system is the most prominent structural feature in the district. Three sets of faults characterize the deposit with strike directions NW, NS and NE.

A series of mining units were defined in 1978; these units are part of the Mantos Blancos Volcanic Sequence defined by Chavez (1985) which are included in the La Negra Formation. In the deposit, these local units show a strike N25° to 50°W and dip (10 to 20°) SW, with a thickness of 700 m to 800 m (Figure 7-4 and Figure 7-6). All mining units may contain copper mineralization.

Figure 7-4: Regional and Local Stratigraphic Relationships



Note: Figure courtesy Mantos Copper, 2020

7.4 Rock Types

The deposit is mainly characterized by pyroclastic and intrusive host rock units. The pyroclastic and intrusive units are from the Permo-Triassic and Early Jurassic age. Andesite belonging to the La Negra Formation (Middle-Late Jurassic), tonalite, granodiorite, aplite and dacite porphyry belonging to the El Ancla and Alibaud plutons of Middle to Late Jurassic age also outcrop along the deposit.

Rock types in Mantos Blancos consist of a rhyolitic dome and magmatic–hydrothermal breccias which are intruded by dioritic and granodioritic stocks and sills. The dioritic and granodioritic stockwork locally grade upwards into magmatic–hydrothermal breccias that are mineralized to different degrees. Late mafic dikes cross all the previously mentioned rock units and are essentially of no economic value. The local structural framework is characterized by three groups of faults: 1) NE and NW sub-vertical faults with evidence of sinestral and dextral movements respectively, 2) NS/50˚ to 80° W normal faults, and 3) NS/50˚ to 80° E normal faults.

The main rock types are described in the following sections.

7.4.1 Stratified Rocks

From bottom to top it is possible to recognize:

Basal Andesite: Chloritized porphyritic andesite, green to greenish-grey tone with an assemblage of quartz-chlorite–epidote mineral alteration. This is the base of the mineralized unit in the deposit. The unit is typical 100 m thick.

Volcanic Sandstone: Volcaniclastic tuff, fine to coarse grained, light pink to reddish, brown colour. The unit is thin relative to the other units in the sequence, typically ranging between 0.5 m to 5 m thick.

Quartz Dacite: Rhyolitic to dacitic lavas: these are a quartz-rhyolite–rhyolitic volcanic tuff. This appears similar in colour to porphyritic dacite but it is possible to differentiate based on the presence of 1 mm to 5 mm quartz eyes and the absence of porphyritic texture. This rock type hosts copper sulphide and subordinated oxidized copper mineralization up to 200 m thick. Radiometric measurements performed on samples from the bottom of the Elvira pit returned a U/Pb age of 181.8±0.6 My (Cornejo et al., 2006) using the TIMS method (not zoned zircon).

Upper Andesite: Volcanic tuffs, dacitic and rhyolitic lava flows, andesites, epiclastic and volcanic breccias showing purple to reddish-brown tones due to the red hematite, thin disseminated hematite and specular hematite. Albitization of feldspars is common along with epidote, weak sericite and illite, and silicification. The unit has a maximum thickness of 300 m. Radiometric measurement returned an age of 181.7±0.2 My (Cornejo et al., 2006) using the TIMS method.

7.4.2 Igneous Rocks

Diorite: Sub-volcanic sill-like intrusive body. Petrographically it is a green porphyritic andesite, with vesicular texture, albitization and strongly chloritized. The unit is 50 m maximum thick. Mineralization is copper oxides and copper sulphides.

Porphyritic Dacite: Alternating sequence of rhyodacites with porphyritic and breccia textures: pinkish, white to red colour depending on the amount of hematite and sodic alteration. In general, the rocks with paler colors are weakly mineralized; however, a reddish colour typically indicates the presence of copper mineralization. This unit has a maximum thickness of 150 m.

Intrusive Andesite: Mantle rhyodacite, pinkish and greenish colours depending on the degree of albitization and chloritization developed. Morphologically the unit develops concordant sills or discordant dikes. The unit ranges from 1 m to 10 m thick and copper oxides and copper sulphide mineralization is present. Radiometric measurements indicate a U/Pb age of 180.8±0.2 Ma (Cornejo et al., 2006) using the TIMS method.

Dikes: Northeast striking sub-vertical porphyritic diorites of pyroxene-plagioclase and fine porphyritic hornblende diorite. The dikes cut all units of the deposit, including the orebodies and ranges from 1m to 20 m thick. They are dark green or dark grey due to strong chloritization and the presence of a large amount of magnetite. They are essentially waste units, although locally they can host oxide copper mineralization and pyrite may occur at deeper levels. Radiometric measurement ages range from 147 My to 149 My (Chavez (1985)) using the K/Ar in amphibole method; 147.4±1.4 My (Munizaga et al. (1991)) using the 40Ar/39Ar in plagioclase method; and 151.3 ±1.2 (Cornejo et al., 2006) using the Ar/Ar in plagioclase method.

The units described above are represented in the schematic section in Figure 7-4 and may present gradational limits or faulting contacts.

7.5 Mineralization and Alteration

The sulphide mineralization consists of chalcocite (and/or digenite), covellite, bornite, chalcopyrite, pyrite, specularite, magnetite, galena and low sphalerite, occurring in disseminated form, with varying thicknesses. The oxidized copper minerals are atacamite, chrysocolla and minor malachite, antlerite, tenorite, cuprite and almagres occurring as dissemination and fracture filling. Silver occurs in the crystal structure of the copper sulphides and occasionally as native silver. The geometries of the mineralized bodies are irregular lenses and oxidized copper sulphides are arranged in tabular form with a 100 m to 200 m thick interval (Boric et al., 1990) that is strongly controlled by structures.

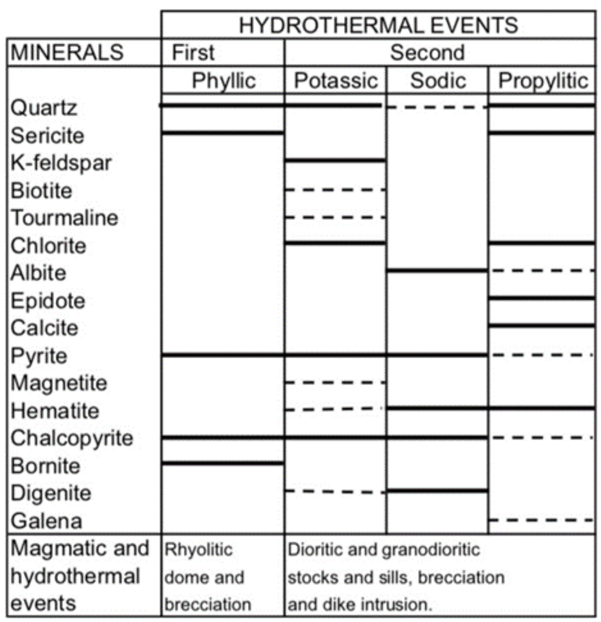
The mineralization has a distinct vertical zonation (Infanta, 2002), with specularite at the top (porphyritic andesite and upper andesite), followed by an oxidized copper (atacamite with minor chrysocolla) that migrates in depth to a high-grade sulphide (chalcocite-bornite). The latter corresponds to irregular chalcocite rich centre lenses which decrease towards the edge to predominant bornite. Surrounding these lenses is a zone of lower grade with chalcopyrite and bornite, ending at depth with a pyritic zone, occasionally in some sectors associated with chalcopyrite. The areas with secondary enrichment are of small extent, predominantly with covellite over chalcocite and located near major faults. The oxidized copper would have developed by the in-situ oxidation of primary sulphides.

7.5.1 Hydrothermal Events

The mineralization is characterized by two main hydrothermal events, with the super-imposition of distinct minerals and the relationship between different stages of veinlets.

The first hydrothermal event is defined by the rhyolitic magmatic–hydrothermal brecciation hosted in the rhyolitic dome and the second hydrothermal event is defined by dioritic to granodioritic magmatic-hydrothermal breccias. The second event contains the major copper mineralization and is considered syngenetic with both the breccia and the emplacement of the granodioritic and dioritic stocks and sills. The correlation between minerals and alterations including these hydrothermal events is shown in Figure 7-5.

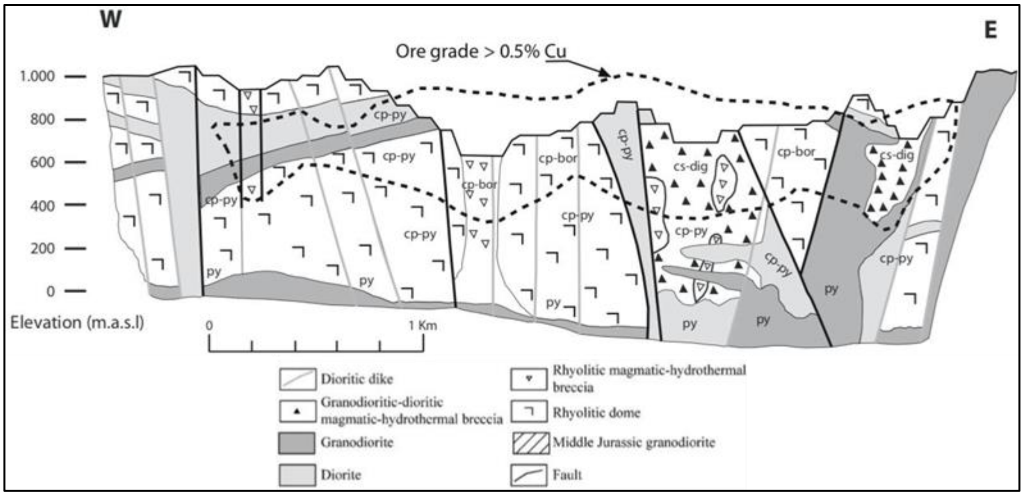
Figure 7-5: Hypogene Mineral Assemblage of the Hydrothermal Events



Note: (Ramírez 2006), Figure courtesy Mantos Copper, 2020

The mineralized volume associated with the second hydrothermal event extends discontinuously for 3 km in the E–W direction and it has width and depth of up to 1 km and 600 m respectively. The hypogene mineralization occurs between 720 masl and 450 masl. Figure 7-6 shows a representative vertical section.

Figure 7-6: E-W Vertical Section showing Rock Types and Minerals



Note: (Ramírez 2006), Figure courtesy Mantos Copper, 2020

7.5.2 Alteration/Mineralization Units

The Mantos Blancos mineralization has an EW orientation, with an extension of 3.1 km long by 0.9 km wide. Vertically it extends from 1,020 m elevation to approximately 400 m elevation.

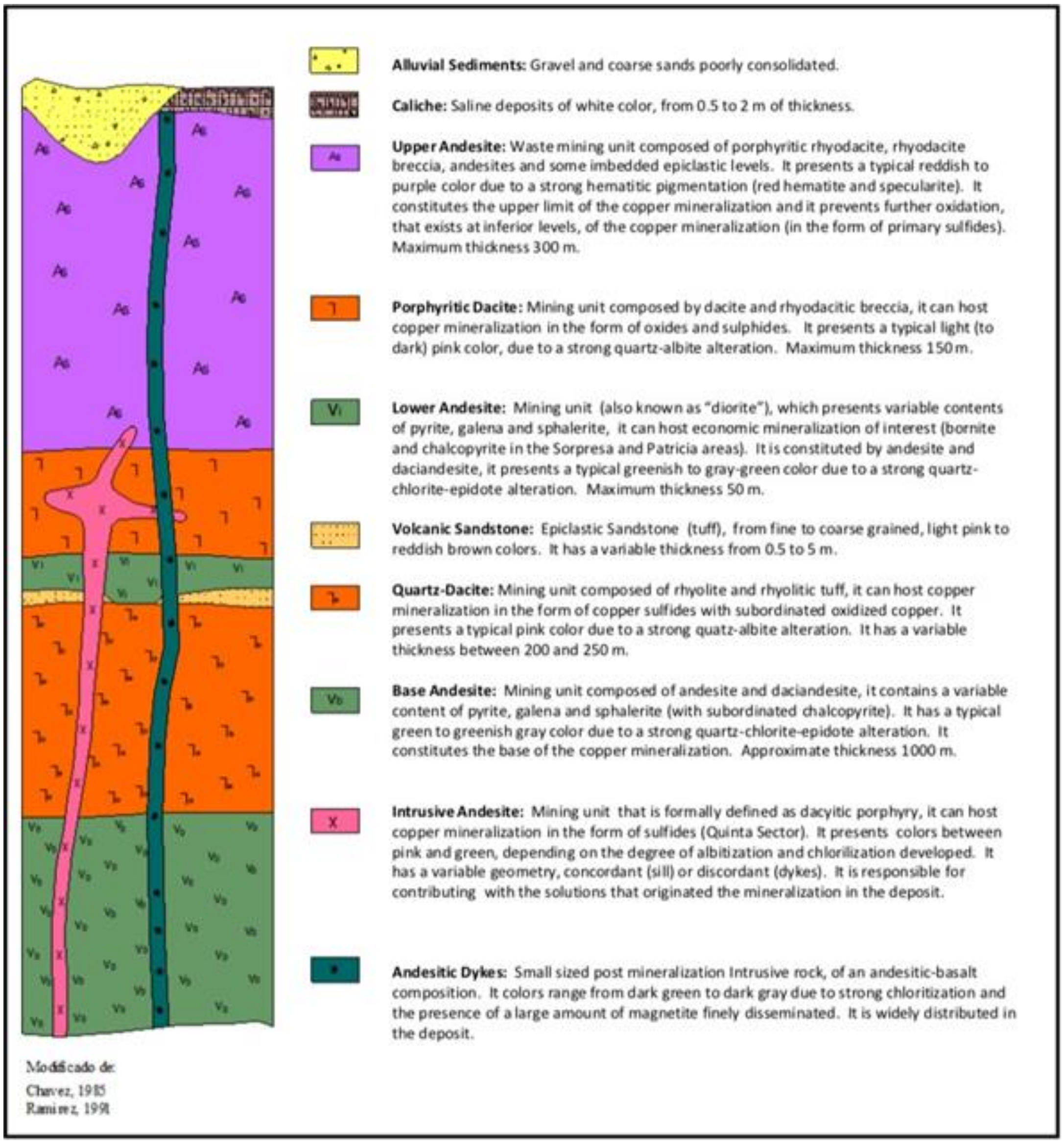
According to Ramirez (1991) the deposit has three different alteration-mineralization units (after all the geological events). These are called Upper Andesite, Porphyric Dacite and Lower Andesite.

Upper Andesite has no mineralization and defines the upper limit of copper mineralization. It includes andesite, dacite, volcanic breccia, tuff and sandstone. All are typically reddish in colour due to hematitic pigmentation and disseminated specular hematite.

Porphyric Dacite hosts the main mineralization event, it consists of porphyric dacite with prominent quartz eyes, tuff and andesite. All are pale pinkish-brown to orange-brown in colour due to the alteration to albite and some amounts of epidote, sericite-illite, chlorite and quartz. In addition, sulphides in this unit are zoned, from outside to the centre, pyrite followed by pyrite-chalcopyrite, chalcopyrite-bornite and finally bornite-chalcocite. The centre of the mineralized zone has a reddish hue because of the abundant hematite in veinlets and finely disseminated veins.

Lower Andesite defines the lower limit of the copper mineralization, it includes andesite and porphyritic dacite. Both are commonly of green colour due to chlorite, albite, quartz, epidote alteration, pyrite and minor quantities of chalcopyrite. Figure 7-7 shows these alteration/mineralization units.

Figure 7-7: Stratigraphic Column with Rock Types, Alteration and Mineralization Units

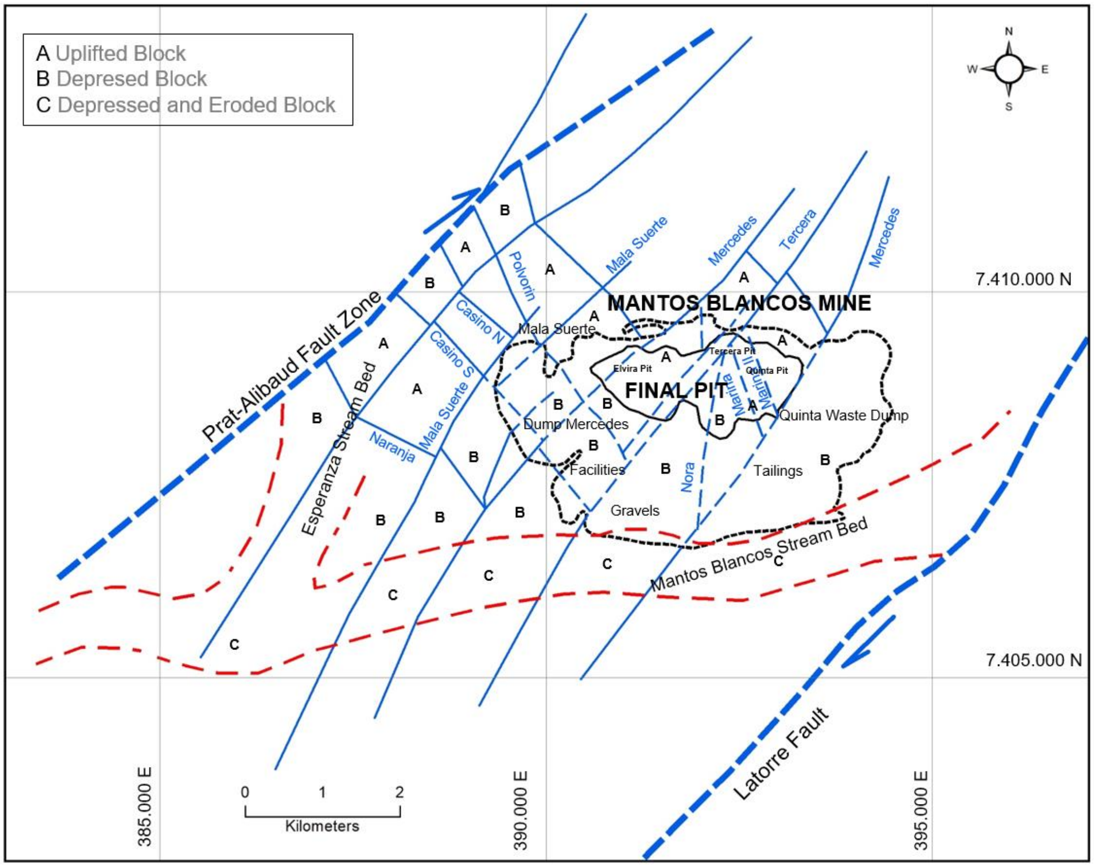


Note: (Chávez, 1985), Figure courtesy Mantos Copper, 2020

7.6 Local Structures and Faults

The deposit is part of an extensional pull-apart basin controlled by the Prat-Alibaud and La Torre master major dextral faults. Most of the local features that can be seen in the mine are controlled by this extensional setting of graben and horst. Figure 7-8 shows the main structural domains.

Figure 7-8: Local Structures and Faults



Note: Figure courtesy Mantos Copper, 2020

Figure 7-8 shows that the deposit is constrained by North-West (NW), North-East (NE) and North-South (NS) structural domains. The main characteristics of these are described below:

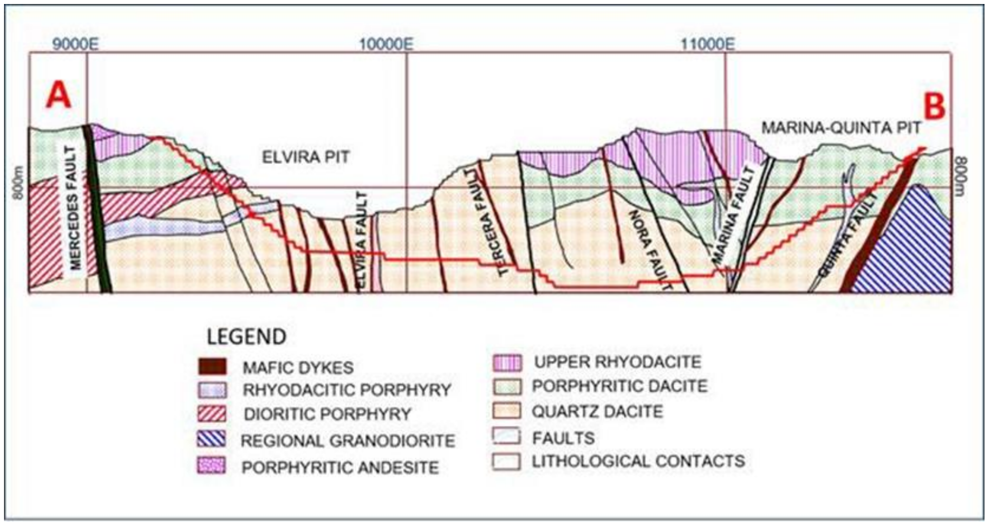
- NW Domain: Comprises the sub-vertical faults Naranja, Casino, Polvorín and Cabecera which strike N (40° to 60º) W. It is the oldest domain and can be clearly seen on the west side of the deposit (Mala Suerte and Argentina zones). This domain is parallel to a NW continental order which includes Archibarca and Escondida. This domain belongs to a family of structures that are interpreted as deep faults limiting basement blocks.

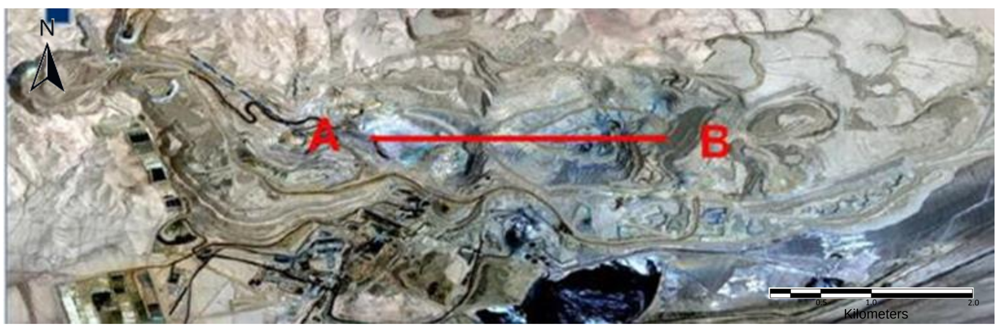
- NE Domain: Comprises the sub-vertical faults Mala Suerte, Mercedes, Tercera and Quinta which strike N (40º to 55º) E. This is the predominant structural feature controlling the dike emplacement and cuts all mineralized lithologies.

- NS Domain: Comprises the sub-vertical faults Marina, Nora and Elvira which strike NS to N25ºW. Post mineralization movements are typical in this domain.

These domains are related to lithologies and mineralization forming grabens and horsts. These features can be seen in the conceptual cross sections in Figure 7-9 and Figure 7-10.

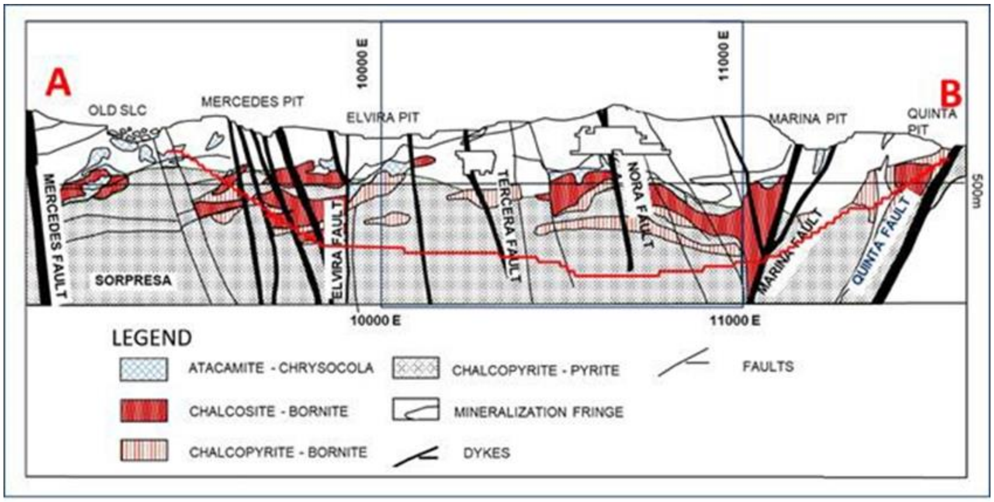
Figure 7-9: Lithological and Structural Setting, Cross Section

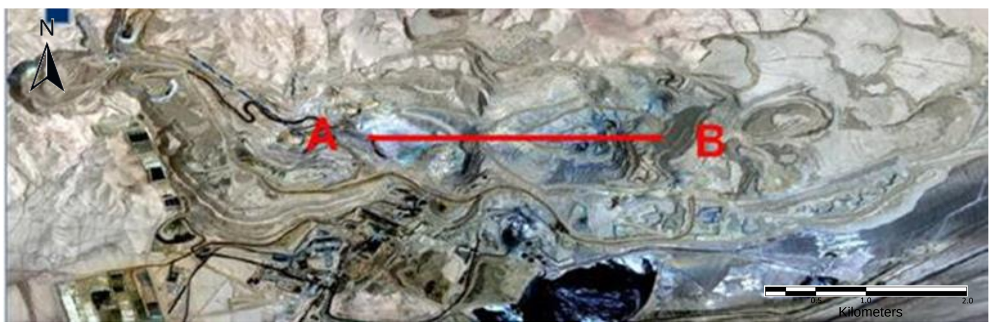




Note: Figure courtesy Mantos Copper, 2020

Figure 7-10: Mineralization and Structural Setting, Cross Section





Note: Figure courtesy Mantos Copper, 2020

8 Deposit Types

Mantos Blancos is a copper stratabound deposit with subordinate content of silver mineralization hosted by Jurassic volcanic sequences. Mantos Blancos has the typical rock, mineralization, alteration and structural setting of the Jurassic deposits, in spite of its bigger size in comparison with other Chilean stratabound copper deposits. The area has been the subject of geological studies and interpretation since 1917 and the deposit geology has been extensively studied by Ramirez (2006) and Maksaev (2002).

Stratabound copper deposits with subordinate silver, known as Chilean manto type deposits, are found along the Coastal Cordillera of northern Chile hosted by Jurassic and Lower Cretaceous volcanic and volcano-sedimentary rocks. The stratabound deposits occurring in the region are shown in Figure 8-2. The Mesozoic stratabound deposits historically have been the second source of copper production in Chile, after the Cenozoic porphyry copper deposits, but have recently been displaced to third place by the exploitation of large Lower Cretaceous Fe-Cu-Au deposits (e.g. Candelaria and Mantoverde mines).

In Chile there are two groups of significant stratabound Cu-(Ag) deposits:

(a) From 22° to 26° lat. S hosted by a Jurassic volcanic sequence (La Negra Formation)

(b) From 30° to 34° lat. S hosted by Lower Cretaceous volcanic and volcano-sedimentary rocks.

Mantos Blancos is associated with the La Negra Formation.

A volcanic arc is recognized in the La Negra Formation in the Coastal Range of northern Chile. This formation comprises mainly thin flows of calc-alkaline basalts, basaltic andesites and high-K basaltic andesites, as well as some volcaniclastic intercalations with a total thickness of 7 km to 10 km. The beginning of the volcanism of the La Negra Formation has been determined to be of Lower Jurassic age. A comparable volcanic belt is also recognized in the Lower Cretaceous in several areas of northern Chile.

Important copper deposits occur in this magmatic arc of northern Chile. The grade (typically 1.5% Cu to 3.0% Cu) makes these deposits good economic targets. Subordinate silver grades (in the range of 10 g/t Ag to 20 g/t Ag) are typical. The most significant deposits are located in calc-alkaline and high-K basalts, basaltic andesites and andesites of the Coastal Range of the La Negra Formation.

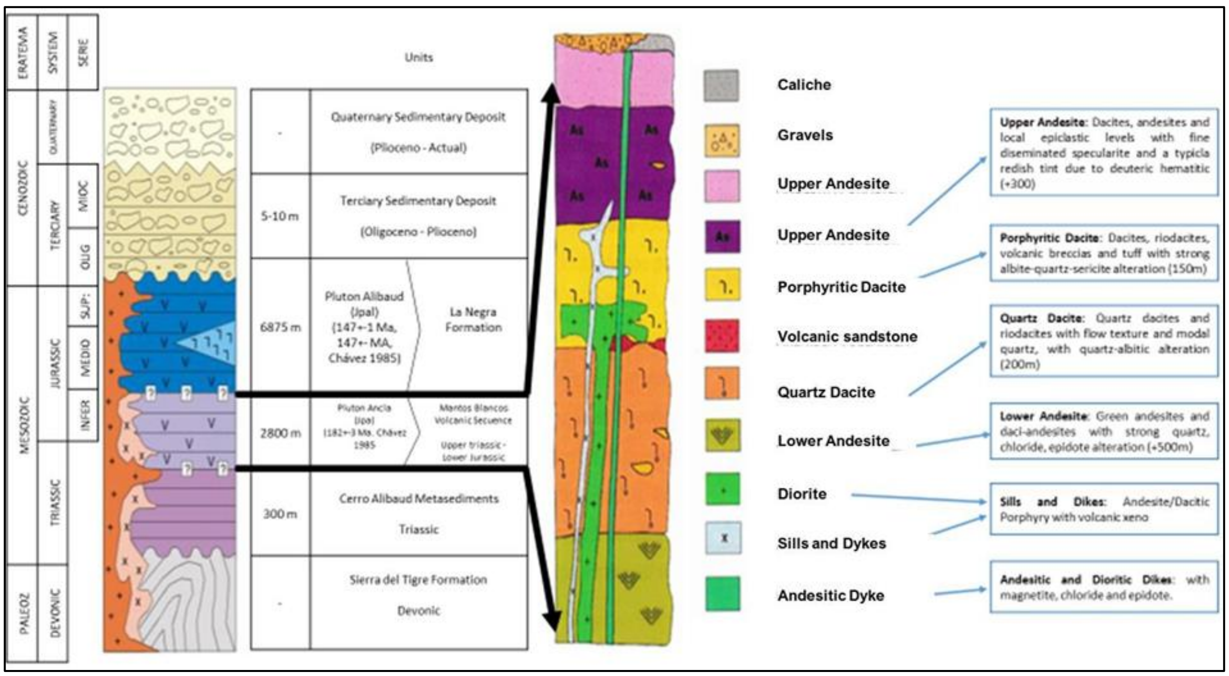
In coastal deposits of the La Negra Formation the copper mineralization occurs both as breccia pipe bodies and as stratiform bodies called mantos, the latter are located preferentially in amygdaloidal and/or brecciated tops of lava flows. The main copper sulphide minerals are chalcocite, digenite, bornite and subordinately, chalcopyrite. The host volcanic rocks are affected by regional scale alteration, likely associated with burial metamorphism which is especially visible in the flow tops. Typical alteration minerals are albite, chlorite, epidote, calcite and quartz.

Although all detailed investigations of stratabound ore deposits in Chile recognize the existence of hydrothermal alteration related to the mineralization, it is difficult to determine the ultimate nature of the mineralization-forming fluids. It is also difficult to discriminate between the role of burial metamorphism versus hydrothermal alteration related to magmatic processes, because both processes may lead to similar alteration minerals.

At Mantos Blancos there are two superimposed hydrothermal events: (1) phyllic alteration probably related to the emplacement of the rhyolitic dome and felsic and magmatic-hydrothermal brecciation at ~155 My, and (2) potassic, propylitic and sodic alterations at ~141 My to 142 My, which occurred with the emplacement of dioritic and granodioritic porphyries and basaltic dikes. The main mineralization is genetically related to the second hydrothermal event, represented by hydrothermal breccias, disseminations and stockwork style mineralization, associated with potassic, propylitic and sodic alterations. The potassic alteration is characterized by K-feldspar, quartz, tourmaline, biotite–chlorite, magnetite, chalcopyrite, digenite and minor pyrite. Propylitic alteration occurs extensively in the whole deposit overprinting and obliterating the potassic alteration assemblage. It occurs as disseminations and veinlets of quartz, chlorite, epidote, calcite, albite, sericite, hematite and minor chalcopyrite, galena and pyrite. A sub-vertical cluster of pebble-dikes, N 25˚ to 30° E with propylitic alteration was observed. Both potassic and propylitic alterations were overprinted by sodic alteration, with albite (replacing feldspar), hematite, pyrite, chalcopyrite, Ag-rich digenite and minor amounts of quartz. This mineral assemblage is very extensive, centred on the magmatic and hydrothermal breccias, and occurs as disseminations, cavity fillings and sharp veinlets.

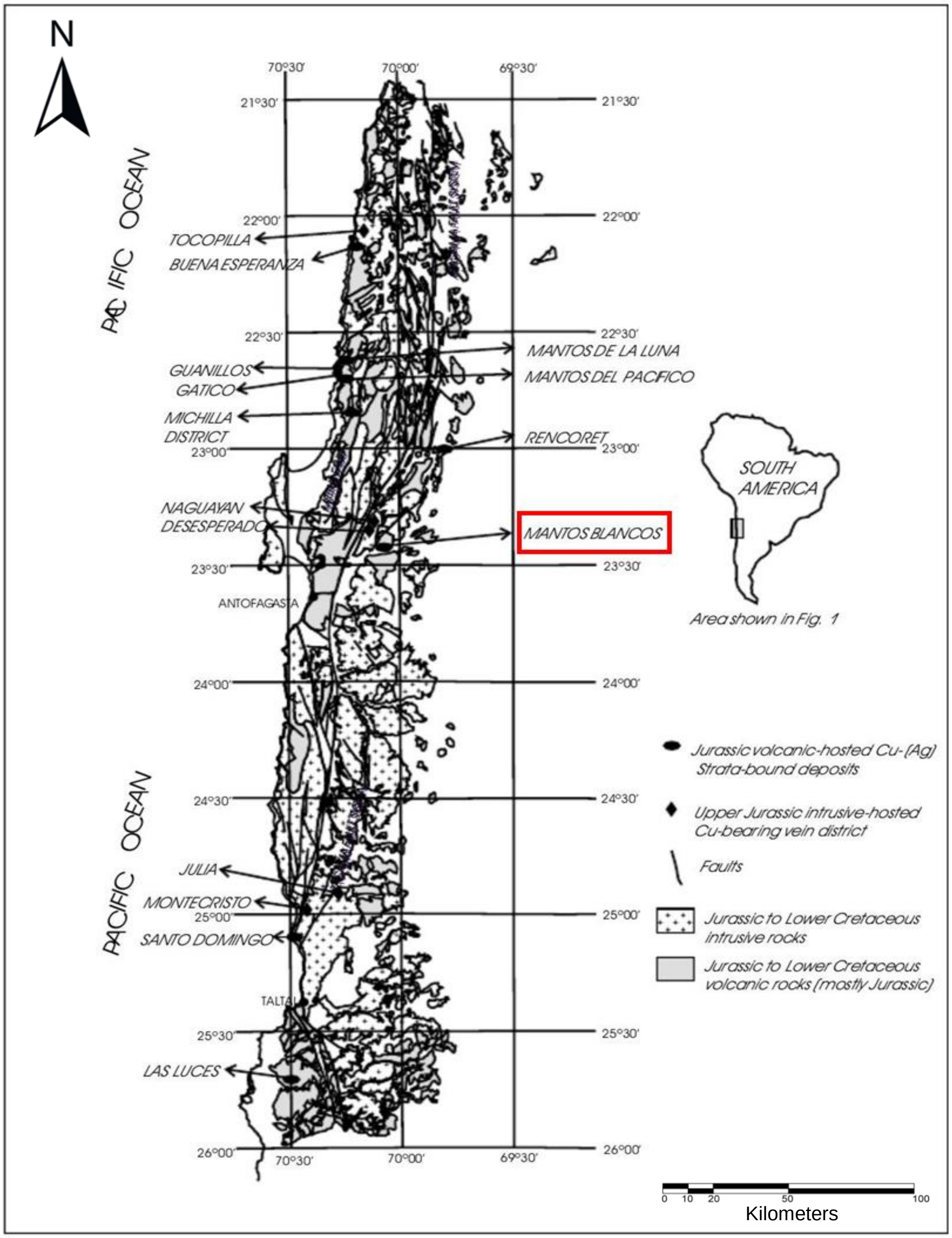
Current mining operations and exploration drilling activities at Mantos Blancos confirm the conceptual geological model (Figure 8-1) and the deposit type (Figure 8-2).

Figure 8-1: Mineralization and Structural Setting, Cross Section



Note: Figure courtesy Mantos Copper, 2020

Figure 8-2: Cu (Ag) Deposits Hosted in Upper Jurassic Volcanic Strata and Cu Vein Districts Hosted in Upper Jurassic Intrusive in the Coastal Cordillera of Northern Chile



Note: (Maksaev 2002) Figure courtesy Mantos Copper, 2020

9 Exploration

The exploration strategy at Mantos Blancos has focused on increasing the accuracy of the Mineral Resource Estimate, as well as a strategic re-evaluation of Mineral Resources and Mineral Reserves to increase Mineral Reserves and extend the life of mine. Exploration is carried out in-house by Mantos Copper's exploration management team.

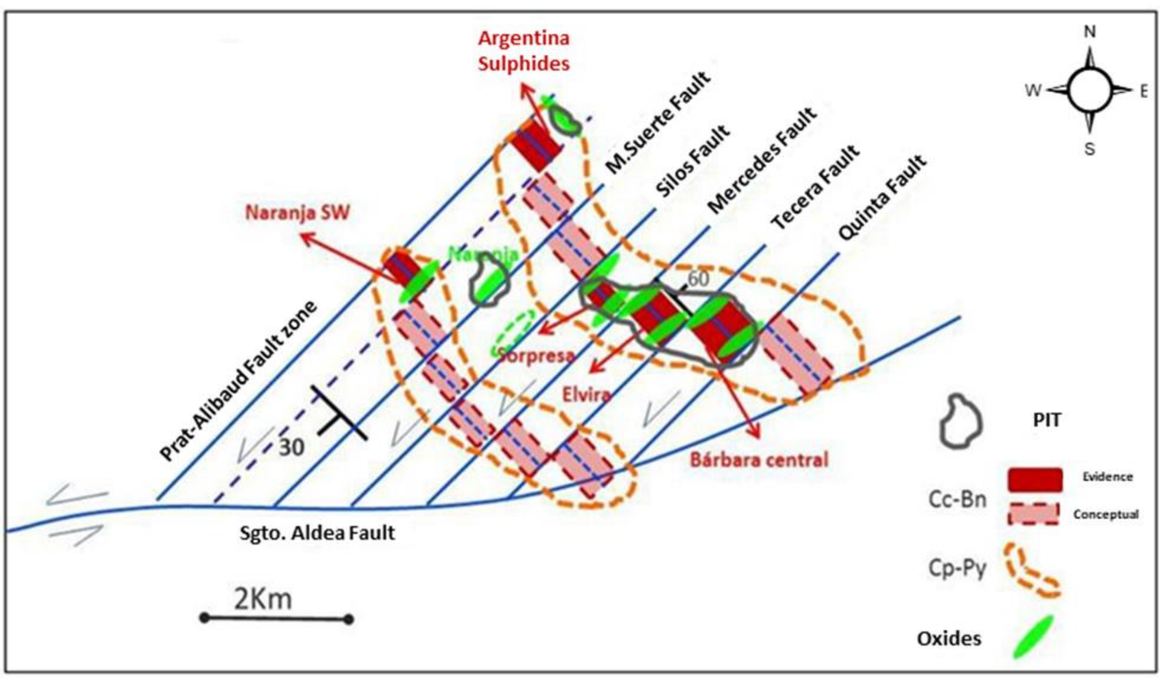
Detailed geological mapping of lithologies, mineralization and alteration along with comprehensive fault studies are the main drivers of exploration activity, in addition to extensive drilling campaigns. Mantos Blancos exploration program has the following specific objectives:

- Definition of the local target: based on the Mantos Blancos Structural Model, the area extends from the Reserve Pit to the Resource Cone, Category 3 and 4 (Exploration Mining and Brownfield, respectively)
- Identification of the structural trend (NS, NW-SE and NE-SW) of the district (within the MB-Atacama Fault district), one of the main controls on the mineralized areas
- Application of the indirect exploration technique (geophysics), mainly to evaluate the extension within the Mantos Blancos Norte and Rosario areas
- Evaluation of potential exploration targets, through local and district greenfield drilling campaigns.

9.1 Deposit Exploration

As detailed in Section 8 Mantos Blancos is a strata-bound copper deposit, the conceptual model used as the main guide for exploration is shown in Figure 9-1.

Figure 9-1: Conceptual Model for Exploration (Plan View)



Note: Figure courtesy Mantos Copper, 2020

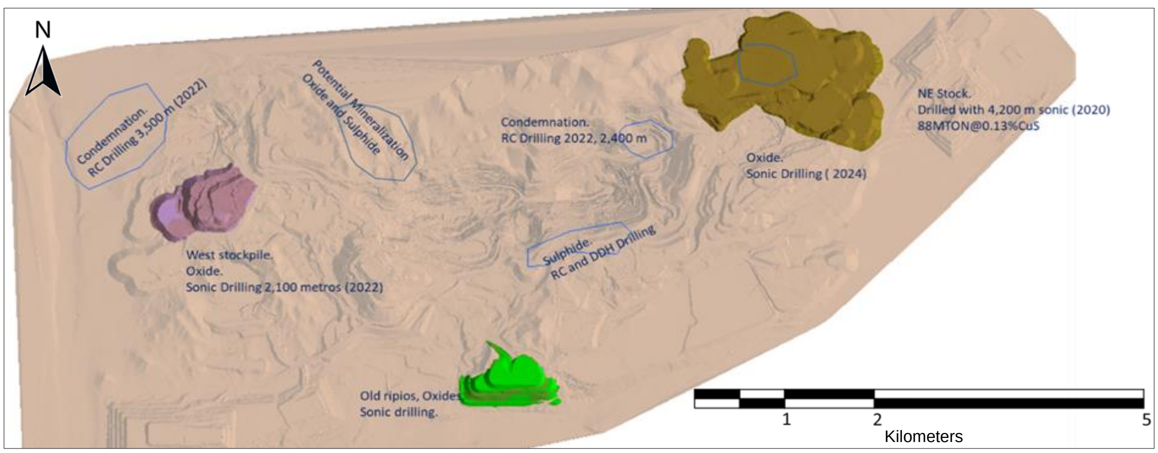
The conceptual model can explain the distribution of chalcopyrite/bornite and copper oxide mineralization (coloured in red and green, respectively, in Figure 9-1) which are controlled by major faults (blue, all oriented N-E, in Figure 9-1). Potential areas for chalcopyrite/pyrite and chalcocite/bornite mineralization are shown in orange and pink, respectively. It can also be seen that the mineralization is displaced by the occurrence of faults and that the mineralized zones are located between the Prat Alibaud and Sargento Aldea faults.

The conceptual model is structure-oriented and is based on mining, geophysical surveys, geological mapping, structural surveys and drilling activities. In terms of geological mapping, the focus is on the identification of:

- Lithology: Dacites/riodacites/daciticos cuarcíferas and intrusive dacites
- Alteration Minerals: Specularite/hematite, albite and chlorite.

On a local scale, exploration has focused on the areas surrounding the Mercedes dump, the current pit and adjacent areas for deep oxides and sulphides. The current sectors where exploration is focussed are shown in Figure 9-2.

Figure 9-2: Exploration Zones at Mantos Blancos



Note: Figure courtesy Mantos Copper, 2020

9.2 District Exploration

District exploration is carried out within a radius of approximately 50 km from the current mining operation, following the structural control of the Atacama Fault, which can be recognized to the north of the mine.

District exploration includes regional mapping with outcrop geochemical surveys to identify anomalies with potential mineralization of interest. Mantos Blancos current efforts are focused on exploration to increase the Mineral Resources near the mine.

Rosario is expected to have the greatest potential for future exploration because there is evidence of favourable structural conditions and outcrops.

9.2.1 Rosario

Between 2017 and 2019 Mantos Copper conducted a district exploration program on properties near the Mantos Blancos mine. This campaign included work on the Rosario prospect. The Rosario prospect is located 15 km south of the Mantos Blancos deposit and approximately 30 km ENE of the city of Antofagasta. A geochemical sampling survey was carried out to delimit the prospective areas. Due to the extension of the mining property, drainage sediment sampling was performed, removing the first 10 cm to reduce contamination by wind dispersion.

Samples were collected approximately every 200 m. There were 1,219 samples collected during the campaign. The samples were sent to the GeoAssay laboratory for ICP-MS analysis of 33 elements (Ag, Al, As, Au, B, Ba, Ba, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K_2O, La, Mg, Mn, Mo, Na_2O, Ni, P, Pb, S, Sb, Sr, TiO_2, Tl, U, Zn, Zr). The results of this campaign allowed Mantos Copper to identify the zones of highest potential.

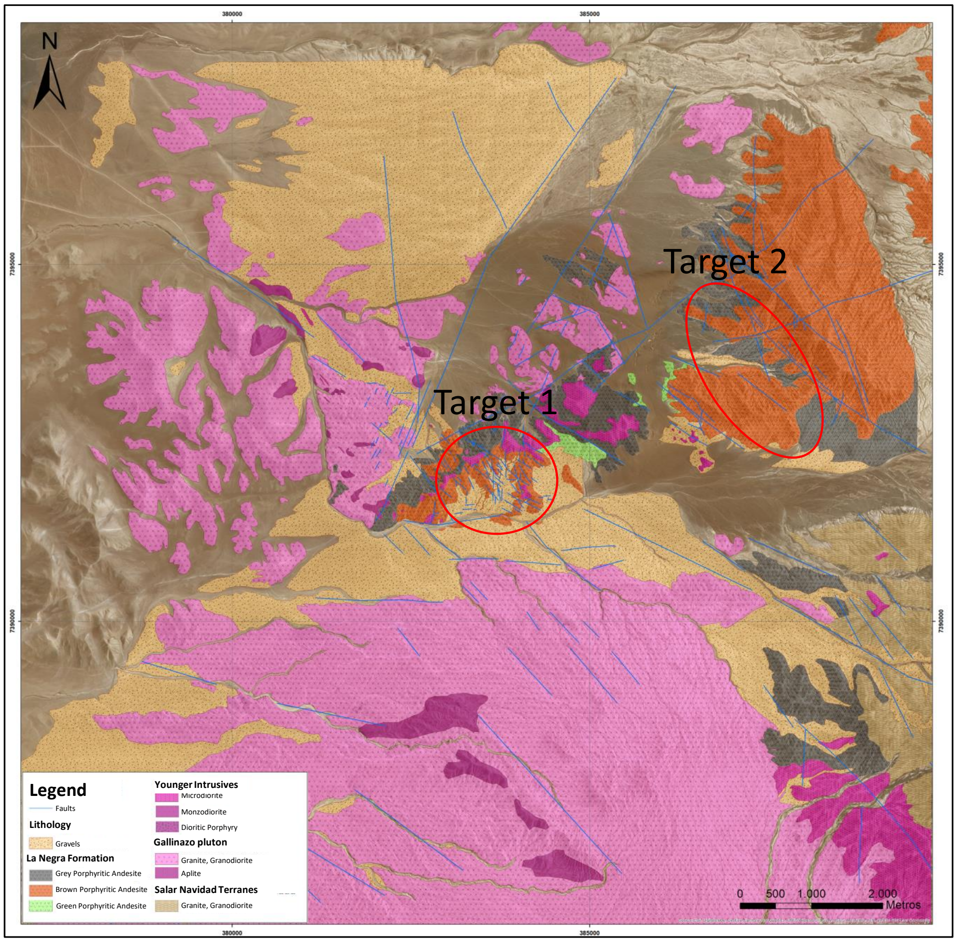
During May 2018, 6 induced polarization (IP) profiles were carried out, totaling 18.6 linear km in a NE-SW arrangement with stations measuring every 200 m using a pole-dipole configuration. This survey, in conjunction with magnetometry, allowed chargeable zones to be detected in magnetic lows at depth, consistent with possible mineralization as shown in Figure 9-3.

Using the surface geological, geochemical and geophysical information of the district, two targets of prospective interest were defined.

The first target (Target 1) is in the central area of the mining property and is an andesitic rock of the La Negra Formation in contact with intrusives of the Gallinazo Pluton to the NW and intrusive rocks of the Las Dunas Pluton to the S.

The second target (Target 2) is located to the E side of the properties. Lithologically it is related to lavas of the La Negra Formation intruded towards the W by microdiorites. There is an important geochemical anomaly in the area that correlates with discordant mineralized bodies with a NNW trend varying between 10 cm to 2 m thick.

Figure 9-3: Target Exploration Zones around Mantos Blancos



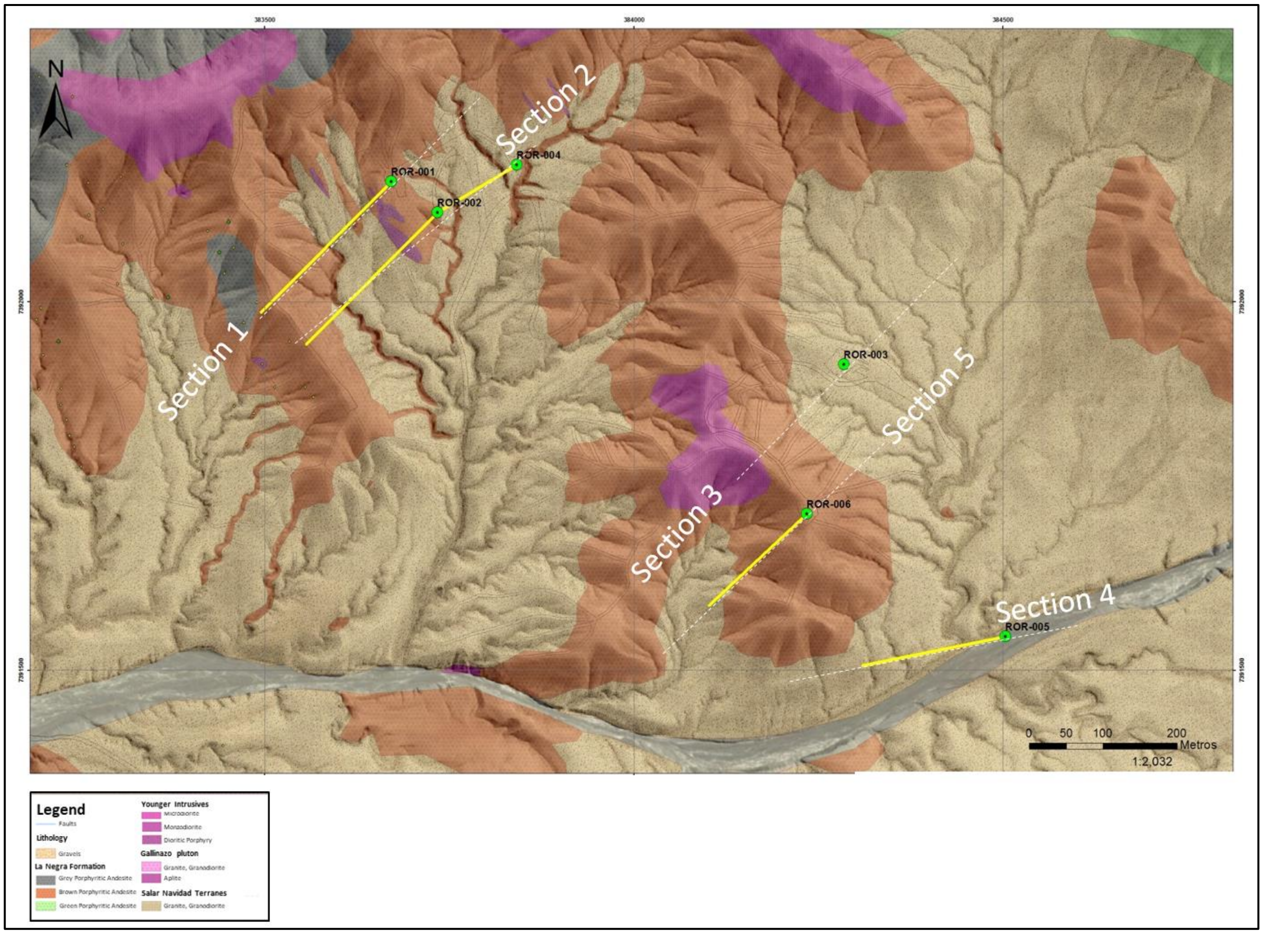
Note: Figure courtesy Mantos Copper, 2020

9.2.2 Drilling

Between July and August 2018, 6 reverse circulation drill holes totaling 2,798 m were drilled. The campaign was conducted by Major Drilling Chile using a Scramm drill rig. The objective was to test surface mineralization detected in the form of high-grade vein systems, with stratabound type till impregnation and deep IP geophysics anomalies at the Rosario main target. Figure 9-4 shows the location of the drill holes in Rosario, Figure 9-5 and Figure 9-6 show vertical sections for the ROR-001 and ROR-005 drill holes.

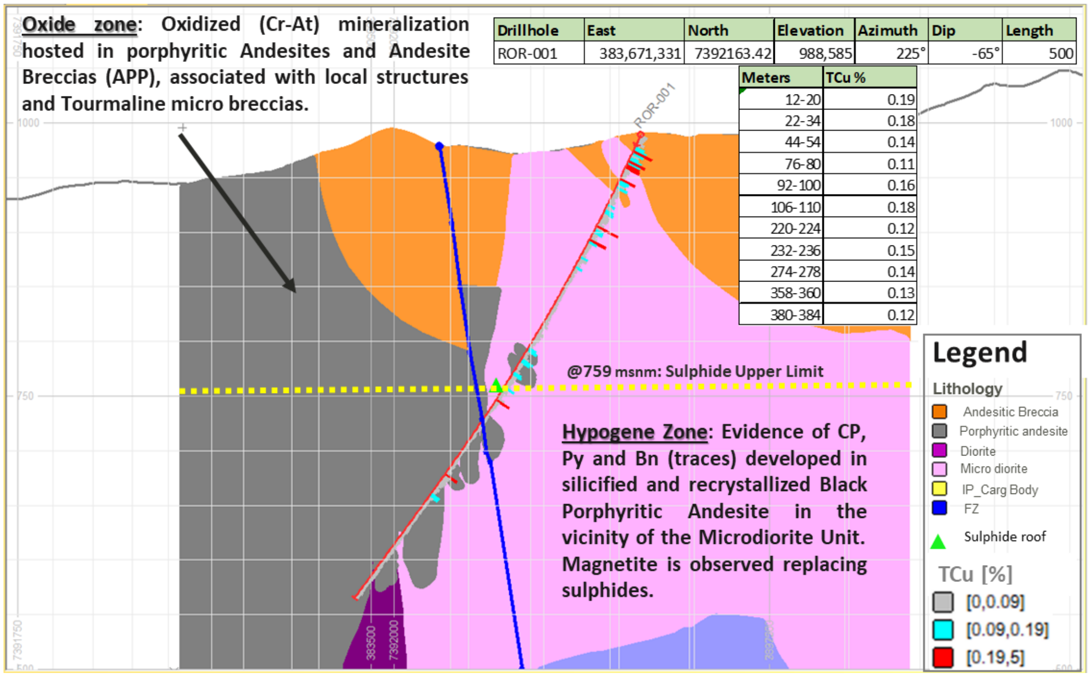
Rosario is expected to have the greatest potential for future exploration because there is evidence of favourable structural conditions and outcrops.

Figure 9-4: Drill Hole Campaign in Rosario



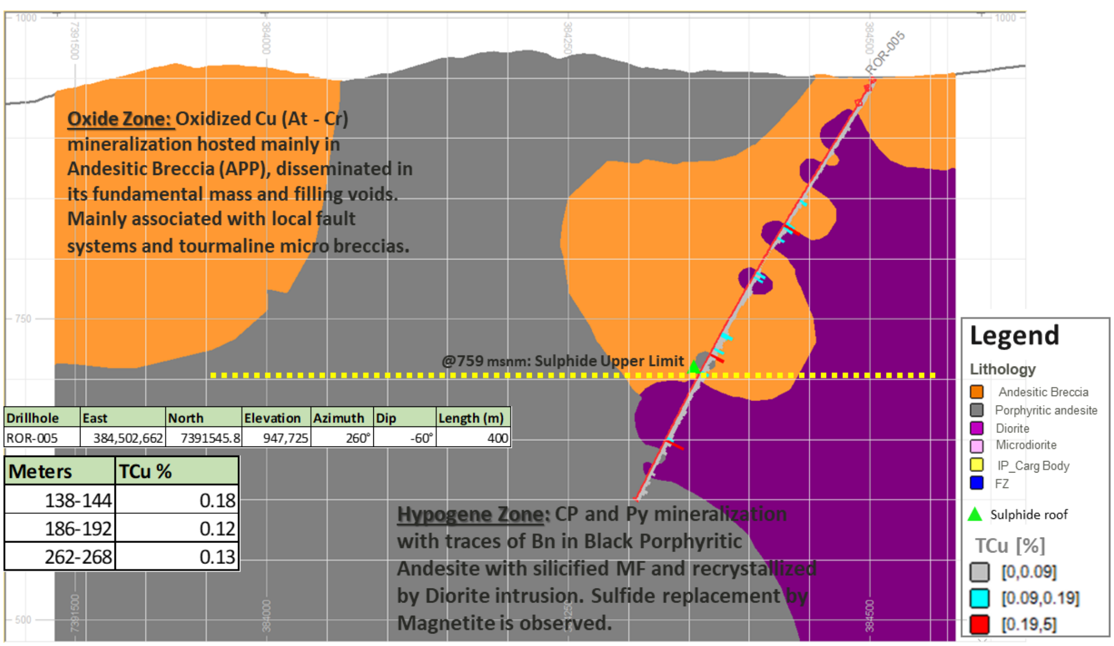
Note: Figure courtesy Mantos Copper, 2020

Figure 9-5: Results for ROR-001 Drill Hole in Rosario



Note: Figure courtesy Mantos Copper, 2020

Figure 9-6: Results for ROR-005 Drill Hole in Rosario



Note: Figure courtesy Mantos Copper, 2020

10 Drilling

10.1 Introduction

Drilling at the Mantos Blancos mine has been conducted by external contractors following procedures defined by the owners and in line with the industry standards. This drilling mainly consisted of surface drilling oriented to intercept the mineralization at depth. Diamond drill holes (DDH) and reverse circulation (RC) were used. The majority of the drilling has been DDH and, more recently RC, see Table 10-1 and Figure 10-4.

The drilling database includes a total of 2,357,438 m drilled by three past and present owners between 1940 and 2021.

Table 10-1: Drilling Detail by Owner

Owner		DDH	DDH/RC	RC	Total
Hochschild up to 1983	Metres	150,186	99		150,285
	N° Drill holes	847	2		849
Anglo American 1983 - 2016	Metres	1,922,229	47,700	152,572	2,122,501
	N° Drill holes	13,618	495	662	14,775
Mantos Copper 2016 - Present	Metres	6,726	13,160	64,767	84,653
	N° Drill holes	36	46	327	409
Total	Metres	2,079,141	60,959	217,338	2,357,438
	N° Drill holes	14,501	543	989	16,033

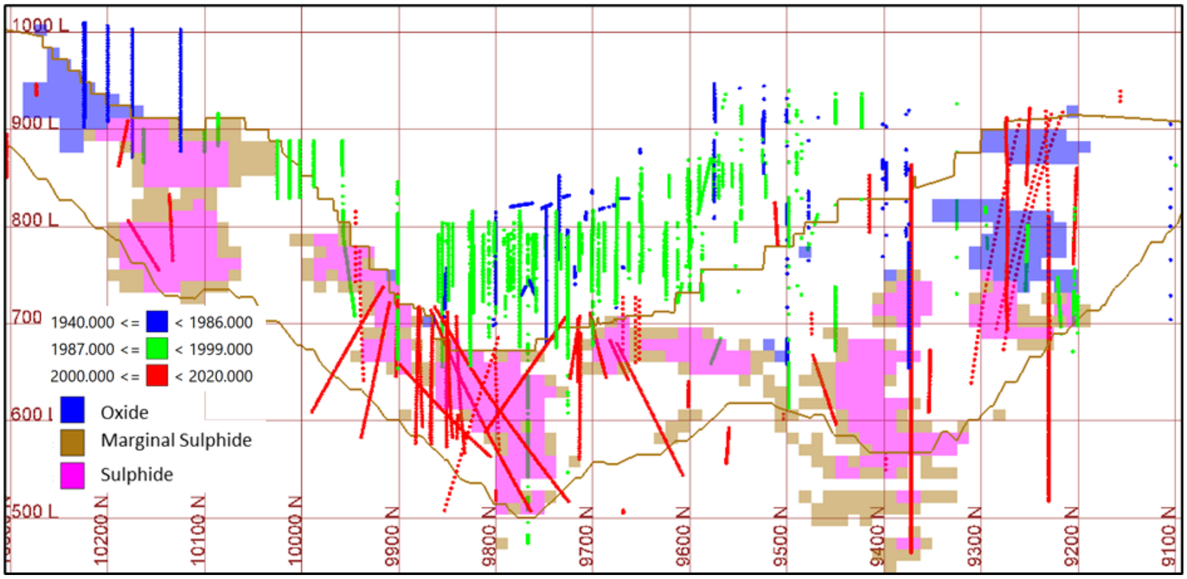
10.2 Historical Drilling Data

The Mantos Blancos drill hole database has information related to drill holes since the 1970s, therefore, some specific information related to historic drill holes is not available, such as the procedures used at the time the drilling was conducted. To evaluate the influence of historical information on the current Mantos Blancos Mineral Resources, several analyses have been carried out.

