Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile

Report Prepared for

Lundin Mining Corporation

lundin mining

Report Prepared by

srk consulting

SRK Consulting (Canada) Inc.
3CL016.002
November 30, 2017

Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile

Lundin Mining Corporation

Suite 1500, 150 King Street West
Toronto, Ontario, Canada
M5H 1J9
E-mail: info@lundinmining.com
Website: www.lundinmining.com
Tel: +1 416 342 5560
Fax: +1 416 348 0303

SRK Consulting (Canada) Inc.

Suite 1500,155 University Avenue
Toronto, Ontario, Canada
M5H 3B7
E-mail: toronto@srk.com
Website: www.srk.com
Tel: +1 416 601 1445
Fax: + 1 416 601 9046

SRK Project Number 3CL016.002

Effective date: June 30, 2017

Signature date: November 30, 2017

Authored by:

["*signed*"]
Jean-François Couture, PGeo
Associate Consultant
(Geology)

["*signed*"]
Glen Cole, PGeo
Principal Consultant
(Resource Geology)

["*signed*"]
Benny Zhang, PEng
Principal Consultant
(Mining Engineering)

["*signed*"]
John Nilsson, PEng
Independent Consultant
(Mining Engineering)

["*signed*"]
Adrian Dance, PEng
Associate Consultant
(Mineral Processing)

["*signed*"]
Cameron C. Scott, PEng
Principal Consultant
(Environment)

["*signed*"]
Maria Ines Vidal
Principal Consultant
(Environment)

Reviewed by:

Several co-authors.

Cover: Los Diques tailings storage facility construction, November 2017

IMPORTANT NOTICE

This report was prepared as a National Instrument 43-101 *Standards of Disclosure for Mineral Projects* Technical Report for Lundin Mining Corporation (Lundin) by SRK Consulting (Canada) Inc. (SRK). The quality of information, conclusions, and estimates contained herein are consistent with the quality of effort involved in SRK's services. The information, conclusions, and estimates contained herein are based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Lundin subject to the terms and conditions of its contract with SRK and relevant securities legislation. The contract permits Lundin to file this report as a Technical Report with Canadian securities regulatory authorities pursuant to the Canadian Securities Administrators' National Instrument 43-101. Except for the purposes legislated under applicable Canadian securities law, any other uses of this report by any third party is at that party's sole risk. The responsibility for this disclosure remains with Lundin. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

© 2017 SRK Consulting (Canada) Inc.

This document, as a collective work of content and the coordination, arrangement and any enhancement of said content, is protected by copyright vested in SRK Consulting (Canada) Inc. (SRK).

Outside the purposes legislated under provincial securities laws and stipulated in SRK's client contract, this document shall not be reproduced in full or in any edited, abridged or otherwise amended form unless expressly agreed in writing by SRK.

Executive Summary

The Candelaria Copper Mining Complex comprises two adjacent copper mining operations that produce copper concentrates from open pit and underground mines located near Copiapó in the Atacama Region, Region III of Chile. Compañía Contractual Minera Candelaria (Minera Candelaria) is an open pit and underground mine providing copper ore to an on-site concentrator with a capacity of 75,000 tonnes per day, and Compañía Contractual Minera Ojos del Salado (Minera Ojos del Salado) comprises two underground mines: Santos and Alcaparrosa. The Santos mine provides copper ore to an on-site concentrator with a capacity of 3,800 tonnes per day, while ore from the Alcaparrosa mine is treated at the Minera Candelaria processing plant. In 2017, the operation is forecast to collectively produce contained metals in concentrate (100 percent basis) of 184 kilotonnes of copper, 105,000 ounces of gold, and 1.8 million ounces of silver. The Candelaria Copper Mining Complex is indirectly owned by Lundin Mining Corporation (Lundin; 80 percent) and Sumitomo Metal Mining Co., Ltd. and Sumitomo Corporation (collectively, Sumitomo; 20 percent).

Lundin is a diversified base metals mining company with operations and projects in Chile, the USA, Portugal, and Sweden producing copper, nickel, zinc, and lead. Lundin is a Canadian public company with offices in Toronto, Canada. Its common shares are listed on the Toronto Stock Exchange (symbol LUN) and the NASDAQ Stockholm (symbol LUMI).

In November of 2016, Lundin retained the services of SRK Consulting (Canada) Inc. (SRK) to visit the Candelaria Copper Mining Complex and compile a technical report pursuant to National Instrument 43-101 *Standards of Disclosure for Mineral Projects* and Form 43-101F1. This report updates an earlier Technical Report dated September 4, 2015 and entitled "Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile" by the same authors. It summarizes the technical information that is relevant to support the disclosure of revised Mineral Resources and Mineral Reserves estimates prepared using revised economic parameters and the positive results of recent exploration programs. The revised Mineral Resources and Mineral Reserves Statements were disclosed by Lundin on September 5, 2017. The report also summarizes changes to the open pit phase design and new underground production schedules, based on these updated Mineral Reserves, as well as an open pit mine equipment re-capitalization programme, process improvement initiatives and a new tailings storage facility construction sequence.

Property Description and Ownership

The Candelaria Copper Mining Complex is located in Chile's Atacama Region, Region III, approximately 20 kilometres south of the city of Copiapó and adjacent to the community of Tierra Amarilla all of which are approximately 650 kilometres north of Santiago (Figure i and Figure ii). The properties are easily accessed using the public road system. Copiapó is a modern city with all the regular services and a population of approximately 160,000. Personnel employed by the Candelaria Copper Mining Complex come primarily from the Atacama region. The Candelaria and Ojos del Salado mines receive electrical power through long-term contracts with AES Gener S.A., a nation-wide energy company. The primary water supply comes from a desalination plant, which was commissioned in 2013 and is located at the Punta Padrones port facility at the nearby sea port of Caldera. Both the desalination plant and the Punta Padrones port are owned by Minera Candelaria. Local treated sewage water purchased from Aguas Chañar is also used by the mines. The copper concentrate is trucked from site to local smelters or shipped from Punta Padrones to world markets.

Copiapó has a desert climate with mild temperatures year-round. Winters are mild with warm temperatures. Annual precipitation averages approximately 17 millimetres, the majority of which falls in the winter months. The elevation of the mining operations does not exceed 800 metres above sea level. The climate and relatively low elevation allows for year-round mining and exploration activities.

Figure i: Location of the Mines Comprising the Candelaria Copper Mining Complex

The Minera Candelaria property comprises 249 mining exploitation concessions (approximately 5,855 hectares) and 65 mining exploration concessions (approximately 6,580 hectares). The Minera Ojos del Salado property comprises 192 mining exploitation concessions (approximately 9,273 hectares) and 38 mining exploration concessions (approximately 6,848 hectares). The tenements are free of mortgages, encumbrances, prohibitions, injunctions, and litigation. The tenements containing the active and future mining activities are not affected by royalties. The Candelaria Copper Mining Complex holds certain underground water use rights and certain surface water use rights.

Figure ii: The Local Infrastructure of the Candelaria Copper Mining Complex

History

The Candelaria sulphide deposit was discovered by Phelps Dodge Corporation (Phelps Dodge) in 1987. A feasibility study was completed in 1990, and, following approval by the Chilean government, construction started in October of 1992. Sumitomo acquired a 20 percent stake in the property in 1992. Production commenced in early 1995.

In 2007, property ownership changed when Freeport-McMoRan Inc. (Freeport) acquired Phelps Dodge.

During 2011, a pipeline was completed to bring water purchased from a nearby sewage treatment facility to the Candelaria mine. A desalination plant at the port of Caldera was built and commissioned in 2013 at a capacity of 500 litres per second.

The Santos underground mine has been in production since 1929, with processing taking place at what is now called the Pedro Aguirre Cerda (PAC) plant. Phelps Dodge became sole owner of Minera Ojos del Salado and the Santos mine and PAC plant in 1985. The PAC plant has been expanded several times to its current capacity of 3,800 tonnes per day. Sumitomo acquired its 20 percent interest in Minera Ojos del Salado in 2005.

In early 1996, production from the Alcaparrosa underground mine commenced.

In November 2014, Lundin acquired Freeport's interest in the Candelaria Copper Mining Complex.

The Candelaria Copper Mining Complex has been a significant producer of copper since the mid-1990s. Over the last four years, annual contained copper and gold metal in concentrates has averaged approximately 174 kilotonnes and 100,000 ounces, respectively.

During 2015, the Candelaria 2030 project received environmental approval. Key permits were received during 2016 for the construction of the new Los Diques tailings storage facility and major civil works began in August 2016 and construction continued through 2017. The Los Diques tailings storage facility is scheduled to receive its first tailings during the first quarter of 2018.

During 2017 permits were granted to allow the Candelaria Underground operations to expand production from 6,000 to 14,000 tonnes per day.

Geology, Mineralization, and Deposit Types

The Candelaria sulphide deposit is located at the boundary between the Coastal Cordillera and the Copiapó Precordillera. The Coastal Cordillera of Chañaral and Copiapó is composed of Permian to Lower Cretaceous intrusions within a basement of metasedimentary rocks of Devonian to Carboniferous age. Volcanic, volcaniclastic, and marine carbonate rocks represent intra- and back-arc sequences that were deposited during Early to Mid-Cretaceous.

The Candelaria, Santos, and Alcaparrosa mines are located in the district of Punta del Cobre. The polymetallic sulphide deposits are hosted in volcanic rocks of the Punta del Cobre Formation. Polymetallic sulphide deposits in the Punta del Cobre district are located to the east of the main branches of the Atacama fault zone, a subduction-linked, strike-slip fault system stretching over 1,000 kilometres along the Chilean coast and active at least since the Jurassic. The dominant structural elements of the Punta del Cobre area are the northeast-trending Tierra Amarilla Anticlinorium, a southeast-verging fold-and-thrust system and a series of north-northwest- to northwest-trending high-angle faults.

The copper-gold sulphide mineralization found at the Candelaria Copper Mining Complex is generally referred to as iron oxide copper gold (IOCG) mineralization. The sulphide mineralization occurs in breccias, stockwork veinlets, disseminations in andesite, and as an internal tuff unit. There are also some localized controls to mineralization in the form of faults, breccias, veins, and foliation. Candelaria has become an exploration model for Andean-type IOCG deposits that display close relationships to the plutonic complexes and broadly coeval fault systems. Depending on lithology and the structural setting, the polymetallic sulphide mineralization can

occur as veins, hydrothermal breccias, replacement mantos, and calcic skarns. The Candelaria IOCG system lies within the thermal aureole of the Lower Cretaceous magmatic arc plutonic suite in the Candelaria-Punta del Cobre district.

Exploration Status

Ongoing exploration is conducted by the Candelaria Copper Mining Complex with the primary purpose of supporting mining and increasing the estimated Mineral Resources and Mineral Reserves available for mining. Exploration is focused on the known mantos, veins, and breccia masses in proximity to existing underground infrastructure. Historically, this strategy has proven very effective in defining new Mineral Resources available for underground mining. Much of the exploration is conducted from underground, requiring significant underground development to provide adequate drilling stations. Regional exploration is also undertaken on the large properties surrounding the mines to identify targets and define new Mineral Resource areas.

From 2010 to the end of June 2017, Minera Candelaria and Minera Ojos del Salado have together invested more than US$189 million in exploration to expand the Mineral Resource estimates primarily below the Candelaria Open Pit, to the north and south of the pit, and at the three underground mines (Candelaria Underground, Santos and Alcaparrosa). During this period, 2,309 core boreholes (608,851 metres) were drilled requiring 13,327 metres of underground development to provide access for drilling. Since Lundin purchased the Candelaria Copper Mining Complex in late 2014 to the end of June 2017, there has been an investment in exploration of US$60 million. During this period 982 core boreholes (284,232 metres) were drilled and 1,386 metres of underground exploration development were completed.

The recent aggressive exploration program has resulted in significant new discoveries with a positive impact particularly on the life of the three underground mines. In 2015, a new exploration and resource development tool, Mineral Inventory Range Analysis ("MIRA") was initiated with the purpose to understand the potential mineral inventory remaining in the mines as well as within the Candelaria land holdings. Since 2015, mineral inventories have increased across the Candelaria district as a result of the aggressive exploration programs, block model integrations, and new discoveries in both Alcaparrosa and Candelaria mines.

Building on this exploration success, an aggressive exploration program is planned for the period 2018 to 2022, targeting the lateral extensions of the areas investigated since 2010 and exploring district targets to the north and south of mining infrastructure within the Minera Candelaria and Minera Ojos del Salado land holdings. The planned exploration program includes 5,655 metres of underground development, 453,000 metres of core drilling, and extensive geophysical surveying at a total estimated cost of US$130 million.

The exploration potential of the Candelaria Copper Mining Complex remains excellent. SRK is of the opinion that aggressive exploration programs and the MIRA exploration and Mineral Resource development initiative will continue to expand the underground Mineral Resource estimates.

Drilling, Sample Preparation, Analyses, and Security

Mineral Resources are estimated from information obtained from surface and underground boreholes. From 1990 to June 30, 2017, 2,944 core and percussion boreholes (914,252 metres) were drilled in and around the Candelaria mine. At the Santos mine, a total 1,442 core boreholes (288,411 metres) were drilled from underground and surface stations since 1988. The borehole database for the Alcaparrosa mine contains 1,002 boreholes (246,766 metres) drilled from surface and underground locations.

The drilling and sampling procedures are consistent with generally recognized industry best practices. SRK concludes that the samples are representative of the source materials and there is no evidence that the sampling process introduced a bias.

Analytical samples informing the Candelaria Mineral Resource estimates were prepared and assayed at the Candelaria mine laboratory that is accredited to ISO17025 for the analyses of copper, iron, zinc, and silver. Analytical samples informing the Ojos del Salado Mineral Resource estimates were prepared and assayed by Intertek (formerly Vigalab). Conventional preparation and assaying procedures were used. Copper is analyzed

by multi acid digestion and atomic absorption spectroscopy. Gold is assayed using a fire assay procedure. Specific gravity is systematically measured on core samples.

The Candelaria Copper Mining Complex implements analytical quality control measures consistent with generally accepted industry best practices. The analytical quality control program includes the use of control samples inserted with all samples submitted and check assaying by umpire laboratories. The analytical quality control data are routinely monitored and audited.

In the opinion of SRK, the analytical results delivered by the primary laboratories used are sufficiently reliable to inform Mineral Resource estimates. An apparent bias in the analytical results delivered by Intertek laboratory for silver was identified. This bias affecting samples assayed prior to 2015 was remedied and biased results were corrected. For the Open Pit area, boreholes with biased silver assay results were removed from the database so as not to affect the Mineral Resource models prepared since 2016, resulting in a small decrease in the silver grade in the Candelaria Open Pit Mineral Resource estimate.

The sampling preparation, security, and analytical procedures used are consistent with generally accepted industry best practices and are therefore adequate to support Mineral Resource estimation.

Mineral Processing and Metallurgical Testing

The Candelaria Copper Mining Complex maintains regular metallurgical testing programs that are incorporated with historical testing results and mill performance into a statistical model to predict and improve processing performance in terms of mill throughput, metal recovery to concentrate, and final concentrate grade. Metallurgical tests are executed in several specialized in-house and commercial facilities. Testing includes rock hardness classification, mineralogy using QEMSCAN technology and bench scale flotation testing that is correlated with industrial scale performance in order to predict mill throughput and metallurgical performance.

The success of the recent exploration programmes has allowed the study of potential production expansion options. New metallurgical tests were initiated in late 2016 as part of a Feasibility Study to evaluate potential throughput increases at the Candelaria mill. Results and analysis from this testwork programme were evaluated and many process improvement initiatives have now commenced, focussing on debottlenecking and improving the performance of the existing mill facilities.

Mineral Resource and Mineral Reserve Estimates

The Mineral Resource estimates discussed herein are informed from core drilling information stored in a secured central database, and were evaluated using a geostatistical block modelling approach. Five Mineral Resource models were prepared for the areas comprising the Candelaria Open Pit mine and the three underground mines (Candelaria Underground [North Sector], Candelaria Underground [South Sector], Santos, and Alcaparrosa) using slightly different methodologies and assumptions. The block models comprising the Candelaria Underground and Santos underground deposits were integrated in 2017.

SRK reviewed and audited the Mineral Resource models prepared by Minera Candelaria and Minera Ojos del Salado personnel. In the opinion of SRK, the Mineral Resource estimation reported herein is a reasonable representation of the Mineral Resources found at the Candelaria Copper Mining Complex at the current level of sampling. The Mineral Resources have been estimated in conformity with generally accepted CIM *Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines* and are reported in accordance with Canadian Securities Administrators' National Instrument 43-101. The consolidated audited Mineral Resource Statement for the Candelaria Copper Mining Complex, as of June 30, 2017, is presented in Table i. Mineral Resources include Mineral Reserves.

Table i: Consolidated Audited Mineral Resource Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
	Tonnes ('000)	Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Open Pit							
Measured	389,374	0.55	0.13	1.73	2,154	1,614	21,684
Indicated	28,942	0.42	0.12	1.30	122	108	1,206
Measured and Indicated	**418,316**	**0.54**	**0.13**	**1.70**	**2,276**	**1,721**	**22,889**
Inferred	5,976	0.27	0.06	0.93	16	12	178
Underground							
Measured	147,844	1.15	0.26	3.56	1,694	1,215	16,939
Indicated	82,279	1.06	0.23	3.11	869	605	8,223
Measured and Indicated	**230,123**	**1.11**	**0.25**	**3.40**	**2,563**	**1,820**	**25,162**
Inferred	17,851	1.04	0.24	1.75	185	138	1,001
WIP**							
Measured	92,386	0.34	0.09	1.41	314	272	4,183
Indicated							
Measured and Indicated	**92,386**	**0.34**	**0.09**	**1.41**	**314**	**272**	**4,183**
Inferred							
Combined							
Measured	629,604	0.66	0.15	2.11	4,162	3,101	42,805
Indicated	111,222	0.89	0.20	2.64	992	712	9,429
Measured and Indicated	**740,825**	**0.70**	**0.16**	**2.19**	**5,153**	**3,813**	**52,233**
Inferred	23,827	0.84	0.20	1.54	201	149	1,179

* Reported within the boundaries of the Compañía Contractual Minera Candelaria and Compañía Contractual Ojos del Salado properties. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimates. Mineral Resources include Mineral Reserves. Open pit Mineral Resources are reported at a cut-off grade of 0.2 percent copper within a conceptual pit shell based on metal prices of US$3.16 per pound of copper and US$1,000 per ounce of gold and current topography. Underground Mineral Resources are reported at a cut-off grade of 0.6 percent copper. Parts of the open pit Mineral Resources have been converted into underground Mineral Reserves.

** Work-in-progress (WIP) stockpiles

Relative to 2016, the 2017 open pit Mineral Resources have decreased slightly and the underground Mineral Resources have increased significantly, particularly from Candelaria Underground (North Sector) and at the Santos underground mine.

The Candelaria Open Pit Mineral Resources show good reconciliation to the grade control models. For the period July 2016 to June 2017, the reconciliation on copper metal between the long- and short-term models, and between the long-term model and the mill were approximately -9 percent and -6 percent, respectively.

Mineral Reserves are derived from Measured and Indicated Mineral Resources after applying economic parameters. The Mineral Reserves are derived and classified according to the following criteria:

- Proven Mineral Reserves are the economically mineable part of the Measured Mineral Resources where development work for mining and information on processing/metallurgy and other relevant factors demonstrate that economic extraction is achievable.
- Probable Mineral Reserves are those Measured and Indicated Mineral Resources where development work for mining and information on processing/metallurgy and other relevant factors demonstrate that economic extraction is achievable.

The consolidated audited Mineral Reserve Statement for the Candelaria Copper Mining Complex is presented in Table ii. Mineral Reserves are included in Mineral Resources.

Table ii: Consolidated Audited Mineral Reserve Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity ('000 t)	Grade			Contained Metal		
		Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Open Pit							
Proven	295,012	0.54	0.13	1.75	1,591	1,188	16,569
Probable	20,880	0.45	0.12	1.66	94	80	1,117
Total	**315,892**	**0.53**	**0.12**	**1.74**	**1,685**	**1,268**	**17,687**
WIP (Candelaria)**							
Proven	92,316	0.34	0.09	1.41	313	271	4,179
Probable							
Total	**92,316**	**0.34**	**0.09**	**1.41**	**313**	**271**	**4,179**
Underground							
Proven	54,967	0.89	0.21	3.11	491	371	5,500
Probable	34,240	0.86	0.19	2.92	296	209	3,215
Total	**89,207**	**0.88**	**0.20**	**3.04**	**787**	**580**	**8,714**
WIP Ojos del Salado**							
Proven	70	0.87	0.22	1.69	1	0.5	4
Probable	–	–	–	–	–	–	–
Total	**70**	**0.87**	**0.22**	**1.69**	1	0.5	**4**
Combined							
Proven	442,364	0.54	0.13	1.85	2,395	1,830	26,251
Probable	55,120	0.71	0.16	2.44	390	289	4,332
Total	**497,484**	**0.56**	**0.13**	**1.91**	**2,785**	**2,120**	**30,584**

* Mineral Reserves are included in Mineral Resources. Mineral Reserves have been prepared using metal prices of US$2.75 per pound of copper, US$1,000 per ounce of gold, and US$15.00 per ounce of silver. All figures have been rounded to reflect the relative accuracy of the estimates. Minera Candelaria Mineral Reserves for open pit and underground are reported at cut-off grades of 0.20 and 0.60 percent copper, respectively. Underground Mineral Reserves for Alcaparrosa and Santos mines are reported at cut-off grades of 0.63 and 0.66 percent copper, respectively.

** Work-in-progress (WIP) stockpiles

Mining Methods

The Candelaria Open Pit mine operates with an overall mining rate of approximately 228,000 tonnes per day including 64,800 tonnes per day of ore sent to the Candelaria processing plant. The average grade of the ore that will be mined from the open pit over the remaining life of mine (LOM) is estimated at 0.53 percent copper, while stockpiled work-in-progress material is estimated to have an average grade of 0.34 percent copper. The mine currently operates seven electric shovels, 43 haulage trucks, eight production drills, and a fleet of support equipment. A major open pit mine equipment re-capitalization programme has been approved that will see much of the current fleet replaced over the next four years.

The Candelaria Underground mine is forecast to produce 7,000 tonnes per day of ore in 2017, ramping up to a steady state of 14,000 tonnes per day by 2021 as per the LOM plan. The average LOM grade is 0.89 percent copper. The Alcaparrosa mine currently produces 4,300 tonnes per day of ore and is expected to maintain that rate in the LOM plan. The life of mine average grade is 0.77 percent copper. The Santos mine will continue to produce at its current rate of production of 5,100 tonnes per day of ore with an average LOM grade of 0.94 percent copper. The mining method in all three underground mines is sublevel open stoping.

The LOM plan for the Candelaria Copper Mining Complex is largely driven by supplying ore to the Candelaria processing plant from the open pit mine and surface stockpiles once the open pit Mineral Reserves have been depleted. The open pit and work-in-progress stockpile Proven and Probable Mineral Reserves are estimated at 408.2 million tonnes at an average grade of 0.49 percent copper, 0.12 gram of gold per tonne, and 1.67 grams per tonne silver.

The open pit was designed to be mined in several phases of development. As of June 2017, five phases of development remain in the LOM plan (Phases 9 to 13). The overall strip ratio is expected to be 2.7:1 including ore that is initially delivered to stockpiles. The total in-pit waste is 871.6 million tonnes and the overall life of the open pit mine is 18 years. The new phase designs will reduce phase operations interaction, recover waste stripping and provide and should improve copper production profile from 2021. These new phase designs will require an increase in waste stripping in 2018 and 2019. Candelaria is planning a substantial mine equipment recapitalization program to replace the aged mining equipment fleet and a change in the loading methodology to increase capacity and efficiency while improving equipment availability and reliability. The forecast total cost over the next four years of this mine equipment recapitalisation programme is US$218.8 million.

Following a localized failure in the east wall of the Phase 9 pit in October 2017, modifications were made to the Phase 9 design and the LOM schedule. The Mineral Reserves were not affected by the change in design as material now excluded from the original Phase 9 will be captured in Phase 10 in 2020 and 2021. However, the forecast for 2018 now shows a reduction in contained copper of approximately 20 percent over the previous production plan, as additional low grade stockpile material will be processed in place of higher grade ore previously scheduled from Phase 9.

The three underground mines (Candelaria Underground, Santos, and Alcaparrosa) utilize a sublevel stoping mining method for ore extraction. This method is ideal for relatively large, vertical, as well as thick deposits with favourable and stable host rock. Stopes can typically be up to 100 metres high with sublevels at 20 to 60 metre intervals. The length of the stopes is generally 20 to 80 metres with widths varying between 20 to 30 metres. Stopes are drilled down from the sublevel drilling drifts as benches using 4.5-inch diameter down-the-hole holes. The holes are loaded and blasted in vertical slices towards an open face. The blasted ore gravitates to the bottom of the stope and is collected through drawpoints at the production level below. Ore is mucked from the drawpoints using surface-type front-end loaders and load haul dumps. The mucked ore is dumped into 30-tonne highway type trucks and hauled up the ramp to a surface stockpile for subsequent re-handling and processing. The current mine lives of the Candelaria Underground, Alcaparrosa, and Santos mines are 14, 7 and 7 years, respectively.

For 2017, the Candelaria Copper Mining Complex is forecast to produce contained metals in concentrate (100 percent basis) of 184 kilotonnes of copper, 105 kilo ounces of gold and 1.8 million ounces of silver. Over the remaining life of mine plan (to 2035), the average annual production is estimated to be 140 kilotonnes of copper, 82 kilo ounces of gold and 1.3 million ounces of silver. This is an improvement over the previously reported production schedule and increases the overall project economics.

Recovery Methods

The Candelaria processing plant receives ore from the Candelaria Open Pit and the Candelaria Underground (North Sector) and Alcaparrosa underground mines. It has a nameplate capacity of 75,000 tonnes per day. The PAC processing plant receives ore from the Santos underground mine and has a design capacity of 3,800 tonnes per day.

The historical processing performance of Minera Candelaria from 2000 to mid-2017 averaged 25.6 million tonnes per year, equivalent to approximately 70,000 tonnes per day with a utilization of 93 percent. During this period, metallurgical recovery averaged 94 percent for copper, 75 percent for gold, and 83 percent for silver.

The Candelaria processing plant flowsheet is conventional, comprising two parallel process lines for grinding and flotation, reclaimed process water from a conventional tailings dam, final concentrate filtration, and shipping of bulk copper concentrates. Run of mine ore is trucked to a primary gyratory crusher. Grinding takes place in a multi-stage closed circuit using semi-autogenous grinding (SAG) mills, ball mills, and pebble crushing. A multi-stage flotation circuit using an arrangement of mechanical cells, regrind mills and column cells produces copper concentrate. Final flotation copper concentrate with gold and silver by-product metals is thickened, filtered, and stored on site. Final flotation tails are conventionally thickened and disposed of in a rockfill embankment tailings storage facility. Process water is reclaimed from the tailings dam for reuse in the processing plant.

The PAC processing plant has been in operation since 1929. The plant processes 3,800 tonnes per day of fresh feed from the Santos underground mine with an average historical head grade of 0.85 percent copper and a copper recovery of 94 percent. The historical gold and silver recoveries are 72 percent.

The PAC processing plant flowsheet comprises a closed-circuit crushing plant including a primary jaw crusher, a secondary cone crusher, and two tertiary cone crushers. The grinding circuit has three ball mills operating in parallel and in direct closed circuit with hydro-cyclone classification. The flotation plant uses conventional multi-stage, mechanical, self-aspired and forced-air flotation cells, regrind milling, and column cells for the final concentrate cleaning stage. The final concentrate is thickened and filtered using a ceramic disc filter. Final flotation tailings from the PAC plant are pumped to the main Candelaria tailings storage facility.

Copper concentrates containing precious metals are trucked to the Punta Padrones port, near Caldera. In 2017, the typical Candelaria copper concentrate is forecast to average 29.5 percent copper, 5.3 g/t gold, and 97 g/t silver with a moisture content of 8.0 percent after filtration. The copper concentrate of the PAC plant is forecast to average 29.7 percent copper, 4.9 g/t gold, and 50 g/t silver.

Minera Candelaria has an agreement with a third-party company to process Candelaria's flotation tailings to produce a magnetite concentrate and this produces an additional source of by-product revenue.

The current Candelaria tailings storage facility receives the flotation tails from the Candelaria and PAC processing plants. The Candelaria flotation tails are thickened and then pumped to the tailings storage facility at an average solids concentration of 50 percent. The PAC flotation tails are pumped unthickened at an average concentration of 35 percent. The forecast tailings storage capacity at the end of 2017 is estimated at 7.1 million cubic metres, sufficient to receive tailings until the June 2018. At the end of October 2017, the construction of the new Los Diques tailings storage facility is 84 percent complete. It is expected to receive its first tailings during the first quarter of 2018. The Los Diques tailings storage facility is located to the southwest of the open pit and plant sites and will have an approximate designed capacity of 600 million tonnes, more than what is required by the current projected mine life.

Project Infrastructure

The Minera Candelaria infrastructure includes:

- Candelaria Open Pit with a capacity of approximately 270,000 tonnes of rock per day.
- Surface waste dumps located to the north and southwest of the Candelaria Open Pit.
- Candelaria processing plant with a nameplate capacity of 75,000 tonnes per day. A series of process improvements are scheduled for 2018 and 2019.
- Candelaria Underground (North Sector) with a current production ore capacity of 7,500 tonnes per day ramping up to 10,000 tonnes per day in 2020.
- Candelaria Underground (South Sector) scheduled to come online in 2019 and ramping up capacity to 4,000 tonnes per day in 2020.
- Candelaria tailings storage facility located northwest of the Candelaria Open Pit.
- The new Los Diques tailings storage facility located to the east of the open pit and mine facilities.
- Ancillary mine services and administrative buildings and road accesses.
- Off-site Punta Padrones port located at Caldera with a 45,000-wet metric tonne designed storage capacity and 1,000 wet metric tonnes per hour loading capacity.
- Desalination plant adjacent to the port facility commissioned in January 2013 with a capacity of 500 litres per second and the related aqueduct to connect to the Bodega pump station (80 kilometres).
- Pipeline from the Bodega pump station to the Candelaria plant site (40 kilometres).

The Minera Ojos del Salado infrastructure includes:

- Alcaparrosa underground mine with an ore capacity of 4,300 tonnes per day.
- Santos underground mine with an ore capacity of 5,100 tonnes per day.
- PAC processing plant with a capacity of 3,800 tonnes per day.
- Ancillary surface service buildings and road accesses.

Market Studies

The quality of the copper concentrates produced by the Candelaria Copper Mining Complex is excellent. The concentrates are clean and have very low content of critical elements such as lead, arsenic, antimony, bismuth, and mercury. The range of the zinc content in the Candelaria copper concentrates is very wide (0.1 percent to 3.75 percent) and may, from time to time, result in modest penalties from some copper smelters.

The copper concentrates have significant by-product credits of gold and silver. From a technical specification standpoint, the copper concentrates have no limitations and can be treated at all copper smelters worldwide. The Candelaria copper concentrate is sold under eight long-term contracts expiring from the end of 2017 to 2019. The concentrate is shipped from the Punta Padrones port facility to destinations in Europe, China, Japan and Korea. The Minera Ojos de Salado copper concentrate is currently sold under two long-term contracts: one for domestic delivery in Chile and one for delivery to Japan. The contracts run to the end of 2018 and 2019, respectively, and both are referenced against annual copper smelter treatment terms.

Environmental Studies, Permitting, and Social or Community Impact

The Candelaria Copper Mining Complex is located at approximately 800 metres above sea level in the southern margins of the Atacama Desert, south of the major regional center of Copiapó and a few kilometres from the community of Tierra Amarilla. The Punta Padrones facilities are located adjacent to the coastal community of Caldera, approximately 110 kilometres from the mine and mill. The arid and proximity to communities and agricultural areas and fishing zones constitute the major environmental and social constraints on project development and mine operation.

Chile has in place a comprehensive regulatory framework for mining and other industrial activities, dating from the mid-1990s and most recently updated in 2013. Although the Candelaria Copper Mining Complex was permitted and developed prior to the modern framework being in place, it holds numerous environmental approvals stemming from modifications to the original developments. In addition, the complex holds more than 1,000 permits for construction and operation of the mining and milling facilities, and related infrastructure.

The most recent environmental assessment process was initiated in September 2013 with the submittal of an Environmental Impact Study (*Estudio de Impacto Ambiental*, EIA). The "Candelaria 2030" EIA included, among other things, an extension of the operating life of the facilities and the Los Diques tailings storage facility. The EIA received regulatory approval with conditions on July 2015, and the major construction permits for Los Diques were acquired approximately a year later, allowing construction of the main embankment to commence in August 2016. None of the conditions of approval represent risks to the technical or economic feasibility of the operation.

The Alcaparrosa mine's current environmental approval expires at the end of 2017. An EIA was submitted in May 2017 to extend its operating life until 2022. At the end of November 2017, this EIA remains under, with the major technical issues substantially resolved, Lundin expects to receive a *Resolución de Calificación Ambiental* (RCA) by the end of 2017. Failing this, Lundin may seek an interim extension of the existing environmental permit, or may suspend operations at Alcaparrosa until the RCA is issued.

An Environmental Impact Declaration (*Declaración de Impacto Ambiental*, or DIA) for the extension of the tailings transportation from the PAC plant to the Candelaria tailing storage facility for the mine life through 2030 was submitted in December 2016 and approval was received in November 2017.

The Environmental Management Systems for the Candelaria Copper Mining Complex have been certified under the international ISO 14001 Standard. Minera Candelaria was most recently re-certified in March 2015 and the certification for Minera Ojos del Salado was achieved in September 2016. During 2017, implementation of the updated standard ISO 14.001 in all their areas was initiated and the compliance was certified. An External Audit is planned for January 2018.

In December 2016, The Candelaria Copper Mining Complex received notice of fines totaling approximately US$4 million, related to alleged instances of non-compliance with its environmental approvals stemming from two inspections carried out by regulatory authorities in 2013 and 2014, prior to ownership by Lundin. The sanctioning resolution was challenged before the Environmental Courts (Tribunal Ambiental). In June 2017, the Candelaria Copper Mining Complex presented its appeal in front of the Environmental Court. It is expected that the process could take up to a year or more to be resolved. Depending on the outcome of the appeals process before the Environmental Court, this case could be appealed to the Supreme Court (Corte Suprema). The Candelaria Copper Mining Complex does not foresee any impact of this legal process on production.

Separate Mine Closure Plans are in place for Minera Candelaria and Minera Ojos del Salado. Both have been approved by the National Geology and Mining Service (Spanish acronym SERNAGEOMIN). The approved closure costs are US$57.7 million for Minera Candelaria and US$9.0 million for Minera Ojos del Salado. In December 2016, an updated closure plan was submitted to SERNAGEOMIN for review and approval, which includes the Candelaria 2030 developments, and is expected to be approved before the end of 2017.

The Candelaria Copper Mining Complex is an active participant in civil society in the Atacama region of Chile, with social initiatives focussed principally on the communities nearest to the mine and port sites, namely Tierra Amarilla and Caldera. The Candelaria Copper Mining Complex operates liaison offices in both communities and has implemented a formal Stakeholder Engagement Plan and a grievance/suggestions mechanism. Community forums, called “Encuentros con Candelaria” and consisting of open meetings, have been conducted to share relevant information about the company’s strategic plan and initiatives on topics related to safety, environmental, operational and social performance.

The Candelaria Copper Mining Complex has in place an agreement with the local government of Tierra Amarilla, which makes available more than US$16 million to develop a portfolio of community programs in areas such as housing, culture and health services improvements. In addition, at Caldera where most residents are either directly or indirectly linked to the fishing industry, Minera Candelaria established the Fishermen Development Fund to offer local fishermen resources to develop individual and collective projects in the four main areas of housing, health, education and economic development.

In May 2017, the Candelaria Copper Mining Complex initiated a process to develop a 5-year Strategic Development Plan aimed to position the Candelaria Copper Mining Complex as a catalyst for the development of the Atacama region, together with the generation of public-private partnerships. The key pillars of the process are economic development, education, wellness and social and environmental innovation.

Capital and Operating Costs

The average open pit mining cost over the next four years (2018 – 2021), excluding the impact of capitalized waste stripping, is estimated to be US$2.60 per tonne of material moved, with annual fluctuations. Total mining costs include ore and waste stripping. Costs have risen slightly over the previous forecast with the planned use of mining contractors in 2018 and 2019 and as a result of new phasing in the open pit. Diesel, electricity and supplies costs are slightly higher than those previously forecast, as are labour costs with a new labour contract.

The average underground mining cost over the next four years at Candelaria Norte is estimated to be US$15.00 per tonne, with overall costs falling as production increases in the last year of operations. Contractor costs make up some 82 percent of the total mining costs. The forecast average Ojos del Salado unit underground mining cost over the next four years is estimated at approximately US$20.40 per tonne. Both the Santos and Alcaparrosa mines are operated by a common contractor on unit rate contracts and these contract rates have risen slightly over previous years. The mine lives at Santos and Alcaparrosa have both been extended to 2024.

The forecast average unit processing cost for Minera Candelaria over the next four years is estimated to be US$6.70 per tonne, with the varying unit costs year on year largely influenced by changes in throughput (due to ore hardness) and the treatment of stockpiled material. Costs have increased slightly from those published in the previous technical report largely as a result of higher energy, labour (new union agreement) and contractor (for maintenance activities) costs.

The average processing cost for Minera Ojos del Salado over the next four years is estimated to be US$8.00 per tonne. This is a combination of the costs for treating the Santos ore at the PAC plant and the Alcaparrosa ore at the Candelaria plant. Energy and supplies make up the largest cost element, although given the significantly smaller scale of the plant, labour and contractor costs are proportionately larger.

Minera Candelaria unit general and administrative cost (G&A) over the next four years is estimated to be US$2.30 per tonne. For Minera Ojos del Salado, the average unit G&A cost over the next four years is expected to be US$1.80 per tonne.

For 2017, the forecast combined Candelaria Copper Mining Complex C1 cash operating cost is estimated to be less than US$1.20 per pound. From 2018 to 2021, the forecast C1 cash costs are estimated at between US$1.50 and US$1.70 per pound of copper net of by-product credits and the effect of the Franco-Nevada gold and silver streaming agreement. Life of mine C1 cash costs are forecast to average approximately US$1.39 per pound of copper net of by-product credits and the Franco-Nevada gold and silver streaming agreement. Fluctuations in the cash cost are largely driven by the changes in the copper head grade in the open pit, and hence copper metal production, over the life of mine.

At Minera Candelaria, total capital expenditures over the period 2018 to 2021, excluding capitalized waste stripping, are forecast at US$614.1 million and from 2022 to 2026 at US$338.3 million. In the Candelaria Open Pit mine, a major recapitalization of the open pit mine equipment fleet has been approved. This includes new trucks, shovels and ancillary equipment at a forecast total cost of US$218.8 million over the next four years. Capital costs for the Candelaria Underground mine have increased significantly and represent the development and supporting mine infrastructure for the expanded production in the north sector of the Candelaria Underground and the initial development of the south sector of the mine. The south sector of the mine will be undertaken by owner operator teams and equipment. The total pre-production capital is $47 million of which $20 million will be spent in 2018. Candelaria mill capital costs are forecast at US$101.1 million over the next four years including a number of significant process improvement initiatives approved that will increase mill throughput by 4,000 tonnes per day and copper metal recovery by a forecast 1.7 percent. Tailings capital costs include the completion of the initial phase of the new Los Diques tailings storage facility, which is expected in mid-2018, and the early commencement of subsequent phases of the facility reducing both operating and capital costs over the long term. G&A costs include a number of environmental and local community initiatives.