Figure 10-1, Figure 10-1 and Figure 10-2 show vertical sections and a plan view with drill holes per year and the block model with the type of mineralization.

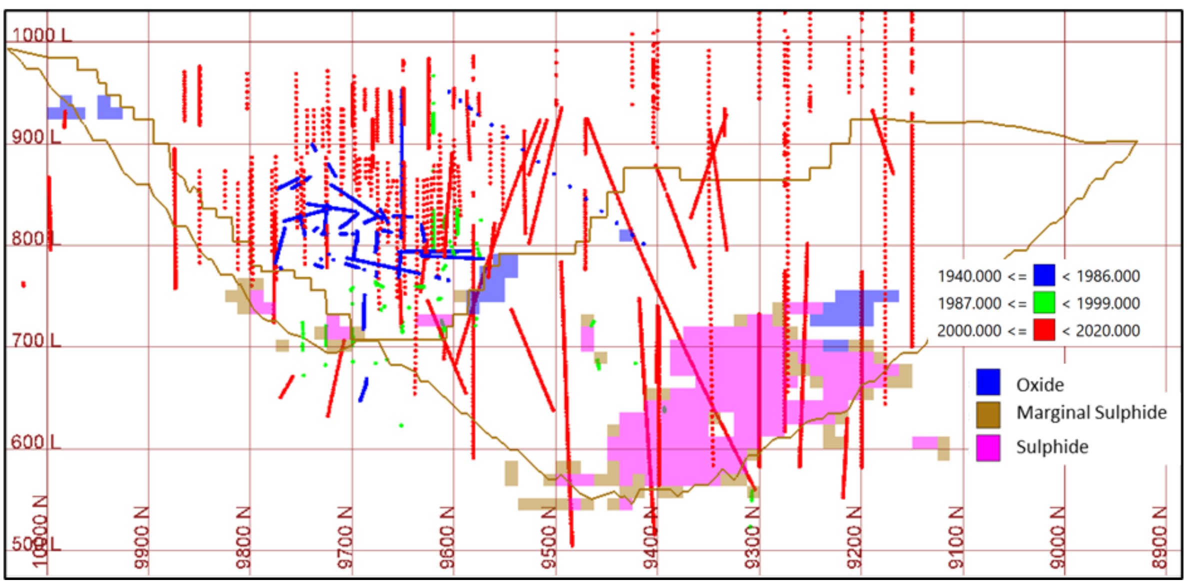
Figure 10-4 shows the drilling by owner and Figure 10-5 shows the drilling (samples) by year of drilling (sample location at December 2020), differentiating between below topo (blue), artificial fill (orange) and above topo (grey). It can be seen that most of the drilling prior to the 2000 is in areas already mined, and approximately 60% of the drilling located below topo was drilled after the year 2000, when Anglo American was the owner.

Figure 10-1: Section 10,015E showing Drill Holes by Year inside the Resource Pit



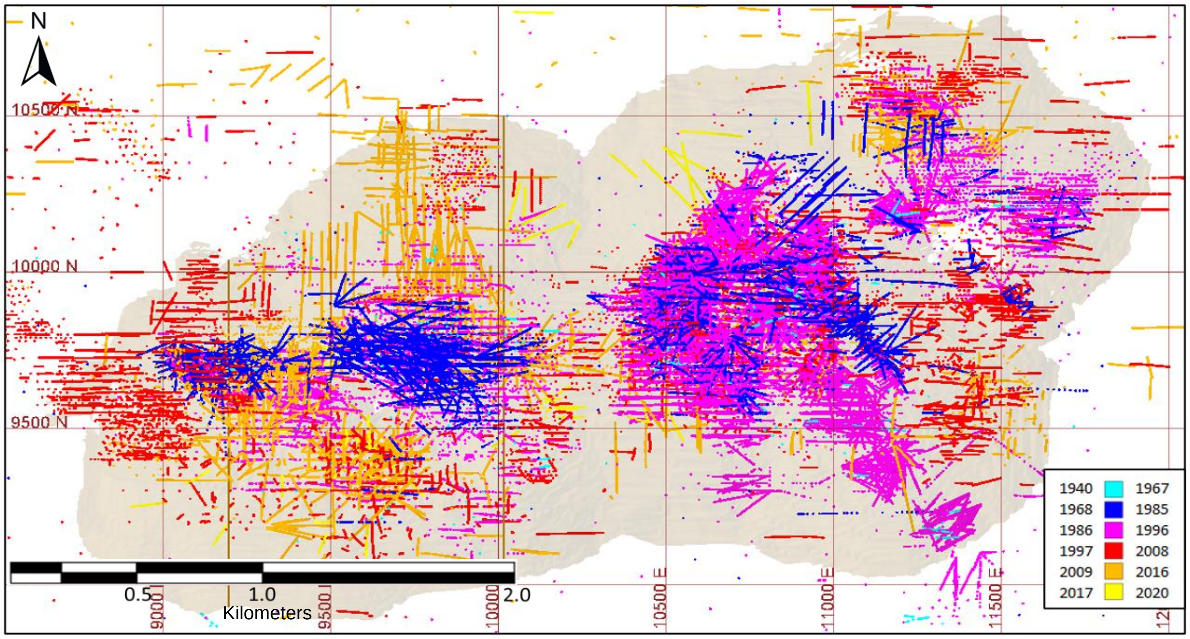
Note: Figure provided by Golder, 2020

Figure 10-2: Section 9,195E showing Drill Holes by Year inside the Resource Pit



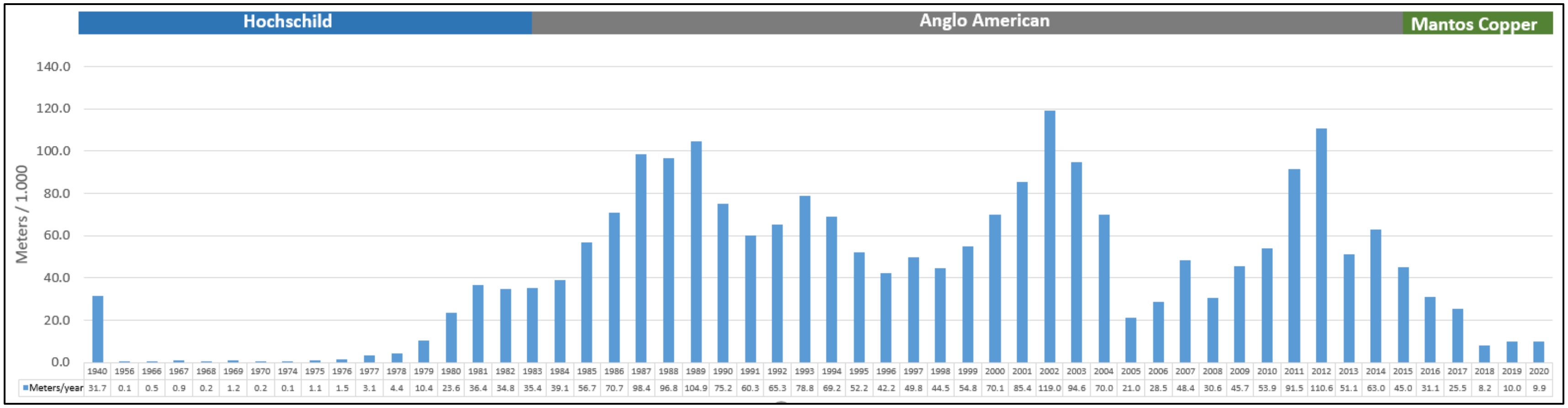
Note: Figure provided by Golder, 2020

Figure 10-3: Drill Hole Distribution by Year at Mantos Blancos



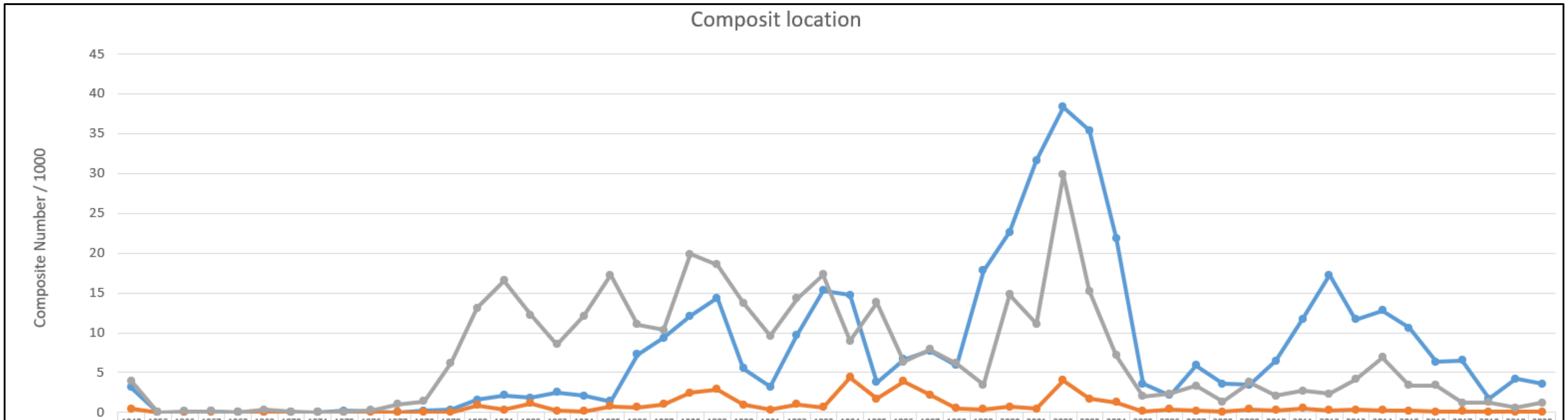
Note: Figure provided by Golder, 2020

Figure 10-4: Distribution of Drilling in Metre by Owner by Year



Note: Figure courtesy Mantos Copper, 2020

Figure 10-5: Distribution of Metre by Year Relative to Topography at December 2020



	1940	1956	1966	1967	1968	1969	1970	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Rock	3.138	0.05	0.038	0.131	0	0.091	0	0.017	0.21	0.123	0.048	0.205	0.323	1.573	2.164	1.811	2.533	2.066
Artifical	0.452	0.009	0.001	0.046	0	0.002	0	0.001	0.041	0.004	0.008	0.029	0.015	0.917	0.352	1.116	0.205	0.138
Air	3.981	0.018	0.116	0.137	0.044	0.305	0.076	0.026	0.079	0.296	1.051	1.424	6.198	13.08	16.58	12.24	8.516	12.13

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Rock	1.369	7.294	9.336	12.1	14.38	5.502	3.194	9.697	15.3	14.74	3.776	6.644	7.743	5.901	17.79	22.62	31.66	38.31
Artifical	0.75	0.664	1.05	2.431	2.896	0.941	0.347	1.028	0.662	4.373	1.694	3.903	2.22	0.511	0.388	0.692	0.464	4.026
Air	17.23	11.02	10.34	19.87	18.53	13.73	9.598	14.3	17.29	8.989	13.78	6.333	7.937	6.133	3.433	14.83	11.13	29.82

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rock	35.38	21.84	3.614	2.136	5.935	3.591	3.448	6.493	11.7	17.25	11.68	12.77	10.63	6.359	6.505	1.692	4.207	3.557
Artifical	1.691	1.283	0.15	0.386	0.187	0.098	0.365	0.272	0.539	0.282	0.347	0.269	0.187	0.108	0.121	0.058	0.086	0.097
Air	15.26	7.185	2.014	2.318	3.343	1.336	3.756	2.113	2.729	2.337	4.172	6.876	3.417	3.398	1.21	1.278	0.591	1.217

Note: Figure courtesy Mantos Copper, 2020

10.2.1 Hochschild (to 1983)

A total of 849 drill holes (150,285 m), including 2 RC (99 m) and 847 DDH (150,186 m) were drilled by Hochschild with the main objective of oxide characterization. Almost all of this information is located in areas already mined.

10.2.2 Anglo American (1983 to 2016)

A total of 14,775 drill holes (2,122,501 m), including 662 RC (152,572 m), 13,618 DDH (1,922,229 m) and 495 RC/DDH (47,700 m) were drilled with the main objective of infill and to increase the Mineral Resource inventory. This historical diamond drilling carried out by Anglo American followed internal procedures, which are considered to be of a good standard and follow standard practices in the industry. Most of the drilling completed during this time was DDH with HQ and NQ diameter. All the collars were surveyed with a total station and deviation measured with a gyroscope. The recovery was good, approximately 84% for RC and 87% for DDH, and no evidence of material losses related to any specific unit has been reported.

10.2.3 Mantos Copper (2016 to present)

The Mantos Copper drilling program includes all data collected since Mantos Copper acquired the project in September 2015. Mantos Copper has completed a total of 327 RC (64,767 m), 36 DDH (6,726 m) and 46 RC/DDH (13,160 m), totalling 92,596 m. At Mantos Blancos, infill drilling uses a grid of 50 m x 50 m and 15 m x 20 m (on average). Mine exploration drilling relates to drilling in the immediate vicinity but outside the limits of the pit, mainly to the east and west with a dip of 65° to 90° on a grid of 60 m x 60 m (on average). A number of holes were drilled for geomechanical and metallurgical purposes.

10.3 Drill Hole Collar Surveys

All Mantos Blancos drill hole collars have been surveyed. Collar surveying at Mantos Blancos is done with high precision GPS and total station for surface data. Daily operational surveying is done with GPS or total station and prism, which allows a high degree of confidence in terms of the X, Y and Z coordinates. Mantos Blancos uses a local coordinate system based on UTM coordinates.

10.4 Downhole Surveys

For the more recent drill holes downhole surveys were measured by Comprobe Services using an SRG gyroscope. Measurements were taken every 10 m along the drill hole depth. The surveys were carried out during the lowering and raising of the gyroscope. In addition, as a quality control procedure, 10% of the drill holes were re-measured; most of the holes showed little deviation. Records are submitted digitally and in hard copy, and are reviewed and validated by Mantos Blancos personnel before being uploaded to the database. Original certificates are archived in folders.

10.5 Logging Procedure

Logging is performed by external contractors following Mantos Copper standards and under the supervision of Mantos Copper personnel. The logging activities are carried out in the Mantos Blancos core shed, where special facilities are available for these activities. RC drill cuttings and DDH cores are logged recording the main geological variables, lithology, alteration and mineralization, and recording all geological contacts. Specific procedures exist for the geological logging, and geologists use the same format and codes to log DDH and RC drill holes. The information is recorded digitally using portable field computers (Getac Notebook V110G3). Figure 10-6 shows a general view of the logging area.

Figure 10-6: Logging Area at Mantos Blancos

Note: Photograph courtesy Mantos Copper, 2020

10.6 Recovery

Recovery in RC drilling, for each 2 m sample interval, was calculated by comparing the real weight to the estimated weight, which was calculated using the drill hole diameter (mainly 5½"), the length of the interval and the sample density. Core recoveries were calculated by comparing the core recovered by drilling with the length of the sample interval at the logging facility by trained personnel. In general, no major deviations have been identified for RC or DDH recoveries, which average 81% for RC and 84% for DDH. Recovery percentages are set by contract with the drilling company, and recoveries out of the expected ranges are penalized.

10.7 Sample Length/True Thickness

To intercept true widths, drill holes are normally directed orthogonal to the mineralization or structures controlling the mineralization and depending on the dip of the drill hole and the dip of the mineralization, drill hole intercept widths are usually greater than the true thickness of the mineralization.

11 Sample Preparation, Analysis and Assurance

11.1 Sampling

11.1.1 Reverse Circulation Samples

The RC samples are taken at regular 2 m intervals, homogenized by passing them twice through a riffle splitter, and divided twice with the same riffle splitter. The splitter has a collection tray on the top and a control gate on the side which is used to open the vessel to ensure homogeneity of the process. The sample is finally placed in plastic bags that are weighed on site, the values are manually recorded and later entered into digital files. About 30 kg of material is collected in the process. From the original material, a sample is collected and stored in plastic containers for geological logging purposes. The transportation of the samples from the platform to the sampler is carried out by the contractor and is documented on a form that specifies the number of samples and meters. After logging is complete, the material is stored until the analytical data is accepted and entered into the database. On the same drilling platform spaces are generated for the subsequent insertion of the coarse blank samples, as shown in Figure 11-1.

This sampling method is common in the industry for RC drilling and in the opinion of the QP the procedure results in no bias in either the sampling method or the material selected for geological logging. The RC samples show no significant bias when compared to the DDH samples

Figure 11-1: RC 0713 Samples for Geological Logging

Note: Figure courtesy Mantos Copper, 2020

11.1.2 Diamond Drill Hole Samples

The core collection is done from the core rod on the drilling platform, taking special care to alter the sample as little as possible and not to make mistakes in the ordering of cores. The actual length of the section collected is recorded and the recovery calculated. The cores are sorted in boxes, depth markers are placed to identify the interval drilled and the intermediate lengths are regularized. The transportation of the samples from the platform to the core shack is carried out by the contractor and is documented in a form that specifies the number of boxes and meters. Once the core boxes are received by the sampler, digital photographs are taken and the samples are geologically logged. Subsequently samples are selected for density measurement following the cut line marked by the geologist logging the core. The core sampling of DDH drill holes is carried out at regular sampling length of 2 m without considering a break for geological control. Cores are cut in half using a hydraulic guillotine following the sampling line drawn by the geologist during logging. The entire sampled drill hole is sent for chemical analysis. Samples submitted to the laboratory are prepared by primary and secondary crushing and treated essentially the same as the RC samples. A cardboard box containing DDH drill hole DD0013 is shown as an example in Figure 11-2. The procedure used in the laboratory for mechanical preparation and chemical analysis is described in Section 11.2.

Figure 11-2: Drill Hole DD0013, Half Cores from 58.4 m to 60.5 m

Note: Figure courtesy Mantos Copper, 2020

11.1.3 Other Drilling

During the 60s and 70s some Chun Drill drilling was carried out. However, this information was not used for the Resource Model construction.

11.1.4 Legacy Drilling

It is the Qualified Person's opinion that the methodology used for sampling at Mantos Blancos is common in the industry; handling, storage and recording of core samples in cardboard boxes and plastic bags is intuitive, clear and follows generally accepted mining industry standards.

11.2 Sample Preparation and Analysis

The mechanical sample preparation for RC and DDH samples was conducted by GeoAssay, an independent laboratory in Antofagasta, which holds ISO 9001, ISO 14001 and OHSAS 18001 certificates. The mechanical preparation protocol applied for RC and DDH samples is described below.

11.2.1 Sample Preparation

Bags containing chip or half-core samples labelled with bar codes are sent to the laboratory for sample preparation. On arrival, the laboratory checks and verifies the sample information.

1. Cleaning: before each batch of samples is processed, the crusher is cleaned with quartz and this material is then discarded.

2. Blank sample: the first sample of each batch is quartz, and this sample follows the entire cycle through chemical analysis to check for the presence of contamination or errors. Other blanks are inserted by Mantos Blancos.

3. Primary and secondary crushing: the entire sample is crushed to 95% passing 2.36 mm particle size. One sample from every 30 is selected for a granulometric test and particle size check.

4. Splitting: depending on the weight of the sample, the splitting procedure follows one of two routes;

   a. Samples up to 15 kg: a rotary splitter is used until 1.5 kg to 2 kg is obtained. The sample is passed through a Jones splitter until 300 g remains

   b. Samples <15 kg are split using a Jones splitter until 300 g is obtained

   c. In both cases one duplicate is obtained for every 20 samples.

The sample rejects are returned to Mantos Blancos for back-up.

5. Pulverizing: the entire sample is pulverized using an LM1 pulverizer until 95% of the sample passes <0.104 mm. One of every 30 samples is selected for a granulometric test and particle size check.

6. Storage: samples from pulverizing are put into a paper envelope, labelled with a bar code and sent to the chemical laboratory for assaying. The remaining samples are stored as back-up.

The aim of the sample preparation protocol above is to control the error associated with segregation and minimize the level of contamination. The Qualified Person deems this procedure to be appropriate in terms of sampling, contamination control and sample preparation and is a generally accepted practice in the mining industry for mechanical preparation for RC and DDH samples.

11.2.2 Assaying

Resource estimation is based on total copper and soluble copper grades. Samples have been assayed since 2013 by GeoAssay in Antofagasta, a well-known, independent, international laboratory that has international accreditations. GeoAssay is also responsible for the mechanical preparation.

The general procedures for assaying were as follows:

1. Total Copper: was analyzed by atomic absorption, following international standard AAS022D. The general procedure was as follows:

(1) 1 g of sample was selected and mixed in a solution with 10 ml of HNO_3 and 5 ml of $HClO_4$

(2) the solution is heated until a dry state is obtained

(3) 10 ml of HCl and 20 ml of distilled water are added

(4) the solution is heated to boiling point

(5) 1 ml of Na_2SO_4 was added after the final solution cooled

(6) total copper assay was performed using atomic absorption.

2. Soluble Copper: this was measured by atomic absorption, following international standard AAS078C. The general procedure was as follows:

(1) 1 g of sample is mixed in a solution with 50 ml of H_2SO_4

(2) this solution is stirred for 20 minutes at 140 revolutions per minute

(3) Soluble copper assay is performed using atomic absorption.

3. For silver assays: 2 g of sample is weighed and digested cold for 1 hour in 10 ml of HNO_3, 5 ml of $HClO_4$ and 15 ml of HF, and salts are dissolved with 12.5 ml of HCl; the solution is gauged to 50 ml. Measurement of silver is conducted using Atomic Absorption (AA), this has a detection limit of 1 ppm.

4. $CaCO_3$ assay: 0.1 g of sample is weighed (in refractory crucible), 1 g of accelerator is added. Measurement is done using LECO and the detection limit is 0.01%.

In 2012 a change was made in the method of chemical analysis for soluble copper. This change was from a chemical dissolution with heating to a cold dissolution. Several analyses have been carried out to determine the impact of this change in terms of the soluble copper grade model. A validation of the chemical analysis results against QMSCA sample results was performed with no major inconsistencies detected.

11.2.3 Quality Assurance and Quality Control

Quality Assurance (QA) is the system and set of procedures used to ensure the representativeness of sampling and chemical analysis results. Quality Control (QC) corresponds to the data used to check that the results of sample preparation and chemical analysis are accurate and unbiased and suitable for use in the construction of a Resource Model.

All QA/QC is managed on-line automatically using BDGEO® software. QA procedures include the insertion of control samples of certified reference materials (CRM), pulp and coarse duplicates, and blank samples, inserted into every batch of samples sent to the laboratories. Batch creation is done on site in BDGEO® by Mantos Blancos staff, each batch includes 1 standard, 1 blank, 1 coarse and 1 pulp duplicate (a batch contains approximately 20 samples).

The QA/QC program has been implemented as a normal routine within Mantos Blancos. The results to date have been divided into three time periods; 2009 to 2012, 2013 to 2016 and 2016 to 2020. 2016 corresponds to the acquisition of Mantos Blancos by Mantos Copper. Before 2000 it is not clear how the QA/QC program was implemented at Mantos Blancos; however, since 2000 duplicates and standards have been used. The following sections describe the QA/QC program implemented by Mantos Blancos personnel.

11.2.4 Certified Reference Material

Certified Reference Materials (CRM) are reference materials with known statistical values (mean and standard deviation). Figure 11-3 shows the certificate for MMB-26 CRM samples prepared and certified by GeoAssay Group using material from the Santa Barbara Pit and OREAS Australia. The selected CRMs covered a range of total copper grades to adequately represent high and low grade material. The QC process included preparing and evaluating control charts with the minimum and maximum acceptance thresholds (± twice the standard deviation). If the value exceeded these thresholds, the entire batch was sent to be re-analyzed and results were checked again. Figure 11-4 to Figure 11-9 show the results for CRMs for the period between 2009 to 2012, 2013 to 2016 and 2017 to 2020.

Figure 11-3: Certificate for CRM MMB-26

GEO ASSAY GROUP

MRC S.A
Avenida Américo Vespucio Oriente 1273,
Pudahuel, Santiago, Chile
Tel: +562-27407500
www.geoassay.cl

ASSAY CERTIFICATE

STD-MMB-26

MINERA MANTOS BLANCO.

ANTOFAGASTA, CHILE.

STD-MMB-26 REPRODUCIBILITY												
Elemet	Grade	*Absolute Standard Deviation*					*Relative Standard Deviation*			*Margin 5%*		
		1 SD	*2 SD Low*	*2 SD High*	*3 SD Low*	*3 SD High*	1RSD	2RSD	3RSD	*5%*	*Low*	*High*
Total Copper, TCu (%)	***0,282***	0,006	0,270	0,294	0,264	0,300	2,09%	4,19%	6,28%	0,014	0,268	0,296
Soluble Copper, SCu (%)	***0,197***	0,023	0,151	0,243	0,128	0,266	11,69%	23,37%	35,06%	0,010	0,187	0,207

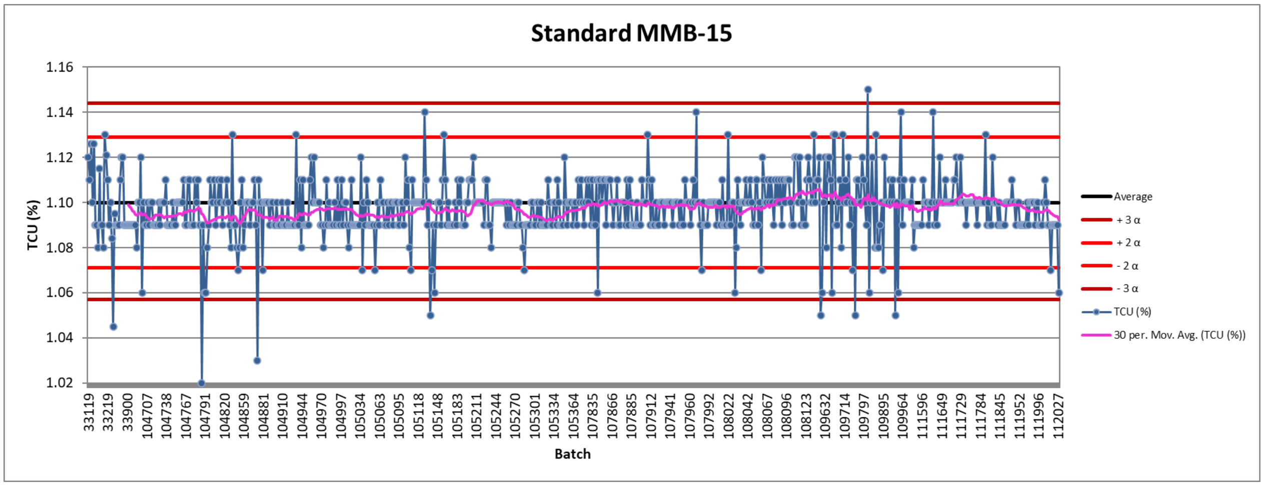
Statistical Summary for STD-MMB-26

Prepared By:

MRC S.A
July 2015

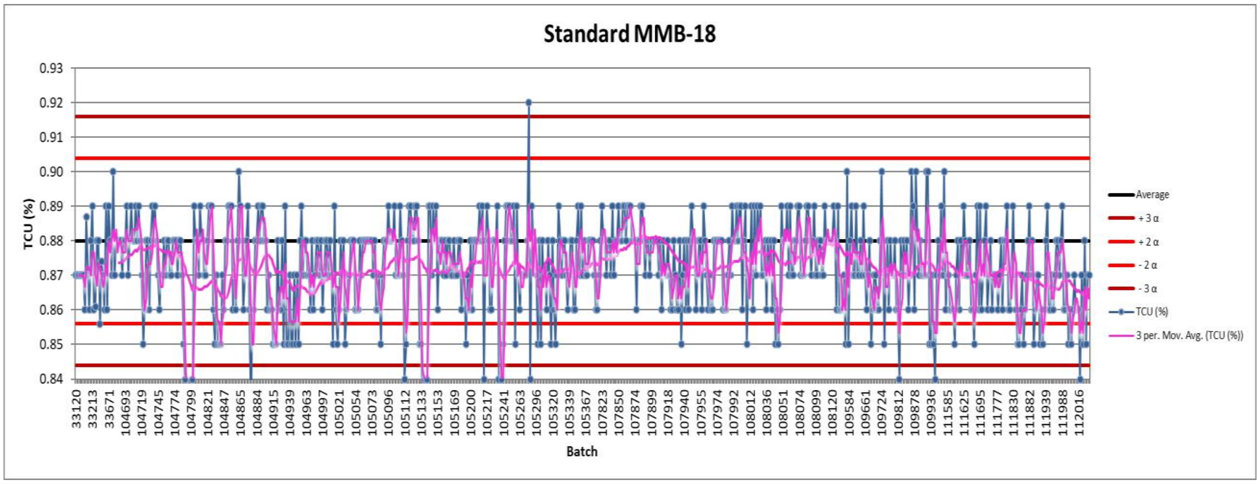
Note: Figure courtesy Mantos Copper, 2020

Figure 11-4: Standard MMB-15 TCU (from 2009 to 2012)



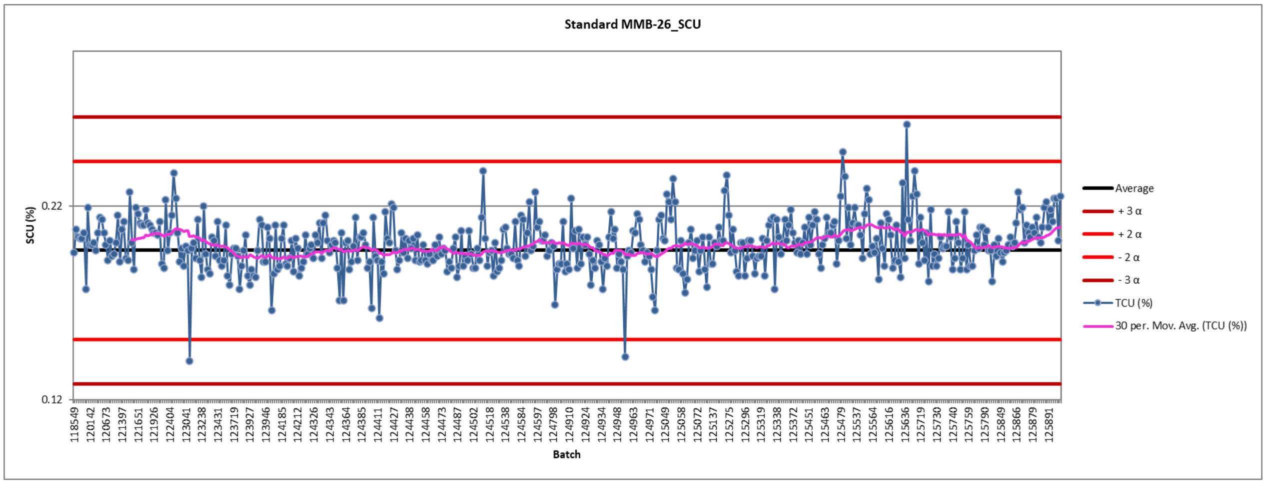
Note: Figure courtesy Mantos Copper, 2020

Figure 11-5: Standard MMB-18 TCU (from 2009 to 2012)



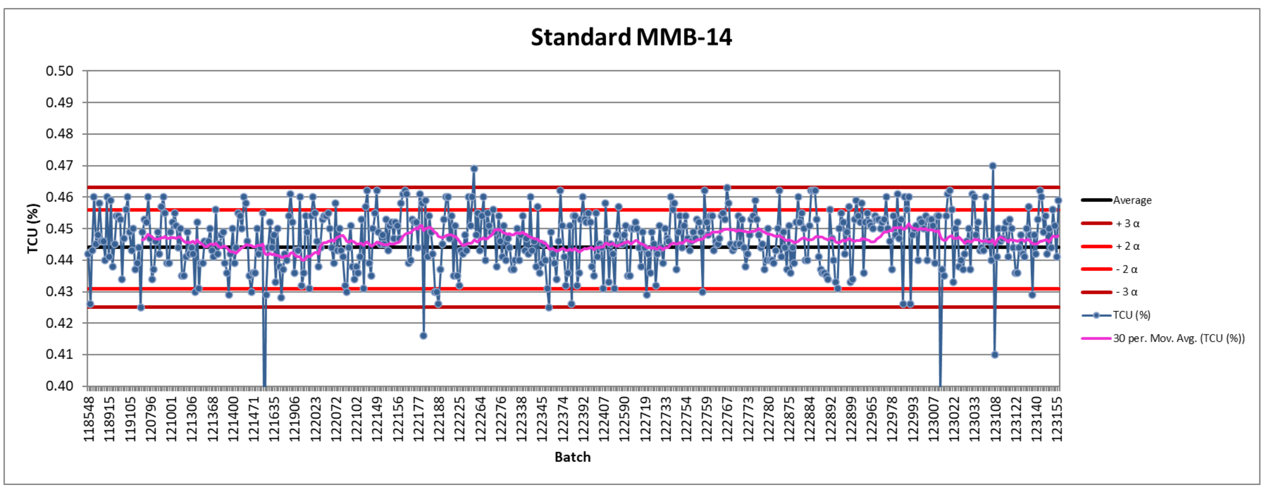
Note: Figure courtesy Mantos Copper, 2020

Figure 11-6: Standard MMB-26 SCU (from 2013 to 2016)



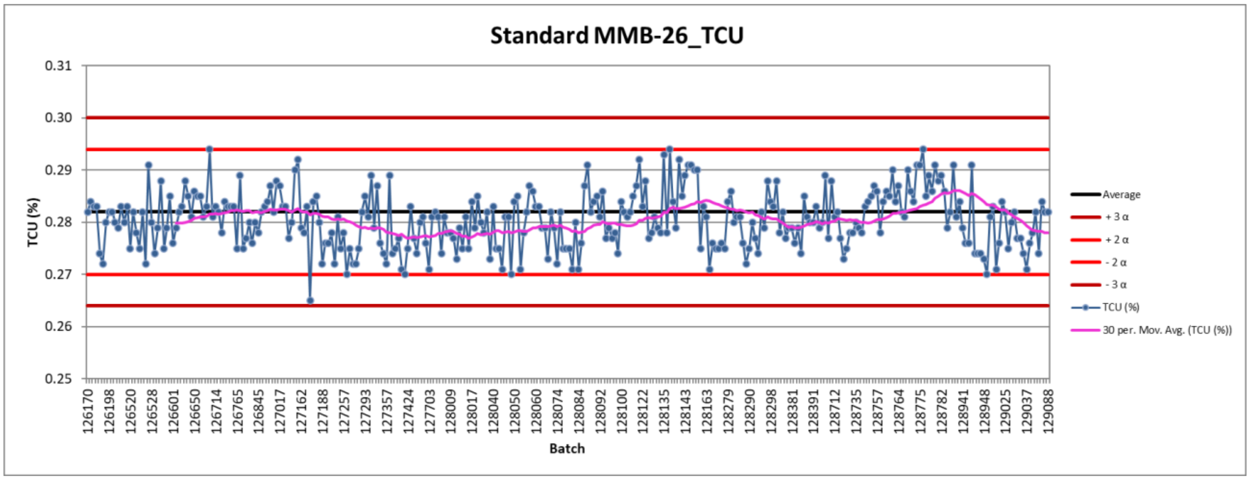
Note: Figure courtesy Mantos Copper, 2020

Figure 11-7: Standard MMB-14 TCU (from 2013 to 2016)



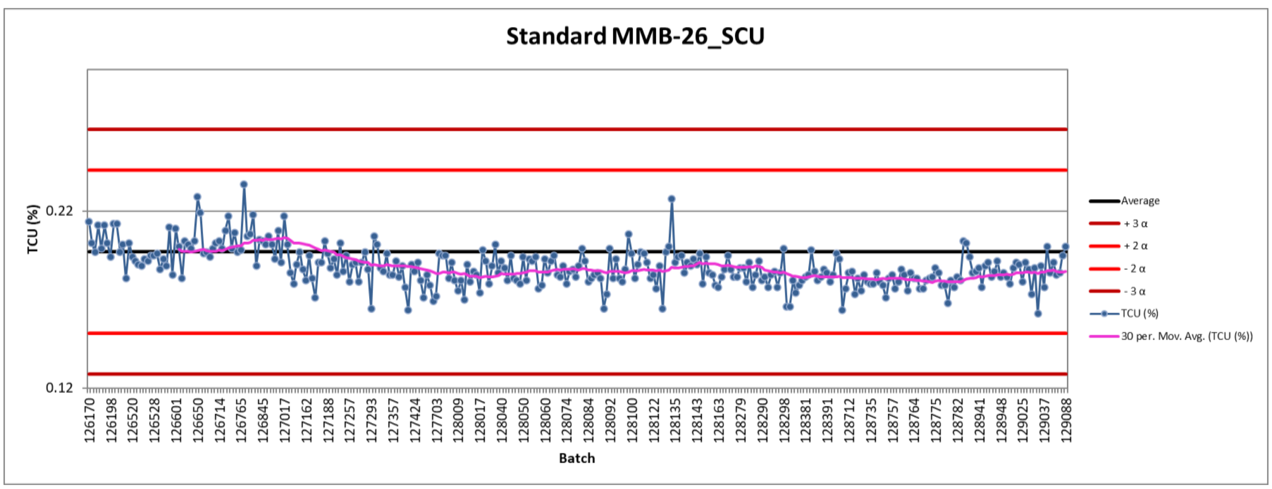
Note: Figure courtesy Mantos Copper, 2020

Figure 11-8: Standard MMB-26 TCU (from 2017 to 2020)



Note: Figure courtesy Mantos Copper, 2020

Figure 11-9: Standard MMB-26 SCU (from 2017 to 2020)

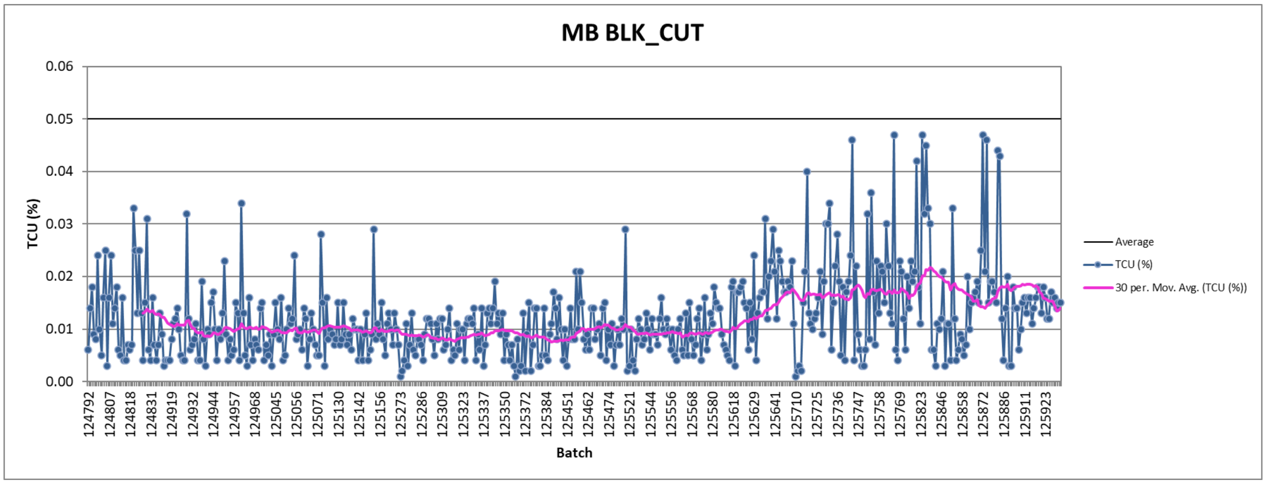


Note: Figure courtesy Mantos Copper, 2020

11.2.5 Coarse Blank Samples

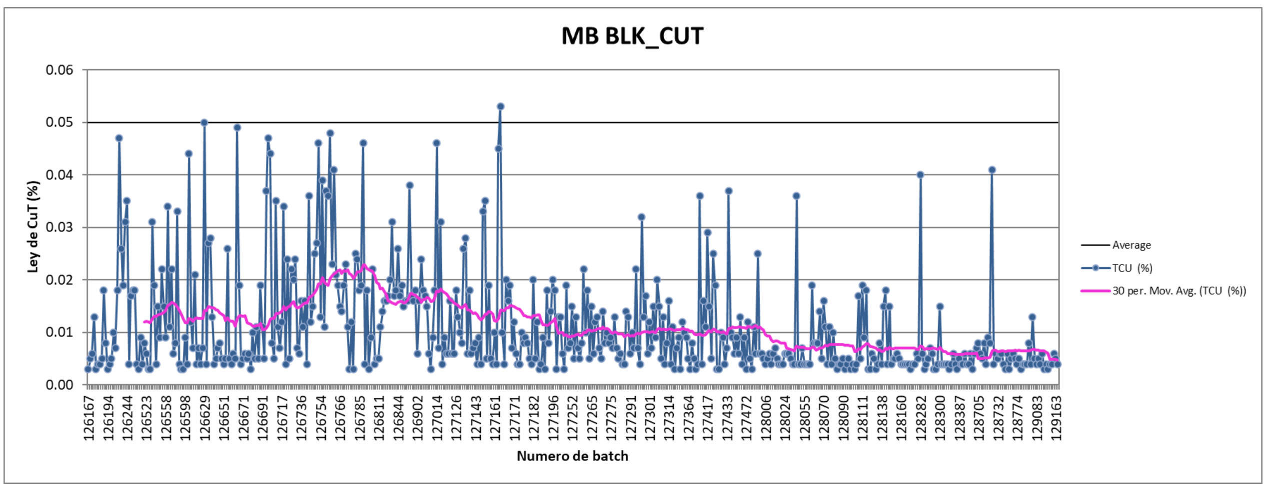
Coarse blank samples are inserted to determine any contamination during mechanical preparation and chemical analysis by inserting material obtained from blast holes logged as rhyodacite with a total copper cut-off of less than 0.02% Cu. If the results of the blank samples exceeded 0.05% Cu, the batch is identified as potentially contaminated. If the value above 0.05% Cu is confirmed by re-analysis, the entire set of samples between the blank samples is re-analyzed. In general, no evidence of contamination has been identified. Figure 11-10 and Figure 11-11 show the results for coarse blanks for the period between 2009 to 2012 and 2017 to 2020.

Figure 11-10: Blank BLK TCU (from 2009 to 2012)



Note: Figure courtesy Mantos Copper, 2020

Figure 11-11: Blank BLK TCU (from 2017 to 2020)



Note: Figure courtesy Mantos Copper, 2020

11.2.6 Duplicate Samples

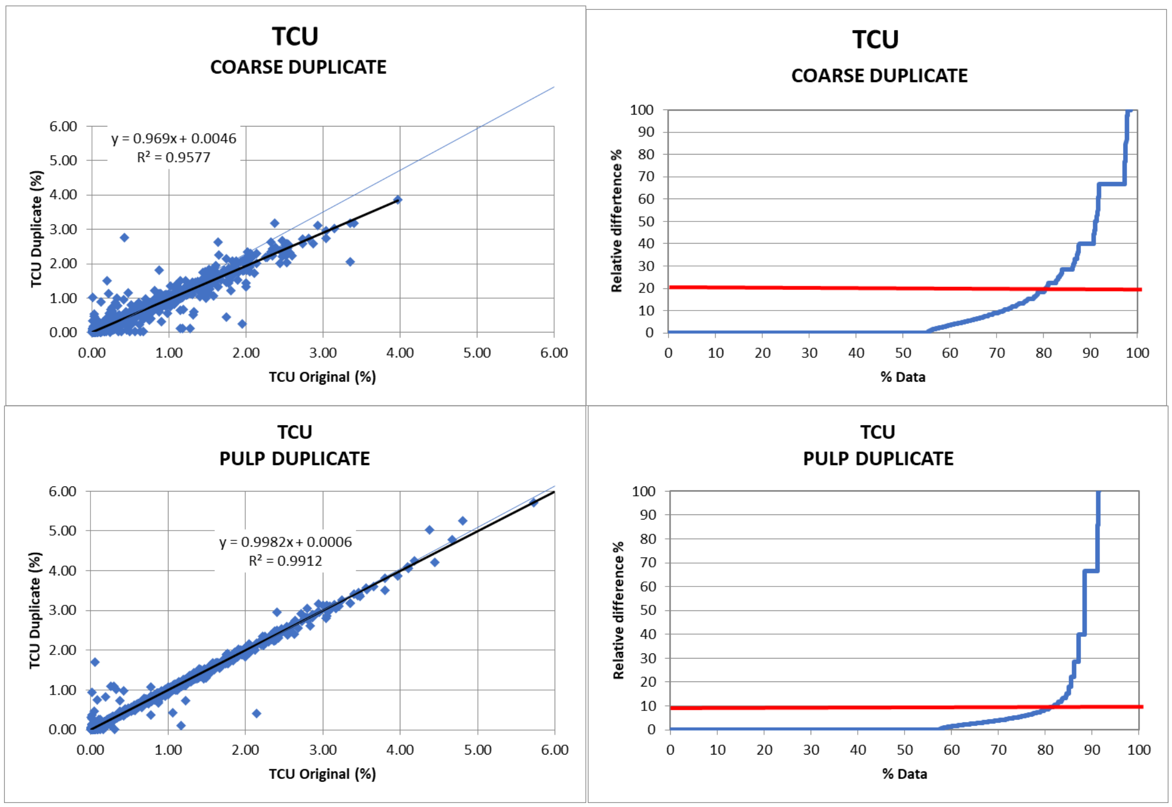
After mechanical preparation, envelopes containing the pulverized samples (pulp) are returned to the mine to introduce control samples into each batch. The duplicate samples include two types of samples:

1. Coarse duplicates: samples obtained during the mechanical preparation after the secondary crushing. The tolerance limit for acceptance is 20% difference.

2. Pulp duplicates: samples obtained during the mechanical preparation after pulverizing. The tolerance limit for acceptance is 10% difference.

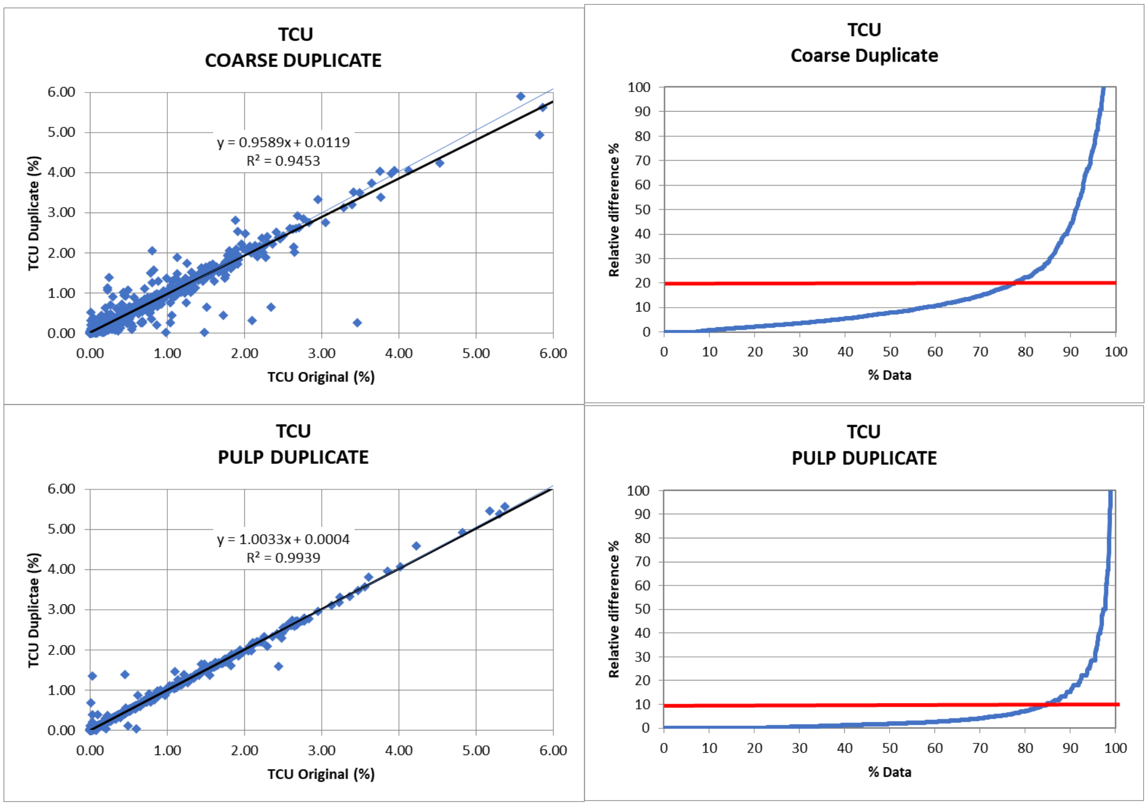
Figure 11-12 to Figure 11-14 show the results for coarse and pulp duplicates for the period between 2009 to 2012, 2013 to 2016 and 2017 to 2020. The Figures include scatter and cumulative difference charts.

Figure 11-12: Coarse and Pulp Duplicates TCU (from 2009 to 2012)



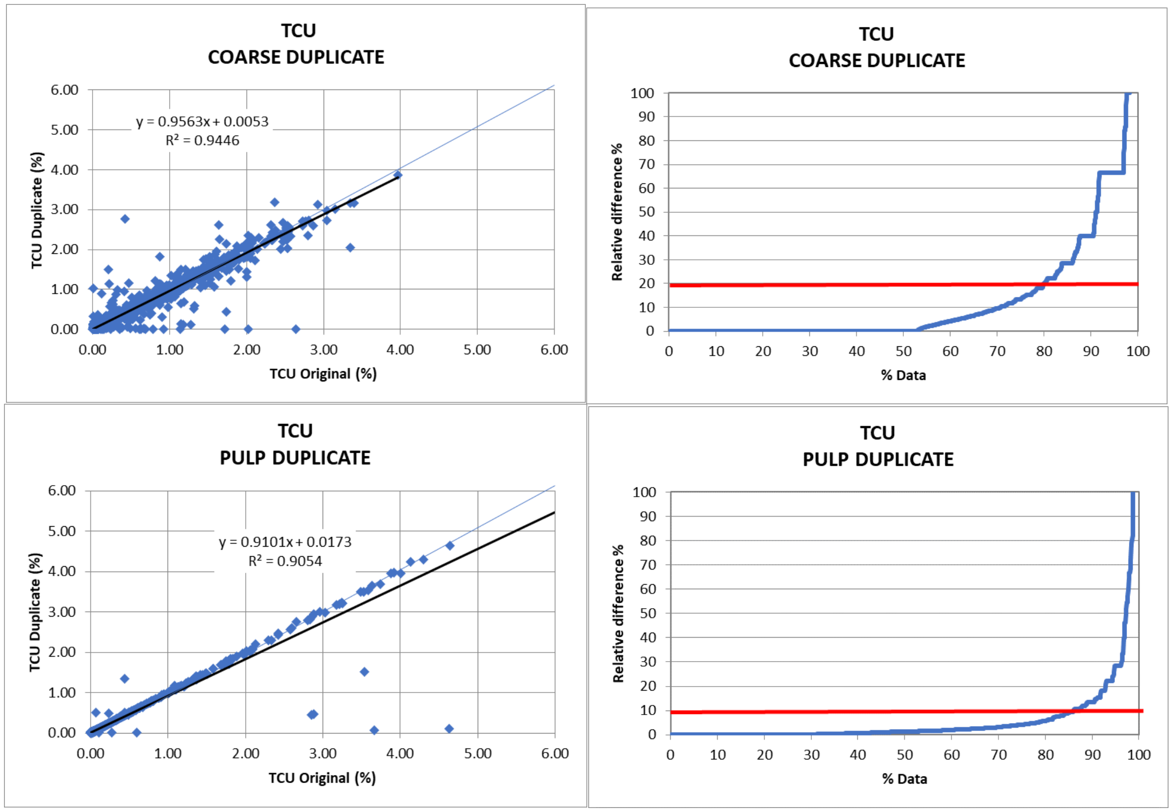
Note: Figure courtesy Mantos Copper, 2020

Figure 11-13: Pulp Duplicate TCU (from 2013 to 2016)



Note: Figure courtesy Mantos Copper, 2020

Figure 11-14: Pulp Duplicate TCU (from 2017 to 2020)



Note: Figure courtesy Mantos Copper, 2020

11.2.7 Database

The geological information was recorded on the Mantos Blancos site using a digital system. The data was verified and reviewed internally by Mantos Blancos senior personnel before being uploaded to the database and made available for resource modelling and estimation purposes. The chemical analysis and geological logging are uploaded directly into the database and no manual recording exists. The review includes identifying inconsistences between tables and consistency on geological logging.

Mantos Blancos uses BDGEO® to administer and handle the input information process. This database is backed up on a regular basis.

11.2.8 Sample Storage

Currently, three types of samples are stored: half core, coarse sample rejects and pulp samples. Half core samples are stored indoors on metallic racks. All samples and sample rejects are stored and secured on the mine site under adequate conditions to ensure the quality of these samples, as shown in Figure 11-15, Figure 11-16 and Figure 11-17.

Figure 11-15: Cardboard Boxes with Pulp Rejects

Note: Figure courtesy Mantos Copper, 2020

Figure 11-16: Coarse Rejects Storage

Note: Left: Plastics Containers with Fine Coarse Rejects
Right: General View of Current Storage for Coarse Rejects
Figure courtesy Mantos Copper, 2020

Figure 11-17: Core Storage

Note: Left: General View of Core Sample Rejects
Right: Plastic Boxes with Cutting Samples
Figure courtesy Mantos Copper, 2020

11.2.9 Adequacy of Sample Preparation, Security and Analytical Procedures

It is the Qualified Person's opinion that appropriate chain of custody and industry standards for sample selection, sample preparation, analysis and QA/QC procedures were followed during the sample preparation and analytical process for the sampling programs.

It is the Qualified Person's opinion that the samples collected are representative of the Mantos Blancos mineralization with no significant sample bias.

12 Data Verification

12.1 Site Visit

Mr. Ronald Turner has visited the site several times, the last visit was on 9 November 2021. During those visits Mr. Turner inspected the current mining operations, discussed geology and mineralization, and reviewed geological interpretations with staff. Also, he inspected core and sample cutting and logging areas, drilling, geological sampling and logging procedures and the current conditions of the sample storage. Mr. Turner also checked that data collection was being conducted in accordance with Mantos Copper procedures and industry standards by checking specific drilling against the records in the database.

12.2 External Mineral Resource Audit

As part of its internal procedures Mantos Blancos undertakes annual external Mineral Resources and Reserves audits. Recent audits are listed below:

- Golder Associates, Level 2 Resource Audit, Mantos Blancos, II Region, Chile, Technical Report, July 2016
- Golder Associates, Level 1 Resource Audit, Mantos Blancos, II Region, Chile, Technical Report, October 2017
- Golder Associates, Level 1 Resource Audit, Mantos Blancos, II Region, Chile, Technical Report, August 2018
- Golder Associates, Level 1 Resource Audit, Mantos Blancos, II Region, Chile, Technical Report, May 2019
- Golder Associates, Level 1 Resource Audit, Mantos Blancos, II Region, Chile, Technical Report, April 2020.

The findings of the 2020 Resources Audit state that:

"Mantos Copper provided the necessary information to evaluate the procedure adopted in the construction of the geological model allowing to verify the suitability of the data, and the current conditions of sample capture, administration and storage. Mantos Copper technical team has confirmed that the information given to Golder is true, accurate and complete.

The results from this Audit suggest that appropriate data, geological interpretation, and the methods used to estimate Mineral Resources were adopted appropriately, which reflect the current understanding of the deposit. Furthermore, the methods used to construct the resource model are reasonable and have been correctly applied.

The QP has not identified any fatal flaws or significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the Mineral Resources estimates for Mantos Blancos Mine.

The Mineral Resources estimates have been checked and are believed to be appropriate for the purpose of public reporting in that they provide an acceptable prediction of the material available to determine Mineral Reserves. The tonnes and grades are reported at an appropriate economic cut-off grade based on documented costs and prices.

All Mineral Resource audits were performed by Golder, the QP for this Technical Report, Ronald Turner, was responsible. During the annual resource audits, reviews and validations of the data used in the construction of the resource model, the correct implementation of the estimation methodologies and the results obtained are conducted. These activities include review of: the QA/QC program to verify precision, accuracy and contamination issues; comparison of original assay certificates against database records; appropriate definition and implementation of high-grade control; variography; Mineral Resource estimation; Mineral Resource classification, changes in Mineral Resources with respect to the previous model, reproducibility of the Mineral Resource statement.

12.2.1 Annual Mineral Resource and Mineral Reserve Reports

Mantos Copper prepares a resource report for the Mantos Blancos operation every year. Each report provides a review of the data used to support that year's estimates, includes an annual summary of the results and interpretations of the QA/QC performed on exploration and blast hole data, and provides a discussion of the reconciliation trends and observations. As part of the annual resource audits the QP reviewed the information contained in the reports and considered it adequate for the purposes of constructing a resource model, and no issues were noted with the exploration data collected each year that would materially affect the Mineral Resource Estimates in these annual resource reports.

12.2.2 Annual Internal Audits

Mantos Copper's Resource Group conducts an annual process review for each of the company's operations, including the Mantos Blancos mine. The reviews check that the corporate governance processes in terms of data collection, data verification and validation and estimation procedures are being followed and met. The audits also review the governance process results.

No issues that would materially affect the Mineral Resource estimates were noted during these process audits.

12.3 Limitation on Data Verification

The primary limits on data verification are due to the historical data for the mine. The Qualified Person has been involved in the Mineral Resource audits since 2014, when a detailed analysis of the historical data was completed, and no material issues were found.

12.4 Qualified Person Statement on Data Verification

The Qualified Person has made personal visits to the Mantos Blancos mine, most recently on 9 November 2021. As part of the site visits, a detailed explanation and review of the geological setting of the Mantos Blancos mine was conducted with the Mantos Blancos team. The Qualified Person also reviewed the current and future drilling program, drill core management, sample chain of custody, resource estimation procedures and aspects of database integrity in terms of geological mapping and sampling.

The Qualified Person reviewed sample handling and preparation, sample data integrity, the drill hole database and the descriptive logs prepared by the drill site geologist, comparing these against geological units and intervals in the drill hole database to confirm that the drill hole database entries were representative of the data and observations collected in the field.

It is the Qualified Person's opinion that the exploration data and observations from the drill holes were collected using industry standard practices and that the accompanying assay results are reasonable. The drilling and sampling data have been appropriately verified for the purpose of completing a geological model, estimating Mineral Resources and preparing a NI 43-101 Mineral Resource Estimate Technical Report.

During the site visit on 9 November 2021, the QP inspected all the Mantos Blancos facilities.

13 Mineral Processing and Metallurgical Testing

13.1 Introduction

As a result of the depletion of the oxide reserves, from January 2020 processing in the Mantos Blancos oxide plant decreased substantially and only ROM dump leaching of low-grade ore operates. In order to maintain copper production, Mantos Blancos is expanding the sulphide ore treatment capacity from 4.2 Mt per year to 7.3 Mt per year. The current installations have two lines of crushing and grinding. Line 1 treats 4.2 Mt per year of sulphide ore by conventional three stage crushing and ball milling followed by a conventional flotation circuit producing copper concentrate. Line 2 also has a conventional three stage crushing circuit for oxide ore ahead of leaching and SX-EW to produce copper cathodes.

The planned expansion project will use Lines 1 and 2 to treat an increased tonnage of sulphide feed. In general, this will use existing equipment with relatively minor circuit modifications as described in Section 17, with the following exceptions:

- Two new secondary crushers (Sandvik 660) and two new screens will be installed; four new crushers (Sandvik 440) will be installed as tertiary crushers
- One new ball mill, designated Ball Mill N° 8, 23' diameter x 40.5' long with a 13,000 kW motor
- One bank of four new (300 m³ each) rougher flotation cells will treat the ball mill product (P80 250 µm) from Lines 1 and 2
- One new high-capacity thickener, 32 m diameter, to replace the existing two thickeners for tailings.

Mantos Blancos has completed extensive drilling and sampling campaigns over recent years to characterize the future material to be mined. Over 490 samples have been prepared to test the main metallurgical variables of head grade, mineralogy (including copper mineral components), Bond work index and response to flotation.

The geometallurgical model has been developed since 2013, the last version is dated 2017 with additional data from samples tested during 2019. In 2019 the model was audited and validated by Orlando Rojas, a geologist who is a Qualified Person, from GeoEstima, based in Chile.

The main purpose of the model is to provide data that can be used in the design of the expanded sulphide plant and to predict the future operating results for the life of mine. Mantos Blancos has developed a good understanding of how well the models reflect actual operating results (i.e. accuracy of the models and their value as forecasting tools).

As a general statement, Mantos Blancos considers that, based in part on over 400 samples of future feed tested to date, future feed will be essentially the same, in terms of hardness (BWIi and flotation response, as past and present ore.