During the production phase of the Candelaria Open Pit mine, waste stripping costs which provide probable future economic benefits and improved access to the orebody are capitalized to mineral properties. Lundin capitalizes waste stripping costs when experienced strip ratios are above the average planned strip ratio for each open pit phase under development. Capitalized waste stripping from the open pit is forecast to be US$641.3 million for the period 2018 to 2021, and represents the changed phasing of the open pit and the increased stripping ratio over the short term. This short-term increase results in an improved copper production profile over the life of mine and overall improvement in Candelaria's economics.

Economic Analysis

Producing issuers may exclude the information required under Economic Analysis (Item 22 of Form 43-101F1) for technical reports on properties currently in production unless the technical report includes a material expansion of current production.

Conclusions and Recommendations

The Candelaria Copper Mining Complex is a world class long life copper mining operation with potential to further extend the operating life. In 2017, the operations are forecasted to collectively produce contained metals in concentrates (100% basis) containing 184 kilotonnes of copper, 105,000 ounces of gold, and 1.8 million ounces of silver.

The technical information about the Candelaria Copper Mining Complex is extensive and attests to the high overall quality of the exploration, mine planning, design work and operational reporting completed by site personnel, as is expected from a world class asset. SRK examined the exploration, geology and Mineral

Resource modelling, mine designs, Mineral Reserve estimates, processing, and environmental aspects of the Candelaria Copper Mining Complex. On the basis of the results from the audit samples, SRK concludes that the Mineral Resource and Mineral Reserve Statements for the Candelaria Copper Mining Complex as of June 30, 2017 are appropriately categorized and free of material errors. Financial information examined by SRK confirms that the Mineral Reserves are economic under the assumptions considered.

The environmental permit for the Alcaparrosa mine was extended to 2018, and a EIA was submitted to the regulatory authorities to extend mine life until 2022. The approval is expected in the last quarter of 2017.

The construction of Los Diques tailings storage facility is well advanced. Completion of Los Diques tailings storage facility and the placement of first tailings is forecast in the first quarter 2018.

The Candelaria Copper Mining Complex has a life of mine projected to at least 2035 with the depletion of the Mineral Reserves disclosed herein. Since 2010, aggressive exploration has defined several new sulphide mineralization zones amenable to underground mining that offer a very good opportunity to expand the Mineral Reserves and extend the lives of the underground mines.

SRK strongly recommends that Lundin continues its aggressive exploration programs that have been very successful in increasing the Mineral Resource and the Mineral Reserve estimates of the Candelaria Copper Mining Complex. Furthermore, studies initiated in 2016 to investigate expansion options for the underground mines, re-optimization of the open pit mine, and increase the throughput of the main Candelaria process plant should be completed. The regional exploration potential of the large exploration properties remains excellent. The regional exploration plan laid out has the potential to generate new discoveries within the properties controlled by the Candelaria Copper Mining Complex.

Table of Contents

IMPORTANT NOTICE ii

Executive Summary iii
Property Description and Ownership iii
History vi
Geology, Mineralization, and Deposit Types vi
Exploration Status vii
Drilling, Sample Preparation, Analyses, and Security vii
Mineral Processing and Metallurgical Testing viii
Mineral Resource and Mineral Reserve Estimates viii
Mining Methods x
Recovery Methods xi
Project Infrastructure xii
Market Studies xiii
Environmental Studies, Permitting, and Social or Community Impact xiii
Capital and Operating Costs xiv
Economic Analysis xv
Conclusions and Recommendations xv

Table of Contents xvii

List of Tables xxi

List of Figures xxiii

1 Introduction and Terms of Reference 1
1.1 Terms of Reference 1
1.2 Qualification of SRK 2
1.3 Basis of Technical Report 3
1.4 Declaration 4

2 Reliance on Other Experts 5

3 Property Description and Location 6
3.1 Mineral Tenure 7
3.1.1 Minera Candelaria 7
3.1.2 Minera Ojos del Salado 7
3.2 Water Use Rights 9
3.3 Mineral Rights in Chile 9
3.3.1 Exploration Concessions 10
3.3.2 Exploitation Concessions 10

4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography 11
4.1 Accessibility 11
4.2 Local Resources and Infrastructure 11
4.3 Climate 11
4.4 Physiography 12

5 History 14

6 Geological Setting and Mineralization 16
6.1 Regional Geology 16

6.2 Local Geology 16
6.3 Property Geology 18
6.3.1 Geology of the Candelaria Mine 18
6.3.2 Geology of the Santos Mine 20
6.3.3 Geology of the Alcaparrosa Mine 22
6.4 Mineralization 23
6.4.1 Mineralization at the Candelaria Mine 23
6.4.2 Mineralization at the Santos Mine 23
6.4.3 Mineralization at the Alcaparrosa Mine 24

7 Deposit Types 25

8 Exploration 26
8.1 SRK Comments 33

9 Drilling 34
9.1 Drilling at Candelaria 34
9.2 Drilling at Ojos del Salado 36
9.2.1 Santos Mine 36
9.2.2 Alcaparrosa Mine 37
9.3 Sampling Method and Approach 38
9.4 SRK Comments 38

10 Sample Preparation, Analyses, and Security 39
10.1 Historical Samples 39
10.2 Core Samples (1985 to Present) 39
10.2.1 Mineral Candelaria 39
10.3 Specific Gravity Data 40
10.4 Quality Assurance and Quality Control Programs 40
10.4.1 Historical Analytical Quality Control at Alcaparrosa 40
10.4.2 Analytical Quality Control (1985 to Present) 40
10.5 Sample Security 41
10.6 SRK Comments 42

11 Data Verification 43
11.1 Verifications by the Candelaria Copper Mining Complex 43
11.2 Verifications by SRK 43
11.2.1 Site Visit 43
11.2.2 Review of Exploration Data and Mineral Resource Models 44

12 Mineral Processing and Metallurgical Testing 45
12.1 Metallurgical Testing at the Candelaria Processing Plant 45
12.2 Mineralogy 48

13 Mineral Resource Estimates 49
13.1 Introduction 49
13.2 Mineral Resource Estimation Procedures 49
13.2.1 Minera Candelaria Open Pit 50
13.2.2 Minera Candelaria Underground 52
13.2.3 Minera Ojos del Salado Underground 54
13.3 SRK Comments 56
13.4 Mineral Resource Statement 56
13.5 Reconciliation 60

14 Mineral Reserve Estimates 64
14.1 Commercial Orientation 64
14.2 Minera Candelaria 64

14.2.1 Candelaria Open Pit Mineral Reserves 64
14.2.2 Mineral Reserves of the Candelaria Underground Mine 70
14.3 Mineral Reserves of the Minera Ojos del Salado 72
14.4 Mineral Reserve Statement 72

15 Mining Methods 75
15.1 Introduction 75
15.2 Open Pit Mine Design and Consolidated Production Schedule 75
15.3 Underground Mine Design and Production Schedule 84
15.4 Underground Mine Plan 90
15.5 Waste Dumps 91
15.6 Mine Equipment 91
15.6.1 Open Pit Mine Equipment 91
15.6.2 Underground Mine Equipment 93
15.7 Mining Opportunities 94

16 Recovery Methods 95
16.1 Minera Candelaria Plant 95
16.1.1 Processing Flowsheet 96
16.1.2 Reagents 98
16.1.3 Magnetite Recovery 98
16.2 Minera Ojos del Salado PAC Plant 99
16.3 Minera Candelaria Tailings Storage Facility 102
16.4 Los Diques Tailings Storage Facility 103
16.5 Process Improvement Initiatives 105

17 Project Infrastructure 107
17.1 Candelaria Copper Mining Complex 107
17.2 Power Supply 107
17.3 Punta Padrones Port Facilities 108
17.4 Fresh Water Supply 108

18 Market Studies and Contracts 110

19 Environmental Studies, Permitting, and Social or Community Impact 111
19.1 Environmental Studies and Regulatory Framework 111
19.2 Permitting and Compliance 112
19.2.1 Environmental Approvals 112
19.2.2 Environmental Compliance 115
19.3 Environment Management 116
19.3.1 Key Environmental Issues 116
19.3.2 Mine Closure Planning 119
19.4 Social and Community Issues 120

20 Capital and Operating Costs 123
20.1 Operating Costs 123
20.1.1 Mining Operating Costs 123
20.1.2 Processing Operating Costs 125
20.1.3 General and Administrative Costs 126
20.1.4 C1 Cash Costs 128
20.2 Capital Costs 129

21 Economic Analysis 131

22 Adjacent Properties 132

23 Other Relevant Data and Information 133

24 Interpretation and Conclusions 134
25 Recommendations 136
26 References 137
APPENDIX A 139
Signature Page 153

List of Tables

Table i: Consolidated Audited Mineral Resource Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) ix

Table ii: Consolidated Audited Mineral Reserve Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) x

Table 1: Responsibility for Technical Report Sections 2

Table 2: Qualified Persons 3

Table 3: Royalty Characteristics for Candelaria Tenements 7

Table 4: Contained Payable Metal in Concentrate (100% Basis) 15

Table 5: Summary Development History of the Candelaria Copper Mining Complex 15

Table 6: Summary of Exploration Program (2018 – 2022) 31

Table 7: Summary of Drilling Activities at Candelaria Mine (Open Pit and Underground) 34

Table 8: Summary of Drilling Activities Completed at the Santos Mine 36

Table 9: Summary of Drilling Activities Completed at the Alcaparrosa Mine 37

Table 10: Rock Hardness Classification, Unconfined Compressive Strength 45

Table 11: Metallurgical Testwork 2016-2017 47

Table 12: Comparison between 2016 and 2017 Block Models 50

Table 13: Classification Parameters for Open Pit Resources and Candelaria Underground South Sector Mineral Resources 51

Table 14: Interpolation Data and Parameters for Candelaria Open Pit and Underground Mines 52

Table 15: Classification Parameters for Minera Candelaria Underground Mineral Resources, North Sector 54

Table 16: Underground Interpolation Data and Parameters for Santos and Alcaparrosa Mines 55

Table 17: Classification Parameters for Minera Ojos del Salado Underground Mineral Resources, (Alcaparrosa and Santos Mines) 55

Table 18: Audited Mineral Resource Statement*, Compañía Contractual Minera Candelaria, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 57

Table 19: Audited Mineral Resource Statement*, Compañía Contractual Minera Ojos del Salado, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 58

Table 20: Consolidated Audited Mineral Resource Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 59

Table 21: Mineral Resources in Underground Pillars, Candelaria Copper Mining Complex, June 2017 60

Table 22: Monthly Reconciliation between Long Term and Short-Term Models and the Mill for the Candelaria Open Pit, Compañía Contractual Minera Candelaria (July 2016 to June 2017). 61

Table 23: Monthly Reconciliation between Long and Short-Term Models for the Candelaria Underground (North Sector), Minera Candelaria (July 2016 to June 2017) 61

Table 24: Monthly Reconciliation between Long and Short -Term Models for the Santos Mine, Minera Ojos del Salado (July 2016 to June 2017) 62

Table 25: Monthly Reconciliation between Long and Short-Term Models for the Alcaparrosa Mine, Minera Ojos del Salado (July 2016 to June 2017) 62
Table 26: Lundin Commercial Orientations for Mineral Reserves Report 2017 64
Table 27: Summary of Pit Optimization Parameters 66
Table 28: Summary of Mineability Factors Applied to Candelaria Underground Mineral Reserve Estimation 71
Table 29: Audited Mineral Reserve Statement*, Compañía Contractual Minera Candelaria, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 73
Table 30: Audited Mineral Reserve Statement*, Compañía Contractual Minera Ojos del Salado, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 73
Table 31: Consolidated Audited Mineral Reserve Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis) 74
Table 32: Candelaria Copper Mining Complex Mine Consolidated Production Schedule (100% Basis) 79
Table 33: Summary of Stope Setting 89
Table 34: Underground Mineral Reserve Schedule 91
Table 35: Waste Dump Capacity 91
Table 36: Open Pit Mine Equipment Additions and Replacements to 2018 2021 93
Table 37: Underground Mining Equipment 94
Table 38: Major Processing Equipment and Systems at Minera Candelaria 98
Table 39: List of Processing Plant Reagents and Consumptions 98
Table 40: Process Improvement Initiatives 105
Table 41: Minera Candelaria Environmental Approvals (RCAs*) 112
Table 42: Changes at Candelaria Approved Under *Pertinencias* 113
Table 43: Summary of Minera Ojos del Salado Approvals (RCAs*) 113
Table 44: Minera Ojos del Salado Changes Approved Under *Pertinencia* 114
Table 45: Environmental Monitoring Program 118
Table 46: Forecast Unit Operating Costs 123
Table 47: Forecast of Candelaria Open Pit Mining Costs 124
Table 48: Forecast of Operating Cost for Candelaria Underground Operations 125
Table 49: Forecast of Operating Cost for Ojos del Salado Underground Operations 125
Table 50: Forecast of Minera Candelaria Processing Cost 126
Table 51: Forecast of Minera Ojos del Salado Processing Cost 126
Table 52: Forecast of Minera Candelaria General and Administration Cost 127
Table 53: Forecast of Minera Ojos del Salado General and Administration Cost 127
Table 54: C1 Copper Cash Costs* 128
Table 55: Forecast Capital Investment Plan for Minera Candelaria 129
Table 56: Forecast Capital Investment Plan for Minera Ojos del Salado 130

List of Figures

Figure i: Location of the Mines Comprising the Candelaria Copper Mining Complex iv
Figure ii: The Local Infrastructure of the Candelaria Copper Mining Complex v
Figure 1: Location of the Mines of the Candelaria Copper Mining Complex 6
Figure 2: Candelaria and Ojos del Salado Land Tenure Map 8
Figure 3: Infrastructure and Landscape in the Project Area 12
Figure 4: Candelaria Copper Mining Complex and Related Local Infrastructure 13
Figure 5: Regional Geology Setting Around the Candelaria, Alcaparrosa, and Santos Mines 17
Figure 6: Schematic Vertical Section Showing the Location of the Candelaria and Santos Mines (see Figure 5 for section location) 18
Figure 7: Local Geology Setting of the Candelaria Mine 19
Figure 8: Geological Setting of Candelaria Underground (North Sector) 20
Figure 9: Geological Setting of the Santos Mine 21
Figure 10: Geological Setting of the Alcaparrosa Mine 22
Figure 11: Schematic Section Through IOCG and Magmatic Systems 25
Figure 12: Exploration Areas at the Candelaria Underground (South Sector) 27
Figure 13: Exploration Areas at the Candelaria Underground (North Sector) 28
Figure 14: Exploration Areas at the Santos Mine 29
Figure 15: Exploration Areas at the Alcaparrosa Mine 30
Figure 16: South District Surface Drilling 31
Figure 17: Oblique View (Looking North) Showing Gravity and Magnetic Resistivity Data Draped on the Topography South of the Candelaria Open Pit 33
Figure 18: Location of Collars of Boreholes Drilled on the Candelaria Copper Mining Complex 35
Figure 19: Structure of Throughput Forecasting Model 46
Figure 20: Structure of Copper Recovery Forecasting Model 46
Figure 21: Typical Mill Feed Mineralogy (QEMSCAN Analysis) 48
Figure 22: Waterfall Charts Showing Variation in Measured and Indicated Mineral Resources between 2016 and 2017 63
Figure 23: Candelaria Open Pit Sectors Geotechnical Design Recommendations 68
Figure 24: Candelaria Mining Phases 69
Figure 25: Change to Phase 9 Design 70
Figure 26: Summary of Candelaria Open Pit Mine Development 76
Figure 27: Slope Sectors Rock Quality Designation for Phase 9 (Left) and Phase 11 (right) 77
Figure 28: Candelaria Life of Mine Plan Development Process 78
Figure 29: Candelaria Copper Mining Complex Consolidated Mine Production Schedule 80
Figure 30: Annual Development Plan for 2019 to 2022 81
Figure 31: Annual Development Plan for 2023, 2024, 2027 and 2028 82

Figure 32: Annual Development Plan for 2031, 2032, 2033 and 2035 83
Figure 33: Candelaria Underground Mine Showing the Layout of the North Sector 84
Figure 34: Candelaria Underground Mine Showing the Layout of the South Sector 85
Figure 35: Santos Mine Layout and Sectors 86
Figure 36: Alcaparrosa Mine Layout and Sectors 87
Figure 37: Candelaria Life of Mine Plan Development Process 88
Figure 38: Typical Sublevel Open Stope 89
Figure 39: Minera Candelaria Historical Crushing and Processing Capacity 95
Figure 40: Minera Candelaria Historical Metallurgical Performance 96
Figure 41: Minera Candelaria Flowsheet 97
Figure 42: Ojos del Salado Crushing Plant Flowsheet 100
Figure 43: Ojos del Salado Grinding Plant Flowsheet 101
Figure 44: Ojos del Salado Flotation Plant Flowsheet 102
Figure 45: Los Diques Tailings Storage Facility, November 2017 104
Figure 46: Candelaria Life of Mine Forecasted Throughput by Source 106
Figure 47: Candelaria Life of Mine Forecasted Copper Grade and Recovery 106
Figure 49: Desalination Plant Location and Pipeline to Candelaria Site 109
Figure 50: Required Dates for Main Environmental and Sectorial Permits 115

1 Introduction and Terms of Reference

The Candelaria Copper Mining Complex comprises two adjacent copper operations producing copper concentrates from open pit and underground mines located near Copiapó in the Atacama Region, Region III of Chile: Compañía Contractual Minera Candelaria (Minera Candelaria) and Compañía Contractual Minera Ojos del Salado (Minera Ojos del Salado). Minera Candelaria is an open pit and underground mine providing copper ore to an on-site concentrator with a capacity of 75,000 tonnes per day. Minera Ojos del Salado comprises two underground mines, Santos and Alcaparrosa. The Santos mine provides copper ore to an on-site concentrator with a capacity of 3,800 tonnes per day, while ore from the Alcaparrosa mine is treated at the Minera Candelaria mill. In 2017, the operations are forecasted to collectively produce contained metals in concentrates (100 percent basis) containing 184 kilotonnes of copper, 105,000 ounces of gold, and 1.8 million ounces of silver. The Candelaria Copper Mining Complex is indirectly owned by Lundin (80 percent) and Sumitomo Metals Mining Co., Ltd. and Sumitomo Corporation (collectively, Sumitomo; 20 percent).

Lundin is a diversified base metals mining company with operations and projects in Chile, the USA, Portugal, Sweden, and Spain and it produces copper, nickel, zinc, and lead. Lundin is a Canadian public company with offices in Toronto, Canada and its common shares are listed on the Toronto Stock Exchange (symbol LUN) and the NASDAQ Stockholm (symbol LUMI).

On September 5, 2017, Lundin announced updated Mineral Resource and Mineral Reserve Statements for the Candelaria Copper Mining Complex (as of June 30, 2017). Relative to the previous year, the Mineral Resources and the Mineral Reserves have increased owing to the success of ongoing exploration programs despite mining depletion.

In September 2017, Lundin retained the services of SRK Consulting (Canada) Inc. (SRK) to visit the Candelaria Copper Mining Complex and compile a new technical report pursuant to National Instrument 43-101 *Standards of Disclosure for Mineral Projects* and Form 43-101F1. This report updates the January 17, 2017 Technical Report entitled "Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile". It summarizes the technical information that is relevant to support the disclosure of new Mineral Resources and Mineral Reserves estimates (as of June 30, 2017) prepared using revised economic parameters and the positive results of recent exploration programs. The revised Mineral Resources and Mineral Reserves Statements presented herein were disclosed by Lundin on September 5, 2017. The report also summarizes changes to the open pit phase design and new underground production schedules, based in these updated Mineral Reserves, as well as an open pit mine equipment re-capitalization programme, process improvement initiatives and a new tailings storage facility construction sequence.

This technical report is based on an inspection of the properties by a team of qualified persons conducted in October and in November 2017, a review of technical information made available by Lundin, and discussions with Lundin technical personnel. The qualified persons have reviewed such technical information and determined it to be adequate for the purposes of this report. The authors do not disclaim any responsibility for this information.

1.1 Terms of Reference

The scope of work was defined in an engagement letter executed between Lundin and SRK on September 17, 2017. The scope involves mobilizing a team of qualified persons to visit the subject

mineral assets to review the technical information relevant to supporting Mineral Resources and Mineral Reserves estimates prepared by Minera Candelaria and Minera Ojos del Salado personnel. The objective of this review is to provide an independent opinion about the Mineral Resources and Mineral Reserves of the Candelaria Copper Mining Complex as of **June 30, 2017**, and to compile a technical report pursuant to National Instrument 43-101 to support the disclosure of Mineral Resource and Mineral Reserve Statements for the complex. The responsibilities for each report section are listed in Table 1.

Table 1: Responsibility for Technical Report Sections

Section	Title	Responsible
-	Executive Summary	SRK / NMS
1	Introduction	SRK
2	Reliance on Other Experts	SRK
3	Property Description and Location	SRK / CCMC
4	Accessibility, Climate, Local Resources, Infrastructure and Physiography	SRK
5	History	SRK
6	Geological Setting and Mineralization	SRK
7	Deposit Types	SRK
8	Exploration	CCMC / SRK
9	Drilling	CCMC / SRK
10	Sample Preparation, Analysis, and Security	CCMC / SRK
11	Data Verification	SRK
12	Mineral Processing and Metallurgical Testing	Lundin / SRK
13	Mineral Resource Estimates	SRK
14	Mineral Reserve Estimates	SRK / NMS
15	Mining Methods	SRK / NMS
16	Recovery Methods	Lundin / SRK
17	Project Infrastructure	SRK / NMS
18	Market Studies and Contracts	SRK / Lundin
19	Environmental Studies, Permitting, and Social or Community Impact	SRK
20	Capital Cost and Operating Costs	CCMC / SRK / NMS
21	Economic Analysis	CCMC / SRK
22	Adjacent Properties	SRK
23	Other Relevant Data and Information	SRK
24	Interpretation and Conclusions	SRK / NMS
25	Recommendations	SRK / NMS
26	References	SRK / NMS

* CCMC = Candelaria Copper Mining Complex; NMS = John Nilsson

1.2 Qualification of SRK

The SRK Group comprises more than 1,400 professionals, offering expertise in a wide range of resource engineering disciplines. The independence of the SRK Group is ensured by the fact that it holds no equity in any project it investigates and that its ownership rests solely with its staff. These facts permit SRK to provide its clients with conflict-free and objective recommendations. SRK has a proven track record in undertaking independent assessments of Mineral Resources and Mineral Reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies, and financial institutions worldwide. Through its work with a large number of major international mining companies, the SRK Group has established a reputation for providing valuable consultancy services to the global mining industry.

The technical report was compiled by a group of independent qualified persons from SRK with the assistance of John Nilsson, PEng of Nilsson Mine Services Ltd. (NMS). In accordance with National Instrument 43-101 guidelines, three of the qualified persons visited the Candelaria Copper Mining Complex (CCMC) during October and November 2017 as shown in Table 2.

The review of the geology and Mineral Resources aspects was completed by Dr. Jean-Francois Couture, PGeo and Glen Cole, PGeo, both full-time employees of SRK.

The review of the underground mining aspect was completed by Benny Zhang, PEng, a full-time employee of SRK.

The review of the open pit mining aspect was completed by John Nilsson, PEng, an independent consultant.

The review of the mineral processing and metallurgical testing and recovery methods aspects was completed by Dr. Adrian Dance, PEng, a full-time employee of SRK.

The review of the environmental, social, and permitting aspects was completed by Maria Ines Vidal, MAusIMM an employee of SRK Consulting (Chile) S.A., under the supervision of Cameron C. Scott, PEng, a full-time employee of SRK.

Table 2: Qualified Persons

Company	Qualified Person	Site Visit	Responsibility
SRK	Jean-François Couture, PGeo (APGO#0197)	July 6-10, 2015	Overall responsibility on behalf of SRK. Project Management (Executive Summary, Sections 1 to 11, 18, 21, 22, 23, 26, and parts of 24 and 25)
SRK	Glen Cole, PGeo (APGO #1416)	June 16-18, 2014 December 14-16, 2016 November 8-9, 2017	Geology and Mineral Resources (Section 13, parts of 24 and 25)
SRK	Adrian Dance, PEng (APEGBC#37151)	No Visit	Review of Processing and Recovery Method (Sections 12, 16, and parts of 20)
SRK	Benny Zhang, PEng (PEO #100115459)	December 14-16, 2016 November 8-9, 2017	Underground Mining and Mineral Reserves (Parts of Sections 14, 15, 20, 24, and 25)
Independent	John Nilsson, PEng (APEGBC#20697)	June 10-12, 2014 June 16-18, 2014 July 6-10, 2015 December 14-16, 2016 October 9-13, 2017	Open Pit Mining and Mineral Reserves (Parts of Sections 14, 15, 17, 20, 24, 25, and 26)
SRK	Cameron C. Scott, PEng (APEGBC#11523)	No Visit	Environmental and Social and Permitting (Section 19)

1.3 Basis of Technical Report

This technical report is based on information made available to SRK by Lundin, Minera Candelaria, and Minera Ojos del Salado in an electronic data room, and on information collected during the site visits. The authors have no reason to doubt the reliability of the information provided by Lundin. Other information was obtained from the public domain.

This report is based on the following sources of information:

- Information provided by Lundin, Minera Candelaria, and Minera Ojos del Salado
- Site visits conducted by SRK on November 8 and 9, 2017 and by John Nilsson from October 9 to 13, 2017
- Discussions with Lundin, Minera Candelaria, and Minera Ojos del Salado personnel
- Additional information from public domain sources

The qualified persons have reviewed such technical information and have no reasons to doubt the reliability of the information provided by Lundin, Minera Candelaria, and Minera Ojos del Salado. The authors do not disclaim any responsibility for the information provided and reviewed.

1.4 Declaration

SRK's opinion contained herein and effective **June 30, 2017** is based on information collected by SRK throughout the course of SRK's investigations. The information in turn reflects various technical and economic conditions at the time of writing the report. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

This report may include technical information that requires subsequent calculations to derive subtotals, totals, and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or an affiliate of Lundin, Minera Candelaria, or Minera Ojos del Salado. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

2 Reliance on Other Experts

SRK has not performed an independent verification of the land titles and tenures as summarized in Section 3 of this report. SRK did not verify the legality of any underlying agreements that may exist concerning the permits or other agreements between third parties. SRK has relied on information provided by Lundin, regarding the ownership status of the Candelaria Copper Mining Complex including the Minera Candelaria and Minera Ojos del Salado properties. The reliance applies solely to the legal status of the rights disclosed in Section 3.

3 Property Description and Location

The Candelaria and Ojos del Salado mines and surrounding tenements are located in Chile's Atacama Region, Region III, approximately 20 kilometres south of the city of Copiapó and adjacent to the community of Tierra Amarilla, all of which are approximately 650 kilometres north of Santiago. The properties are connected to the well-maintained Chilean road system (Figure 1). The properties are located at approximately 27 degrees 30 minutes latitude south and 70 degrees, 15 minutes longitude west.

Figure 1: Location of the Mines of the Candelaria Copper Mining Complex

3.1 Mineral Tenure

3.1.1 Minera Candelaria

The Minera Candelaria property comprises 249 mining exploitation concessions (approximately 5,855 hectares) and 65 mining exploration concessions (approximately 6,580 hectares) (Figure 2 and Appendix A). The list contains concessions that have been granted or are in the process of being granted by the competent Court. The tenements are free of mortgages, encumbrances, prohibitions, injunctions, and litigation. The tenements are not affected by royalties except for those listed in Table 3. No mining is currently taking place on these tenements nor are they contemplated in the current life of mine plan.

Other than disclosed herein, there are no other known factors or risks that may affect access, title, or the right or ability to perform work on the property.

Table 3: Royalty Characteristics for Candelaria Tenements

Tenement Name	Tenement Type	Royalty Description
Santa Gemita II Uno al Veite	Mining Exploitation Concession	US$0.01 per pound of fine copper produced from minerals extracted from these mining concessions. Royalty payment obligation starts once Minera Candelaria has extracted from these concessions ore equivalent to an amount greater than 300 pounds of fine copper.
Santa Gemita III Uno al Veite	Mining Exploitation Concession	
Santa Gemita IV Una al Cinco	Mining Exploitation Concession	
Santa Gemita V Una al Diez	Mining Exploitation Concession	
Brisa 41 a Brisa 45	Mining Exploitation Concession	
Farellon	Mining Exploitation Concession	US$5M if mining concessions being mined or the Plant were to achieve a Mining Operational Margin equal to or superior than 30% on any of the years between 2017 and 2021, included.

3.1.2 Minera Ojos del Salado

The Minera Ojos del Salado property comprises 192 mining exploitation concessions (approximately 9,273 hectares) and 38 mining exploration concessions (approximately 6,848 hectares) (Figure 2). The concessions either have been granted or are in the process of being granted.

A complete list of tenements is provided in Appendix A. The list contains concessions that have been granted or are in the process of being granted by the competent Court. The tenements are free of mortgages, encumbrances, prohibitions, injunctions, and litigation.

There are no other known factors or risks that may affect access, title, or the right or ability to perform work on the property.

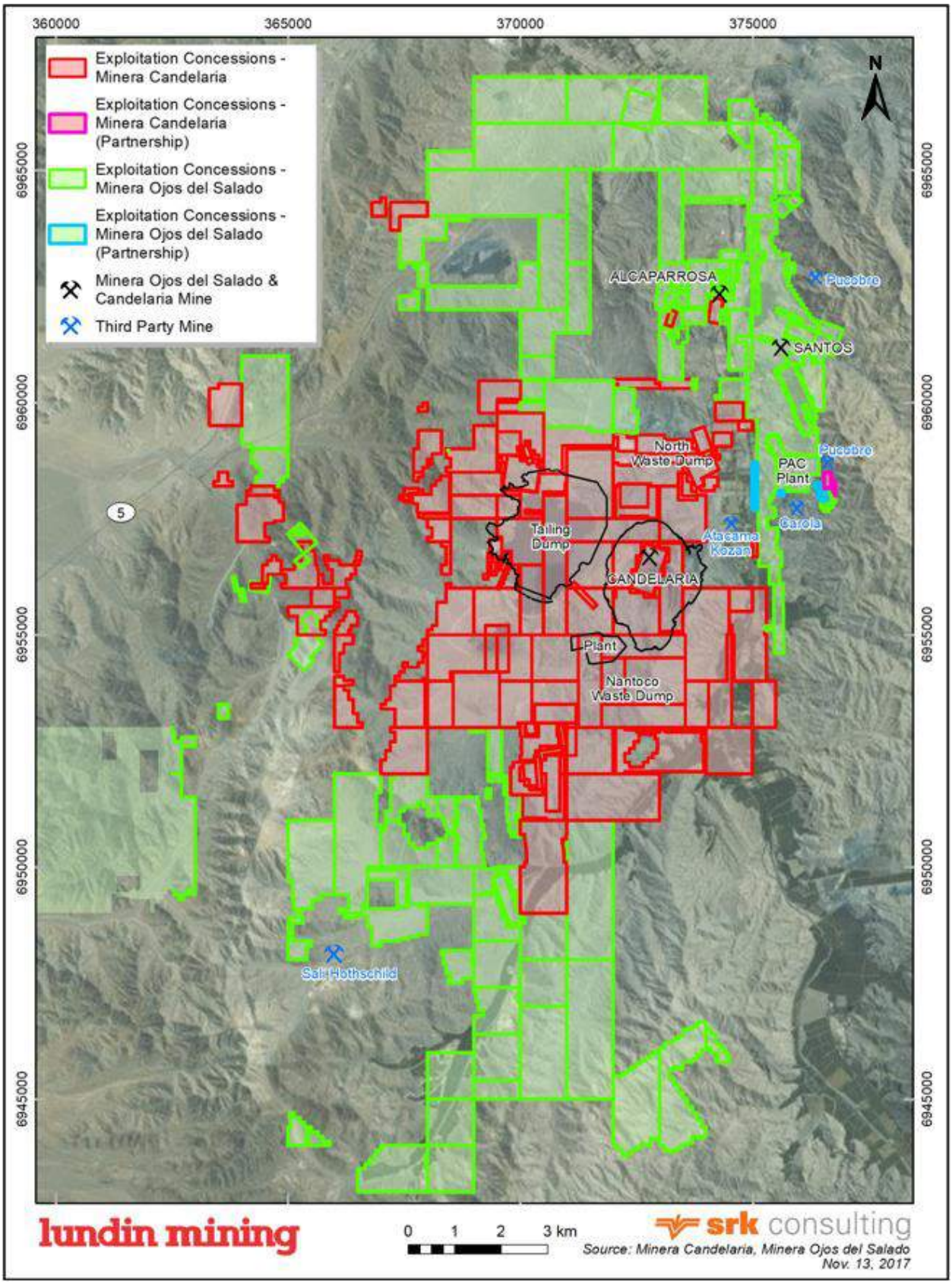


Figure 2: Candelaria and Ojos del Salado Land Tenure Map

3.2 Water Use Rights

Minera Candelaria is the owner of underground water use rights of consumptive and permanent use for approximately 1,196 litres per second. The underground water use rights are legally registered in the name of Minera Candelaria, free of mortgages, encumbrances, prohibitions, injunctions, and litigation.

Minera Candelaria is the property owner of superficial water use rights that are equivalent to approximately 62 litres per second. The superficial water use rights are legally registered in the name of Minera Candelaria, free of mortgages, encumbrances, prohibitions, injunctions and litigation.

Minera Ojos del Salado is the property owner of underground water use rights of consumptive and permanent use for a total of 50 litres per second. The underground water use rights are legally registered in the name of Minera Ojos del Salado, free of mortgages, encumbrances, prohibitions, injunctions, and litigation.

Minera Ojos del Salado is the property owner of superficial water use rights in the Las Rojas Channel that are equivalent to approximately 21 litres per second. The superficial water use rights are legally registered in the name of Minera Ojos del Salado, free of mortgages, encumbrances, prohibitions, injunctions, and litigation.

With the commissioning of a desalination plant located at the Punta Padrone port site in early 2013, the Candelaria Copper Mining Complex ceased extracting process water from underground water sources in November 2013. The underground water rights remain active and are used for potable and emergency purposes.

3.3 Mineral Rights in Chile

There are two types of mining concessions in Chile: exploration concessions and exploitation concessions.

In accordance with the Chilean Mining Code, the owner of a mining concession can explore, exploit and benefit from all minerals within the boundaries of the relevant concessions, except for hydrocarbon and lithium, without additional administrative concessions or operation agreements.

Every titleholder of a mining concession, whether exploitation or exploration, has the right to establish an occupation easement over the surface properties required for the comfortable exploration or exploitation of its concession. In the event that the surface property owner does not voluntarily agree to the granting of the easement, the titleholder of the mining concession may request such easement before the Courts of Justice, which shall grant the same upon determination of due compensation for losses.

All mining exploration and exploitation concession applications are submitted to the Chilean court and granted through a court procedure. Once the court procedure is completed, the court issues a final ruling decision. If the decision is supportive of the application, the ruling decision acts as the legal title of the concession, which is then registered in the national mining registrar. The application to court decision process typically takes 6 to 8 months for an exploration concession and 12 to 15 months for an exploitation concession.

The main characteristics of exploration and exploitation concessions are described in the following subsections.

3.3.1 Exploration Concessions

The titleholder of an exploration concession has the right to carry out all types of mining exploration activities within the area of the concession. Exploration concessions can overlap or be granted over the same area of land, however, the rights granted by an exploration concession can only be exercised by the titleholder with the earliest dated exploration concession over a particular area.

For each exploration concession, the titleholder must pay an annual fee of approximately US$1.60 per hectare to the Chilean Treasury. Exploration concessions have a duration of two years. At the end of this period, they may: (i) be renewed as an exploration concession for two additional years in which case at least 50 percent of the surface area must be renounced, or (ii) be converted, totally or partially, into exploitation concessions.

A titleholder with the earliest dated exploration concession has a preferential right to an exploitation concession in the area covered by the exploration concession, over any third parties with a later dated exploration concession for that area or without an exploration concession at all and must oppose any applications made by third parties for exploitation concessions within the area for the exploration concession to remain valid.

3.3.2 Exploitation Concessions

The titleholder of an exploitation concession is granted the right to explore and exploit the minerals located within the area of the concession and to take ownership of the minerals that are extracted. Exploitation concessions can overlap or be granted over the same area of land, however, the rights granted by an exploitation concession can only be exercised by the titleholder with the earliest dated exploitation concession over a particular area.

Exploitation concessions are of indefinite duration and an annual fee is payable to the Chilean Treasury of approximately US$8 per hectare.

Where a titleholder of an exploration concession has applied to convert the exploration concession into an exploitation concession, the application for the exploitation concession and the exploitation concession itself are back-dated to the date of the exploration concession.

A titleholder to an exploitation concession must apply to annul or cancel any exploitation concessions that overlap with the area covered by its exploitation concession within a certain time period in order for the exploitation concession to remain valid.

4 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

The properties are located in the Atacama Region, Region III of northern Chile, at an elevation of approximately 650 metres above sea level and approximately 20 kilometres south of the city of Copiapó and 5 kilometres west of the town of Tierra Amarilla.

4.1 Accessibility

The properties are accessible by two maintained dirt roads, one coming through the Tierra Amarilla community and the other branching off of Route 5, the Pan-American Highway, a well-maintained multi-lane highway. Copiapó regional airport is serviced by regional flights from Santiago and other destinations on a daily basis. The regional airport is located approximately midway between Copiapó in the south and Caldera in the north. Copiapó itself is strategically located on the Pan-American Highway.

4.2 Local Resources and Infrastructure

Copiapó is a modern city with all regular services and a population of approximately 160,000. Numerous mining-related businesses are located in the city. Personnel employed by the Candelaria Copper Mining Complex come from the Copiapó region. The Candelaria and Ojos del Salado mines receive electrical power through long-term contracts with AES Gener S.A., a local energy company. The main line to the Candelaria mine is rated at 220 kilovolts at 745 amperes. Ojos del Salado is serviced by a 23-kilovolt line with 235 amperes. The current contract with AES Gener S.A. expires in 2022.

The mines' water supply comes from a desalination plant (Figure 3B) owned by Minera Candelaria via a pipeline that were both completed in 2013, as well as from a nearby wastewater treatment facility. The commissioning of the desalination plant has enabled the mines to cease drawing ground water from the Copiapó aquifer, the historic source of water, except in emergency situations and for potable water supply. Concentrate is being shipped from the company-owned Punta Padrones port facility at the port of Caldera (Figure 3B). The facility has a storage capacity of 45,000 wet metric tonnes and can handle ships with a capacity of up to 58,000 tonnes and a draft of 12.4 metres. The port has a total annual capacity of some 3.5 million wet metric tonnes, well in excess of current and planned production. A new tailings storage facility, known as Los Diques, to the southwest of the open pit and plant sites has been designed to replace the Candelaria tailings storage facility. The Los Diques facility will have an approximate designed capacity of 600 million tonnes, to a final crest elevation of 873 metres above sea level, which is more than that is required by the current projected mine life (Figure 3D). Key mine infrastructure is shown in Figure 4.

4.3 Climate

Copiapó has a desert climate with mild temperatures year-round. Winters are mild with warm temperatures; mid-winter maximums in July reach approximately 20 degrees Celsius. Winter night-time temperatures average approximately 7 degrees Celsius. Summers are warm with a January average of 22 degrees Celsius. Annual precipitation is approximately 17 millimetres, of which the majority falls in the winter months. Exploration and mining can occur year-round.

Figure 3: Infrastructure and Landscape in the Project Area

A. PAC plant
B. Puerto Punta Padrones and desalination plant
C. Aerial view of Minera Candelaria
D. Los Diques tailings storage facility under construction

4.4 Physiography

The project area is mountainous with a relief varying between 200 and 1,000 metres above sea level (Figure 3A-D). Vegetation is minimal outside of inhabited valleys where irrigation is used to support vegetation that is capable of withstanding the desert environment. The mines are located in an active seismic zone.

Figure 4: Candelaria Copper Mining Complex and Related Local Infrastructure

5 History

Information about the exploration history of the Minera Candelaria and Minera Ojos del Salado mines is scarce. Information presented in this section was extracted from public databases.

The Candelaria deposit was discovered by the Phelps Dodge Corporation (Phelps Dodge) in 1987. A feasibility study was completed in 1990, and construction started in October 1992. Production commenced in early 1995. In 1996, Phelps Dodge announced plans to expand the concentrator throughput with the installation of a second semi-autogenous grinding (SAG) mill. The expansion also included additional mining facilities and new and expanded concentrator facilities. This upgrade was completed in 1997. Sumitomo Corporation acquired a 20 percent stake in the property in 1992.

Mine site and district exploration programs have been active since the discovery of the Candelaria deposit. This work resulted in the discovery of the Alcaparrosa and Candelaria Underground (North Sector) deposits, both of which are now producing mines.

In 2007, property ownership changed when Freeport-McMoRan Inc. (Freeport) acquired Phelps Dodge. Operations at the Candelaria Copper Mining Complex continued uninterrupted.

During 2011, a pipeline was completed to bring water purchased from a nearby wastewater treatment facility to the Candelaria mine.

A desalination plant at the port of Caldera was commissioned in 2013 at a capacity of 500 litres per second.

The Santos mine has been in production since 1929. At that time, the operation was known as Planta Punta de Cobre and was owned by Caja de Crédito Minero (CACREMI). The plant started with an initial throughput capacity of 250 tonnes per day. It was later renamed the Pedro Aguirre Cerda (PAC) plant. In 1978, the PAC plant was acquired by private individuals from Empresa Nacional de Minería, legal successor to CACREMI. The Santos mine and Resguardo claims were also acquired, which together formed Minera Ojos del Salado. The processing capacity was increased to 650 tonnes per day. Phelps Dodge acquired 10 percent of Ojos del Salado in 1983 and became sole owner of the property in 1985. The PAC plant was expanded for a second time in 1988, increasing capacity to 1,700 tonnes per day. Subsequent upgrades have increased the plant capacity to the current 3,800 tonnes per day. Sumitomo acquired its 20 percent interest in Minera Ojos del Salado in 2005.

In 1995, construction of a second underground operation at the Alcaparrosa mine commenced, with production starting in early 1996.

In November 2014, Lundin acquired Freeport's 80 percent interest in the Candelaria Copper Mining Complex.

The Candelaria Copper Mining Complex has been a significant producer of copper since the mid-1990s. Table 4 shows the contained copper and gold metal in concentrates produced since 2014.

A summary of the development history of the Candelaria Copper Mining Complex is presented in Table 5.

Table 4: Contained Payable Metal in Concentrate (100% Basis)

Metal	Unit	2014	2015	2016	2017 F
Copper	kt Cu	163	181	167	184
Gold	koz Au	94	102	97	105

Source: Lundin (2017 is forecast production)

Table 5: Summary Development History of the Candelaria Copper Mining Complex

Date	Event or Milestone
1927	Minera Ojos del Salado is built under the name Planta Punta de Cobre, and owned by Caja de Crédito Minero (CACREMI). Production started in 1929 with an initial throughput capacity of 250 tonnes per day. It was later renamed the PAC plant.
1978	PAC plant was acquired by private individuals from Empresa Nacional de Minería, legal continuer of CACREMI. The Santos mine and Resguardo claims were also acquired, which together formed Minera Ojos del Salado. The creation of the new mining company generated an expansion, increasing its processing capacity to 650 tonnes per day.
1983	North American company Phelps Dodge acquired 10 percent of the shares of Minera Ojos del Salado.
1985	Phelps Dodge acquired total control of Minera Ojos del Salado.
1987	Phelps Dodge discovered the Candelaria deposit.
1988	Phelps Dodge tunneled 396 metres into the Candelaria sulphide deposit.
1988	The PAC plant was expanded for the second time to 1,700 tonnes per day.
1989	Candelaria feasibility study started. By August, Phelps Dodge had spent US$8 million on the project.
1990	Candelaria feasibility work was completed.
1991	The Chilean government approved a request by Minera Candelaria to invest US$1.5 billion in the project over a 12-year period.
1992	Sumitomo acquired a 20 percent interest in Minera Candelaria for US$40 million, plus Sumitomo's share of the total equity capital required to finance construction and development.
1993	Minera Candelaria began stripping Phase 1 of the open pit at 35 kilotonnes per day.
1994	The Candelaria processing plant start-up, three months ahead of schedule.
1995	Minera Candelaria first shipment loaded at port facility.
1997	The Export-Import Bank (Exim) of Japan agreed to provide a US$150 million loan to assist in financing the expansion at Minera Candelaria. Phelps Dodge completed the expansion project eight months ahead of schedule and at a cost of US$320 million, 10 percent below budget. The expansion included additional mining facilities, the construction of a second SAG mill, and new and expanded concentrator facilities to 70 kilotonnes per day.
1997	Minera Candelaria mill expansion completed to 70 kilotonnes per day.
1998	The PAC processing plant operations were stopped due to a low copper price.
2004	The PAC processing plant operations were resumed due to the improved copper price outlook.
2005	Sumitomo acquired 20 percent interest in Minera Ojos del Salado. The Candelaria Underground (North Sector) started production.
2007	Freeport acquired Phelps Dodge gaining ownership of both Minera Candelaria and Minera Ojos del Salado.
2011	Construction of the desalination plant commenced at Punta Padrones.
2013	Completion and full operation of desalination plant.
2014	October 6, Lundin announced an agreement to acquire Freeport's 80 percent interest in Minera Candelaria and Minera Ojos del Salado. The transaction closed on November 3, 2014.
2015	The Candelaria 2030 project (including the new Los Diques tailings storage facility) receives environmental approval following two years of review by Chilean regulators.
2016	Construction initiated on the Los Diques tailings storage facility after receipt of major construction permits.
2017	Permits granted to allow the Candelaria Underground operations to expand production from 6,000 to 14,000 tonnes per day.

6 Geological Setting and Mineralization

6.1 Regional Geology

The Candelaria deposit is located in the Atacama Region, Region III in northern Chile, at the boundary between the Coastal Cordillera and the Copiapó Precordillera. The Coastal Cordillera of Chañaral and Copiapó is composed of Permian to Lower Cretaceous intrusions within a basement of metasedimentary rocks of Devonian to Carboniferous age (Dallmeyer et al., 1996). Volcanic, volcaniclastic, and marine carbonate rocks represent intra- and back-arc sequences that were deposited during Early to Mid-Cretaceous (Arévalo et al., 2006).

In the Copiapó Precordillera the oldest exposed rocks are Early Carboniferous in age and correlate with metasedimentary basement rocks in the Coastal Cordillera. They are overlain by Permian to Jurassic sedimentary and volcanic rocks. Permian granitic plutonic complexes in the Precordillera are associated with extensive crustal melting and rifting. Volcanic and sedimentary rocks of the Punta del Cobre Formation, the Bandurrias Formation, and marine carbonate rocks of the Chañarcillo Group are prominently exposed as a belt of calcareous, volcanic, and volcaniclastic rocks in the western Precordillera. They are overlain by the Cerrillos Formation of epiclastic to volcaniclastic rocks. At the base, the Cerrillos Formation contains fluviatile sandstone and conglomerate, as well as freshwater limestone. Volcanic breccias and lava flows are more dominant higher in the sequence.

The Candelaria-Punta del Cobre polymetallic sulphide deposits are located to the east of the Atacama fault zone, which extends over 1,000 kilometres along the Chilean coast. The Atacama fault zone is a subduction-linked arc-parallel strike-slip fault system that has been active at least since Jurassic (Marschik and Fontboté, 2001).

6.2 Local Geology

The Candelaria, Santos, and Alcaparrosa mines are located in the mining district of Punta del Cobre. The polymetallic sulphide deposits are hosted in the volcanic rocks of the Punta del Cobre Formation (Figure 5). The Punta del Cobre Formation is overlain by Cretaceous marine calcareous rocks of the Lower Cretaceous Chañarcillo Group. The Chañarcillo Group comprises, from the bottom up, the Abundancia, Nantoco, Totoralillo, and Pabellón Formations.

In the north and northwest, the rocks of the Chañarcillo Group are interlayered with continental volcanosedimentary rocks of the Bandurrias Formation, also of Lower Cretaceous age. The rocks of the Chañarcillo Group were deposited in the back-arc facies of a volcanic arc, which is represented by the rocks of the Bandurrias and Punta del Cobre formations.

Intrusive rocks of the Coastal Batholith are located mainly to the west of the Punta del Cobre district (Figure 5) and are age dated at between 123 and 111 million years. The development of a contact aureole to this batholith affected, with decreasing intensity to the east, all the Lower Cretaceous rocks in the Punta del Cobre district. At the latitude of the Candelaria mine, the Coastal Batholith forms a tabular multi-phase plutonic complex formed, from oldest to youngest, by the La Brea diorite, the San Gregorio monzodiorite, the tonalitic to granodioritic Los Lirios pluton, and the Ojancos and El Granate microgranite (Figure 5). The largest area is covered by the La Brea pluton.

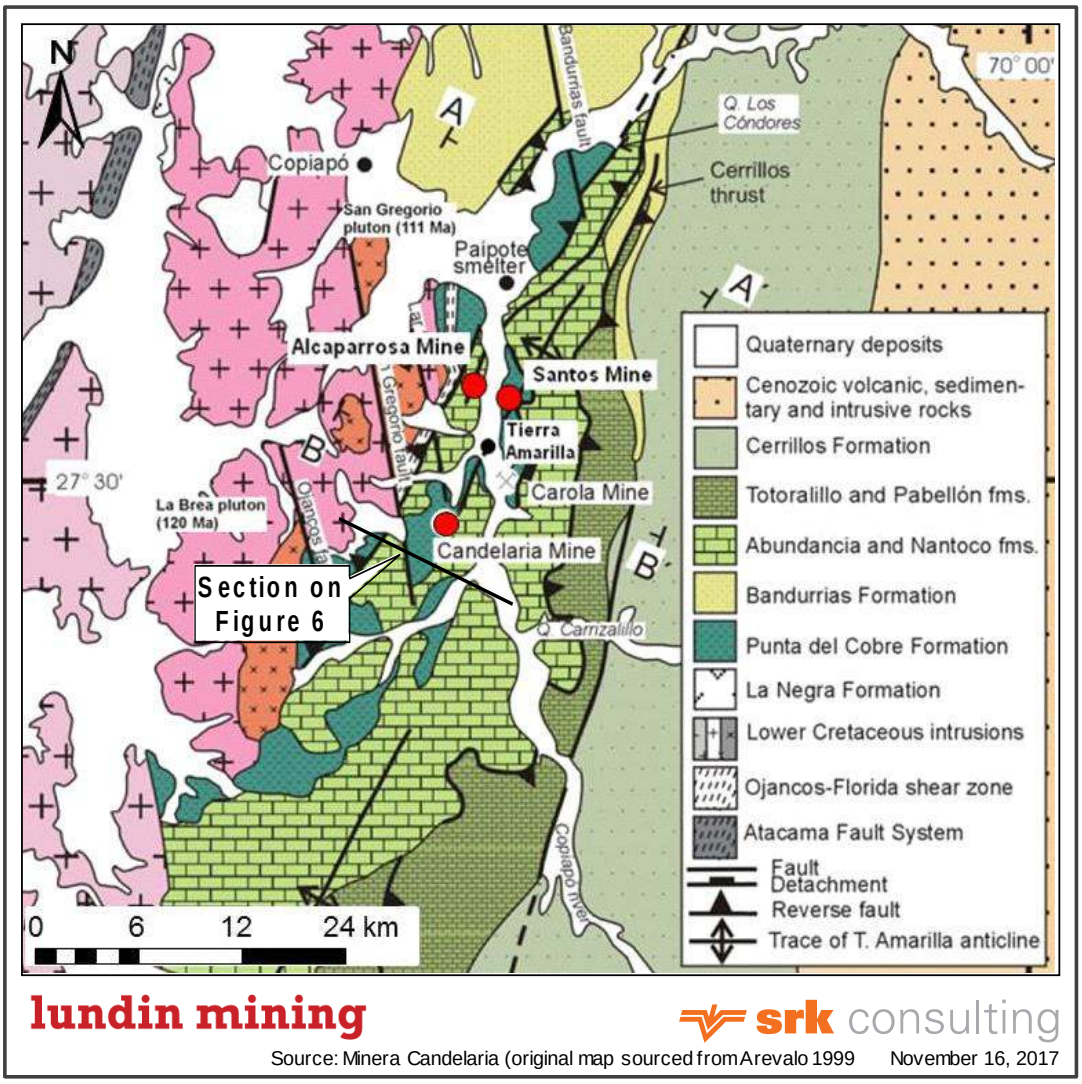


Figure 5: Regional Geology Setting Around the Candelaria, Alcaparrosa, and Santos Mines

The dominant structural elements in the Candelaria-Punta del Cobre area are a large northeast-trending antiform (Tierra Amarilla Anticlinorium), a southeast verging fold-and-thrust system and a dense set of north-northwest to northwest-trending high-angle sinistral transcurrent faults (Marschik and Fontbote, 2001). This fold is part of the Paipote Fold and Thrust System comprising a set of north-northeast-trending folds and thrust sheets (Arévalo et al., 2006). One of the folds in the Candelaria mine area is the northeast-trending Tierra Amarilla Anticline, which has affected all Lower Cretaceous sedimentary and volcanic rock.

Northeast-striking reverse faults parallel to the Tierra Amarilla Anticline are part of the Paipote fold and thrust belt. Mylonitic shear zones and cataclastic rocks locally form the contact between the intrusive rocks and Early Cretaceous host rocks. Ductile deformation is recorded in the Ojancos, Candelaria, and Florida shear zones. Both the Tierra Amarilla Anticline and the Ojancos-Florida Shear Zone are displaced by north-northwest-trending brittle faults (Figure 5). The Lar, San Gregorio, and Ojancos Faults show sinistral strike-slip displacement. The rocks located between the major north-northwest-striking faults also appear displaced by shorter faults of northwest- to north-northwest-strike orientation.

6.3 Property Geology

6.3.1 Geology of the Candelaria Mine

Calcareous, sedimentary, and volcaniclastic rock of the Abundancia and Punta del Cobre formations are exposed within the open pit of the Candelaria mine. Due to the closer proximity to the Coastal Batholith, rocks in the open pit of the Candelaria mine show stronger metasomatism and metamorphism than in other sulphide deposits of the Punta del Cobre district (Figure 6).

The lowermost unit in the Candelaria mine and Candelaria Underground is the Lower Andesite, a compact succession of porphyritic to massive andesite and volcaniclastic breccias with intense biotite-quartz-magnetite-albite alteration (Figure 7 and Figure 8). The Lower Andesite is overlain by a succession of stratified volcaniclastic rocks including tuffs, which are further sub-divided by alteration and mineralisation into pink garnet skarn and magnetite breccia. The Upper Andesite of the Punta de Cobre Formation consists of a homogenous succession of undifferentiated volcaniclastic and andesitic rock. The biotite-bearing andesite exhibits alteration varying from quartz-pyroxene hornfels to pyroxene-scapolite-garnet skarns.

The Abundancia Formation of the Chañarcillo Group in the Candelaria mine consists of fine-grained biotite-, silica-, or clinopyroxene-bearing calcareous metasandstone and mudstone. The stratified rocks are cut by dacite and lamprophyre dikes. The hydrothermally-altered dacite porphyry dikes and sills locally contain copper mineralization. The youngest rocks in the Candelaria mine are post-mineralization lamprophyre dikes.

At the Candelaria mine a low angle shear zone, located at the confluence of ductile to brittle high-angle faults, marks synplutonic brittle-to-ductile extensional deformation (Arévalo et al., 2006).

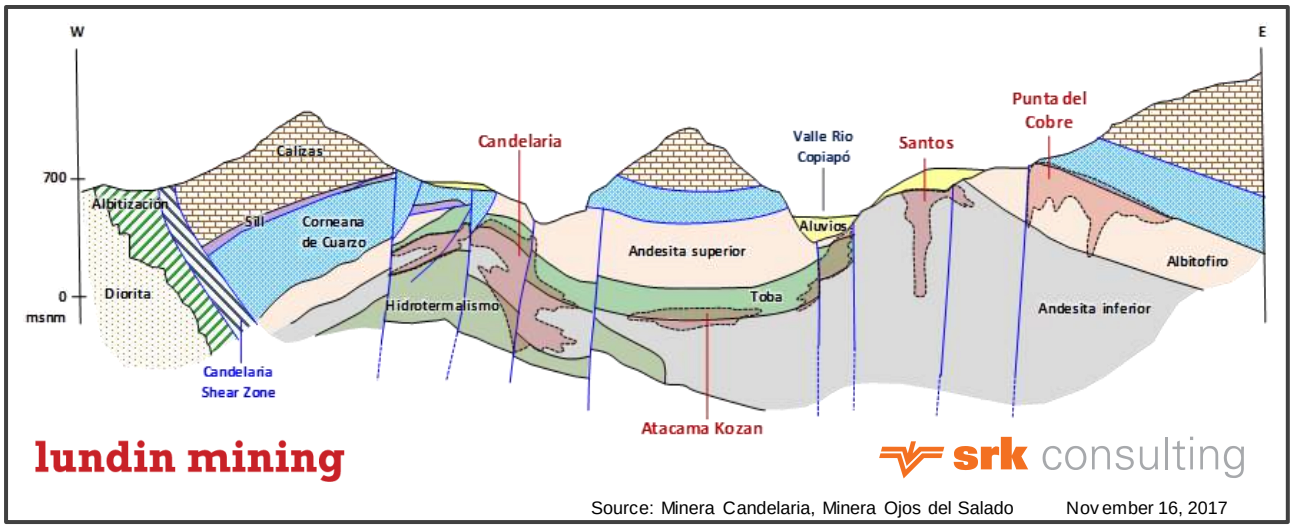


Figure 6: Schematic Vertical Section Showing the Location of the Candelaria and Santos Mines (see Figure 5 for section location)

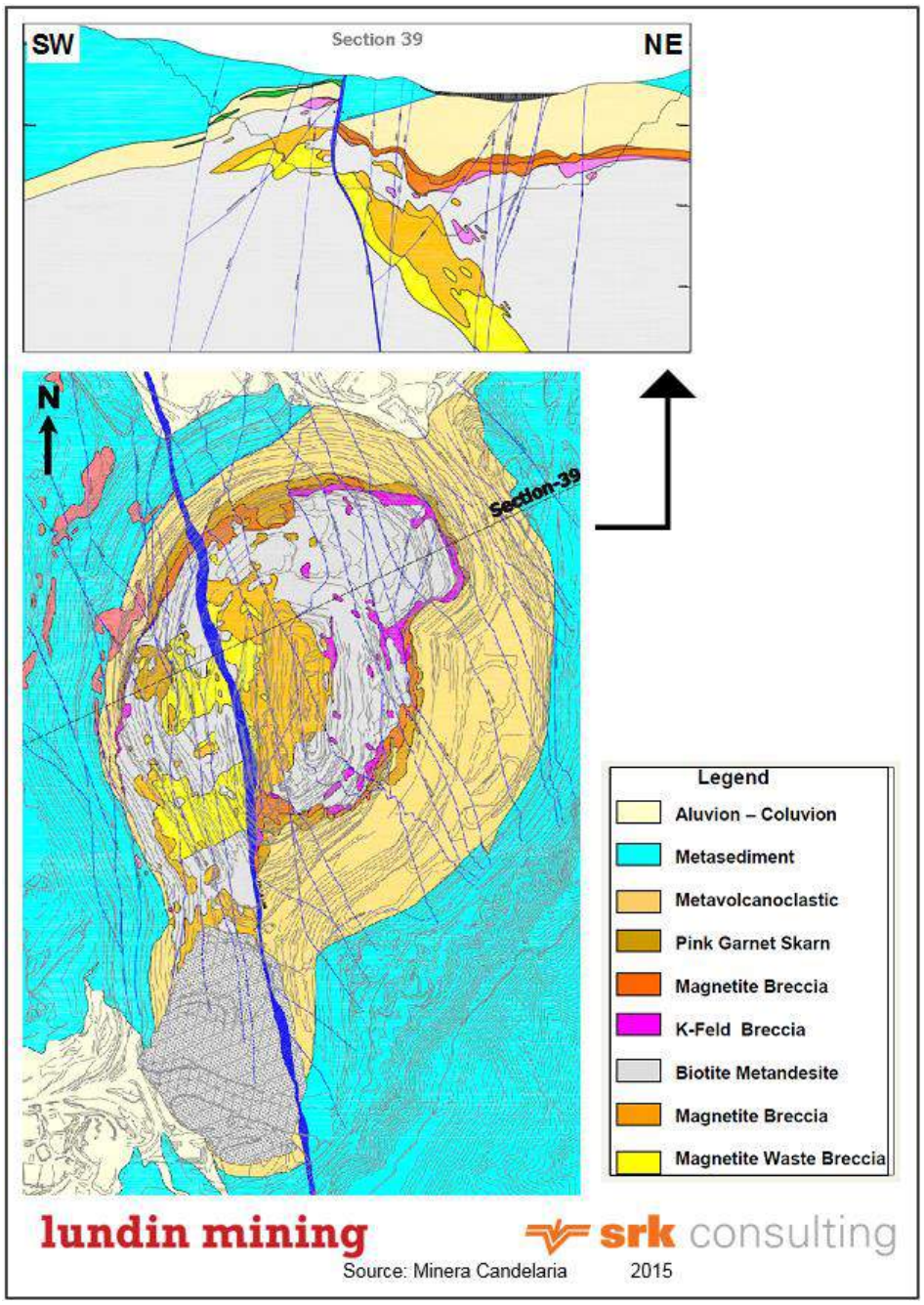


Figure 7: Local Geology Setting of the Candelaria Mine

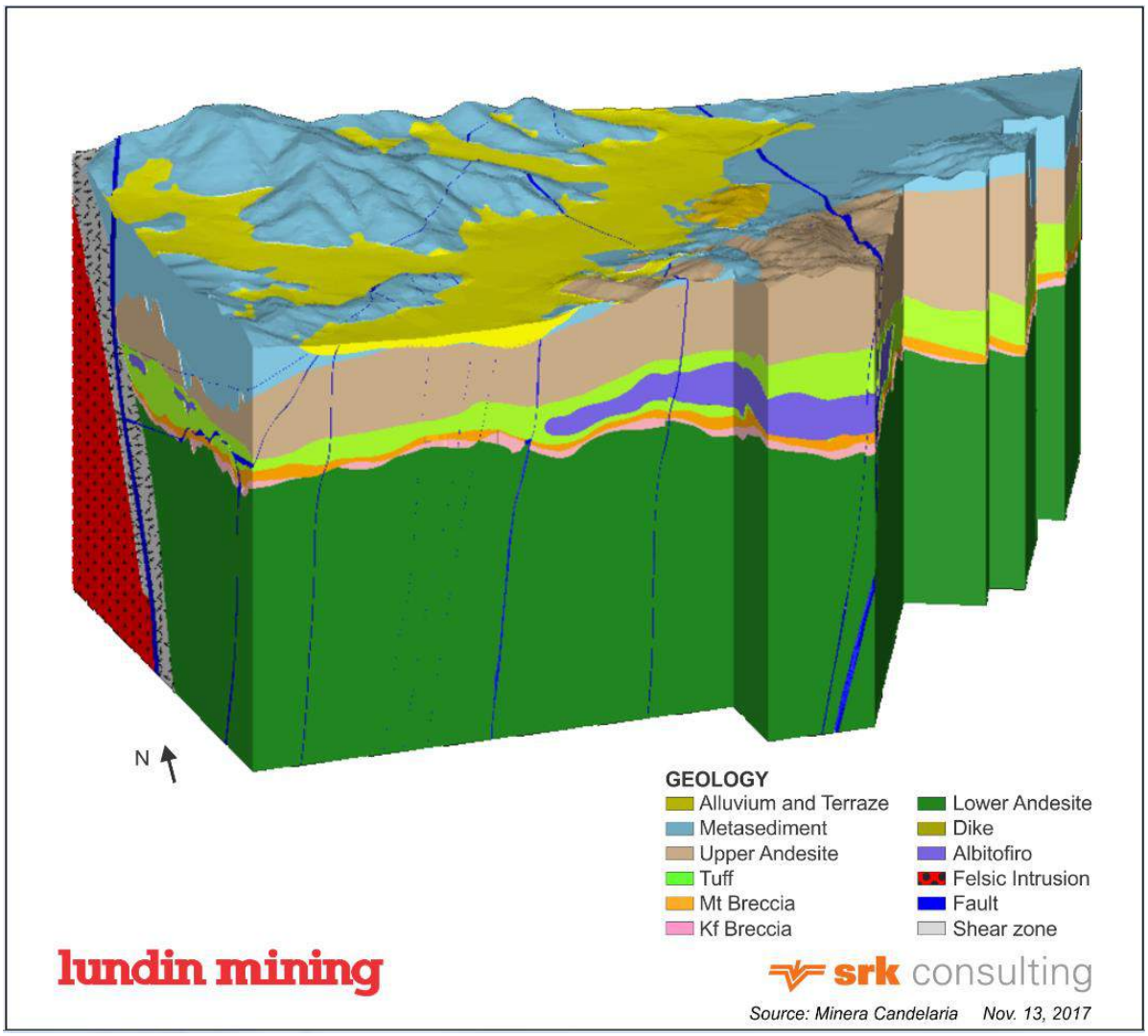


Figure 8: Geological Setting of Candelaria Underground (North Sector)

6.3.2 Geology of the Santos Mine

The rocks of the Santos mine are mainly of the Punta del Cobre and Abundancia Formations. A typical section showing the geology of the Santos mine is shown in Figure 9.

The lowermost rocks of the Punta del Cobre Formation are porphyritic to aphanitic andesite of the Lower Andesite. The Lower Andesite is conformably overlain by dacitic domes hydrothermally altered to an albitic-pyritic assemblage that is overlain by a succession of volcaniclastic breccias with interbedded layers of siltstone and sandstone. The basal portion of this unit (locally termed albitoforo) hosts manto-type copper mineralization. Conformably overlying the breccias are fine grained clastic rocks and Upper Andesite basaltic andesite flows. Intercalations of lenticular limestone, polymict breccias, volcanic tuffs, sandstone and iron-rich chert also occur within the Upper Andesite. The overlying Abundancia Formation comprises well stratified marine sedimentary rock, mainly calcareous sandstone. The rocks of the Abundancia Formation do not contain significant mineralization.

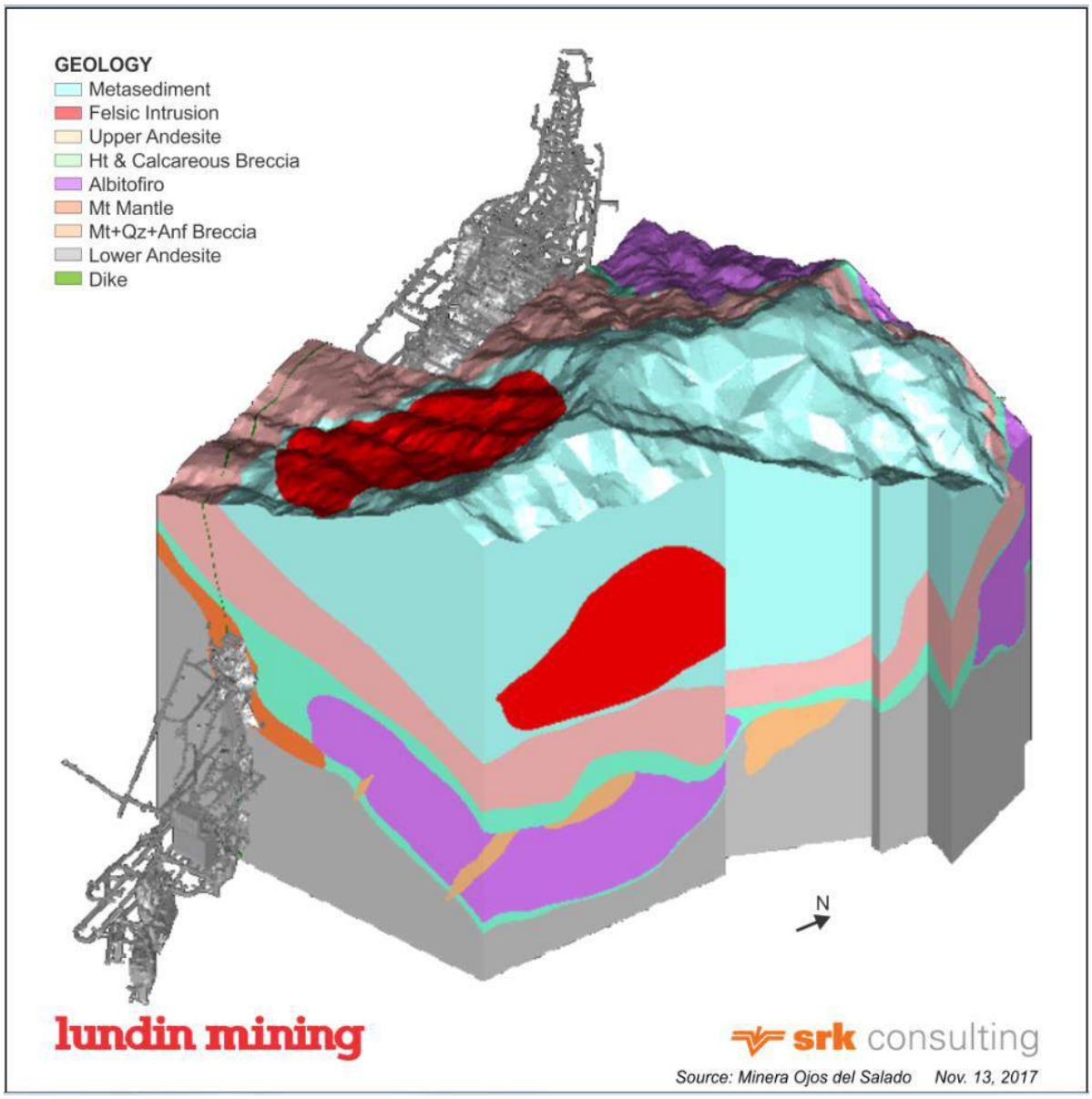


Figure 9: Geological Setting of the Santos Mine

Intrusive rocks in the Santos mine are represented by a hornblende diorite, which intrudes the Punta del Cobre Formation and the lower Abundancia Formation. Dikes cut various stratigraphic levels of the Punta del Cobre Formation and some layers of the Abundancia Formation. Andesitic dikes trend northwest and are up to 4 metres thick. Dacitic dikes occur in variable orientations ranging from northwest to northeast trends and are up to 5 metres thick. Dikes post-date the mineralization.

The Santos mine is located in the eastern limb of the north-northeast-trending Tierra Amarilla anticline. The stratigraphic contacts in the eastern limb of the fold dip approximately 25 degrees.

6.3.3 Geology of the Alcaparrosa Mine

The Alcaparrosa mine is located in the northern part of the Punta del Cobre mining district (Figure 5), in the west flank of Copiapo valley. A typical section of the mine stratigraphy is shown in Figure 10. Punta del Cobre Formation is subdivided into a Lower Andesite unit, which is succeeded by volcanoclastic breccias, albitophyre and pyroxene- scapolite hornfels interbeded with garnetites. The Lower Andesite consist of aphanitic, porphyritic, blastoporphyritic and brecciated dark grey andesites. The albitophyre is a light grey pophyritic dacite with phenocrysts of plagioclase and occasionally "quartz eyes" in an aphanitic silica groundmass. The volcanoclastic breccia contains porphyritic rock clasts altered to potassic feldspar in a matrix with high contents of magnetite. Hornfels and garnetites are concordant located over the albitophyre and correspond to the metamorphosed equivalents of the upper part of Punta de Cobre Formation and Abundancia Formation. In the southern central part of the mine a granodiorite stock cuts the whole sequence.

The metasedimentary unit overlying the Punta del Cobre Formation likely corresponds to the Abundancia Formation. The metasedimentary unit is divided into the following two sub-units: a quartz hornfels, and a pyroxene-scapolite-garnet skarn with metasomatic banding.

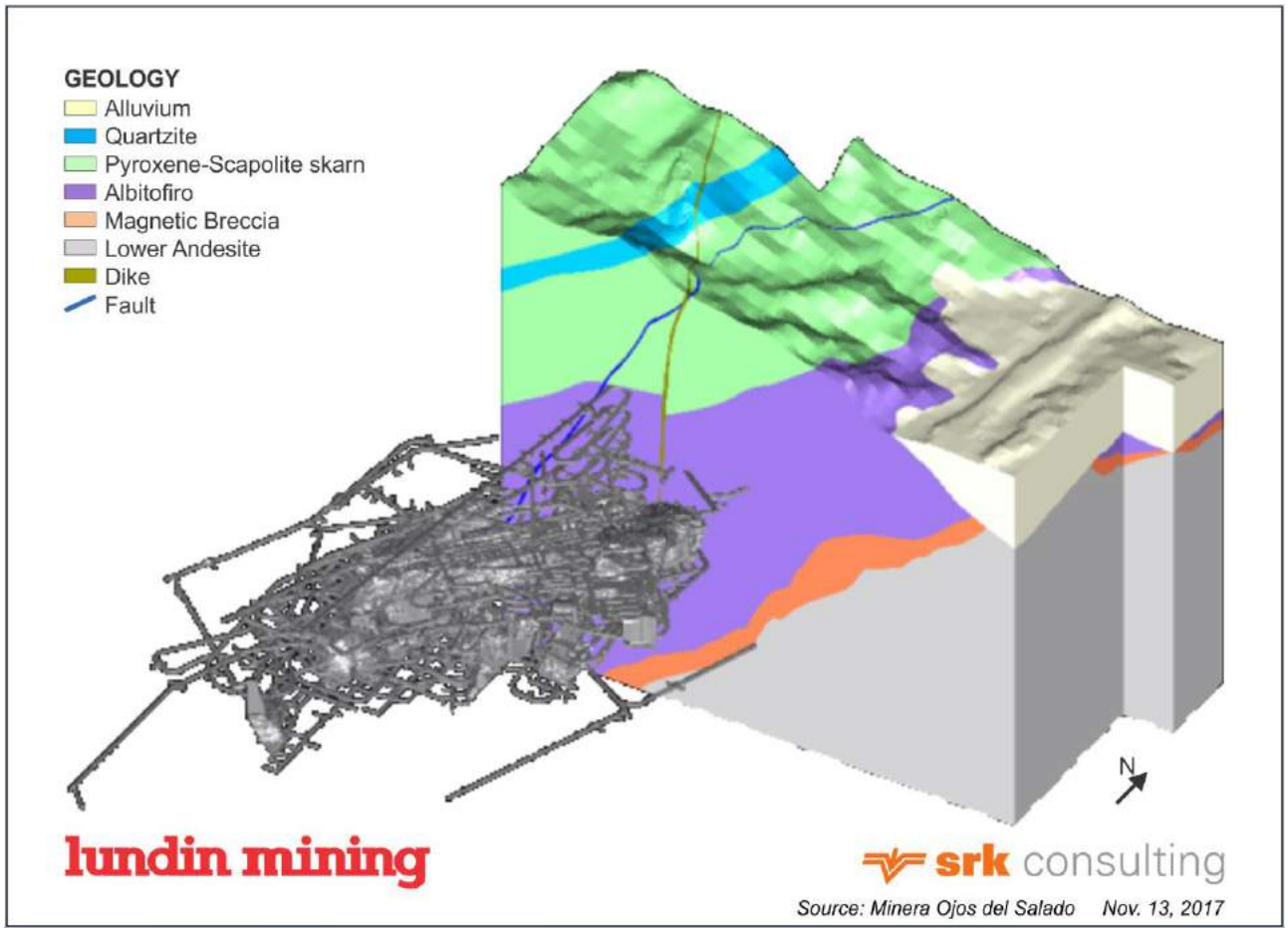


Figure 10: Geological Setting of the Alcaparrosa Mine

Intrusive rocks are andesitic, granitic, dioritic and monzodioritic dikes, and a diorite stock. The diorite stock is a post-mineral intrusion with equigranular texture composed of plagioclase and hornblende phenocrysts. The diorite stock is cut by dikes. Andesite dikes are porphyritic in texture and do not contain any mineralization. Granitic dikes have aplitic to porphyritic texture and show disseminated traces of pyrite and magnetite, although they do not contain any copper mineralization. Dioritic dikes are fine-grained equi-granular and barren. Monzodioritic dikes contain xenoliths of magnetite and chalcopyrite veinlets.

6.4 Mineralization

6.4.1 Mineralization at the Candelaria Mine

The main mineralized body at the Candelaria mine is hosted in rocks of the Punta del Cobre Formation. Specifically, the host rocks are massive andesite and andesite breccias of the Lower Andesite, and volcanic tuffs and volcaniclastic rocks comprising the base of the Upper Andesite. In the metasedimentary rock unit, the mineralization is confined to a few isolated layers (mantos).

The mineralized body is up to 400 metres thick in its central part and thins towards the edges. In east-west sections, the mineralization has a lenticular, downward concave shape with a steep eastern limb and a shallowly dipping western limb. The shape of the mineralized body in north-south section is irregular. In plan view, the extent of the mineralization is approximately 1,400 metres by 2,400 metres. The mineralized body was folded after its formation. The north-northeast-trending fold axis corresponds to the Tierra Amarilla Anticline.

The mineralization assemblage in the Candelaria mine consists of chalcopyrite, magnetite, pyrite, pyrrhotite, and sphalerite. Biotite, calc-silicate minerals, and potassium feldspar constitute the gangue minerals. Pervasive potassic alteration is associated with the mineralization.

Dominant copper mineralization styles are mantos, veins, breccia bodies, and veinlets along foliation planes. Gold occurs within chalcopyrite grains and along fractures surface in pyrite. Chalcopyrite and pyrite also occur in secondary northwest and north-northwest-striking faults.

6.4.2 Mineralization at the Santos Mine

Chalcopyrite is the only primary copper sulphide present in the Santos mine. In addition to copper mineralization, there are economic values of gold. Most frequent gangue minerals are pyrite, magnetite, actinolite, potassic feldspar, chlorite, biotite and hematite.

In the Santos mine, three styles of mineralized bodies are observed: veins, mantos, and breccia bodies. An important vein in the Santos mine is the Isabel Vein, which is oriented northwest-striking, and extends over 1 kilometre in length and between 4 and 30 metres in width. Manto-type mineralization occurs as tabular bodies located at two sedimentary horizons located in the floor and roof of the albitophyre. The manto mineralization is characterized by variable iron contents with magnetite common in the north and deeper areas, and specular hematite in the south. Mineralization occurs within breccia bodies is typically contained with the albitoforo and lower andesite and is formed by steeply west-dipping and north-northwest- to northwest-striking bodies.

6.4.3 Mineralization at the Alcaparrosa Mine

Mineralization at the Alcaparrosa mine principally occurs as mantos that trend to the northeast and dip to the west. Ore mineralogy consists of chalcopyrite, pyrite, and magnetite, with trace pyrrhotite, molybdenite, and arsenopyrite. Mineralization at the Alcaparrosa mine also occurs as veinlets defining dense stockwork, breccias (hydrothermal potassium feldspar and magnetite) as well as fine dissemination in biotite meta-andesites. High-grade bodies are also found in massive veins striking north-northwest, north, and east.

7 Deposit Types

The copper-gold sulphide mineralization present at the Candelaria Copper Mining Complex is generally referred to as iron oxide copper gold ("IOCG"). Depending on lithology and the structural setting, the polymetallic sulphide mineralization can occur as veins, hydrothermal breccias, replacement mantos, and calcic skarns (Sillitoe, 2003).