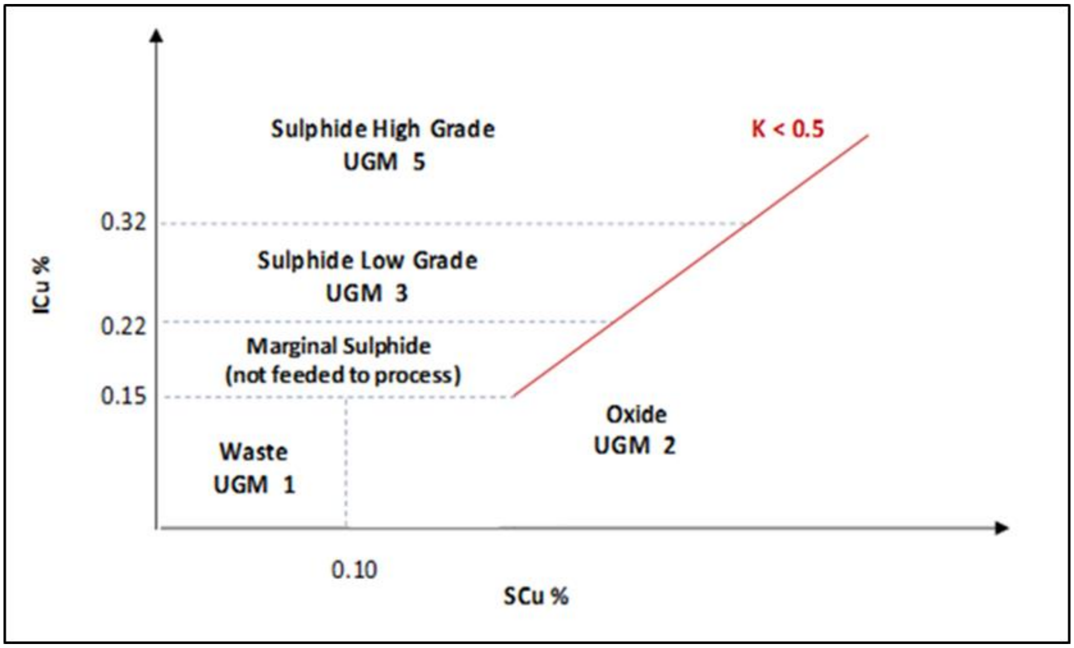
There are four main process parameters that will impact future production and hence project economics:

- Head grade and the ratio of total copper to oxide copper (TCu/SCu)
- Ore hardness (BWi) and its effect on mill throughput
- Flotation recovery (Cu and Ag)
- Flotation concentrate grade (%Cu, g/t Ag).

The following sections discuss these variables and their predicted values over the life of mine.

The resource model has defined three types of material classified as: Sulphide, Oxide and Waste. The combination between the material types and technical/economical parameters define the geometallurgical units (UGM), as shown in Figure 13-1.

Figure 13-1: General Classification of Mantos Blancos Ore Types



Note: Figure courtesy Mantos Copper, 2020

Note: ICu is acid insoluble copper, SCu is acid soluble copper, total copper grade (TCu) is ICu+SCu and K is the ratio between soluble copper and total copper (K = SCu/TCu)

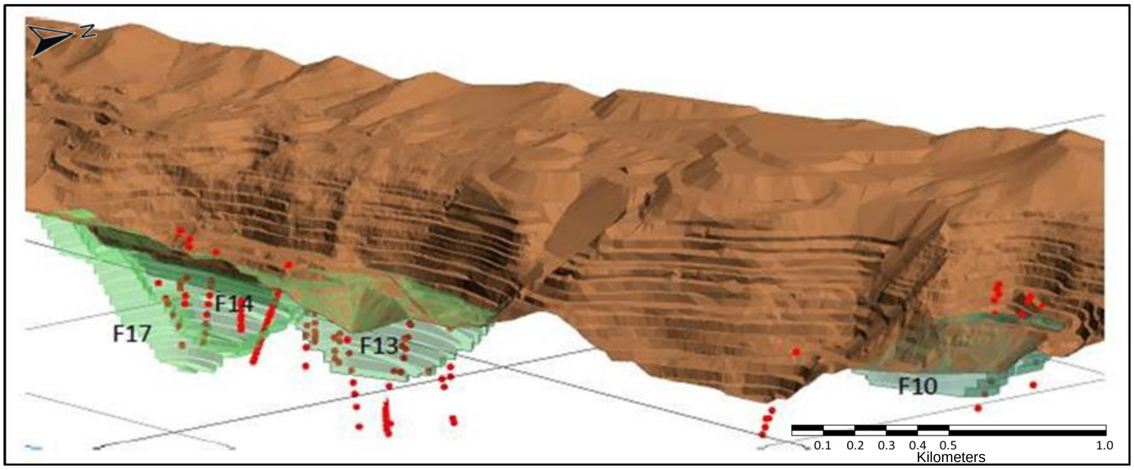
13.2 Grinding

13.2.1 Bond Work Index (BWi)

The Bond work index (BWi) is an industry-wide accepted measurement of ore hardness for ball milling. Current and past operating data at Mantos Blancos has shown a consistent work index and in the range between 20 kWh/t and 23 kWh/t. Figure 13-2 illustrates the main areas to be mined in the next 5 years and the location of the samples used to determine the BWi. The area in green represents the 5 year pit outline.

The planned production through the concentrator from 2021 to 2037 is shown in Table 13-1.

Figure 13-2: Spatial Location of Samples used for BWi Determination in Planned Mining Phases



Note: Figure courtesy Mantos Copper, 2020

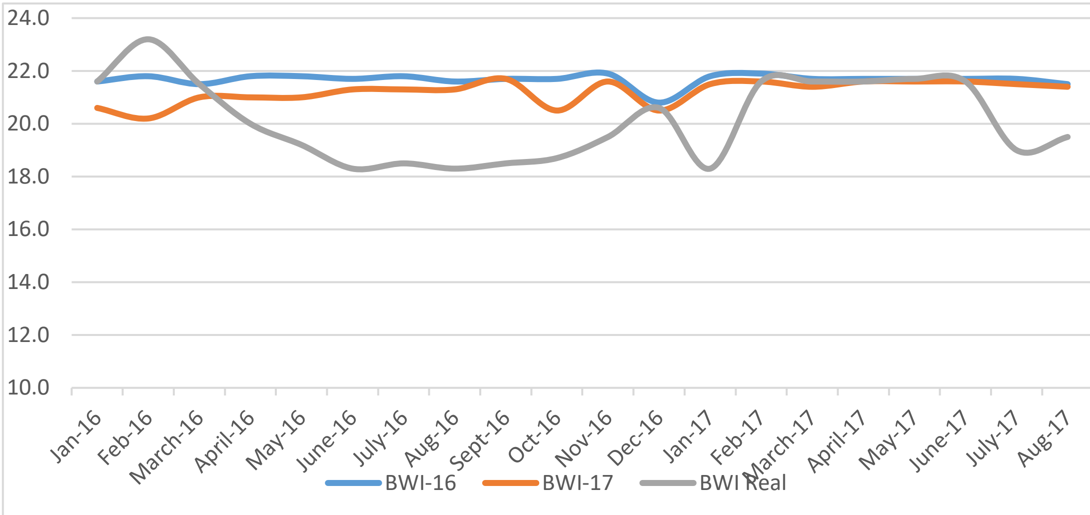
Table 13-1: Concentrator Production Summary 2021-2037 (Based upon LOM Plan 2020)

Copper Production	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total LOM
Concentrator																			
Ore to mill	kt	5,734	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	122,614
TCu Mill Grade	%	0.83	0.88	0.91	0.92	0.92	0.92	0.83	0.79	0.78	0.74	0.58	0.58	0.54	0.50	0.52	0.33	0.25	0.69
SCu Mill Grade	%	0.08	0.20	0.12	0.10	0.11	0.11	0.11	0.08	0.08	0.10	0.10	0.10	0.09	0.06	0.06	0.05	0.06	0.09
Ag Mill Grade	g/t	5.65	8.19	6.75	7.41	9.35	9.12	5.29	3.94	5.37	6.49	4.57	4.54	4.60	3.81	3.74	3.10	2.80	5.57
Cu Metallurgical Recovery	%	**82.0**	**78.7**	**78.2**	**78.6**	**82.3**	**82.7**	**87.7**	**85.1**	**82.7**	**82.1**	**84.9**	**87.1**	**87.9**	**86.5**	**84.7**	**83.9**	**84.2**	**83.0**
Cu Concentrate grade	%	32.9	29.5	30.8	31.2	32.3	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.8
Fine Copper Production	**t**	**37,996**	**50,444**	**52,099**	**52,912**	**55,481**	**55,342**	**53,151**	**49,074**	**47,007**	**44,250**	**35,927**	**36,997**	**34,886**	**31,757**	**31,929**	**20,091**	**15,356**	**704,699**

Note: Ore to mill 5,734 kt in 2021 assumes full ramp-up and commercial production in H2 of 2021 at the time of submission of the report this has moved to H1 of 2022 and it is estimated that 7 kt of fine copper production will be moved to the future

Mantos Blancos has developed a geometallurgical model for the Bond work index by identifying blocks of ore, locating the individual BWi samples within the block and using the Kriging technique to calculate the average BWi for the block. The detail of the calculations is provided in the report Modelo Geometalúrgico Mantos Blancos 2018 by Vergara and Madariaga. The model has been tested by comparing it with samples of actual mill feed (2016 to 2017) shown in Figure 13-3.

Figure 13-3: Reconciliation of BWi Model Samples of Mill Feed (January 2016-August 2017)



Note: Figure courtesy Mantos Copper, 2020

BWi in blue and brown in the figure above are calculated. It can be seen that the model indicates BWi values slightly above those calculated from the actual mill feed samples (in grey) i.e. the model is somewhat conservative; adding further confidence to the design criteria and the mill power requirements calculated for 7.3 Mt per year.

The sizing of the new 23’ x 40.5’ ball mill for Line 2 used a BWi of 23.55 kWh/t and a product P80 of 250 µm for flotation feed. This value of 23.55 kWh/t is thus reasonable and slightly conservative. The ball mill sizing is described in detail in the memorandum Mantos Blancos Ball Mill Sizing and was independently reviewed by Fluor. Fluor concluded that the new ball mill requires a 12,000 kW motor. After further analysis and review by another third party (RPA) this was increased to 13,000 kW.

In addition to the development of the geometallurgical model for BWi, a grinding pilot plant was run with 11.5 t of ore in 2017. The results of this test are shown in Table 13-2, together with Hatch’s evaluation of the results.

Table 13-2: Results of Ball Mill Pilot Plant Test

Mineral Characterization		
Specific Gravity	-	2.71
Work Index (Bond)	kWh/t	22.96
Pilot Plant Results		
D80 Feed	µm	12,227
D80 Classifier Oversize	µm	345
D80 Classifier Final Product	µm	263
Circulating Load	%	300
Power Draw Empty	kW	1.85
Power Draw Total	kW	3.91
Power Milling	kW	2.06
Specific Energy	kWh/t	10.53
Specific Energy (for 250 µm)	kWh/t	10.84

Comments on the pilot plant results are as follow:

- The BWi of 22.96 kWh/t is lower than the value used in the project design (23.54 kWh/t) but compares well with Mantos Blancos past operations data
- The pilot plant feed had a similar, but slightly coarser F80 (12,227 µm), than the design value of 11,000 µm
- The test ran for a total period of 33 hours, but equilibrium conditions were only achieved in the final 4 hours. Although this is a short period, it is not untypical for this type of pilot plant test
- The pilot plant operating conditions i.e. ball loading, ball size and critical velocity is in line with the Project design criteria
- The P80 achieved was 263 µm, with a specific energy of 10.5 kWh/t. Correcting to a P80 of 250 µm gives a specific energy of 10.84 kWh/t. This is lower than Project design value but within the expected range of variation.

In conclusion, the pilot plant results support the selection of Ball Mill N° 8 as appropriate to grind hard ore with an F80 of 11,000 µm to a product size P80 of 250 µm.

The pilot plant feed was one bulk sample and does not represent all ore types to be milled in the future. Therefore, it is recommended that the higher specific energy values used in the design criteria (more conservative) are maintained.

During the pre-feasibility study Mantos Blancos carried out a series of standard comminution tests associated with SAG (autogenous grinding) and ball milling; these included;

- JK Drop Weight Test (DWT)
- SAG Mill Comminution Test (SMC)
- SAG grinding test (Tsag, Spi protocols)
- Ball Mill Work Index (BWi)
- Abrasion Index (Ai).

The results are summarized in Table 13-3.

Table 13-3: Comminution Test

Test	Value	Unit	Sample 1	Sample 2
JK Drop Weight (DWT)	A	-	73.5	-
	b	-	0.45	-
	Axb	-	33.1	-
	SCSE	kWh/t	10.7	-
	ta	-	0.14	-
SAG Mill Comminution (SMC)	A	-	100	-
	b	-	0.33	-
	Axb	-	33.0	-
	SCSE	kWh/t	10.7	-
SAG Grinding Test (Tsag, Spi protocols)	Tsag	min	105.9	90.2
Bond Ball Work Index (BWi)	BWi	kWh/t	22.6	22.6
Bond Abrasion Index (Ai)	Ai	g	0.3542	0.5264
Specific Gravity	SG	-	2.75	2.66

These results show that:

- For SAG milling, the material is defined as hard with an Axb value of 33, therefore, SAG technology is not recommended
- The BWi value of 22.6 kWh/t is in agreement with operating experience and other testwork.

13.3 Flotation

13.3.1 Flotation Recovery

The flotation circuit at Mantos Blancos, current and after the expansion to 7.3 Mt per year, is conventional and comprises rougher flotation, regrinding to a P80 of 45 µm, column cleaner flotation and scavenger flotation of the cleaner tailings. Over 400 samples have been subjected to laboratory flotation in the last 5 years. The flotation tests are based upon the technique of rougher flotation kinetics developed by AMINPRO.

Table 13-4 summarizes a series of tests for a range of P80 grind sizes from 198 µm to 377 µm. The % TCu recovery represents the rougher flotation recovery after 20 minutes. The recovery appears to be relatively insensitive to the primary grind P80 but supports the selection of a P80 of 250 µm for the project.

Table 13-4: Results of rougher kinetic tests

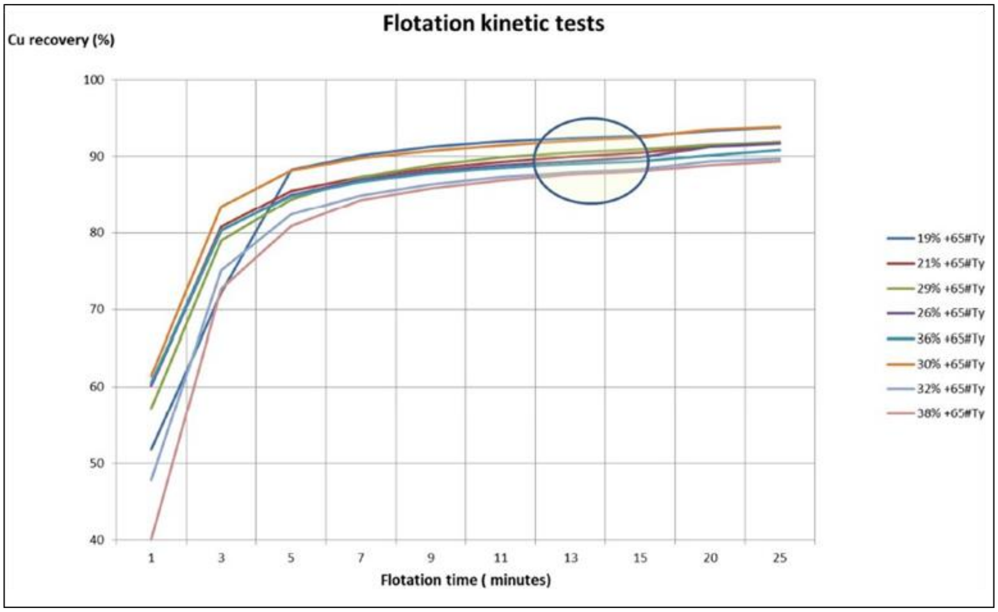
Flotation Kinetics		% of Solid Feed	%+65 #Ty	% TCu Recovery	%Error TCu Test	P80 µm
19%	+65#	33.6	18.7	93.74	9.22	198
21%	+65#	34.0	21.1	91.84	-0.01	221
23%	+65#	34.5	29.0	91.91	2.25	294
25%	+65#	34.1	25.8	91.72	-5.96	265
27%	+65#	35.1	35.9	90.82	5.59	358
31%	+65#	33.6	32.1	89.71	-1.29	323
33%	+65#	35.1	37.9	89.37	1.18	377

Additional tests on the samples indicate that the recovery is more sensitive to the grind size, with a potential 1% to 1.5% improvement in recovery with a P80 of 200 µm versus 250 µm.

The design P80 of 250 µm is considered to represent a good economic and technical choice supported by the geometallurgical model.

Figure 13-4 provides the results of a further series of flotation kinetics tests.

Figure 13-4: Flotation Kinetics for Various P_{80} Sizes

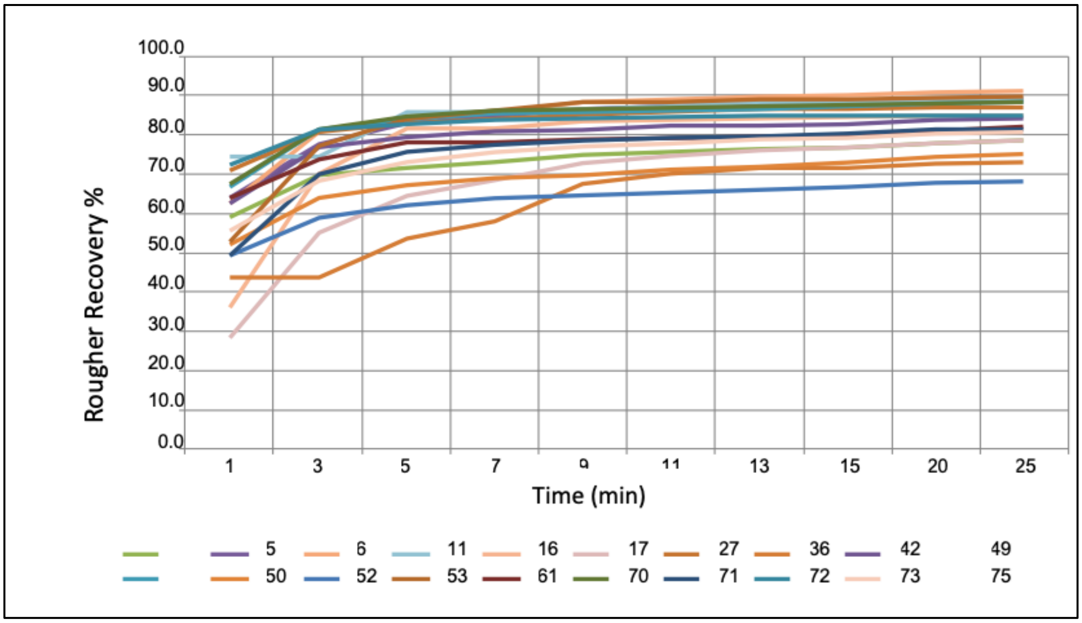


Note: Figure courtesy Mantos Copper, 2020

Figure 13-5 shows the rougher kinetics for 18 samples with soluble copper values between 0.09% and 0.21%.

The final recovery varies widely, between 68.3% and 90.9% (which is assumed to reflect the mineralogy, head grade and the range of soluble copper values), with an average of 82.8%. The recovery curves approach maximum values after 11 to 13 minutes, applying a standard scaling factor of 2.5 this results in an actual rougher residence time of 30 minutes. This has been used in the design criteria and equipment sizing.

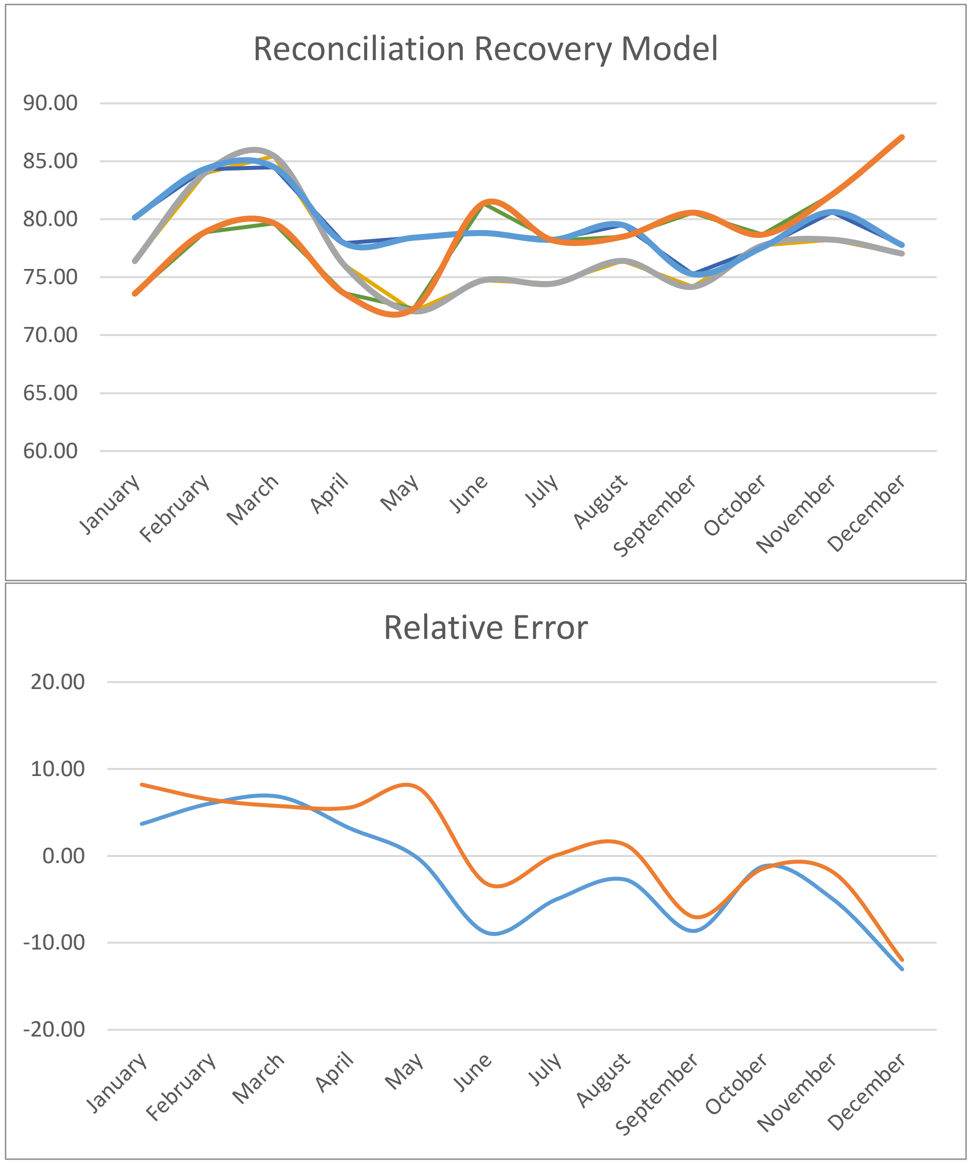
Figure 13-5: Rougher Flotation Kinetics representing Phase 13 (2018-2022) of the Mine Plan



Note: Figure courtesy Mantos Copper, 2020

Mantos Blancos has developed a geometallurgical model for flotation similar to the BWi model, using Kriging to establish an average copper recovery for each ore block. The rougher recovery was reduced by 5% to provide a final (cleaner concentrate) recovery. The 5% figure is based on operating data and typical cleaner flotation data. The results of the 2019-2020 model are compared to the actual plant recovery in Figure 13-6.

Figure 13-6: Recovery Reconciliation Geometallurgical Model Compared to Actual Plant Results



Note: Figure courtesy Mantos Copper, 2020

The annual concentrator copper recovery is shown in Table 13-5 for LOM.

Table 13-5: LOM Recovery

Copper Production	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Total LOM
Concentrator																			
Ore to mill	kt	5,734	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	122,614
TCu Mill Grade	%	0.83	0.88	0.91	0.92	0.92	0.92	0.83	0.79	0.78	0.74	0.58	0.58	0.54	0.50	0.52	0.33	0.25	0.69
SCu Mill Grade	%	0.08	0.20	0.12	0.10	0.11	0.11	0.11	0.08	0.08	0.10	0.10	0.10	0.09	0.06	0.06	0.05	0.06	0.09
Ag Mill Grade	g/t	5.65	8.19	6.75	7.41	9.35	9.12	5.29	3.94	5.37	6.49	4.57	4.54	4.60	3.81	3.74	3.10	2.80	5.57
Cu Metallurgical Recovery	%	**82.0**	**78.7**	**78.2**	**78.6**	**82.3**	**82.7**	**87.7**	**85.1**	**82.7**	**82.1**	**84.9**	**87.1**	**87.9**	**86.5**	**84.7**	**83.9**	**84.2**	**83.0**
Cu Concentrate grade	%	32.9	29.5	30.8	31.2	32.3	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.8
Fine Copper Production	**t**	**37,996**	**50,444**	**52,099**	**52,912**	**55,481**	**55,342**	**53,151**	**49,074**	**47,007**	**44,250**	**35,927**	**36,997**	**34,886**	**31,757**	**31,929**	**20,091**	**15,356**	**704,699**

Note: Ore to mill 5,734 kt in 2021 assumes full ramp-up and commercial production in H2 of 2021 at the time of submission of the report this has been moved to H1 of 2022. It is estimated that 7 kt of fine copper production will be moved to the future

The copper recovery is based upon the geometallurgical model. There is less testwork data for the later years of the Project, and thus the recoveries assigned to those years may carry some risk.

The SCu decreases after 2023-2035, which should result in increased recovery.

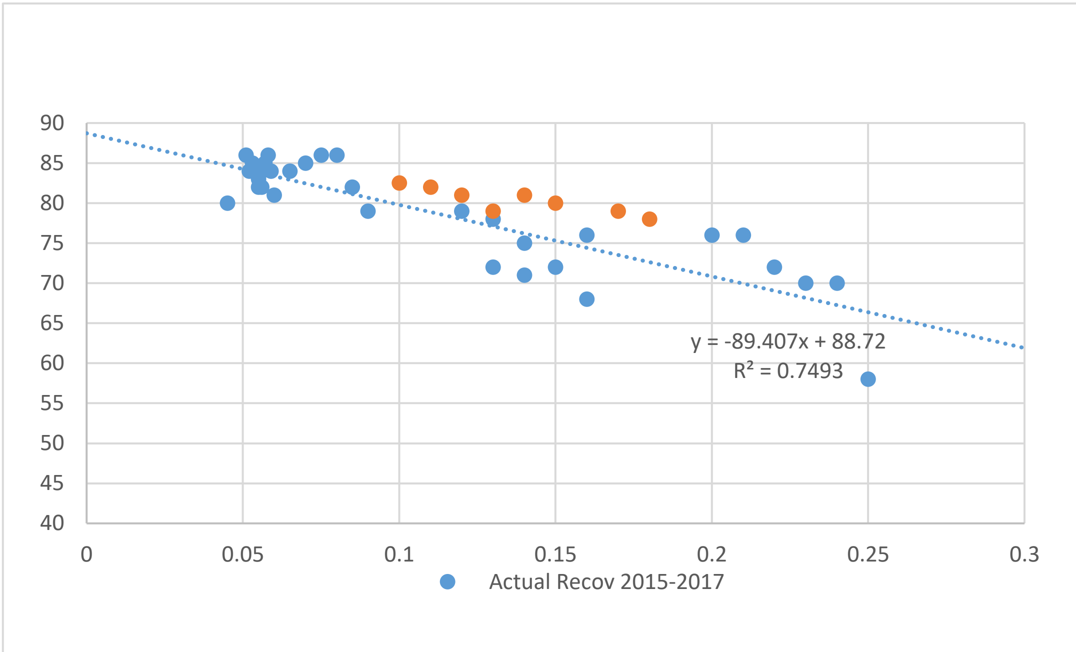
The information available from the metallurgical testwork and over 30 years of operation shows that the ore and mineralogy has generally been consistent, indicating that future recoveries will be similar to those in the past.

The proposed P80 grind size of 250 µm will be finer than in the past (in 2015 to 2017 the P80 was 278 µm). Testwork illustrates that this finer grind would increase recovery by approximately 0.5% to 1.5%.

Recent testwork indicates that reducing the flotation feed pulp density from between 40% and 42% (current) to 38% (future) increases the recovery. Mantos Blancos has not used this in the evaluation of the Project, this is a reasonable conservative approach.

The value of SCu/TCu has a significant impact on the recovery as shown in Figure 13-7.

Figure 13-7: Total Copper Recovery vs SCu/TCu



Note: Figure courtesy Mantos Copper, 2020

Operating data for 2017 and 2020 (January to June) have been reviewed and show a wide fluctuation in results, but generally recovery has been between 75% and 80% and concentrate grades between 27% and 29% Cu. This may be due to mineralogical factors or to operational issues (poor control) and maintenance. In the two brief site visits it was not possible to ascertain what is the main cause (or causes) of the variability. It is therefore recommended that Mantos Blancos considers completing a Plant Survey when operating results are poor. This would involve a team taking samples of the flotation feed and all products every 30 minutes over a shift (minimum 8 hours). The samples would be screened and assayed and a mineralogical evaluation (such as Qemscan) conducted on the feed and final tailings. Laboratory flotation tests (preferably full locked cycle tests) would be conducted on the flotation feed to compare actual plant results with test results.

The silver recovery has been modelled using the following equation based on historical data:

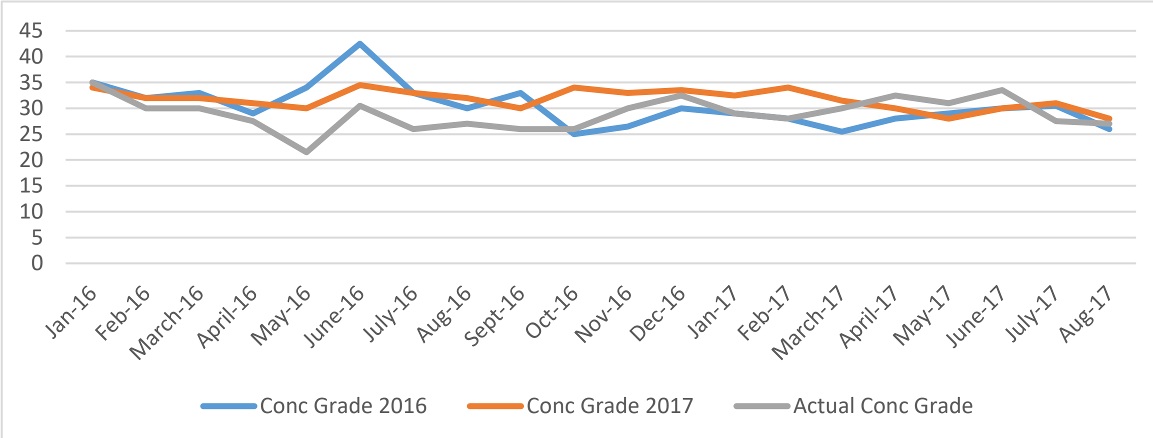
Recovery Ag (%) = 67.1 + 0.39 Ag head grade (g/t).

13.3.2 Flotation Concentrate Grade

In addition to the geometallurgical models for BWi and flotation recovery, Mantos Blancos developed a model for the concentrate grade. The concentrate grade will be very dependent on the relative abundance of the main copper minerals (bornite, chalcopyrite, covellite and chalcocite). In addition, the concentrate grade will be impacted by the operating approach to recovery, i.e., producing more concentrate to increase recovery will tend to lower the concentrate grade and vice versa. Generally, most flotation plants will have a trade-off between recovery and concentrate grade to optimize revenue. The concentrate grade at Mantos Blancos has varied significantly.

Between January 2015 and May 2017 the monthly concentrate grade varied between 26.2% Cu and 36.2% Cu, with an average of 30.9%. Results from the model (in blue and orange) and actual (in grey) concentrate grades are shown in Figure 13-8.

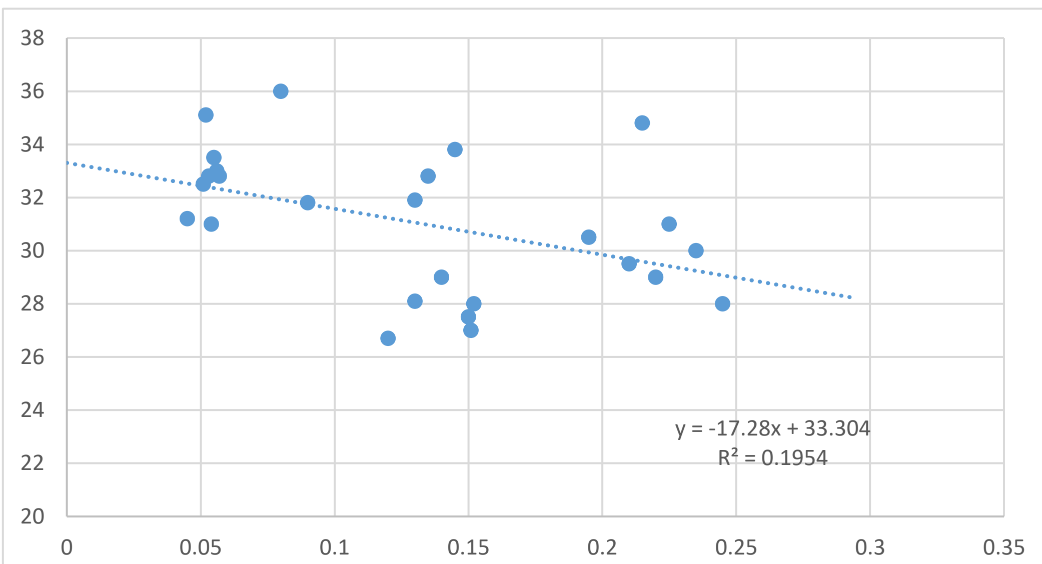
Figure 13-8: Geometallurgical Model vs Actual Concentrate Grade



Note: Figure courtesy Mantos Copper, 2020

As with recovery, the concentrate grade is also impacted by the value of SCu/TCu, this is illustrated in Figure 13-9.

Figure 13-9: Copper Concentrate Grade vs SCu/TCu



Note: Figure courtesy Mantos Copper, 2020

This shows a wide range of results and there is not good correlation. However, on the basis of this data, the selection of 30.9% Cu as an average value, with a range of 29% to 33% appears reasonable. A value of 29% Cu has been used in the economic analysis.

13.4 Thickening and Filtration

There is little data available from testwork for thickening of tailings or thickening and filtration of concentrates. However, there is data from the existing operation, as well as benchmarking other operations, hence, it is possible to be confident that the thickening and filtering capacity for the future sulphide plant capacity will be appropriate.

13.4.1 Tailings Thickening

The existing operation has one 67 m diameter and two 45 m diameter thickeners, providing a total thickening area of 6,700 m². The total installed capacity for 4.2 Mt per year (11,900 tpd) is 0.50 m²/tpd. However, for the existing 4.2 Mt per year operation only two thickeners are in use.

Testwork on current ore by three vendors gave unit area requirements between 0.09 m²/tpd and 0.12 m²/tpd, well below the installed and available thickener capacity. The Project design criterion is 0.401 m²/t/d which is conservative. The new thickener will replace the two thickeners currently in use. However, these will remain as stand-by or spare capacity.

13.4.2 Concentrate Thickening

The existing plant has three concentrate thickeners (one 23 m diameter and two 10.5 m diameter), providing a total thickening area of 580 m². Only the 23 m thickener is in operation, and this calculates to an actual capacity of 1.7 m²/tpd.

This value is very high, compared to similar operations (0.5 m²/tpd to 1.0 m²/tpd) and probably reflects that the thickener is under-utilized. This is further supported by recent testwork that gave a unit area of 0.2 m²/tpd. Therefore, it is concluded that, as with tailings thickening, the existing capacity will be adequate for the proposed expanded capacity.

13.4.3 Concentrate Filtration

The existing operation has one 48 m² filter. This calculates to an actual operating capacity of 195 kg/h/m². However, the calculated capacity based on full utilization is 292 kg/h/m². Similar operations achieve between 350 kg/h/m² and 450 kg/h/m².

Mantos Blancos has carried out tests for ceramic and pressure filters and these tests indicate filtration rates in excess of 400 kg/h/m². Thus, one additional 31.5 m² filter (same type as currently installed) will provide sufficient filtration capacity for the Project.

13.5 Comments

The addition of the new No. 8 ball mill (with a 13,000 kW motor) and the four new flotation cells should allow Mantos Blancos to achieve the design throughput of 7.3 Mt per year. The installation of additional new equipment, such as tertiary crushers, a concentrate filter, high rate tailing thickener and tailing screens, pumps and pipeline will also improve plant performance. Actual plant performance for 2019-2020 has seen TCu recoveries between 75% and 80% and concentrate grades between 27% and 29% Cu.

The mineralization at Mantos Blancos has no significant amounts of any deleterious elements that may affect the quality of the concentrate. Historically, Mantos Blancos concentrate has been very clean and there is no reason to expect that this will change in the future.

Building on the long history and experience of the Mantos Blancos team, Mantos Copper has expended considerable effort in developing accurate geometallurgical models, continuing the work by the previous owner and operator, Anglo American. This effort should continue, especially to provide more data for later in the mine life. In particular, the impact of lower pulp density on copper recovery should be reviewed.

14 Mineral Resource Estimate

The Mineral Resources for the Mantos Blancos Mine were estimated internally by Mantos Copper's mineral resources group, using information available to the end of 2019. This information has been validated in this Technical Report. The Qualified Person for the Mineral Resource Estimate confirms that the Mineral Resource Estimate is still current and no significant new information that can be considered as material has been added.

The Qualified Person has verified the data presented in Section 12 of this Technical Report and the model provided by Mantos Blancos, and is of the opinion that the model was prepared in accordance with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines, that the model is reasonably representative of the data and geological interpretation and is suitable for the preparation of Mineral Resource Estimate.

The effective date of this Mineral Resource Estimate is 31 December 2020. This Mineral Resource Estimate was prepared in accordance with Canadian National Instrument (NI) 43-101, and the terms “Mineral Resource,” “Inferred Mineral Resource,” “Indicated Mineral Resource” and “Measured Mineral Resource” have been used as defined in the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted by the CIM Council (CIM).

Mineral Resources were estimated by domain for the Mantos Blancos Mine using the verified DDH and RC drilling and assaying data. Grade estimation was completed in Datamine Studio RM software.

The Mantos Blancos Mineral Resource Estimate was conducted using 15,608 drill holes distributed in seven main geological zones defined by the main structures controlling the mineralization. The dimensions of the block model were based on a long-term economic scenario and the block size was defined taking into account current open pit mining. Both the geological domains and grade estimation were performed using Ordinary Kriging for total copper (TCu), insoluble copper (ICu), lead and silver. The density assigned was 2.60 g/cc.

Mineral Resource categorization criteria were applied using a methodology that combined production schedule, drill hole spacing, Kriging variance and the geological knowledge of the Mantos Blancos technical team.

The Qualified Person is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political or other relevant issues that would materially affect the current Mineral Resource Estimate.

14.1 Geological Model

14.1.1 Lithology Model

The lithology model was built using Mantos Copper's internal methodology originally developed by the former owner (Anglo American). This considers the probability of the existence of a specific rock unit. This probability is estimated by interpolating indicators based on rock codes extracted from the database. Mantos Blancos used a 50% probability threshold to assign the blocks to a given unit. Mantos Blancos found some cases where there was the same probability for multiple units and these cases were resolved by taking into account the unit that was predominant in the local neighbourhood.

14.1.2 Dike Model

To model the dike, which is a barren unit that intruded after the mineralization event, Mantos Blancos built a dike model. For the purposes of this resource model the dike model was updated to include information from the new drilling campaigns. The model is built using a block size of 3.125 m x 3.125

m x 6.0 m. The construction of the dike model uses dynamic search ellipsoids, an indicator is calculated and blocks with a probability ≥50% of being dikes are coded as such. During the modelling and re-blocking process, all blocks coded as dikes were considered barren.

14.2 Resource Block Model

The Mantos Blancos geological block model is primarily estimated using blocks of 6.25 m x 6.25 m x 6.0 m. Later a re-blocking process is done generating blocks of 12.5 m x 12.5 m x 12 m (Table 14-1), where eight small blocks define the block size for the Mineral Resource block model. This process dilutes the grade in the contour and contact zones of the deposit. Waste dilutes the Mineral Resources as low and high grade are combined and contact mineralized zones are blended. The block sizes selected are appropriate selective mining units (SMU) for this type of deposit.

In the zones where waste was dumped or filled in the pit, the resource blocks in contact with those materials are diluted proportionally. In the zones where cavities related to previous underground operations exist, those blocks are diluted considering that the cavities are filled with waste.

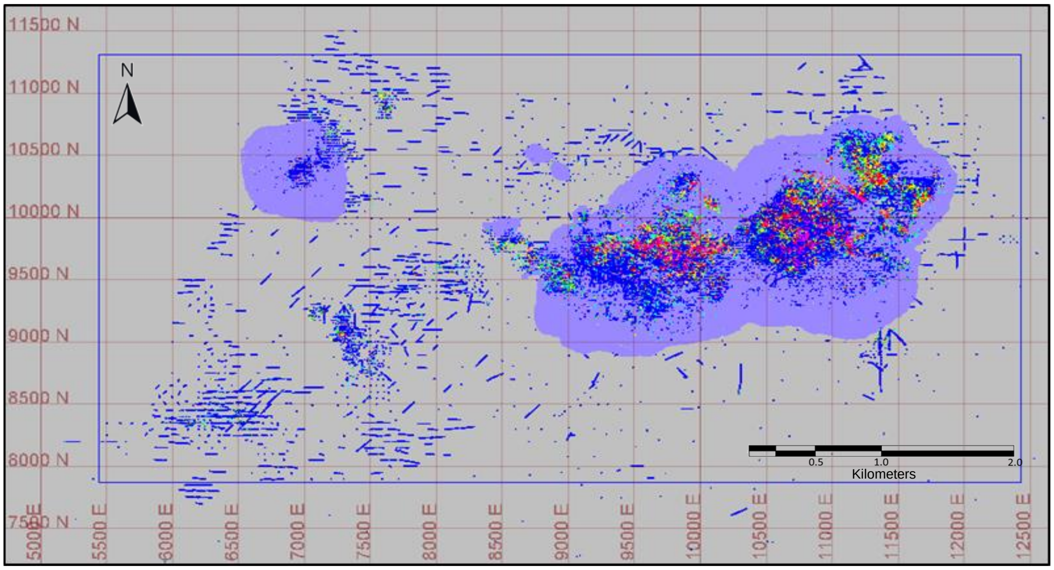
Table 14-1: Block Model Definition

	Azimuth	Dip	Plunge
	90E	0	0
	East extension	North extension	Elevation
	3,500	4,500	0
Block Size	12.5	12.5	12.0
Number of Blocks	1,080	680	100

14.3 Database

The database used for the construction of the 2020 Resource Model was identified as COMB20.dm (Datamine) and includes 2,175,889 m of drill data distributed amongst 15,608 drill holes as shown in Figure 14-1.

Figure 14-1: Isometric View with the Dill Hole Distribution



Note: Figure provided by Golder, 2020

14.4 Composites

Compositing of the data is necessary to ensure that the data intervals have the same volume of support and to control for grade variability and potential bias associated with unequal sample lengths. The Mantos Blancos drill hole data has a representative sample length of 1.5 m. To standardize the sample length, samples were composited to 6 m in length, which is considered consistent with the type of mineralization and the SMU.

14.5 Total Copper (TCu) and Insoluble Copper (ICu) estimate

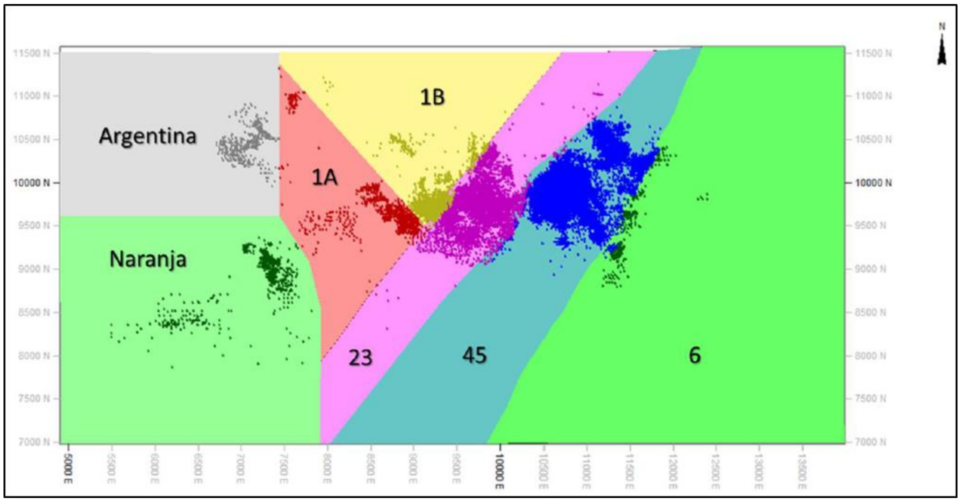
The exploratory data analysis is aimed at finding similarities of distributions among different populations and to determine possible groupings by geological attributes. The exploratory data analysis also seeks to detect possible drifts that may affect the estimation result. The statistical adequacy of the definitions of the estimation units (EU) was verified through the implementation of statistical and geostatistical tools. The analyses included basic statistics, cumulative probability and swath plots. All statistical analyses were developed using the composites database.

The seven geological domains used for the estimation were defined on the basis of lithologies and major faults. The Mantos Blancos deposit is stratabound and the spatial continuity of grades is controlled by geology and fault displacement. Each of the defined estimation domains has an adequate number of samples, geological continuity and coherence. The estimation of TCu and ICu uses the same definition of domains. The geological domains are identified as listed below and shown in Figure 14-2.

- Domain 1A: between Mercedes fault in the east and Sorpresa fault in the north
- Domain 1B: between Mercedes fault in the east and Sorpresa fault in the south
- Domain 23: between Mercedes fault in the west and Tercera fault in the east
- Domain 45: between Tercera fault in the west and Quinta fault in the east
- Domain 6: east of Quinta fault

- Argentina: isolated mineralized zone with oxide and sulphide copper
- Naranja: isolated mineralized zone with oxide copper.

Figure 14-2: Mantos Blancos Geological Domains

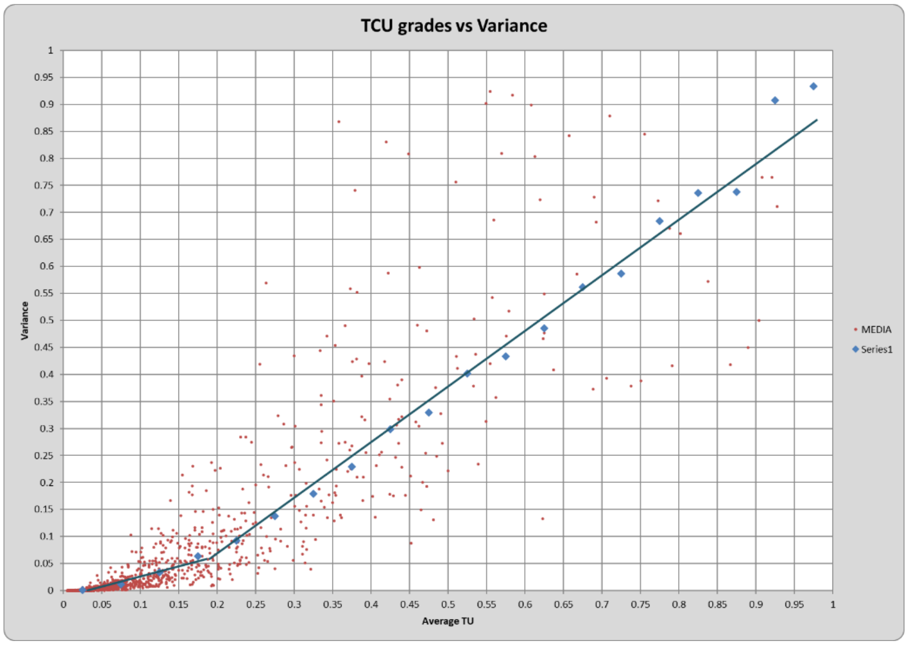


Note: Figure courtesy Mantos Copper, 2020

Within each of these domains, two grade envelopes were created using Indicator Kriging, the first to separate mineralization from waste, and the second to separate low grade from high grade.

- The differentiation between mineralized and non-mineralized material is defined by Indicator Kriging (INDCUT) with a threshold of 0.15% TCu. If the probability is greater than 50% the block is defined as "mineralized", otherwise it is "non-mineralized". The 0.15% TCu cut-off was selected based on the Mantos Blancos in-house accumulated geological knowledge and historical mine reconciliation results.
- For all blocks that were defined as mineralized estimates for total copper, insoluble copper, silver, lead and carbonate were completed.
- Based on the results of the first pass total copper grade estimation, a second Indicator Kriging was completed at 0.28% total copper cut-off. This second pass allowed differentiation of the high-grade zones from the rest. The selection of this threshold was based on the evaluation of the variance at different mean values, where a break is observed at 0.28%TCu as seen in Figure 14-3.
- All blocks that have a probability ≥50% of being high grade were estimated with Ordinary Kriging, for blocks that return <50% probability of being high grade the result of the previous estimate was maintained.

Figure 14-3: Variance at Different Mean Values



Note: Figure courtesy Mantos Copper, 2020

14.5.1 Grade Capping

For the final composite database, capping of outliers was applied to avoid local estimation of high grades that is not representative of the grades within the estimation domain. The outlier values were defined considering the cumulative histogram of grades per domain in the range between 100% and 99% of the values. The bounding values are shown in Table 14-2.

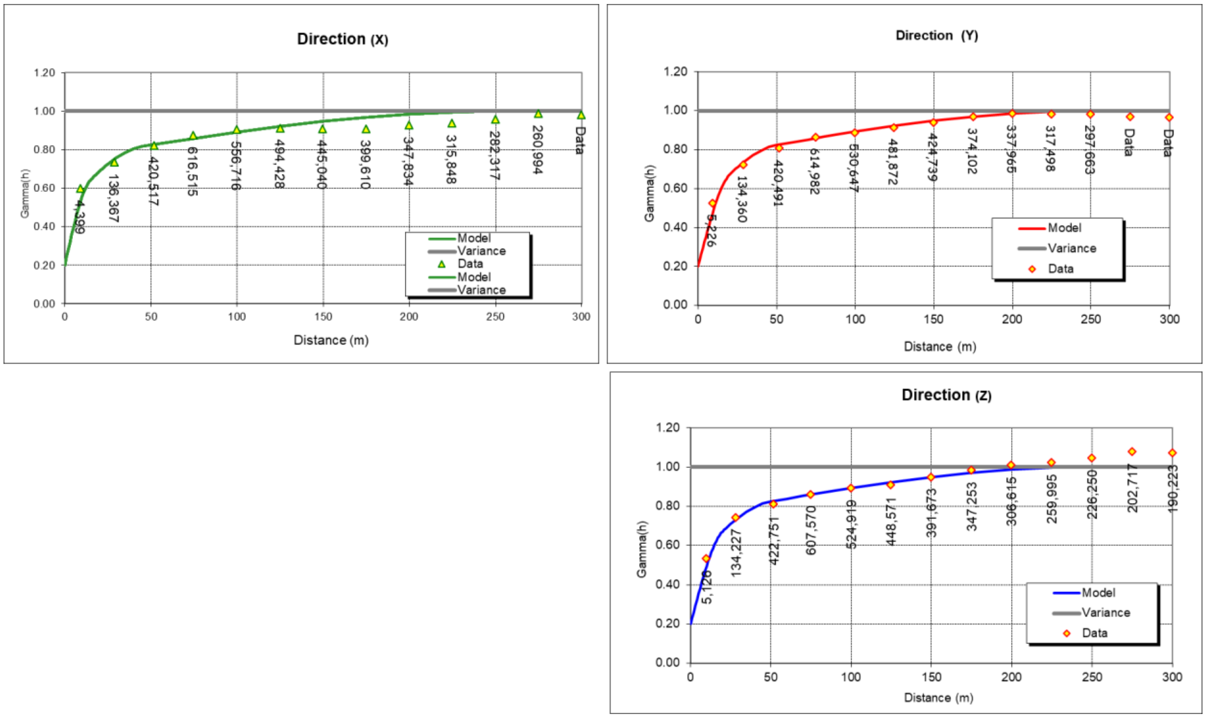
Table 14-2: Capping Values

Domain	Capping TCu (%)
1A	4.2
1B	3.3
23	7.5
45	9.0
6	2.4
NAR	2.2
ARG	2.99

14.5.2 Variography

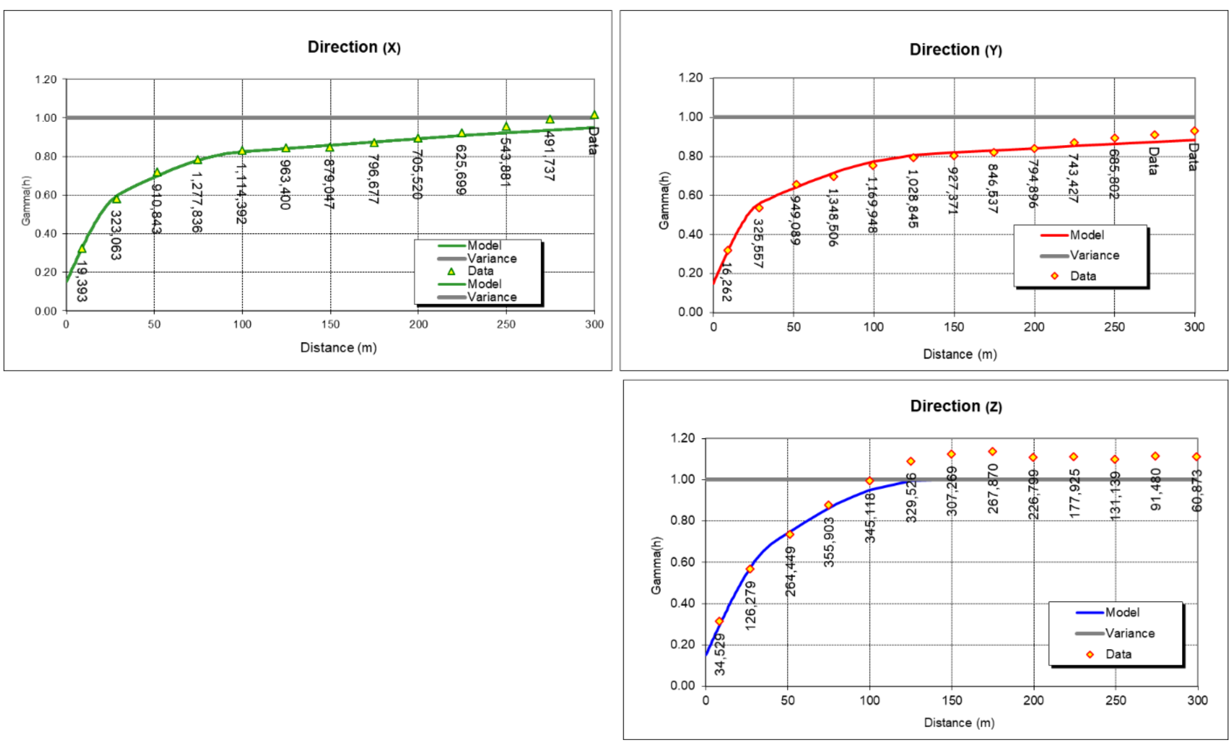
Correlograms were calculated and modelled for each of the elements to be estimated and directions of major and minor continuity were derived from variogram maps in the horizontal and vertical directions for each of the domains. The nugget effect was obtained from the down-the-hole (DTH) variogram. Figure 14-4 and **Error! Reference source not found.** show the variograms for domains 23 TCu and domains 45 ICu.

Figure 14-4: Variogram Domains 23 TCu



Note: Figure courtesy Mantos Copper, 2020

Figure 14-5: Variogram Domains 45 ICu



Note: Figure courtesy Mantos Copper, 2020

14.5.3 Estimate Plan

TCu and ICu were estimated by Ordinary Kriging in three estimation passes. Table 14-3 and Table 14-4 detail the estimation plan by domain for TCu and ICu, respectively.

The Kriging plan includes three passes in which the search radii are increased, the sample restriction is fixed and no sample restrictions by octant is applied.

Table 14-3 Search Parameters for TCu Estimation by Domain

DOM	Pass	Type	Angle 1	Angle 2	Angle 3	Axis			Samples		Max. Samples per Drill Hole
						Major	Semi Major	Minor	Min.	Max.	
1A	1	OK	-45	-35	-25	33.3	43.3	30	7	16	3
	2	OK	-45	-35	-25	66.6	86.6	60	7	16	3
	3	OK	-45	-35	-25	99.9	129.9	90	7	16	3
1B	1	OK	40	-43	-20	40	23.3	40	7	16	3
	2	OK	40	-43	-20	80	46.6	80	7	16	3
	3	OK	40	-43	-20	120	69.9	120	7	16	3
23	1	OK	-40	0	0	43.3	51.6	50	7	16	3
	2	OK	-40	0	0	86.6	103.2	100	7	16	3
	3	OK	-40	0	0	129.9	154.8	150	7	16	3
45	1	OK	-40	15	-20	43.3	43.3	41.6	7	16	3
	2	OK	-40	15	-20	86.6	86.6	83.2	7	16	3
	3	OK	-40	15	-20	129.9	129.9	124.8	7	16	3
6	1	OK	60	56	-20	33.3	25	30	7	16	3
	2	OK	60	56	-20	66.6	50	60	7	16	3
	3	OK	60	56	-20	99.9	75	90	7	16	3
NAR	1	OK	-40	-32	-20	33.3	40	17	7	16	3
	2	OK	-40	-32	-20	66.6	80	34	7	16	3
	3	OK	-40	-32	-20	99.9	120	51	7	16	3
ARG	1	OK	90	0	-25	33.3	16.6	33.3	7	16	3
	2	OK	90	0	-25	66.6	33.2	66.6	7	16	3
	3	OK	90	0	-25	99.9	49.8	99.9	7	16	3

Table 14-4: Search Parameters for ICu Estimation by Domain

DOM	Pass	Type	Angle 1	Angle 2	Angle 3	Axis			Samples		Max. Samples per Drill Hole
						Major	Semi Major	Minor	Min.	Max.	
1A	1	OK	-45	-35	-25	25	33.3	33.3	7	16	3
	2	OK	-45	-35	-25	50	66.6	66.6	7	16	3
	3	OK	-45	-35	-25	75	99.9	99.9	7	16	3
1B	1	OK	40	-43	-20	36.6	36.6	40	7	16	3
	2	OK	40	-43	-20	73.2	73.2	80	7	16	3
	3	OK	40	-43	-20	109.8	109.8	120	7	16	3
23	1	OK	-40	0	0	46.6	50	50	7	16	3
	2	OK	-40	0	0	93.2	100	100	7	16	3
	3	OK	-40	0	0	139.8	150	150	7	16	3
45	1	OK	-40	15	-20	43.3	43.3	33.3	7	16	3
	2	OK	-40	15	-20	86.6	86.6	66.6	7	16	3
	3	OK	-40	15	-20	129.9	129.9	99.9	7	16	3
6	1	OK	60	56	-20	33.3	25	30	7	16	3
	2	OK	60	56	-20	66.6	50	60	7	16	3
	3	OK	60	56	-20	99.9	75	90	7	16	3
NAR	1	OK	-40	-32	-20	30	30	17	7	16	3
	2	OK	-40	-32	-20	60	60	34	7	16	3
	3	OK	-40	-32	-20	90	90	51	7	16	3
ARG	1	OK	90	0	-25	33.3	16.6	33.3	7	16	3
	2	OK	90	0	-25	66.6	33.2	66.6	7	16	3
	3	OK	90	0	-25	99.9	49.8	99.9	7	16	3

Table 14-5 and

Table 14-6 show the variography parameters used for TCu and ICu estimate by domain.

Table 14-5: TCu Variographic Parameters by Domain

DOM	Nugget	Angle 1	Angle 2	Angle 3	Type	First Structure				Second Structure				Third Structure			
						Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis
1A	0.15	-45	-35	-25	SPH	0.23	15	20	15	0.3	50	70	70	0.32	120	145	120
1B	0.15	40	-43	-20	SPH	0.23	20	15	10	0.3	60	50	35	0.32	130	90	125
23	0.2	-40	0	0	SPH	0.3	15	20	20	0.25	45	50	50	0.25	250	250	250
45	0.15	-40	15	-20	SPH	0.3	30	25	30	0.3	70	90	100	0.25	300	600	160
6	0.15	60	56	-20	SPH	0.35	15	10	20	0.3	60	40	60	0.2	140	80	120
NAR	0.15	-40	-32	-20	SPH	0.3	20	20	20	0.25	70	50	60	0.3	300	150	80
ARG	0.15	90	0	-25	SPH	0.35	20	30	20	0.3	100	60	50	0.2	160	300	120

Table 14-6: ICu Variographic Parameters by Domain

DOM	Nugget	Angle 1	Angle 2	Angle 3	Type	First Structure				Second Structure				Third Structure			
						Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis
1A	0.15	-45	-35	-25	SPH	0.28	30	40	30	0.3	40	70	75	0.27	500	400	350
1B	0.15	40	-43	-20	SPH	0.23	20	20	15	0.3	40	50	50	0.32	120	130	130
23	0.2	-40	0	0	SPH	0.3	15	15	20	0.25	50	80	50	0.25	180	180	190
45	0.15	-40	15	-20	SPH	0.3	30	30	40	0.3	100	130	130	0.25	500	800	140
6	0.15	60	56	-20	SPH	0.32	35	15	30	0.25	120	40	150	0.28	800	170	5000
NAR	0.2	-40	-32	-20	SPH	0.3	20	20	20	0.3	55	40	50	0.2	250	250	1000
ARG	0.15	90	0	-25	SPH	0.3	30	40	20	0.28	120	70	90	0.27	200	600	140

14.6 Silver (Ag) Estimate

Silver estimation was carried out with Ordinary Kriging using the same domains as for TCu but grouped in two domains 1A-1B-23-45-45-6-NAR and Argentina. Grades were capped.

14.6.1 Variography

For each domain directional correlograms were calculated.

Table 14-7 shows the variogram model parameters used for the Ag estimate by domain.

Table 14-7: Ag Variographic Parameters by Domain

DOM	Nugget	Angle 1	Angle 2	Angle 3	Type	First Structure				Second Structure				Third Structure			
						Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis	Sill	Major Axis	Semi Major Axis	Minor Axis
1A 1B 23 45 6 NAR	0.37	90	20	90	SPH	0.31	44	50	61	0.1	225	372	91	0.22	366	382	101
ARG	0.35	-150	10	90	SPH	0.03	37	70	36	0.42	59	121	71	0.2	117	128	81

14.6.2 Estimation Plan

Table 14-8 shows the estimation plan by domain for Ag.

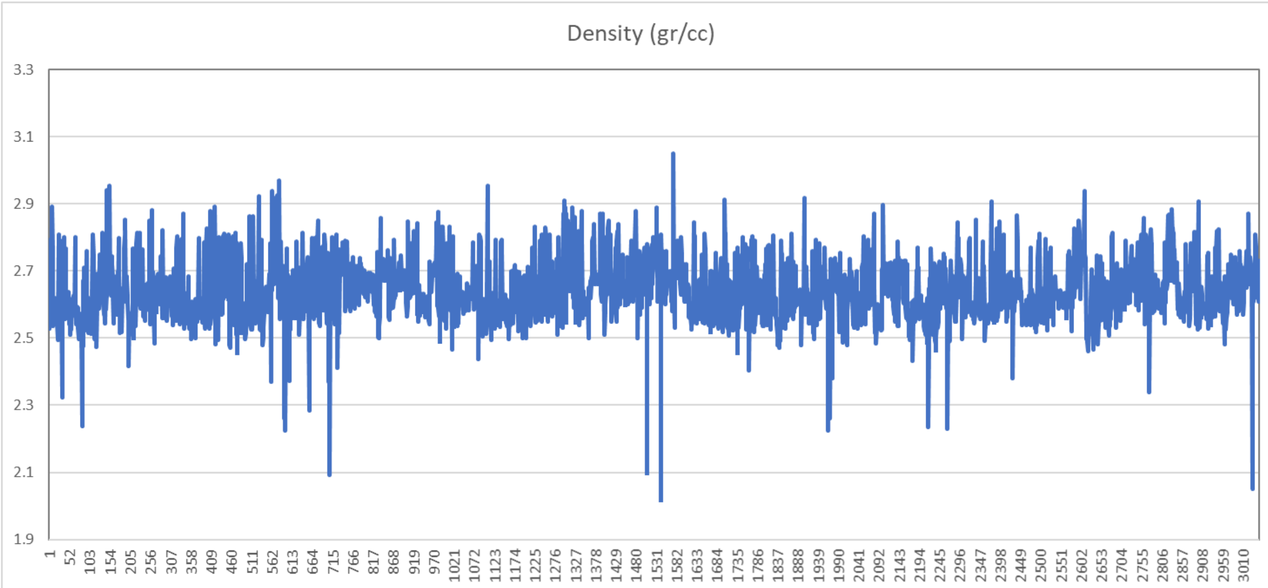
Table 14-8: Search Parameters for Ag Estimation by Domain

DOM	Pass	Type	Angle 1	Angle 2	Angle 3	Axis			Samples		Max. Samples per Drill Hole
						Major	Semi Major	Minor	Min.	Max.	
1A-1B-23-45-6-NAR	1	OK	90	20	90	183	191	52	7	16	3
	2	OK	90	20	90	183	191	52	4	16	3
	3	OK	90	20	90	183	191	52	3	16	3
ARG	1	OK	-150	10	90	117	128	81	7	16	3
	2	OK	-150	10	90	117	128	81	4	16	3
	3	OK	-150	10	90	117	128	81	3	16	3

14.7 Density

Density is assigned based on the results of 1,259 samples; no evidence of a possible relationship between density and grade was observed. The method used for density measurement was the Archimedes method. Based on the results and the historical mine data an average value of 2.60 g/cc was used. Figure 14-6 presents a chart for density per sample. Currently the density database has 3,024 records. A comparison of the data by lithology shows that for the main lithology (202) results are very close to the density assigned in the resource model. Table 14-9 summarizes density values by lithology.

Figure 14-6: Density Database Summary



Note: Provided by Golder, 2020

Table 14-9: Density by Lithology

Lithology	Number	Average (g/cc)	Min. (g/cc)	Ma. (g/cc)	Std Dev.
202	1,380	2.594	2.0910	3.050	0.067
203	139	2.610	2.0500	2.798	0.073
204	332	2.647	2.2240	2.969	0.071
205	23	2.671	2.6070	2.765	0.033
206	652	2.697	2.0200	2.917	0.083
207	260	2.740	2.3390	2.939	0.084
209	238	2.635	2.3810	2.942	0.081
Total	3,024	2.639	2.0200	3.050	0.090

14.8 Mercedes Stockpile

Mercedes is the main stockpile for leach material at Mantos Blancos and the estimated resources include total copper (TCu), carbonate (CO_3) and solubility ratio (Ksol), all estimated by Ordinary Kriging.

The database supporting the Mercedes stockpile block model includes 13,507 m of sonic drilling and 177 trench samples. Sonic drilling samples were composited at 6 m lengths. The estimation process used Ordinary Kriging in two passes. Trench sampling was conducted in a 6 m trench collecting 6 samples of 20 kg per meter, subsequently all samples were composited into a final 60 kg sample that was sent for chemical assay. Trench sampling is shown in Figure 14-7 and overall sampling locations are shown in Figure 14-8.

The estimated variables were TCu, CO_3 and Ksol (SCu/TCu), from these variables the SCu and ICu were calculated. In the first pass the grades were interpolated for the blocks within the search radii defined as 100% of the variogram range. The second pass considered search radii 2 times the variogram ranges and blocks were assigned the average grade of each variable calculated per bench from the composites database.

Figure 14-7: Trench Sampling of Mercedes Stockpile

Note: Figure courtesy Mantos Copper, 2019

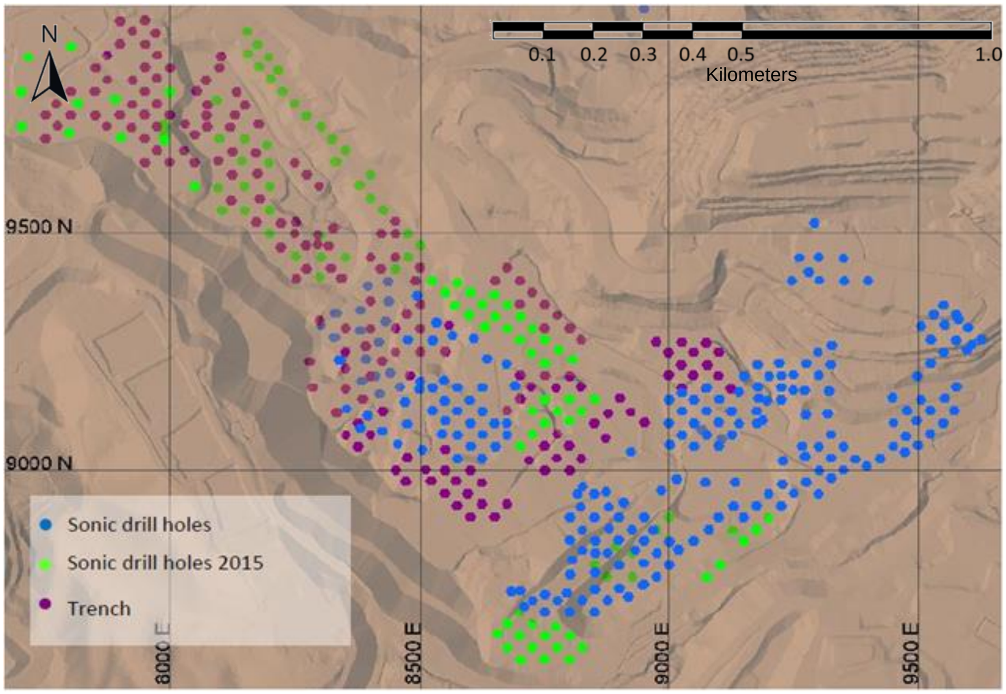
Table 14-10 lists the estimation parameters used for estimating the Mercedes Stockpile.

Table 14-10: Estimation Plan for Mercedes Stockpile

	Search Parameters X;Y;Z	Minimum Number of Samples	Maximum Number of Samples
Pass 1	100;100;10	2	12
Pass 2	200;200;20	NA	NA
* Omnidirectional variograms were used			

Because of the type of material in the Mercedes Stockpile no Measured material was defined. Mineral Resources were classified as Indicated when estimated in the first pass and Inferred when estimated during the second pass.

Figure 14-8: Mercedes Stockpile Plan View



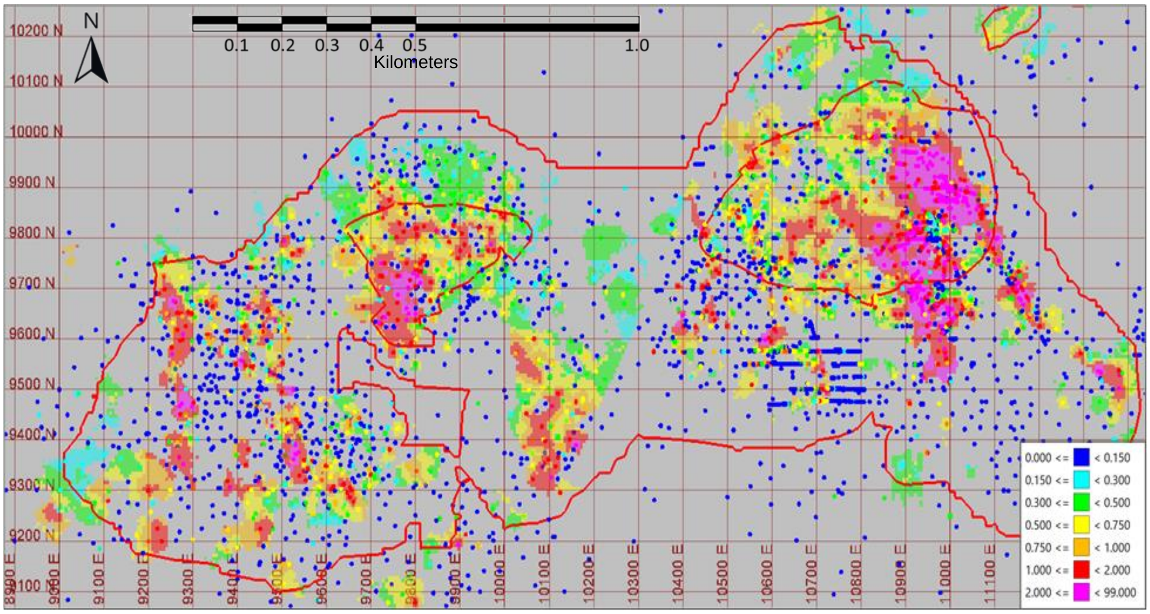
Note: Figure courtesy Mantos Copper, 2020

14.9 Block Model Validation

Review and validation of the estimation results was carried out for each pass and for each of the estimation units. The consistency between the data and the block model is checked, verifying smoothing or over-estimations, biases, outliers and reproduction of local averages, among other verifications. The validation of the block model included:

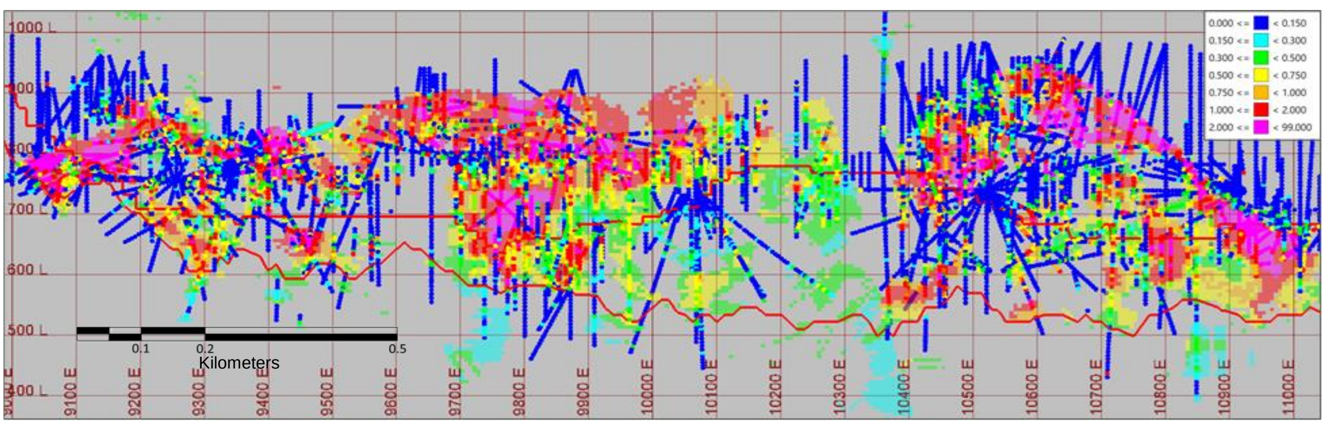
- Visual validation was performed in sections along each coordinate axis. Estimates and composites were compared using the same colour scheme to identify visually if problems of negative or positive difference occurred (examples are shown in Figure 14-9 and Figure 14-10). In general, the visual validation for total copper estimates indicates that the composite grades are adequately represented by the block model. High grade zones are adequately represented and high grade samples are adequately controlled, validating the outlier treatment applied. Smoothing levels increase in deeper parts of the deposit due to a reduction in the number of composites available. However, the results show an acceptable level of smoothing.
- Swath plots correlate block grade moving averages versus drill hole samples, by north, east and elevation panels, which allows verification of the reproducibility of local averages, reviewing the level of smoothing, over-estimations and bias (see examples in Figure 14-11). The results show that the estimated block model reasonably follows the composite trend.

Figure 14-9: Horizontal View 680 RL ±3 m – TCu



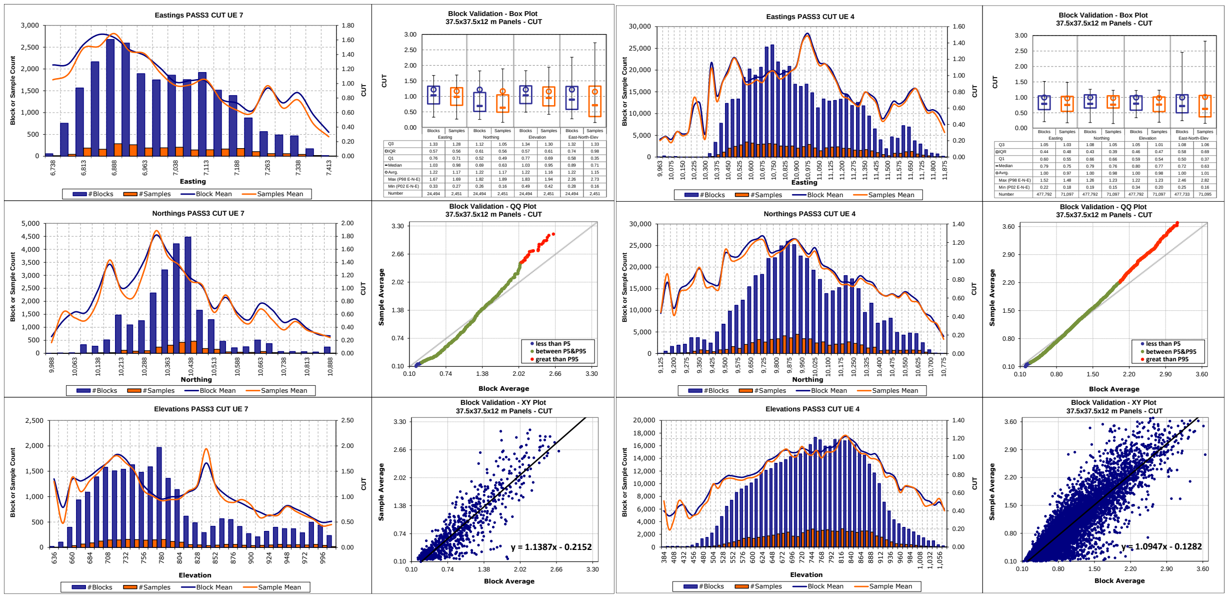
Note: Figure provided by Golder, 2020

Figure 14-10: Vertical Section 9,700N ±15 m – TCu



Note: Figure provided by Golder, 2020

Figure 14-11: Swath Plots – TCu



Note: Argentina (left) and Zona 45 (right)
Figure provided by Golder, 2020

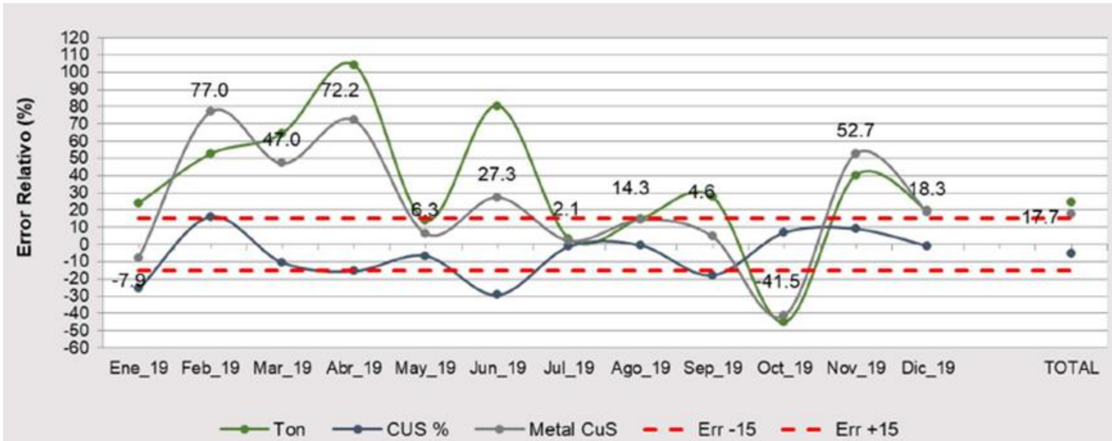
14.10 Reconciliation

Reconciliation between the short-term model and stockpile sampling, and the long-term Mineral Resource Estimates shows good historical correlation for total and soluble copper, implying that the resource estimate is robust for both tonnage and grade. Figure 14-12 and Figure 14-13 show the 2019 monthly reconciliation for TCu and SCu.

Mantos Blancos copper production currently comes from two sources, the mine and the dump leach stockpiles. The predictability of the long-term model (LTM) as it relates to mine production is controlled by monthly reconciliations against blast hole data. Using a comparison basis of 5,000 kt mined during 2020, the sulphide ore has a relative difference of less than 5% in tonnage.

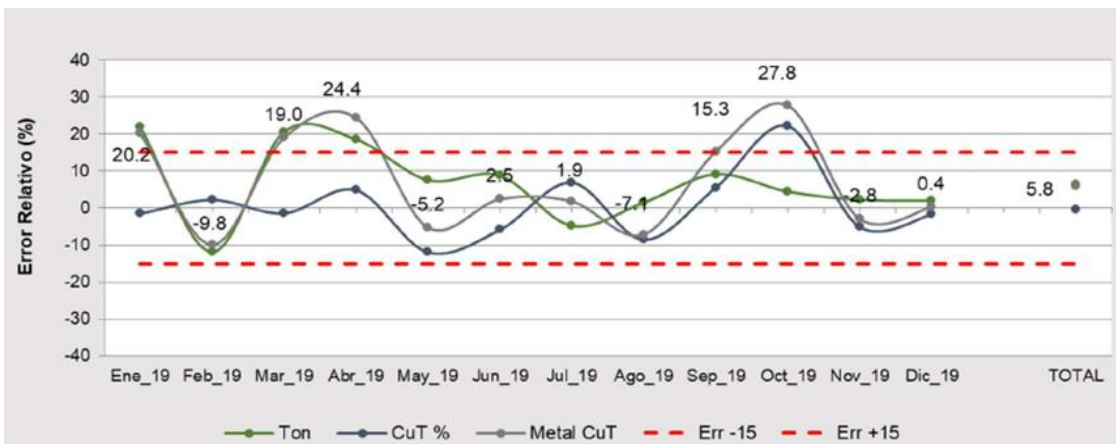
For the same period, but with a lower comparison basis of 456 kt, the oxide from the mine was reconciled, with a relative difference of +38% in tonnage. This difference represents an additional 130 kt of oxide. The resource model performance for oxides is considered only as a reference because of the low tonnage produced from the mine and because the categorization and reconciliation was originally intended for a production of 5 Mt.

Figure 14-12: SCu Reconciliation Results between 2020 Resource Model and In-situ Mine Production, 2019 Results



Note: Figure courtesy Mantos Copper, 2020

Figure 14-13: TCu Reconciliation Results between 2020 Resource Model and In-situ Mine Production, 2019 Results



Note: Figure courtesy Mantos Copper, 2020

14.11 Mineral Resource Classification

Mineral Resources were defined using a methodology that combined information from production, drill hole spacing, Kriging variance and the geological expertise of the Mantos Blancos technical team.

This method involves the definition of two probabilistic indicators using the Ordinary Kriging variance as classification thresholds. The methodology consists of calculating the variography of the total copper grades above 0.15% and the variography of the indicator above this threshold (called the metal variable). This threshold was defined considering the minimum total copper grade that defines the feed sent to the process plant. Ordinary Kriging is then used to calculate the grade and metal variables at different grid sizes. The total error per grid (which mathematically combines both Kriging variances) is calculated. The maximum grid size is then identified at which the total error is no greater than 15% at a 90% confidence level. This grid is associated not only with the total error, but also with the Kriging variance of the grade variable. Finally, grids representing a monthly and yearly production are defined as the thresholds or the 12.5 m x 12.5 m x 12 m block size to define Measured and Indicated Resources.

Mineral Resources are classified as Measured if the grade, the variability of which is corrected to 1 month of production, is estimated with an error not greater than 15% at a 90% confidence level, implying a theoretical 20 m x 20 m grid.

Mineral Resources are classified as Indicated if the grade, the variability of which is corrected to 1 year of production, is estimated with an error not greater than 15% at a 90% confidence level, implying a theoretical 40 m x 40 m grid.

Mineral Resources that do not meet the above criteria are classified as Inferred.

To avoid the effect of extrapolation, only Mineral Resources within the approved drilled and sampled perimeter have been considered for classification.

14.12 Reasonable Prospects of Eventual Economic Extraction

Mineral Resources were evaluated considering reasonable prospects for eventual economic extraction by constraining the estimates within a Lerchs–Grossmann (LG) pit shell, using the Geovia Whittle 4.5.5 software package. Optimization parameters were determined by Mantos Copper staff based on historical and operational databases and factors.

14.13 Mineral Resource Statement

The Mineral Resource Estimate is reported inclusive of those Mineral Resources that have been converted to Mineral Reserves, and uses the definitions set out in the 2014 CIM Definition Standards.

Mantos Blancos Mineral Resources are contained within a conceptual pit shell that is generated using the same economic and technical parameters used for Mineral Reserves but at a selected revenue factor of 1. The metal price was US$3.77/lb Cu which is 30% above the price used for Mineral Reserves. Direct mining costs are estimated using the 12 month historical data from the previous year adjusted according to depth (averaging US$1.76/t of material mined). Processing costs are estimated based on historical data and the new concentrator line assuming a cost of US$9.98/t of material milled. This cost includes concentrator, tailings storage facility and water costs. The general and administration (G&A) cost was not included in the optimization process completed by Mantos Copper. Metallurgical recoveries average around 83.0% for Cu for flotation and 40.0% for dump leach material. Pit slope inter-ramp angles vary from 36˚ to 59º.

This optimized pit shell is used as the basis for the test of reasonable prospects for eventual economic extraction for the estimation of Mineral Resources. Mantos Copper has typically used a copper price assumption for resources that is 30% higher than the copper price used for the determination of Mineral Reserves. This is the same approach used by Anglo American previously. The same adjustment is not made to gold and silver because these are by-products and do not drive the shape of the optimized resource pit shell which is driven by copper, the main payable product.

Table 14-11 and Table 14-12 summarize the Mineral Resources by process. The topography used to constrain the estimates was projected from July 2020 to December 2020.

Table 14-11: Mantos Blancos Sulphide Resources as of 31 December 2020

Process	Category	Tonnage (Mt) (4)	Grade % TCu (2)	Grade g/t Ag (2)	Contained Cu (kt) (6)	Contained Ag (koz) (5)
Mantos Blancos Sulphide (Flotation) (1) (3)	Measured	104.4	0.75	6.03	783	20,234
	Indicated	106.5	0.58	4.41	618	15,099
	Total Measured & Indicated	210.9	0.66	5.21	1,400	35,334
	Inferred	20.0	0.48	3.35	96	2,151

Table 14-12: Mantos Blancos Oxide Resources – Dump Leaching as of 31 December 31, 2020

Process	Category	Tonnage (Mt) (4)	Grade % SCu (2)	Contained Cu (kt) (5)
Mantos Blancos Oxide (Dump Leach) (1) (3)	Measured	22.8	0.34	78
	Indicated	28.5	0.26	74
	Indicated (Mercedes Stockpile)	6.3	0.18	11
	Indicated (NE Dump Stockpile)	3.9	0.19	7
	Total Measured & Indicated	61.6	0.28	171
	Inferred	8.6	0.25	21
	Inferred Mercedes	2.3	0.19	4
	Inferred F2 Este Dump	3.1	0.19	6
	Inferred NE Dump	4.4	0.17	7

Notes to accompany Mineral Resources table:

1. Mineral Resources are reported on a 100% basis and inclusive of Mineral Reserves. The attributable percentage to Mantos Copper Holding SpA is 99.993%
2. Cut-off grade:
   - Dump Leach: 0.10% SCu
   - Flotation: 0.22% ICu
3. Mineral Resource pit is based on a Cu price of US$3.77/lb and a Ag price of US$17.00/oz
4. Tonnes are reported on a dry basis
5. Contained Metal (CM) is calculated by the following formulas:
   a. CM=Tonnage (Mt) * TCu (%) *1,000 for sulphides
   b. CM=Tonnage (Mt) * SCu (%) * 1,000 for oxides
   c. CM=Tonnage (Mt) * Ag (g/t)*1,000/31.1035 for sulphides.
6. Flotation recovery is based on a geometallurgical model, 83% TCu and 76.5% Ag as average. Dump recovery is based on operation data 40% SCu
7. Through the Osisko silver production agreement, Osisko Gold has the right to buy 100% of the silver production in concentrate (less specified deductions) until reaching 19,300,000 ounces and subsequently 40% paying 92% of the market price
8. Tonnage and contained metal have been rounded to reflect the accuracy of the estimate and numbers may not add exactly
9. ICu = insoluble copper
   SCu = soluble copper
   TCu = total copper

14.14 Factors That May Affect the Mineral Resource Estimate

Factors that may affect the Mineral Resource Estimates include:

- Metal price and exchange rate assumptions
- Changes to the assumptions used for the cut-off
- Changes in local interpretations of mineralization geometry and continuity of mineralized zones
- Density and domain assignments
- Geometallurgical assumptions
- Changes to geotechnical, mining and metallurgical recovery assumptions
- Changes to input and design parameter assumptions that pertain to the conceptual Whittle pit design constraining the estimate
- Assumptions as to the continued ability to access the site, retain mineral and surface rights titles, maintain environmental and other regulatory permits, and maintain the social licence to operate.

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

14.15 Comments on Section 14

Mantos Blancos Mineral Reserves follow industry accepted practices, conform with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM 2014 Definition Standards.

The QP independently reproduced the tonnages and grades estimated in the resource statements included in this Technical Report.

15 Mineral Reserve Estimates

15.1 Introduction

The conversion of Mineral Resources into Mineral Reserves entails the following input data and activities:

- Mineral Resources statement as of 31 December 2020
- Optimized Mine Design: Mineral Resources as of 31 December 2020, geometallurgical characterization and corresponding recoveries, updated operating and off-site costs, metal prices, and geotechnical recommendations are incorporated to generate optimized Lerchs-Grossmann (LG) pit shells implemented in Whittle
- Optimal Pit Selection: The optimal shell used as the guide for mine design is selected based on undiscounted and discounted cash flows
- Cut-off grades calculation: Operating costs, geometallurgical characterization and corresponding recoveries are used to calculate cut-off grade for sulphides to the mill and dump leaching
- Mine Phasing Sequence: The information provided by the LG algorithm is used to sequence mine extraction phases
- Operational Mine Design: Detail mine design including accesses, ramps, benches configuration and phase connectivity, allowing extraction from the mine
- Mine Production Schedule: The mine production schedule is a combination of detailed mine planning for the first 5 years (monthly and quarterly) and long term mine planning on a yearly basis for the remaining life of mine. The starting point for the schedule is October 2020 surveyed topography is projected to year end 2020, as per the short term mine plan.

Updated Mineral Reserves: It is the opinion of NCL that the mine production schedule defines the Mineral Reserve for a mining operation.

A full review of input data, methodology and results supporting the work done by Mantos Copper was completed by NCL and Carlos Guzmán, the Qualified Person for the Mineral Reserves Estimate. Criteria, methodologies and algorithms used are standards practices in the mining industry.

15.2 Block Model

The Mineral Reserves reported as of 31 December 2020 are based on the Resource Model generated in May 2020 by Mantos Copper staff.

A block size of 12.5 m N x 12.5 m E x 12 m RL was selected for the block model. The selected block size was based on interpreted domain geometry, data configurations and operational constraints.

15.3 Design Criteria

The conversion of Mineral Resources into Mineral Reserves implies the incorporation of economic parameters, environmental and social community aspects, taxes, geotechnical recommendations, metallurgical recoveries and other factors. Some of these parameters, used as inputs of the optimization process, are shown Table 15-1.

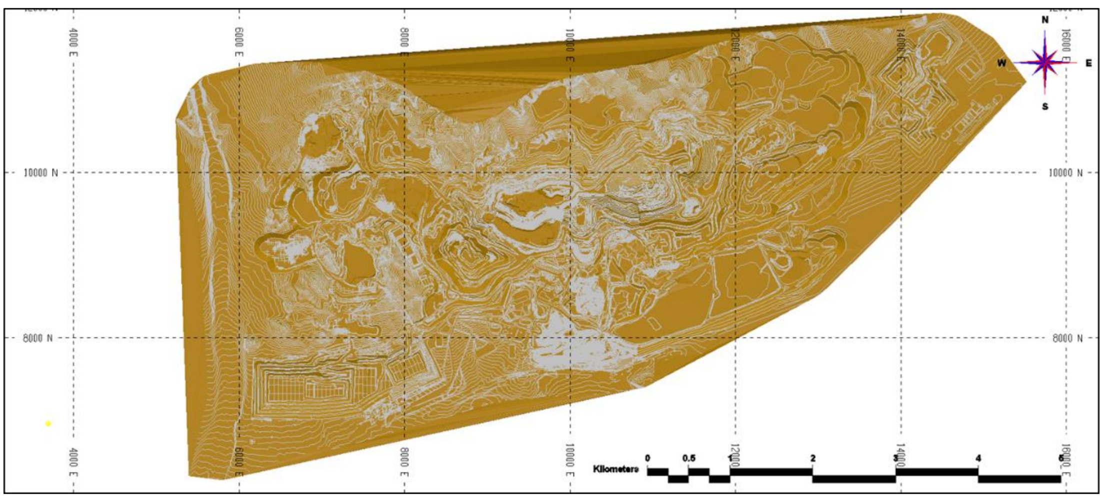
Table 15-1: LG Optimization Parameters

Item			Unit	Value
Mine	Initial Topography			July 2020
	Real Mine Cost		US$/t	1.76
	Cost Mine (Bench 900)		US$/t	1.6
Process	Concentrator (7.3 Mt)		US$/t min	9.98
	Dump (Mercedes)		US$/t min	1.47
Sales	Oxides	SX-EW	cUS$/lb	37.36
		Marketing	cUS$/lb	4.71
		Total	**cUS$/lb**	**42.07**
	TC/RC	Sulphides	cUS$/lb	22.56
		Marketing	cUS$/lb	4.71
		Total	**cUS$/lb**	**27.27**
Price	Copper (M+I)		US$/lb	2.9
	Copper (M+I+I)		US$/lb	3.77
	Silver		US$/oz troy	17
G&A	Annual		MUS$	20

15.3.1 Topography

The initial topography used for the Mineral Reserves Estimate was based on the pit design projected for the end of December 2020 (10 months real + 2 months projected).

Figure 15-1: Initial Topography



Note: Figure courtesy Mantos Copper, 2020

15.3.2 Geometallurgical Considerations

Sulphides

For TCu recovery, the recovery in the geometallurgical model (GEOMET2020) was used. The methodology to obtain this model is described in Section 13.3.1.

The recovery by period through the life of mine is shown in Table 15-2.

Table 15-2: Cu Metallurgical Recovery

Period	Cu Metallurgical Recovery (%)
2021	82.0
2022	78.7
2023	78.2
2024	78.6
2025	82.3
2026	82.7
2027	87.7
2028	85.1
2029	82.7
2030	82.1
2031	84.9
2032	87.1
2033	87.9
2034	86.5
2035	84.7
2036	83.9
2037	84.2
Average LOM	83.0

For silver recovery the following model was used:

- Silver recovery (%) (from 2021 to 2025) = 67.105 + 0.3951 * Ag (g/t) + 5
- Silver recovery (%) (from 2026 to 2037) = 67.105 + 0.3951 * Ag (g/t) + 8

Oxides

The Dump Leach process uses the following recovery model for grades greater than 0.10% soluble copper,

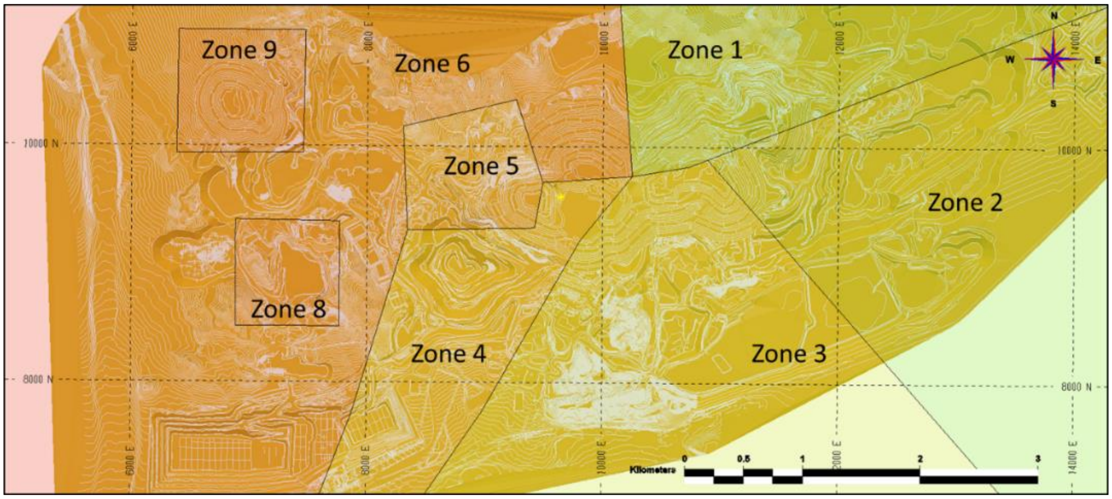
Soluble Copper Recovery (%) = 43.524 + 15.969 * LN (Irrigation Rate)

Where the maximum irrigation rate for the Mercedes and Entrefases Dump is 0.96 m^3/t.

15.3.3 Geotechnical Considerations

Previous studies by Geotecnia (1991-1992), SRK (1996) and AKL (2005, 2007, 2009, 2012) were considered and divide the mine area into nine zones. The recommended global angles were used for the pit optimization process and bench configuration (inter-ramp angles, bench heights and berm widths) for detail mine design. Figure 15-2 shows the defined zones and Table 15-3 shows the recommended parameters. Bench faces are drilled at 90° due to rock hardness, and pre-splitting is used for blasting control.

Figure 15-2: Mantos Blancos Geotechnical Zones



Note: Zone 7 is existing filled underground stopes and previous waste dump areas
Figure courtesy Mantos Copper, 2020

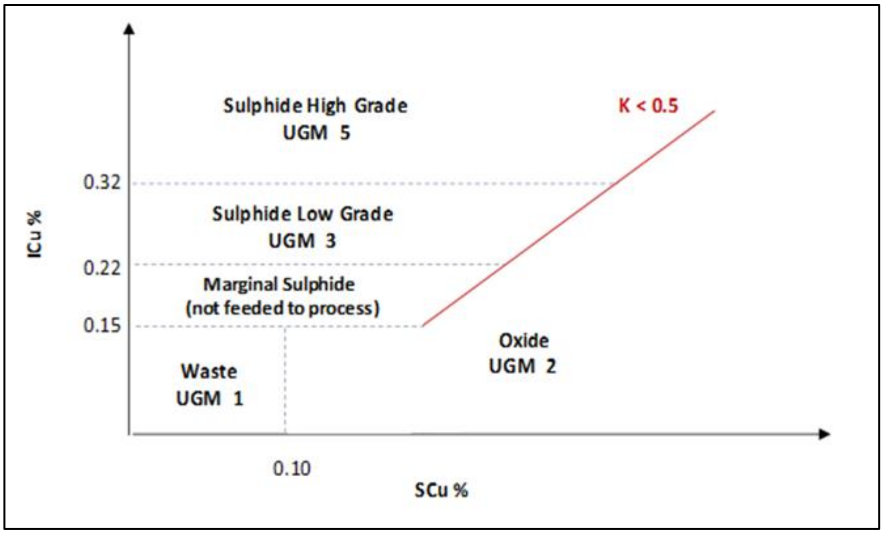
Table 15-3: Mantos Blancos Geotechnical Parameters

Zone	IRA β	Face Angle γ	Height H(m)	Backbreak a(m)	Berm b(m)	Catch Berm c(m)	Slope Height L(m)	Slope Angle (°)	Global Angle (°)
1	55	90	24	0.40	16.4	30	120	46.5	42.3
2	50	90	24	0.40	19.7	30	120	42.6	41.5
3	58	90	24	0.40	14.6	30	120	48.8	47.4
4	55	90	24	0.40	16.4	30	120	46.5	42.1
5	59	90	24	0.40	14.0	30	120	49.6	48.1
6	54	90	24	0.40	17.0	30	120	45.7	42.4
7	36	90	24	33.00	0.0	30	120	31.6	31.6
8	54	90	24	0.40	17.0	30	120	45.7	45.7
9	56	90	24	0.40	15.8	30	120	47.2	45.9
Zone 7 is existing filled underground stopes and previous waste dump areas									

15.4 Cut-off Grades

Geometallurgical units were incorporated for cut-off grade (COG) strategy. The COG varies over time according to mine and process plant restrictions (Figure 15-3). The cut-off grades were defined based on economic parameters for the two metallurgical processes. Values of 0.22% (ICu) and 0.10% (SCu) were used for flotation and dump leaching, respectively.

Figure 15-3: Mantos Blancos Cut-off Grades by UGM



Note: Figure courtesy Mantos Copper, 2020

15.5 Mining Losses and Dilution

The Mineral Resource block model was considered as fully diluted. Pit optimization and mine planning processes were performed without introducing any additional factors to account for dilution.

15.6 Mineral Reserves Statements

The estimated Mineral Reserves are reported using metal prices of US$2.90/lb Cu and US$17/oz Ag. Mineral Reserves are reported with an effective date of 31 December 2020. The Qualified Person for the estimate is Mr. Carlos Guzmán, RM CMC, FAusIMM, Principal and Project Director at NCL.

Mineral Reserves are summarized in Table 15-4. Proven and Probable Mineral Reserves in the table were converted from Measured and Indicated Mineral Resources, respectively.

Table 15-4: Mantos Blancos Mineral Reserves as of 31 December 2020

Process	Category	Tonnage (Mt)	Grade (%TCu)	Grade (%SCu)	Grade (g/t Ag)	Contained Cu (kt)	Contained Ag (koz)
Mantos Blancos - Sulphides (Flotation) (%TCu)	Proven	72.6	0.78	-	6.41	567	14,968
	Probable	50.0	0.57	-	4.57	288	7,339
	Total Mineral Reserves	**122.6**	**0.69**	**-**	**5.66**	**854**	**22,307**
Mantos Blancos - Oxide (Dump Leach) (%SCu)	Proven	2.8	-	0.36	-	10	-
	Probable	1.8	-	0.28	-	5	-
	Total Mineral Reserves	**4.6**	**-**	**0.33**	**-**	**15**	**-**
Mantos Blancos - Mercedes Stockpile (Dump Leach) (%SCu)	Proven	-	-	-	-	-	-
	Probable	6.7	-	0.18	-	12	-
	Total Mineral Reserves	**6.7**	**-**	**0.18**	**-**	**12**	**-**

Notes to accompany Mineral Reserves table:

1. Mineral Reserves are reported effective 31 December 2020
2. The Qualified Person for the estimate is Mr. Carlos Guzmán (RM CMC, FAusIMM)
3. Mineral Reserves are reported on a 100% basis using average off-site costs (selling cost) of US$0.27/lb for sulphides and US$0.42/lb for oxides
4. Mineral Reserves are contained within an optimized pit shell. Mining will use conventional open pit methods and equipment and a stockpiling strategy (direct mining costs are estimated at the base bench at 900 masl, averaging US$1.60/t of material mined)
5. Processing costs average US$9.98/t of milled material, including concentrator, tailings storage facility and port costs
6. Processing cost for material sent to dump leach is US$1.47/t
7. Total copper recoveries average 83.1% for sulphides and silver recoveries average 77.2%
8. Soluble copper recoveries average 47.9% for material sent to the dump leach
9. Inter-ramp angles vary from 36 to 59º. The life-of-mine strip ratio is 4 to 1
10. Tonnage and contained copper are reported in metric units and grades are reported as percentages. Contained silver is reported in kilograms and grades are reported in grams per tonne
11. Grade %TCu refers to total copper grade in percentage sent to the mill. Grade %SCu refers to soluble copper grade in percentage sent to the dump leach
12. Through the Osisko silver production agreement, Osisko Gold has the right to buy 100% of the silver production in concentrate (less specified deductions) until reaching 19,300,000 ounces and subsequently 40% paying 92% of the market price.
13. Rounding as required by reporting guidelines may result in apparent summation differences in tonnes, grade and contained metal.

15.7 Comments on Section 15

The opinion of the Qualified Person is that the Mineral Reserves for Mantos Blancos have been prepared using industry best practices and conform to the requirements of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM (2014) Standards.

The main factors that may affect the Mineral Reserve Estimate are the metal prices, metallurgical recoveries and operating costs (fuel, energy and labour), but are well mitigated by the pit design based on an economic shell obtained at a conservative copper price and by considering a cut-off grade higher than marginal.

The Mantos Blancos Mineral Reserves are subject to the types of risks common to most open pit copper mining operations in Chile. The risks are reasonably well understood at the feasibility level of study of the concentrator expansion and should be manageable based on the operating experience and record of performance over 60 years of mine operation. NCL is not aware of any mining, metallurgical, infrastructure, permitting or other relevant factors that could materially affect the Mineral Reserve Estimate.

16 Mining Methods

16.1 Overview

The two metallurgical processes in operation at Mantos Blancos are:

- Flotation plant (concentrator) for sulphide ore with insoluble copper grade (ICu) greater than 0.22%
- Dump leach process for oxides with soluble copper grade (SCu) greater than 0.10%.

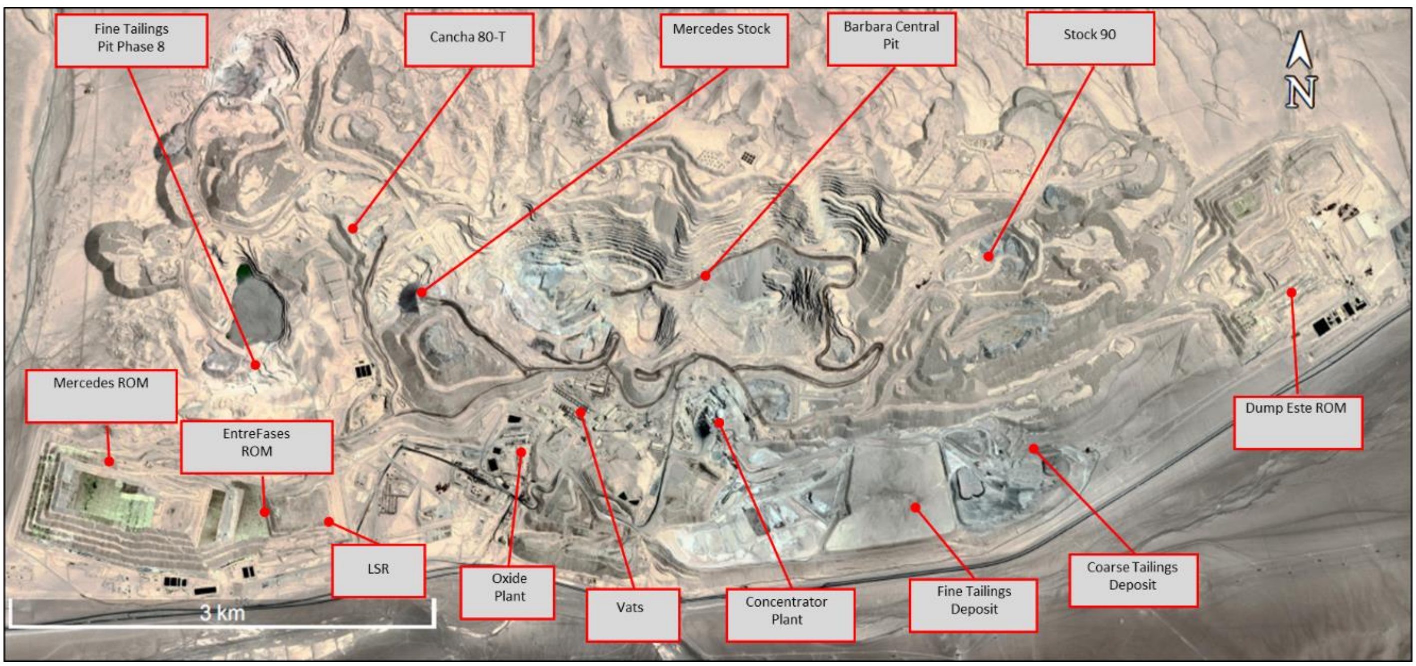
The open pit operation includes one large open pit (Santa Barbara) which provides most of the sulphides for the concentrator and oxides for dump leaching.

Other sources of material are:

- Flotation: Sulphide stockpile (Cancha 90)
- Dump leach process: Oxide stockpile (Mercedes Stockpile).

The general layout at Mantos Blancos is shown in Figure 16-1.

Figure 16-1: Mantos Blancos General Layout



Note: Figure courtesy Mantos Copper, 2020

16.2 Pit Design

Initial pit design considerations are included in Section 15 of this Report.

The Lerchs-Grossman algorithm implemented in Whittle, was used to obtain the final pit limits considering a copper price of US$2.90/lb and updated costs. Only Measured and Indicated Mineral Resources were considered to determine the final pit outline.

Variable slope angles were used for the detail mine design, with inter-ramp slope values varying between 50° and 59°. A slope angle of 36° (natural slope angle for broken materials) is used on areas with existing underground stopes and for waste dumps.

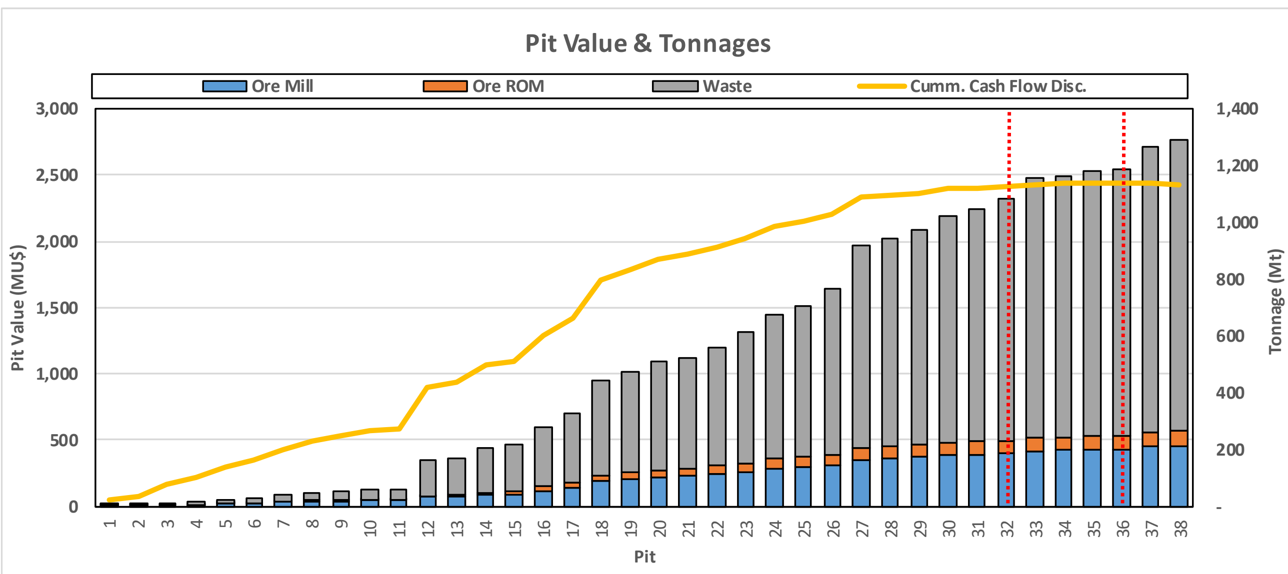
The pit design was developed considering the following:

- Minimum expansions width: 30 m for front end loaders
- Minimum road width: 30 m
- Maximum gradient on ramps: 10%
- Operating bench height: 12 m (24 m in final pit walls with pre-split blasting).

The optimization results show minor variations in NPV from Pit Shell 27 (revenue factor 0.82). However, not only the NPV is important for a given pit but also the behaviour of variations in variables such as the copper price, mine cost and metallurgical recoveries. After analysis of these results, the decision was to select Pit 32 (RF= 0.92 and Cu price US$2.67/lb) as the basis for the detailed ultimate pit design.

Figure 16-2 and Table 16-1 show the optimization results.

Figure 16-2: Mantos Blancos Pit Optimization Results



Note: Figure courtesy Mantos Copper, 2020

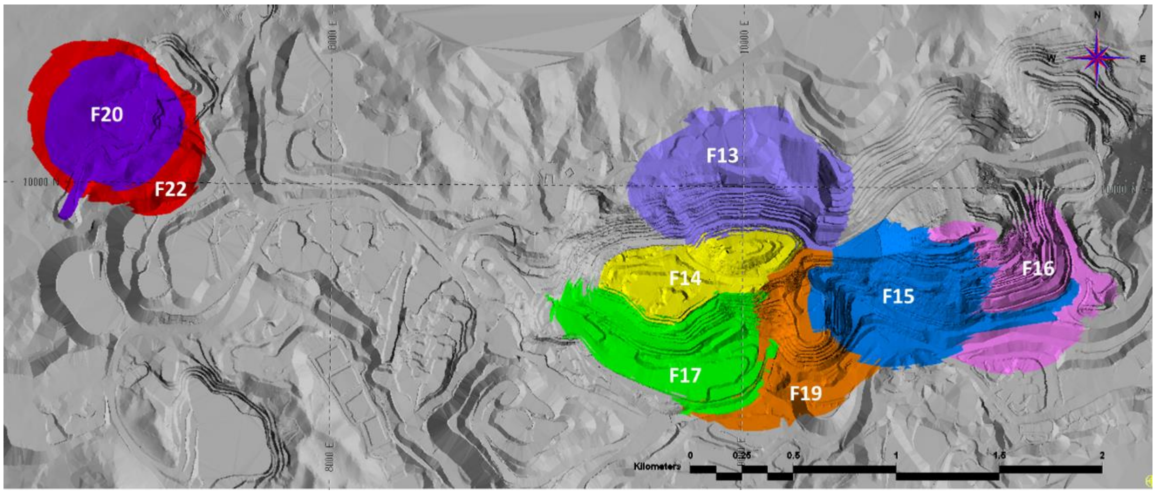
Table 16-1: Mantos Blancos - Pit Optimization Results

Pit	RF	Ore Mill			Fine Cu	Ore ROM			Fine Cu	Waste	Rock	Strip	Cum. Cash Flow (MUS$)
N°		kt	TCu%	Rec. Cu%	kt	kt	SCu%	Rec. Cu%	kt	kt	kt	Ratio	Disc.@10%
1	0.30	**877**	1.42	81.2%	10	**136**	1.00	42.9%	0.58	**653**	**1,666**	**0.64**	**51**
2	0.32	**1,341**	1.30	81.2%	14	**197**	0.88	42.9%	0.74	**1,062**	**2,600**	**0.69**	**69**
3	0.34	**3,885**	1.20	77.8%	36	**373**	0.70	42.9%	1.12	**6,134**	**10,392**	**1.44**	**166**
4	0.36	**5,193**	1.15	78.6%	47	**525**	0.67	42.9%	1.50	**8,928**	**14,646**	**1.56**	**211**
5	0.38	**7,446**	1.12	77.5%	65	**1,602**	0.58	42.9%	3.95	**14,132**	**23,180**	**1.56**	**289**
6	0.40	**9,416**	1.07	77.2%	78	**2,127**	0.57	42.9%	5.20	**16,627**	**28,170**	**1.44**	**342**
7	0.42	**12,972**	0.99	77.2%	100	**2,728**	0.56	42.9%	6.57	**21,821**	**37,521**	**1.39**	**427**
8	0.44	**15,632**	0.96	77.9%	117	**3,214**	0.55	42.9%	7.62	**26,282**	**45,128**	**1.39**	**490**
9	0.46	**17,518**	0.94	78.1%	129	**3,502**	0.55	42.9%	8.29	**30,446**	**51,466**	**1.45**	**532**
10	0.48	**19,255**	0.92	78.4%	138	**3,808**	0.54	42.9%	8.85	**32,735**	**55,798**	**1.42**	**565**
11	0.50	**20,548**	0.90	78.6%	145	**4,003**	0.54	42.9%	9.23	**34,832**	**59,383**	**1.42**	**588**
12	0.52	**31,145**	0.98	78.4%	240	**5,662**	0.53	42.9%	12.76	**122,890**	**159,697**	**3.34**	**895**
13	0.54	**33,266**	0.96	78.5%	252	**6,126**	0.52	42.9%	13.64	**129,059**	**168,451**	**3.28**	**933**
14	0.56	**40,731**	0.93	78.6%	297	**6,798**	0.51	42.9%	14.90	**156,781**	**204,310**	**3.30**	**1,061**
15	0.58	**42,872**	0.92	78.6%	309	**7,190**	0.51	42.9%	15.59	**165,583**	**215,645**	**3.31**	**1,097**
16	0.60	**55,055**	0.85	79.8%	375	**12,844**	0.44	42.9%	24.43	**208,729**	**276,628**	**3.07**	**1,284**
17	0.62	**65,204**	0.81	80.4%	426	**17,164**	0.45	42.9%	33.12	**243,922**	**326,290**	**2.96**	**1,424**
18	0.64	**87,886**	0.77	80.8%	546	**19,590**	0.44	42.9%	37.13	**334,089**	**441,565**	**3.11**	**1,712**
19	0.66	**93,793**	0.76	80.9%	573	**23,222**	0.43	42.9%	43.13	**353,768**	**470,783**	**3.02**	**1,782**
20	0.68	**102,227**	0.74	81.0%	611	**25,316**	0.43	42.9%	46.90	**380,817**	**508,360**	**2.99**	**1,866**
21	0.70	**105,762**	0.73	81.1%	627	**26,439**	0.43	42.9%	48.83	**392,587**	**524,788**	**2.97**	**1,899**
22	0.72	**112,780**	0.72	81.1%	658	**28,496**	0.42	42.9%	51.71	**418,362**	**559,638**	**2.96**	**1,959**
23	0.74	**120,023**	0.71	81.0%	693	**31,028**	0.43	42.9%	56.89	**460,218**	**611,269**	**3.05**	**2,027**
24	0.76	**132,781**	0.70	81.0%	749	**32,770**	0.42	42.9%	59.55	**511,254**	**676,805**	**3.09**	**2,117**
25	0.78	**138,630**	0.69	81.1%	773	**34,017**	0.42	42.9%	61.25	**533,508**	**706,155**	**3.09**	**2,154**
26	0.80	**146,610**	0.69	81.0%	815	**34,966**	0.42	42.9%	62.75	**587,649**	**769,225**	**3.24**	**2,209**
27	0.82	**165,047**	0.68	80.6%	906	**39,491**	0.41	42.9%	70.05	**715,940**	**920,478**	**3.50**	**2,329**
28	0.84	**169,100**	0.68	80.6%	923	**40,797**	0.41	42.9%	71.65	**735,901**	**945,798**	**3.51**	**2,349**
29	0.86	**173,459**	0.67	80.6%	941	**41,928**	0.41	42.9%	73.10	**756,837**	**972,224**	**3.51**	**2,367**
30	0.88	**180,312**	0.67	80.7%	971	**43,144**	0.41	42.9%	75.09	**799,229**	**1,022,685**	**3.58**	**2,394**
31	0.90	**182,945**	0.67	80.7%	984	**43,540**	0.40	42.9%	75.57	**819,142**	**1,045,627**	**3.62**	**2,404**
32	**0.92**	**187,607**	**0.66**	**80.6%**	**1,004**	**44,304**	**0.40**	**42.9%**	**76.63**	**849,300**	**1,081,211**	**3.66**	**2,415**
33	0.94	**194,980**	0.66	80.5%	1,041	**45,400**	0.40	42.9%	78.28	**914,213**	**1,154,593**	**3.80**	**2,433**
34	0.96	**196,776**	0.66	80.5%	1,047	**45,630**	0.40	42.9%	78.58	**921,095**	**1,163,501**	**3.80**	**2,435**
35	0.98	**199,652**	0.66	80.5%	1,058	**46,049**	0.40	42.9%	79.28	**937,554**	**1,183,255**	**3.82**	**2,437**
36	**1.00**	**200,953**	**0.66**	**80.5%**	**1,062**	**46,283**	**0.40**	**42.9%**	**79.54**	**942,517**	**1,189,753**	**3.81**	**2,438**
37	1.02	**208,499**	0.65	80.5%	1,091	**51,421**	0.39	42.9%	87.07	**1,006,589**	**1,266,509**	**3.87**	**2,434**
38	1.04	**211,090**	0.65	80.5%	1,101	**51,973**	0.39	42.9%	87.71	**1,026,297**	**1,289,360**	**3.90**	**2,432**

16.3 Pit Phases

The selected final pit was divided into operational phases, resulting in a total of eight phases to define the LOM 2020. The phase configuration is shown in Figure 16-3.

Figure 16-3: Mine Phases LOM 2020



Note: Figure courtesy Mantos Copper, 2020

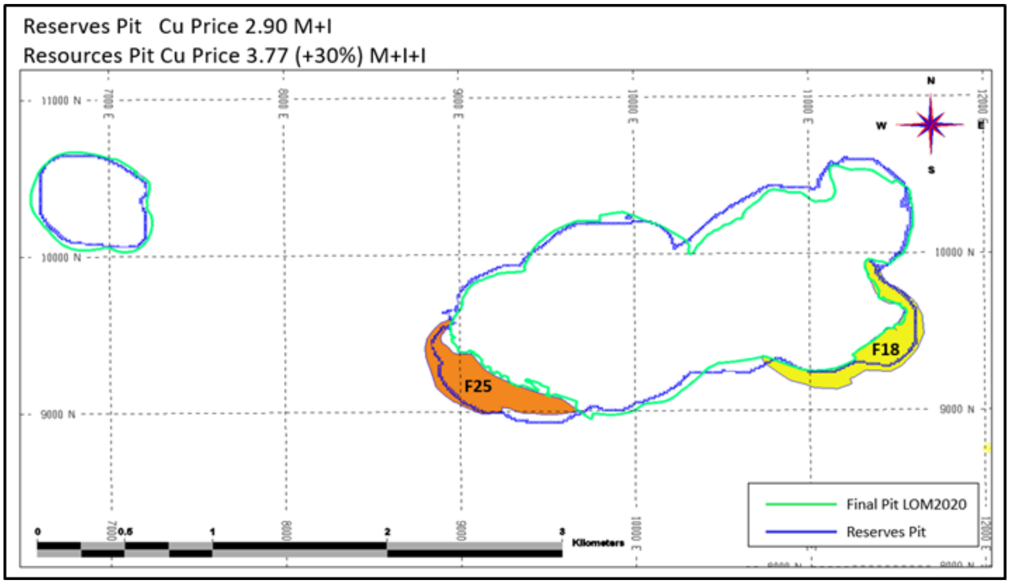
Mine phases for the LOM 2020 plan add a total mineral inventory of 123 Mt of sulphides (high, low and marginal grade at a minimum 0.22% ICu cut-off grade), 31 Mt of oxides and a total rock tonnage of 773 Mt. Table 16-2 shows the inventory details by phase.