The Candelaria IOCG deposit lies within the metamorphic aureole of ae Lower Cretaceous magmatic arc plutonic complex that is located within the Candelaria-Punta del Cobre district, Atacama Region, northern Chile. IOCG deposits are primarily defined by their elevated magnetite and/or hematite with elevated copper and gold contents (Sillitoe, 2003). The IOCG belt located in the Coastal Cordillera of northern Chile and southern Peru is part of a volcano-plutonic arc of Jurassic to Early Cretaceous age. The arc is characterized by voluminous tholeiitic to calc-alkaline plutonic complexes of gabbro to granodiorite composition and primitive, mantle-derived parentage. Major arc-parallel fault systems developed in response to extension and transtension induced by subduction roll-back at the retreating convergent margin.

Most of the sulphide mineralization at Candelaria and Ojos del Salado occurs in breccias, stockwork veinlets, and disseminations in andesite, especially where the rocks are strongly foliated. Higher-grade copper mineralization is controlled by stratigraphy in mantos and by faults, trending predominantly northwest. The host rocks are thermally metamorphosed (hornfels and skarn) in the aureole of the Copiapó Batholith, within 1 kilometre from the intrusion. The top of the mineralization system consists of magnetite-amphibole skarn within calcareous meta-tuff mineralized with pyrrhotite, pyrite and chalcopyrite (Figure 11).

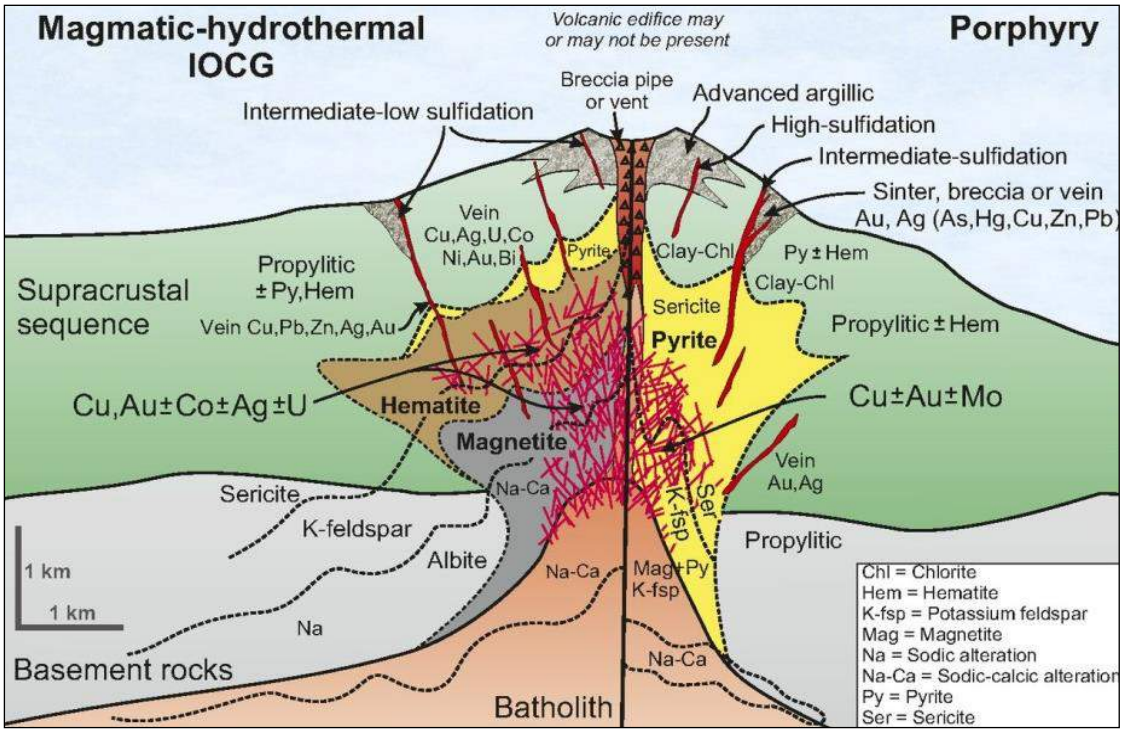


Figure 11: Schematic Section Through IOCG and Magmatic Systems

Source: Richards and Mumin (2013)

8 Exploration

Candelaria and Ojos del Salado (Santos and Alcaparrosa) are active mine operations that comprise the Candelaria Copper Mining Complex. Exploration work completed prior to commencement of mining is not relevant to this technical report.

Ongoing exploration is conducted by Minera Candelaria and Minera Ojos del Salado with the primary purpose of supporting mining and increasing Mineral Resource estimates. The exploration strategy is focused on tracing known mantos and vein targets as extensions from current orebodies utilizing host rock and alteration features down dip and along strike from existing underground infrastructure. Historically, this strategy has proven very effective in defining new Mineral Resources available for underground mining. Exploration work is completed by mine personnel.

Much of the exploration is conducted from underground, requiring significant underground development to provide adequate drilling stations. Regional exploration is also undertaken on the large properties surrounding the mines to identify new targets and define new Mineral Resource areas for more detailed resource exploration.

From 2010 to the end of June 2017, Minera Candelaria and Minera Ojos del Salado have together invested more than US$189 million in exploration to expand the Mineral Resources primarily below the Candelaria Open Pit, to the north and south of the pit, and at the three underground mines (Candelaria Underground, Santos and Alcaparrosa). During this period, 2,309 core boreholes (608,851 metres) were drilled requiring 13,237 metres of underground development to provide access for drilling. Since Lundin purchased the Candelaria Copper Mining Complex in late 2014 to the end of June 2017, there has been an investment in exploration of US$60 million. During this period 982 core bore holes (284,232 metres) were drilled requiring 1,386 metres of underground development.

At Minera Candelaria, during the first half of 2017, new Mineral Resource models were prepared for Lila 3 and Lila 4 (Figure 12 and Figure 13). The Measured and Indicated Mineral Resources have doubled during the last year in this sector, owing to the extensive drilling program and the integration of nine independent block models into one. During 2017 drilling surface and underground drilling targeted the Candelaria Open Pit and Underground sectors. In the Candelaria Underground (North Sector), new discoveries were made in the Lila 5 and Lila 9 sectors. New discoveries were also made in the Candelaria Underground (North Sector) to the south east of the Elisa models. Exploration drilling from the surface above the Mariana sector further established the continuity of mineralization beneath the western and southern portions of the open pit. Additional surface drilling was also completed in the northwest section of the Phase 9 pit and western section of Phase 10 to explore the potential for mineralization at depth. Time domain electro-magnetic geophysical surveys (TDEM) were also performed to the south of the pit to confirm the extension of the sulphide mineralization from the current pit limit to the south.

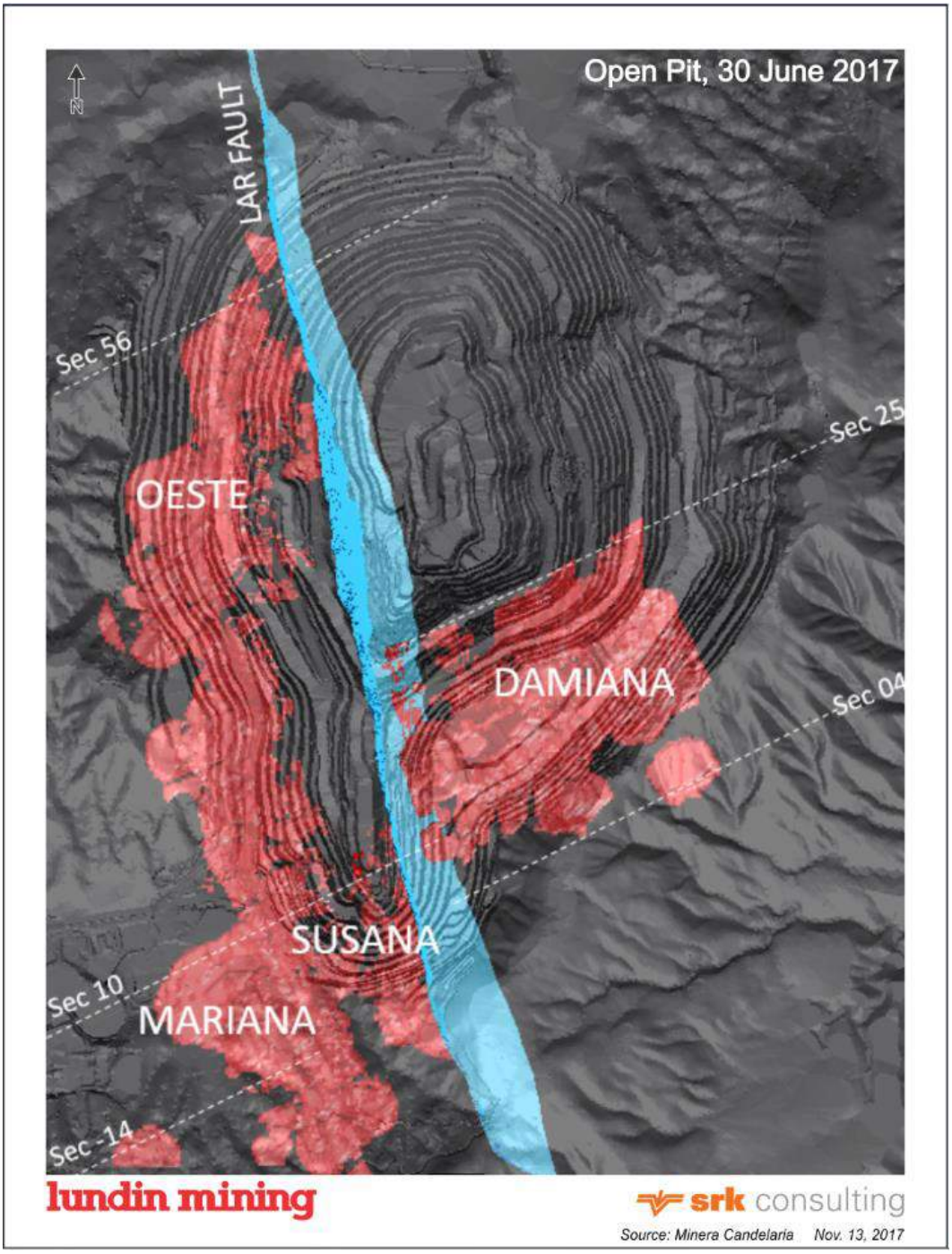


Figure 12: Exploration Areas at the Candelaria Underground (South Sector)

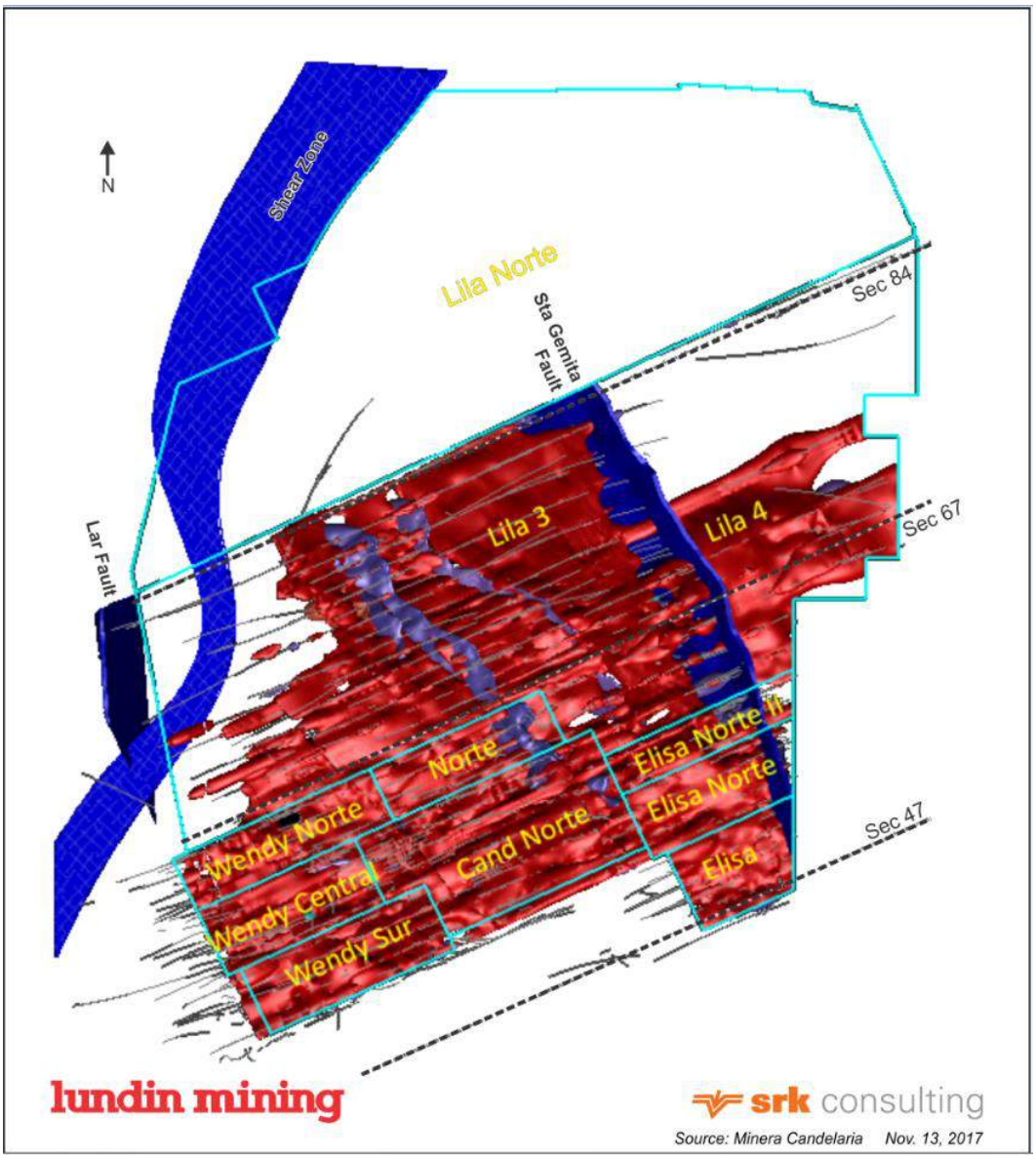


Figure 13: Exploration Areas at the Candelaria Underground (North Sector)

At Minera Ojos del Salado, new Mineral Resource and Mineral Reserve estimates were prepared in the first half of 2017, extending the life of the Santos mine to 2024. The Measured and Indicated Mineral Resources nearly doubled over the year in Santos due to drilling and the integration of five independent block models into one (Santos; Figure 14). At the Alcaparrosa mine, Mineral Resources dropped slightly owing to the smaller amount of drilling conducted in that sector. Although new discoveries were made at Alcaparrosa (Viviana Norte; Figure 15) they are smaller than the mining depletion. In the Santos mine to the north of the Melendez sector, sulphide mineralization was confirmed to the north. At Alcaparrosa, deep zones of sulphide mineralization remain open to the southwest and further potential exists in the east central and west central zones outside of the current model. Wide spaced extension and infill drilling is ongoing and will improve the confidence in the continuity of the sulphide mineralization in both the Alcaparrosa and Santos mines.

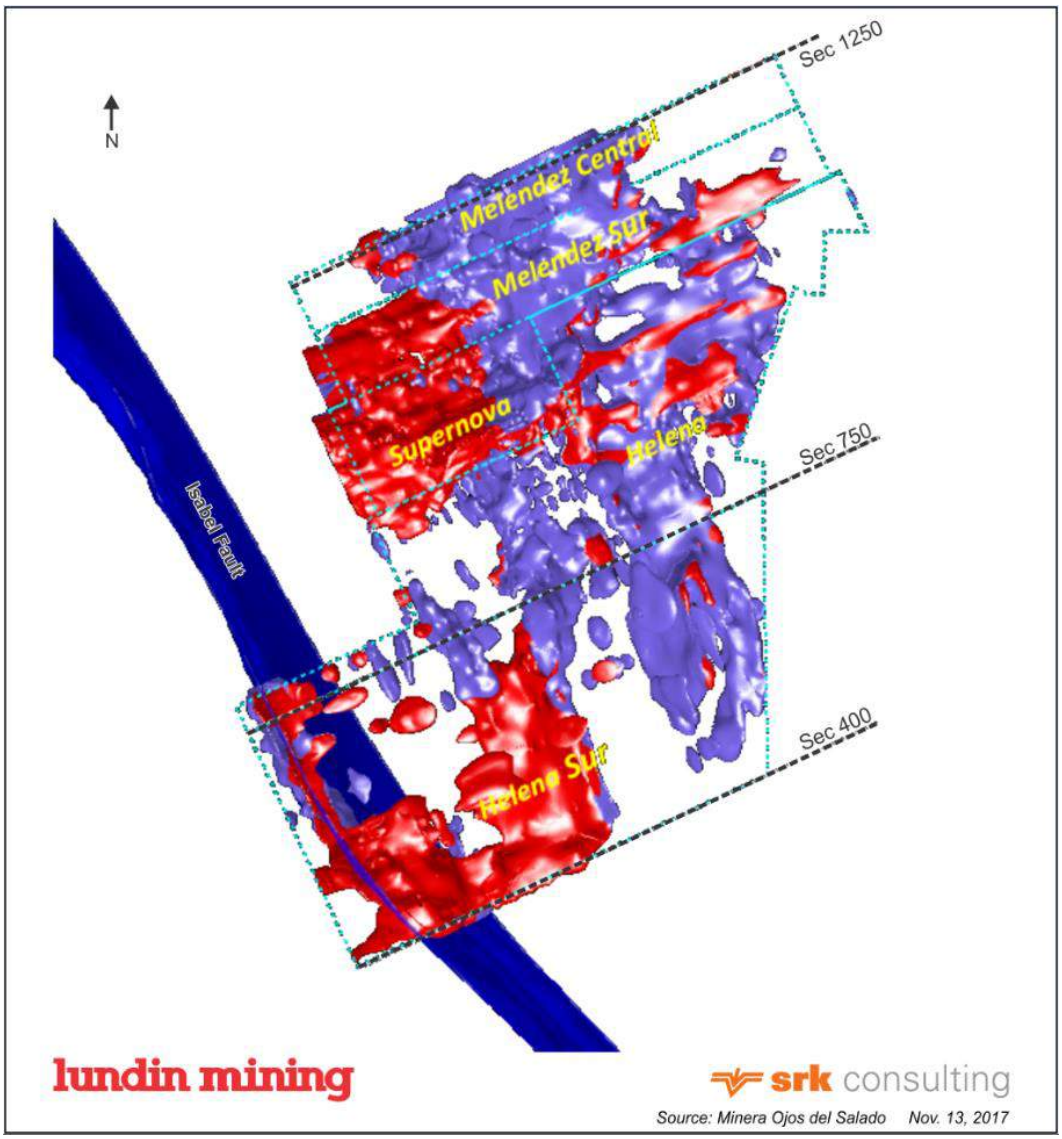


Figure 14: Exploration Areas at the Santos Mine

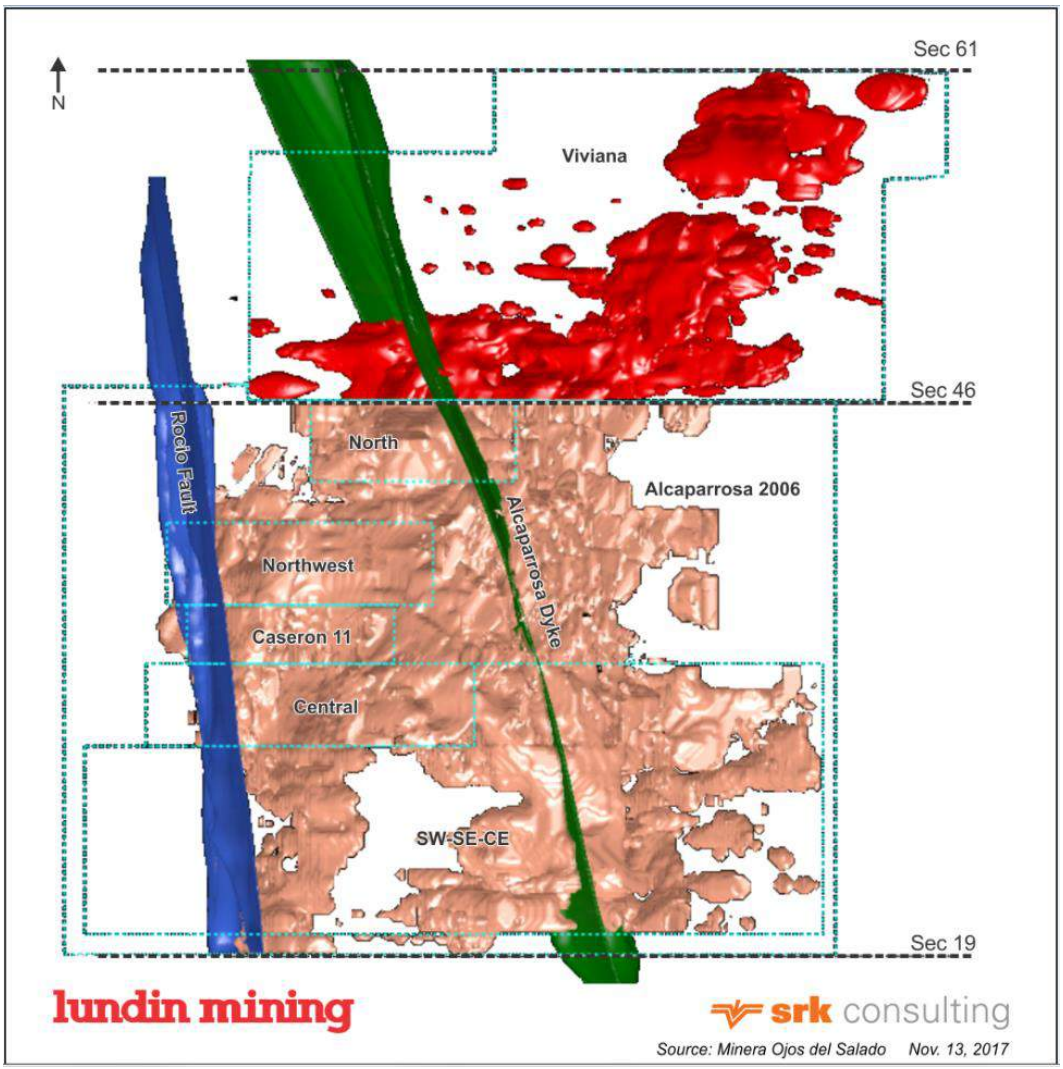


Figure 15: Exploration Areas at the Alcaparrosa Mine

Brownfield exploration drilling began in early 2017 with surface drilling commencing in the south district of the Ojos del Salado land concession, approximately 5 kilometres south of the Candelaria Open Pit. Geophysical survey was the primary tool in locating the drilling targets. There were 1,809 metres drilled at the Ojancos Sur and Pirata Rincon targets (Figure 16).

Building on this exploration success, an aggressive exploration program is planned for the period 2018 to 2022, targeting the lateral extensions of the areas investigated since 2010 and exploring district targets to the north and south of mining infrastructure within the Minera Candelaria and Minera Ojos del Salado land holdings. The planned exploration program (Table 6) includes approximately 5,655 metres of underground development, 453,000 metres of core drilling, and an extensive geophysical campaign at a total estimated combined cost of US$130 million.

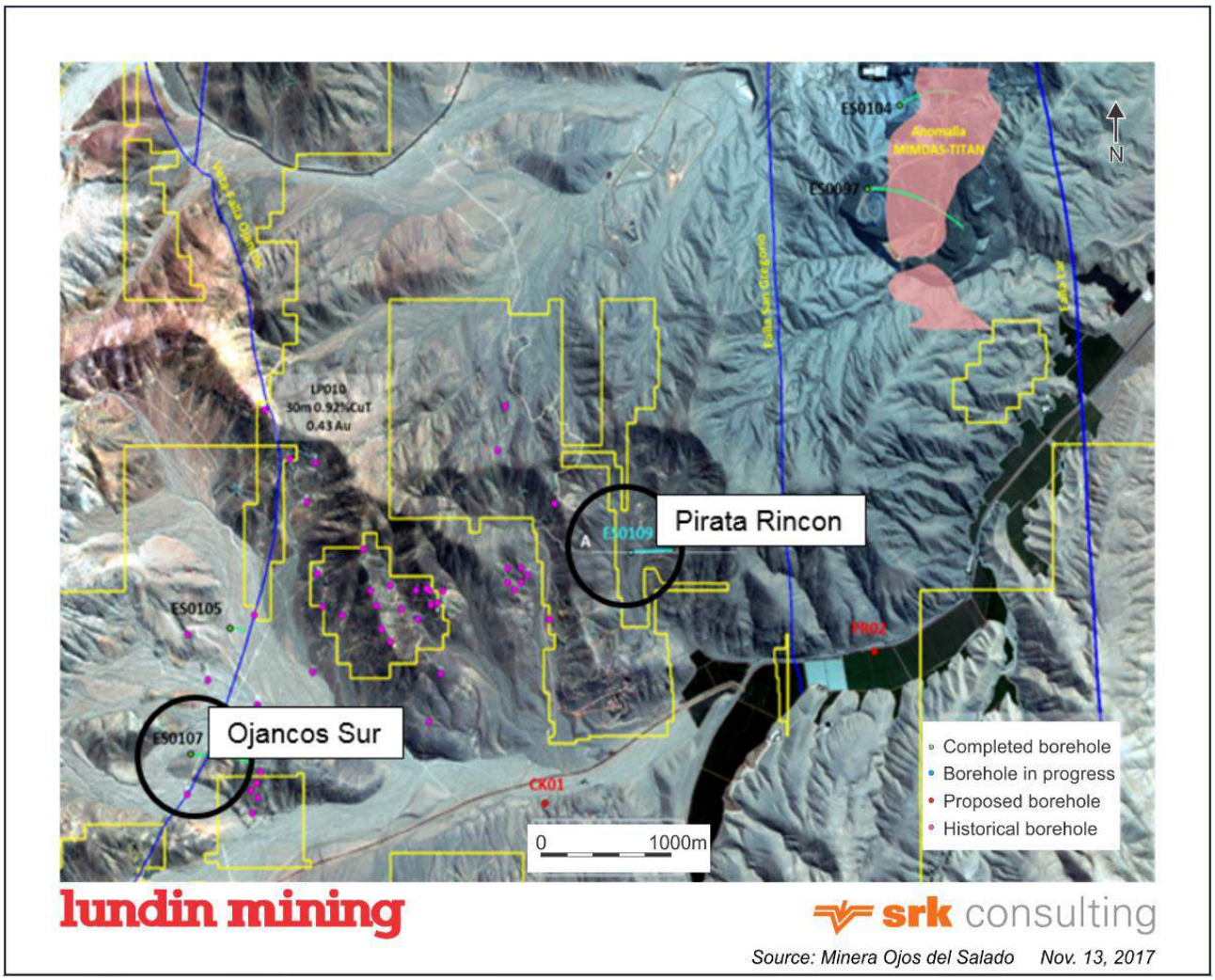


Figure 16: South District Surface Drilling

Table 6: Summary of Exploration Program (2018 – 2022)

		2018	2019	2020	2021	2022	Total
Santos	Definition	17,000					17,000
	Exploration	17,000					17,000
Alcaparrosa	Definition		15,500	7,000			22,500
	Exploration	19,000	7,000				26,000
Candelaria Underground	Definition	29,000	49,000	26,000	30,000	8,000	142,000
	Exploration	28,000	11,000	23,000	26,000	8,000	96,000
Candelaria Open Pit	Definition						0
	Exploration	4,000	7,000				11,000
District	Definition					23,000	23,000
	Exploration	8,000	7,000	10,000	7,000	12,000	44,000
	Delineation	3,000	15,500	15,000	6,000	15,000	54,500
	Total (metres/Year)	**125,000**	**112,000**	**81,000**	**69,000**	**66,000**	**453,000**
	Drifting (metres)	**1,995**	**1,150**	**1,160**	**660**	**700**	**5,665**
	US$ ('000s)	**35,970**	**30,482**	**24,132**	**19,666**	**19,967**	**130,218**

The objective of this aggressive exploration program is three-fold: to define and upgrade the classification of additional higher-grade Mineral Resources in the underground mines to replace the processing of lower grade feed from the open pit or surface stockpiles and improve the life of mine copper production; to understand the resource potential remaining in the underground mines; and, to explore the Candelaria District to supplement the depletion of Mineral Resources in the mines.

The aggressive exploration program initiated in 2010 has resulted in significant new discoveries, with a positive impact on the life of the three underground mines. In 2015, a new exploration and Mineral Resource development tool, Mineral Inventory Range Analysis ("MIRA") was initiated with the purpose to understand the potential mineral inventory remaining in the mines as well as identify the potential mineral inventory within the Candelaria land holdings. Since 2015, mineral inventories have increased across the Candelaria district as a result of the aggressive exploration programs (drilling and geophysical surveys), block model integrations, and new discoveries in both Alcaparrosa and Candelaria mines. Confidence has grown with the positive results received by utilizing the MIRA tool in the exploration programs. It is expected that the Mineral Resources will continue to grow within the current mines and district.

At Candelaria, the 2017 exploration program included 60,900 metres of surface and underground core drilling and 729 metres of underground development. There were 18,100 metres of core drilling to explore the southern extensions of Mariana, Damiana, and Santa Gemita, 38,700 metres to establish northern extensions of mineralization in Candelaria Underground (North Sector), and 4,100 metres to explore open pit potential.

At the Alcaparrosa mine, the 2017 exploration program included 39 metres of underground development, and a total of 11,300 metres including 5,900 metres of core drilling in the Viviana Norte area, 3,000 metres in the West Central area, and 2,400 metres drilled on the surface in the south (Figure 15).

At the Santos mine, the 2017 exploration program included 23 metres of underground development, and a total of 34,500 metres including 31,600 metres of core drilling in the Helena and Helena South sector, 1,500 metres in Melendez North, and 1,400 metres in the Malaquita Deep sector (Figure 14).

In addition to the underground exploration programmes, geophysical tools including Gravity, TDEM, and IP Gradient Resistivity were employed to guide future drilling programs within the Candelaria District. Gravity and IP Gradient Resistivity Surveys were utilized in the south district of Cora-Kaiser and Pirata-Rincon. These surveys show two remarkably strong anomalous chargeability trends trending north-south to north-northeast. The trend is located in the west border of this study area (Figure 17). Both lineaments are consistent with the magnetotelluric lineaments. The most intense lineament could coincide with San Gregorio fault trace. A TEM sounding survey was conducted in the same area, to guide drilling in the sector. Surface drilling commenced in 2017 in the Pirata Rincon and Ojancos South sectors.

Magnetic susceptibility and conductivity measurements and down-hole physical property logging were also initiated during 2017 and will be used to assist interpreting geophysical data and map magnetic susceptibility of lithological units and improve geological modelling.

Furthermore, historical paper logs were digitized and integrated in a 3D geological model of the district. These logs were reviewed with focus in the southern district of Pirata Rincon, or specifically La Española area, in an attempt to correlate the geophysical anomalies detected in this area. A drilling program has commenced in the area with favourable results to date.

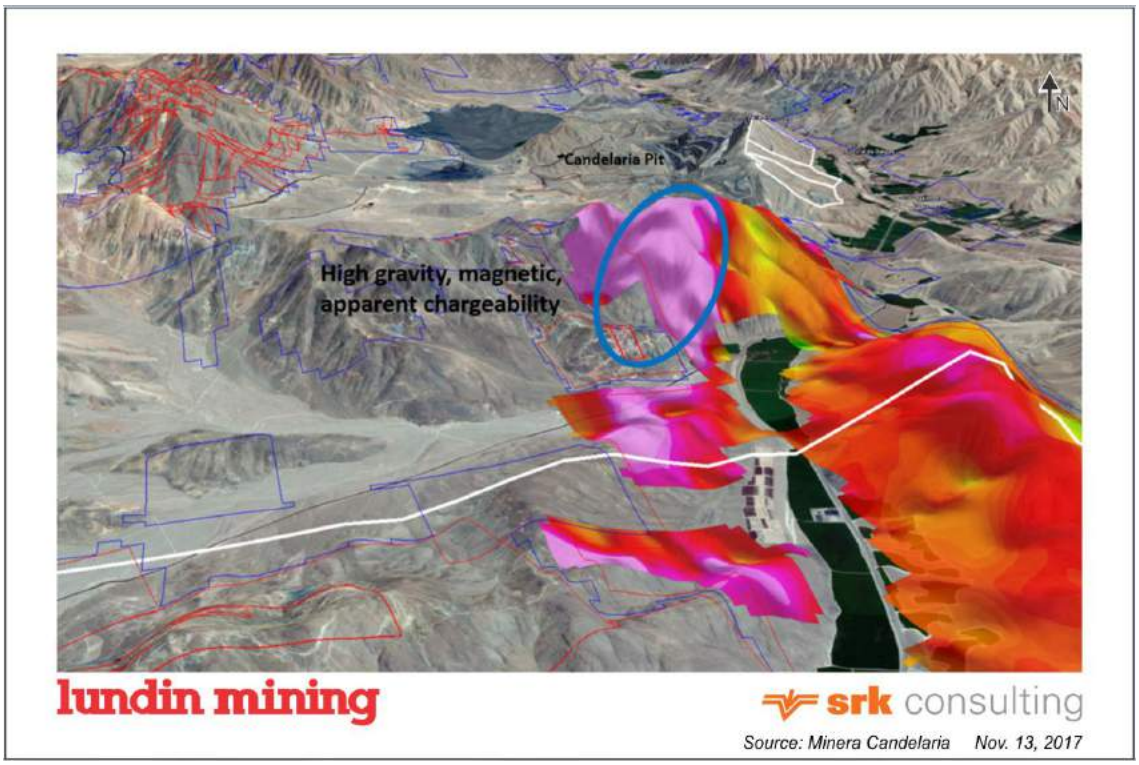


Figure 17: Oblique View (Looking North) Showing Gravity and Magnetic Resistivity Data Draped on the Topography South of the Candelaria Open Pit

8.1 SRK Comments

Considerable investment in exploration at Minera Candelaria and Minera Ojos del Salado since 2010 has continued to demonstrate the excellent potential for extending the sulphide zones in the three underground mines and generated new discoveries amenable for underground mining in other areas of the properties.

Step-out and infill drilling programs have resulted in the discovery of new mineralization extensions throughout the property particularly at Candelaria Underground (North and South Sectors), Alcaparrosa and Santos.

During the first half of 2017, new Mineral Resource models were prepared (including the integration of various mineral resource models), resulting in a small decrease in the open pit Mineral Resources offset by significant underground mine Mineral Resources increases, contributing to the extension of the life of mine.

A new five-year exploration program (2018 to 2022) has been developed and will target lateral extensions of the areas investigated since 2010 and exploring district targets to the north and south of mining infrastructure within Minera Candelaria land holdings. This aggressive exploration program will continue to define and upgrade underground Mineral Resource estimates on the property.

The exploration potential of the Candelaria Copper Mining Complex has been demonstrated to be excellent. SRK is also of the opinion that the new MIRA exploration and Mineral Resource development initiative will continue to complement the exploration program in the future, which should result in a continuous growth in Mineral Resources within the current mines and district.

9 Drilling

9.1 Drilling at Candelaria

From 1990 to June 30, 2017, 2,944 core and percussion boreholes (1,185,406 metres) were drilled in and around the Candelaria mine. Approximately 93 percent of all drilling comprised core boreholes. Approximately 80 percent of all core boreholes were drilled using NQ equipment, the rest using HQ equipment. Initially, drilling was completed by Geotech Boyles Bros. S.A. Later, drilling services were provided by Connors Drilling, LLC and finally from 2012, Boart Longyear was contracted to complete all drilling.

Until 2011, boreholes were surveyed by mine personnel. No information exists on instruments or methodologies used for these surveys. Since 2011, SG Drill Servicios Geol (SG Drill) based in Copiapó, has been contracted to complete down-hole surveys. SG Drill uses a Reflex tool with readings at 3-metre intervals. Most of the boreholes were drilled with an azimuth of 065 or 245 degrees with inclinations between -90 and +90 degrees. Table 7 summarizes the drilling information for Candelaria. The collars of the boreholes drilled within the Candelaria Copper Mining Complex is shown in Figure 18.

Table 7: Summary of Drilling Activities at Candelaria Mine (Open Pit and Underground)

Year	Dust		Surface		Geotechnics		Underground		Total	
	Number	Metres	Number	Metres	Number	Metres	Number	Metres	Number	Metres
1990	-	-	325	125,369	-	-	-	-	325	125,369
1991	-	-	-	-	-	-	-	-	0	0
1992	-	-	-	-	-	-	-	-	0	0
1993	23	4,041	-	-	-	-	-	-	23	4,041
1994	-	-	88	21,482	5	1,236	-	-	93	22,718
1995	-	-	71	32,417	-	-	-	-	71	32,417
1996	-	-	70	32,848	-	-	-	-	70	32,848
1997	-	-	38	12,174	4	1,459	-	-	42	13,632
1998	-	-	37	14,661	-	-	-	-	37	14,661
1999	-	-	60	16,736	-	-	-	-	60	16,736
2000	-	-	69	20,788	2	1,016	-	-	71	21,804
2001	-	-	126	51,026	-	-	-	-	126	51,026
2002	-	-	83	26,455	-	-	2	461.3	85	26,917
2003	47	3,627	88	30,441			89	11,984	224	46,052
2004	-	-	78	34,291	4	1,360.7	248	34,443	330	70,094
2005	-	-	112	53,130	1	71	30	6,398	143	59,599
2006	109	3,482	156	41,742	2	547	7	1,051.2	274	46,821
2007	-	-	131	38,568	-	-	79	14,294.1	210	52,862
2008	-	-	63	22,516	1	161	95	17,627.2	159	40,304
2009	-	-	52	13,773	-	-	23	4,541.2	75	18,315
2010	-	-	29	9,696	5	2,246	161	26,218.9	195	38,161
2011	-	-	69	36,433	4	200	95	17,424.4	168	54,057
2012	-	-	90	47,725	2	814.3	136	30,430	228	78,970
2013	-	-	45	24,483	2	859	208	47,115	255	72,457
2014	-	-	37	13,873	10	4,305	118	29,242	165	47,419
2015	-	-	59	31,393	-	-	248	66,694	307	98,086
2016	-	-	27	14,617	-	-	153	42,447	180	57,064
2017	-	-	37	21,153	-	-	88	21,824	125	42,977
Total	**179**	**11,150**	**2,040**	**787,787**	**42**	**14,275**	**1,780**	**372,195**	**4,041**	**1,185,406**

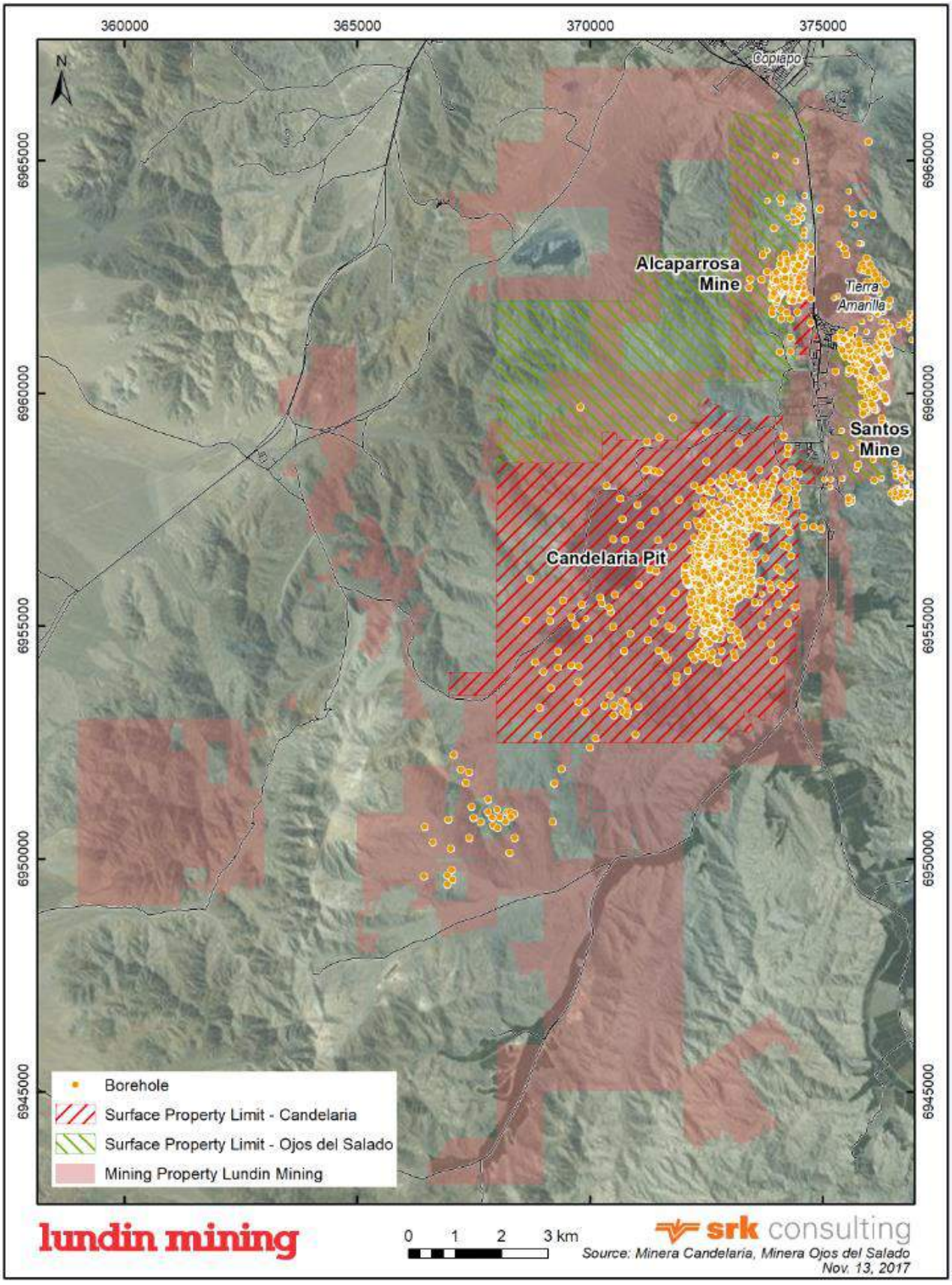


Figure 18: Location of Collars of Boreholes Drilled on the Candelaria Copper Mining Complex

Core recovery is routinely measured and typically exceeds 90 percent. Borehole spacing in the Mineral Resource areas is approximately 35 metres and wider along the edges of the Mineral Resource areas and beyond.