There is a difference between the operational and optimal tonnage reported in Table 16-1 (Pit 32), due to two factors:

- The first factor is the minimum operational width that must be considered to design a phase. The distance between the current topography and the optimal pit does not satisfy this requirement in the northeast zone of the pit, leaving some tonnage out of the operational design.
- The second factor excludes two designed phases after a marginal benefit analysis, phase 18 (located in the southeast) and phase 25 (located in the southwest). In these areas the operational pit is closer to the Whittle Pit 26 than the Whittle Pit 32.

The differences between the optimal and operational design are depicted in Figure 16-4.

Figure 16-4: LOM 2020 vs Whittle Pit 32



Note: Figure courtesy Mantos Copper, 2020

Table 16-2: Mantos Blancos Available Tonnage by Phase LOM 2020

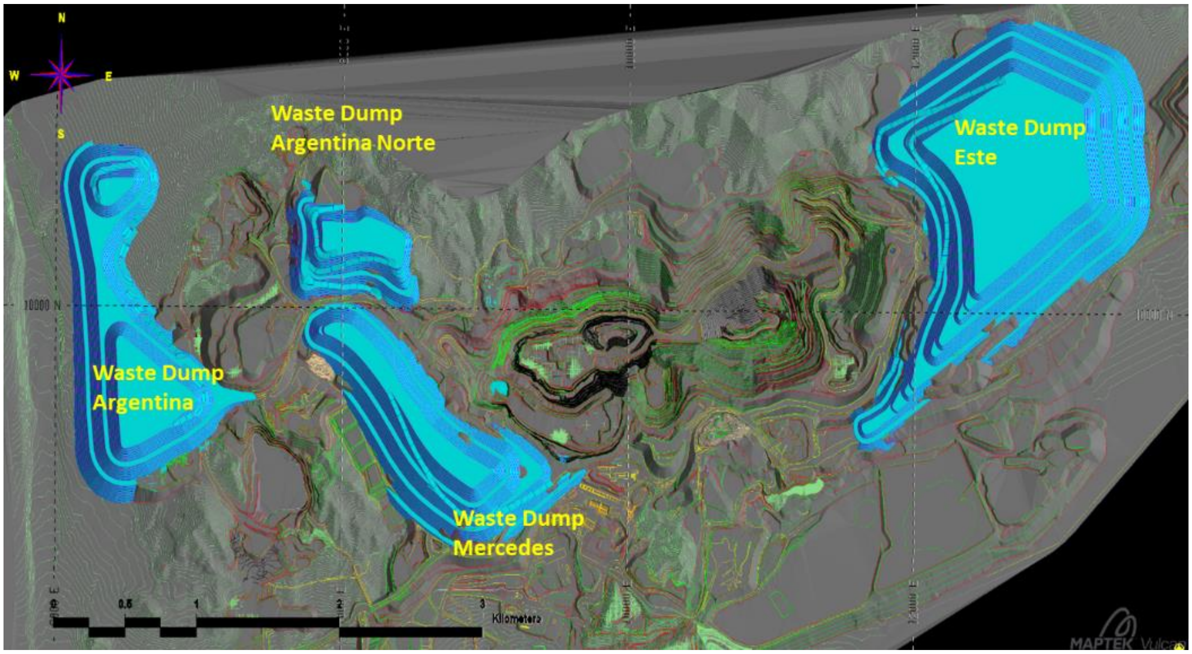
Phase	Sulphide				Marginal Sulphide				Oxide				Waste	**Total**
	kt	%TCu	%SCu	%ICu	kt	%TCu	%SCu	%ICu	kt	%TCu	%SCu	%ICu	kt	**kt**
F14	12,420	0.68	0.06	0.62	830	0.23	0.03	0.2	13	0.39	0.22	0.17	12,953	**26,216**
F17	16,701	0.88	0.12	0.76	1,101	0.26	0.07	0.2	4,089	0.47	0.33	0.14	63,816	**85,707**
F20	7,311	1.32	0.13	1.18	259	0.26	0.07	0.19	551	0.53	0.36	0.17	85,940	**94,061**
F15	14,641	0.69	0.09	0.6	1,899	0.25	0.06	0.19	1,783	0.37	0.23	0.14	79,373	**97,696**
F16	14,527	0.74	0.09	0.65	815	0.24	0.05	0.19	1,274	0.46	0.35	0.11	80,653	**97,269**
F22	6,364	0.98	0.11	0.88	366	0.26	0.07	0.19	994	0.46	0.31	0.14	73,856	**81,581**
F19	21,870	0.6	0.09	0.51	2,721	0.25	0.06	0.19	6,129	0.46	0.33	0.13	118,534	**149,253**
F23	17,257	0.51	0.08	0.43	3,808	0.26	0.07	0.19	15,721	0.34	0.26	0.08	104,690	**141,477**
Total	**111,091**	**0.74**	**0.09**	**0.64**	**11,799**	**0.25**	**0.06**	**0.19**	**30,554**	**0.39**	**0.29**	**0.11**	**619,815**	**773,260**

Additional sulphide material was included from an old sulphide stockpile called Cancha 90, this currently adds 2.0 Mt at grades of 0.47%TCu, 0.33%ICu and 0.14%SCu.

16.4 Waste Dumps and Leach Pads

The four waste dumps in LOM 2020 have a capacity of 729 Mt, using a swell density of 1.8 t/m^3.The waste dumps are shown in Figure 16-5 and Table 16-3.

Figure 16-5: Mantos Blancos Waste Dumps



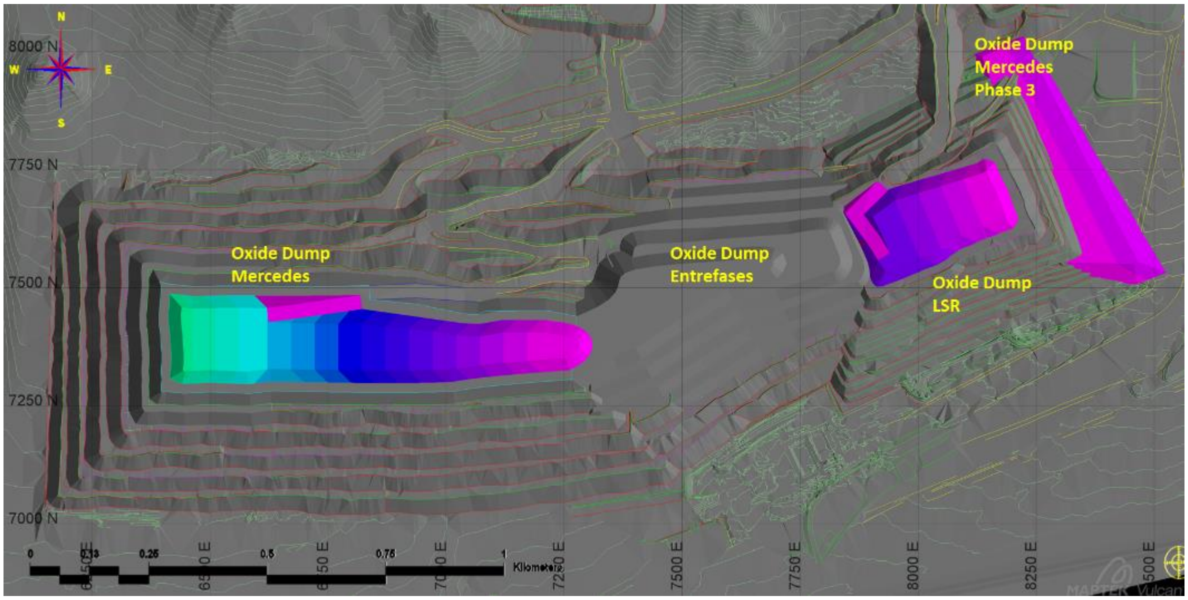
Note: Figure courtesy Mantos Copper, 2020

Table 16-3: Waste Dumps Remaining Capacity

Dump	Remaining capacity LOM2020 (kt)
Argentina Dump	184,708
Argentina Norte Dump	29,509
Este Dump	427,300
Mercedes Dump	87,563
TOTAL	**729,080**

Mantos Blancos has four heap leach pads for leaching oxides (see Figure 16-6). The oxides come from the mine and from the Mercedes stockpile.

Figure 16-6: Mantos Blancos Leach Pads



Note: Figure courtesy Mantos Copper, 2020

16.5 Production Schedule

16.5.1 Mining Scheduling

Mine scheduling was structured using Vulcan STP tools (for 2021 to 2023) and the Mine Plan (from 2024 to the end of life of mine) using a strategic mine plan obtained using software called Serrucho. The periods for mine scheduling were:

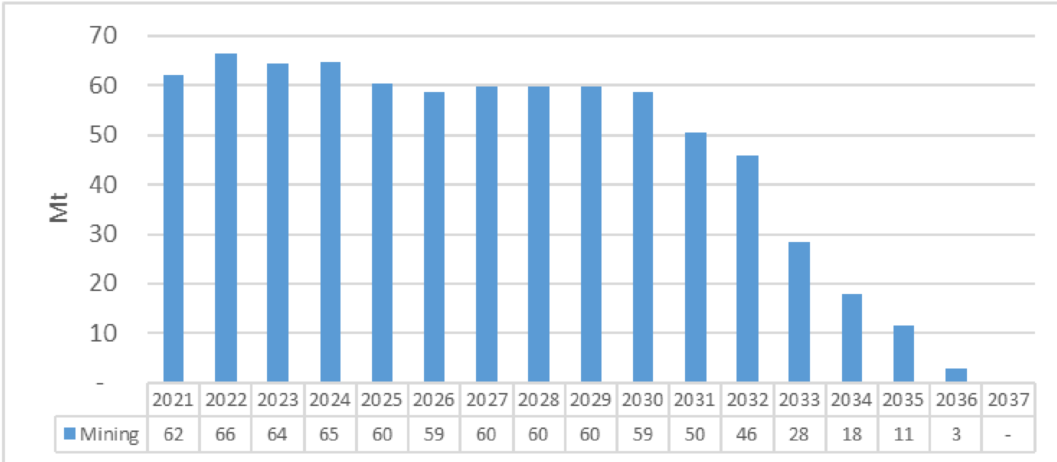
- Monthly for 2021 to 2023 (36 periods)
- Quarterly for 2024 to 2025 quarterly (8 periods)
- Yearly for 2026 to 2037 (12 periods).

Mine movements considered historical KPIs for loaders, operational ramps and maximum quantity of equipment for each phase. The production plan was developed considering a maximum mining rate of 66 Mt per year and the operation of 4 to 5 phases simultaneously.

A maximum sinking rate of 8 benches/year was considered, given the historical performance and the operational infrastructure of the phases. Eventual reductions of the mining rate were considered due to the interaction with old underground mined areas during pit development and possible vertical interactions between phases (phases 14 and 17).

The resulting plan considers a total mining rate (mineral and waste) which decreases from approximately 66 Mt in 2022 to 60.0 Mt in 2025, staying at this level up to 2030 when production starts to decrease through to 2037.

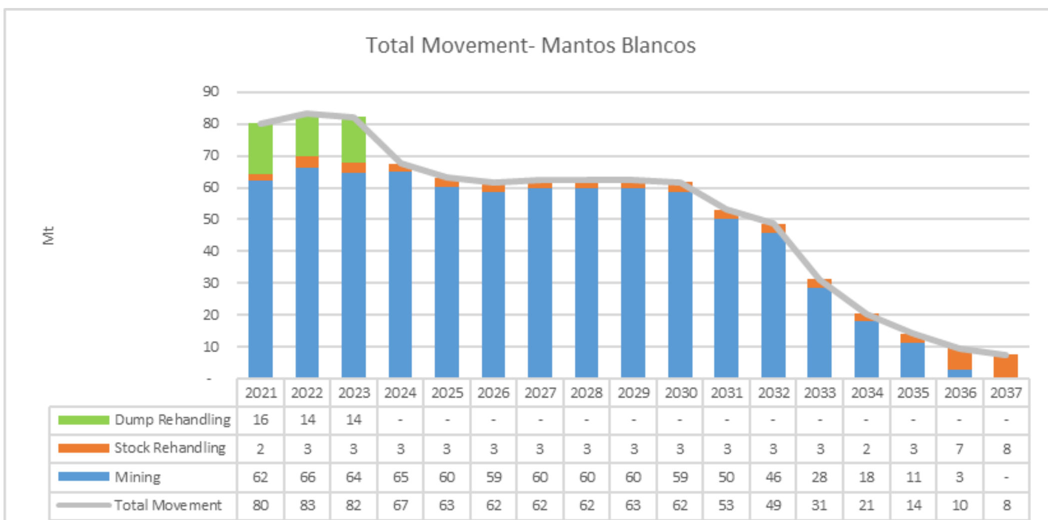
Figure 16-7: Mantos Blancos Total Rock Extraction 2021-2037



Note: Figure courtesy Mantos Copper, 2020

Due to the re-handling of several mineralized materials (Mercedes stockpile and others) the annual movement of total material (mine plus re-handling) peaks at 83 Mt in 2022, then decreases when oxides are depleted. Later, the re-handling is for the low-grade sulphides to the concentrator.

Figure 16-8: Mantos Blancos Total Material Movement 2021-2037



Note: Figure courtesy Mantos Copper, 2020

The production plan considers only Measured and Indicated Mineral Resources over cut-off grades, converted into Proven and Probable Mineral Reserves. The feed to the concentrator considers an average proportion for the first 3 years of 83% Proven Reserves and 17% Probable Reserves.

Table 16-4 shows the variable cut-off grade (COG) strategy per year for feeding the flotation plant and Table 16-5 shows the marginal cut-off grades for the flotation and dump leach processes. The sulphides with grades between the yearly cut-off and the marginal cut-off are sent to low grade stockpiles to be re-handled in later years.

Table 16-4: Mantos Blancos Sulphides Cut-off Grade Strategy

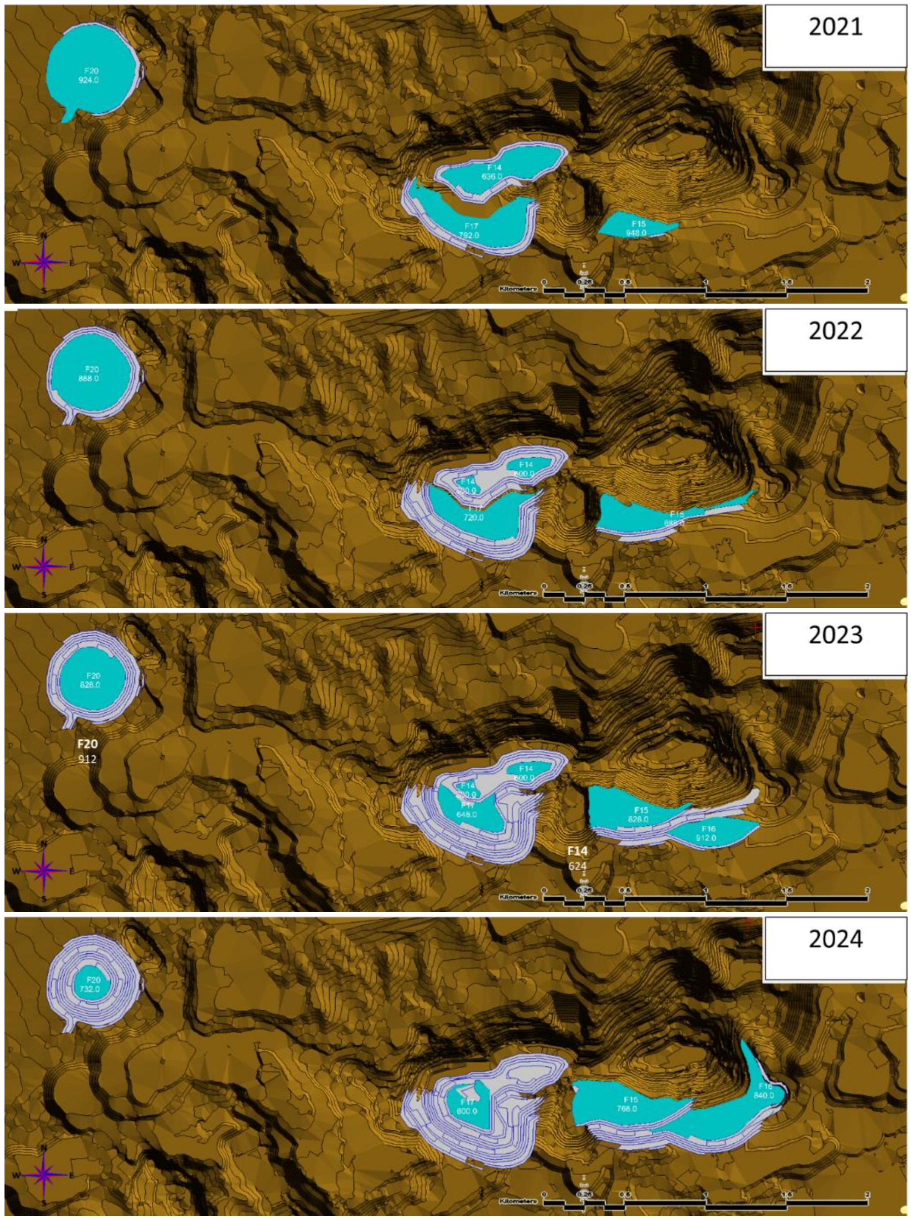
Year	COG	Average Grade to Flotation Plant
	%ICu	%TCu
2021	0.33	0.83
2022	0.26	0.88
2023	0.26	0.91
2024	0.26	0.92
2025	0.26	0.92
2026	0.26	0.92
2027	0.26	0.83
2028	0.26	0.79
2029	0.26	0.78
2030	0.26	0.74
2031	0.22	0.58
2032	0.22	0.58
2033	0.22	0.54
2034	0.22	0.50
2035	0.22	0.52
2036	0.22	0.33
2037	0.22	0.33

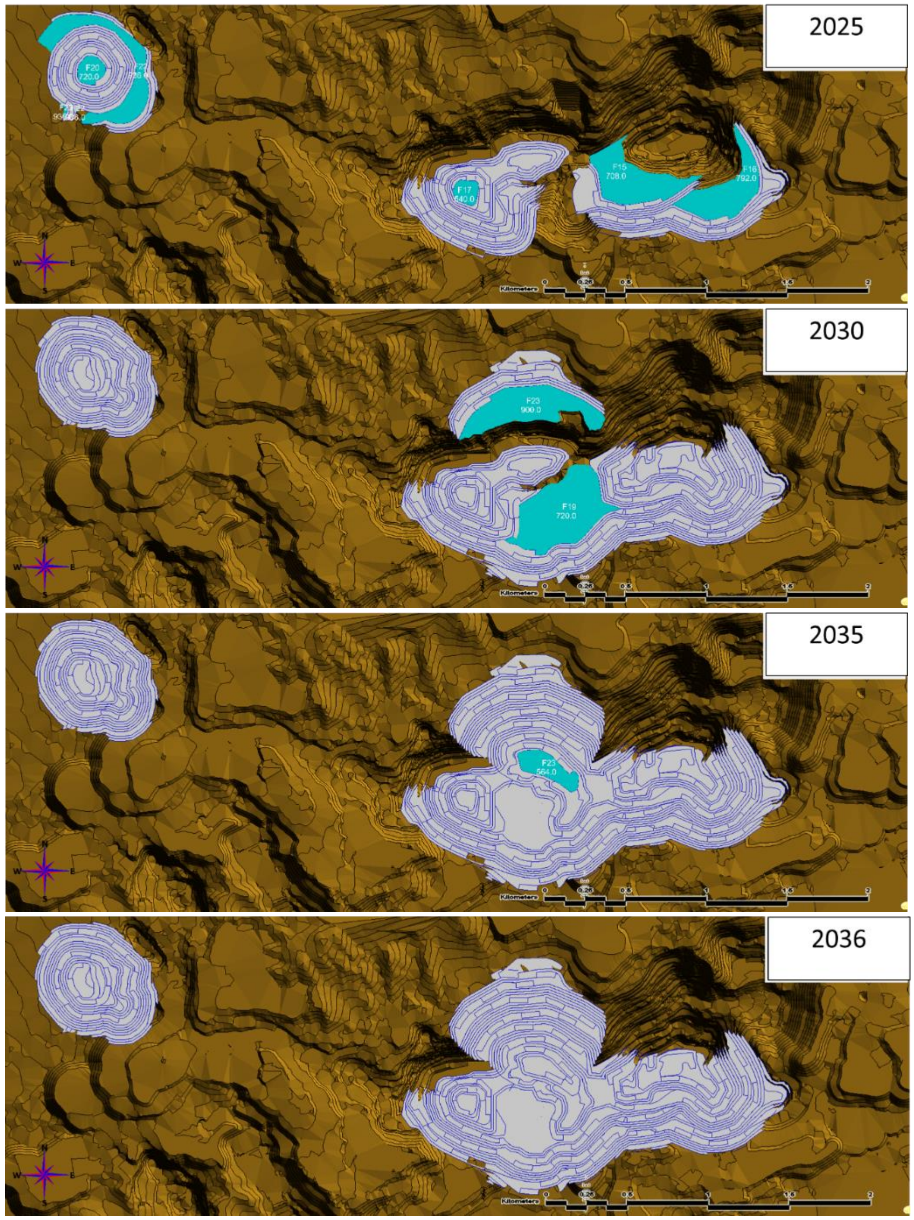
Table 16-5: Mantos Blancos Marginal Cut-off Grade by Process

Process	UGM	Cut-off grade
Flotation	3 or 5	0.22% ICu
Dump Leach	2	0.10% SCu

Figure 16-9 shows selected annual mine layouts obtained from the production schedule and Table 16-6 shows the extracted material by phase by year.

Figure 16-9: Mantos Blancos Mining Sequence





Note: Figure courtesy Mantos Copper, 2020

Table 16-6: Mantos Blancos Phase Extraction by Year

Phase	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
F14	Mt	18	7	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
F17	Mt	25	24	18	8	7	1	-	-	-	-	-	-	-	-	-	-	-
F20	Mt	19	26	25	20	2	2	-	-	-	-	-	-	-	-	-	-	-
F15	Mt	0	9	15	19	20	19	7	5	2	-	-	-	-	-	-	-	-
F16	Mt	-	-	5	17	21	21	19	6	4	4	-	-	-	-	-	-	-
F22	Mt	-	-	-	-	9	16	20	18	14	4	-	-	-	-	-	-	-
F19	Mt	-	-	-	-	-	-	13	24	24	26	25	20	11	3	2	-	-
F23	Mt	-	-	-	-	-	-	-	6	15	26	26	26	18	15	9	3	-
Mine rock	Mt	62	66	64	65	60	59	60	60	60	59	50	46	28	18	11	3	-

16.5.2 Plant Feed and Copper Production Schedule

Table 16-7 shows the plant feed and the estimated copper production profile for the life of mine (2021-2037). NCL is not aware of any mining, metallurgical, infrastructure, permitting or other relevant factors that could materially affect the budgeted production estimates.

Table 16-7: Budgeted Production LOM 2020

Copper production	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Total LOM
Concentrator																				
Ore to mill	kt	4,503	7,158	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	1,373	122,614
TCu Mill Grade	%	0.82	0.88	0.91	0.92	0.92	0.92	0.83	0.79	0.78	0.74	0.58	0.58	0.54	0.5	0.52	0.43	0.25	0.25	0.69
SCu Mill Grade	%	0.08	0.15	0.12	0.1	0.11	0.11	0.11	0.08	0.08	0.1	0.1	0.1	0.09	0.06	0.06	0.06	0.06	0.06	0.09
Ag Mill Grade	g/t	5.8	8.38	7.31	7.41	9.36	9.34	5.36	4.07	5.58	6.5	4.57	4.54	4.61	3.81	3.74	3.64	2.8	2.8	5.66
Cu Metallurgical Recovery	%	82.01	79.05	78.23	78.58	82.34	82.71	87.66	85.09	82.7	82.09	84.9	87.13	87.85	86.48	84.74	83.89	84.19	84.27	83.1
Cu Concentrate Grade	%	36.17	34.84	32.12	36.04	37.32	36.76	35.87	35.02	35.33	33.39	30.7	30.44	29.27	30.6	32.52	32.31	33.09	33.29	33.57
Fine Copper Production	**kt**	**30.5**	**49.6**	**52.1**	**52.9**	**55.3**	**55.3**	**53.2**	**49.1**	**47.0**	**44.2**	**35.9**	**37.0**	**34.9**	**31.8**	**31.9**	**26.4**	**15.4**	**2,9**	**705.3**
Ag Metallurgical Recovery	%	79.4	80.5	74.79	75.13	75.81	78.71	77.2	76.66	77.23	77.67	76.91	76.9	76.92	76.61	76.58	78.54	78.21	78.21	77.24
Silver Production	kg	21,440	49,892	41,270	42,111	53,509	55,459	31,205	23,632	32,523	38,065	26,531	26,423	26,729	22,042	21,617	21,631	16,532	3,109	553,722
Mercedes Dump																				
Ore to Leach	kt	6,748																		6,748
SCu Leach Grade	%	0.18																		0.18
Cu Metallurgical Recovery	%	56																		56
Cu Cathode Production	**kt**	**6.8**																		**6.8**
Entrefases Dump																				
Ore to Leach	kt	1,661	2,560	367																4,588
SCu Leach Grade	%	0.34	0.32	0.38																0.33
Cu Metallurgical Recovery	%	41	42	42																41.24
Cu Cathode Production	**kt**	**2.3**	**3.3**	**0.6**																**6.2**
Total Copper Production	**kt**	**39.6**	**52.9**	**52.7**	**52.9**	**55.3**	**55.3**	**53.2**	**49.1**	**47.0**	**44.2**	**35.9**	**37.0**	**34.9**	**31.8**	**31.9**	**26.4**	**15.4**	**2.9**	**718.3**

16.6 Mining Equipment

The current mining fleet owned by Mantos Blancos and the average remaining life is summarized in Table 16-8.

Table 16-8: Current Equipment Fleet

Fleet	Equipment	No. of Units	Avg. Hours (h)	Estimated Life (h)	Remaining Life (year)*
Drilling	Roc L8	1	22,186	70,000	14
	D75 KS	8	25,961	70,000	8.8
Loading	WA1200	6	41,709	100,000	9.0
Hauling	830E	24	41,935	100,000	8.9
	789	3	72,286	100,000	4.3
*Note: 3,300 and 5,500 hours per year were used to calculate the remaining life of the Roc L8 and D75 KS drilling fleet respectively. For the rest of the equipment 6,500 hours per year was used.					

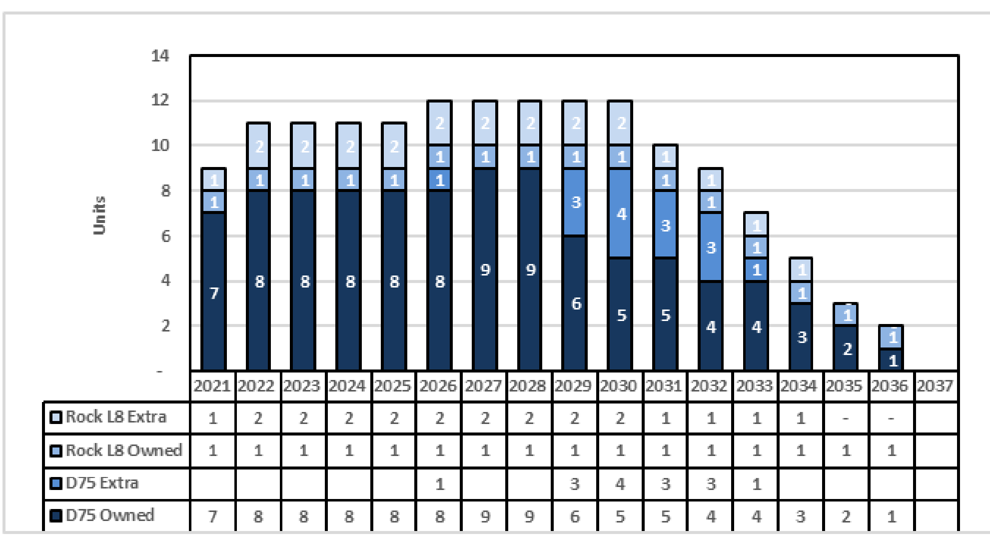
The drilling, loading and hauling fleets per year required for the updated mine production schedule are shown in Figure 16-10, Figure 16-11 and Figure 16-12. The Owned equipment in the graphs is the current fleet owned by Mantos Blancos that will be available by period, considering the remaining life and overhaul in some cases. The Extra equipment is the difference between the requirement by period and the Owned and contracted equipment.

One additional D75 drilling will be acquired by 2027. From 2029 the D75 equipment that reaches the end of its life will be replaced by contracted equipment.

Currently, the operation has two contracted PC5500 shovels that will continue operating. No additional WA-1200 front loaders will be needed.

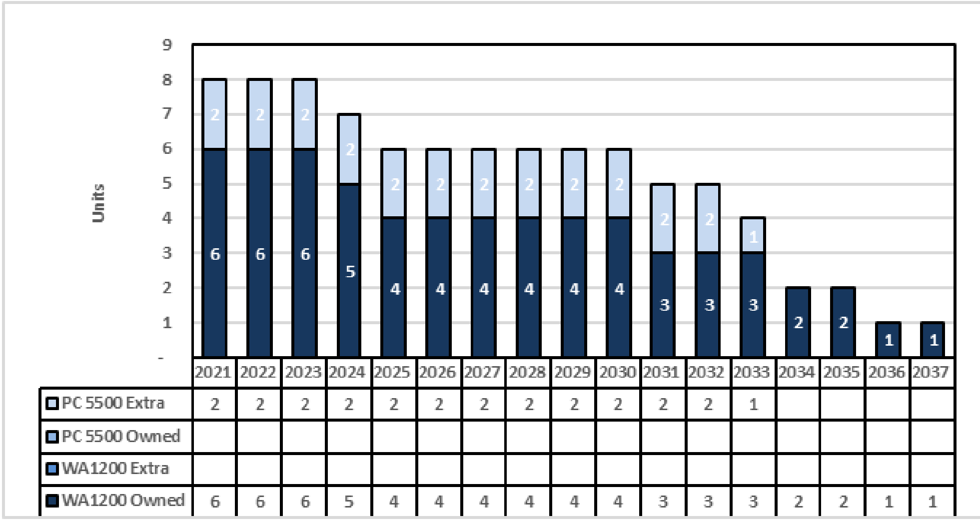
The fleet of Komatsu 830E trucks is owned by Mantos Blancos and consists of 24 units. During 2021 to 2023 additional units will be contracted as the requirement peaks at 26 trucks.

Figure 16-10: Drilling Fleet Requirements



Note: Figure courtesy Mantos Copper, 2020

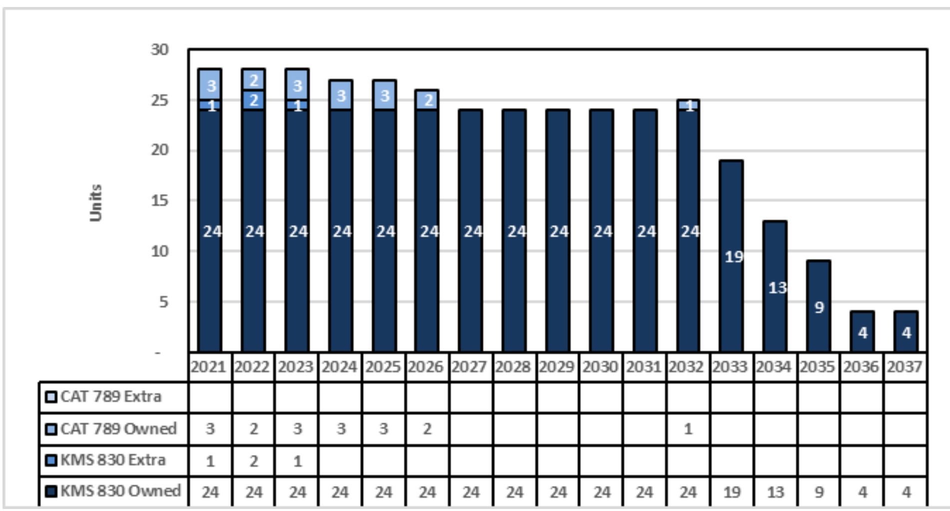
Figure 16-11: Loading Fleet Requirements



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
PC 5500 Extra	2	2	2	2	2	2	2	2	2	2	2	2	1				
PC 5500 Owned																	
WA1200 Extra																	
WA1200 Owned	6	6	6	5	4	4	4	4	4	4	3	3	3	2	2	1	1

Note: Figure courtesy Mantos Copper, 2020

Figure 16-12: Hauling Fleet Requirements



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
CAT 789 Extra																	
CAT 789 Owned	3	2	3	3	3	2						1					
KMS 830 Extra	1	2	1														
KMS 830 Owned	24	24	24	24	24	24	24	24	24	24	24	24	19	13	9	4	4

Note: Figure courtesy Mantos Copper, 2020

The mining fleet is complemented by auxiliary equipment, mostly owned by Mantos Blancos. As they reach the end of life, some equipment will be replaced with new purchases and others will be contracted, especially towards the end of the mine life. The current auxiliary fleet is summarized in Table 16-9.

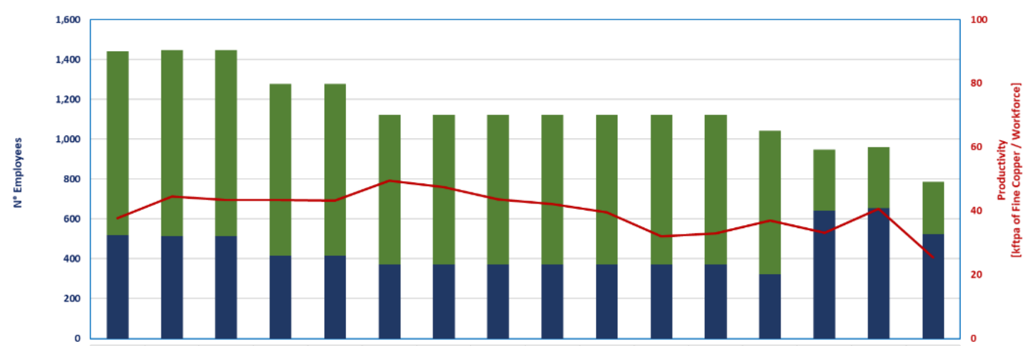
Table 16-9: Auxiliary Equipment Fleet

Equipment	Model	No. of Units
Wheel Dozer	KOM WD600	2
	KOM WD900	2
	CAT 824H	1
Bulldozer	CAT D10R	6
Excavator	KOM PC600	1
	CAT 416E	1
Motor Grader	CAT 16G	1
Water Truck	KOM WT-785	1
	FM 500	2
Loader	CAT 980H	2

16.7 Mine Shift Schedule

Figure 16-13 shows the mine labour levels expected from 2021 to 2036. The decrease in labour in 2024 is associated with the end of oxide processing.

Figure 16-13: Workforce by Period



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Own Employees	923	935	935	860	860	747	747	747	747	747	747	747	721	304	305	261
Contractors	518	512	512	416	416	373	373	373	373	373	373	373	321	643	655	524
Total Headcount	1,441	1,447	1,447	1,276	1,276	1,120	1,120	1,120	1,120	1,120	1,120	1,120	947	960	785	785
Product LOM - 2020	38	44	43	43	43	49	47	44	42	40	32	33	37	33	41	26

Note: Figure courtesy Mantos Copper, 2020

17 Recovery Methods

17.1 Introduction

Ore processing at Mantos Blancos currently comprises two plants: the oxide plant where the oxide ore is leached using sulphuric acid to produce copper cathodes, and the copper concentrator where the sulphide ore is treated to produce a copper concentrate.

Current mining plans indicate that oxide reserves will be completely depleted by 2023 and only sulphides will be processed after that time.

The Mantos Blancos Project intends to maintain the total copper production at 80,000 tpy to 100,000 tpy by an expansion of the concentrator from the current processing capacity of 4.2 Mt per year to 7.3 Mt per year (20,000 tpd).

The feed will be trucked from the mine to two parallel primary, secondary and tertiary crushing facilities. The existing crushing plant Line 1 treats 1.8 Mt per year and Line 2 treats 5.5 Mt per year. Line 1 will crush the ore to a F80 of 4,000 µm and this will then be milled to a P80 of 250 µm using the existing 16.5 ft x 25 ft Ball Mill N° 3. Line 2, currently used to crush oxide ore, will, with some minor modifications, crush 5.5 Mt per year of sulphides to an F80 of 11,000 µm, and this will be milled to a P80 of 250 µm in a new 23 ft x 40.5 ft ball mill (Ball Mill N° 8).

The milled product from both crushing and milling lines will then be combined and treated in the downstream flotation plant to produce a 29% to 33% Cu copper concentrate. In the concentrator, in general, existing equipment will be used, the exceptions being four new 300 m^3 rougher flotation tank cells, a new 30 m^2 concentrate filter and a new high capacity type tailings thickener.

The expanded plant has been designed on the basis of existing plant operating data, together with limited testwork on samples and geometallurgical models representing material to be mined over the next 5 years, as described in Section 13, with less data available for the period after that.

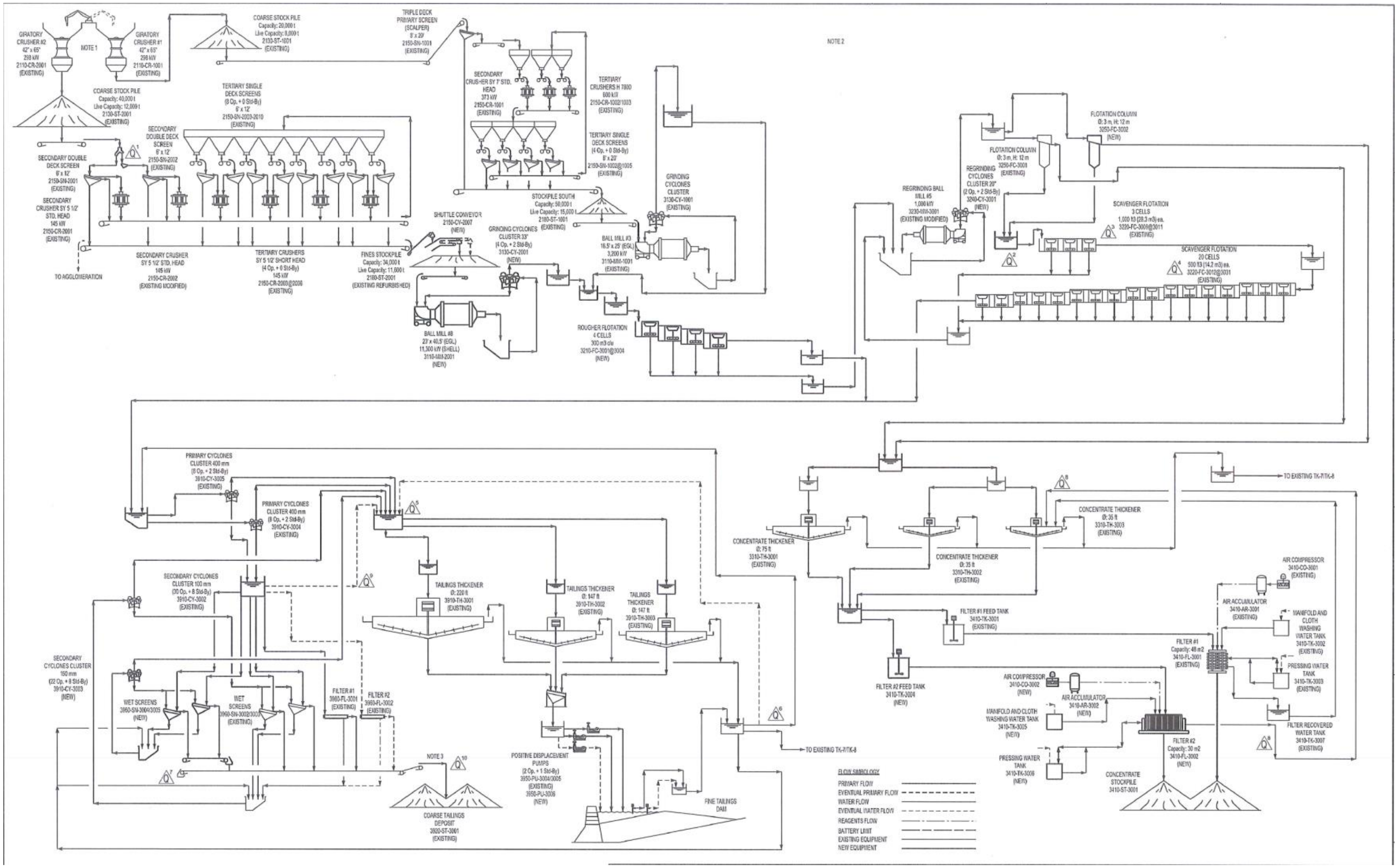
The process is described in detail in the following sections.

17.2 General Flow Diagram

Figure 17-1 illustrates the general flow diagram for the process plant that includes the following principal areas:

- Primary Crushing
- Secondary and Tertiary Crushing and Screening
- Ball Milling
- Flotation
- Copper Concentrate Handling (Thickening and Filtration)
- Tailings Classification and Thickening.

Figure 17-1: Process Plant Flow Diagram



Note: Figure courtesy Mantos Copper, 2020

17.3 Crushing

The primary crushing area comprises two 42” x 65” gyratory crushers. Each crusher has a maximum capacity of 5.5 Mt per year, equivalent to a nominal throughput of 897 tph, operating with an open side setting of 125 mm.

Line 1 will operate with a crushing capacity of 1.8 Mt per year and will feed the existing fine crushing plant. The system will have one belt feeder and two overland conveyors delivering ore to an 8,000 t (live) stockpile.

The Line 1 fine crushing plant will comprise one triple deck 8 ft x 20 ft primary screen fed from the 8,000 t coarse ore stockpile. The screen undersize will pass to final product, the screen oversize will pass to the existing 7 ft secondary cone crusher; the product will be conveyed to the tertiary screening plant. The tertiary screens, four 8 ft x 20 ft single deck screens, will be in closed circuit with two H7800 tertiary crushers. The product of Line 1, undersize from the tertiary screens, will be 80% passing 4 mm and will pass to the existing 15,000 t (live) fine ore stockpile. This will be the feed to the existing N°3 Ball Mill.

Line 2 was the oxide ore crushing plant until January 2021. The modified plant will consist of two 10 ft x 12 ft secondary screens that are fed from the 12,000 t coarse ore stockpile. The screen undersize will pass to final product. The screen oversize will feed two 5½ ft secondary standard cone crushers, the product of which will feed the tertiary screen feed bins. These will feed four tertiary crushing lines, each consisting of two 6 ft x 12 ft tertiary screens and one 5½ ft short-head crusher. The screen undersize will be final product, the oversize will be recirculated. The final product of Line 2 will be -11 mm and will pass to the existing but modified fine ore stockpile, capacity 11,600 t (live).

The belt feeders under each primary crusher are reversible and can deliver product to the other line. This provides great operational flexibility.

17.4 Grinding

The product of crushing Line 1 will be milled in the existing Ball Mill N°3 at a rate of 1.8 Mt per year, and the product of Line 2 will be milled in a new ball mill, Ball Mill N°8, at a rate of 5.5 Mt per year.

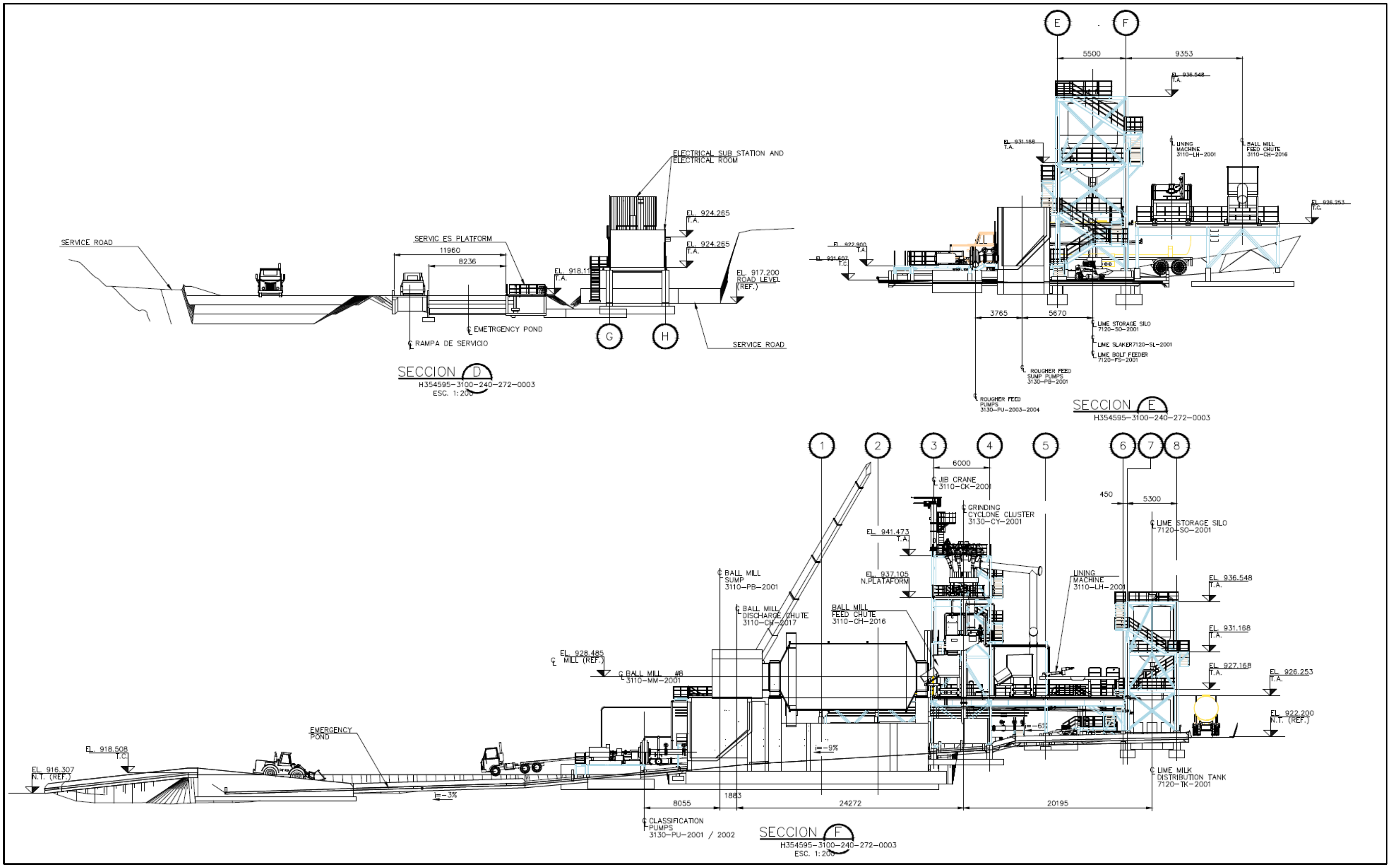
The 16.5 ft x 25 ft Ball Mill N°3 with a 3,200 kW motor will mill 4,932 tpd of ore and is in closed circuit with the existing cyclone cluster. The cyclone overflow, with a P80 of 250 µm, will be pumped to the new rougher flotation cells. The cyclone underflow will be returned to the mill feed. Lime, primary flotation collector and dilution water will be added to the mill circuit.

Line 2, with the new 23 ft x 40.5 ft Ball Mill N° 8 with a 13,000 kW motor, will be installed and will operate in closed circuit with a new cyclone battery. This mill will receive 15,068 tpd of -11 mm ore and, as for Ball Mill N° 3, will produce a product P80 of 250 µm. The cyclone overflow will also be pumped to the new rougher flotation bank, joining the product of Ball Mill N°3. The Hatch mill sizing and power (12,000 kW) was reviewed by Fluor. Fluor concluded that the design was conservative and fit for purpose. A second independent review of the mill sizing was carried out in 2019 (by RPA) and as the result the motor size was increased from 12,000 kW to 13,000 kW.

Ball Mill N° 8 will have its own, new, lime feeding facility. The general arrangement drawing (H354595-3100-240-272-0006) is provided as Figure 17-2.

In the new milling circuit existing Ball Mills 1 and 2 will be redundant. However, they will remain available to cover maintenance periods on Mills 3 and 8 or to provide additional capacity should it be required.

Figure 17-2: General Arrangement Grinding



Note: Figure courtesy Mantos Copper, 2020

17.5 Flotation and Concentrate Regrinding

The current flotation plant consists of thirteen 42.5 m^3 rougher cells, one regrind ball mill, one 3 m x 12 m cleaner column cell and three 28 m^3 plus twenty 14 m^3 cells operating as scavengers.

For the 7.3 Mt per year plant four new 300 m^3 tank cells will be installed for rougher flotation. These will treat the combined product from Lines 1 and 2 (see Figure 17-3, Drawing H354595-3200-240-272-0001). Lime, flotation reagents and dilution water will be added to the feed box. A flotation feed pulp density of 38% is proposed.

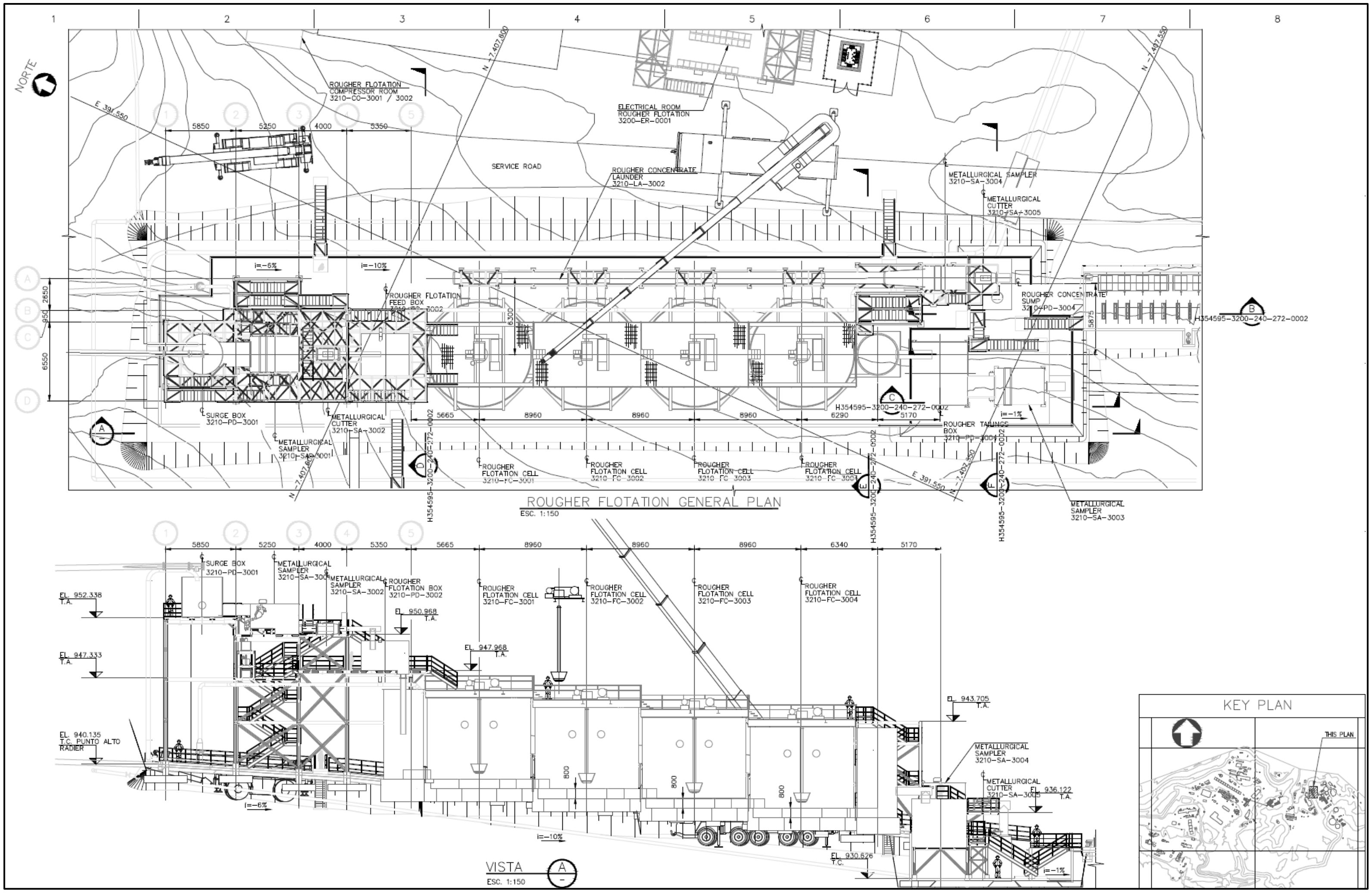
The rougher concentrate will be sent to regrinding, the rougher tailings will pass to the tailings section.

The regrind mills will be the existing Ball Mills N° 6 and 7 (currently used for primary grinding) (8.5 ft x 12.0 ft with a 500 hp motor and 9.5 ft x12.0 ft with a 600 hp motor). The sizing is described in the memorandum Dimensionamiento Molino de Remolienda Mantos Blancos.

The discharge box for these mills receives the rougher and scavenger concentrates, which is then pumped to a cyclone battery (existing but modified) to produce a final product (cyclone overflow) with a P80 of 45 µm.

A second, equal size cleaner column cell, 3 m x 12 m will be installed adjacent to the existing column, doubling cleaner flotation capacity. Sufficient area and access is available. The column concentrate will be final concentrate with a grade of 29% to 33% Cu (the lower value of 29% Cu was used for plant design). The concentrate flows by gravity to the concentrate thickeners. The column tailings pass to the existing three 28 m^3 and twenty 14 m^3 cells, arranged in series, for scavenger flotation. The scavenger concentrate with a grade of 10% Cu will be returned to the regrind mill, or directly to cleaner flotation, to avoid overgrinding. The scavenger tailings will flow by gravity to the tailings area.

Figure 17-3: General Arrangement Flotation



Note: Figure courtesy Mantos Copper, 2020

17.6 Thickening and Filtration of Concentrate

Thickening of flotation concentrates will be carried out in one 75 ft diameter and two 35 ft diameter thickeners, all three are existing. Only one thickener is currently used, the other two are stand-by. The thickened concentrate at 60% solids is pumped to concentrate filtration, the thickener overflow is pumped to the process water tanks.

The filtration of the concentrate will be carried out by one existing 48 m^2 horizontal pressure filter and one new 30 m^2 filter. There is sufficient area and good access for the installation of the new filter. The concentrate will have an expected moisture content less than 10% to 11% and will be discharged from both filters onto the existing concentrate stockpile prior to truck transport to the smelter or port. The filtrate water will be returned to the concentrate thickeners.

17.7 Tailings

The combined flotation rougher and scavenger tailings will be pumped to two primary tailings cyclone batteries (one existing, one new) with the overflow (approximately 30% solids by weight) passing to tailings thickening and the underflow (approximately 70% solids by weight) passing to dewatering ahead of stacking on the existing dry coarse tailings pad. This overall approach to tailings deposition has the objective of maximizing water recovery and reducing the size of the wet tailings dam (as described in Section 18). One new cyclone cluster has been designed with input provided from a specialist cyclone vendor and will be installed for this duty.

The cyclone overflow will be conducted to a new high capacity thickener (32 m diameter). The thickener underflow at 60% solids will be pumped to the existing Pit 8 tailings dam. One additional positive displacement tailings pump will be installed.

There are three existing tailings thickeners; one 220 ft Larox, one 175 ft Eimco and one 175 ft Dorr-Oliver. These existing thickeners will be used as stand -by units.

The coarse underflow from the primary tailings cyclones will feed the dewatering section which will comprise four 6 ft x 12 ft dewatering screens (two existing, two new) plus two existing 100 m^2 belt filters. The belt and screen product will contain approximately 20% moisture and will be discharged onto a stockpile ahead of truck transport to the coarse tailings pad for dry stacking as per the current practice. The screen and belt filter underflow will be pumped to two secondary tailings cyclone batteries (one existing, one new), with the overflow passing to the tailings thickeners and the underflow fed to the dewatering screens.

17.8 Lime and Reagents

Lime is added as slurry to regulate the flotation pH to 9.0 to 9.5 (rougher) and 10 to 10.5 (cleaner). It is added principally to the ball mills, and to flotation as required. The existing lime plant will supply Line 1. A new lime plant will be installed near the new Ball Mill N° 8. This will be a conventional slaking and mixing system and will be provided as a package by a specialist vendor.

The flotation reagents (collector and frother) will be supplied in iso-containers that will be connected directly to dosing pumps, supplying the flotation feed and individual cells as required. The iso-containers will be located in the existing reagent area.

A new flocculant plant will be designed and supplied by a specialist vendor to supply the new tailings thickener. The existing flocculant plant will then be dedicated to concentrate thickening.

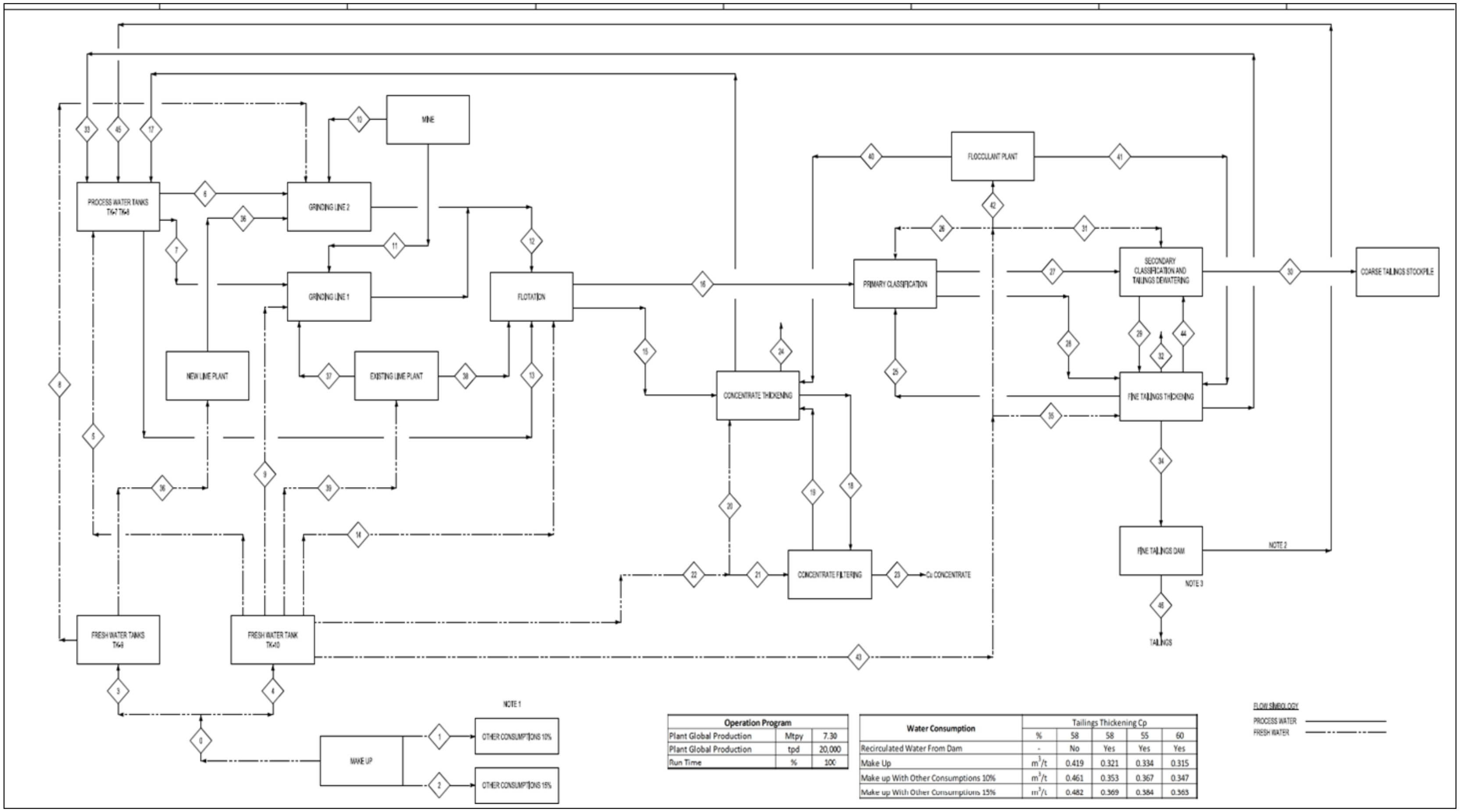
17.9 Mill Balls

Ball Mill N° 3 and the regrind mill will utilize the existing ball handling systems. The ball size will be 3" (primary mill) and 1" (regrind mill). A new ball handling system will be provided for the new N° 8 Ball Mill and the ball size will be 3"/3½".

17.10 Fresh (Make-up) Water

The overall water balance is shown in Figure 17-4. Fresh water make-up, supplied by FCAB and ADASA will feed the existing fresh water tanks. The make-up requirement has been estimated to be 8,378 m^3/d. This is less than the current fresh water make-up requirement. This does not consider recirculation from the fine tailings dam, which is a conservative assumption. In practice there will normally be significant recirculation from the fine tailings dam. For example with 50% recirculation (reclaimed water from tailings dam), the fresh water make-up demand would drop to 6,411 m^3/d.

Figure 17-4: Overall Water Balance



Operation Program		
Plant Global Production	Mtpy	7.30
Plant Global Production	tpd	20,000
Run Time	%	100

Water Consumption	Tailings Thickening Cp				
	%	58	58	55	60
Recirculated Water From Dam	-	No	Yes	Yes	Yes
Make Up	m^3/t	0.419	0.321	0.334	0.315
Make up With Other Consumptions 10%	m^3/t	0.461	0.353	0.367	0.347
Make up With Other Consumptions 15%	m^3/t	0.482	0.369	0.384	0.363

Note: Figure courtesy Mantos Copper, 2020

17.11 Plant Design

The design criteria used in the Project are listed below.

17.11.1 Main Design Criteria

- Annual throughput : 7.3 Mt per year
- Annual throughput – Line 1 : 1.8 Mt per year
- Annual throughput – Line 2 : 5.5 Mt per year
- Daily throughput : 20,000 tpd
  - Daily throughput – Line 1 : 4,932 tpd
  - Daily throughput – Line 2 : 15,068 tpd

Operating Time

- Days per year : 365
- Hours per day : 24

Feed Characteristics

- Specific gravity – ore : 2.7
- Moisture content of ore : 2.0%
- Ball mill work index (75th percentile): 23.55 kWh/t
- Crushing work index : 18.0 – 22.0 kWh/t

Copper Head Grade

- Nominal : 0.897%
- Design : 0.937%

Area Running Time

- Primary crushing : 70.0%
- Secondary/tertiary crushing : 80.0%
- Grinding : 93.0%
- Flotation : 93.0%
- Concentrate thickening : 96.0%
- Concentrate filtration : 80.0%
- Fine Tailings thickening : 96.0%
- Dewatering coarse tailings : 80.0%

17.11.2 Crushing and Grinding

Primary Crushing

Quantity : Two, one per line (existing)

Type	:	Gyratory
Size	:	42” x 65”
Open side setting (OSS)	:	5.5” (140 mm) to 7” (178 mm)
Close side setting	:	3.5” (88.9 mm) to 5” (125mm)

Material Handling

Capacity	:	5.5 Mt per year (each line)

Coarse Ore Stockpile

Line 1	:	8,000 t (live)/20,000 t (total)
Line 2	:	12,000 t (live)/40,000 t (total)

Secondary and Tertiary Crushing, Line 1

Primary Screening

Quantity	:	1; existing
Type	:	8’ x 20’; triple deck
Opening top deck	:	60 mm
Opening middle deck	:	30 mm
Opening lower deck	:	6.5 mm

Secondary crushing

Quantity	:	1; existing
Type	:	Symons 7 ft, standard
Closed side setting	:	2

Tertiary Screening

Quantity	:	4; existing
Type	:	8’ x 20’; double deck
Screen opening	:	6.5 mm/8.0 mm

Tertiary crushing

Quantity	:	2; new
Type	:	Hydro-cone CH870 EF

Closed side setting	:	15 mm, flexible

Line 1 product sizing

D100	:	6.5 mm
D80	:	4.0 mm
D50	:	2.1 mm
Fine ore stockpile	:	15,000 t (live)/50,000 t (total)

Secondary and Tertiary Crushing Line 2

Secondary Screening

Quantity	:	2; new
Type	:	Sandvik LF1850T
Opening upper deck	:	50 mm
Opening lower deck	:	17 mm

Secondary Crushing

Quantity	:	2; new
Type	:	Sandvik 660
Closed side setting	:	28 mm

Tertiary Screening

Quantity	:	8; two per line, existing, modified
Type	:	6’ x 12’; single deck
Screening opening	:	15 mm

Tertiary Crushing

Quantity	:	4; new
Type	:	Sandvik 440
Closed side setting	:	8 mm

Line 2, product sizing

D100	:	17.0 mm
D80	:	11.00 mm

D50	:	5.5 mm

Line 2, Fine Ore Stockpile

Type	:	Existing, reconditioned
Capacity	:	11,600 t (live)

17.11.3 Grinding

Line N° 1

Quantity	:	1; Mill N° 3; existing 16.5 ft x 25 ft; 3,200 kW
Feed size F80	:	4.0 mm (4,000 µm)
Product size P80	:	250 µm
Specific energy consumption	:	12.50 kWh/t (P80=277 µm)
Specific energy consumption	:	13.54 kWh/t (P80=250 µm)

Line N° 2

Feed size F80	:	11 mm (11,000 µm)
Mill size	:	23’ x 40.5’; 13,000 kW (FLSmidth)
Product size P80	:	250 µm
Specific energy consumption	:	15.91 kWh/t (P80=250 µm)
Power at shell	:	12,546 kW
Mill discharge density (w/w)	:	75%
Critical speed	:	75%
Ball loading (for power)	:	32%
Ball loading (for structural)	:	40%
Ball size	:	3.0 – 3.5 in
Ball consumption	:	655 g/t

Grinding Classification

Line 1 Hydrocyclones

Type	:	Existing, associated with Ball Mill 3
Circulating load (nominal/design)	:	300%/400%

Solids in overflow	:	40%
Solids in underflow (w/w)	:	75%

<u>Line 2 Hydrocyclones</u>

Type	:	New, 33” diameter
Number operating/standby	:	4/2
Circulating load (nominal/design)	:	300%/400%
Solids in overflow	:	40%
Solids in underflow	:	75%

17.11.4 Rougher Flotation

Type	:	Conventional, mechanical
Cell volume	:	4 new units, 300 m^3
Residence time	:	30 min (based on effective volume)
Effective volume factor	:	90.0%
Feed density (w/w)	:	38% nominal; 34% design
Concentrate grade	:	10.0% Cu

<u>Regrinding</u>

Feed	:	Rougher and scavenger concentrate
Specific Energy Consumption	:	0.69 kWh/t

<u>Regrind Mills</u>

Mill size:		Ball Mills N°6 and 7 existing
Product size P80	:	45 µm
Ball size	:	1.0 in

<u>Regrind Mill Cyclones</u>

Type	:	20” diameter, 2op+2s/b (new)
Circulating load (nominal/design)	:	150%/180%
Solids in overflow (w/w)	:	18 – 22%
Solids in underflow (w/w)	:	55 – 65%

Feed pressure	:	20 psi (1,406 kg/cm^2)

17.11.5 Cleaner Flotation

Type	:	Columns, 3 m x 12 m
Quantity	:	2; 1 new and 1 existing
Unit area	:	5.46 t/h/m^2
Capacity (conc. produced)	:	1.52 t (conc.)/h/m^2
Feed density (w/w)	:	19.0 – 21.0%
Concentrate grade	:	29 – 33% (29% design)

17.11.6 Scavenger Flotation

Type	:	Conventional, existing
Cell volume	:	Three 28 m^3 + twenty 14 m^3
Number	:	23
Residence time	:	45 minutes (over effective volume)
Feed density (w/w)	:	13.9%
Concentrate grade	:	20.0% Cu

17.11.7 Concentrate Handling

<u>Concentrate thickening</u>

Type	:	Three existing conventional thickeners
Number	:	3
Thickener 1	:	75 ft diameter (23 m)
Thickener 2	:	35 ft diameter (11 m)
Thickener 2	:	35 ft diameter (11 m)
Unit area	:	1.15 m^2/tpd
Underflow density (w/w)	:	55 – 65% (60.0% for balance)

<u>Concentrate filtration</u>

Type	:	Filter press
Number	:	2; 1 new and 1 existing (30m^2 + 48m^2)

Cycle time	:	15 minutes
Existing filter rate	:	292 kg/h/m^2

<u>New Filter</u>

Moisture content-product	:	10 – 11%
Filtration rate (t/cycle)	:	3.5 – 4 t/cycle
Filtration rate	:	450 kg/h/m^2
Concentrate Stockpile	:	Existing
Feed	:	Direct feed from filters

17.11.8 Tailings

<u>Primary Classification</u>

Type	:	Hydrocyclones 400 mm diameter
Number of batteries	:	2; 1 new and 1 existing
Coarse/fine separation	:	70/30
Feed density (w/w)	:	35.0%
Overflow density (w/w)	:	15.3%

<u>Fine Tailings thickening</u>

Type	:	Hi-Rate (Outotec) 32 m dia.
Number	:	1
Unit area	:	m^2/tpd
Underflow density	:	55 – 62% (60.0% for balance)

<u>Dewatering of Coarse Tailings</u>

Type		Dewatering screens
Number	:	4; 2 existing and 2 new
Size	:	11.5 m^2
Capacity	:	150 t/h (dry)
Moisture content product	:	20.0%

Secondary classification

Type	:	100mm/150 mm diameter cyclones
Number of batteries	:	2; 1 new and 1 existing
Feed density (w/w)	:	43.6%
Underflow density (w/w)	:	61.4%
Overflow density (w/w)	:	5.0%

17.11.9 Reagents

Lime

New lime plant for Ball Mill N°8

Existing plant for Ball Mill N°3

Addition rate	:	500 g/t
Type	:	80.0% CaO
Lime slurry density	:	20% (w/w)

Flotation Reagents

Primary Collector

Type	:	Aero AP-7156; mercaptobenzotiazol mixed with dithiophosphate
Form	:	Liquid
Addition rate	:	10 g/t
Addition points	:	Rougher flotation

Secondary collector

Type	:	Aero MX-3753; modified xanthate
Form	:	Liquid
Addition rate	:	20 g/t
Addition points	:	Rougher flotation

Primary Frother

Type	:	Methyl Isobutyl Carbinol (MIBC)
Form	:	Liquid

Addition rate	:	38 g/t
Addition points	:	Rougher flotation

<u>Secondary Frother</u>

Type	:	MB-78; generic
Form	:	Liquid
Addition rate	:	15 g/t
Addition points	:	Rougher flotation

<u>Concentrate thickening</u>

Plant	:	Existing
Type	:	Praestol 2520; anionic polymer
Addition rate	:	5 g/t (concentrate)
Primary solution	:	2.5 g/l
Addition solution	:	0.25 g/L tailings thickening
Plant	:	New
Type	:	Praestol 2520; anionic polymer
Addition rate	:	5 – 30 g/t
Primary solution	:	2.5 g/L
Addition solution	:	0.25 g/L

17.12 Production Plan

The production plan has been issued as document LOM Book 2020, it was developed by Mantos Copper in 2020 and is summarized in Table 16-7.

17.13 Comments

The ramp up to full tonnage (7.3 Mt per year) will be achieved by 2022. This tonnage will be maintained until 2037, with an average head grade of 0.69% Cu and total fine copper production in concentrate of 704,800 t.

The plant layout has good access and space for the installation of the new equipment (see Figure 17-5 taken from general arrangement drawing H354595-0000-240-290-0002).

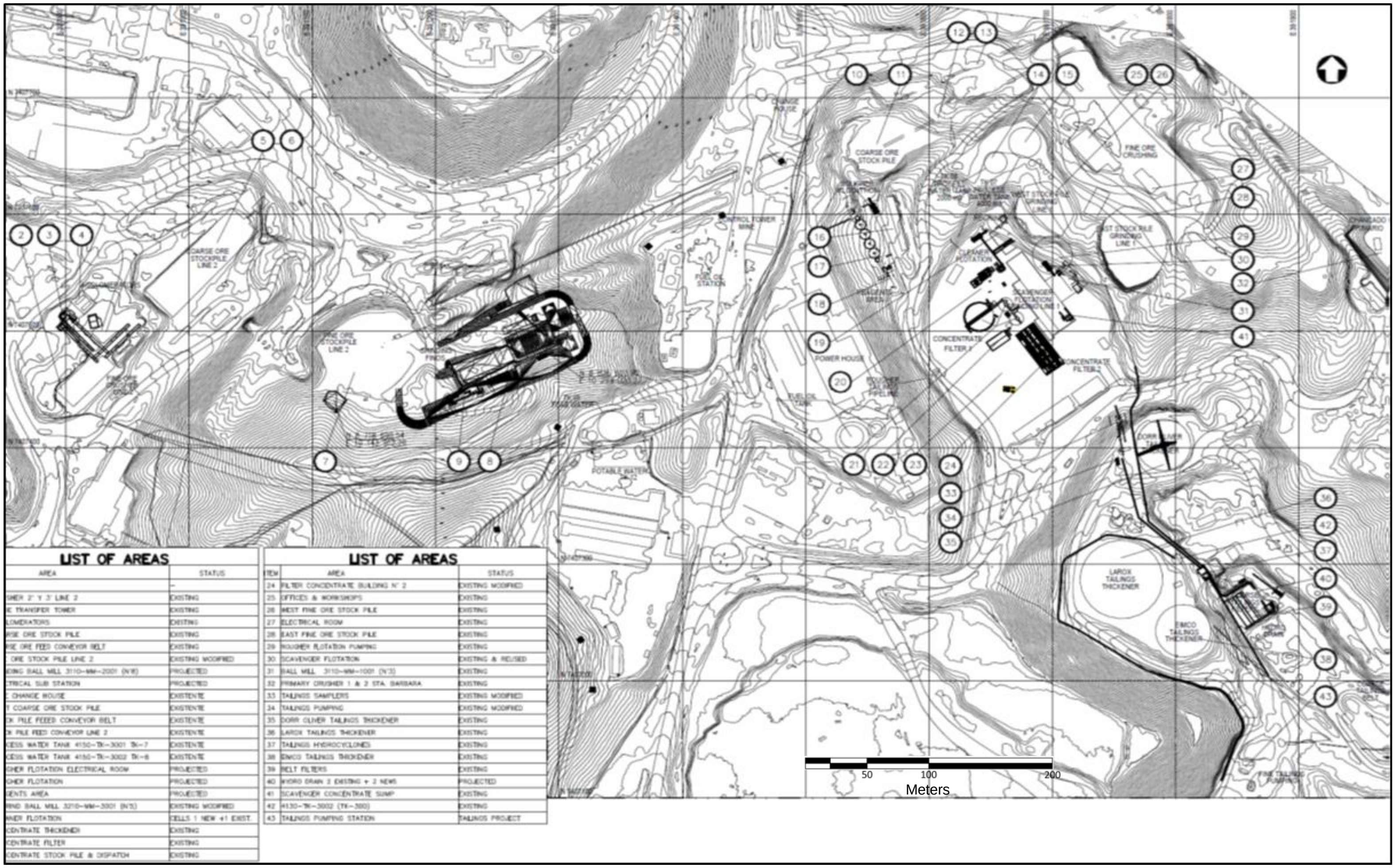
The design criteria are considered to be correct, well supported and conservative.

A cautionary comment is that this is a brownfield project where new equipment must be tied into an old plant. Thus, a very detailed commissioning plan will be required and ramp-up to full tonnage may take longer than is customary.

The geometallurgical model has been tested by comparing results to actual plant results and it was found to be a reliable indicator of recovery. However, some cautionary comments are;

- The predicted recoveries for future years are higher than actual results achieved over recent years. In the QP's opinion this is achievable because the new equipment will remove some bottleneck in the current operation.
- New equipment, especially the crushers, Ball Mill N° 8 and the rougher flotation cells should improve plant operating efficiency.
- There is only limited testwork on samples after 2025.

Figure 17-5: Mantos Blancos General Layout



Note: Figure courtesy Mantos Copper, 2020

18 Project Infrastructure

18.1 Introduction

The Project facilities are located at the existing Mantos Blancos operations site and will also use other existing external facilities.

- Mantos Blancos Existing Plant Site: 23°25’40’’ north latitude and 70°1’10’’ west longitude
- Main access by the Panamericana highway (Route-5)
- Port Facilities: Antofagasta and Angamos (Mejillones) ports, located about 45 km south west of the mine site and 86 km north west of the mine site, respectively
- Personnel and Contractors Accommodation: in Antofagasta and Baquedano, located about 45 km and 20 km, respectively from the mine site
- Water Supply: by pipeline from existing water providers (ADASA and FCAB)
- Concentrate Transport: trucking to Altonorte smelter (45 km) or to Angamos Port (Mejillones) (86 km)
- High Voltage Power Supply: by existing transmission lines, power provided by ENORCHILE, from the Laberinto and Chacaya high voltage substations to the mine site under medium term contract.

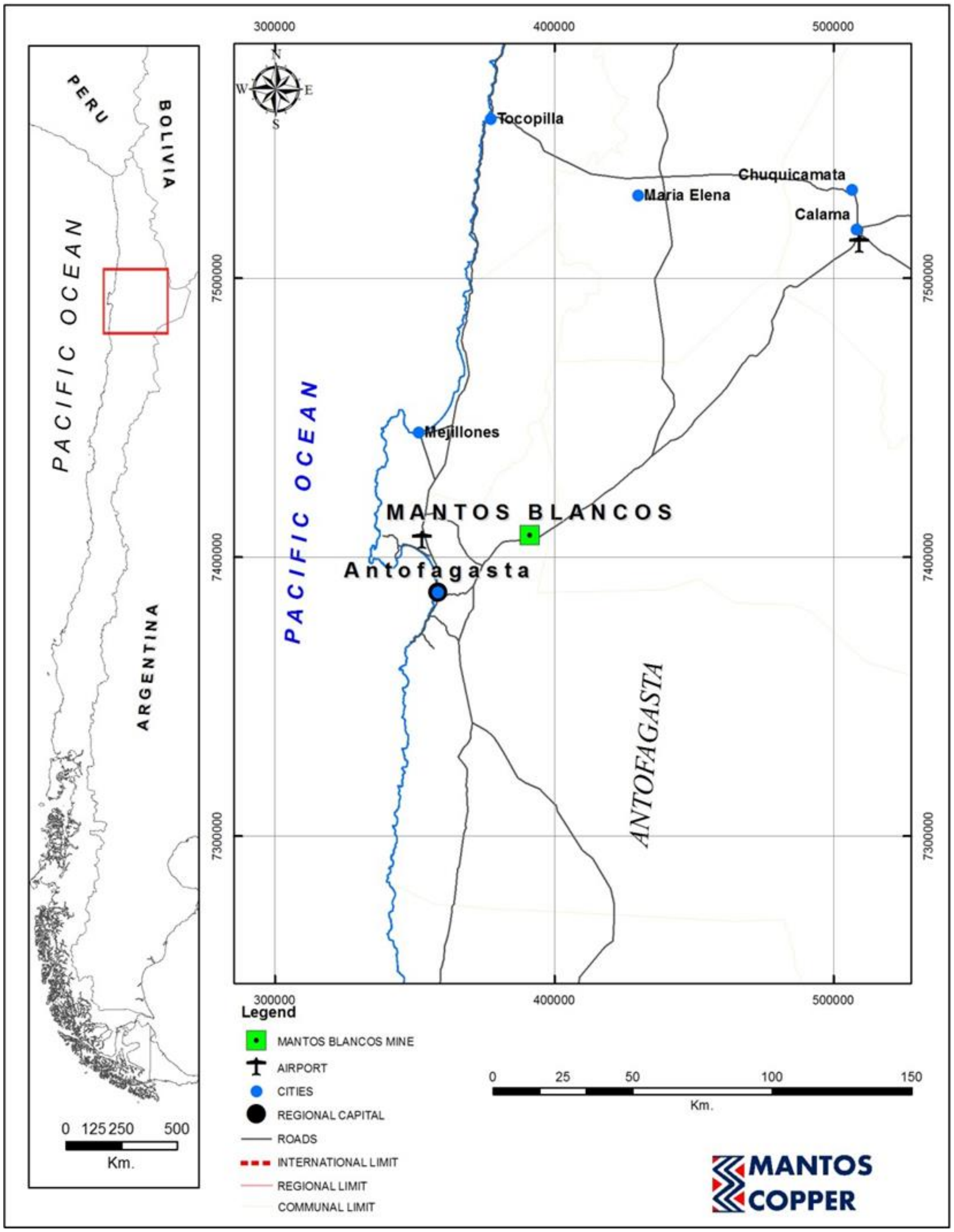
18.2 Road and Logistics

18.2.1 Access

Mantos Blancos is located in the Antofagasta Region, 45 km northeast of the city of Antofagasta, next to the road connecting Antofagasta with Calama near the village of Baquedano at 900 masl. It consists of an open pit mine, crushing plants and facilities for processing sulphide and oxide ores. The reference coordinates for the Project location 23°25’40’’ north latitude, 70°1’10’’ west longitude (see Figure 18-1).

The main access to the project area is by Route 26 from Antofagasta northeast towards Baquedano following Route 5. Another access is by Route 1 north from Antofagasta then via Route B-400 east to connect to Route 5 north towards Baquedano. From Route 5 the access to the Mantos Blancos site is from road B-418. All these are paved public roads.

Figure 18-1: Location of Mantos Blancos Site



Note: Figure courtesy Mantos Copper, 2020

18.2.2 On Site Access

The mine has a number of private roads to access facilities. These roads include roads for small vehicle as well as a network of mine truck haul roads. The haul roads are built to a width suitable for the haul trucks. These roads will continue to be used in the expanded operation.

18.2.3 Copper Concentrate Haulage

Copper concentrate is transported from the mine to the smelter or to the Angamos (Mejillones) port by road using trucks and trailers for approximate haulage distances of 45 km and 86 km, respectively, following Route 5 and other public roads. The production increase will be handled with an increase in the number of truck trips per day. Contingency plans are in place for spill management and accidents and there is a trained incident management team, in accordance with standard transport operating procedures and legal requirements.

18.3 On Site Buildings and Facilities

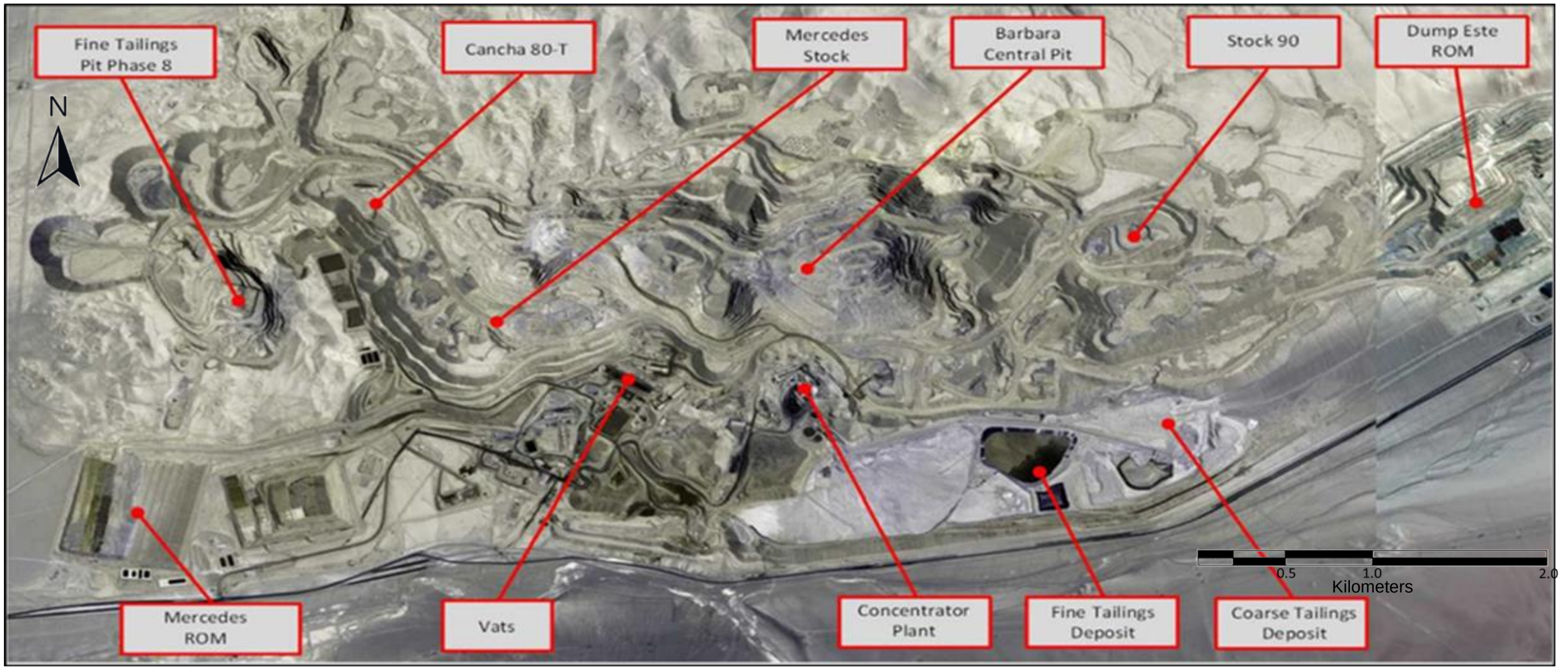
The infrastructure for the Mantos Blancos Mine is currently developed and in service. Figure 18-2 shows the general layout of the Mantos Blancos infrastructure. The main facilities for the Mantos Blancos Mine are

- Santa Barbara pit
- Argentina Norte dump
- Phase 8 dump
- Este dump
- Oeste dump
- Concentrator
- Leach vats
- Coarse tailings deposit
- Fine tailings deposit
- Mercedes stockpile
- Mercedes dump
- Secondary leaching pads and heaps (SL)
- SX-EW plant
- Back-up power plant.

The ancillary facilities for the Mantos Blancos Mine are:

- Workshops
- Warehouses
- Administrative buildings and offices
- Explosives storage
- Chemical/reagent storage
- Policlinic
- Two canteen buildings with kitchens.

Figure 18-2: Mantos Blancos On-Site Facilities



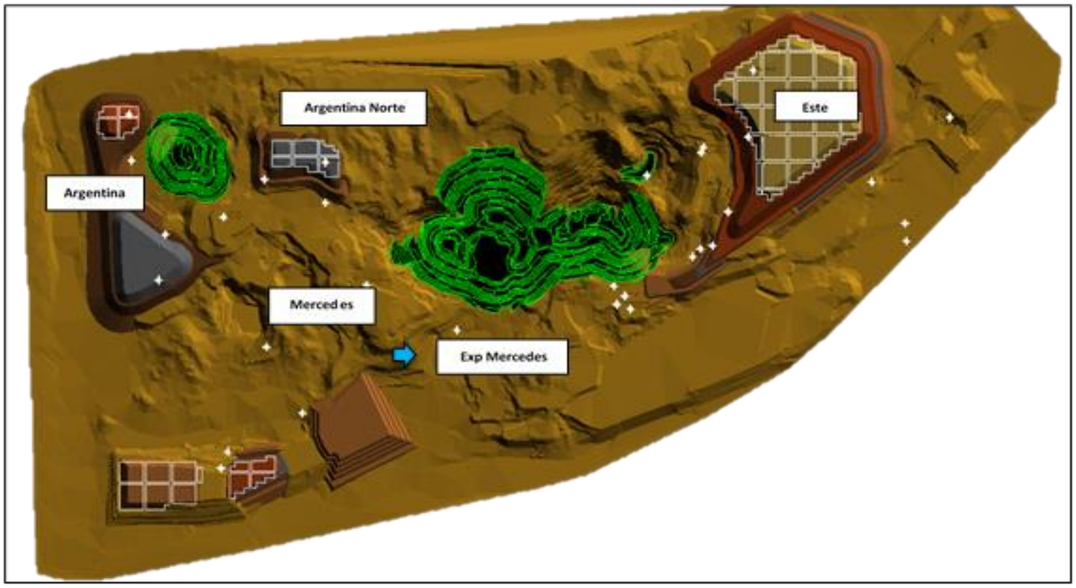
Note: Figure courtesy Mantos Copper, 2020

18.4 Stockpiles and Waste Storage

18.4.1 Waste Storage Facilities

Three waste rock storage areas will be included in the current LOM plan (Argentina, Mercedes and East (Este)), shown in Figure 18-3.

Figure 18-3: Waste Storage Location



Note: Figure courtesy Mantos Copper, 2020

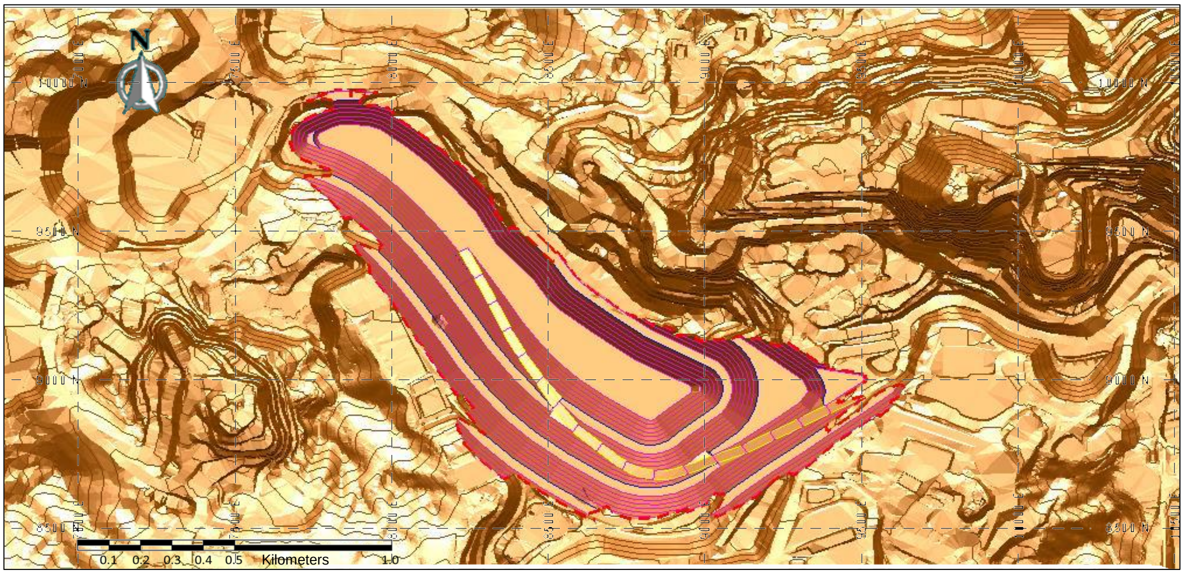
18.4.1.1 Waste Storage (Botadero) Operation

Currently the Mantos Blancos operation uses five waste dumps (Mercedes, Este, Argentina Norte, Argentina Sur (Oeste) and Naranja (Fase 8)) which receive the waste material from a number of phases of the Santa Barbara pit. For the expanded operation only the Este, Argentina (overlapping part of Argentina Sur (Oeste) and Naranja (Fase 8)) and Mercedes waste dumps will be used. These modifications have already been approved by the environmental authorities.

18.4.1.1.1 Mercedes Waste Dump

The Mercedes waste dump has a capacity of 180 Mt, and maximum height of 180 m (see Figure 18-4).

Figure 18-4: Mercedes Waste Dump

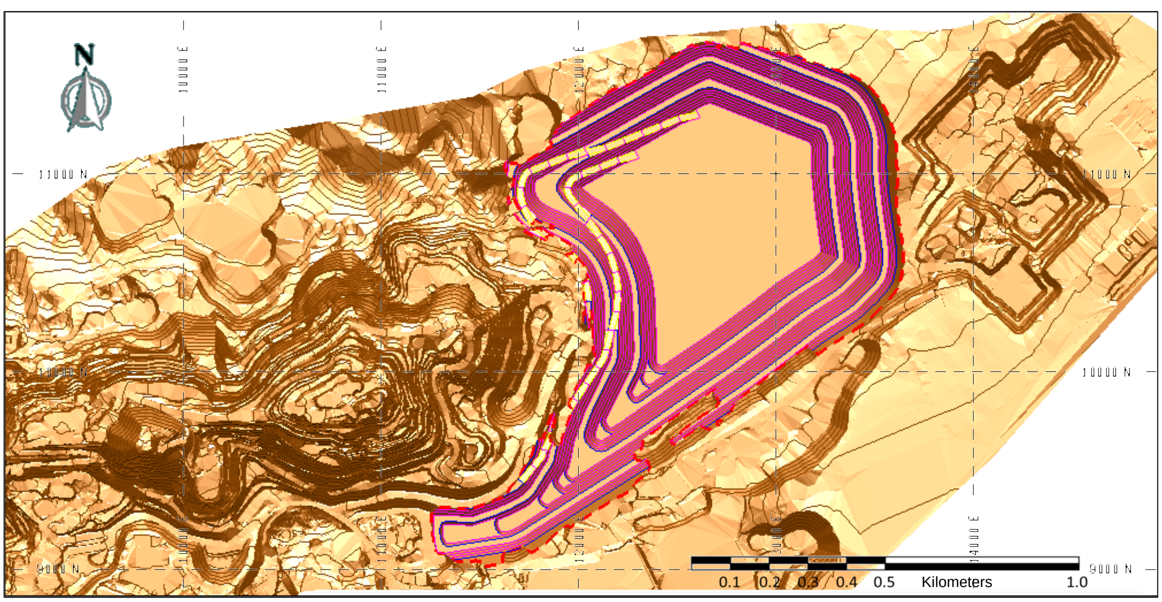


Note: Figure courtesy Mantos Copper, 2020

18.4.1.1.2 Este Waste Dump

The Este waste dump will be expanded to increase capacity by 460.5 Mt to reach a total capacity of 824.5 Mt, the approximate dimensions will be 2.63 km north-south and 2.35 km east-west, maximum height 230 m with 30 m decoupling berms at levels 960, 1,020 and 1,080. The angle of natural repose has been estimated to be 36° (see Figure 18-5 and Table 18-1).

Figure 18-5: Este Waste Dump



Note: Figure courtesy Mantos Copper, 2020

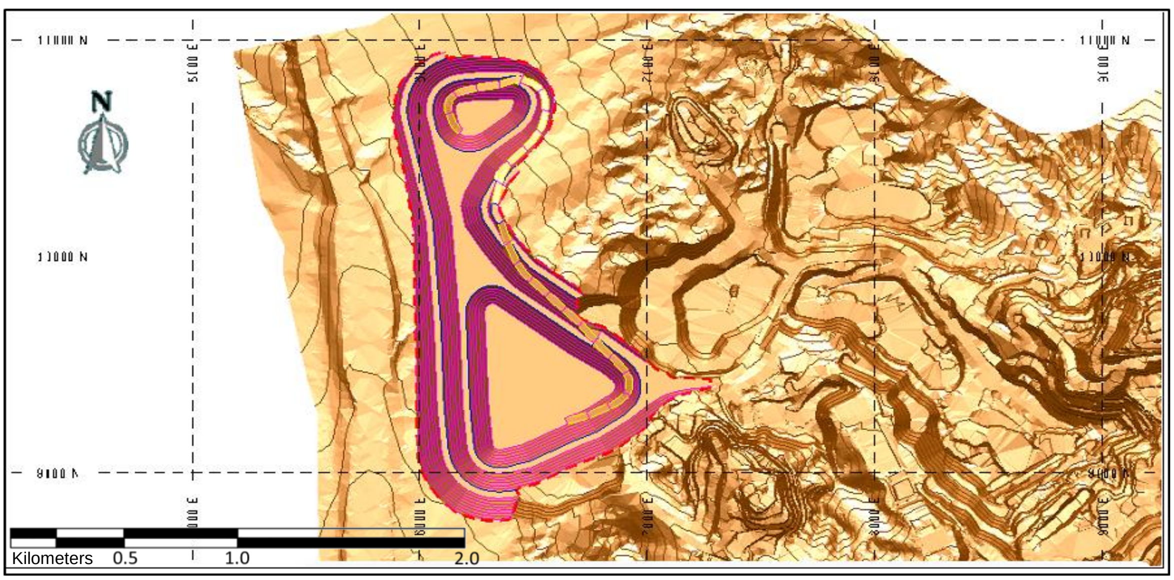
Table 18-1: Este Waste Dump Capacity

Level	Volume (Mm^3)	Tonnage (Mt)
1,140	65.0	117.0
1,080	103.1	185.5
1,020	71.0	127.9
960	16.7	30,1
Total	255.8	460.5

18.4.1.1.3 Argentina Waste Dump

The Argentina waste dump will be expanded to a total capacity of 233.6 Mt, the approximate dimensions will be 1.99 km north-south and 1.08 km east-west, the maximum height will be 200 m with decoupling berms at each level (see Figure 18-6 and Table 18-2).

Figure 18-6: Argentina Waste Dump



Note: Figure courtesy Mantos Copper, 2020

Table 18-2: Argentina Waste Dump Capacity

Level	Volume (Mm^3)	Tonnage (Mt)
1,040	22.7	40.8
980	51.2	92.2
920	29.1	52.5
Total	103.0	185.5

18.4.2 Ore Stockpiles

The stockpile used for sulphide ore is the old Cancha 90 stockpile, which has an initial tonnage of 2.0 Mt at a TCu grade of 0.47%, ICu grade of 0.33% and SCu of 0.14%.

18.5 Tailings

18.5.1 Introduction

This section describes the current and approved design and operation of the Tailings Storage Facilities (TSF) which covers the expanded concentrator operation to 2031-2033. Additional expansions of the TSF are required to accommodate the complete LOM tailings generated by the Project and are included as deferred capital cost.

Tailings from the concentrator are separated by cycloning into coarse and fine tailings in 70/30 nominal ratio. The 30% fine fraction is thickened and pumped to a conventional tailings dam. The 70% coarse fraction, after being filtered, is transported by trucks to the coarse tailings deposit. The fine tailings deposit (FTD) is located 6 km west of the process plant, at the existing Pit 8 site. The coarse tailings deposit (CTD) is located 3 km east of the concentrator (see Figure 18-7).

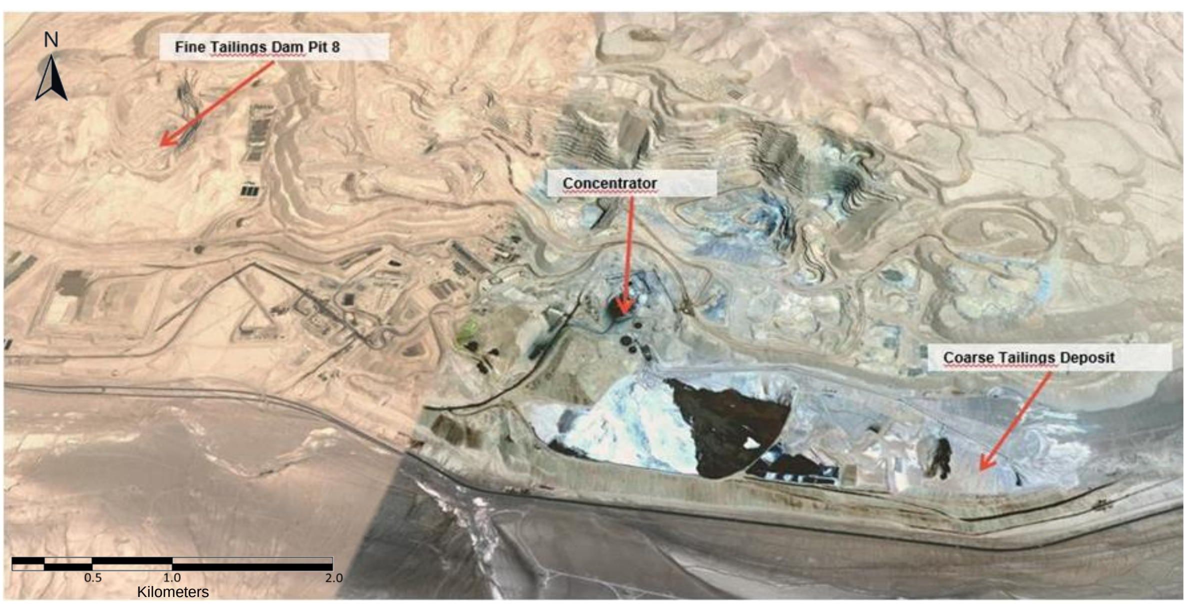
The tailings production from the expanded plant will be 7.1 Mt per year (2.1 Mt per year of fine tailings and 5.0 Mt per year of coarse tailings).

The FTD has been designed for a total tailings storage capacity of approximately 21.4 Mm³ (28.5 Mt at an estimated density of 1.33 t/m³). The Project currently includes an increase in the dam wall height to 932 masl and the dam will be full by October 2031.

The CTD has been designed for a total tailings storage capacity of approximately 41 Mm³ (69.2 Mt at an estimated dry density of 1.65 t/m³) and will be full by July 2033.

The additional 12 Mt of fine tailings and 20 Mt of coarse tailings that need to be stored to cover the complete LOM will be accommodate by small expansions of the two deposits which will be constructed starting in 2027. The FTD will be raised to 947 masl and the CTD will expanded to the east. A capital cost estimate for these expansions of US$43.3 million based on conceptual engineering is included in the financial model.

Figure 18-7: Fine and Coarse Tailings Storage Deposits



Note: Figure courtesy Mantos Copper, 2020

18.5.2 Design Basis

The Project includes expansions of the coarse tailings and fine tailings deposits and related infrastructure based on the requirements of the LOM mine plan. Growth simulations were made for both facilities using as the baseline the designs developed during the Feasibility Study for Construction, Management and Disposal of Tailings 2016-2030 issued by Amec in 2015 (based on the LOM 2014 mine plan) and revised by Mantos Blancos with the current LOM production plan.

18.5.2.1 Characterization of Tailings

18.5.2.1.1 Characterization of Coarse Tailings

- Coarse/fine design ratio : 70/30
- Type of tailings : Dewatered sands (filtered/drained)
- Specific gravity : 2.7
- Weight concentration : 80%
- Density of the deposited tailing : 1.65 t/m^3

18.5.2.1.2 Characterization of the Fine Tailings

- Coarse/fine design ratio : 70/30
- Type of tailings : Slimes
- Specific gravity : 2.7
- Weight Concentration of solids : 55% to 62%
- Density of the deposited tailings : 1.33 t/m^3

18.5.2.2 Design Criteria for the Coarse Tailings Facility

Table 18-3 shows the tailings production plan used in the simulation of the CTD growth from the LOM 2018 mine plan with a design factor of 10% applied.

Table 18-3: Coarse Tailing Production Plan

Tailings			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Total Tailings Productions	100%	Mtpy	7.01	7.15	7.15	7.15	7.74	7.74	7.15	7.15	7.74	7.74	7.15	7.74	7.74	7.74	7.15	0.60
Coarse Tailings	70%	Mtpy	4.91	5.00	5.00	5.00	5.42	5.42	5.00	5.00	5.42	5.42	5.00	5.42	5.42	5.42	5.00	0.42
Accumulated Coarse Tailings		Mt	4.91	9.91	14.91	19.92	25.34	30.76	35.76	40.77	46.19	51.61	56.61	62.03	67.45	72.87	77.88	78.29
Accumulated Coarse Tailings		Mm^3	2.97	6.01	9.04	12.07	15.36	18.64	21.67	24.71	27.99	31.28	34.31	37.59	40.88	44.17	47.20	47.45

18.5.2.3 Design Criteria for the Fine Tailings Facility

Table 18-4 shows the tailings production plan used in the simulation of the TFD growth from the LOM 2018 mine plan with a design factor of 10% applied.

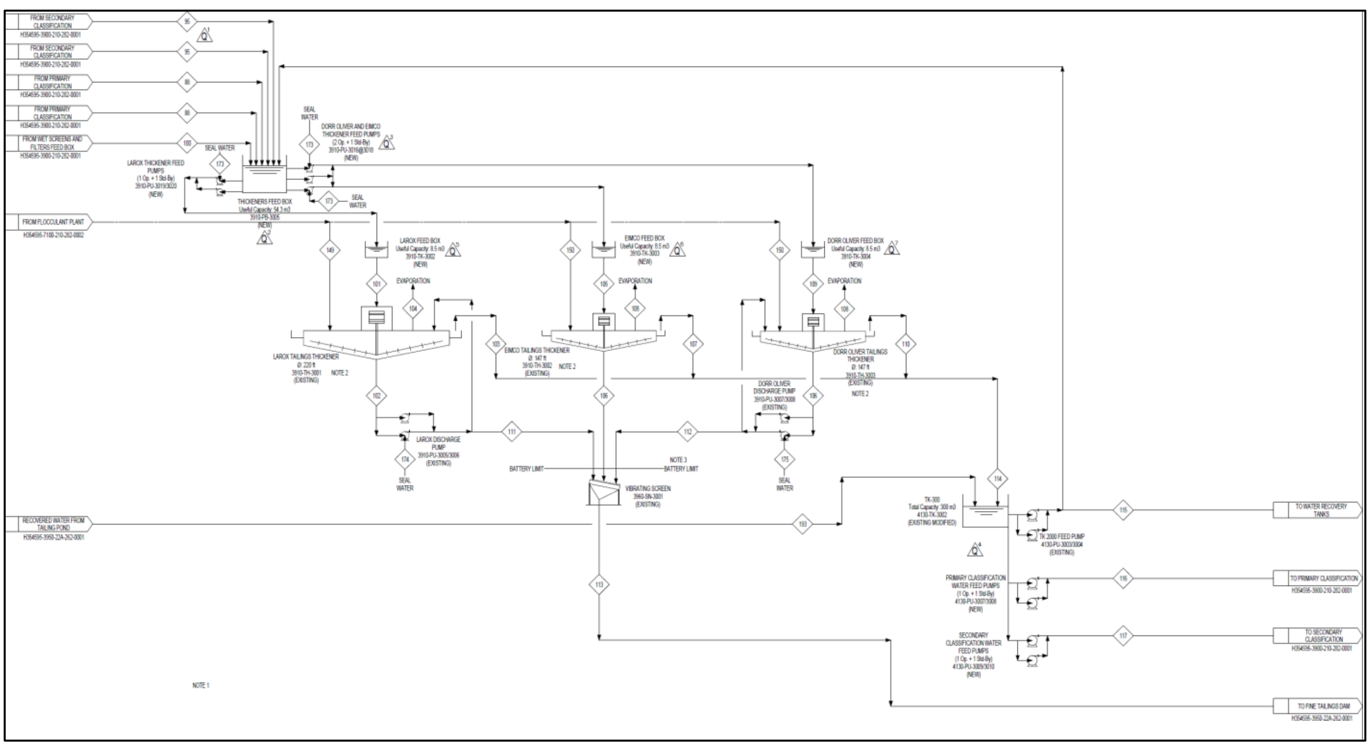
Table 18-4: Fine Tailings Production Plan

Tailings			2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Total Tailings Productions	100%	Mtpy	7.01	7.15	7.15	7.15	7.74	7.74	7.15	7.15	7.74	7.74	7.15	7.74	7.74	7.74	7.15	0.60
Fine Tailings	30%	Mtpy	2.10	2.14	2.14	2.14	2.32	2.32	2.14	2.14	2.32	2.32	2.14	2.32	2.32	2.32	2.14	0.18
Accumulated Fine Tailings		Mt	2.10	4.25	6.39	8.54	10.86	13.18	15.33	17.47	19.79	22.12	24.26	26.58	28.91	31.23	33.38	33.55
Accumulated Fine Tailings		Mm^3	1.58	3.19	4.81	6.42	8.16	9.91	11.52	13.14	14.88	16.63	18.24	19.99	21.74	23.48	25.09	25.23

18.5.3 Tailings Storage Facility

Tailings from the concentrator are separated into fine and coarse tailings (see Figure 18-8 and Figure 18-9). Currently, tailings production is 4.58 Mt per year (1.38 Mt per year of fine tailings and 3.21 Mt per year of coarse tailings). Table 18-5 provides the current operating parameters associated with fine and coarse tailings.

Figure 18-8: Tailings Separation Flowsheet

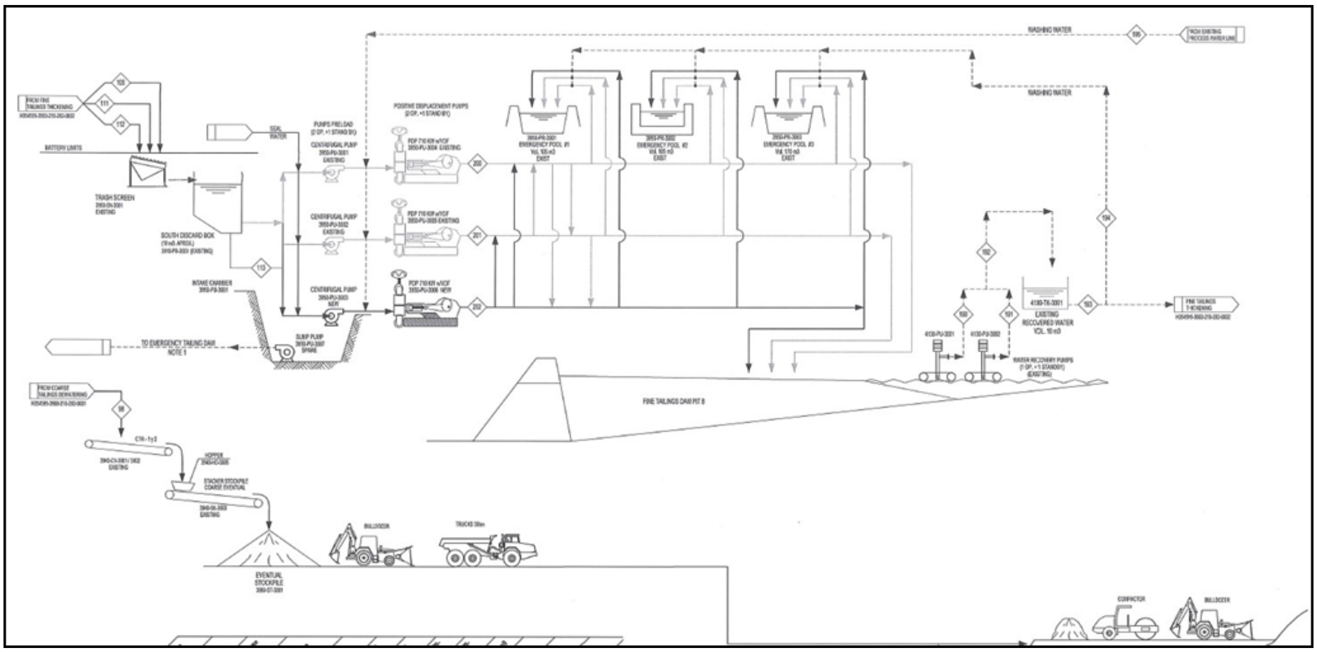


Note: Figure courtesy Mantos Copper, 2020

Table 18-5: Operating Parameters

Parameter	Unit	Value
Total Tailings	Mt per year	4.58
Tailings to Thickener (fines)	Mt per year	1.38
Solids Content (underflow)	%	60
Tailings to Dewatering (coarse)	Mt per year	3.21
Water Content (product)	%	20
Run Time	%	94 to 96
Solid Content (product)	%	80
Coarse-Fine Ratio	%	70 to 30

Figure 18-9: Tailings Transport Flowsheet

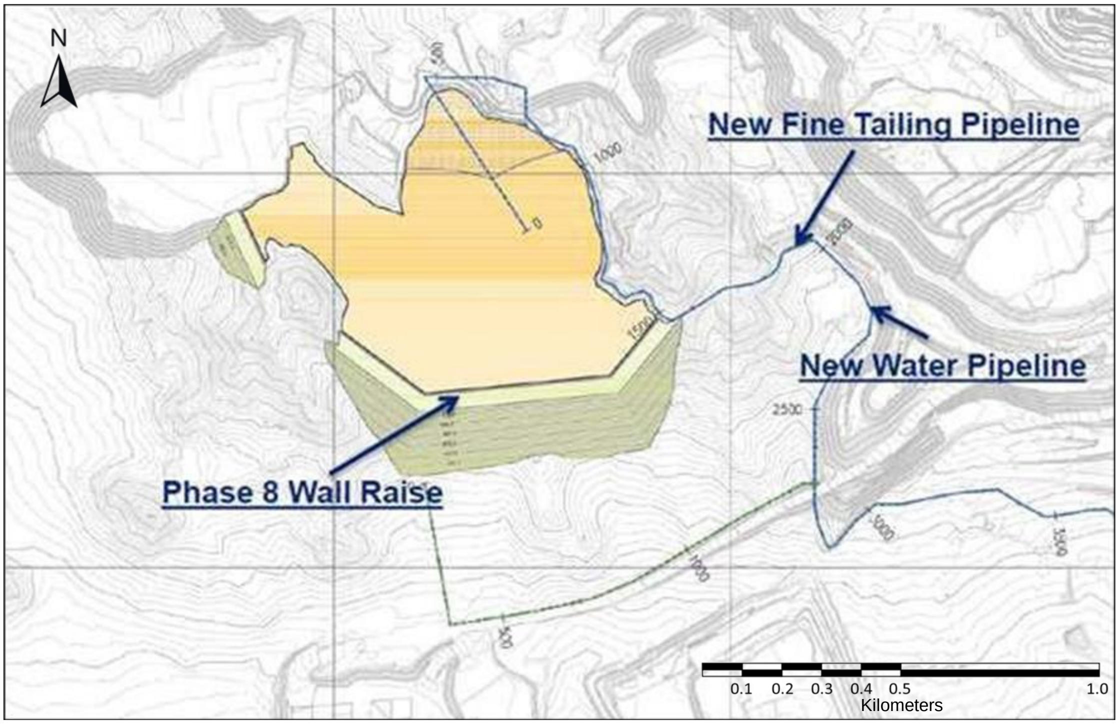


Note: Figure courtesy Mantos Copper, 2020

18.5.4 Fine Tailings Storage Facility Embankment and Dam

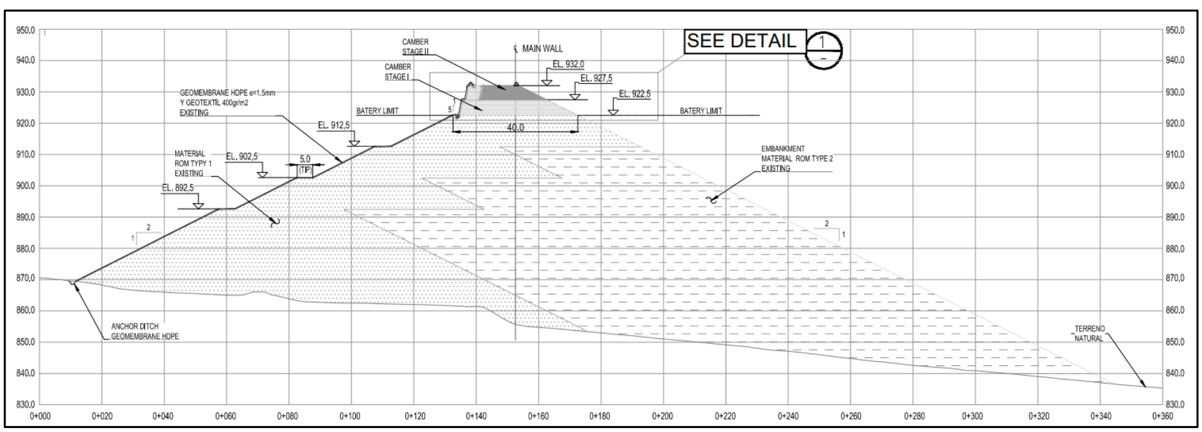
The current design of FTD is shown in Figure 18-10. It is planned to increase the retaining wall in one stage to a wall crest elevation of 932 masl (see Figure 18-11) to contain the additional fine tailings required for the plant expansion. This design will be full by October 2031. The wall of the FTD will need to be raised further to a final elevation of 947 masl to accommodate the total tailings included in the current LOM plan.

Figure 18-10: Fine Tailings Dam Plan



Note: Figure courtesy Mantos Copper, 2020

Figure 18-11: Fine Tailings Dam Wall Elevation



Note: Figure courtesy Mantos Copper, 2020

Mantos Blancos is constructing the fine tailings management system including changes to the original design during current operations. The filling rate of the dam has been higher than expected. The current operation has not been able to achieve the 70/30 coarse/fine ratio and is operating close to a ratio 60/40. The opinion of this QP is that the new pumping station and hydrocyclones should allow the designed 70/30 ratio to be achieved. If problems arise, there are several methods that can be used to improve the classification efficiency.

18.5.5 Transport and Disposal of Tailings

The fine tailings pumping system for the expansion considered re-using as much as possible the current equipment and pipelines. The optimal pumping system was determined for the entire service life of the Project with the following configuration:

- Pumping stage 1: Operation continues under current conditions, with a 7” carbon steel (CS) pipeline operating and another 7” CS pipeline as stand-by, until production increases in 2021.
- Transition stage: Both existing 7" CS pipelines in operation; no stand-by line. The final year of this transition is estimated to be 8 years after the installation of the pipelines (in 2016) i.e. in 2024. This must be confirmed by measuring the pipe wall thickness. Also, a third positive displacement pump was installed during 2020, with the same characteristics as the existing pumps, so that there are two operating and one stand-by.
- Pumping stage 2: Normal operation (2024) with a new 8" CS pipe, the two existing 7" CS pipes are kept as stand-by, for operation during maintenance or emergency conditions. The installation of this line has been deferred to 2023.

18.5.6 Thickened Tailings Distribution

The thickened tailings will be pumped from the plant as conventional slurry (60% solids) to the east end of the dam. The tailings are discharged into a tailings distribution header and directed in a pipe to points around the wall perimeter for deposition using the sub-aerial method.

18.5.7 Water Management - Reclaim and Transport

The expansion Project will use the expanded current tailings water recovery facilities with a maximum estimated flow for the line of 26 L/s. The seepage water recovery system behind the dam will be used as per the Amec design in 2015.

18.6 Coarse Tailings Storage Facility

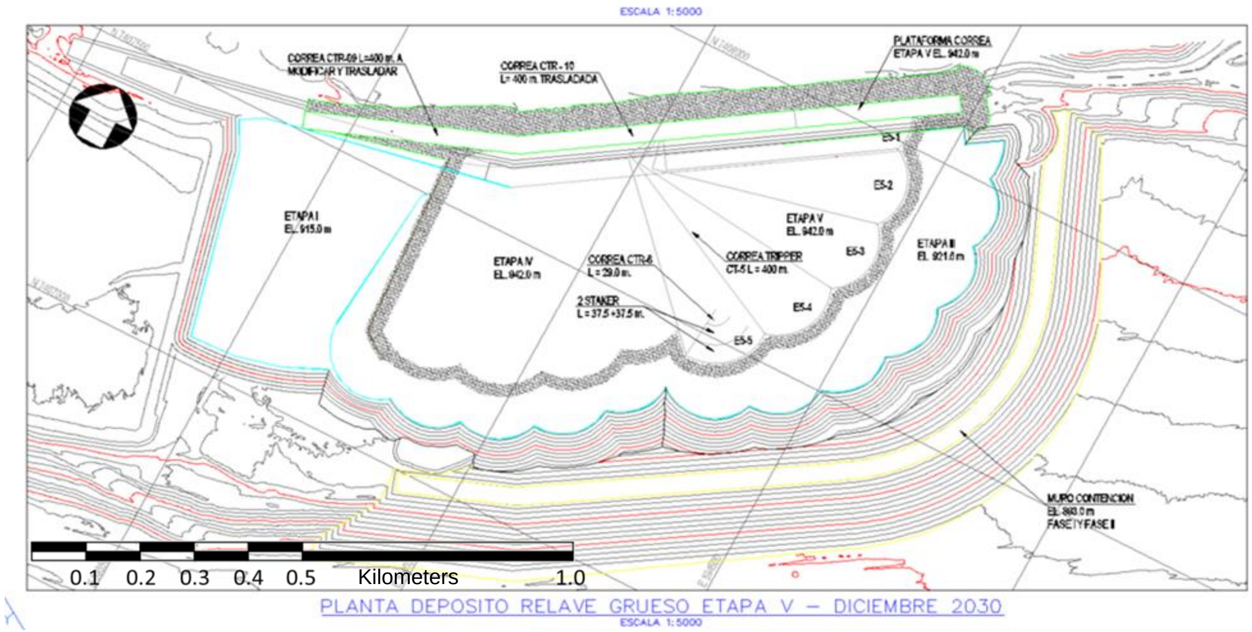
The coarse tailings facility started at 838 masl and after five stages of growth will reach 942 masl. The total storage capacity is 68.6 Mt (see Table 18-6 and Figure 18-12). More growth stages will be required to accommodate the additional 20 Mt of coarse tailing included in the LOM.

Dewatered tailings from the plant will be transported in 30 t trucks to the CTD, unloaded and spread with a bulldozer.

Table 18-6: Material Take-off for the Coarse Tailings Facility

Stage	Level (masl)	Partial Volume (m^3)	Cumulative Volume (m^3)	Partial Tonnage (t)	Cumulative Tonnage (t)
Stage 1	915	7,680,515	7,680,515	12,672,850	12,672,850
Stage 2	921.6	14,147,822	21,828,337	23,343,906	36,016,756
Stage 3	921.6	14,425,453	34,425,451	20,785,238	56,801,994
Stage 4	942	5,254,607	39,680,058	8,670,101	65,472,096
Stage 5	942	2,272,494	41,952,552	3,749,616	69,221,711

Figure 18-12: Coarse Tailings Deposit



Note: Figure courtesy Mantos Copper, 2020

18.6.1 Monitoring

The monitoring system for the FTD includes a battery of monitoring wells installed downstream of the dam wall. They wells have been located to intersect the main rock faults where it is expected that the preferential direction of possible drainage flows may occur. Piezometers are installed in and under the main embankment and dam.

The monitoring system for the CTD includes a battery of monitoring wells and piezometers in various locations.