9.2 Drilling at Ojos del Salado

9.2.1 Santos Mine

In the Santos mine, a total 1,442 core boreholes (288,411 metres) were drilled from underground and surface stations since 1988 (sectors of Supernova, Melendez South and Central, and Helena South). The majority of the boreholes were drilled with an azimuth of 065 or 245 degrees with inclinations between -82 and +90 degrees. Borehole lengths vary between 40 and 728 metres. Down-hole deviation is monitored at regular intervals using Reflex tools. Table 8 shows summary of the drilling completed at the Santos mine.

Table 8: Summary of Drilling Activities Completed at the Santos Mine

Year	Dust		Surface		Geotechnics		Underground		Total	
	Number	Metres	Number	Metres	Number	Metres	Number	Meters	Number	Metres
1988	-	-	96	15,464	-	-	32	4,944	128	20,408
1989	-	-	17	3,651	-	-	49	5,773	66	9,424
1990	-	-	9	1,455	-	-	24	2,617	33	4,072
1991	-	-	-	-	-	-	17	3,327	17	3,327
1992	-	-	23	11,019	-	-	28	4,637	51	15,656
1993	-	-	32	12,766	-	-	26	2,978	58	15,744
1994	-	-	-	-	-	-	129	14,463	129	14,463
1995	-	-	-	-	-	-	18	1,520	18	1,520
1996	-	-	-	-	-	-	10	2,099	10	2,099
1997	-	-	-	-	-	-	22	5,398	22	5,398
1998	-	-	-	-	-	-	3	654	3	654
1999	-	-	-	-	-	-	-	-	0	0
2000	-	-	-	-	-	-	-	-	0	0
2001	-	-	-	-	-	-	-	-	0	0
2002	-	-	-	-	-	-	-	-	0	0
2003	-	-	-	-	-	-	-	-	0	0
2004	-	-	-	-	-	-	30	5,549	30	5,549
2005	-	-	-	-	-	-	52	11,764	52	11,764
2006	-	-	21	7,972	-	-	74	15,318	95	23,291
2007	-	-	6	1,261	-	-	90	16,156	96	17,417
2008	-	-	-	-	-	-	109	22,128	109	22,128
2009	-	-	-	-	-	-	-	-	0	0
2010	-	-	-	-	-	-	-	-	0	0
2011	-	-	-	-	-	-	92	15,818	92	15,818
2012	-	-	-	-	-	-	77	18,845	77	18,845
2013	-	-	-	-	-	-	85	21,923	85	21,923
2014	-	-	-	-	-	-	35	7,121	35	7,121
2015	-	-	-	-	-	-	91	15,949	91	15,949
2016	-	-	-	-	-	-	69	17,791	69	17,791
2017*	-	-	-	-	-	-	76	18,050	76	18,050
Total	**0**	**0**	**204**	**53,588**	**0**	**0**	**1,238**	**234,822**	**1,442**	**288,411**

All boreholes are collared with HQ-sized equipment; boreholes size was reduced in long boreholes or in fracture zones. All drilling in the Santos mine was originally completed by the Connors Drilling Group. More recent drilling was completed by Boart-Longyear.

9.2.2 Alcaparrosa Mine

The borehole database for the Alcaparrosa mine contains 1,002 boreholes (246,766 metres) drilled from surface and underground locations. The Table 9 shows a summary of the drilling activities completed at the Alcaparrosa mine.

Table 9: Summary of Drilling Activities Completed at the Alcaparrosa Mine

Year	Dust		Surface		Geotechnics		Underground		Total	
	Number	Metres	Number	Metres	Number	Metres	Number	Metres	Number	Metres
1990	-	-	31	15,381	-	-	-	-	31	15,381
1991	-	-	15	7,854	-	-	-	-	15	7,854
1992	-	-	19	7,706	-	-	-	-	19	7,706
1993	-	-	34	11,392	-	-	45	14,129	79	25,521
1994	-	-	14	3,817	-	-	28	6,653	42	10,470
1995	-	-	-	-	-	-	-	-	0	0
1996	-	-	-	-	-	-	2	247	2	247
1997	-	-	-	-	-	-	50	7,025	50	7,025
1998	-	-	-	-	-	-	-	-	0	0
1999	-	-	-	-	-	-	-	-	0	0
2000	-	-	-	-	-	-	-	-	0	0
2001	-	-	-	-	-	-	-	-	0	0
2002	-	-	-	-	-	-	-	-	0	0
2003	-	-	14	6,004	-	-	4	1,672	18	7,677
2004	-	-	8	552	-	-	27	6,071	35	11,623
2005	-	-	7	6,753	-	-	20	6,959	27	13,712
2006	-	-	3	1,378	-	-	-	-	3	1,378
2007	-	- -	-		-	-	66	7,783	66	7,783
2008	-	-	-	-	-	-	26	4,278	26	4,278
2009	-	-	-	-	-	-	85	12,261	85	12,261
2010	-	-	-	-	-	-	81	16,449	81	16,449
2011	-	-	10	5,932	-	-	95	13,914	105	19,846
2012	-	-	9	4,277	-	-	35	9,049	44	13,326
2013	-	-	-	-	-	-	112	22,755	112	22,755
2014	-	-	-	-	-	-	28	7,161	28	7,161
2015	-	-	-	-	-	-	81	22,130	81	22,130
2016	-	-	5	2,397	-	-	19	3,200	24	5,597
2017*	-	-	-	-	-	-	29	6,588	29	6,588
Total	**0**	**0**	**169**	**78,443**	**0**	**0**	**833**	**168,323**	**1,002**	**246,766**

9.3 Sampling Method and Approach

Logging and sampling procedures at Minera Candelaria and Minera Ojos del Salado operations follow similar approaches using documented protocols. Geology logging records information about rock type, mineralogy, textures, structures, mineralization, and alteration. Geotechnical logging records information about core recovery, rock quality designation (RQD), hardness, and the number and nature of fractures. In addition, point load tests were performed at selected intervals. Until January 2012, geotechnical logging was performed by mine personnel, after this date that work was contracted. Core photographs were initially taken of uncut core of selected drill hoes. During 2017, core photography has been implemented for all drill holes,

Before 2007, samples were taken at 1-metre intervals. After 2007 onward, sample intervals for the open pit were increased to 2 metres. Analytical samples were taken from core cut lengthwise using a diamond saw. Half of the core is retained in core boxes for reference. For the Candelaria Open Pit, core was sampled from two bench heights above known mineralization to the bottom of the borehole. For the underground mines, core is sampled on the basis of visible sulphides. At Candelaria core samples are 2 metres in length. In the underground mines, core samples are 1 metre in length. The top parts of boreholes were not sampled. Sampling is carried out by a contractor under the supervision of mine personnel. In late 2016, in the underground mines, core sample length was increased from 1 to 2 metres in length.

Before 2014, primary information such as collar coordinates, survey data, as well as geological and geotechnical logging data was entered into Microsoft® Excel sheets and later aggregated into a final database by authorized personnel from the geology team. Since 2015 logging information is captured digitally and transferred to the main project Acquire database automatically.

9.4 SRK Comments

SRK has witnessed drilling and sampling activities on the operations and believes that the drilling and sampling procedures adopted by the Candelaria Copper Mining Complex are consistent with generally recognized industry best practices. The resultant drilling pattern is sufficiently dense to interpret the geometry and the boundaries of the copper and gold mineralization with confidence. The core samples were collected by competent personnel using procedures meeting generally accepted industry best practices. The process is undertaken or supervised by suitably qualified geologists. SRK concludes that the samples are representative of the source materials and there is no evidence that the sampling process introduced a bias.

10 Sample Preparation, Analyses, and Security

10.1 Historical Samples

The borehole sampling preparation, analyses, and security procedures utilized by ENAMI and its predecessors between 1929 and 1985 are unknown.

10.2 Core Samples (1985 to Present)

10.2.1 Mineral Candelaria

Analytical samples informing the Candelaria Open Pit Mineral Resources were prepared and assayed at the Candelaria mine site. In 2014, the laboratory was certified to ISO17025 by the National Institute of Standardization (INN) of Chile for the analyses of copper, iron, zinc, and silver. Compliance to the ISO standard is being verified yearly by the INN. The laboratory is not independent from Minera Candelaria. It is managed by the Technical Services Department.

Analytical samples informing the Ojos del Salado Mineral Resources were prepared and assayed by Intertek (formerly Vigalab) in Tierra Amarilla, Chile. Intertek is a global group operating 13 laboratories in Chile with a management system accredited to ISO9001. Intertek's laboratories are independent from Minera Ojos del Salado.

Minera Candelaria uses Intertek in Copiapó as an umpire laboratory.

Prior to 2006, Minera Ojos del Salado used Geolab as an umpire laboratory. As far as SRK was able to determine, Geolab is independent from Minera Ojos del Salado. After 2006, Minera Ojos del Salado used ALS Limited (ALS) laboratory in Coquimbo as an umpire laboratory. The management system of the ALS Minerals Group laboratories is accredited to ISO-9001:2000 by QMI Management Systems. ALS is independent from Minera Ojos del Salado.

The sample preparation and analytical methodologies used for assaying Candelaria and Ojos del Salado samples are similar.

Upon reception, sample details are recorded and insertion points for quality control samples in the sample stream are determined. Sample preparation includes drying at 105 degrees Celsius in a forced air furnace, primary crushing to 100 percent passing 5 millimetres, secondary crushing cycle to 90 percent passing 1.68 millimetres (12 mesh). Grinding tests are conducted on every 40th sample.

From the crushed material two 1-kilogram samples (Sample A and B) are prepared using a rotary splitter. Coarse rejects are retained and kept in storage. Both samples A and B are pulverized separately to 95 percent passing 0.106 millimetres (140 mesh). Sample A is subdivided into four subsamples: one subsample with approximately 200 grams, and three subsamples weighing approximately 100 grams each (A1, A2, and A3) and are used for quality control. Sample B is subdivided into two subsamples: one weighing approximately 200 grams and the other (B1) approximately 100 grams. The two heavier subsamples are kept for future reference or as backup should more sample material be required.

Copper, silver, zinc, and iron are analyzed by multi acid digestion and atomic absorption spectroscopy (AAS). Copper assays greater than 6 percent are re-analyzed systematically. Gold is also assayed in 30-gram aliquots by fire assay with AAS finish. Minera Ojos del Salado began assaying for zinc in January 2015.

Assay data are loaded directly from digital assay result files into the final database in order to minimize entry errors.

10.3 Specific Gravity Data

Specific gravity (SG) is measured systematically over the full sample intervals. For each sample interval, all core fragments larger than 5 centimetres in length are collected and used to measure specific gravity using a water displacement method without paraffin coating. Measurements are duplicated every 20 measurements and the scale is checked frequently using a 2-kilogram weight.

10.4 Quality Assurance and Quality Control Programs

Quality assurance and quality control programs are typically set in place to ensure the reliability and trustworthiness of the exploration data. They include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management, and database integrity. Appropriate documentation of quality control measures and regular analysis of quality control data are important as a safeguard for the project data and form the basis for the quality assurance program implemented during exploration.

Analytical control measures typically involve internal and external laboratory control measures implemented to monitor the precision and accuracy of the sampling, preparation, and assaying. They are also important to prevent sample mix-up and monitor the voluntary or inadvertent contamination of samples. Assaying protocols typically involve regular duplicate and replicate assays and insertion of quality control samples. Check assaying is typically performed as an additional reliability test of assaying results. This typically involves re-assaying a set number of rejects and pulps at a second umpire laboratory.

10.4.1 Historical Analytical Quality Control at Alcaparrosa

No information exists about the analytical quality control procedures at Alcaparrosa between 1929 and 1985.

10.4.2 Analytical Quality Control (1985 to Present)

Minera Candelaria

The analytical quality control program implemented at Candelaria includes the use of control samples (coarse and pulp duplicate samples and reference material samples) inserted within all samples submitted for assaying. Pulp duplicate samples are inserted at a rate of one every 20 samples. Preparation duplicate samples from the B samples (see section 10.2) are inserted at a rate of one every 40 samples.

Prior to 2016, six different reference materials were created from Candelaria samples and certified for copper and gold by round robin testing under the supervision of ALS Minerals in Copiapó. Copper grades of the reference material range from 0.50 to 3.69 percent copper. Reference material samples were inserted at a rate of one every 20 samples.

After sample preparation, pulps are relabeled. A duplicate and approximately 5 percent of the samples are sent to the umpire laboratory.

Analytical quality control procedures were improved during 2016. Four reference material were prepared (In-PT-5301 procedure) at the INTEM laboratory in Antofagasta, Chile following the ISO-34 guide (General Requirements for the Competence of Reference Material Producers). The four reference material samples are:

- IN-BMF-233: Blank 2016, (0.004% Cu, 1.0 ppm Ag, 0.01 ppm Au)
- IN-C080-230: Low grade 2016 (0.293% Cu, 2.2 ppm g, 0.079 ppm Au)
- IN-C080-231: Medium grade 2016 (0.658% Cu, 2.8ppm Ag, 0.138 ppm Au)
- IN-C080-232: High grade 2016, (1.373% Cu, 3.1 ppm Ag, 0.275 ppm Au)

Since 2016, exploration data are managed through an AcQuire database, which include quality control management features for sample coordinates from borehole surveys and data management tools. Sample numbering and labelling is controlled through AcQuire, including insertion of quality control samples and consignment notes to the primary laboratories. Analytical results are received electronically and managed through AcQuire with quality control filters. Samples outside defined limits are rejected by AcQuire and flagged for further investigation. The AcQuire system includes features for reporting analytical results and preparing bias charts and time series plots.

Minera Ojos del Salado

Prior to 2006, the analytical quality control program at Ojos del Salado consisted of the use of control samples (pulp duplicate samples) and the use of check assaying at an umpire laboratory. No field duplicates, standard reference material, or blank material were submitted prior to 2006.

Analysis of quality control data during this time by AMEC (2013b) highlighted the poor performance of the pulp duplicate samples, especially for copper. Because the duplicate samples performed better for gold, AMEC (2013b) concluded that the overall performance of the quality control data was satisfactory.

Starting in 2006, Minera Ojos del Salado changed the analytical quality control procedures to replicate those in use at Candelaria.

Since 2016, Ojos del Salado samples are now also managed through the AcQuire system similarly to Minera Candelaria.

10.5 Sample Security

Information about the sample security in the historical exploration period prior to Minera Candelaria and Minera Ojos del Salado's involvement is unavailable.

All drilling assay samples are collected by a contractor under the direct supervision of a mine geologist. Samples from Candelaria are processed and analyzed entirely at the mine site. Samples from Ojos del Salado are shipped directly from the property to the Intertek laboratory in Tierra Amarillo.

Assay samples are collected by appropriately qualified staff at the laboratories. Sample security involved maintaining the chain of custody of samples to prevent inadvertent contamination or mixing of samples and rendering active tampering as difficult as possible.

During the site visit, SRK found no evidence of active tampering or inadvertent contamination of assay samples collected either on the Candelaria or Ojos del Salado properties.

10.6 SRK Comments

SRK reviewed the field procedures and analytical quality control measures used at the Candelaria Copper Mining Complex operations. In the opinion of SRK, company personnel used care in the collection and management of the field and assaying exploration and production data. Based on historical reports and data available, SRK has no reason to doubt the reliability of exploration and production information provided by the Candelaria Copper Mining Complex. The introduction of the AcQuire-based database / analytical data management system in 2016 has further enhanced analytical quality control procedures at Minera Candelaria and Minera Ojos del Salado. The reports and analytical results examined by SRK suggest that the analytical results delivered by the primary laboratories used by the Candelaria Copper Mining Complex are free of apparent bias.

In the opinion of SRK, the sampling preparation, security, and analytical procedures used by the Candelaria Copper Mining Complex are consistent with generally accepted industry best practices and are therefore adequate to support Mineral Resource estimation.

11 Data Verification

11.1 Verifications by the Candelaria Copper Mining Complex

The exploration and production work completed by the Candelaria Copper Mining Complex was conducted using documented procedures and involved extensive verification and validation of exploration and production data prior to them being considered for geological modelling and Mineral Resource estimation. During drilling, experienced mine geologists implemented industry standard measures designed to ensure the reliability and trustworthiness of the exploration data.

The Candelaria Copper Mining Complex monitors the analytical quality control data on a real-time basis. Exploration data are now managed through an AcQuire database, which includes extensive quality control features and tools to facilitate ongoing monitoring and reporting. Quality control failures are investigated and appropriate actions are taken when necessary, including requesting re-assaying of certain batches of samples.

In 2016, Minera Candelaria initiated a study to investigate the poor reconciliation of silver at the PAC plant. The investigation involved the re-assay of over 800 samples for silver at the Intertek and/or the Candelaria Mine laboratory and nearly 300 samples for gold and silver at the Candelaria laboratory. The study showed that the Intertek laboratory results prior to mid-2015 are biased high by approximately 42%. No apparent bias was identified in the duplicate samples from the open pit Phase 9 and 10 areas assayed at the Minera Candelaria laboratory. There is no significant evidence of historical bias in gold assay results delivered by the Candelaria or Intertek laboratories.

To resolve the bias noted in the silver assay results delivered by Intertek, the sub-sample size was increased from 1.0 to 2.5 grams aliquot and the analysis is now performed as the first element as opposed to second element in the past. The detection limit was also lowered from 1.0 to 0.2 ppm by lowering the calibration curves used to calibrate the atomic absorption equipment at Intertek.

For the 2016 block models, correction factors were calculated by area and grouped lithology types and this was applied to the historical block models impacted by the problematic samples for the underground mines.

In the 2017 underground block models, the same correction factor was applied per lithology for each borehole affected by silver overestimation from 2015. In the Open Pit, due to the overestimation of the silver analysis from the Intertek laboratory, boreholes with overestimated silver grades were removed from the database so as not to affect the block models prepared in 2017. This resulted in a decrease of the silver grade in the Candelaria Open Pit Mineral Resource estimate.

11.2 Verifications by SRK

11.2.1 Site Visit

In accordance with National Instrument 43-101 guidelines, a team of professionals under the supervision of SRK visited the Candelaria and Ojos del Salado properties from June 10 to 12 and from June 14 to 16, 2014, accompanied by representatives of Lundin. The team included Glen Cole, PGeo, Gary Poxleitner, PEng, and Maria Ines Vidal, MAusIMM, from SRK, and Daniel Sepulveda, and John Nilsson, PEng, both independent consultants.

SRK conducted another site visit from July 6 to July 10, 2015. The team included Jean-Francois Couture, PGeo, Gary Poxleitner, PEng, and Maria Ines Vidal, MAusIMM, from SRK, and John Nilsson, PEng, an independent consultant. Jean-Francois Couture, Gary Poxleitner, and John Nilsson are qualified persons pursuant to National Instrument 43-101.

SRK returned to the Candelaria Copper Mining Complex from December 14 to 16, 2016. The team included Glen Cole, PGeo, Benny Zhang, PEng, Maria Ines Vidal, MAusIMM, from SRK and John Nilsson, PEng, an independent consultant.

On November 8 and 9, 2017 Glen Cole, PGeo, Benny Zhang, PEng, Maria Ines Vidal, MAusIMM, from SRK visited the Candelaria Copper Mining Complex. John Nilsson, PEng, an independent consultant, also visited the mine complex from October 9 to 13, 2017.

The site visits took place during active drilling and production activities. All aspects that could impact materially the integrity of the data informing the Mineral Resources (core logging, sampling, analytical results, and database management) were reviewed with Minera Candelaria and Minera Ojos del Salado staff. SRK could interview mine staff to ascertain exploration and production procedures and protocols.

SRK has examined core from several boreholes and found that the logging information accurately reflects actual core. The lithology contacts checked by SRK match the information reported in the core logs.

On November 9, 2017, SRK toured the Santos underground mine, one of the three underground operations. Areas of the mine observed included mine development, sub-level stoping activities, and the current raise boring project. An inspection of the new Los Diques tailings storage facility was also undertaken. SRK also met with discipline heads to discuss all aspects of the latest Mineral Resource and Mineral Reserve estimates.

11.2.2 Review of Exploration Data and Mineral Resource Models

SRK reviewed the borehole databases, Mineral Resource models, and planned and existing mine infrastructure. For the preparation of this technical report, SRK was able to reproduce block model estimates for a representative sample of the block models to a satisfactory degree.

SRK also completed statistical comparison of the global block models grade against the informing drilling data and visually compared on plans and sections the block models against the informing composites to confirm that the various models are generally an adequate representation of the distribution of the copper, gold, and silver mineralization.

The Candelaria Open Pit Mineral Resource model is routinely compared against the production model derived from blasthole samples and the Mineral Resource estimation parameters are periodically adjusted accordingly. Generally, the Mineral Resource model under evaluates the metal content of a bench by a few percent relative to the blasthole model.

After comparing the open pit and underground Mineral Resource models against the informing composites and the statistics of the production model (long and short-term models), SRK concludes that the Candelaria Copper Mining Complex estimation approach produces a reasonable and reliable model adequate to support open pit mining and which adequately reconciles to monthly production data.

12 Mineral Processing and Metallurgical Testing

The Candelaria Copper Mining Complex is a mature mining operation. Mineral processing and metallurgical testwork completed prior to the commissioning of the Candelaria and Pedro Aguirre Cerda (PAC) processing plants are not relevant to this technical report. Both processing plants have been in operation for many years and produce copper concentrates that are sold to customers worldwide (see section 18). A summary of the performance of the processing plants is provided in section 16 of this technical report. Metal recovery assumptions are derived by ore type from historical performance of the processing plants. Other than those stated in sections 16 and 18, there are no other processing factors or deleterious elements that could have a significant impact on economic extraction.

As part of the ongoing operations, both processing plants undertake ongoing testing programs. This section describes the testing programs undertaken and updated during normal operations.

12.1 Metallurgical Testing at the Candelaria Processing Plant

Minera Candelaria maintains regular metallurgical testing programs that are incorporated into statistical models to predict historical metallurgical performance and improve its processing performance in terms of mill throughput, metal recovery to concentrate and final concentrate grade.

Metallurgical tests are executed in several specialized facilities such as Universidad de Atacama and at commercial third-party laboratories in Chile, including SGS Mineral Services, Aminpro and Starkey & Associates.

Regular testing by Geological Unit (Unidad Geológica, UG) includes rock hardness classification (see Table 10) for hard (UG 57 and 59) moderate (UG 40 and 68) and intermediate units (UG 5-61 and 67). In addition, bench scale flotation testing is correlated with industrial scale results to predict mill throughput and metallurgical performance.

Table 10: Rock Hardness Classification, Unconfined Compressive Strength

Hardness Category	UCS MPa
Extra Hard	180 to 240
Hard	140 to 180
Intermediate	100 to 140
Soft	20 to 100

Figure 19 shows the structure of the throughput forecasting model that is updated and maintained by Candelaria personnel. Relationships between ore type UG and specific energy (kWh/t) and pebble rate are used to predict grinding circuit power requirements and therefore, plant capacity based on mill availabilities.

In addition, copper recovery to final concentrate is modelled by UG, including factors for grind size (and its effect on tailings grade), zinc head grade and stockpile oxidation. Copper grade is also incorporated, as depicted in Figure 20. Currently, no effect of secondary copper minerals (e.g., acid soluble copper) is included in the copper recovery model.

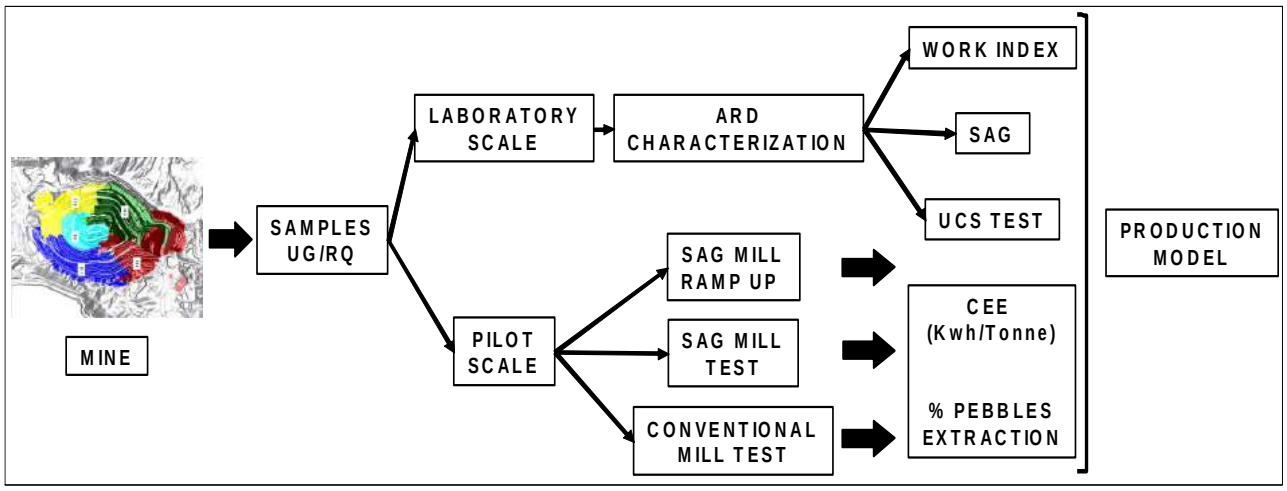


Figure 19: Structure of Throughput Forecasting Model
Source: Minera Candelaria

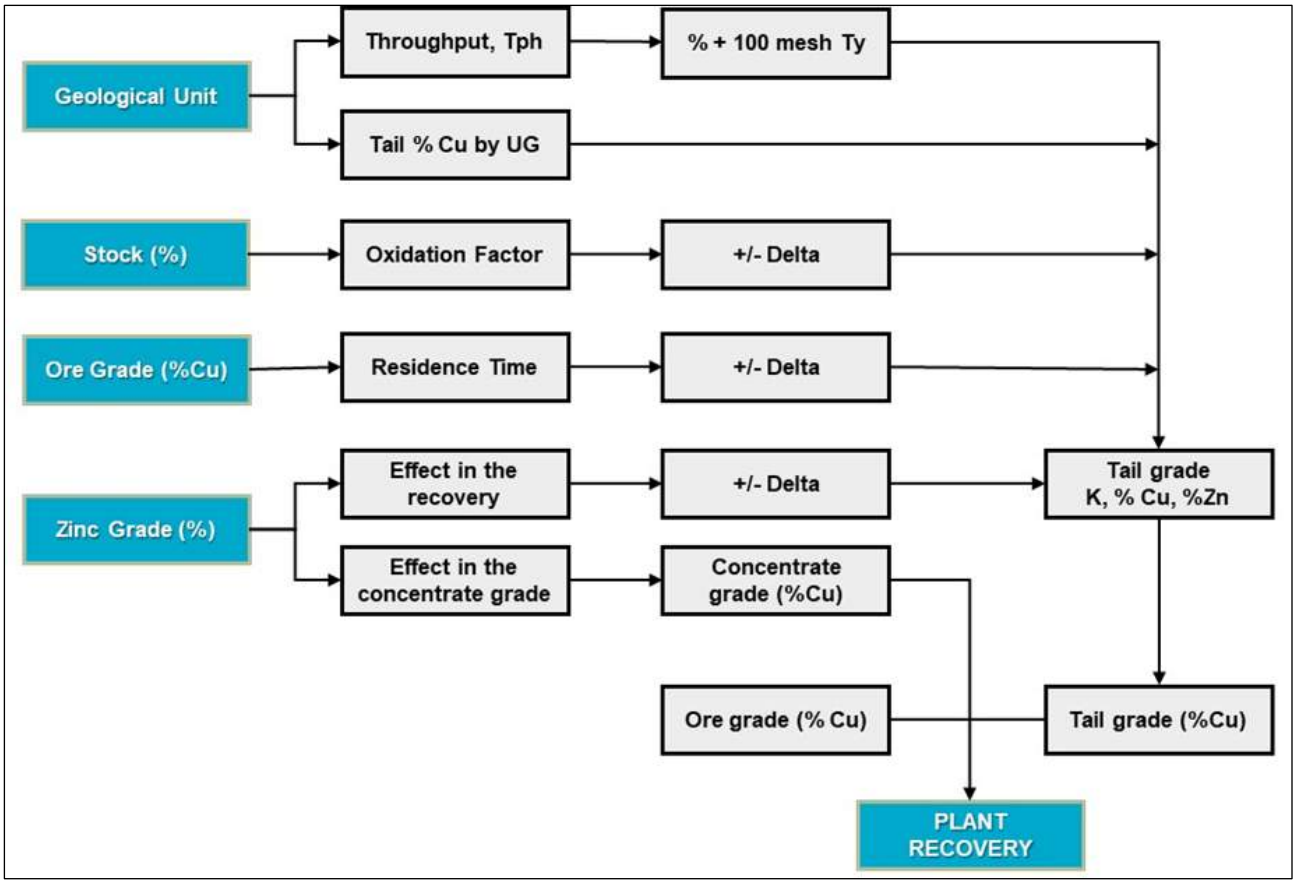


Figure 20: Structure of Copper Recovery Forecasting Model
Source: Minera Candelaria

Precious metal recovery is not related to UG and is relatively constant for both gold and silver depending on the open pit or underground source.

Recent exploration programmes have discovered additional Mineral Resources and Reserves and resulted in extended mine lives. New metallurgical tests were initiated in late 2016 as part of a feasibility study to evaluate potential throughput increases at the Candelaria mill. The material tested was a blend of ore considered representative of future feedstock. Testwork included semi-autogenous grinding (SAG) and ball mill pilot testing (SGS Minerals S.A., 2017), specific SAGDesign© tests (Starkey & Associates, 2016), bench scale flotation kinetic modelling and automated scanning electron microscopy (QEMSCAN). Results and analysis from this testwork programme were evaluated using the Ausenco Ausgrind methodology to improve confidence in the estimated throughput for the life of mine plan.

In parallel with the mill expansion study, a number of process initiatives have commenced focussing on debottlenecking and improving the existing facilities. As a part of these initiatives, further variability testwork programmes were initiated. The first study is to evaluate the potential for Mine-to-Mill improvements in primary crusher feed size from blasting (both underground and the open pit) and the effect of optimising the comminution energy input over the whole process. Coupled with this is a geometallurgical initiative to characterise the different geological zones adding to the existing database and incorporating more underground sections. The anticipated improvement in copper recovery – with planned improvements to grinding, classification and upgrades to flotation cells – will substantially address the shortfall associated with previous throughput increases. However, lower feed grades will limit the benefits of these initiatives compared with historically high copper grades.

Internal routine testwork is undertaken with SPI, Bond ball mill and rod mill work index testing along with laboratory flotation tests for routine characterisation and ongoing adjustment/ development of geometallurgical models.

Table 11 tabulates the metallurgical testwork undertaken to date in 2016 and 2017.

Table 11: Metallurgical Testwork 2016-2017

Testwork	Quantity	Comments
Bond BWI & RWI	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
JK Drop Weight	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
SMC	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
Pilot plant	3	Pilot tests of grinding SAG and grinding balls to evaluate pre-crushing (expansion FS)
SAGDesign	3	Starkey SAGDesign Milling tests of material to evaluate pre-crushing (expansion FS)
QEMSCAN	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
Grinding rates	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
Standard rougher and cleaner flotation	3	Samples Phase 9, Candelaria Underground (North Sector) and Alcaparrosa (expansion FS)
SPI	298	Drill samples to feed block model and samples for operational control
Bond BWI	217	Drill samples to feed block model and samples for operational control
Bond AI (Abrasion)	197	Drill samples to feed block model and samples for operational control
Rougher flotation kinetics	267	Drill samples to feed block model and samples for operational control
Rougher flotation	159	Samples to test flotation reagents
Settling rates	44	Samples for operational optimization
Rheology	52	Samples for operational optimization

12.2 Mineralogy

The sulphide mineralization at Candelaria and Ojos del Salado is classified as an IOCG deposit where minerals of interest occur in breccia, stockwork, and veinlets disseminated in andesite rock. Copper and magnetite minerals coexist or appear independent from each other in the host rock.

Largely dominant minerals are potassium feldspar, biotite, quartz and plagioclase. The sulphide mineralization is dominated by pyrite while copper is present as chalcopyrite representing approximately four percent of the mineralization (see Figure 21 for a QEMSCAN summary of overall composition).

Chalcopyrite is present across all size fractions with the majority in the 38 to 150 micrometer range. Similarly, the dominant mineralogy species (including iron oxides) maintain their presence across all particle sizes. Gold and silver are associated with sulphide minerals, primarily chalcopyrite and pyrite. Varying gold content in the pyrite is associated with gold losses to flotation tailings.

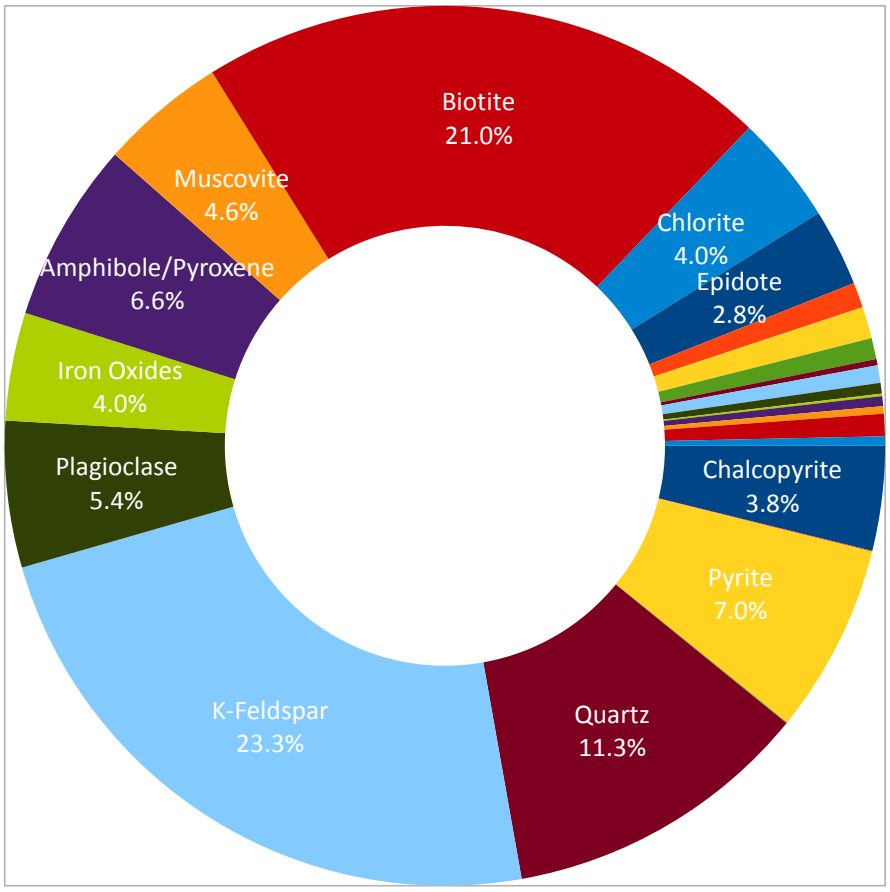


Figure 21: Typical Mill Feed Mineralogy (QEMSCAN Analysis)

13 Mineral Resource Estimates

13.1 Introduction

The Mineral Resources for Minera Candelaria comprise, primarily, the Candelaria iron oxide copper gold (IOCG) deposit, which is mined by open pit mining methods, and, secondarily, the satellite deposits located in the northeast, south and west of the Candelaria Open Pit. In the northeast area, the deposit called Candelaria Underground (North Sector) is currently mined by underground methods. The deposits south and west of the pit include the Mariana, Susana, Damiana, and West areas. These deposits, jointly called Candelaria Underground (South Sector), will be also eventually mined by underground methods. The Mineral Resources for Minera Ojos del Salado comprise two deposits, Alcaparrosa and Santos, currently mined by underground mining methods.

As of 2017, the Mineral Resource models for both companies are generated by the Resource Definition Department of the Candelaria Copper Mining Complex. The new Mineral Resource model for the Candelaria Underground (South Sector) is separated from the Mineral Resource model for the Candelaria Open Pit. In addition, as of 2017, the Mineral Resources for the Candelaria Underground (North Sector) are estimated using a single integrated block model, instead of the former nine separate models. Similarly, the new integrated Mineral Resource model for the Santos deposit comprises four of the areas modelled and reported separately until 2016, including the expanded Helena / Helena South area.

SRK reviewed and audited the Mineral Resource models generated by the personnel of the Resource Definition Department of the Candelaria Complex. This section outlines the Mineral Resource estimation methodology and summarizes the key assumptions considered for the preparation of the open pit and underground mines Mineral Resource models during the second quarter of 2017. Table 12 presents a list of the block models constructed in 2017 and their 2016 equivalents.

In the opinion of SRK, the Mineral Resource evaluation reported herein is a reasonable representation of the Mineral Resources found at the Candelaria Copper Mining Complex at the current level of sampling as of June 30, 2017. The Mineral Resources were estimated in conformity with generally accepted CIM *Estimation of Mineral Resource and Mineral Reserves Best Practices Guidelines* and are reported in accordance with Canadian Securities Administrators' National Instrument 43-101. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources will be converted into Mineral Reserves.