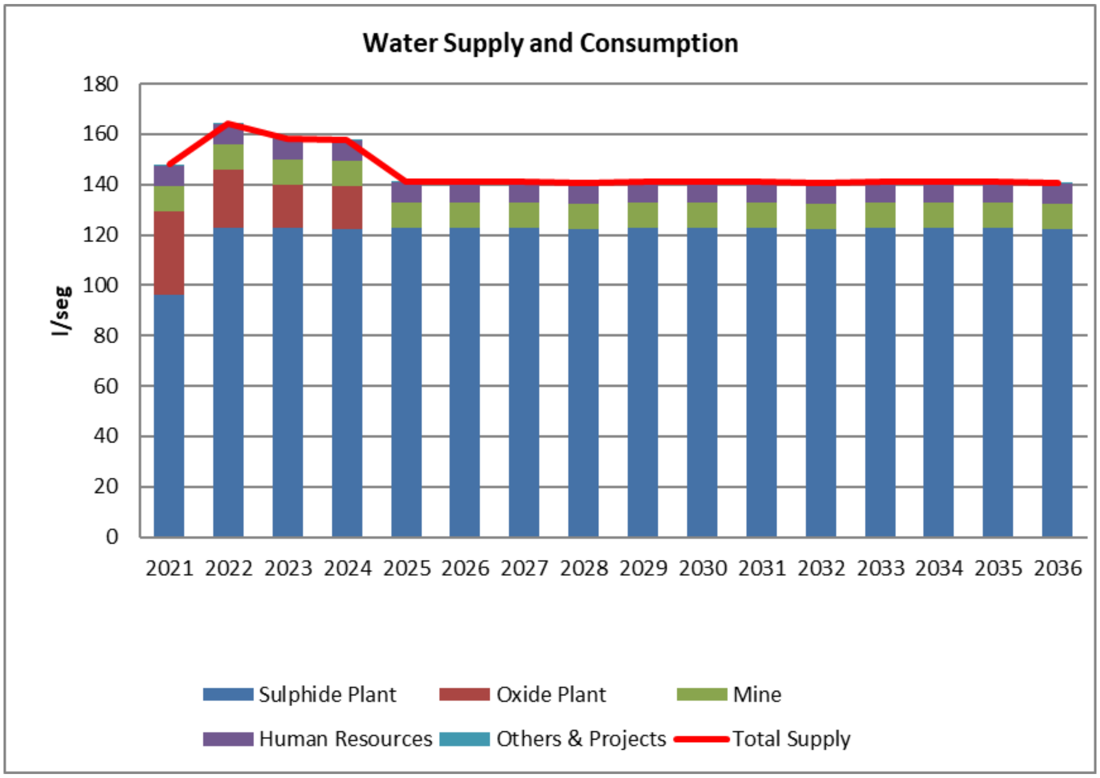
18.7 Water Supply

The water supply is provided by FCAB and ADASA. The water is pumped by pipelines from Siloli and Toconce, located approximately 250 km from Mantos Blancos. Currently, the total water consumption at Mantos Blancos is 10,000 m^3/d and the maximum storage capacity on site is 17,000 m^3.

Considering the elimination of vat leaching, reduction of processing by dump leaching and optimization of water recovery from tailings, the estimated water consumption over the LOM will not exceed the 145 L/s contracted with FCAB and ADASA The water consumption shown in Figure 18-13 is expected to continue at the same rate until 2037.

The industrial water supply contract for 130 L/s with ADASA ends in 2023, with a clause allowing for a first renewal for 5 years to 2028 and a second extension until 2033. The contract with FCAB to supply 15 L/s of higher quality water used for specific processes ends in December 2023. Mantos Copper plans to extend or replace these supplies before they expire.

Figure 18-13: Water Supply and Consumption - LOM Plan



Note: Figure courtesy Mantos Copper, 2020

18.7.1 Fresh Water Distribution for the Expansion Project

The fresh water supply will be from Tank TK-4000, which will feed Tanks TK-9 and 10, which supply various plant areas as shown in Figure 17-1.

The water balance for the concentrator for a processing capacity of 7.3 Mt per year was developed to estimate the future consumption (make up) of fresh water for the operation. Table 18-7 shows the estimated consumption of fresh water under three scenarios.

The existing storage capacity and facilities provide sufficient water storage for the sulphide plant for approximately 3 days of operation, which is acceptable.

Table 18-7: Concentrator Fresh Water Consumption

Description	Unit	Consumptions
Nominal condition (without reclaimed water from tailings)	m^3/t	0.48
	L/s	111.50
Minimum condition (considering reclaimed water from tailings, 70/30 split, 60% Cp discharge of tailings thickener)	m^3/t	0.35
	L/s	81.30
Maximum condition (without reclaimed water from tailings, 55/45 split, 55% Cp discharge of tailings thickener)	m^3/t	0.61
	L/s	140.80

18.7.2 Water and Spills Treatment

Existing facilities at Mantos Blancos will be used to treat spills. No requirements for modifications have been identified.

18.7.3 Potable Water

Existing facilities at Mantos Blancos will be used and are sufficient for the demand.

18.8 Electrical Power Supply

Electrical energy is provided by Guacolda Energia S.A. and delivered to the Mantos Blancos Mine through a high voltage power line (220 kV) connected to the National Electrical System (Sistema Eléctrico Nacional). The contract will expire in December 2034. The Mantos Blancos site has a back-up power plant managed by an external company (ENORCHILE) which is also connected to the national supply system. The current electrical energy supply contracts are sufficient to meet the estimated future demands.

The primary distribution will be at 23 kV and medium and low voltage loads will be fed at 6.3 kV and 400 V respectively.

18.8.1 Power Distribution for New Facilities

New electrical facilities are required in the following areas:

<u>New grinding line</u>

Both circuits of the 2 x 23 kV overhead line, which connects the main substation of Mantos Blancos with the powerhouse, will be opened and connected to a 23 kV switchgear through an existing anchoring structure by means of fusible switching devices, terminal joints and cables. The 23 kV switchgear located at the planned new electrical room will be fed with two inlet cells, a circuit breaker coupled to bars and four outlet circuit breakers. The switchgear will be composed of existing cells available for re-use and will feed two planned new transformers at the electrical substation for the new grinding line and two existing transformers at the powerhouse.

The new grinding line substation will have an electrical room and distribution transformers to feed the ball mill motors and associated loads.

<u>New rougher flotation</u>

The power supply to the new rougher flotation cells (medium voltage) will come from the existing 6,000 V concentrator switchgear room.

The switchgear circuit breaker in the powerhouse will be re-used. This circuit breaker will feed a new medium voltage motor control room, which in turn will feed the new flotation cells and other equipment in the area.

A new motor control centre (400 V) will be fed through a step-down transformer. The low voltage motor control center will provide the power supply and the control for low voltage loads required by the new rougher flotation and reagent plant.

<u>New sulphide plant loads</u>

A new motor control centre (MCC) will be installed in the electrical room in the concentrator on the second floor. (400 V flotation control room). This MCC will feed all new low voltage electrical loads for the concentrator area.

<u>New tailings dewatering area loads</u>

A new electrical room will be installed behind the existing tailings switchgear electrical room (6,000/380 V), this will be a re-used container-type electrical room A new electrical room will be provided with the Project electrical equipment and ancillary services required for the operation. A new MCC is required at the existing electrical room for the tailings pumping station.

18.8.2 Demand

The maximum estimated demand for new equipment is approximately 19.5 MVA.

The maximum total demand estimated for Mantos Blancos, taking into account the new equipment, the existing equipment that will remain in operation and the equipment that will be taken out of service when the Project is commissioned, is approximately 48.6 MVA. To avoid operating the main transformers under forced ventilation for maximum demand, a permanent connection of the second 50 MW 220/23 kV unit to the system will be installed.

18.9 Communications

The mine site has a communication network of telephones and licenced UHF radio repeaters within the main pit mining area. Outside this area communication is by UHF CB radio, satellite phones and cellular phones.

18.10 General Infrastructure

The Project will continue to use the infrastructure and utilities currently in use at Mantos Blancos, including administration offices, warehouses, workshops, lunch rooms - cafeterias, fuel stations, emergency power, communication networks, power supply, process water supply, fire suppression system, potable water system, liquid and solid industrial waste treatment, access control gates and roads.

Fresh water, reclaim water and fire protection water will be obtained from existing tanks through the use of new pumps and pipelines where required.

18.10.1 Mine and Plant Site Administration and Services Building

The existing buildings at the mine and plant site include:

Administration:

- Offices
- Canteen and kitchen
- Access control gate
- Access guard house.

Operations:

- Process plant control room and dispatch office

- Change house and training building
- Mine truck maintenance shop (this will continue in use during the expansion and is capable of covering the initial requirements of the additional mine fleet for the expanded operation). In 2025 the truck maintenance shop will be relocated to provide additional capacity as the fleet increases. The cost of this is included in the estimate.

The contractors' area for the Project will be provided by using existing buildings and installing temporary site offices, workshops and portable sanitary services. The existing installations to be used are:

- Change house
- First aid and emergency
- Offices.

18.10.2 Assay Laboratory

Mantos Blancos uses external laboratories, only sampling and sample preparation are currently done on site.

18.10.3 Workshops

The existing workshop areas will be used to provide maintenance areas for:

- Mine trucks and equipment
- Light vehicles
- Mine truck wash bay
- Mine truck tire shop
- Welding shop
- Spare parts storage area
- Offices
- Change house.

18.11 Ancillary Infrastructure

18.11.1 Fire Protection

The fire detection and protection system will protect electrical and control rooms and conveyors inside the tunnel under the fine ore stockpile. Fire water will be pumped to feed the fire water network via an electrical pump with a diesel back-up pump.

18.11.2 Compressed Air Systems

The compressed air supply will be expanded to cover the requirements of the new grinding area.

18.11.3 Dust Control

The following principles have been applied to control dust emissions:

- Watering of active access roads and roads in operating areas

- Vehicle speeds will be limited on all internal and access roads
- Conveyors belts will be covered
- Dust mitigation at conveyor chutes with suppression systems installed in transfer chutes
- Dust collection system in the tunnel underneath the new mill feed stockpile.

18.11.4 Solid Waste Management

The existing facilities for management of domestic solid waste, recyclable waste, non-hazardous industrial solid waste and hazardous waste will continue in use. These existing facilities include:

- Landfill
- Recycle yard (non-hazardous industrial solid waste)
- Transitory storage yards for hazardous waste
- Storage yards for non-hazardous industrial waste
- Domestic waste and similar that is generated on the site are identified prior to final disposal in the landfill. Waste is removed for final disposal in accordance with current regulations. Materials to be disposed of will be covered as required to prevent dust generation by wind during transport. Sludge is removed from the existing sewage treatment plant and transported to the landfill in accordance with current regulations
- Final disposal of hazardous waste is done by a specialized contractor in external authorized deposits.

18.11.5 Recovery of Operational Condition of Existing Installations

Mantos Blancos has defined a program for maintenance and repair of existing equipment and installations to recover the functionality and availability to a level similar to that of new equipment, mitigating the risk of failures due to any under-standard condition. This program includes a set of technical recommendations focused on structures, mechanical components and power drives installed for each piece of process equipment and infrastructure facilities, for the current and expanded operation.

19 Market Studies and Contracts

19.1 Market Studies

Mantos Copper currently produces copper cathode from oxide ore. The cathodes are currently transported approximately 40 km to the Antofagasta International Terminal Port (ATI), located in Antofagasta, or to the Angamos port located 75 km north of Antofagasta. The cathodes grade is 99.99% Cu, they are certified under ISO 9001 and are certified Grade A by the London Metal Exchange under the symbol MB. The cathodes are exported mostly to China, South Korea and the USA.

Mantos Copper also currently produces copper concentrate that is exported through one of the above ports or trucked directly to a local smelter. The expanded plant will continue to produce copper concentrate and Mantos Blancos used metallurgical testwork results and current operating data to estimate the projected concentrate grades presented in Table 19-1.

Historical assay and testwork indicates that contained Cu and Ag would both continue to be payable in the concentrates produced. The testwork also indicates that the concentrate will continue to be clean and marketable with a low content of deleterious elements (see comment in Section 13.5).

No formal concentrate marketing studies have been carried out for the Project. Potential markets include local and international smelters and trading companies who could use Mantos Blancos concentrates for blending with concentrates containing higher levels of deleterious elements. Historical and current marketing of Mantos Blancos concentrates shows a high level of interest from local and international smelters and trading companies. As part of the recent Facility Agreement with Glencore Chile SpA for a U$150 million financing, a parallel offtake agreement was signed with Glencore International AG and Complejo Metalurgico Altonorte for 75% of the annual concentrate production to December 2026. The remaining 25% of concentrate production is available for sale to third parties.

Table 19-1: Future Copper Concentrate Specification (from Metallurgical Testwork)

Element	Unit	Typical	Minimum	Maximum
Cu	%	31.0	25.5	36.0
Ag	g/t	265.0	173.0	342.0
Fe	%	15.0	11.0	25.0
S	%	22.0	6.0	30.0
Zn	%	0.3	0.2	0.4
Pb	g/t	3,943.7	2,180.0	5,850.0
F	g/t	207.6	196.0	216.0
Cd	%	0.0	0.0	0.0
Hg	g/t	0.5	0.1	1.2
SiO_2	%	13.0	3.8	21.0
As	g/t	69.0	10.0	196.0

19.2 Smelting and Refining Terms

The commercial terms (for concentrates and cathodes) and the cathodes logistics used to support the financial analysis were provided by Mantos Copper. The commercial terms were benchmarked against similar operations from publicly available information. The main elements of the commercial terms and cathode logistics costs are summarized in Table 19-2 and Table 19-3.

Table 19-2: Commercial Terms and Cathodes Logistics

Item	Unit	Value
Cathode logistics		
Ocean freight rate	US$/t	55
Insurance rate (as % of 110% CIF revenue)	%	0.02
Port handling	US$/t	2.6
Inland freight rate	US$/t	12.26
Concentrate commercial terms		
Treatment Charge (TC)	US$/dmt	79.7
Refining Charge (RC)	USc/lb	8.0
Silver metallurgical deduction	g/t of conc	30
Silver RC	US$/oz	0.35
Silver % payable	%	90

Table 19-3: Quality Discounts

Category	Quality	Discount per Tonne (US$)
A	Visually rejected Grade A copper cathodes (excluding Category B- E)	40.00
B	Off-grade copper cathodes (S<=25 ppm) (excluding Category A)	60.00
C	Off-grade copper cathodes (Pb<=12 ppm and/or S<=40 ppm) (excluding Category A and B)	80.00
D	Off-grade copper cathodes (Pb=>12 ppm and/or S=>40 ppm) (excluding Category E)	100.00
E	Off-grade copper cathodes (impurities exceeding the limits above for Category A-D)	120.00

Mantos Blancos usually sells concentrate to the Altonorte Smelter in Antofagasta, Chile. Because the total ocean freight cost is split among the parties, under the terms of the Offtake Agreement signed with Glencore and Altonorte, the benchmark TC/RC is subject to a discount and the total freight cost is shared amongst the parties.

19.3 Commodity Price Projection

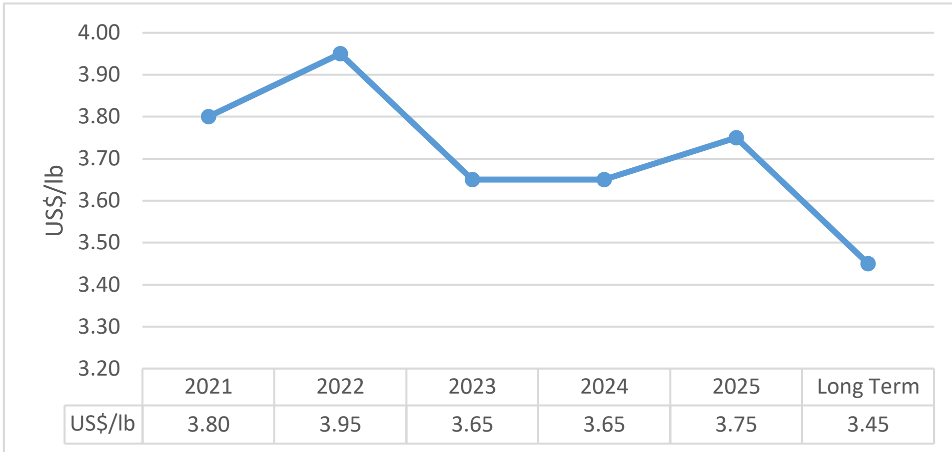
The Mantos Blancos price forecast was based on consensus metal prices that were derived from the average of the long-term price projections from a number of analyst and bank forecasts.

The long-term metal prices used for the LOM projections are summarized in Table 19-4. The LOM price forecasts by year for copper and silver are shown in Figure 19-1 and Figure 19-2, respectively. Long-term prices are assumed from 2026 until the end of the mine life.

Table 19-4: Long-term Metal Price Assumptions

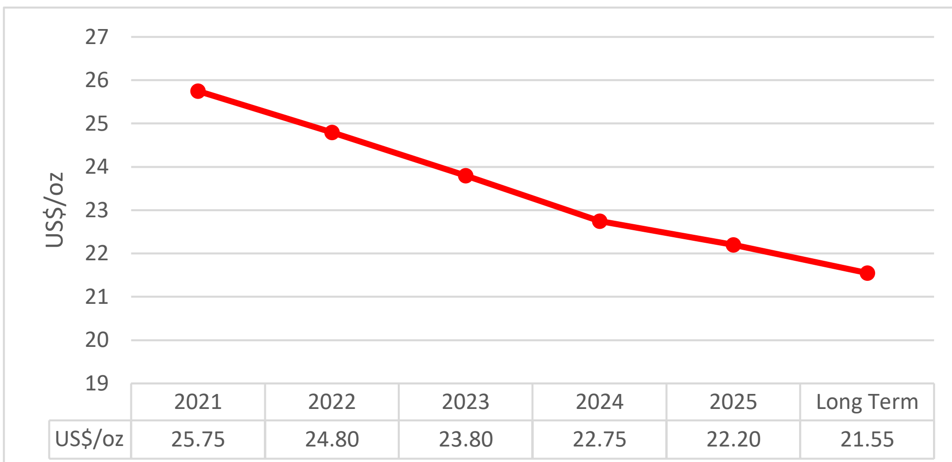
Metal	Unit	Metal Price used for the Financial Analysis
Copper	US$/lb	3.45
Silver	US$/oz	21.55

Figure 19-1: Copper Price Forecast



Note: Figure courtesy Mantos Copper, 2020

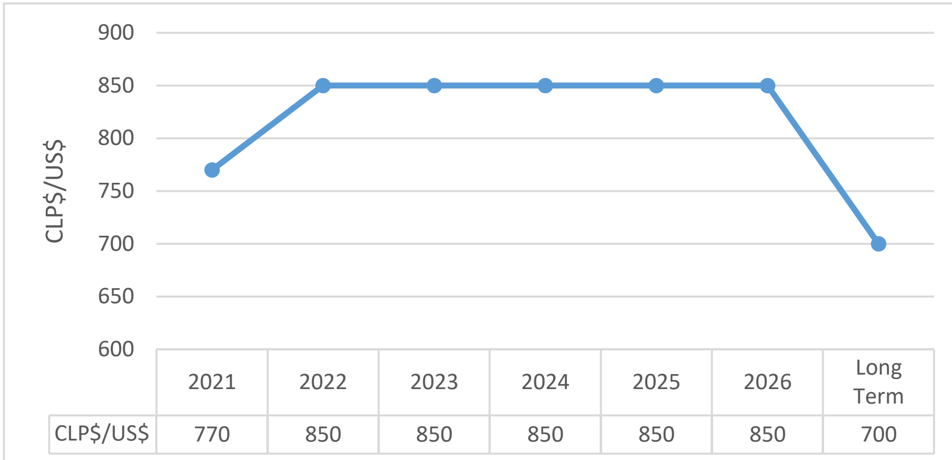
Figure 19-2: Silver Price Forecast



Note: Figure courtesy Mantos Copper, 2020

A long-term exchange rate of CLP$700 for US$1 was used in the financial analysis. The exchange rate by year is in Figure 19-3.

Figure 19-3: US$/CLP Exchange Rate by Year



Note: Figure courtesy Mantos Copper, 2020

19.4 Contracts

Contracts are based on bids where three or more bidders were invited. The proposals are evaluated considering the price, technical quality, health and safety requirements and reliability using an evaluation matrix.

Electrical power is provided under a long-term contract with Guacolda Energía S.A. The contract is valid until December 2034, with the option of being extended for 2 years by the provider.

Acid is supplied through annual contracts with a diversified supplier base comprising smelters (Potrerillos, Paipote) in the Atacama Region, smelters in the Antofagasta Region (Altonorte) and direct supply from international suppliers (Peru, Europe, other) and traders. Annual contracts are typically secured for between 90% and 100% of annual requirements. Forward looking assumptions for sulphuric acid supply, demand and price included in this report were obtained from independent expert reports (CRU, Cochilco and INCOMARE Ltda.).

Fuel is provided by Copec based on a contract that ends in November 2025.

The industrial water supply contract of 130 L/s with ADASA ends in 2023, with a clause allowing for a first renewal for 5 years to 2028, and a second extension until 2033.

Explosives are supplied by Empresa Nacional de Explosivos (ENAEX) based on a contract that ends in June 2022.

The total contractor workforce considered in the LOM plan for Mantos Blancos varies from approximately 320 to 520. These contractors operate under a number of contract terms.

It is envisaged that similar style contracts would be negotiated with the main contractors when the current contract periods end.

19.5 General Comments

The long-term metal price assumptions used in the Report, which are based on a consensus of price forecasts for those metals estimated by numerous analysts and major banks, are based on many factors that include historical experience, current spot prices, expectations of future market supply and perceived demand. Over any period of years the actual metal prices can change, either positively or negatively, from what was earlier predicted. If the assumed long-term metal prices are not realized, this could have a negative impact on the operation’s financial outcome. Equally, higher than predicted metal prices could have a positive impact. These impacts are discussed in the financial evaluation presented in Section 22.

20 Environmental Studies, Permitting and Social or Community Impact

The current Base Case is the Mantos Blancos Concentrator De-bottlenecking Project (MB-CDP).This was submitted to the Environmental Impact Assessment System (SEIA) through an Environmental Impact Statement (DIA) and was approved on 2 November 2017 by the Antofagasta Region Evaluation Commission (environmental qualification resolution (Resolución de Calificación Ambiental) RCA No. 419/2017. The approved Project considers increasing the sulphide mineral processing capacity of the Mantos Blancos operation from 4.2 Mt per year to 7.3 Mt per year. This requires changes to:

- Concentrator
- Tailings management and transportation system
- Tailings deposit
- Waste dumps.

For the transport of coarse tailings to the deposit, a grasshopper conveyor system will be added. The approved 2017 MB-CDP considered in an initial stage for transportation of coarse tailings in trucks to the tailings deposit, installing the conveyor system later. Trucking will be available for situations when the conveyor system is not available (estimated to be 7% of the time).

Before approval of the MB-CDP the design and operation of the existing sulphide mineral processing was authorized in the Environmental Impact Assessment System (SEIA) through the Environmental Impact Study (EIA) of the Santa Barbara Project. This approval was issued by the Antofagasta Region COREMA, through Exempt Resolution No. 165 dated 26 April 1995. Later, the operation was expanded and authorized by SERNAGEOMIN by Resolution No. 2991, 30 December 2002.

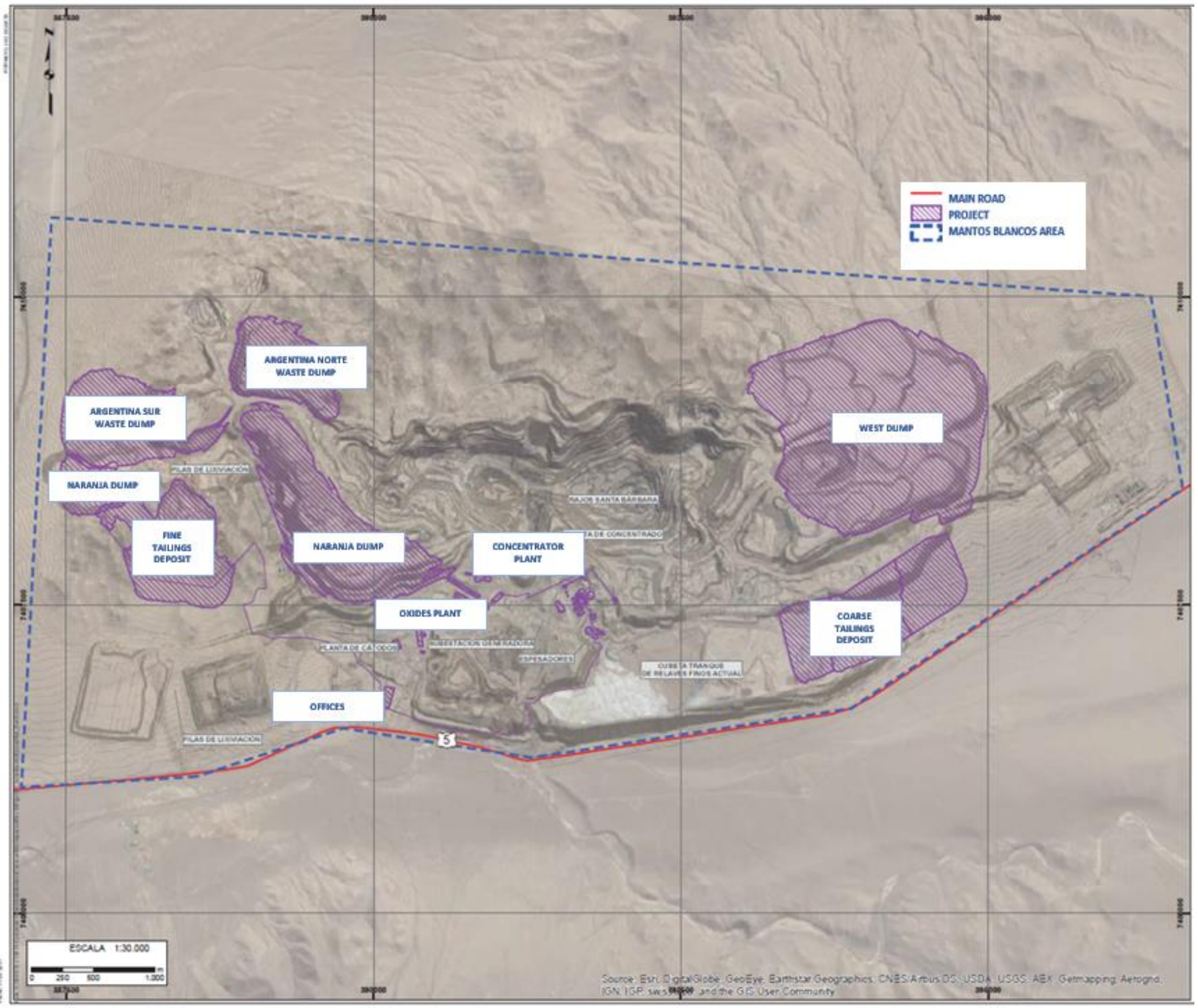
The Mantos Blancos Mercedes and East waste rock dumps were approved by RCA N° 165/1995. The Argentina North waste rock dump was approved by RCA N° 80/2011 and SNGM N° 0322/2010, the Naranja waste rock dump (Phase 8) was approved by RCA N° 189/2010 and SNGM 3848/2011, and the Argentina South (West) waste rock dump was approved by RCA N° 189/2010, RCA N° 80/2011 and SNGM 834/2011.

Mantos Blancos submitted a DIA for the tailings optimization project. This was approved by RCA N° 101/2016, which was modified by Exempt Resolution N° 175/2016.

The Mantos Blancos oxide operation is based on three different leaching processes (vat leach, ROM and dump leach) with a capacity to produce up to 60 ktpy of fine copper in cathodes. Treatment for sulphide minerals started in 1981 with the start-up of the sulphide concentrator. This is a conventional concentrator designed to process 4.2 Mtpa using comminution and flotation.

The site layout for the MB-CDP is shown in Figure 20-1 and the facilities and installations with environmental approvals are listed in Table 20-1.

Figure 20-1: Mantos Blancos Concentrator Debottlenecking Layout



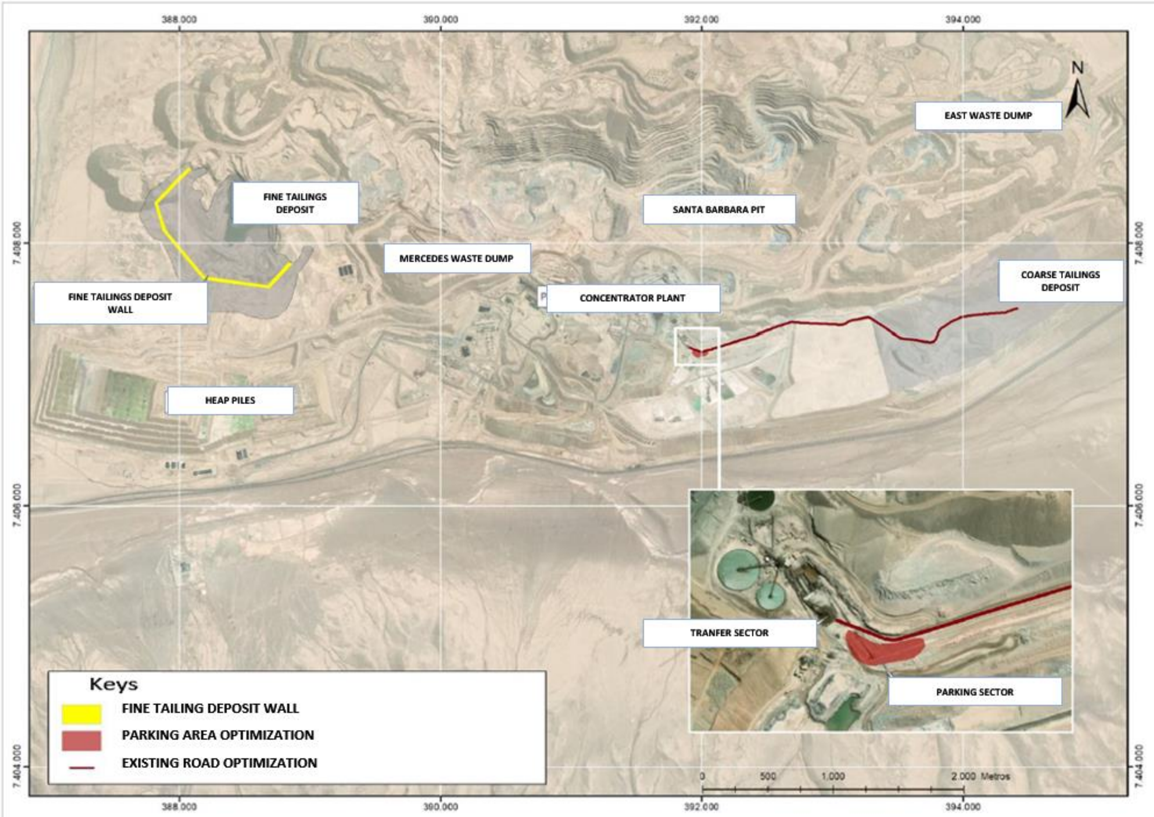
Note: Figure courtesy Mantos Copper, 2020

Table 20-1: List of Installations and Facilities Modified by RCA 419/2017

Installations and Facilities Modified by RCA 419/2017	Original Environmental Authorizations (RCAs)
Fine tailings deposit	Mantos Blancos Tailings Disposal Optimization Project. (RCA N° 101/2016)
Coarse tailings deposit	Mantos Blancos Tailings Disposal Optimization Project. (RCA N° 101/2016)
Waste Dumps	Santa Barbara Project (RCA 165/1995) Mercedes Waste Dump
	East Dump (Res. SNGM N° 0322/2010) with an authorized capacity of 435 Mt, Santa Barbara Project (RCA 165/1995) Santa Barbara Expansion Project" (RCA 80/2011)
	Santa Barbara Expansion Project (RCA 80/2011) Argentina North Dump
	"Santa Barbara Expansion Project (RCA 80/2011) Argentina South Dump
	Santa Barbara Project - Phase 8 Naranja Dump (Phase 8) (RCA 189/2010)
Mill	Santa Barbara Project (RCA 165/1995) • Primary crushing • Secondary crushing • Tertiary crushing • Transport to grinding • Rougher flotation • Regrind • Cleaner Flotation • Concentrate thickening • Concentrate Filtering

Recently, by RCA 49/2021, Mantos Blancos received approval of the environmental impact statement (DIA) for the Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit Project. The objectives of this project are to permanently maintain the alternative of transport of coarse tailings in trucks and modifying the wall construction method of the fine tailings deposit from a conventional barren rock wall to a reinforced earth wall. The layout approved for the project is shown in Figure 20-2.

Figure 20-2: Layout of the Tailings Area



Note: Figure courtesy Mantos Copper, 2020

20.1 Baseline Studies

Baseline studies were carried out before the submission of the 2017 MB-CDP DIA and the 2020 Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit Project. The following baseline surveys were completed:

- Physical media
  - Climate and meteorology
  - Air quality
  - Noise
  - Geology, geomorphology and geological risks
  - Soils
  - Vibration
- Water
  - Hydrology
  - Hydrogeology
- Land ecosystems
  - Flora and vegetation

    - Fauna
- Cultural heritage and archaeology
- Landscape
- Human environment and community.

20.2 Environmental Considerations and Monitoring Programs

Mantos Copper has stated that it is of the opinion that its projects will not:

- Present health risks due to the quantity and quality of effluents, emissions or residues
- Have a significant impact on the location of populations, resources and protected areas, priority sites for conservation, protected wetlands and glaciers, or affect the environmental value of the territory in which the operations are located
- Generate a significant alteration to the landscape of the area
- Generate any significant alterations to cultural heritage.

However, there is the potential for the operations to impact the air quality. Mantos Blancos has incorporated mitigation measures including dust suppression and collection and dust control on roads, including the following:

- Excavation and fill areas are humidified during construction, emissions control efficiency has not been estimated
- Machinery and vehicles are kept in good condition and no further emission control is considered, the control efficiency been estimated
- Bischofita (magnesium chloride) is applied to all dirt roads, this is estimated to have a control efficiency of 75%.

During operations atmospheric emissions are mainly from the operation of the crushing plant and the mine area. The main dust control measures for these operations are:

- Sprinklers for control of particulate matter emissions from primary crushing
- Encapsulation of secondary and tertiary crushers and screening
- Use of a dust suppressant at conveyor transfer points
- Encapsulated ore stockpile storage.

20.3 Waste Rock Storage Facilities

Low-grade oxide material and secondary leach pad facilities will continue to be used for dump leaching.

There are currently five dumps for the collection of waste rock material: Mercedes Dump, East Dump, North Argentina, South Argentina (West) and Naranja (Phase 8). These waste dumps will provide storage for the waste from the Santa Barbara pit. For the operation of the Debottlenecking Project, the capacity of the East dump will be increased creating a new Argentina waste dump (which will overlap with areas occupied by the current Argentina South (West) and Naranja dumps). There will also be an adjustment in the design of the Mercedes dump.

20.4 Tailings Storage Facilities

Coarse tailings will be deposited in the CTDosit, which will reach a total capacity of approximately 68.6 Mt (41.5 Mm³) at the end of the operation, with five filling stages, reaching an elevation of 942 masl; the maximum deposition rate is 5.5 Mt per year of thickened tailings.

The initial approved project considered building the walls (main and auxiliary) of the fine tailings dam with waste material from the mine, using a conventional construction method, with upstream and downstream slopes of 2:1 (H: V). The construction of the wall will require 17.3 Mm³ of ROM waste material, reaching a maximum elevation of 932 masl.

The approved capacities of the two tailings deposits are shown in Table 20-2.

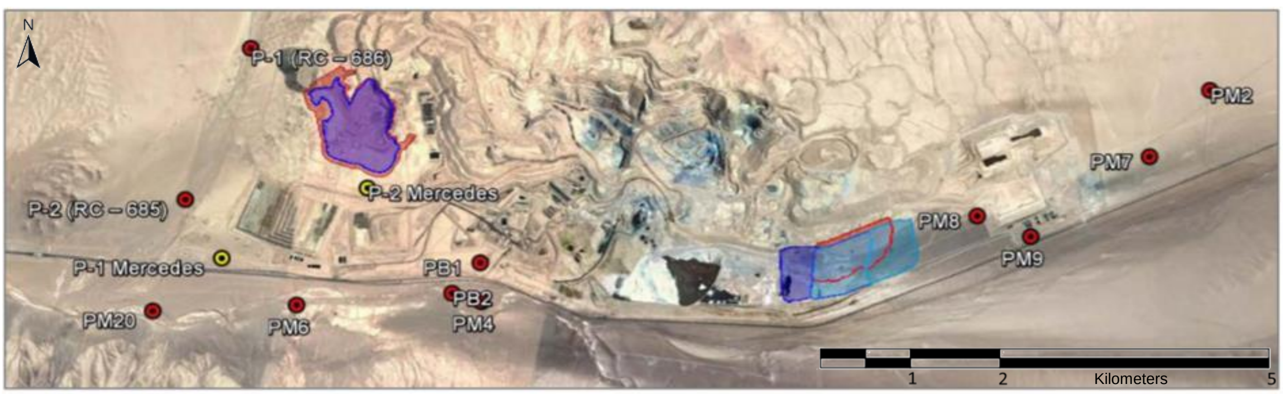
Table 20-2: Approved Tailings Deposit Capacities

Tailing Deposit	Capacity Approved by RCA 101/2016	Capacity Approved by RCA 419/2017
Fine tailings deposit	21 Mt (15.54 Mm³)	28.5 Mt (21.4 Mm³)
Coarse tailings deposit	55 Mt (33.37 Mm³)	68.6 Mt (41.5 Mm³)

Note: Based on Comparative Capacities of the Tailings Deposits - Table 8 first Addendum Debottlenecking DIA

There is an underground water monitoring system for the tailings deposits with 14 wells (see Figure 20-3).

Figure 20-3: Location of the Environmental Monitoring Wells



Note: Figure courtesy Mantos Copper, 2020

20.5 Water Management

20.5.1 Process Water

Industrial water is provided by external companies (Aguas de Antofagasta and FCAB). There is a distribution network on the site and water is also transported in tank trucks to work areas where there is no distribution system.

Eventually, it is planned to provide industrial quality water obtained by desalination of sea water (extracted from points authorized by the Antofagasta Harbour Master's Office). When industrial water is purchased from other sources a record of the supplier and the origin of the water are requested prior to contracting to ensure that the supplier has the sectoral and environmental authorizations according to current regulations.

A portion of the process water will be water reclaimed from the fine tailings deposit. This water will be pumped to the reclaim water distribution tank for re-use. The planned increase in production and tailings deposit capacity, together with the improvement in moisture reduction of the tailings will allow an increase in recovered water from the tailings deposits. Water recovered from the fine tailings thickeners will also be recirculated as process water. Additional industrial water may come from the sewage treatment plant after treatment.

20.5.2 Potable Water

Mantos Blancos has a water purification plant (certified by Sanitary Resolution No. 0370-2019). This plant stores potable water in tanks for distribution within the site and has the capacity to supply 15 m^3/h (360 m^3/day), in accordance with current regulations this can supply up to 2,400 workers.

20.5.3 Non-Contact Water

At the fine tailings deposit run-off water expected for 50 and 100 years return periods (i.e. rainfall) will be contained in the tailings facility. At the coarse tailings deposit collection area and possible run-off water flows are negligible and will be absorbed into the area.

20.5.4 Contact Water

The tailings deposit currently in operation has no potential for the generation of acid drainage. The tailings deposit has a drainage system to capture the water coming from any potential leaks through the main wall and from the deposit both into the natural terrain and the walls. Any recovered contact water is collected in sump and returned to the deposit or recycled back to the process.

The Mantos Blancos operation is located over the Sierra Gorda aquifer which has poor quality baseline and no downstream users due to the poor condition. The Mantos Blancos RCAs have committed to continuous monitoring of underground water physiochemical conditions and the water table level. A model of this underground aquifer was included in the latest environmental submission for the tailings areas. The model indicates that this aquifer receives natural contributions from the east and south and includes anthropic contributions from infiltrations generated by the Mantos Blancos operations due the permeability of the soils in this area. The geomorphology of the aquifer presents an upper level of the water table in front of the western part of the previous fine tailing deposit, before the natural contribution from the south.

Increases in the water table level and deformations in the Panamericana highway required a by-pass of 500 m in this area to prevent vehicle accidents. The Environmental Authority (SMA, Superintendencia de Medio Ambiente) carried out field analysis using superficial pits and requested Mantos Blancos for analysis and information.

The SMA requested urgent measures by Mantos Blancos which included: a) making an isotopes study of water and sulphates in the underground water; b) a feasibility study for a hydraulic barrier and c) further engineering studies of geological and geotechnical conditions in the area, including drilling, geophysics and other technical investigations.

Mantos Blancos delivered the first responses to the Environmental Authority request on 11 August 2021. The Urgent and Transitory Measures (MUT) were developed within 30 days after the Exempt Resolution N° 1538/2021 (delivered on 6 July 2021, notified on 8 July 2021) with 5 days to deliver the report for the advanced activities. On 30 September 2021 Mantos Blancos submitted the report in response to item a) of the MUTs.

Mantos Blancos is carrying out the studies requested by the SMA to better understand the origins and causes of the road deformation. Currently expenditures are less than U$3M, some of these costs are already part of the regular controls and monitoring systems.

20.6 Permitting

Chilean mining projects require sectoral and environmental permits prior to construction, ramp-up and operation. The expansion at Mantos Blancos will require additional sectoral and environmental permits to those already granted for the operating mine.

20.6.1 Granted Environmental Permits

The Base Case was approved for the MB-CDP by RCA 419/2017 to increase throughput from 4.2 Mt per year to 7.3 Mt per year of sulphide minerals.

A list of the approved RCAs (environmental permits) is provided in Table 20-3.

Table 20-3: List of Approved RCA Environmental Permits

Project		Resolution/Year.
Santa Barbara Pit	EIA	165/1995
Low Grade Dump Leaching (East Dump)	DIA	45/1999
West Dump	DIA	109/2003
Dynamic 2 Leaching	DIA	111/2007
Secondary Leaching (LSR)	DIA	127/2008
Santa Barbara Phase 8	DIA	189/2010
Mercedes Project	DIA	62/2011
Santa Barbara Expansion	DIA	80/2011
Fuel Station DMBL	DIA	140/2011
Dynamic 2 Leaching Modification	DIA	641/2014
Optimization of Tailings Deposit	DIA	101/2016
Concentrator Debottlenecking	DIA	419/2017
Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit	DIA	49/2021
EIA: Environmental Impact Assessment; DIA: Environmental Impact Declaration		

Mantos Blancos has developed a Master Plan for Sectoral Permits, to ensure that the supporting documentation is provided to the regulatory authorities so that the correct permits are applied for, granted and maintained. This plan includes the following activities:

- Identify the permits that are required
- Identify the technical and administrative requirements before requesting the permit
- Prepare applications and send documentation to the relevant authorities
- Receipt of approvals and authorizations
- Establish documentation and administrative protocols for approvals granted.

It is estimated that at least 41 separate permits will be required for the De-bottlenecking Project. Mantos Blancos has reasonable prospects of obtaining the environmental and sectoral permits (PAS, Permiso Ambiental Sectorial) in time. The main PASs are listed in table 20-4.

Table 20-4: Sectoral Permits for RCA 419/2017 and RCA 49/2021

Permit	RCA	Description
PAS 135	419/2017	Permit for the construction and operation of tailings deposits to modify the deposition of fine tailings. (Required by 2022)
PAS 136	419/2017	Permit for the new waste dumps (approved)
PAS 137	419/2017	Permit for the new Closure Plan, due to modifications at the mine site. (Required by 2022)
PAS 155	419/2017	Permit for the construction of hydraulic works, required by 2024, to modify the fine tailings deposit
PAS 160	419/2017	Permission to build outside the urban limits, as new electrical rooms are incorporated (approved)
PAS 135	49/2021	Permit for the construction and operation of tailings deposits to modify the construction method of the last stage of the dam wall for the fine tailings deposit
PAS 155	49/2021	Permit for the construction of hydraulic works, required by 2024, to modify the fine tailings deposit

20.7 Closure Plan

The Closure Plan was approved by SERNAGEOMIN on 24 June 2019, by Exempt Resolution N° 1670/2019. The Plan was prepared using the requirements and guidelines of the Chilean mining safety standard, Supreme Decree No. 72/1985 of the Ministry of Mining, which was amended by Supreme Decree No. 132/2002, Law No. 20,551/2011, which regulates the closure of mining operations and Supreme Decree No. 41/2015.

The Closure Plan follows the provisions in the Mantos Blancos RCAs and describes the measures that must be undertaken for closure and reclamation. The Closure Plan does not yet include the RCAs for the Concentrator Debottlenecking (DIA 419/2017) and Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings Deposit (DIA, 49/2021).

The Closure Plan (2019) will be updated to incorporate the changes approved by the Concentrator Debottlenecking Project and the Modification of Coarse Tailings Transportation and Optimization of the Construction Method of the Wall of the Fine Tailings. Mantos Blancos is developing the new file to be submitted to the Mining Authority in 2021.

The existing Closure Plan (2019) for Mantos Blancos has an estimated closure and post-closure cost of 1,735,927 UF (approximately US$79.3 M) for the existing installations.

20.7.1 Physical and Chemical Stability

Closure measures regarding the physical stability consider the occurrence of seismic events of great magnitude and intense rainfall. Closure measures aim at stabilization if necessary by re-profiling part of the sloped areas.

For the leach areas and waste rock facilities, when the closure phase starts, the Plan includes analyzing the composition of the materials remaining on the surface of the facilities and solution management. Channels and ponds will be constructed to divert and manage surface runoff.

20.7.2 Closure Actions for Dismantling or Securing Stability

Prior to dismantling and demolition the Plan assumes removal of all powered infrastructure. All equipment, wiring and in general all elements installed in all areas will be dismantled and removed. Concrete foundations that cannot be demolished will be covered and/or backfilled by a layer of granular material and profiling works will be executed. There will be no visible constructed facilities, structures or equipment except for the facilities, structures or equipment used for post-closure activities.

The final slopes in the open pit will be retained, allowing the inter-bench and overall slopes to naturally acquire a stable long-term condition. A berm or parapet wall will be constructed around the open pit and subsidence areas so that access by vehicles and pedestrians is blocked.

20.7.3 Contaminated Soil Management

An assessment of soil on surface that might have been contaminated by spillage of hazardous materials will be completed at the end of the mining operation. Any soils contaminated with hydrocarbons will be removed and treated as hazardous waste.

20.7.4 Non-Contact Water Management

The plan is to extend the non-contact water management plan developed for the operations stage. Due to the dryness of the area and the high evaporation rate at the perimeter of the TSF, the operations perimeter water intake for collecting sporadic rainfall will not be required in the long term. The water intake does not pose a significant risk to people and the environment, therefore, it will be restored naturally by erosion and sediment accumulation.

20.7.5 Contact Water Management

Considering meteorological factors, ground water depth, absence of acid drainage from the dumps and pits and implemented impermeabilization measures, no provision is required for the flow of acidic water or water with high concentrations of metals towards surface or ground water resources.

20.7.6 Post-Closure

In global terms, Mantos Blancos post-closure activities will last for 5 years, except for the monitoring of PM-10 that will last for 1 year and the monitoring of ground water associated with the sanitary landfills which will last for 20 years (based on the provisions of Article 55 of Supreme Decree No. 189/2005 Regulation on Basic Sanitary and Safety Conditions in Sanitary Landfills).

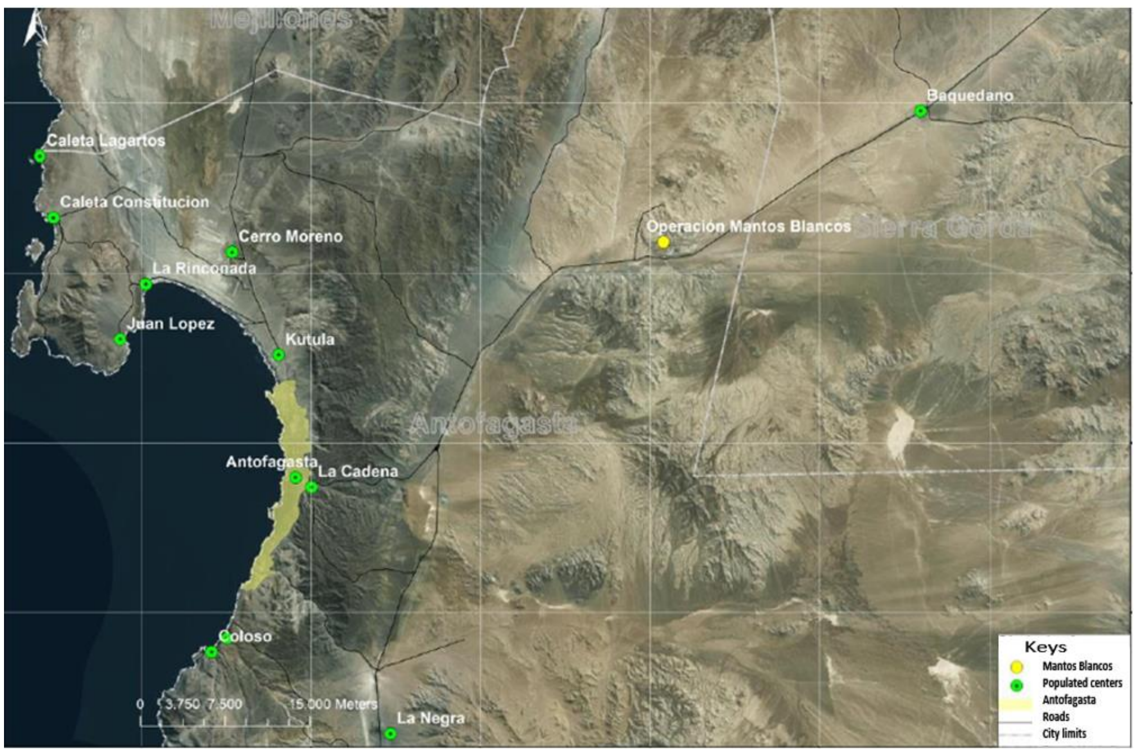
Ground water monitoring will be carried out for the mine site using the existing wells located upstream and downstream of the leach piles (East Dump, Dynamics II, Secondary Gravel and Mercedes ROM) and the tailings deposits (FTD and CTD).

20.8 Consideration of Social and Community Impacts

The Mantos Blancos area of influence includes the city of Antofagasta and the village of Baquedano (a small community of 900 people located 20 km northeast of the mine) (see Figure 20-4).

Mantos Blancos does not intervene, use or restrict access to natural resources which could be used as economic sustenance for any human group or for any other traditional use, such as medicinal, spiritual or cultural use. There are no indigenous communities or indigenous human groups in the vicinity, nor does Mantos Blancos affect the exercise or manifestation of traditions, culture or community interests.

Figure 20-4: Location of Mantos Blancos and Population Centres



Note: Figure courtesy Mantos Copper, 2020, based on the Mantos Blancos Mine Closure Plan

21 Capital and Operating Costs

21.1 Capital Cost Estimates

The capital cost estimate for Mantos Blancos was developed by Mantos Copper.

21.1.1 Stay in Business (SIB) Capital

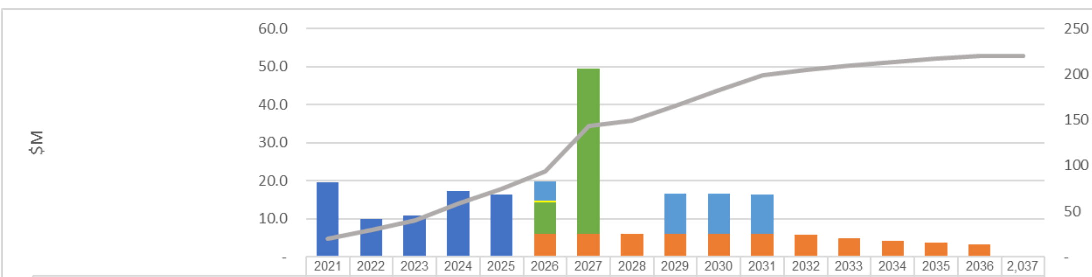
Over the LOM the stay in business (SIB) capital cost is estimated to be US$220.6 M.

Table 21-1 and Figure 21-1 summarize the sustaining capital by year divided into Mine Equipment and Other Fixed Assets (tailings dam, infrastructure, deferred investment, long-term SIB).

Table 21-1: Stay in Business Capital Costs

SIB Capex	Mine Equipment (US$M)	Other Fixed Assets (US$M)	Total (US$M)
2021	-	19.6	19.6
2022	-	9.9	9.9
2023	-	10.9	10.9
2024	-	17.3	17.3
2025	-	16.5	16.5
2026	5.0	14.8	19.8
2027	-	49.4	49.4
2028	-	6.0	6.0
2029	10.5	6.1	16.6
2030	10.5	6.0	16.5
2031	10.5	5.9	16.4
2032	-	5.7	5.7
2033	-	4.9	4.9
2034	-	4.1	4.1
2035	-	3.7	3.7
2036	-	3.3	3.3
2037	-	0.0	-
LOM	36.5	184.1	220.6

Figure 21-1: Stay in Business Capital Cost by Year



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2,037
Mine Equipment	-	-	-	-	-	5.0	-	-	10.5	10.5	10.5	-	-	-	-	-	-
Tailing Dam	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-
Infraestructure	19.6	9.9	10.9	17.3	16.5	-	-	-	-	-	-	-	-	-	-	-	-
Deferred MB Investments	-	-	-	-	-	8.2	43.3	-	-	-	-	-	-	-	-	-	-
SIB Largo Plazo (3% del Costo Directo)	-	-	-	-	-	6.0	6.1	6.0	6.1	6.0	5.9	5.7	4.9	4.1	3.7	3.3	-
Cumulative Total SIB	20	29	40	58	74	94	143	149	166	183	199	205	210	214	217	221	221

Note: Figure courtesy Mantos Copper, 2020

21.1.2 Tailings Facilities Expansion Sustaining Capital

The fine tailings storage expansion cost estimate was prepared by Hatch during the feasibility stage and adjusted by Mantos Copper based on the current Project conditions. Costs include: earthworks, supply and installation of materials for the fine tailings dam wall height in 2027; pumping system expansion in 2024 (both are deferred investments). Costs are also included for contractor mobilization and demobilization, overhead and profit, indirect costs, design and construction management.

It is assumed that waste rock will be supplied from the open pit by the Mantos Blancos mine fleet. The waste rock will be delivered to the fine tailings dam with no additional haul costs considered in the estimate.

21.1.3 Expansion Capital

Expansion capital totals US$71.2 M between 2021 and 2022 and it is divided into Pre-stripping and Other Fixed Assets. There is no expansion capital for mine equipment over the mine life.

The expansion capital by year is summarized in Table 21-2

Table 21-2: Expansion Capital Cost by Year

Expansion Capex	Unit	2021	2022	LOM
Mine equipment	US$M	-	-	-
Other fixed assets	US$M	57.8	1.5	59.3
Pre-stripping	US$M	11.9	-	11.9
Total	US$M	69.7	1.5	71.2

21.2 Operating Costs

Mantos Blancos has been in operation for over 60 years. Most of the supporting information and assumptions for the operating cost estimates are derived from information collected over the past 24 months of operation.

21.2.1 Mining Cost

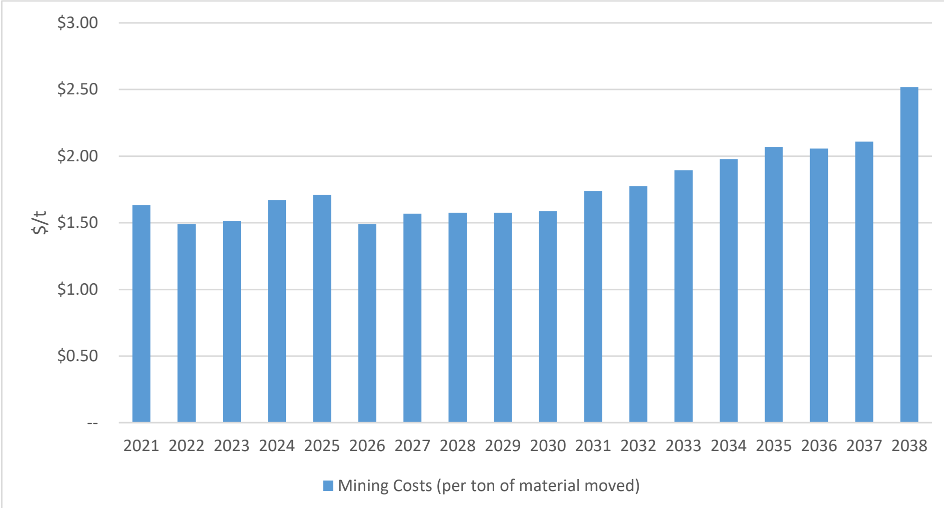
Mine operating costs are summarized in Table 21-3 and Figure 21-2.

Table 21-3: Mining Costs

Item	Unit	LOM Total
Labour	US$M	287
Diesel	US$M	319
Explosives	US$M	78
Rock Movement by Contractor	US$M	0
Spares & Tires	US$M	34
Variable Services Contract	US$M	57
Fixed Services Contract	USM	24
Pre-stripping	US$M	-12
Other Variable Costs	US$M	233
Other Fixed Costs	US$M	416
Mining Cost	US$M	1,436
Mining Cost	US$/t Material Moved	1.67

*Note: Pre-stripping is removed from total mining cost because it is considered part of capital cost.

Figure 21-2: Mining Costs by Year



Note: Figure courtesy Mantos Copper, 2020

21.2.2 Oxide and Sulphide Processing Costs

The total processing costs are estimated to be US$1,390 M. The average sulphide plant cost is US$10.8/t of ore processed and the average oxide plant cost is USc245.7/lb of cathode produced.

The process operating costs forecast by material are summarized in Table 21-4 and Table 21-5.

Table 21-4: Oxide Plant Processing Cost

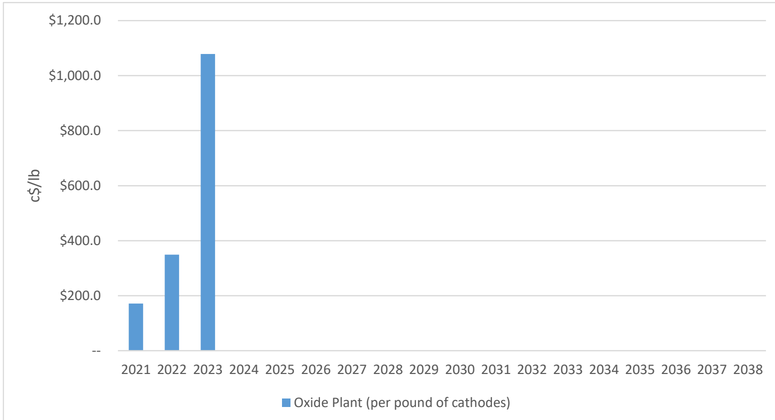
Item	Unit	LOM Total
Labour	US$M	13
Power	US$M	4
Acid	US$M	17
Water	US$M	4
Other variable costs	US$M	2
Other fixed costs	US$M	35
Oxide Plant Processing Cost	US$M	74

Table 21-5: Sulphide Plant Processing Cost

Item	Unit	LOM Total
Labour	US$M	225
Power	US$M	229
Grinding media	US$M	93
Liners	US$M	0
Lime	US$M	0
Reagents	US$M	2
Water	US$M	173
Other variable cost	US$M	240
Other fixed costs	US$M	344
Sulphide Plant Processing Cost	US$M	1,306

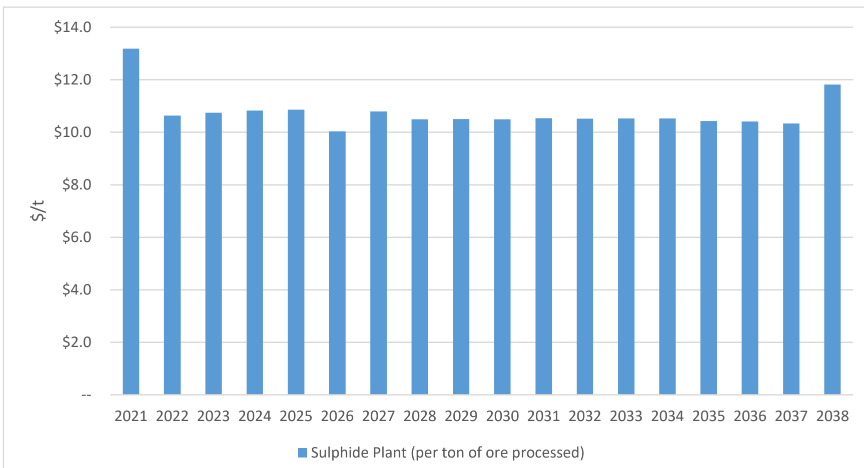
The estimated oxide and sulphide plant operating costs by year are shown in Figure 21-3 and Figure 21-4, respectively.