13.2 Mineral Resource Estimation Procedures

The methodology used in building the Candelaria Open Pit model is discussed separately from the methodology used for the underground deposits, which is also divided between the Minera Candelaria Underground deposits (Candelaria Underground [North Sector] and Candelaria Underground [South Sector]) and the Minera Ojos del Salado (Alcaparrosa and Santos) deposits.

Table 12: Comparison between 2016 and 2017 Block Models

Mineral Resource Models 2016	Mineral Resource Models 2017	Latest Informing Data
Candelaria		
Open Pit and Underground	Candelaria Open Pit	31/12/2016
(South Sector)	Candelaria Underground (South Sector)	31/12/2016
Candelaria Underground (North Sector)		
Candelaria Underground		
Elisa		
Sector North		
Wendy South	Integrated	
Wendy Central	Candelaria Underground (North Sector)	31/12/2016
Elisa North	Model	
Wendy North		
Elisa North II		
Lila South		
Alcaparrosa Underground		
Alcaparrosa		11/08/2004
Caserón 11		15/08/2009
Sector North		05/11/2009
Sector Northeast		03/11/2010
Sector Central		06/12/2011
Sector SW-SE-CE		20/11/2013
Sector Viviana		31/12/2016
Santos Underground		
Supernova		
Meléndez South	Integrated Santos Model	31/12/2016
Meléndez Central		
Helena / Helena South		

13.2.1 Minera Candelaria Open Pit

At the closure date December 31, 2016, the database informing the Mineral Resources comprised 3,489 core and percussion boreholes (1,010,377 metres) which included 27 new boreholes (14,617 metres) drilled as part of the 2016 drilling campaign. All exploration data are securely managed within the new Candelaria Copper Mining Complex Acquire database.

The Candelaria Open Pit block model consists of 10- by 10- by 16-metre cells encompassing all the Candelaria area, including Candelaria Underground (South Sector) and most of Candelaria Underground (North Sector). Drilling data were used to generate 35-metre spaced geology sections and 16-metre spaced geology plans, which are modelled within MineSight software as polyline files. The modelled surface of the Lar fault was used to divide the block model in east and west sectors. For both sectors, combined section and plan lithology polyline files are used to code Mineral Resource blocks within 13 geological units. Also, sections of copper grade shells are modelled in relation to the geological units and coded into the block model as three categories (less than 0.2 percent, above 0.2 percent, and above 1.5 percent copper) called ‘mineral types’.

The 725,034 individual assays were composited to a 16-metre length, which corresponds to the open pit bench height. The composites were also coded by the geological and mineral type codes, resulting in 46,555 coded composites which also contain copper grades. Experimental covariance was utilized to assess the spatial correlation of the copper, gold, silver, and specific gravity values using composited data within geological units and for each sector separately. The anisotropy

directions were analyzed using variogram maps and verified against blast hole grade data and modelled geological units.

Grade capping was applied to the 97.8 percentile of the composite population, which was evaluated for copper, gold and silver within each geological unit and sector independently. Estimation of copper, gold, silver and copper grades was performed using a search ellipsoid of 100 by 100 by 50 metres, oriented according to the copper covariance model. A further search restriction (45 metres for magnetite and 15 metres for all other variables) was applied to high grade outliers. This restriction corresponds to the nearest neighbour kriging algorithm applied in the estimation of all variables excepting the specific gravity, for which ordinary kriging was used. This nearest neighbour kriging algorithm was chosen to exercise control of the local smoothing effect by assigning even more weight to the nearest composite within the restricted search.

The estimation of all variables was performed separately within each sector of the model. In the case of copper, gold and silver, hard boundaries were applied for each geological unit constrained within the 0.2 percent and the 1.5 percent copper grade shells, whereas the blocks outside the 0.2 percent and inside the 1.5 percent copper grade shells were considered as separate estimation domains regardless the geological units. The estimation of copper, gold and silver was informed by a minimum of one composite and a maximum of 16 restricted to three composites per borehole. The grade shell boundaries were not considered in the estimation of specific gravity and magnetite content. For each geological unit, a search sphere of radius equivalent to the range of the corresponding isotropic covariance models was used for the estimation of specific gravity. A search ellipsoid of 200 by 200 by 100 metres, with a 45 metres search distance restriction for outliers, was used in the estimation of magnetite content. The only hard boundaries applied to the estimation of zinc grades correspond to the limit between east and west sectors. The estimation of specific gravity, magnetite content and zinc was informed by a minimum of two composites and a maximum of 12 with a maximum of three composites per borehole. The search ellipsoid and outlier search distance restriction applied to the estimation of zinc grades was the same as for copper, gold and silver.

The block models were classified on the basis of distance to the nearest composite and the minimum number of boreholes used to estimate a block. Most of the blocks were classified in the Measured category (Table 13).

Open pit mine Mineral Resources include those classified blocks above a cut-off grade of 0.2 percent copper, below the mine topography at the end of June 2016 and within a conceptual Lerchs-Grossman pit shell based on metal prices of US$3.16 per pound of copper and US$1,000 per ounce of gold.

Table 13: Classification Parameters for Open Pit Resources and Candelaria Underground South Sector Mineral Resources

Classification	Number of Informing Boreholes	Minimum Distance (m)
Measured	3 or more	Less than 35
Indicated	3 or more	35 to 70
	2	Less than 35
Inferred	All other blocks estimated by copper	

13.2.2 Minera Candelaria Underground

Data and interpolation parameters considered for the preparation of the Mineral Resource models for the underground mines of Candelaria are summarized in Table 14. The Candelaria Underground deposits comprise the Candelaria Underground (South Sector), at the south and west of the Candelaria Open Pit, and the Candelaria Underground (North Sector), at the north of the Candelaria Open Pit.

The Candelaria Underground (South Sector) Mineral Resource model comprises the exploration areas of Susana, Damiana, Mariana and West. The estimation methodology applied for the underground Mineral Resources in Candelaria Underground (South Sector) is very similar to that defined for the Candelaria Open Pit Mineral Resource model. The geological model and the grade shells in the Candelaria Underground (South Sector) are part of those built for the open pit. The data used in the Candelaria Underground (South Sector) is a subset of the Candelaria Open Pit data set.

Table 14: Interpolation Data and Parameters for Candelaria Open Pit and Underground Mines

Parameter	Candelaria Open Pit	Candelaria South Susana, Damiana, Mariana, Candelaria West	Candelaria North Integrated Model
Last model date	**2017**	**2017**	**2017**
Drilling			
Type			Core drilling
Number (1)	3,849	2,153	1,629
Metres	1,010,376	704,602	367,348
Data			
Samples (2)	725,034	435,026	313,613
Compositing	16 m		4 m
No. Composites	46,555	126,992	80,018
Capping	Restricted search capping used (97.8 percentile of data)		
Wireframe	Lithological and mineralization (Grade shells) wireframes created		
Interpolation			
Domaining	Estimation domains for grades built combining lithology and mineralization. Hard boundaries used. SG, Magnetite and Zn estimated using only lithological domains.		
Variables	Cu, Au, Ag, Zn, Magnetite, SG	Cu, Au, Ag, SG	Cu, Au, Ag, Magnetite, SG
Block model extent (m)	2,600 X 4,600 Y 1,168 Z	2,350 X 2,850 Y 1,000 Z	2,300 X 2,700 Y 1,700 Z
Block size (m)	10 x 10 x 16	5 x 5 x 4	
Method			
Cu, Au, Ag	NNK	NNK	NNK
SG	OK	OK	OK
Zn	NNK	-	
Magnetite	NNK	-	OK
Classification	Measured, Indicated, Inferred (see Table 12)	Measured, Indicated, inferred (see Table 14)	

(1) Includes only the boreholes effectively used in the model

(2) Includes only samples with copper values and domain assignation

Estimation method: ID = Inverse distance OK = Ordinary Kriging NNK = Nearest Neighbour Kriging PO = Polygonal

The main differences in the Candelaria Underground (South Sector) Mineral Resource estimation are:

- The block dimensions are 5 by 5 by 4 metres.
- The covariance models and estimation of specific gravity and copper gold and silver were based on 4-metre composites.
- Zinc and magnetite values were copied from the open pit model.
- The outlier search distance is 7.5 metres, this is equivalent to the size of a block and a half.
- The 2017 ultimate pit limit truncates the Candelaria Underground (South Sector) Mineral Resource model.

The Mineral Resource model for the Candelaria Underground (North Sector) is an integrated model comprising the areas of Wendy (South, Central and North), Candelaria Underground (North Sector), Elisa, Elisa North, Elisa North II and Lila South. In addition to all these areas that were modelled separately until 2016, the integrated model was expanded northwards into two exploration areas called Lila 3 and Lila 4.

The interpolation methodology applied for the integrated Candelaria Underground (North Sector) Mineral Resource model also follows the outline used for the Candelaria Open Pit Mineral Resource model. Notable differences include:

- The implicit modelling tools within MineSight software were used to build rock type model and the grade shells from geological cross sections and coded drillhole data. The resulting rock type model comprises 12 lithological units. The 0.2 percent and 1.5 percent copper grade shells were used in combination with the mantos and veins wireframes to create 15 mineral type units, including a barren or low-grade domain outside the grade shells and the mantos and veins.
- Composite length is 4 metres and the block size is 5 by 5 by 4 metres.
- Outside the grade shells (low grade domains), grade estimation was performed by combining all lithological units and using the 0.2 percent copper grade shell as a hard boundary.
- Within the grade shells corresponding to the mantos, lithological units were used as hard boundaries in the interpolation of copper, gold and silver grades.
- The veins Copiapó and Elisa were treated as separated domains within their corresponding grade shells. The interpolation of copper gold and silver grades within these veins was performed regardless the lithological units. The grade shells corresponding to other veins (Corta, East, Nueva and others) were treated as a single domain.
- Interpolation of the magnetite content and specific gravity was constrained only by the lithological units.
- Copper, gold, silver, magnetite and specific gravity were estimated using nearest neighbour kriging. Since no outlier threshold was considered in the estimation of specific gravity and magnetite content, ordinary kriging was effectively applied for these two variables, and
- The outlier search distance is 7.5 metres, this is equivalent to the size of a block and a half.

The block models for the underground mines were classified based on the average distance of the informing composites to the centres of the blocks and the minimum number of boreholes used to estimate a block (Table 15).

Table 15: Classification Parameters for Minera Candelaria Underground Mineral Resources, North Sector

Classification	Number of Informing Boreholes	Average Distance (m)
Measured	3 or more	Less than 35
Indicated	3 or more	35 to 70
	2	Less than 70
Inferred	All other blocks estimated by copper	

13.2.3 Minera Ojos del Salado Underground

Minera Ojos del Salado comprises the Santos and Alcaparrosa underground mines. As of 2017, all areas of the Santos mine are integrated in an expanded single model, which comprises a southern portion of the deposit adjacent to the Isabel Fault called Helena South. The Santos mine integrated database comprises 808 boreholes (174,813 metres), including 61 (15,789 metres) drilled in 2016. Table 16 summarizes the data and Mineral Resource estimation parameters used in the integrated Santos mine model. The methodology used for building the lithological models, the grade shells and for estimating the Mineral Resources are very similar to what was outlined for the Candelaria Underground (North Sector) model. Notable differences are related mostly to the selection of domains and boundary treatment in the estimation of copper, silver and gold, as follows:

- Between the 0.2 percent and 1.5 percent grade shells (medium grade domain), the lithological units work as hard boundaries, whereas the 1.5 percent grade shell is treated as a soft boundary.
- All lithologies are estimated together within the 1.5 percent grade shell and its contact with the medium grade domain is considered as soft.

Alcaparrosa is the only underground model still to be integrated. As in 2016, the Alcaparrosa mine Mineral Resources comprise seven separate models: Alcaparrosa, Caserón 11, North, Northeast, Central, Southwest-Southeast-Central East and Viviana. Among them, only the Viviana model has been updated and expanded northwards in 2017. The data used to update the Viviana model comprise 185 boreholes (55,422 metres), including 17 boreholes (2,569 metres) that were drilled from underground workings in 2016. Table 16 also presents a summary of the data and parameters used to build the different Alcaparrosa mine Mineral Resource models. As in the Santos mine model, the methodology used to build the updated Viviana Mineral Resource model follows the general outline adopted in 2017 for the Candelaria Copper Mining Complex underground mines. The main differences are related to domain grouping and boundary treatment in the estimation of copper, silver and gold, as follows:

- Outside the grade shells (low grade domain) all lithological units, excepting the alluvium, are estimated together and the 0.2 percent copper grade shell is treated as a hard boundary.
- Within the medium grade domain, the 0.2 percent and 1.5 percent copper grade shells are treated as hard boundaries and only the three lowest lithological units (albitophire, magnetite breccia and the lower andesite) are estimated.
- Within the high-grade domain only the three abovementioned lithological units are estimated too, but the 1.5 percent copper grade shell is treated as a soft boundary.
- The ordinary kriging of specific gravity is performed using a 200 by 200 by 100 metres search ellipsoid within four separate lithological groups.
- Inverse distance to a power of two is applied for the estimation of magnetite content separately for each one of seven lithological units, excepting the alluvium.

Table 16: Underground Interpolation Data and Parameters for Santos and Alcaparrosa Mines

Parameter	Santos	Alcaparrosa						
	Integrated Model	Alcaparrosa	Caseron 11	North Sector	North West	Central	Southwest, Southeast, Central Este	Viviana
Last model date	**2017**	**2006**	**2009**	**2010**	**2012**	**2012**	**2015**	**2017**
Drilling								
Type	Core drilling							
Number (1)	808	253	39	58	78	121	345	208
Metres	174,813	75,062	4,125	14,681	15,180	18,859	76,828	65,517
Data								
Samples (2)	137,235	40,144	3,818	9,494	12,440	14,033	61,055	54,379
Compositing	4 m	2 m	4 m	2 m	2 m	4 m	4 m	4 m
No. Composites	39,150	21,263	1,114	4,915	6,452	3,885	16,705	14,556
Capping	Restricted search (1.5 blocks) capping used (97.8 percentile of data)							
Wireframe	Geological units and grade shells	Lithological and mineralization wireframes created					Geological units and grade shells	
Interpolation								
Domaining	Estimation domains for grades built combining lithology and grade shells. SG estimated using only lithological domains.	Estimation domains for grades built combining lithology and mineralization. Hard boundaries used. SG estimated using only lithological domains.					Estimation domains for grades built combining lithology and grade shells. SG estimated using only lithological domains.	
Variables	Cu, Au, Ag, SG and FeM	Cu, Au, Ag, SG				Cu, Au, Ag, SG and FeM		
Block Model Extent (m)	2,500 X 2,300 Y 1,400 Z	800 X 800 Y 600 Z	350 X 200 Y 300 Z	350 X 200 Y 350 Z	324 X 100 Y 300 Z	500 X 200 Y 400 Z	1,000 X 500 Y 1,000 Z	1,700 X 2,700 Y 2,000 Z
Block size (m)	5 x 5 x 4	2 x 2 x 2	5 x 5 x 4	2 x 2 x 2	2 x 2 x 2		5 x 5 x 4	
Method								
Cu, SG	NNK, OK	ID	OK	OK	OK	OK	NNK	NNK, OK
Au, Ag	NNK	ID	ID	ID	ID	ID	NNK	NNK
Magnetite	NNK	-	-	-	ID	ID	ID	ID
Checks	-	PO	ID, PO	ID, PO	ID, PO	ID, PO	-	-
Classification	Measured, Indicated, Inferred (see Table 11)							

(1) Only the boreholes effectively used in the model are counted

(2) Only samples with copper grades and domain assignation counted

Estimation method: ID = Inverse distance OK = Ordinary Kriging NNK = Nearest Neighbour Kriging PO = Polygonal

As for the Candelaria Underground Mineral Resources, the block models for the Ojos del Salado underground mines were classified based on the average distance of the informing composites to the centres of the blocks and the minimum number of boreholes used to estimate a block (Table 17).

Table 17: Classification Parameters for Minera Ojos del Salado Underground Mineral Resources, (Alcaparrosa and Santos Mines)

Classification	Number of Informing Boreholes	Average Distance (m)
Measured	3 or more	Less than 25
Indicated	3 or more	25 to 50
	2	Less than 50
Inferred	All other blocks estimated by copper	

13.3 SRK Comments

Since acquiring the Candelaria Copper Mining Complex in November 2014, the aggressive exploration programs completed by Lundin have significantly expanded the Mineral Resource estimates of Minera Candelaria and Minera Ojos del Salado. During 2017, this led to a slight decrease in reported Mineral Resources in the open pit offset by more significant increases in the underground especially at the Candelaria Underground (North Sector) and Santos, with both mineralization extensions and conversion of Inferred Mineral Resource estimates to the Measured and Indicated categories. Of the four models for the underground deposits, three (Candelaria Underground North and South Sectors, and Santos) have now been completely integrated and expanded to extend over future areas of exploration. The Alcaparrosa mine still comprises seven separated Mineral Resource models, but the model corresponding to area Viviana has been updated and expanded in 2017. Since this year, all new or updated Mineral Resource models for Minera Candelaria and Minera Ojos del Salado have been built by the Resource Definition Department of the Candelaria Copper Mining Complex. This centralization has resulted in a more consistent Mineral Resource estimation methodology applied to the different deposits. The integration of the models and standardization of the estimation methodology across all mines and for most variables represents an important milestone that will undoubtedly prove helpful for future exploration for the extensions of the sulphide mineralization. The success of the exploration programs has had a positive impact on the life of the operations, particularly at the underground mines.

SRK is of the opinion that the exploration program proposed for the period 2018 to 2022 has the potential to expand further the Mineral Resources of the underground mines of the Candelaria Copper Mining Complex, with a positive impact on their life.

13.4 Mineral Resource Statement

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

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

The "reasonable prospects for eventual economic extraction" requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recoveries. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource estimate will be converted into Mineral Reserves.

The audited Mineral Resource Statement for Minera Candelaria is presented in Table 18. Open pit Mineral Resources are reported within a conceptual Lerchs-Grossman pit shell based on metal prices of US$3.16 per pound of copper and US$1,000 per ounce of gold and at a cut-off grade of 0.2 percent copper. Underground Mineral Resources from Candelaria Underground (North Sector) and Candelaria Underground (South Sector) are reported at a cut-off grade of 0.6 percent copper. Table 18 also includes a contribution from various operational work-in-progress (WIP) stockpiles. The Mineral Resources include Mineral Reserves.

Table 18: Audited Mineral Resource Statement*, Compañía Contractual Minera Candelaria, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
	Tonnes ('000)	Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Candelaria Open Pit							
Measured	389,374	0.55	0.13	1.73	2,154	1,614	21,684
Indicated	28,942	0.42	0.12	1.30	122	108	1,206
Measured and Indicated	**418,316**	**0.54**	**0.13**	**1.70**	**2,276**	**1,721**	**22,889**
Inferred	5,976	0.27	0.06	0.93	16	12	178
Candelaria Underground South and North Sectors							
Measured	114,219	1.14	0.25	4.10	1,302	933	15,041
Indicated	50,960	1.06	0.23	4.07	542	373	6,674
Measured and Indicated	**165,179**	**1.12**	**0.25**	**4.09**	**1,844**	**1,306**	**21,715**
Inferred	10,060	1.02	0.25	2.24	103	80	726
WIP**							
Measured	92,316	0.34	0.09	1.41	313	271	4,179
Indicated							
Measured and Indicated	**92,316**	**0.34**	**0.09**	**1.41**	**313**	**271**	**4,179**
Inferred							
Combined							
Measured	595,909	0.63	0.15	2.13	3,769	2,818	40,904
Indicated	79,902	0.83	0.19	3.07	664	481	7,880
Measured and Indicated	**675,811**	**0.66**	**0.15**	**2.25**	**4,433**	**3,299**	**48,784**
Inferred	16,036	**0.74**	0.18	1.75	119	92	904

* Reported within the boundaries of the Compañía Contractual Minera Candelaria property. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimates. Mineral Resources include Mineral Reserves. Open pit Mineral Resources reported at a cut-off grade of 0.2 percent copper within a conceptual pit shell based on metal price of US$3.16 per pound of copper and US$1,000 per ounce of gold and current topography. Underground Mineral Resources are reported at a cut-off grade of 0.6 percent copper. Parts of the open pit Mineral Resources have been converted into underground Mineral Reserves.

** Work-in-progress (WIP) stockpiles

The audited Mineral Resource Statement for Minera Ojos del Salado is presented in Table 19. The Mineral Resources for the underground Santos and Alcaparrosa mines are reported at a cut-off grade of 0.6 percent copper.

The audited combined Mineral Resource Statement for the Candelaria Copper Mining Complex is presented in Table 20.

Table 19: Audited Mineral Resource Statement*, Compañía Contractual Minera Ojos del Salado, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
	Tonnes ('000)	Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Santos							
Measured	19,733	1.18	0.27	2.28	233	170	1,449
Indicated	10,851	1.12	0.27	2.21	121	92	772
Measured and Indicated	**30,584**	**1.16**	**0.27**	**2.26**	**354**	**262**	**2,221**
Inferred	1,007	0.93	0.26	1.81	9	8	58
Alcaparrosa							
Measured	13,892	1.14	0.25	1.00	158	113	449
Indicated	20,469	1.01	0.21	1.18	207	139	777
Measured and Indicated	**34,361**	**1.06**	**0.23**	**1.11**	**365**	**251**	**1,225**
Inferred	6,784	1.07	0.22	1.00	73	49	217
WIP**							
Measured	70	0.87	0.22	1.69	0.6	0.5	4
Indicated							
Measured and Indicated	**70**	**0.87**	**0.22**	**1.69**	**0.6**	**0.5**	**4**
Inferred							
Combined							
Measured	33,695	1.16	0.26	1.75	392	283	1,901
Indicated	31,319	1.05	0.23	1.54	328	231	1,549
Measured and Indicated	**65,014**	**1.11**	**0.25**	**1.65**	**720**	**514**	**3,450**
Inferred	7,791	1.05	0.23	1.10	82	57	275

* Reported within the boundaries of the Compañía Contractual Minera Ojos del Salado property. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. Mineral Resources include Mineral Reserves. All figures are rounded to reflect the relative accuracy of the estimates. Reported at a cut-off grade of 0.6 percent copper, based on metal price of US$3.16 per pound of copper and US$1,000 per ounce of gold.

** Work-in-progress (WIP) stockpiles

Table 20: Consolidated Audited Mineral Resource Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
	Tonnes ('000)	Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Open Pit							
Measured	389,374	0.55	0.13	1.73	2,154	1,614	21,684
Indicated	28,942	0.42	0.12	1.30	122	108	1,206
Measured and Indicated	**418,316**	**0.54**	**0.13**	**1.70**	**2,276**	**1,721**	**22,889**
Inferred	5,976	0.27	0.06	0.93	16	12	178
Underground							
Measured	147,844	1.15	0.26	3.56	1,694	1,215	16,939
Indicated	82,279	1.06	0.23	3.11	869	605	8,223
Measured and Indicated	**230,123**	**1.11**	**0.25**	**3.40**	**2,563**	**1,820**	**25,162**
Inferred	17,851	1.04	0.24	1.75	185	138	1,001
WIP**							
Measured	92,386	0.34	0.09	1.41	314	272	4,183
Indicated							
Measured and Indicated	**92,386**	**0.34**	**0.09**	**1.41**	**314**	**272**	**4,183**
Inferred							
Combined							
Measured	629,604	0.66	0.15	2.11	4,162	3,101	42,805
Indicated	111,222	0.89	0.20	2.64	992	712	9,429
Measured and Indicated	**740,825**	**0.70**	**0.16**	**2.19**	**5,153**	**3,813**	**52,233**
Inferred	23,827	0.84	0.20	1.54	201	149	1,179

* Reported within the boundaries of the Compañía Contractual Minera Candelaria and Compañía Contractual Ojos del Salado properties. Mineral Resources are not Mineral Reserves and have not demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimates. Mineral Resources include Mineral Reserves. Open pit Mineral Resources are reported at a cut-off grade of 0.2 percent copper within a conceptual pit shell based on metal prices of US$3.16 per pound of copper and US$1,000 per ounce of gold and current topography. Underground Mineral Resources are reported at a cut-off grade of 0.6 percent copper. Parts of the open pit Mineral Resources have been converted into underground Mineral Reserves.

** Work-in-progress (WIP) stockpiles

Table 21 tabulates the Mineral Resources contained in underground pillars which may later be partially convertible into Mineral Reserves. This material is included in the respective Mineral Resource Statements for the respective operations.

Table 21: Mineral Resources in Underground Pillars, Candelaria Copper Mining Complex, June 2017

Classification	Quantity	Grade			Contained Metal		
	Tonnes ('000)	Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Pillars Candelaria Underground							
Measured	31,944	1.21	0.26	4.06	385	271	4,166
Indicated	1,119	1.03	0.22	2.47	12	8	89
Measured and Indicated	**33,063**	**1.20**	**0.26**	**4.00**	**397**	**279**	**4,255**
Inferred					0	0	0
Pillars Santos Underground							
Measured	8,103	1.17	0.27	2.12	95	70	552
Indicated	938	1.09	0.27	2.23	10	8	67
Measured and Indicated	**9,041**	**1.17**	**0.27**	**2.13**	**105**	**78**	**619**
Inferred							
Pillars Alcaparrosa Underground							
Measured	5,150	1.26	0.29	0.87	65	68	203
Indicated	3,845	1.16	0.27	0.83	45	47	144
Measured and Indicated	**8,994**	**1.22**	**0.28**	**0.85**	**109**	**115**	**347**
Inferred	1,311	1.15	0.27	0.70	15	16	42
Combined							
Measured	45,197	1.21	0.27	3.35	545	409	4,921
Indicated	5,902	1.13	0.26	1.36	66	63	300
Measured and Indicated	**51,099**	**1.20**	**0.27**	**3.12**	**611**	**471**	**5,221**
Inferred	1,311	1.15	0.27	0.70	15	16	42

* Reported within the property of the Compañía Contractual Minera Ojos del Salado and Compañía Contractual Minera Candelaria. The figures presented in this table are included into the Audited Mineral Resource Statement and correspond to Mineral Resources located within pillars that could eventually be converted into Mineral Reserves. All figures rounded to reflect the relative accuracy of the estimates. Reported at a cut-off grade of 0.6 percent copper.

13.5 Reconciliation

The Candelaria Open Pit Mineral Resource model (locally termed the long-term model) is compared to grade control models (short term models) on a monthly basis. Grade control models are generated from closely spaced blast hole data, whereas Mineral Resource models are derived from exploration core drilling data.

A monthly reconciliation between the Mineral Resource model, the grade control model and the mill feed for the Candelaria Open Pit for the period of July 2016 to June 2017 is presented in Table 22. The reconciliation between the short and long-term models is reasonable. This demonstrates that the Mineral Resource model adequately predicts quantities and grades achieved during mining.

Table 22: Monthly Reconciliation between Long Term and Short-Term Models and the Mill for the Candelaria Open Pit, Compañía Contractual Minera Candelaria (July 2016 to June 2017)

Period	Long Term 2016			Short Term			Mill		
	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)
Jul '16	921	0.50	4,942	1,003	0.5	5,020	1,110	0.44	4,852
Aug '16	876	0.52	5,002	943	0.51	4,836	1,090	0.43	4,668
Sept '16	799	0.53	4,714	1,016	0.62	6,283	1,072	0.56	5,966
Oct '16	1,066	0.61	6,314	1,307	0.65	8,470	1,534	0.48	7,330
Nov '16	1,818	0.63	11,484	1,943	0.70	13,677	2,352	0.59	13,759
Dec '16	1,910	0.74	13,933	1,949	0.83	16,122	2,421	0.76	18,460
Jan '17	1,588	0.57	9,624	1,599	0.62	9,864	1,713	0.53	9,136
Feb '17	1,259	0.64	8,247	1,242	0.67	8,283	1,418	0.54	7,617
Mar '17	1,337	0.66	8,911	1,187	0.83	9,852	1,112	0.69	7,660
Apr '17	1,468	0.88	13,440	1,458	0.92	13,356	1,639	0.90	14,694
May '17	1,409	0.67	9,310	1,337	0.78	10,443	1,362	0.64	8,665
Jun '17	1,482	0.83	12,378	1,410	0.92	13,000	1,321	0.90	11,855
Total	**15,931**	**0.67**	**85,575**	**16,394**	**0.73**	**119,206**	**18,144**	**0.63**	**114,662**
Overall relative difference*				**-2.8%**	**-8.3%**	**-9.2%**	**-12.2%**	**5.5%**	**-5.6%**

* Long term vs short term and mill

Monthly reconciliation is also undertaken between underground Mineral Resource models (long term models) and short-term models, estimated from down-the-hole boreholes sampling, which is used for production grade control. Examples of this are shown in Table 23, Table 24, and Table 25, which present the monthly reconciliation between the Mineral Resources and the grade control models for the Candelaria Underground (North Sector), Santos and Alcaparrosa underground mines for the period of July 2016 to June 2017. Over that period and relative to their corresponding short-term models, the Candelaria Underground (North Sector) long-term model underestimates the metal content by about 5 percent, the Santos long term model overestimates the grade and metal content in around 3 percent, whereas the Alcaparrosa long term model underestimates the copper content by more than 21 percent.

Table 23: Monthly Reconciliation between Long and Short-Term Models for the Candelaria Underground (North Sector), Minera Candelaria (July 2016 to June 2017)

Period	Long Term			Short Term		
	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)
Jul '16	160	2.05	3.3	160	2.83	4.5
Aug '16	79	0.81	0.6	79	0.74	0.6
Sept '16	133	0.86	1.1	133	0.90	1.2
Oct '16	163	0.75	1.2	163	0.78	1.3
Nov '16	183	0.80	1.5	183	0.78	1.4
Dec '16	155	1.41	2.2	155	1.18	1.8
Jan '17	126	0.84	1.1	126	0.51	0.6
Feb '17	21	0.65	0.1	21	0.72	0.2
Mar '17	246	0.95	2.3	246	1.05	2.6
Apr '17	45	1.38	0.6	45	1.38	0.6
May '17	108	0.76	0.8	108	0.85	0.9
Jun '17	36	0.91	0.3	36	0.68	0.2
Total	**1,455**	**1.05**	**15.2**	**1,455**	**1.10**	**16.0**
Overall relative difference*					**-4.8%**	**-4.8%**

* Long term vs short term

Table 24: Monthly Reconciliation between Long and Short -Term Models for the Santos Mine, Minera Ojos del Salado (July 2016 to June 2017)

Period	Long Term			Short Term		
	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)
Jul '16	44	1.25	0.6	44	0.71	0.3
Aug '16	12	0.80	0.1	12	0.51	0.1
Sept '16	36	0.86	0.3	36	0.47	0.2
Oct '16	107	0.72	0.8	107	0.75	0.8
Nov '16	19	1.10	0.2	19	0.88	0.2
Dec '16	64	0.78	0.5	64	1.01	0.6
Jan '17	48	0.45	0.2	48	0.62	0.3
Feb '17	82	1.08	0.9	82	1.13	0.9
Mar '17	224	1.67	3.7	224	1.75	3.9
Apr '17	52	0.85	0.4	52	0.66	0.3
May '17	72	1.01	0.7	72	0.88	0.6
Jun '17	61	1.14	0.7	61	0.95	0.6
Total	**821**	**1.11**	**9.1**	**821**	**1.08**	**8.9**
Overall relative difference*					**3.1%**	**3.1%**

* Long term vs short term

Table 25: Monthly Reconciliation between Long and Short-Term Models for the Alcaparrosa Mine, Minera Ojos del Salado (July 2016 to June 2017)

Period	Long Term			Short Term		
	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)	Quantity '000 (t)	Grade Cu (%)	Metal Cu (t)
Jul '16	169	0.77	1.3	169	1.12	1.9
Aug '16	168	1.19	2.0	168	1.44	2.4
Sept '16	1	0.43	0.0	1	0.94	0.0
Oct '16	48	0.69	0.3	48	1.08	0.5
Nov '16	47	0.93	0.4	47	1.16	0.5
Dec '16	28	0.85	0.2	28	0.99	0.3
Jan '17	28	1.00	0.3	28	1.29	0.4
Feb '17	265	0.93	2.5	265	1.00	2.7
Mar '17	31	0.71	0.2	31	0.92	0.3
Apr '17	70	0.73	0.5	70	0.97	0.7
May '17	69	0.67	0.5	69	1.24	0.9
Jun '17	0	0.00	0.0	0	0.00	0.0
Total	**924**	**0.89**	**8.2**	**924**	**1.14**	**10.5**
Overall relative difference*					**-21.5%**	**-21.5%**

* Long term vs short term

SRK understands that larger mismatch between the long and short-term models for Alcaparrosa mine (currently still separate Mineral Resource models) compared with the Candelaria Underground (North Sector) and Santos mine, is being investigated.

The waterfall charts in Figure 22 explain the sources of the changes observed between the Mineral Resource statements of 2016 and 2017 for the Candelaria Open Pit, Candelaria Underground (South Sector), Candelaria Underground (South Sector) and Santos deposits. Depletion is the cause of a 6 percent loss in the Measured and Indicated Mineral Resources of the Candelaria Open Pit. Conversely, the Candelaria Underground (North Sector) and Santos underground models have practically doubled their Measured and Indicated Mineral Resources owing to primarily exploration, and also to the expansion of the models. Similarly, the ten percent increase in the Measured and Indicated Mineral Resources at the Candelaria Underground (South Sector) is due to exploration.

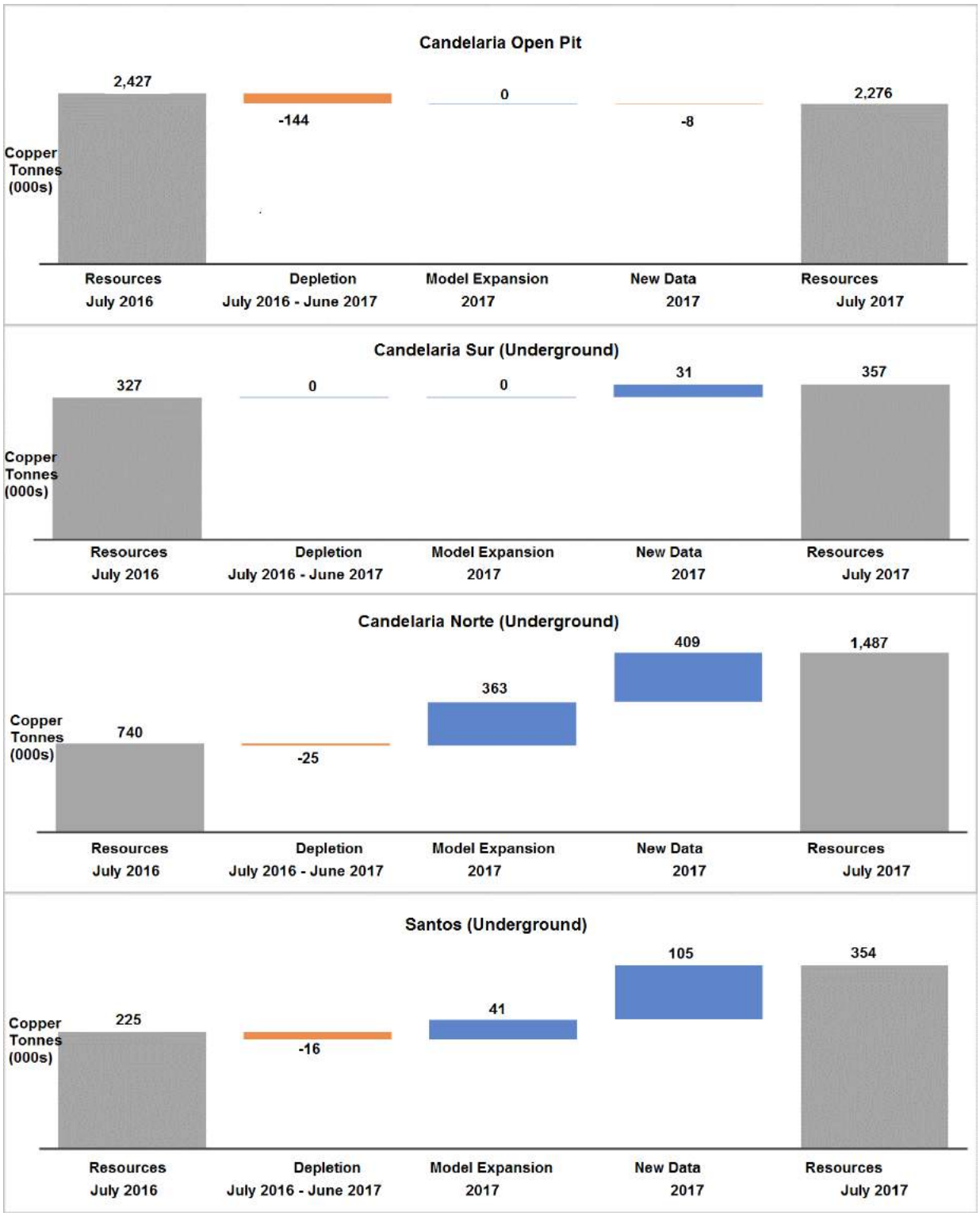


Figure 22: Waterfall Charts Showing Variation in Measured and Indicated Mineral Resources between 2016 and 2017

Measured and Indicated Mineral Resources (expressed as copper metal content) in the Candelaria Open Pit, and the underground mines at Candelaria Underground (South Sector), Candelaria Underground (North Sector) and Santos mine.

14 Mineral Reserve Estimates

14.1 Commercial Orientation

Mineral Reserves of the Candelaria Copper Mining Complex were estimated by the Candelaria Copper Mining Complex Technical Services Open Pit and Underground Departments. The Mineral Reserves are based on the 2017 Measured and Indicated Mineral Resources.

The mining costs correspond to the average of the last three years of the operating costs of the mine and processing plant. Diesel and energy costs were provided by the company's supplies department adding also sustainability capital and general administration expenses.

The Mineral Reserve estimation is based on the 2017 life of mine (LOM) production plan designed to optimize the pit design and incorporate the new sectors for the underground mines. The pit considers mining phases 9 to 13 for this LOM plan.

The price deck considered for the main product copper and sub products silver and gold was given according to the Lundin commercial orientation.

Table 26: Lundin Commercial Orientations for Mineral Reserves Report 2017

Metal Prices	Unit	Jun-17
Copper	US$/lb	2.75
Silver	US$oz	15.00
Gold	$/oz	1,000.00
Exchange Rates	**Unit**	
Chilean Peso	Peso/US$	550

14.2 Minera Candelaria

14.2.1 Candelaria Open Pit Mineral Reserves

The Candelaria Open Pit Mineral Reserve estimates were prepared by the Technical Services Open Pit Department and were based on the Measured and Indicated Mineral Resources defined for the open pit mine. The Mineral Reserve estimates are based on a mine plan and open pit designs developed using modifying parameters including metal prices, metal recovery based on performance of the processing plant, operating cost estimates, and sustaining capital cost estimates based on the production schedule and equipment requirements.

The Mineral Reserve estimation process involved the following tasks:

- Selection of optimization parameters
- Pit optimization to define optimum pit limit using a Lerchs-Grossman algorithm
- Selection of mining cut-off grade
- Preparation of a pit design, including pit phases
- Preparation of a LOM production schedule
- Tabulation of Mineral Reserve Statement

Table 27 summarizes the optimization parameters used in 2017 for the disclosure of Mineral Reserves.

For the June 30, 2017 Mineral Reserves, site operating costs used for the pit optimization were based on actual average operating costs for the previous three years, 2014 through 2016, and long-term forecasts for fuel at US$1.80 per gallon, power at US$0.11 per kilowatt hour, tires at US$31,938 each and an exchange rate of 550 pesos per US dollar.

Base mining costs excluding haulage are estimated at US$1.45 per tonne mined for an overall mining rate of 201,000 tonnes per day. Stockpile re-handle costs excluding haulage are estimated at US$0.81 per tonne. The haulage increment per 16-metre bench is estimated at US$0.027 per tonne per bench to depth. The fixed milling ore and waste haulage costs are estimated at US$0.05 and US$0.39 per tonne, respectively. An equipment annuity of US$0.16 per tonne mined was applied to account for equipment replacement. Discounting was applied to all block values in the model for the purposes of pit optimization. The discount rate applied was 10.0 percent and the sinking rate assumed was eight benches per year resulting in an effective discount factor of 1.25 percent per bench.

Processing cost estimates include US$0.24 per tonne for crushing and US$6.76 per tonne for milling. A mill sustaining capital allowance of US$0.81 per tonne was included. The general and administration costs of US$1.90 per tonne were assigned to the ore milled. The total processing costs are estimated at US$9.71 per tonne milled.

Copper recovery estimates are based on a model developed by the metallurgical group at the Candelaria Copper Mining Complex. This model takes input data for geology, mineralogy, process throughput, grind size, oxidation and zinc to concentrate as part of the process that provides estimates of final tailings and concentrate grades and resultant overall copper recovery. The Candelaria plant average LOM copper recovery is estimated to be 93.7 percent. Gold and silver recoveries were assigned for a series of grade ranges. The average LOM gold and silver recoveries are estimated to be 72.2 and 82.1 percent, respectively.

The copper concentrate is assumed to have a copper grade of 30.17 percent with a moisture content of 8.5 percent. For the pit optimization, the concentrate was assumed to be “clean” with no applicable smelter penalties. Transportation costs for the concentrate are estimated at US$52.00 per wet metric tonne or US$56.97 per dry metric tonne. Smelting and refining charges are estimated to be US$100.00 per dry metric tonne and US$0.10 per payable pound of copper, respectively. Based on a 30.28 percent concentrate grade, the copper pay factor is estimated at 96.7 percent. A transportation loss allowance of 0.20 percent was applied.

Table 27: Summary of Pit Optimization Parameters

Basic Design Parameters	Units	Parameter Value
Copper	US$/lb-Cu	2.75
Gold	US$/oz-Au	1,000
Silver	US$/oz-Ag	15.00
Discount Rate	**%**	**10.0%**
Average vertical advance rate	bench/yr/PB	8
Long term power cost assumption	US$/kWh	0.110
Long term diesel cost assumption (delivered)	US$/US Gal.	1.80
Mining Rate	**KMTPD**	**201**
Mining costs (no haulage)	US$/dmt-Mined	1.448
Stockpile re-handling costs (no haulage)	US$/dmt-Mined	0.811
Haulage increment/dmt/bench	US$/dmt-Mined	0.027
Fixed mill ore haulage cost	US$/dmt-Mined	0.025
Fixed waste haulage cost	US$/dmt-Mined	0.436
Mine equipment capital annuity	US$/dmt-Mined	0.155
Milling Rate	**KMTPD**	**75**
Crushing cost	US$/dmt-Milled	0.24
Milling cost	US$/dmt-Milled	6.76
Mill sustaining capital allowance	US$/dmt-Milled	0.81
G&A assigned to mill	US$/dmt-Milled	1.90
Total Cost	**US$/dmt-Milled**	**9.71**
Downstream Costs		
Concentrate moisture	%	8.3
Concentrate copper grade	%-Cu	30.09
Freight cost	US$/wmt	39.00
Freight cost (concentrate)	US$/dmt-Concentrate	42.65
Smelting	US$/dmt- Concentrate	100.00
Refining	US$/lb-Cu	0.100
Transportation loss allowance	%-loss	0.20
Net smelter payment incl. trans loss	%-payable	96.31
By-product credits gold, silver, iron	US$/lb-Cu	(0.357)
Costs /lb W/ By-product Credits	**US$/lb-Cu**	**(0.035)**
w/o Credits	**US$/lb-Cu**	**0.322**
Royalty	**US$/lb-Cu**	**n/a**
By Product Credits		
Gold content in copper concentrate	g/dmt	5.4
Gold payable term	%	96.0
Gold refining cost	US$/oz	5.00
Silver content in copper concentrate	g/dmt	88.0
Silver payable term	%	90.0
Silver refining cost	US$/oz	0.40
Payable gold	US$/lb-Cu	0.258
Payable silver	US$/lb-Cu	0.058
Other credits	US$/lb-Cu	0.041
By-Product Credits	US$/lb-Cu	**0.357**
Downstream Costs	US$/lb-Cu	
Concentrate freight	US$/lb-Cu	0.066
Smelting	US$/lb-Cu	0.156
Refining	US$/lb-Cu	0.100
Freight to market & sales costs	US$/lb-Cu	0.003
Total Before By-Product Credits	**US$/lb-Cu**	**0.322**

The payable gold in concentrate was assigned at 96.0 percent with a refining charge of US$5.00 per ounce. The payable silver in concentrate was assigned at 90.0 percent with a silver refining charge of US$0.40 per ounce.

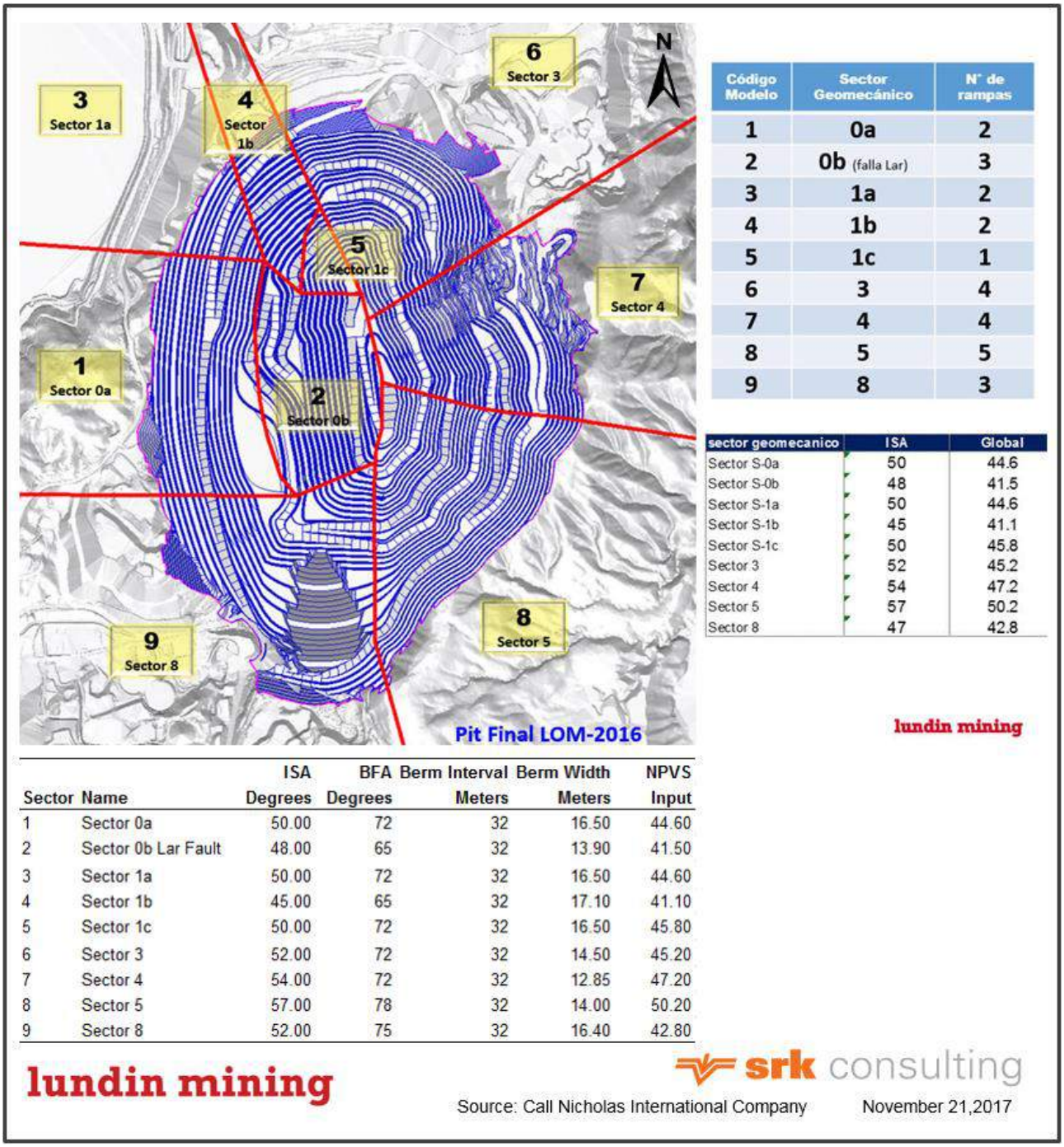
The pit optimization was undertaken using the resource block model expanded in all directions to cover the maximum extent of the ultimate pit. A mining block model was populated in MineSight and Datamine NPV Scheduler. Additional block model items were added for slope coding, concentrate grades, metallurgical recovery, rock hardness, mining restriction near the tailings impoundment and the property boundary on the east side of the open pit. No additional mining dilution or losses were applied to the Mineral Resource model for the purpose of mine planning. A 100-metre offset pit limit restriction was applied at the toe of the existing tailings storage facility. A boundary restriction was applied on the east side of the open pit.

Open pit wall slope recommendations were provided by Call Nicolas International Company (CNI), based on comprehensive geo-mechanical studies to support the current operating pits. Inter-ramp slopes angles range from 45 to 57 degrees. Nine slope sectors were defined with different inter-ramp slopes, bench face angles, berm intervals, and berm widths (Figure 23). A hard rock surface was used to control the slope angle in overburden and fill areas in the upper part of the deposit.

The unsmoothed US$2.75 per pound of copper Lerchs-Grossman pit was used as a guide to develop the ultimate pit design. Design parameters include:

- Sixteen-metre bench with double bench between catchment berms.
- Planned mining widths in the design phases exceeding 100 metres, but pinching down to 40 to 60 metres locally where ramps and phase interfaces come together.
- Haulage allowances of 33 metres; in practise, the ramp width provides adequate room for berms and two-way traffic with the 240-ton class trucks used at Candelaria.
- Mining Phases 9 through 13.

The final pit design was used to report the Candelaria Open Pit Mineral Reserves, using a topographic profile as of June 30, 2017. The final pit design mining phases are shown in Figure 24. For the open pit life of mine plan that supports the open pit Mineral Reserves direct mill feed is scheduled at a variable cut-off grade averaging approximately 0.31 percent copper. The material below that cut-off grade but above a grade of 0.20 percent copper is stockpiled.



Código Modelo	Sector Geomecánico	N° de rampas
1	0a	2
2	0b (falla Lar)	3
3	1a	2
4	1b	2
5	1c	1
6	3	4
7	4	4
8	5	5
9	8	3

sector geomecanico	ISA	Global
Sector S-0a	50	44.6
Sector S-0b	48	41.5
Sector S-1a	50	44.6
Sector S-1b	45	41.1
Sector S-1c	50	45.8
Sector 3	52	45.2
Sector 4	54	47.2
Sector 5	57	50.2
Sector 8	47	42.8

Sector	Name	ISA Degrees	BFA Degrees	Berm Interval Meters	Berm Width Meters	NPVS Input
1	Sector 0a	50.00	72	32	16.50	44.60
2	Sector 0b Lar Fault	48.00	65	32	13.90	41.50
3	Sector 1a	50.00	72	32	16.50	44.60
4	Sector 1b	45.00	65	32	17.10	41.10
5	Sector 1c	50.00	72	32	16.50	45.80
6	Sector 3	52.00	72	32	14.50	45.20
7	Sector 4	54.00	72	32	12.85	47.20
8	Sector 5	57.00	78	32	14.00	50.20
9	Sector 8	52.00	75	32	16.40	42.80

Figure 23: Candelaria Open Pit Sectors Geotechnical Design Recommendations

ISA: Inter-ramp slope angle, BFA: bench face angle

Source: Call Nicolas International Company

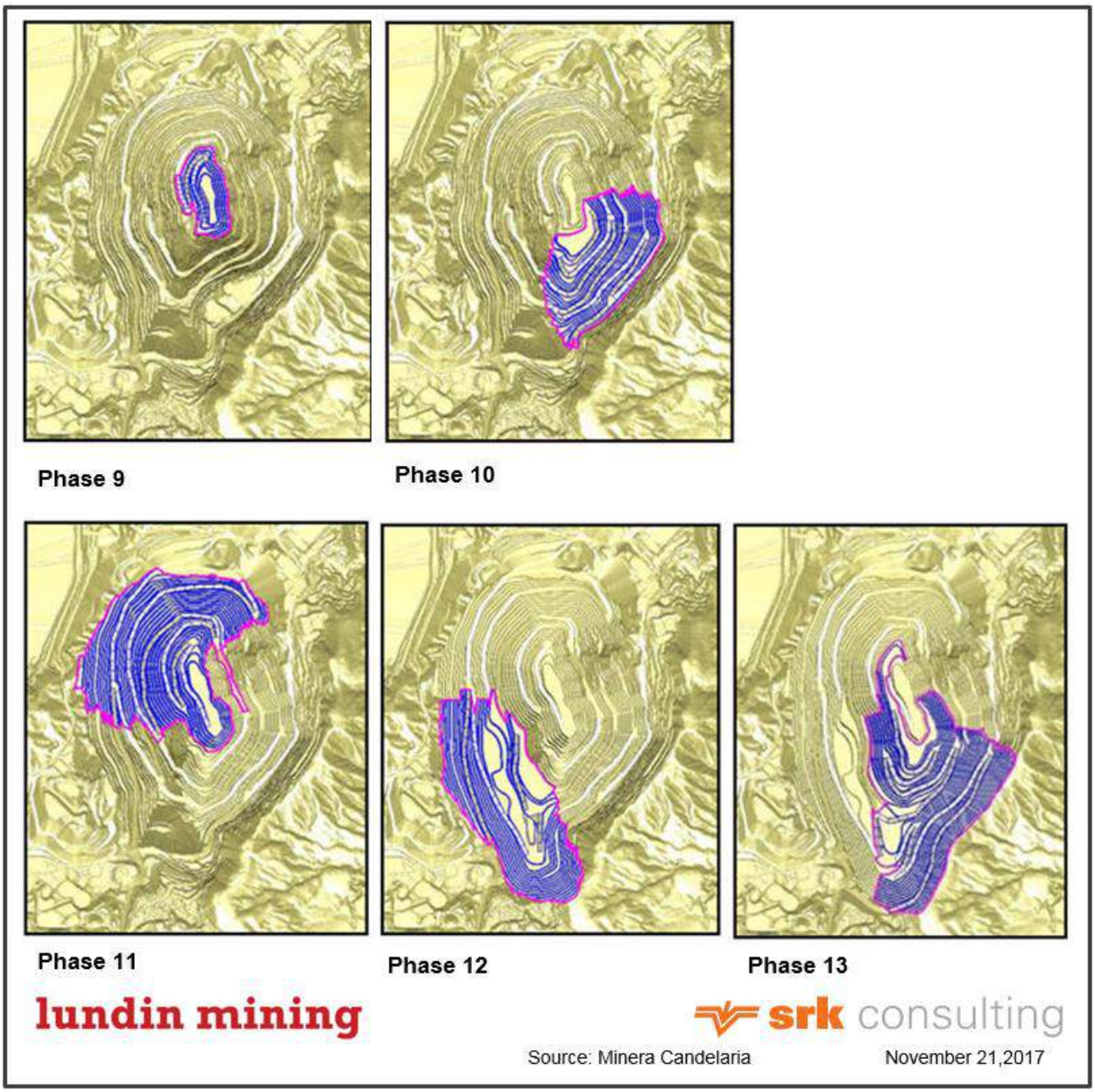


Figure 24: Candelaria Mining Phases

Following a localized failure in the east wall of the Phase 9 pit on October 31, 2017 modifications were made to the Phase 9 design as shown in Figure 24. The LOM schedule was modified to reflect the changes in the design. The Mineral Reserves were not affected by the change in design as material now excluded from the original Phase 9 will be captured in Phase 10 in 2020 and 2021. However, the forecast for 2018 now shows a reduction in contained copper of approximately 20 percent over the previous production plan, as additional low grade stockpile material will be processed in place of higher grade ore previously scheduled from Phase 9. The changes in the Phase 9 design are shown in Figure 25 as is the slide which contained between 600,000 and 700,000 tonnes of waste.

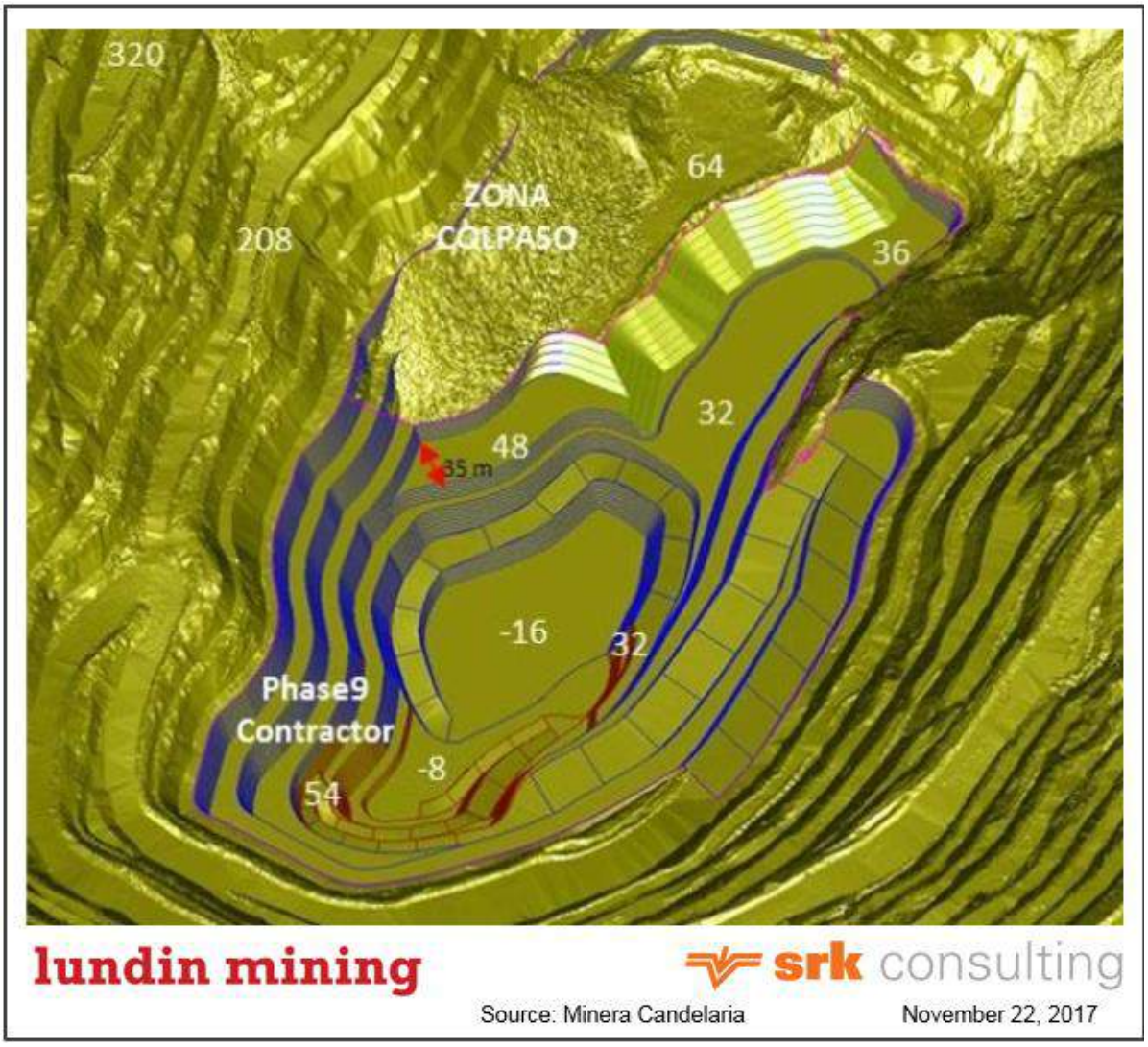


Figure 25: Change to Phase 9 Design

14.2.2 Mineral Reserves of the Candelaria Underground Mine

The Candelaria Underground mine Mineral Reserve estimates were prepared by the Candelaria Copper Mining Complex Underground Technical Service Department. The Mineral Reserves are based on the 2017 estimated Measured and Indicated Mineral Resources defined for the underground mine.

The Candelaria Underground mine includes a series of sectors, which during 2016 were added south from the Candelaria Open Pit and extensions to the north of the Candelaria Underground (North Sector). These newly added sectors include Lila (Consuelo), Lila (Irma), Lila (Cristina), and Wendy North from the Candelaria Underground (North Sector), and Mariana from the Candelaria Underground (South Sector). The Mineral Reserve estimates for the Candelaria Underground mine are based on the 2017 LOM plans and the stopes were designed and developed using modifying parameters summarized in Table 28.

Table 28: Summary of Mineability Factors Applied to Candelaria Underground Mineral Reserve Estimation

Parameter	Units	Candelaria UG	
		June 2016	June 2017
Mining ore recovery by stope setting			
Vertical	%	95	
Inclined	%	85	
Rib	%	85	95
Pillar	%	80	
Structural pillar	%	75	
Mining ore dilution by stope setting			
Vertical	%	10	18
Inclined	%	30	30
Rib	%	30	50
Pillar	%	40	40
Structural pillar	%	50	50
Dilution material*			
Copper	%	0.30	0.30
Gold	g/t	0.07	0.07
Silver	g/t	1.00	1.00
Magnetite	%	5.00	5.00

* Default dilution material grades. Some in-production stope dilution grades applied are based on detailed dilution solid analysis performed by geologists and geotechnical engineers

It should be noted that mineability factors applied in 2017 were updated based on back analysis from historical mined-out stope cavity monitoring system data. Notably: (1) vertical stope external dilution increased to 18 percent from 10 percent used in previous years; (2) rib stope external dilution increased to 50 percent from 30 percent used in the previous years; (3) a uniform 95 percent stope mucking recovery applied to all stope categories with provision of further improvement to be realized. The new mineability factors used in 2017 deliver slightly more conservative Mineral Reserve estimates previously. Mineral Reserve tonnage has increased by 11.9 percent, while metal grades decreased by 9.9 percent, and contained metals slightly increased by approximately 0.7 percent.

SRK recommends that Lundin surveys more stopes for different categories of mined-out stopes and re-evaluates the mineability factors in the future.

The conversion of Mineral Resources to Mineral Reserves at Minera Candelaria is initiated at the formal transfer of the resource block models to the underground mine planning group.

The metal grades of the Inferred Mineral Resources in the resource block model were re-coded to zero. All the Inferred material in the model was assigned a zero value. Preliminary stope layouts were generated by first utilizing Datamine MSO (Mineable Shape Optimizer) software with predefined stope design parameters. These preliminary stope designs were reviewed and refined to achieve optimal stope geometries. The specific geotechnical recommendations were also considered for each case including, where necessary, for the crown pillars left between the underground mine and the open pit. The final stope designs, grades and tonnes were internally audited before reporting.

Stope in situ data were reported using an excel spreadsheet and mining dilution, and mining recovery factors were applied to the final calculations.

The cut-off grade calculated for the Candelaria Underground mine was based on costs and commercial orientations which correspond to 0.60 percent copper.

Dilution and recovery parameters vary depending on each stope, geotechnical condition, geometry, and mining sequence.

All economical stopes and related developments are included in this report.

14.3 Mineral Reserves of the Minera Ojos del Salado

Minera Ojos del Salado consists both the Santos and Alcaparrosa underground mines. The Mineral Reserves for the Santos and Alcaparrosa underground mines were prepared by the Underground Technical Services Department, and were based on the 2017 estimations of Measured and Indicated Mineral Resources, defined by the Resource Definition Department.

The Mineral Reserve estimates for the Santos and Alcaparrosa underground mines are based on their 2017 LOM plans and the stopes were designed and developed using modifying parameters shown in Table 28.

The conversion of Mineral Resources to Mineral Reserves at the Santos and Alcaparrosa underground mines followed the same process applied for the Candelaria Underground mine.

The cut-off grade calculated for the Santos underground mine was based on cost estimation and commercial orientations, which corresponds to 0.66 percent copper.

The cut-off grade calculated for the Alcaparrosa underground mine was based on cost estimation and commercial orientations, which corresponds to 0.63 percent copper.

14.4 Mineral Reserve Statement

Mineral Reserves are derived from Measured or Indicated Mineral Resources after applying economic parameters. Mineral Reserves are classified using to the following criteria:

- Proven Mineral Reserves are the economically mineable part of the Measured Mineral Resources where development work for mining and information on processing/metallurgy and other relevant factors demonstrate that economic extraction is achievable.
- Probable Mineral Reserves are those Measured and Indicated Mineral Resources where development work for mining and information on processing/metallurgy and other relevant factors demonstrate that economic extraction is achievable.

The audited Mineral Reserve Statements for Minera Candelaria and Minera Ojos del Salado are presented in Table 29 and Table 30, respectively. The consolidated Mineral Reserve Statement for the Candelaria Copper Mining Complex is presented in Table 31.

Table 29: Audited Mineral Reserve Statement*, Compañía Contractual Minera Candelaria, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
		Copper	Gold	Silver	Copper	Gold	Silver
	('000 t)	(%)	(g/t)	(g/t)	('000 t)	('000 oz)	('000 oz)
Candelaria Open Pit							
Proven	295,012	0.54	0.13	1.75	1,591	1,188	16,569
Probable	20,880	0.45	0.12	1.66	94	80	1,117
Total	**315,892**	**0.53**	**0.12**	**1.74**	**1,685**	**1,268**	**17,687**
Candelaria WIP**							
Proven	92,316	0.34	0.09	1.41	313	271	4,179
Probable	–	–	–	–	–	–	–
Total	**92,316**	**0.34**	**0.09**	**1.41**	**313**	**271**	**4,179**
Candelaria Underground							
Proven	43,210	0.90	0.21	3.50	387	293	4,858
Probable	22,487	0.87	0.19	3.58	197	139	2,591
Total	**65,697**	**0.89**	**0.20**	**3.53**	**584**	**432**	**7,448**
Candelaria Total							
Proven	430,537	0.53	0.13	1.85	2,291	1,752	25,606
Probable	43,367	0.67	0.16	2.66	291	219	3,708
Total	**473,904**	**0.54**	**0.13**	**1.92**	**2,582**	**1,971**	**29,314**

* Mineral Reserves included in Mineral Resources. Mineral Reserves have been prepared using metal prices of US$2.75 per pound of copper, US$1,000 per ounce of gold, and US$15.00 per ounce of silver. All figures have been rounded to reflect the relative accuracy of the estimates. Mineral Reserves for open pit and underground are reported at cut-off grades of 0.20 and 0.60 percent copper, respectively.

** Work-in-progress (WIP) stockpiles

Table 30: Audited Mineral Reserve Statement*, Compañía Contractual Minera Ojos del Salado, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity	Grade			Contained Metal		
		Copper	Gold	Silver	Copper	Gold	Silver
	('000 t)	(%)	(g/t)	(g/t)	('000 t)	('000 oz)	('000 oz)
Santos (Underground)							
Proven	7,649	0.93	0.22	2.04	71	54	503
Probable	5,646	0.95	0.23	1.98	54	41	359
Total	**13,295**	**0.94**	**0.22**	**2.02**	**125**	**95**	**862**
Alcaparrosa (Underground)							
Proven	4,108	0.79	0.18	1.05	33	24	139
Probable	6,107	0.75	0.15	1.35	46	29	265
Total	**10,215**	**0.77**	**0.16**	**1.23**	**78**	**53**	**404**
WIP**							
Proven	70	0.87	0.22	1.69	1	0	4
Probable	0	0.00	0.00	0.00	0	0	0
Total	**70**	**0.87**	**0.22**	**1.69**	**1**	**0**	**4**
Combined Mining							
Proven	11,827	0.88	0.21	1.70	105	78	646
Probable	11,753	0.84	0.19	1.65	99	70	624
Total	**23,580**	**0.86**	**0.20**	**1.67**	**204**	**149**	**1,270**

* Mineral Reserves included in Mineral Resources. Mineral Reserves have been prepared using metal prices of US$2.75 per pound of copper, US$1,000 per ounce of gold, and US$15.00 per ounce of silver. All figures have been rounded to reflect the relative accuracy of the estimates. Underground Mineral Reserves for Alcaparrosa and Santos are reported at cut-off grades of 0.63 and 0.66 percent copper, respectively.

** Work-in-progress (WIP) stockpiles

Table 31: Consolidated Audited Mineral Reserve Statement*, Candelaria Copper Mining Complex, SRK Consulting (Canada) Inc., June 30, 2017 (100% Basis)

Classification	Quantity ('000 t)	Grade			Contained Metal		
		Copper (%)	Gold (g/t)	Silver (g/t)	Copper ('000 t)	Gold ('000 oz)	Silver ('000 oz)
Open Pit							
Proven	295,012	0.54	0.13	1.75	1,591	1,188	16,569
Probable	20,880	0.45	0.12	1.66	94	80	1,117
Total	**315,892**	**0.53**	**0.12**	**1.74**	**1,685**	**1,268**	**17,687**
WIP (Candelaria)**							
Proven	92,316	0.34	0.09	1.41	313	271	4,179
Probable							
Total	**92,316**	**0.34**	**0.09**	**1.41**	**313**	**271**	**4,179**
Underground							
Proven	54,967	0.89	0.21	3.11	491	371	5,500
Probable	34,240	0.86	0.19	2.92	296	209	3,215
Total	**89,207**	**0.88**	**0.20**	**3.04**	**787**	**580**	**8,714**
WIP Ojos del Salado**							
Proven	70	0.87	0.22	1.69	1	0.5	4
Probable	–	–	–	–	–	–	–
Total	**70**	**0.87**	**0.22**	**1.69**	1	0.5	**4**
Combined							
Proven	442,364	0.54	0.13	1.85	2,395	1,830	26,251
Probable	55,120	0.71	0.16	2.44	390	289	4,332
Total	**497,484**	**0.56**	**0.13**	**1.91**	**2,785**	**2,120**	**30,584**

* Mineral Reserves included in Mineral Resources. Mineral Reserves have been prepared using metal prices of US$2.75 per pound of copper, US$1,000 per ounce of gold, and US$15.00 per ounce of silver. All figures have been rounded to reflect the relative accuracy of the estimates. Minera Candelaria Mineral Reserves for open pit and underground are reported at cut-off grades of 0.20 and 0.60 percent copper, respectively. Underground Mineral Reserves for Alcaparrosa and Santos mines are reported at cut-off grades of 0.63 and 0.66 percent copper, respectively.

** Work-in-progress (WIP) stockpiles

A comparison of Mineral Reserves declared in 2016 versus Mineral Reserves estimated in 2017 and disclosed in this technical report indicate that:

- The Candelaria Open Pit Mineral Reserves have decreased by 138 kilotonnes of copper, considering extraction from July 2016 to June 2017.
- The Candelaria Underground Mineral Reserves have increased by 336 kilotonnes of copper. This is mainly due to the incorporation of a larger areas in the north and south sectors of the open pit.
- Between July 2016 and June 2017 in the Ojos del Salado mines, the Mineral Reserves of the Santos mine have increased by 14 kilotonnes of copper due to the expansion of the south sector area. At Alcaparrosa the Mineral Reserves have decreased by 13 kilotonnes of copper due to production depletion.
- Finally, the combined total Mineral Reserves for the underground mines increased by 337 kilotonnes of copper tonnes between July 2016 and June 2017 without considering work-in-progress material (stock piles), which in June 2017 amounted to 612 tonnes of copper.

15 Mining Methods

15.1 Introduction

Minera Candelaria consists of the Candelaria Open Pit and the Candelaria Underground mines. Minera Ojos del Salado consists of the Santos and Alcaparrosa underground mines. The Candelaria and the Minera Ojos del Salado facilities are close to each other. As a result, both facilities share surface infrastructures such as the concentrator, tailings dam, and also share a management structure. The ore from the Candelaria Open Pit, Candelaria Underground, and Alcaparrosa underground mines is processed at the Candelaria concentrator. Ore from the Santos underground mine is processed at the Pedro Aguirre Cerda (PAC) plant located on the Minera Ojos del Salado property.

This section describes the open pit and underground mining methods used at the Candelaria Copper Mining Complex.

The Candelaria Open Pit operates with an overall mining rate of approximately 270,000 tonnes per day including 64,800 tonnes per day of ore sent to the Candelaria concentrator. The average grade of the ore mined from the open pit over the remaining life of mine is estimated at 0.53 percent copper while stockpiled work-in-progress material at an average of 0.34 percent copper. The mine operates seven electric shovels, 43 haulage trucks, eight production drills, and a fleet of support equipment. The location of the underground mines relative to the Candelaria Open Pit is shown in Figure 4.

The Candelaria Underground mine is forecast to produce 7,000 tonnes per day of ore in 2017, ramping up to a steady state of 14,000 tonnes per day by 2021 as per the life of mine plan. The average life of mine grade is 0.89 percent copper. The Alcaparrosa mine currently produces 4,300 tonnes per day of ore and is expected to keep it as a steady state production rate. The life of mine average grade is 0.77 percent copper. The Santos mine will continue to produce at its current rate of production of 5,100 tonnes per day of ore with an average life of mine grade of 0.94 percent copper. The mining method in all three underground mines is sublevel open stoping. The underground mines currently operate in total eight load haul dump vehicles LHDs, six front end-loaders, nine jumbos, nine down-the-hole drills, two Simba longhole drills, 26 30-ton trucks, 14 man lifts, and a fleet of support equipment.

15.2 Open Pit Mine Design and Consolidated Production Schedule

A life of mine plan for Minera Candelaria is based on the Mineral Reserves reported in Section 14. The plan is largely driven by supplying ore to the Candelaria processing plant from the open pit mine and surface stockpiles once the open pit Mineral Reserves have been depleted. The current combined open pit and work-in-progress stockpile Mineral Reserves are estimated at 408.2 million tonnes at an average grade of 0.49 percent copper, 0.12 g/t gold, and 1.67 g/t silver. The open pit and work-in-progress stockpile Mineral Reserves are reported at 0.20 percent cut-off grade.

The open pit was designed to be mined in several phases of development. As of June 2017, five phases of development remain in the LOM plan (Phases 9 to 13). The overall strip ratio is expected to be 2.7:1 including ore that is initially delivered to stockpiles. The total in-pit waste is 871.6 million tonnes and the overall life of the open pit mine is 18 years. The final pit design and overall Mineral Reserves including stockpiles are shown in Figure 26.

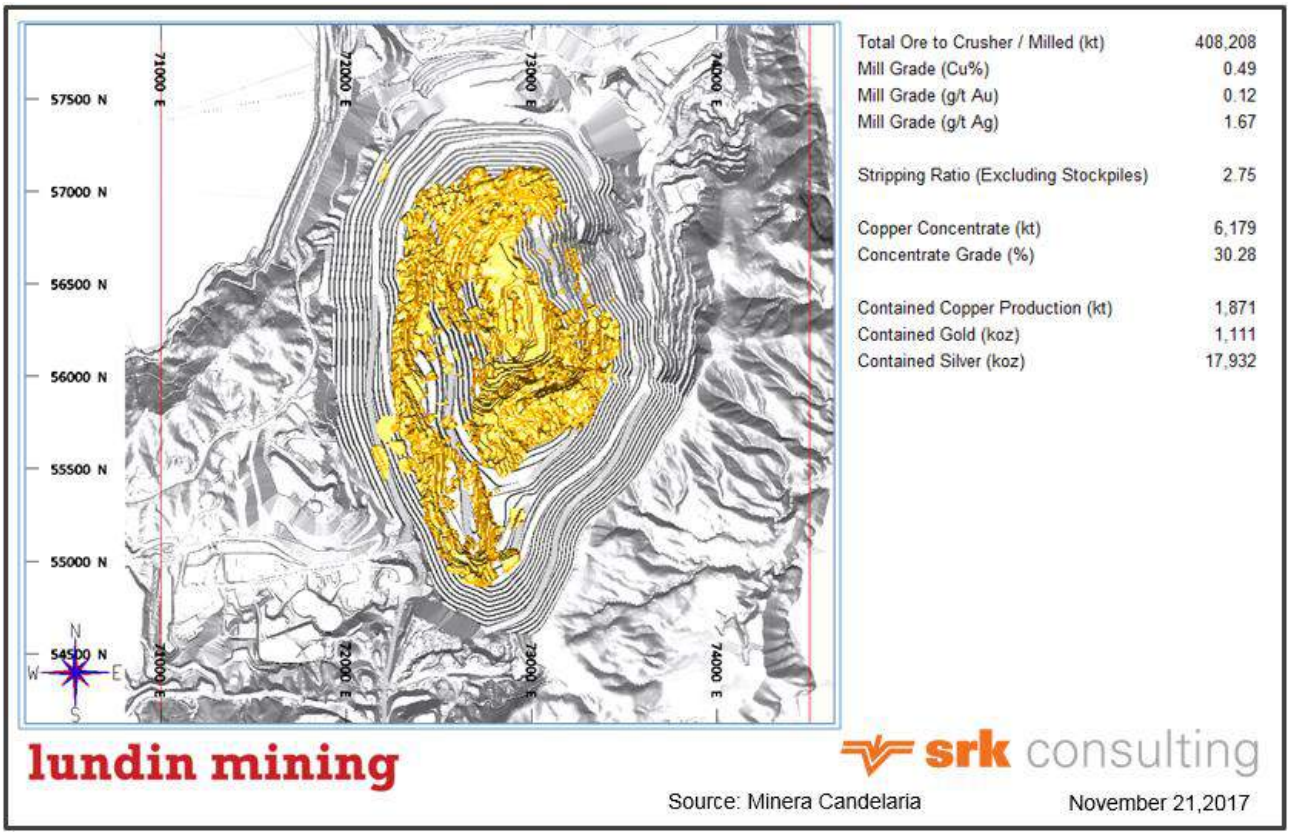


Figure 26: Summary of Candelaria Open Pit Mine Development

The open pit design is based upon the following key considerations:

- Phase development to smooth ore and waste scheduling with stockpile material available to supplement direct mill feed from the mine.
- Overall and inter-ramp slope recommendations provided by Call Nicolas International Company (CNI) including use of pre-shear drilling and blasting.
- Operating constraints of the equipment available for mining.
- Minimum mining width defined by double side loading of trucks with allowance for an access ramp.
- Bench height achievable and within the safe operating reach of the primary loading units.
- Minimum haulage road operating width and maximum effective grade within the operating limitations of the primary haulage units.

The primary components for the open pit slope design include bench geometry, inter-ramp, and overall slope angles (Figure 27). The current pit dimensions are 2,200 metres by 1,400 metres with a depth of 700 metres. Current inter-ramp slope angles range from 45 to 52 degrees in the west wall and from 52 to 57 degrees in the east wall. Bench face angles range from 65 to 72 degrees.

The rock at Candelaria has a typical uniaxial compressive strength of over 140 megapascals and is considered “hard rock”. In the east, any wall instabilities are structurally controlled with north and northwest being the most critical directions. The failure mechanism in this wall is mainly planar failure. In the west and north walls the stability is controlled by rock mass conditions. The failure mechanisms in these walls are wedge and circular type failures. The intersection between the Lar

fault and the Mistral Mirador fault generates a zone of rock weakness. Open wall slope recommendations have been provided by CNI (see Section 14).