Figure 21-3: Oxide Processing Cost by Year



Note: Figure courtesy Mantos Copper, 2020

Figure 21-4: Sulphide Processing Cost by Year



Note: Figure courtesy Mantos Copper, 2020

21.2.3 G&A Costs

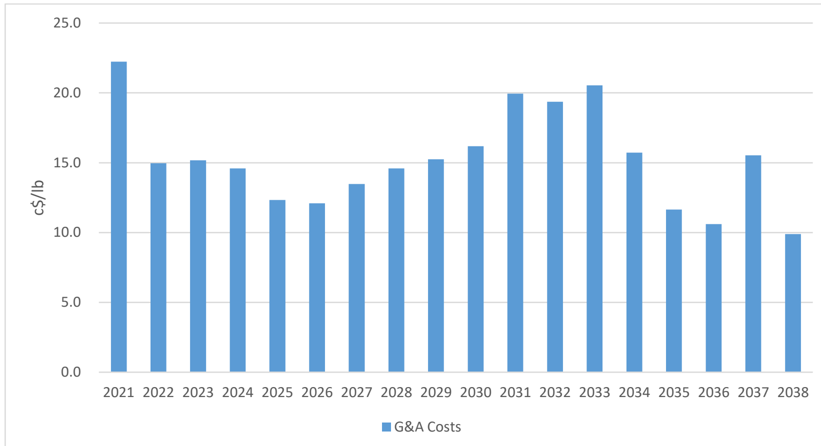
The G&A cost forecast is provided in Table 21-6. The annual average is USc15.5/lb of Cu.

Table 21-6: G&A Cost

Item	Unit	Total LOM
Labour	US$M	41
Other Fixed Costs	US$M	202
RCA Costs	US$M	0
G&A	US$M	243

The G&A costs by year are shown in Figure 21-5.

Figure 21-5: G&A Cost by Year



Note: Figure courtesy Mantos Copper, 2020

21.2.4 Other Operating Expenses

Other operating expenses forecast are summarized in Table 21-7.

Table 21-7: Other Operating Costs

Item	Unit	Total LOM
Other Operating Expense	US$M	7.2
CAT IV Explorations	US$M	7.0
Total	US$M	14.2

22 Economic Analysis

22.1 Cautionary Statement

Certain information and statements contained in this section are “forward looking” in nature. Forward-looking statements include, but are not limited to, statements with respect to the economic and feasibility-level parameters of the Project; mineral reserve estimates; the cost and timing of any Project development; the proposed mine plan and mining method; dilution and mining recoveries; processing method, production rates; projected metallurgical recoveries; infrastructure requirements; capital, operating and sustaining cost estimates; the projected life of mine and other expected attributes of the Project; the net present value (NPV) and payback period of capital; future metal prices; the timing of the environmental assessment process; changes to the Project configuration that may be requested as a result of stakeholder or government input to the environmental assessment process; government regulations and permitting timelines; reclamation obligations estimates; requirements for additional capital; environmental risks; general business and economic conditions.

All forward-looking statements in this Report are necessarily based on opinions and estimates as of the date such statements are made and are subject to important risk factors and uncertainties, many of which cannot be controlled or predicted. Material assumptions regarding forward-looking statements are discussed in this section, where applicable. In addition to, and subject to, such specific assumptions discussed in more detail elsewhere in this Report, the forward-looking statements in this section are subject to the following assumptions:

- There being no significant disruptions affecting the development and operation of the Project
- Exchange rates being approximately consistent with the assumptions in the financial analysis
- The availability of certain consumables and services and the prices for power and other key supplies being approximately consistent with assumptions in the financial analysis
- Labour and materials costs being approximately consistent with assumptions in the financial analysis
- Permitting and arrangements with stakeholders being consistent with current expectations
- All environmental approvals, required permits, licences and authorizations will be obtained from the relevant governments and other relevant stakeholders within the expected timelines
- Certain tax rates, including the allocation of certain tax attributes, being applicable to the Project
- The availability of financing for Mantos Blancos’ planned development activities
- The timelines for development activities on the Project
- The production schedule and financial analysis annualized cash flow table are presented with conceptual years shown. Years shown in these tables are for illustrative purposes only and are based on the anticipated Project schedule.
- The Mantos Blancos operation is located over the Sierra Gorda aquifer which has poor quality baseline and no downstream users due to the condition. The Mantos Blancos RCAs have committed to continuous monitoring of underground water physiochemical conditions and the water table level. A model of this underground aquifer was included in the latest environmental submission for the tailings areas. The model indicates that this aquifer receives natural contributions from the east and south and includes anthropic contributions from infiltrations generated by the Mantos Blancos operations due the permeability of the soils in this area. The geomorphology of the aquifer presents an upper level of the water table in front of the western part of the previous fine tailing deposit, before the natural contribution from the south.

Increases in the water table level and deformations in the Panamericana highway required a by-pass of 500 m in this area to prevent major car accidents. The Environmental Authority (SMA, Superintendencia de Medio Ambiente) carried out field analysis using superficial pits and requested MB for analysis and information. The SMA requested urgent measures by Mantos Blancos which included: a) making an isotopes study of water and sulphates in the underground water; b) a feasibility study for a hydraulic barrier and c) further engineering studies of geological and geotechnical conditions in the area, including drilling, geophysics and other technical investigations. Mantos Blancos delivered the first responses to the Environmental Authority request on 11 August 2021. The Urgent and Transitory Measures (MUT) were developed within 30 days after the Exempt Resolution N° 1538/2021 (delivered on 6 July 2021, but notified on 8 July 2021) with 5 days to deliver the report for the advanced activities. On 30 September 2021 Mantos Blancos submitted the report in response to item a) of the MUTs. Mantos Blancos is carrying out the studies requested by the SMA to better understand the origins and causes of the road deformation. Currently expenditures are less than U$3M, some of the costs are already part of the regular controls and monitoring systems.

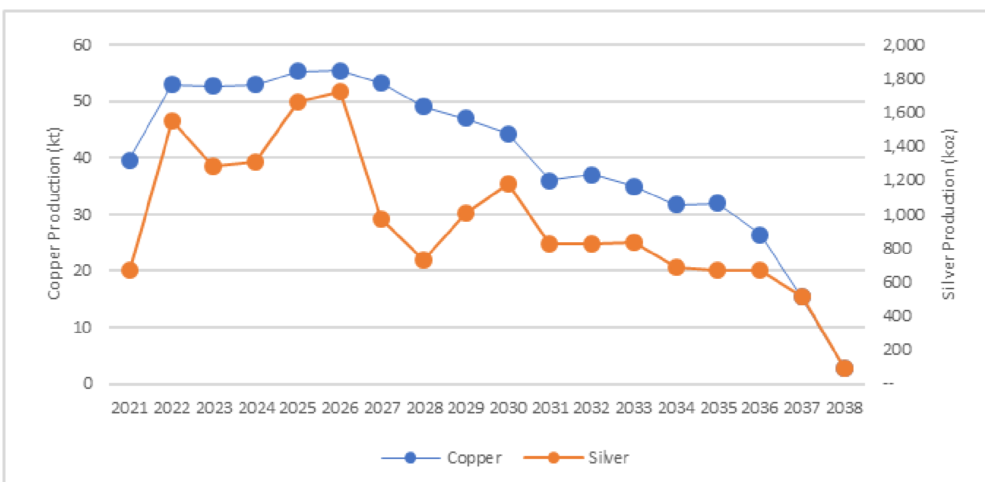
22.2 Project Definition

The financial analysis presented in this section includes the expansion of the concentrator plant from 4.4 Mt per year to 7.3 Mt per year. As result of this expansion, the mine life of Mantos Blancos is extended until 2038.

Cathode production will continue until 2023, treating material from the current oxide operations, stockpile re-handling and from some sulphide phases in the pit.

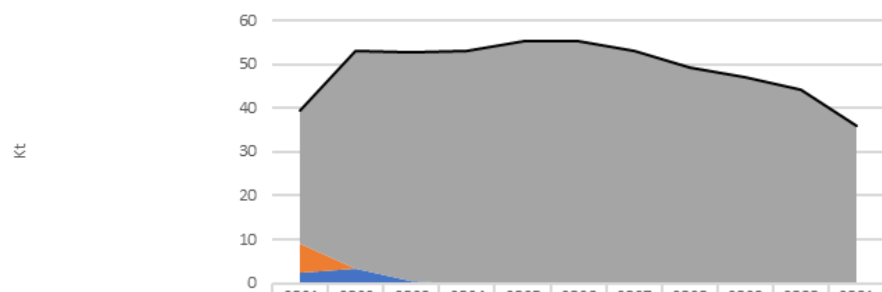
The projected copper and silver production profiles over the LOM are shown in Figure 22-1 and Figure 22-2 shows the first 10 years of copper production (starting in 2021), the average production is 50.2 kt per year.

Figure 22-1: Copper and Silver Production by Year



Note: Figure courtesy Mantos Copper, 2020

Figure 22-2: Projected Copper Production



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Concentrate	30.5	49.6	52.1	52.9	55.3	55.3	53.2	49.1	47.0	44.2	35.9
Mercedes - Oxides	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Entrefases - Oxides	2.3	3.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Copper Production	39.6	52.9	52.7	52.9	55.3	55.3	53.2	49.1	47.0	44.2	35.9

Note: Figure courtesy Mantos Copper, 2020

22.3 Methodology Used

The financial analysis was performed by Mantos Copper using Excel models.

The Project has been valued using a discounted cash flow (DCF) approach. Estimates have been prepared for individual elements of cash revenue and cash expenditures for ongoing operations.

Capital cost estimates include remaining development and construction of the De-bottlenecking Project which started in 2019. In addition to the initial capital cost, SIB capital was included (sustaining capital) from the year 2021. Cash flows are assumed to occur at the mid-point of each period.

The resulting net annual cash flows are discounted back to the date of valuation (31 December, 2020). The currency used to document the cash flow is Q4 2020 US$, considering that the estimation was prepared in the fourth quarter of 2020.

NCL and the QP have reviewed the Base Case developed by Mantos Copper. NCL's review to the financial model focused on consistency and specific items such as: valuation date, long-term prices for copper and silver, and long-term exchange rate (CLP/US$). Additionally, amendments to the existing Osisko Silver Purchase Agreement and the copper royalty agreement with Anglo Pacific Group plc were included in the model, as described in Section 4.

22.4 Financial Model Parameters

22.4.1 Mineral Reserves and Mine Life

The financial model uses the Mineral Reserve Estimate in Section 14.14 of this Report.

The mine plan results in plant throughput rates of 20 kt per day (7.3 Mt per year) for sulphide material. The oxide and sulphide feeds in the mine plan are summarized in Table 22-1.

The production program for sulphide material includes a ramp-up period of 5 months (October 2021 – February 2022) until full production rate of 20 kt/d is reached. Steady-state production will then be maintained for 17 years.

Table 22-1: Mine Production Plan Basis

Item	Unit	Sulphide	Oxide
Tonnage	kt	122,614	11,336
Cu Grade	%	0.69	0.24
Ag Grade	g/t	5.66	-

22.4.2 Metallurgical Recoveries

The average recoveries for each of the payable metals over the proposed life of mine are provided in Table 22-2. Information on metallurgical testwork and projected recoveries is included in Section 13.

Table 22-2: Metallurgical Recoveries

	Ore (kt)	Grade	Recovery	Concentrate Grade
Cu cathodes	11,336	0.24%	47.9%	-
Mercedes Stockpile	6,748	0.18%	56.2%	-
Entrefases	4,588	0.33%	41.2%	-
Concentrate	122,614	-	-	-
Copper	-	0.69%	83.1%	33.8%
Silver	-	5.66 g/t	77.2%	257 g/t

22.4.3 Smelting and Refining Terms

Two products will be produced:

- Copper, in the form of cathodes and concentrates
- Silver in concentrate.

The smelting and refining terms for copper concentrates are based on information provided by Mantos Copper and are summarized in Table 22-3. Sales costs used are included in Section 19.

Table 22-3: Smelting and Refining Terms

Commodity	Pay Factor	Unit Deduction	Treatment Charge	Refining Charge
Copper	96.7% above 30% Cu in conc. 96.60% below 30% Cu in conc. Minimum deduction if below threshold	1.00%	80 (US$/dmt conc)	8 ¢/pay lb
Silver	90% if over 30 g/dmt conc	-	-	35 ¢/pay oz

22.4.4 Metal Prices

This Report uses the short-, medium- and long-term metal prices discussed in Section 19.

22.4.5 Capital and Operating Costs

The capital and operating costs are discussed in Section 21.

22.4.6 Working Capital

A working capital allocation considering receivables and payables was included in the cash flow model. The allocation is shown in the cash flow tables as an increase/decrease in value for each of the years. Mantos Copper provided the working capital figures for each year over the life of mine. It is assumed that all the working capital can be recovered at the end of LOM. Thus, the sum of all working capital variations over the life-of-mine should be zero, but in practice there is a small residual value as a result of carrying through the outstanding working capital at the start of the Project.

22.4.7 Taxes

Depreciation

The capital investment was allocated via the straight-line depreciation method; therefore, a constant depreciation over time was assumed. The depreciation structure for the capital investment used the categories and timelines established by the Chilean Internal Revenue Service (Servicios de Impuestos Internos, SII) shown in **Error! Reference source not found.**.

Table 22-4: Depreciation Structure provided by SII

Extractive Industry (Mining)	Normal UL	Accelerated UL
1) General equipment and machinery for heavy work in mines and ore beneficiation plants	9	3
2) Mine and ore beneficiation facilities	5	1
3) Tailings dams	10	3
4) Mine tunnels	20	6
Note: Mine development has specific depreciation allocations that are based on considerations relating to development and construction timing. UL = useful life		

Mining Specific and Corporate Income Taxes

NCL does not provide expert advice on taxation matters. Taxes were incorporated in the financial analysis by Mantos Copper and supported by their tax consultant (Fischer) who provided the following narrative of their analysis on taxation applicable to the Project:

"Income tax: corporate tax and withholding tax

"As a general rule, the corporate tax is assessed on the net taxable income determined under full accounting records, where income is defined as gross income minus the costs and expenses required to produce that income. The corporate tax rate differs depending on which of the two tax-regimes existing in Chile is adopted by the taxpayer. There are two income tax-regimes in Chile: (a) an attributed regime that levies a 25% corporate tax on income and attributes such income to the partner's or shareholder's income tax base, irrespective of whether an actual dividend distribution is paid, and (b) a partially integrated regime that levies a 27% corporate tax on income, where shareholders can defer their income taxes until such profits are actually distributed.

As a general rule, distributions abroad are subject to a 35% withholding tax, minus a tax credit equivalent to the rate of the corporate tax existing in the year of distribution (provided the relevant company's tax credit ledger has not been exhausted). In the case of profit coming from companies subject to the partially integrated regime, the tax credit is capped at 65% of the corporate tax rate, unless the shareholder is a resident in a tax-treaty country, in which case the foreign shareholder *enjoys 100% of the corporate tax credit* [2]*"When calculating the corporate tax basis, the following should be considered:*

(i) In general, assets and liabilities are adjusted by domestic inflation (based on variations of the Consumer Price Index), which is termed 'monetary correction' and aims to reduce distortions caused by inflation. This occurs unless the company is authorised to use US Dollars, in which case the aforementioned correction is not deemed to be necessary.

(ii) Expenses incurred by the company should be deducted from its gross income, provided they are: (a) related to the entity's business (ordinary expenses); (b) necessary to produce taxable income by the entity, taking into consideration its nature and amount; (c) not previously deducted as part of the company's direct cost of goods or services; (d) incurred in the relevant taxable period, whether paid or accrued; and I supported with appropriate documentation.

If any of these requirements is not met, the deducted expenses must be added to the net taxable income and, if it involves a withdrawal of cash or goods from the company, they are subject to a 40% surtax.

(iii) Imported or new fixed tangible assets may, under certain conditions, be depreciated in one-third of the normal useful life; and

(iv) Profit distributions between Chilean resident companies are not subject to the corporate tax."

"Mining specific taxes

A mining specific tax, also known as the mining royalty, applies on "mining operational taxable income" obtained by "mining operators".

For these purposes "mining operator" means any individual or legal entity engaged in the extraction of any kind of mineral that could be subject to a mining concession and that sells such minerals in any stage of their processing to a metal saleable product.

"Mining operational taxable income" means the net income determined for corporate tax purposes, with some adjustments, such as: (a) the deduction of any gross income not directly related to the sale of mining products, (b) the addition of costs and expenses not directly connected to income from the sale of mining products, (c) the addition of the specific following expenses: (i) interests paid or accrued over owed amounts on the relevant tax period, (ii) carry forward losses, (iii) expenses related to the acquisition of the right to exploit a mine owned by a third party (i.e. leasing, usufruct, "avio"), (iv) the amount deducted for application of accelerated depreciation (only ordinary depreciation can be deducted), among other adjustments.

The mining specific tax rate is progressive, pursuant to the taxpayer's sales of mining products expressed in metric tons of fine copper (MTFC), determined in accordance with the average price for Grade A Copper as registered during the relevant period in the London Stock Exchange.

[2] Currently, Chile has tax treaties in force with Argentina, Australia, Austria, Belgium, Brazil, Canada, the Czech Republic, China, Colombia, Croatia, Denmark, Ecuador, France, Ireland, Italy, Japan, Malaysia, Mexico, New Zealand, Norway, Paraguay, Peru, Poland, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand and the United Kingdom. Tax treaties with the United States and Uruguay have also been signed, but have not entered into force.

Mining operators whose annual gross sales of mining products are equal to or less than the equivalent of 12,000 MTFC are exempt from the mining specific tax.

Mining operators whose annual gross sales of mining products are greater than the equivalent of 12,000 MTFC, but equal to or less than the equivalent of 50,000 MTFC, are subject to a progressive tax rate by brackets from 0.5% to 4.5%.

Mining operators whose annual gross sales of mining products are greater than the equivalent of 50,000 MTFC are subject to a progressive tax rate by brackets from 5% to 14%, which is determined in function of the "mining operational margin". This last concept corresponds to the result, multiplied by 100, from dividing the mining operational taxable income by the mining operational income (all income earned or accrued from the sale of mining products).

To determine the abovementioned applicable tax regimen, the related parties' sales of mining products must also be considered.

The foregoing is shown in the following charts:

Mining operators with annual sales up to 50,000 MTFC	
Sales	Rate
0 – 12,000	0.0 %
12,000 – 15,000	0.5 %
15,000 – 20,000	1.0 %
20,000 – 25,000	1.5 %
25,000 – 30,000	2.0 %
30,000 – 35,000	2.5 %
35,000 – 40,000	3.0 %
40,000 – 50,000	4.5 %

Mining operators with sales over 50,000 MTFC	
Mining Operational Margin	Rate
Up to 35	5%
+ 35 to 40	8%
+ 40 to 45	10.5%
+ 45 to 50	13%
+ 50 to 55	15.5%
+ 55 to 60	18%
+ 60 to 65	21%
+ 65 to 70	24%
+ 70 to 75	27.5%
+ 75 to 80	31%
+ 80 to 85	34.5%
+ 85	14%

"Income Taxes and Mining Specific Tax in the Technical Report

For the Report, based on the assumptions of the financial model, the Project is subject to a corporate tax rate, a withholding tax rate and a mining specific tax rate as shown in the following table:"

Taxes	Unit	Value
Corporate tax rate	%	27%
Withholding tax (corporate tax credit available)	%	35%
Mining specific tax	%	5% - 5.76%

"

(End of tax consultant statement)

In summary, the current Chilean tax law applicable from 1 October 2014 was used for the financial analysis. This law gives two options of tax treatment: a semi- integrated system or an attributed system. The semi-integrated system applies a 27% rate as a first category tax rate. The attributed system applies 25% as a first category tax rate. In addition, a 35% withholding tax will apply each year, even if no distribution of dividends is made under the attributed system the mining tax would still be payable. As a general rule, distributions abroad are subject to a 35% withholding tax, minus a tax credit. The tax rates effectively applied in the financial analysis by Mantos Copper for evaluation, for income and/or revenue taxes, are shown in Table 22-5.

Table 22-5: Tax Rates Applied

Tax	Unit	Value
Corporate Income Tax	%	27
Mining Specific Tax (royalty)	%	5.3*

*Note: Applicable royalty rate in the financial model ranges from 5.0% to 6.41%, with an average of 5.3%

Resulting Taxes

The total income subject to the corporate income tax for the duration of Mantos Blancos is US$1,515M and assumes the semi-integrated system. The government taxes payable for the duration of Mantos Blancos are estimated to be:

- US$308 M for corporate income taxes
- US$104 M for mining tax or royalty.

Total income and mining taxes for Mantos Blancos are estimated to be US$412 M for the life of the Project operation.

All these tax figures are real values, determined after applying inflation and exchange rate escalation to all cost items.

22.4.8 Closure Cost and Salvage Value

For decommissioning in 2037, a total of US$60.6 M (real term) for the oxide and sulphide facilities was considered in the financial model for the Base Case. The latest Closure Plan approved by SERNAGEOMIN on 24 June 2019, according to Exempt Resolution N° 1670/2019 estimates a closure and post-closure cost of 1,735,927 UF or US$79.3 M for the existing installations. The closure costs were converted to USD using CLP28,309.94 for 1 UF and CLP620 for US$1 exchange rates. In the financial evaluation the closure costs are presented without VAT (US$66.6 M).

Provisions have been made in the last 7 years of operation to accumulate this amount. In order to deduct the expenses incurred in the closure of the mine, several requirements must be met, including the fulfillment of environmental mitigation requirements in the RCA.

No salvage value has been allocated.

Mantos Copper entered into a US$250 million financing package, including a US$150 million offtake facility with Glencore International AG and Complejo Metalurgico Altonorte S.A., a US$50 million copper royalty agreement with Anglo Pacific Group plc, a US$25 million agreement with Osisko Gold Royalties Ltd. as an expansion of the existing stream agreement, and US$25 million of committed equity funding from Mantos Copper’s majority shareholder, Orion Mine Finance LLP.

The combined proceeds will fund the US$253 million (real terms) capital cost of the De-bottlenecking Project and associated working capital requirements.

22.4.9 Inflation

The financial analysis assumes escalation factors according to projected domestic and USA inflation rates and exchange rates. The escalation factors are applied to nominal costs to express them in real terms–constant dollars (see Section 19.4).

Capital and operating costs were determined based on Q4 2020 US dollars, consistent with the period when this work was developed. An escalation to the Project start-date is applied in the cash flows.

22.5 Financial Results

The updated financial results from the financial model created by Mantos Copper are summarized in this section. The financial analysis uses a standard Mantos Copper-defined 8% discount rate. The economics were evaluated and presented as before-tax and after-tax for the purpose of NPV calculation.

Table 22-6 presents pre-tax cumulative cash flow, on an undiscounted basis, with the 8% discount rate applied, giving the NPV.

The resulting after-tax NPV is US$670 M. The cumulative, undiscounted, incremental cash flow after-tax value for the project is US$1,103 M (see Table 22-6).

Cash flow details over the LOM are provided in Table 22-7. These are undiscounted real values, which include the escalation factors determined by Mantos Copper (see Section 22.4.9 and Section 19.4). The table includes production data, revenues and costs (operation, deductions, sales costs and non-operational costs), taxes and capital expenditures. As a result of this information, the pre-tax and after-tax undiscounted values of cash flow are shown at the base of the table.

Table 22-8 shows the values of undiscounted and discounted annual cash flows. Full cash flow detail on an annualized basis are provided in Table 22-9. The projected life-of-mine cash flow, both annual and cumulative after-tax values, are shown in Figure 22-3 (undiscounted flows) and Figure 22-4 (at 8% discount rate).

A summary of C1 cash costs in US dollars per pound of copper recovered is presented in Table 22-10.

Table 22-6: LOM Cash Flow Summary

Item	Pre-Tax (US$M)	After-Tax (US$M)
Net Cash Flow, Cumulative, Undiscounted	1,515	1,103
Net Present Value at 8% discount rate (valuation start 2021)	907	670

Table 22-7: LOM Cash Flow Summary Statement

Item	Unit	2021-2037
Metal Price		
Copper (long term after fifth year)	US$/lb	3.45
Silver (long term after fifth year)	US$/oz	21.55
Metal in Concentrate		
Copper	M lbs	1,555
Silver	M oz	17.2
Extracted Metal Value		
Copper (Cathodes)	US$M	117
Copper (Concentrate)	US$M	5,525
Silver	US$M	385
Hedge Revenue	US$M	-28
Total	**US$M**	**$5,998**
Smelter Deduction		
Copper Deduction	US$M	179
Silver Deduction	US$M	38
Total	**US$M**	**217**
Treatment and Refining Charges	US$M	
Copper Concentrate (treatment)	US$M	167
Copper (refining)	US$M	120
Silver (refining)	US$M	5.4
Selling Cost (Sulphide)	US$M	125
Selling Cost (Oxide)	US$M	1
Total	**US$M**	**126**
Production Costs (Sulphide and Oxide)		
Mining	US$M	1,436
Oxide Plant	US$M	74
Sulphide Plant	US$M	1,306
G&A	US$M	243
Other Non-operating (exploration)	US$M	14
Total	**US$M**	**3,074**
Net Income before Tax		
Earnings before Taxes, Depreciation & Amortization	**US$M**	**2,289**
Corporate Income and Mining Taxes		
Corporate Income Tax	US$M	308
Specific Mining Tax (Royalty)	US$M	104
Total Income Taxes and Royalty	**US$M**	**412**
Capital Expenditure		
Initial Capital	US$M	104
SIB	US$M	222
Closure Costs	US$M	61
Total Capital Expenditure	**US$M**	**386**
Change in Working Capital	US$M	1
Silver Stream	US$M	308
Cu Royalty	US$M	80
Total Undiscounted Cash Flow		
Pre-tax	**US$M**	**1,515**
After tax	**US$M**	**1,103**

Note: Totals may not sum due to rounding. SIB = stay in business. All costs in real terms.

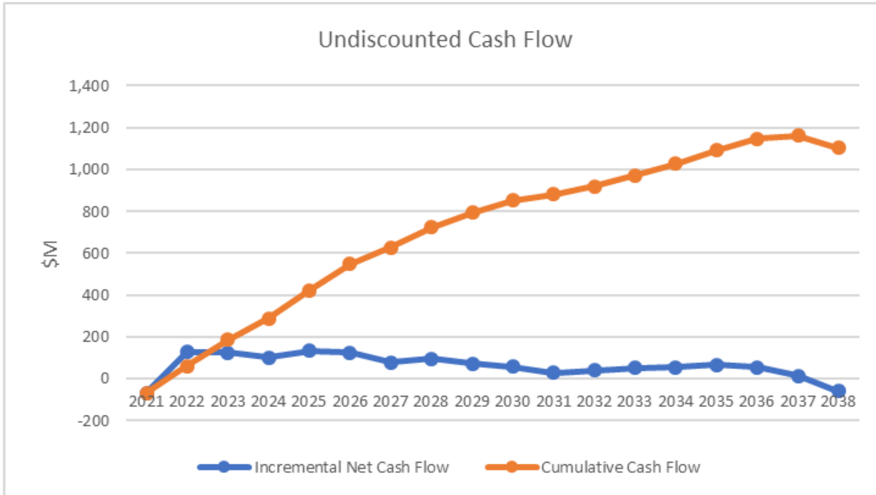
Table 22-8: After-tax Annual Cash Flow

Year	After Tax Annual Cash Flow ($M)	
	Undiscounted	Discounted (8%)
2021	-67	-64
2022	128	114
2023	126	104
2024	102	78
2025	134	95
2026	126	83
2027	79	48
2028	96	54
2029	71	37
2030	59	28
2031	28	13
2032	39	16
2033	51	19
2034	56	20
2035	66	22
2036	54	17
2037	15	4
2038	-59	-15
Total LOM	1,103	670

Table 22-9: Cash Flow Analysis

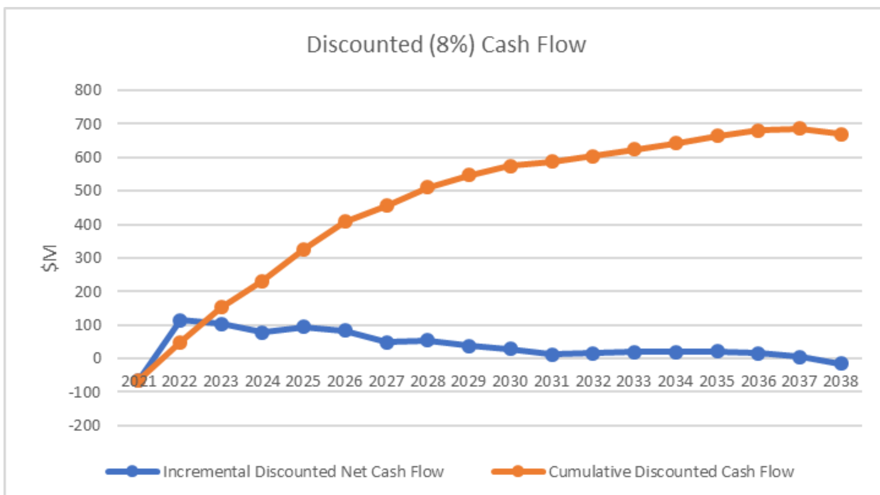
Item	Unit	Total / Avg.	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Production:																				
Total Material Moved	kt	868,525	72,842	83,282	82,104	67,449	63,194	62,463	63,376	62,908	62,789	61,706	53,102	48,598	31,304	20,526	14,213	9,627	7,600	1,443
Prestripping	kt	7,346	7,346	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxide Ore, Dump Leach	kt	11,336	8,409	2,561	366	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphide Ore, Plant	kt	122,614	4,503	7,158	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	7,300	7,300	7,320	7,300	1,373
Total Contained Copper Production	**kt**	**718**	**40**	**53**	**53**	**53**	**55**	**55**	**53**	**49**	**47**	**44**	**36**	**37**	**35**	**32**	**32**	**26**	**15**	**3**
Total Payable Copper Production	**kt**	**695**	**39**	**51**	**51**	**51**	**53**	**54**	**51**	**47**	**45**	**43**	**35**	**36**	**34**	**31**	**31**	**25**	**15**	**3**
Silver Production:																				
Contained Silver Production	koz	17,223	667	1,552	1,284	1,310	1,664	1,725	971	735	1,012	1,184	825	822	831	686	672	673	514	97
Payable Silver Production	koz	15,500	600	1,397	1,155	1,179	1,498	1,552	874	662	910	1,066	743	740	748	617	605	606	463	87
Cash Flows:																				
Copper Revenue	$M	5,463	323	447	416	412	442	407	391	361	346	325	264	272	256	234	235	194	113	24
Silver Revenue	$M	341	15	34	27	26	33	33	19	14	19	23	16	16	16	13	13	13	10	2
Hedge Revenue	$M	-28	-28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	**$M**	**5,776**	**310**	**481**	**443**	**438**	**475**	**440**	**410**	**375**	**365**	**348**	**280**	**288**	**272**	**247**	**248**	**207**	**123**	**26**
TC/RC	$M	-287	-9	-16	-19	-19	-21	-23	-22	-21	-20	-19	-16	-17	-16	-15	-14	-12	-7	-1
Other	$M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Net Revenue	**$M**	**5,489**	**301**	**465**	**425**	**420**	**454**	**417**	**387**	**354**	**345**	**329**	**264**	**271**	**256**	**232**	**234**	**195**	**116**	**24**
Mining Costs	$M	-1,436	-107	-124	-124	-113	-108	-93	-100	-100	-103	-101	-97	-91	-62	-42	-31	-20	-16	-4
Oxide Plant Processing Costs	$M	-74	-34	-26	-14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphide Plant Processing Costs	$M	-1,306	-59	-76	-78	-79	-79	-73	-79	-77	-77	-77	-77	-77	-77	-77	-76	-76	-75	-16
G&A Costs	$M	-243	-19	-17	-18	-17	-15	-15	-16	-16	-16	-16	-16	-16	-16	-11	-8	-6	-5	-1
Cathodes Freight & Port Costs	$M	-1	-1	-0	-0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Concentrate Freight & Port Costs	$M	-125	-4	-9	-10	-11	-9	-9	-9	-8	-8	-8	-7	-7	-7	-6	-6	-5	-3	-1
Other Operating Expenses	$M	-14	-2	-2	-2	-2	-2	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-	-	-
Total Cash Cost	**$M**	**-3,199**	**-226**	**-255**	**-246**	**-222**	**-213**	**-191**	**-204**	**-201**	**-204**	**-202**	**-197**	**-191**	**-162**	**-137**	**-121**	**-107**	**-99**	**-21**
Other Non-Cash Items	$M	77	9	9	8	8	8	8	8	8	8	8	8	8	-2	-5	-5	-5	-4	-1
EBITDA	**$M**	**2,366**	**84**	**219**	**187**	**206**	**249**	**235**	**192**	**162**	**150**	**135**	**74**	**88**	**91**	**90**	**107**	**83**	**12**	**2**
Depreciation	$M	-449	-21	-32	-27	-22	-22	-21	-21	-25	-25	-25	-27	-28	-28	-29	-29	-29	-29	-7
EBIT	**$M**	**1,917**	**62**	**187**	**159**	**184**	**227**	**214**	**170**	**136**	**125**	**110**	**48**	**59**	**63**	**61**	**78**	**54**	**-17**	**-5**
Non-Cash Cash Flows	$M	-77	-9	-9	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	2	5	5	5	4	1
Chilean Royalty Tax	$M	-104	-4	-9	-8	-10	-13	-13	-9	-7	-6	-5	-2	-3	-3	-4	-4	-3	-	-
Cash Taxes Paid	$M	-308	-	-	-6	-30	-39	-36	-29	-31	-27	-22	-9	-12	-14	-16	-21	-15	-	-
Stream & Royalty	$M	-387	-19	-38	-30	-30	-37	-37	-22	-17	-22	-25	-18	-18	-18	-15	-15	-14	-11	-2
Changes in Working Capital	$M	-1	-7	-14	3	-8	-1	5	5	3	1	1	7	-2	-3	-1	-3	3	9	0
Cash Flow from Operations	**$M**	**1,489**	**46**	**148**	**136**	**119**	**150**	**146**	**128**	**102**	**88**	**76**	**45**	**45**	**56**	**60**	**70**	**58**	**15**	**1**
Sustaining Capex	$M	-222	-20	-10	-11	-17	-16	-20	-50	-6	-17	-17	-17	-6	-5	-4	-4	-3	-	-
Expansionary Capex	$M	-104	-93	-11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closure Costs	$M	-61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-61
Cash Flow from Investing	**$M**	**-386**	**-112**	**-21**	**-11**	**-17**	**-16**	**-20**	**-50**	**-6**	**-17**	**-17**	**-17**	**-6**	**-5**	**-4**	**-4**	**-3**	**-**	**-61**
Unlevered FCF	**$M**	**1,103**	**-67**	**128**	**126**	**102**	**134**	**126**	**79**	**96**	**71**	**59**	**28**	**39**	**51**	**56**	**66**	**54**	**15**	**-59**
Acumulated FCF			-67	61	186	288	422	548	627	723	794	853	881	920	971	1,027	1,093	1,147	1,162	1,103
Mantos Blancos After-Tax NPV @ 8.00%	**$M**	**670**	-64	114	104	78	95	83	48	54	37	28	13	16	19	20	22	17	4	-15

Figure 22-3: Undiscounted Cash Flow



Note: Figure courtesy Mantos Copper, 2020

Figure 22-4: Discounted Cash Flow



Note: Figure courtesy Mantos Copper, 2020

Table 22-10: C1 Cost

Item	C1 Cost (US$/lb)
Cash costs	
Mining	0.94
Process	0.90
G&A	0.16
Freight & Handling	0.08
TC/RC	0.19
Leasing Adjustment	-0.02
Sub-total	**2.25**
Credits	
By-product credits	-0.22
Deferred stripping credit	-0.29
Total	**1.74**

Notes:

- Silver credits are shown on a 100% basis. Refer to Section 4.4 for a description of the silver stream
- Deferred stripping credit includes production phase capitalized stripping adjustment for 282 Mt for the life of mine and valued at an average US$ 1.57/t-mined

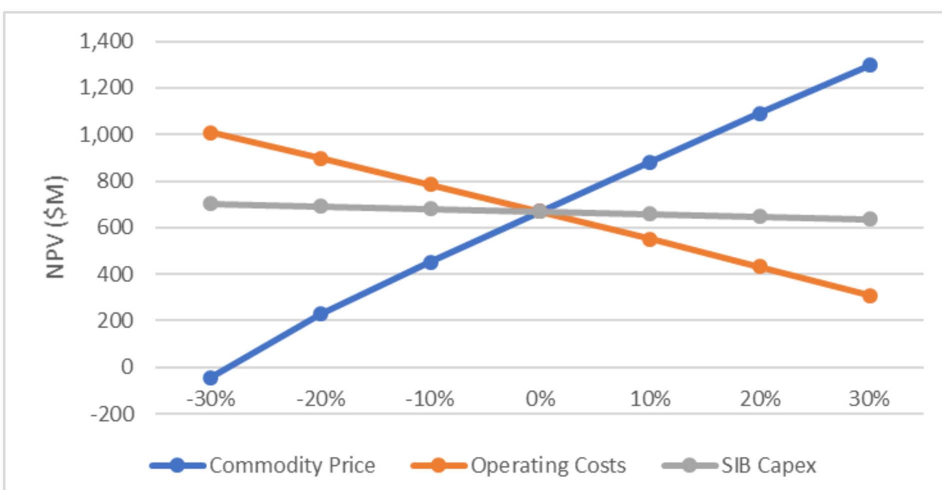
22.6 Sensitivity Analysis

A sensitivity analysis was performed considering variations in metal prices, operating costs and capital costs.

22.6.1 NPV

The results for NPV sensitivity to these variables are shown in Figure 22-5 and in Table 22-11.

Figure 22-5: Sensitivity Analysis, After–tax Incremental NPV, Discounted at 8%



Note: Figure courtesy Mantos Copper, 2020

Table 22-11: Sensitivity Analysis, After–tax Incremental NPV, Discounted at 8%

Change in Factor	Factor		
	Commodity Price	Operating Costs	SIB Capex
-30%	-44	1,009	703
-20%	228	899	692
-10%	452	786	681
0%	670	670	670
10%	883	551	659
20%	1,091	431	648
30%	1,297	308	637

22.6.1 Ore Copper Grade

The grade sensitivity is not explicitly included, for the purposes of the sensitivity analysis, Mantos Copper assumed that the sensitivity to changes in copper grades was mirrored by the sensitivity to changes in the copper price.

23 Adjacent Properties

This section is not relevant to this Report.

24 Other Relevant Data and Information

24.1 Introduction

Mantos Blancos mine, located in the Antofagasta Region of Chile, was commissioned in 1959. Mantos Blancos has undergone an operational transformation into a sustainable long-term operation since Mantos Copper's acquisition in 2015:

- Mine Life Extension: Mine life extended from 6 years at acquisition to 17 years today.
- Advancement of Debottlenecking Project: Received DIA permit for the Mantos Blancos De-bottlenecking Project in November 2017 with Project commencing construction in 2019.
- Renewed Focus: Improved productivity and optimized use of existing assets by leveraging experienced Chilean operating team with a strong track record of results in Chilean mining.

Mantos Copper commenced construction at Mantos Blancos on the De-bottlenecking Project for the sulphide process plant under an EPC Lump Sum Turnkey contract in 2019. The Project is designed to increase throughput capacity from 12.5 kt per day to 20 kt per day with the focus of shifting towards the larger, lower cost sulphide deposit. Average annual copper production of 52 kt per year and with C1 cash costs of US$1.85/lb are estimated for the first 10 years after ramp-up.

Project financing closed US$250 M project financing agreements in September 2019 with Glencore, Anglo Pacific, Osisko Gold and Orion to fund the Project

24.2 Mantos Blancos Phase II

Mantos Copper is analyzing the expansion of the concentrator throughput from 7.3 Mt per year to 10.0 Mt per year using the existing ball mills and process equipment, starting in 2023. This project also considers additional cathode production through 2032. This is called the Mantos Blancos Phase II Project. The estimated total additional capital cost for this expansion will be determined after the engineering work is developed.

The source of material for this increased throughput corresponds to identified mineral inventory as per the results of the pit optimization (Section 16.2). The current Mineral Reserves Estimate was constrained by the pit shell obtained at a revenue factor of 0.92 used as a guide for the final pit design. The difference between the pit shell obtained at revenue factor 1.0 and the current production will be available for Phase II. An additional pushback has been designed (preliminary design) and the new plant feed schedule may consider lowering the cut-off grade to the marginal value, instead of the strategy adopted for the Mineral Reserves Estimate.

24.3 Mantos Blancos Dump Leach

Dump leaching at Mantos Blancos started in 2012 leaching the Mercedes Mineralized Stockpile (Old Waste Dump).

The oxide mineralized stockpile was initially determined by analyzing the origin from the mine and the cut-off grade used during the dumping process. Later, a sampling process using trenches and sonic drilling was used to confirm the grade values of the material, allowing the conversion of this material to Mineral Reserves. Historical production from the dump leach is approximately an average of 12 kt of copper per year.

As part of operational practices, Mantos Blancos will continue with waste dump sampling from the East Dump, North-East Dump, South-East, Argentina Dump and the ripios, to continue with the dump leach process. This has not yet been converted to Mineral Reserves.

25 Interpretation and Conclusions

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

25.1 Mineral Resources

- The Mantos Blancos deposit is a stratabound copper deposit.
- The geological setting, style of mineralization and controls on mineralization are known sufficiently to provide useful guides for mineral resource estimation.
- Mantos Blancos has developed internal protocols and controls for data capture, QA/QC protocols and management that allow the use of such data with an adequate level of confidence in the construction of a Resource Model.
- The Mineral Resources were estimated using appropriate data, geological interpretation and estimation methodology that adequately reflect the current understanding of the deposit.
- The Mineral Resources have been classified into Measured, Indicated and Inferred resource categories based on overall estimation error and production rates.
- The Mineral Resources were constrained within pit shells to establish reasonable prospects for eventual economic extraction.

Mantos Blancos Mineral Resources follow industry accepted practices, conform with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM 2014 Definition Standards.

25.2 Mineral Processing

The addition of the new ball mill, with a 13,000 kW motor and the four new flotation cells should allow Mantos Blancos to achieve the design plant throughput of 7.3 Mt per year. The installation of additional new equipment (crushers, concentrate filters, tailings thickener and tailings screens, pumps and pipeline will improve plant performance and to the plant should achieve the planned production.

The future plant feed characterization is reasonable, but still needs more work for the long term. Ball mill sizing is conservative and supported by a long history. The most critical variable that could affect the copper recovery in flotation is the soluble copper in the feed. The geometallurgical model should help in forecasting the soluble copper grades and provide a good estimate of the recovery.

In addition to the long history and experience of the Mantos Blancos team, Mantos Copper has expended considerable effort in developing accurate geometallurgical models, continuing the work by the previous owner and operator. This effort should continue, especially to provide more data for later in the mine life. In particular, the impact of lower pulp density on copper recovery requires review.

25.3 Mineral Reserves

The Santa Barbara pit has been in operation for over 30 years and the mining of this orebody is well understood. The future phased approach to mining will allow the mine plan tonnage to be achieved, using the mine fleet developed in Section 16.

Mantos Blancos Mineral Reserves follow industry accepted practices, conform with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2019) and are reported in accordance with CIM 2014 Definition Standards.

25.4 Risks and Opportunities

The most significant risks evaluated in a risk review were :

- Increased equipment and labour costs
- Delay in mine equipment and supplies availability due to the Covid-19 pandemic
- Contractor engagement and price uncertainty
- Political and environmental changes not identified at the time of release of this Report
- Further studies and expenditures related to highway deformation.

Opportunities that were identified include:

- Increase the concentrator capacity using stand-by ball mills
- Enhance recovery through further metallurgical testing
- Extension of the dump leach process with oxide from mineralized waste dumps (per existing operational practice since 2012)
- Additional oxide and sulphide feed from new exploration areas such as Rosario
- Additional copper production from brownfield exploration and mineralization open at depth.

Risks and opportunities will be continuously assessed and reviewed through the various phases of the Project in accordance with Mantos Copper's Risk Management Framework.

26 Recommendations

26.1 Mineral Resources

- Improve the geological understanding of silver mineralization and include this in the resource model to improve the confidence in the estimate.

- Evaluate the current method of density assignment to be replaced by an estimation method based on samples that allows for better local representation.

- Complete additional field sampling and studies to verify the current density value of 1.69 g/cm^3 used for the stockpiles.

- Continue the exploration program on Mantos Copper properties located in the vicinity with recognized mineralization potential.

- Continue infill drilling to improve resource categorization and increase confidence of the currently defined Mineral Resources, and provide a better base for long-term mine planning. Table 26-1 shows the drilling costs for recent years and the budget.

Table 26-1: Drilling Costs

US$M	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Infill	0.9	1.0	1.0	1.1	0.8	2.7	1.8	1.6	1.6	1.8
Exploration	1.4	1.6				1.3	0.5	0.5	0.5	0.5
Sonic			1.0	1.1	1.1	1.1	1.1			
Hydrogeological					1.3					

Note: The costs indicated for the period 2022 to 2026 are approved in the budget

26.2 Mineral Processing

- Mantos Blancos should continue to develop and improving the geometallurgical models with more samples representing material to be mined in the period after 2025 to increase the confidence, and reduce the risk, in establishing future plant performance. Special attention should be paid to the soluble copper ratio which has a detrimental effect on the copper recovery.

- The hydrocyclone classification of flotation tailings to produce a 70:30 split into coarse and fine size fractions is a critical factor for fresh water consumption and the tailings dam design. Maintenance and quality of the hydrocyclones is critical.

- The Line 2 crushing plant was initially designed to produce a P80 crushed size of 9,000 µm, hence the new ball mill feed F80 was also set at 9,000 µm. In this scenario, the Line 2 crushing plant will be operating near capacity and the new ball mill has 5% to 8% excess capacity. After external review, the Line 2 crushing plant P80 was increased to 11,000 µm. This change should result in improved operability of the crushing and grinding circuits. However, the QP is of the opinion that 11,000 µm is a relatively coarse feed for the mill and attention should be paid to keep the crush size under control to avoid operational problems with the ball mill.

- The fine tailings dam design has been developed by several engineering companies, most recently Hatch for the period 2019-2029. In the detailed engineering, this work should be reviewed by an independent specialist tailings dam design company or consultant. More studies are required for the period 2029-2037 to evaluate dam capacity and any potential additional costs.

26.3 Mineral Reserves

- The optimum pit shell has been developed using Whittle software. A phased approach to mining out to 2029 has been developed and it is recommended that Mantos Blancos follow this together with the number of benches described in Sections 15 and 16. A digitized 3D model of underground workings is recommended to be included in the estimation of Mineral Resources and Mineral Reserves. The mine plan is in accordance with these procedures and practices and is well developed and meets with industry practices.

27 References and Units of Measure

27.1 References

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Ortuzar, A., 2021: Ownership: letter prepared by Baker & McKenzie for Mantos Copper, 29 November, 2021, 2 p.

Ortuzar Vicuña A., 2021: Mantos Copper S.A.: title opinion prepared by Baker McKenzie., for Mantos Blancos, 3 November, 2021, 3 p. plus appendices.

27.2 Units of Measure

Table 27-1: Units of Measure

Above mean sea level	amsl
Ampere	A
Billion (years)	G
Billion years ago	Gy
Centimetre	cm
Cubic centimetre	cm^3
Cubic metre	m^3
Day	d
Days per week	d/wk
Days per year	d/y
Decibel adjusted	dBa

Decibel	dB
Degree	°
Degrees Celsius	°C
Diameter	ø
Dry metric ton	dmt
Foot or feet	ft or ‘
Gram	g
Grams per litre	g/L
Grams per tonne	g/t
Greater than	>
Hectare (10,000 m^2)	ha
Hertz	Hz
Horsepower	hp
Hour	h
Hours per day	h/d
Hours per week	h/wk
Hours per year	h/y
Inch or inches	In or “
Kilo (thousand)	k
Kilogram	kg
Kilograms per cubic metre	kg/m^3
Kilograms per square metre	kg/m^2
Kilometre	km
Kilometres per hour	km/h
Kilovolt	kV
Kilovolt-ampere	kVA
Kilowatt	kW
Kilowatt hour	kWh
Kilowatt hours per tonne	kWh/t
Less than	<
Litre	L
Litres per minute	L/min
MegaVolt-Ampere	MVA
MegaWatt	MW
Metre	m
Metres above sea level	masl
Metres per second	m/s
Metric ton (tonne)	t
Micrometre (micron)	µm
Microsiemens	µS
Milliamperes	mA
Milligram	mg
Milligrams per litre	mg/L

Millilitre	mL
Millimetre	Mm
Million	M
Million tonnes	Mt
Million tonnes per year	Mt per year
Million years ago	My
Minute (time)	min
Month	mo
Ounce	oz
Parts per billion	ppb
Parts per million	ppm
Percent	%
Revolutions per minute	rpm
Second (plane angle)	"
Second (time)	s
Specific gravity	SG
Square centimetre	cm^2
Square kilometre	km^2
Square metre	m^2
Thousand tonnes	kt
Thousand tonnes per day	ktpd or kt/d
Tonne (1,000 kg)	t
Tonnes per day	tpd or t/d
Tonnes per hour	tph or t/h
Tonnes per year	tpy or t/y
Total dissolved solids	TDS
Total suspended solids	TSS
Troy Ounce	ozt
Volt	V
Week	wk
Weight/weight	w/w
Wet metric ton	wmt
Year	y

Table 27-2: Common Chemical Symbols

Aluminium	Al
Ammonia	NH_3
Antimony	Sb
Arsenic	As
Bismuth	Bi
Cadmium	Cd
Calcium	Ca
Calcium carbonate	$CaCO_3$

Calcium oxide	CaO
Calcium sulphide	$CaSO_4 \cdot 2H_2O$
Carbon	C
Carbon monoxide	CO
Chlorine	Cl
Chromium	Cr
Cobalt	Co
Copper	Cu
Copper Sulphate	$CuSO_4$
Cyanide	CN
Gold	Au
Hydrochloric acid	HCl
Hydrogen	H
Hydrogen cyanide	HCN
Iron	Fe
Lead	Pb
Magnesium	Mg
Manganese	Mn
Molybdenum	Mo
Nickel	Ni
Nitrogen	N
Nitrogen oxide compounds	NOx
Oxygen	O_2
Palladium	Pd
Platinum	Pt
Potassium	K
Silver	Ag
Sodium	Na
Sodium cyanide	NaCN
Sodium hydroxide	NaOH
Sulphur	S
Sulphur dioxide	SO_2
Soluble Copper	SCu
Tin	Sn
Titanium	Ti
Total Copper	TCu
Zinc	Zn

Table 27-3: Abbreviations and Acronyms

Abrasion Index	AI
Adsorption, desorption and recovery	ADR
Acid base accounting	ABA
Acid rock drainage	ARD

All In Sustaining Cost	AISC
Alternating current	AC
American National Standards Institute	ANSI
American Society for Testing and Materials	ASTM
American Society of Mechanical Engineers	ASME
Ammonium nitrate and fuel oil	ANFO
As low as reasonably possible	ALARP
Association for Advancement of Cost Engineering	AACE
Atomic Absorption Spectrometry	AAS
Audit and Risk Committee	ARC
Authorization for Expenditure	AFE
Automatic voltage regulators	AVR
Ball Mill Work Index	BWI
Canadian Electrical Manufacturers Association	CEMA
Carbon in Column	CIC
Carbon in Leach	CIL
Closed circuit television	CCTV
Closed side settling	CSS
Comisión Regional del Medio Ambiente (Regional Environmental Commission)	Corema
Direct current	DC
Civil/Structural/Architectural Discipline	CSA
Coefficient of variation	CV
Construction work package	CWP
Corporación Nacional de Desarrollo Indígena (National Corporation for Indigenous Development)	Conadi
Corporación Nacional Forestal (National Forest Corporation)	Conaf
Corporate Responsibility Management System	CRMS
Crushing Work Index	CWI
Decreto Supremo (Supreme Decree)	DS
Detection limit	DL
Differential global positioning system	DGPS
Dirección General de Aguas (Water Authority)	DGA
Discounted cash flow	DCF
Distributed control system	DCS
Drop Weight Index	DWI
Engineering work station	EWS
Electro-winning	EW
Engineering, procurement, and construction management	EPCM
Engineering Risk Assessment	ERA
Enterprise Risk Management	ERM
Emergency Response Plan	ERP
Environmental, Health and Safety	EHS

Environmental impact assessment	EIA
Environmental Management Plan	EMP
Environmental Management System	EMS
Engineering, Procurement and Construction	EPC
Engineering, Procurement and Construction Management	EPCM
Estimation units	EU
Factory Mutual	FM
Feasibility Study	FS
Fibreglass reinforced polyethylene	FRP
Free on board	FOB
Front end loader	FEL
General and Administration Costs	G&A
Global positioning system	GPS
Greenhouse gases	GHG
Hazard Identification	Hazid
Hazardous Operations Study	Hazop
Health, Safety and Environmental	HSE
Heating, ventilation and air conditioning	HVAC
High density polyethylene	HDPE
High voltage	HV
Independent peer review	IPR
Industrial Relations	IR
Information Technology	IT
International Cyanide Management Code	ICMC
International Finance Corporation	IFC
Inspection and Test Plan	ITP
Institute of Electrical and Electronics Engineers	IEEE
Internal rate of return	IRR
International Standards Organization	ISO
Inverse distance squared	ID^2
Key performance indicator	KPI
Life of Mine	LOM
Light emitting diode	LED
Low Voltage	LV
Ministro de Medio Ambiente (Environmental Ministry)	MMA
Motor control centre	MCC
National Electrical Manufacturers Association	NEMA
National Fire Protection Association	NFPA
Nearest neighbour	NN
Net Acid Generating	NAG
Net position suction head	NPSH
Net position suction head available	NPSHA
Net present value	NPV

Occupational Safety and Health Administration	OSHA
Oil filled naturally cooled	ONAN
Open side setting	OSS
Ordinary Kriging	OK
Original equipment manufacturer	OEM
Overflow	O/F
Oversize	O/S
Particulate Matter 25/10	PM2.5, PM10
Plant control system	PCS
Potentially Acid Generating	PAG
Polyvinyl chloride	PVC
Prefeasibility Study	PFS
Probable maximum precipitation	PMP
Process Control System	PCS
Process flow diagram	PFD
Programmable logic controller	PLC
Quality assurance	QA
Quality control	QC
Relative level	RL
Resolución de Calificación Ambiental (Environmental Approval)	RCA
Rock mass rating	RMR
Rock quality designation	RQD
Root mean square	RMS
Run of mine	ROM
Sectoral Environmental Permit	PAS
Sectoral Permit	PS
Sedimentable particulate matter	SPM
Selective mining unit	SMU
Secretaría Regional Ministerial (Regional Ministerial Secretariat)	Seremi
Servicio Nacional de Turismo (National Tourist Service)	Sernatur
Sistema de Evaluación Ambiental (Environmental Evaluation System)	SEA
Specific gravity	SG
Servicio Nacional de Geologia y Mineria (National Geology and Mining Service)	Sernageomin
Supervisory control and data acquisition	SCADA
System International	SI
Total cost of ownership	TCO
Total enclosed, fan cooled	TEFC
Turn-Over Package	TOP
Underflow	U/F
Undersize	U/S
Uninterruptible power supply	UPS
United Nations Global Compact	UNGC

Variable frequency drive	VFD
Very high frequency	VHF
Voltage transformers	VT
Waste rock dump	WRD
Water treatment plant	WTP
Weight fraction	W/W
Work breakdown structure	WBS
Workplace Hazardous Material Information System	WHMIS
Zona de Interés Turístico (Area of tourist interest)	ZOIT

28 Qualified Person Certificates

NCL Ingeniería y Construcción SpA.
General del Canto 230, office 401,
Providencia, Santiago, Chile.
Tel: +56 2 2651-0800
ncl@ncl.cl

CERTIFICATE OF QUALIFIED PERSON

I, Carlos Guzman, Qualified Person for the mineral reserve estimate certify that

I am Principal and Project director at NCL Ingeniería y Construcción SpA, General del Canto 230, office 401, Providencia, Santiago, Chile.

This certificate applies to the Technical Report titled "Capstone Mining Corp, Mantos Blancos Mine NI 43-101 Technical Report, Antofagasta / Región de Antofagasta, Chile", with an effective date of 29 November 2021.

My qualifications and relevant experiences are that:

1. I am a Graduate of the Universidad de Chile and hold a Mining Engineer title (1995).
2. I am a practicing Mining Engineer and a Fellow Member of the Australasian Institute of Mining and Metallurgy (FAusIMM, N° 229036); and a Registered Member of the Chilean Mining Commission (RM CMC 0119).
3. Have worked as a mining engineer for a total of 26 years. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous explorations, mining operation and projects around the world for due diligence and regulatory requirements.
   - I have extensive experience in mining engineering. I have worked on mining engineering assignments.
4. I have read the definition of Qualified Person set out in Nation Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.
5. I have visited the Mantos Blancos site on November 9, 2021. I am responsible for the preparation of sections 1.6, 1.7, 1.10 through 1.15, 2, 3, 15, 16, 19 through 22, 24, 25.3, 25.4, 26.3 and 27 of the Technical Report.
6. I am independent of Mantos Copper Holding SpA and Capstone Mining Corp.
7. I not have had prior involvement with the property that is the subject of the Technical Report.
8. I have read National Instrument 43-101 and the Technical Report has been prepared in compliance with that instrument.
9. As of the date of the certificate, to the best of my knowledge, information and belief, the Technical Report Summary contains all material scientific and technical information that is required to be disclosed to make the Technical Report Summary not misleading.

Dated:	**January 5, 2022**
Signature:	SIGNATURE ON FILE
Name:	**Carlos Guzmán** Mining Engineer, FAusIMM (229036), RM CMC (0119)

GT Metallurgy
Carmencita 130, apt 92
Las Condes, Santiago, Chile.
Tel: +56 9 8289-5163
gustavo.tapia@gtmetallurgy.com

GT Metallurgy

CERTIFICATE OF QUALIFIED PERSON

I, Gustavo Tapia, Qualified Person for the mineral processing and metallurgical recovery, recovery methods and project infrastructure certify that:

I am Independent Process and Metallurgical Consultant at GT Metallurgy, Carmencita 130, apartment 92, Las Condes, Santiago, Chile.

This certificate applies to the Technical Report titled "Capstone Mining Corp, Mantos Blancos Mine NI 43-101 Technical Report, Antofagasta / Región de Antofagasta, Chile", with an effective date of 29 November 2021.

My qualifications and relevant experiences are that:

1. I am a Graduate of the Universidad de Chile and hold a Civil Mining Engineer title (1981).
2. I am practicing my profession for 40 years. During this time, I have been directly involved in, and supervised operations, design of metallurgical testwork programs, pilot plant testing, designing process flowsheets, selection of mineral processing equipment and Due Diligence for new projects. I have been directly involved in operations, process engineering design and construction for copper projects in Chile; and a Registered Member of the Chilean Mining Commission (RM CMC 0436).
3. Have worked as a mining engineer for a total of 40 years. My relevant experience for the purpose of the Technical Report is:
    - Review and report as an executive of mining companies and independent consultant on numerous mining new business, mining operation and projects around the world for due diligence and regulatory requirements.
    - I have extensive experience in metallurgy and ore processing. I have worked on several metallurgical and ore processing assignments.

1. I have read the definition of Qualified Person set out in Nation Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfil the requirements to be a Qualified Person for the purposes of NI 43-101.
2. I have visited the Property on the 10th November 2021. I am responsible for the preparation of sections 1.4, 1.8, 1.9, 13, 17, 18, 25.2, 26.2 and 27.1 of the Technical Report.
3. I am independent of Mantos Copper Holding SpA and Capstone Mining Corp.
4. I have had earlier involvement with the property as former Executive of the Anglo American Group (2002-2010) but, I not have had prior involvement with the project that is the subject of the Technical Report.
5. I have read National Instrument 43-101 and the Technical Report has been prepared in compliance with that instrument.
6. As of the date of the certificate, to the best of my knowledge, information and belief, the Technical Report contains all material scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated:	**January 5, 2022**
Signature:	SIGNATURE ON FILE
Name:	**Gustavo Tapia** Mining Engineer, RM CMC (0436)

CERTIFICATE OF QUALIFIED PERSON Ronald Turner

I, Ronald Turner, state that:

(a) I am a Senior Resource Geologist at:
Golder Associates S.A.
Magdalena 181, 3rd floor
Las Condes, Santiago, Chile

(b) This certificate applies to the technical report titled "Mantos Blancos Mine NI 43-101 Technical Report Antofagasta / Región de Antofagasta, Chile" with an effective date of: 29th, November 2021 (the "Technical Report").

(c) I am a "qualified person" for the purposes of National Instrument 43-101 ("NI 43-101"). My qualifications as a qualified person are as follows. I am a graduate of Universidad de Concepción with a Geologist title obtained on 1993 and MAusIMM CP(Geo). My relevant experience after graduation and over 21 years for the purpose of the Technical Report includes practice as a geologist in the fields of exploration, resource definition and estimation, and open pit mining at various stages of development (greenfields through to established operation) within Chile, Peru, Canada, and the USA. I have worked primarily with copper and gold deposits hosted within various geological environments.

(d) My most recent personal inspection of each property described in the Technical Report occurred on November 09th, 2021 and was for a duration of 01 day.

(e) I am responsible for Item(s) 1.1 through 1.3, 1.5, 4 through 12, 14, 23, 25.1, 26.1 and 27.1 of the Technical Report.

(f) I am independent of Capstone Mining Corp.

(g) I have not had prior involvement with the property that is the subject of the Technical Report.

(h) I have read NI 43-101, and the part of the Technical Report for which I am responsible has been prepared in compliance with NI 43-101.

(i) At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the part of the Technical Report for which I am responsible, contain(s) all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Santiago, Chile this 05th of January 2022.

AusIMM THE MINERALS INSTITUTE
CHARTERED PROFESSIONAL
GEOLOGY
Ronald Turner

Signature of Qualified Person

Ronald Turner, **MAusIMM CP(Geo)**