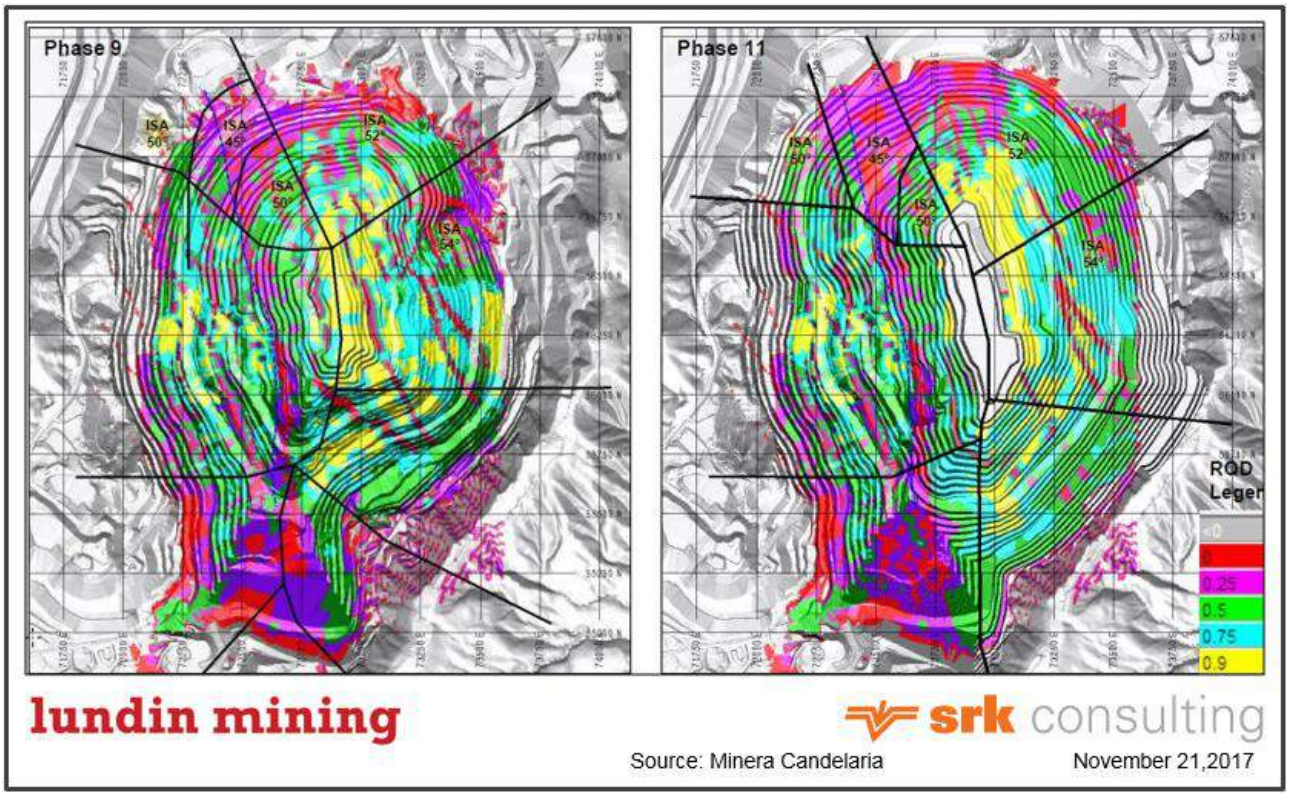


Figure 27: Slope Sectors Rock Quality Designation for Phase 9 (Left) and Phase 11 (right)

Slope monitoring is carried out in the mine on a continuous basis using robotized monitoring systems, including two robotic prism monitoring stations, five SlideMinder extensometers, three Ground Probe SS radar units, nine vibrating wire piezometers, and two web cameras.

The Candelaria Open Pit is relatively dry owing to its location in an arid region. The northeast wall appears to be receiving some seepage from the toe of the tailings dam. Horizontal drain holes have been drilled up to 200 metres into the wall to reduce pore pressures in the area of the Lar fault.

The pit designs include allowances for 32- to 33-metre wide roads including ditches and berms. Haulage roads within the pit limits have a maximum gradient of 10 percent with the exception of the Phase 9 pit bottom where grades will be increased to 14 percent. The final pit design is shown in Figure 26. The flowsheet for the design and scheduling of the Minera Candelaria LOM plan is shown in Figure 28.

The LOM plan was developed using MineSight and Datamine NPVS software packages. The Mineral Resource model and standard mining block model were developed in MineSight. This standard mining model was then imported to NPVS to calculate economic value items and to develop Lerchs-Grossman pit limits. A final pit design was developed in MineSight. NPVS was used to develop potential pushback limits. Detailed phase designs were then completed in MineSight and schedule optimization was undertaken in NPVS. Once a cut-off grade was chosen and a stockpile strategy was completed, MineSight Schedule Optimizer was used to create the final detailed schedule.

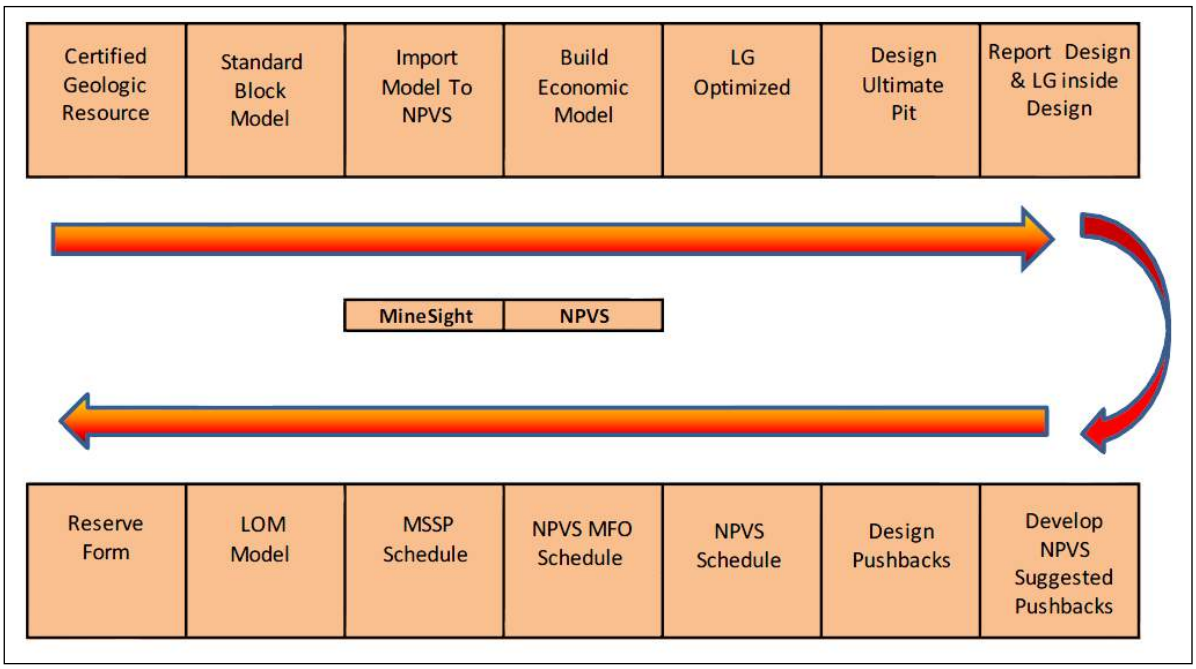


Figure 28: Candelaria Life of Mine Plan Development Process
Source: Minera Candelaria

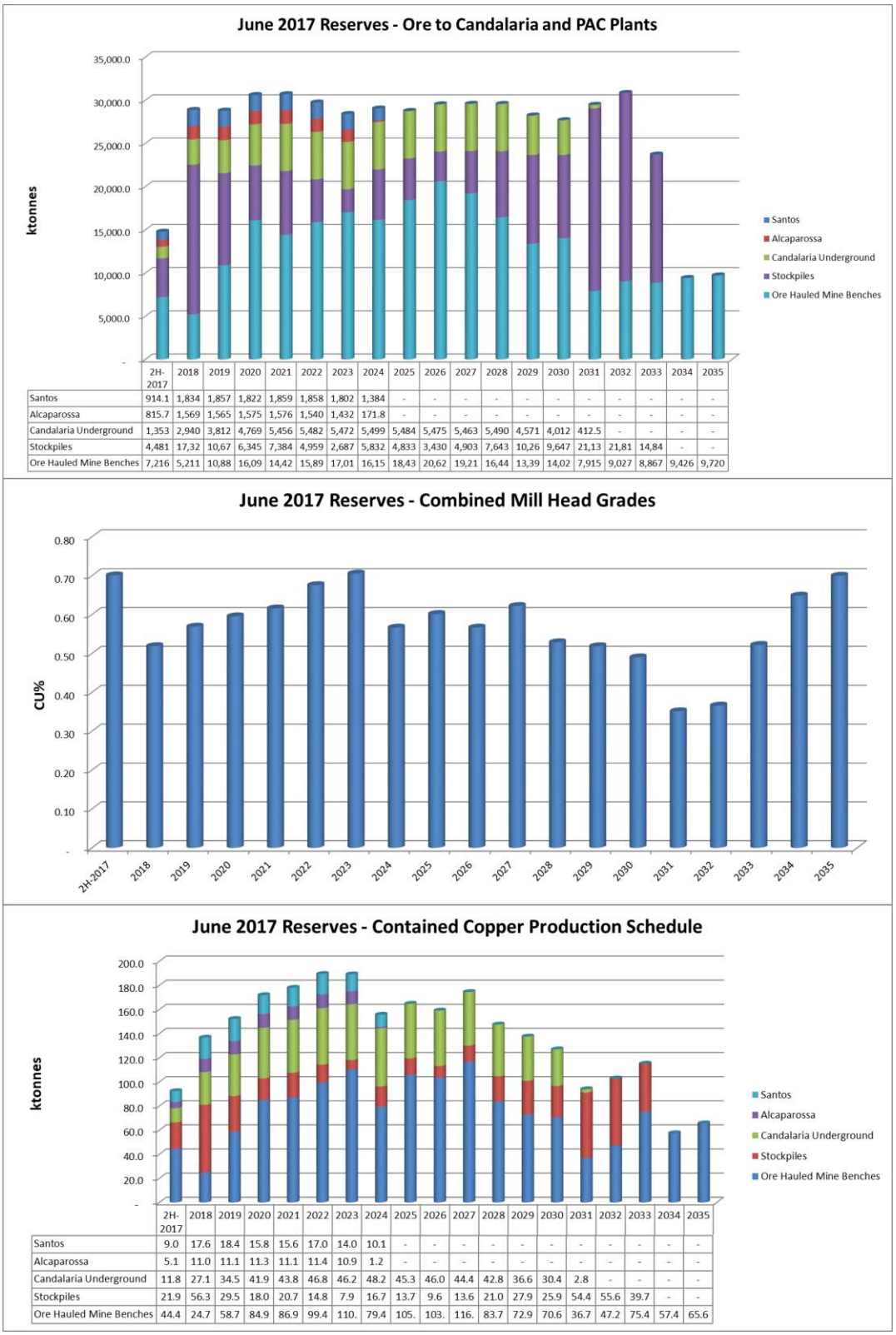
The mine production schedule for Minera Candelaria and Minera Ojos del Salado for the period 2H-2017 to 2035 is shown in Table 32, displaying the material sent to the Candelaria and PAC plants, and the forecast processing plant recoveries together with the concentrate and contained copper, gold, and silver metal. Low grade material from the open pit is initially transferred to work-in-progress stockpiles and later withdrawn as work-in-progress re-handle feed for the plant. The current mine production forecast is shown graphically in Figure 29. Examples of annual development plans are shown in Figure 30 to Figure 32.

For the second half of 2017, the Candelaria Copper Mining Complex is forecast to produce concentrates containing 92 kilotonnes of copper, 52 kilo-ounces of gold and 0.96 million ounces of silver. Over the remaining life of mine plan (2018 to 2035), the average annual production is estimated to be 140 kilotonnes of copper, 82 kiloounces of gold and 1.3 million ounces of silver.

Table 32: Candelaria Copper Mining Complex Mine Consolidated Production Schedule (100% Basis)

Mine	Production Plan	2H-2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
Open pit to mill	Tonnes (kt)	7,217	5,212	10,888	16,091	14,426	15,895	17,017	16,158	18,436	20,621	19,217	16,441	13,396	14,022	7,916	9,028	8,868	9,427	9,721	**249,993**
	Cu (%)	0.694	0.52	0.58	0.56	0.64	0.66	0.69	0.52	0.60	0.53	0.64	0.54	0.58	0.54	0.51	0.57	0.91	0.65	0.70	0.61
	Au (g/t)	0.15	0.14	0.14	0.14	0.15	0.16	0.16	0.12	0.14	0.12	0.14	0.12	0.13	0.13	0.14	0.13	0.20	0.14	0.09	0.14
	Ag (g/t)	3.80	1.87	1.51	1.40	1.72	2.01	2.88	2.16	1.84	1.47	2.17	2.03	1.82	1.29	1.20	1.15	2.37	2.14	1.59	1.90
Open pit LG to WIP	Tonnes (kt)	2,688	1,533	1,856	4,974	4,608	2,798	8,945	6,042	11,128	2,703	2,313	1,366	1,562	2,096	3,855	3,244	4,189			**65,899**
	Cu (%)	0.56	0.29	0.23	0.23	0.23	0.23	0.26	0.23	0.26	0.22	0.22	0.22	0.22	0.22	0.24	0.24	0.32			0.26
	Au (g/t)	0.28	0.08	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.10			0.08
	Ag (g/t)	3.95	1.08	0.85	0.68	0.73	1.05	1.47	1.12	1.19	1.01	1.06	1.21	1.01	0.73	0.57	0.58	1.00			1.137
WIP Rehandle	Tonnes (kt)	4,481	17,322	10,672	6,346	7,384	4,959	2,688	5,832	4,833	3,430	4,903	7,643	10,267	9,647	21,140	21,817	14,850			**158,215**
	Cu (%)	0.551	0.36	0.30	0.30	0.30	0.32	0.31	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.28	0.28	0.29			0.31
	Au (g/t)	0.05	0.11	0.12	0.11	0.06	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08			0.08
	Ag (g/t)	0.36	1.67	1.81	1.62	1.16	1.34	1.35	1.34	1.32	1.31	1.30	1.30	1.29	1.27	1.22	1.17	0.96			1.30
From Candelaria UG	Tonnes (kt)	1,354	2,940	3,813	4,770	5,457	5,482	5,472	5,499	5,484	5,476	5,463	5,491	4,571	4,013	412					**65,697**
	Cu (%)	0.98	1.01	0.98	0.93	0.85	0.91	0.89	0.93	0.87	0.88	0.86	0.83	0.85	0.81	0.74					0.89
	Au (g/t)	0.23	0.26	0.26	0.22	0.20	0.21	0.20	0.21	0.19	0.20	0.19	0.19	0.19	0.16	0.15					0.20
	Ag (g/t)	5.46	4.98	4.85	3.81	3.03	3.41	3.51	3.61	3.19	3.22	2.64	2.97	4.11	3.19	3.04					3.53
From Santos	Tonnes (kt)	267	511	511	512	511	511	511	427												**3,762**
	Cu (%)	1.04	1.03	1.06	0.92	0.89	0.97	0.83	0.78												0.94
	Au (g/t)	0.22	0.21	0.26	0.23	0.21	0.23	0.21	0.20												0.22
	Ag (g/t)	2.30	2.27	2.19	2.06	2.01	2.03	1.68	1.40												1.99
From Alcaparrosa	Tonnes (kt)	816	1,569	1,565	1,576	1,576	1,541	1,432	172												**10,247**
	Cu (%)	0.71	0.77	0.76	0.76	0.74	0.78	0.81	0.75												0.77
	Au (g/t)	0.22	0.17	0.15	0.16	0.15	0.16	0.16	0.14												0.16
	Ag (g/t)	0.94	0.79	1.21	1.37	1.15	1.46	1.57	1.40												1.23
Total Ore to Candelaria Plant	**Tonnes (kt)**	**14,135**	**27,554**	**27,449**	**29,295**	**29,354**	**28,388**	**27,120**	**28,088**	**28,753**	**29,528**	**29,583**	**29,575**	**28,234**	**27,681**	**29,468**	**30,845**	**23,717**	**9,427**	**9,721**	**487,913**
	Cu (%)	**0.68**	**0.49**	**0.54**	**0.58**	**0.60**	**0.66**	**0.70**	**0.56**	**0.60**	**0.57**	**0.62**	**0.53**	**0.52**	**0.49**	**0.35**	**0.37**	**0.52**	**0.65**	**0.70**	**0.55**
	Au (g/t)	**0.13**	**0.14**	**0.15**	**0.15**	**0.14**	**0.16**	**0.16**	**0.13**	**0.14**	**0.13**	**0.14**	**0.12**	**0.12**	**0.12**	**0.10**	**0.09**	**0.12**	**0.14**	**0.09**	**0.13**
	Ag (g/t)	**2.68**	**2.02**	**2.09**	**1.85**	**1.80**	**2.13**	**2.76**	**2.26**	**2.01**	**1.78**	**2.11**	**2.02**	**2.00**	**1.56**	**1.24**	**1.16**	**1.49**	**2.14**	**1.59**	**1.91**
Open pit Waste	Tonnes (kt)	21,110	74,163	93,864	87,569	80,144	81,817	66,728	73,705	57,218	52,436	49,971	47,769	32,171	17,936	11,214	10,276	5,358	5,143	1,256	869,847
Strip Ratio		2.1	11.0	7.4	4.2	4.2	4.4	2.6	3.3	1.9	2.2	2.3	2.7	2.2	1.1	1.0	0.8	0.4	0.5	0.1	2.8
Total Ore from Santos Mine to PAC plant	**Tonnes (kt)**	**646.9**	**1,323**	**1,346**	**1,310**	**1,348**	**1,348**	**1,292**	**958**												**9,572**
	Cu (%)	**1.09**	**1.03**	**1.06**	**0.92**	**0.89**	**0.97**	**0.83**	**0.77**												**0.94**
	Au (g/t)	**0.20**	**0.21**	**0.26**	**0.23**	**0.21**	**0.23**	**0.21**	**0.20**												**0.22**
	Ag (g/t)	**2.39**	**2.28**	**2.19**	**2.06**	**2.01**	**2.03**	**1.68**	**1.66**												**2.03**
Plant	**Production Plan**																				
Candelaria Plant	Cu (%)	88.75	90.99	92.80	94.37	94.16	94.32	94.40	94.62	95.21	95.07	94.81	94.28	93.92	93.60	90.71	91.10	92.95	93.85	96.4	93.7
Recovery	Au (%)	82.31	71.90	72.30	72.95	72.20	74.01	74.00	70.80	72.70	70.70	72.60	70.80	70.70	70.80	70.70	70.80	70.90	71.00	71.00	72.2
	Ag (%)	75.90	81.43	82.30	82.36	82.00	83.11	84.70	83.20	82.40	82.30	82.30	82.40	82.30	80.90	80.80	80.90	81.10	82.70	82.70	82.1
Candelaria Plant Concentrate	Tonnes (kt)	290	408	455	526	548	586	589	492	544	525	580	488	451	416	308	338	382	197	217	8,338
	Cu (%)	29.56	30.38	30.48	30.53	30.40	30.25	30.44	30.23	30.27	30.32	30.08	30.25	30.51	30.52	30.48	30.46	30.10	29.19	30.29	30.29
	Au (g/t)	5.25	6.77	6.63	6.11	5.36	5.69	5.55	5.27	5.35	5.14	5.10	5.30	5.37	5.53	6.45	5.84	5.36	4.91	2.87	5.53
	Ag (g/t)	99.0	111.3	103.5	84.8	78.8	86.0	107.9	107.2	87.5	82.2	88.6	100.8	103.0	84.0	95.9	86.0	74.8	85.0	59.1	91.74
Candelaria Concentrate	Cu (kt)	86	124	139	161	167	177	179	149	165	159	174	147	137	127	94	103	115	57	66	2,526
Contained Metal	Au (koz)	49	89	97	103	94	107	105	83	94	87	95	83	78	74	64	63	66	31	20	1,482
	Ag (moz)	0.9	1.5	1.5	1.4	1.4	1.6	2.0	1.7	1.5	1.4	1.7	1.6	1.5	1.1	0.9	0.9	0.9	0.5	0.4	25
PAC Plant	Cu (%)	93.03	93.50	93.50	93.50	93.50	93.50	93.50	93.50												
Recovery	Au (%)	80.06	74.10	74.06	74.06	74.06	74.06	74.06	74.06												
	Ag (%)	75.04	82.16	81.43	81.43	81.43	81.43	81.43	81.43												
PAC Plant Concentrate	Tonnes (kt)	22	42	45	38	38	41	33	23												281
	Cu (%)	29.63	30.60	30.00	30.00	30.00	30.00	30.00	30.00												30.06
	Au (g/t)	4.72	4.97	5.77	6.02	5.59	5.65	6.08	6.12												5.63
	Ag (g/t)	52.30	59.20	53.90	58.36	58.88	54.49	52.93	55.84												55.96
PAC Concentrate	Cu (kt)	7	13	13	11	11	12	10	7												85
Contained Metal	Au (koz)	3	7	8	7	7	7	7	5												51
	Ag (moz)	0.04	0.1	0.1	0.1	0.1	0.1	0.1	0												0.5
Total Concentrate Production	**Tonnes (kt)**	**312**	**449**	**500**	**564**	**586**	**627**	**622**	**515**	**544**	**525**	**580**	**488**	**451**	**416**	**308**	**338**	**382**	**197**	**217**	**8,619**
	Cu (kt)	**92**	**137**	**152**	**172**	**178**	**189**	**189**	**156**	**165**	**159**	**174**	**147**	**137**	**127**	**94**	**103**	**115**	**57**	**66**	**2,610**
Total Contained Metal	**Au (koz)**	**52**	**95**	**105**	**111**	**101**	**115**	**112**	**88**	**94**	**87**	**95**	**83**	**78**	**74**	**64**	**63**	**66**	**31**	**20**	**1,533**
	Ag (moz)	**960**	**1,538**	**1,592**	**1,504**	**1,461**	**1,691**	**2,098**	**1,736**	**1,531**	**1,387**	**1,652**	**1,580**	**1,493**	**1,123**	**950**	**933**	**919**	**537**	**411**	**25,099**

** Work in Progress (WIP) stockpile



	2H-2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Santos	914.1	1,834	1,857	1,822	1,859	1,858	1,802	1,384	-	-	-	-	-	-	-	-	-	-	-
Alcaparossa	815.7	1,569	1,565	1,575	1,576	1,540	1,432	171.8	-	-	-	-	-	-	-	-	-	-	-
Candalaria Underground	1,353	2,940	3,812	4,769	5,456	5,482	5,472	5,499	5,484	5,475	5,463	5,490	4,571	4,012	412.5	-	-	-	-
Stockpiles	4,481	17,32	10,67	6,345	7,384	4,959	2,687	5,832	4,833	3,430	4,903	7,643	10,26	9,647	21,13	21,81	14,84	-	-
Ore Hauled Mine Benches	7,216	5,211	10,88	16,09	14,42	15,89	17,01	16,15	18,43	20,62	19,21	16,44	13,39	14,02	7,915	9,027	8,867	9,426	9,720

	2H-2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Santos	9.0	17.6	18.4	15.8	15.6	17.0	14.0	10.1	-	-	-	-	-	-	-	-	-	-	-
Alcaparossa	5.1	11.0	11.1	11.3	11.1	11.4	10.9	1.2	-	-	-	-	-	-	-	-	-	-	-
Candalaria Underground	11.8	27.1	34.5	41.9	43.8	46.8	46.2	48.2	45.3	46.0	44.4	42.8	36.6	30.4	2.8	-	-	-	-
Stockpiles	21.9	56.3	29.5	18.0	20.7	14.8	7.9	16.7	13.7	9.6	13.6	21.0	27.9	25.9	54.4	55.6	39.7	-	-
Ore Hauled Mine Benches	44.4	24.7	58.7	84.9	86.9	99.4	110.	79.4	105.	103.	116.	83.7	72.9	70.6	36.7	47.2	75.4	57.4	65.6

Figure 29: Candelaria Copper Mining Complex Consolidated Mine Production Schedule

Top: Total ore to Candelaria and PAC plants; Middle: Average mill feed copper grade; and Bottom: Contained copper production

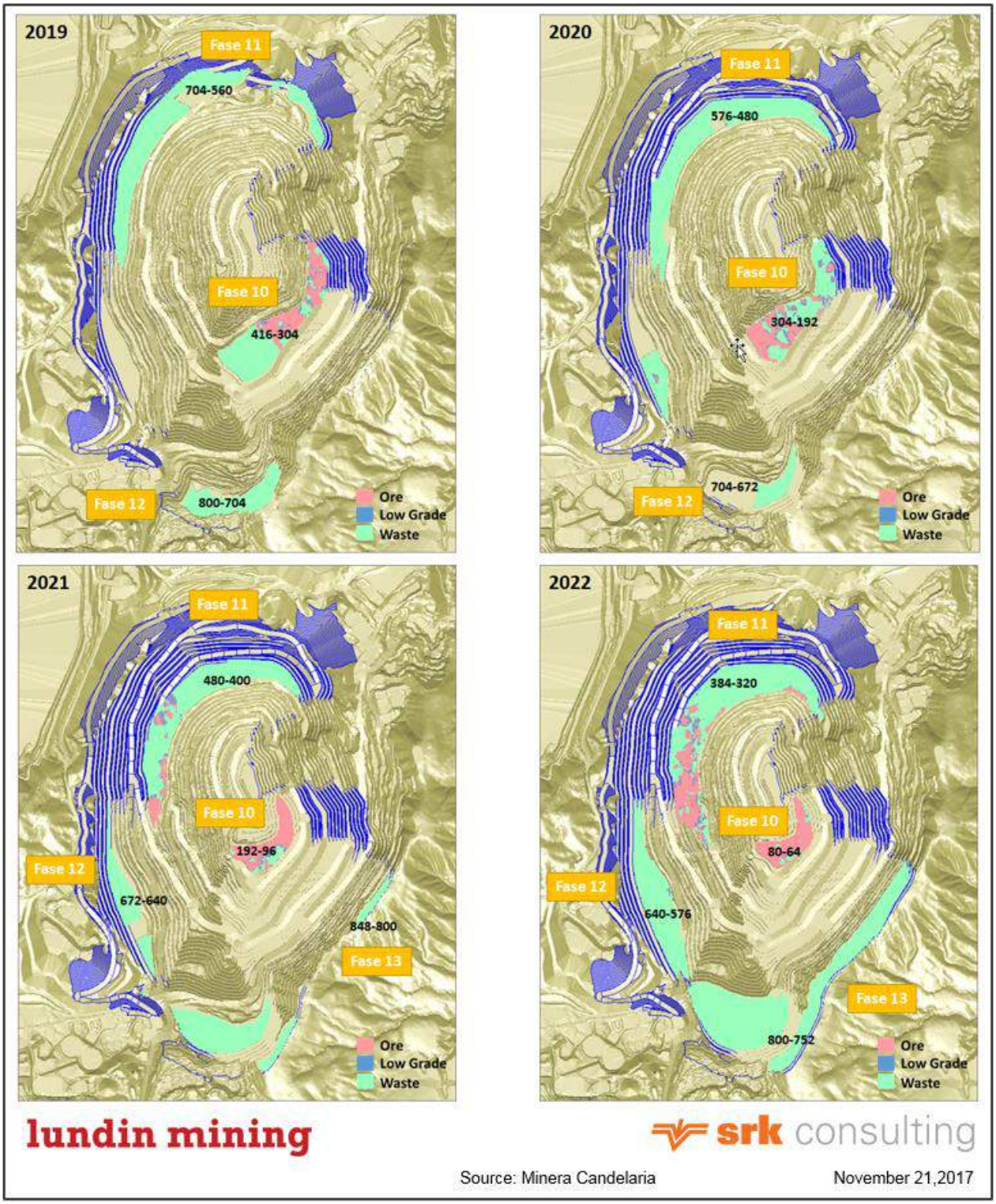


Figure 30: Annual Development Plan for 2019 to 2022

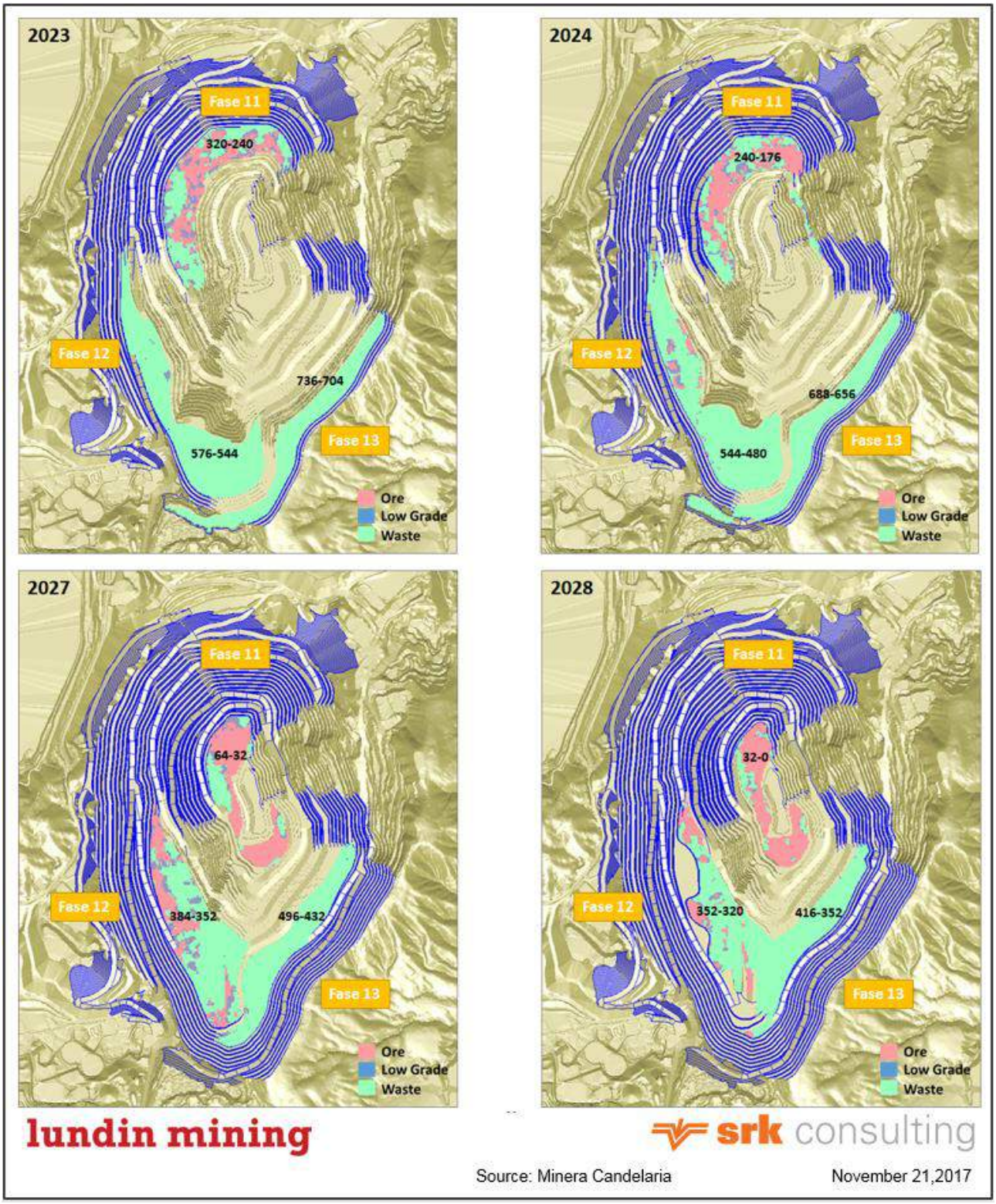


Figure 31: Annual Development Plan for 2023, 2024, 2027 and 2028

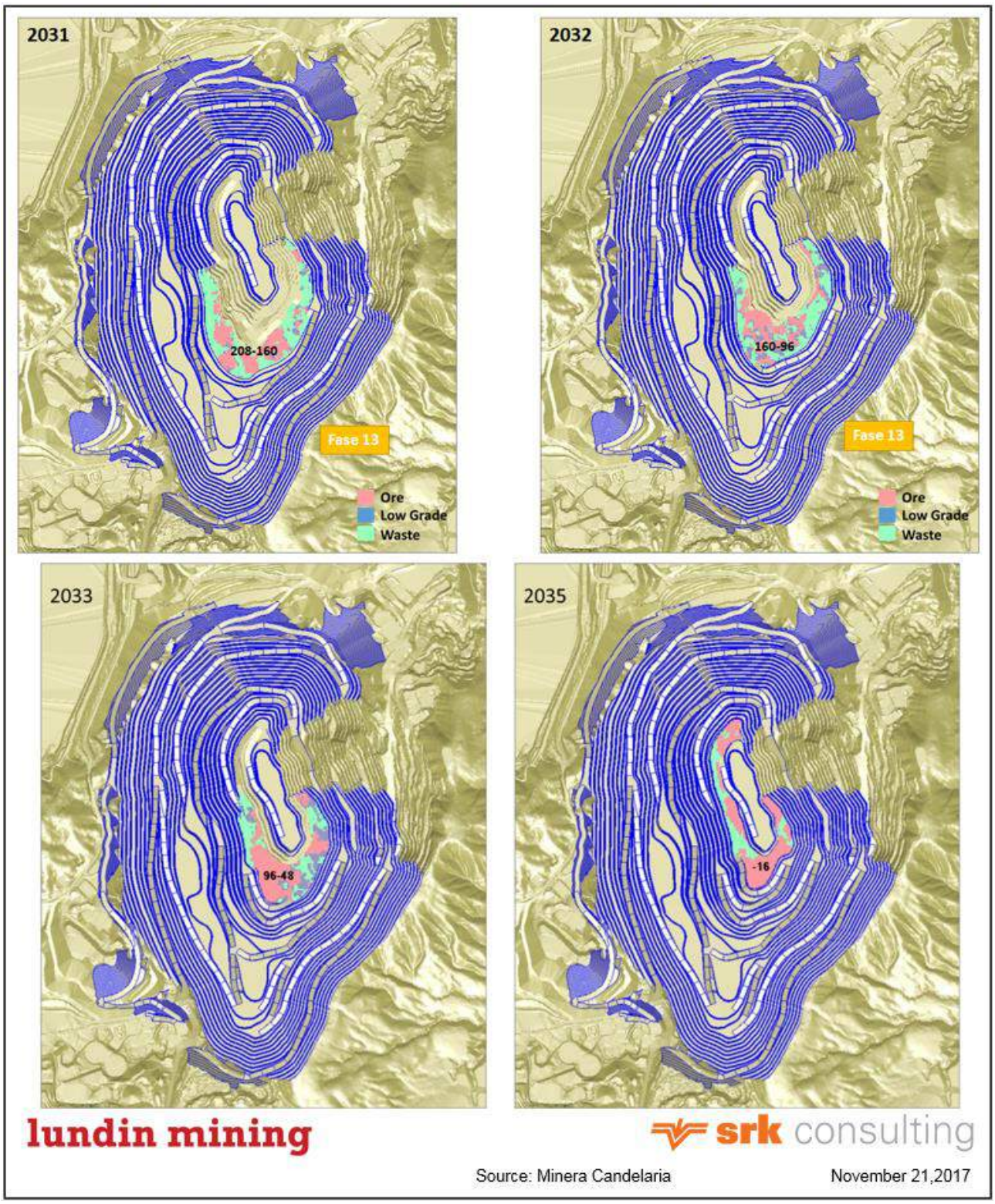


Figure 32: Annual Development Plan for 2031, 2032, 2033 and 2035

15.3 Underground Mine Design and Production Schedule

Each of the three underground mines and its associated facilities is accessed by a surface portal and ramp. Figure 33, Figure 34, Figure 35, and Figure 36 show the basic layout of Candelaria Underground (North Sector), Candelaria Underground (South Sector), Santos mine, and Alcaparrosa mine, respectively.

The underground mine Technical Services Group employs geology, geotechnical, planning, and surveying personnel. The mines operate using detailed production, development plans, and schedules and the mining activities are conducted under the guidance and oversight of the mine's General Manager. The operational activities at the mines are performed by contractors with oversight by Minera Candelaria and Minera Ojos del Salado management. The contractors employ and manage the mines' labour personnel and they own and maintain the mining equipment.

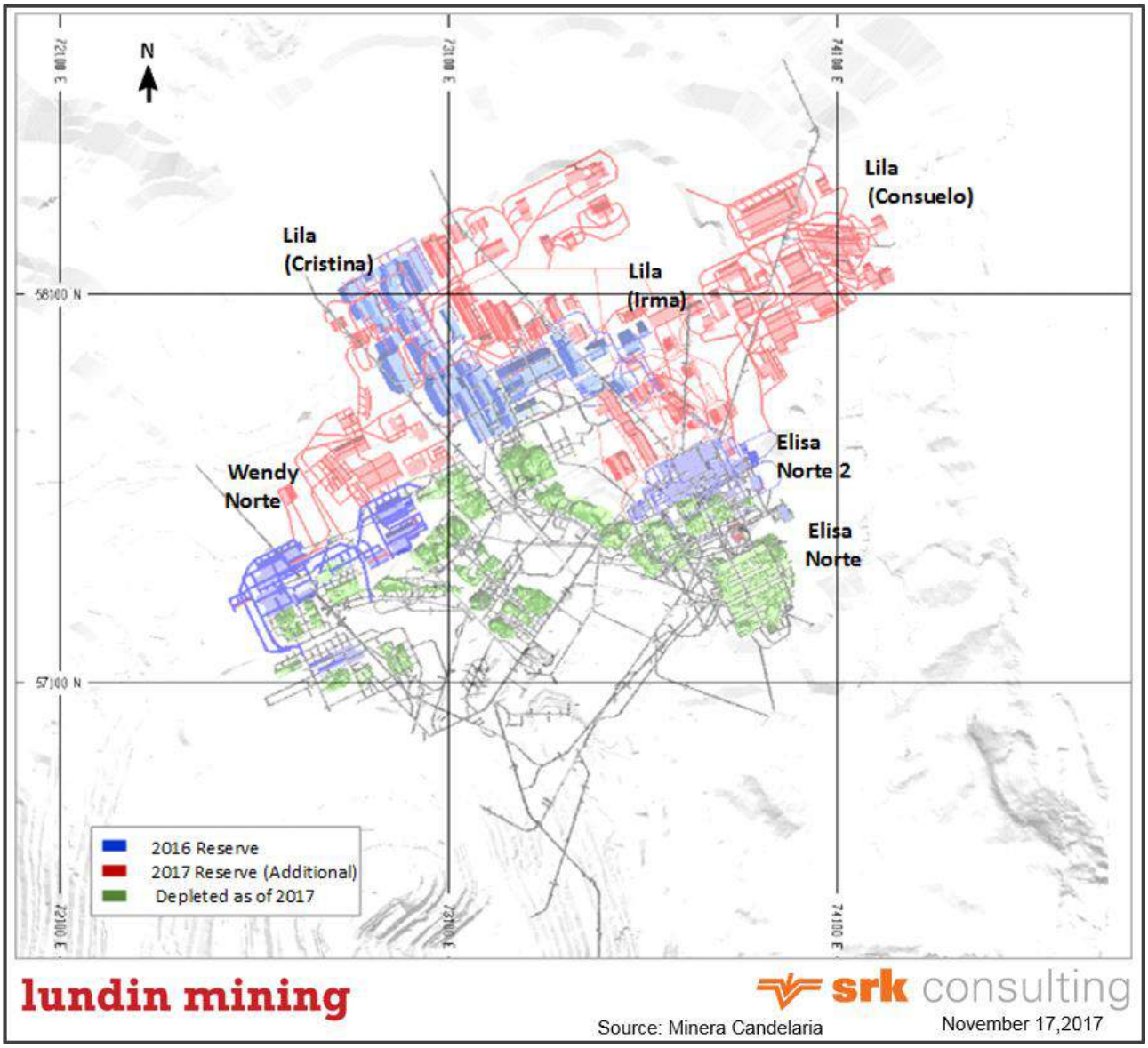


Figure 33: Candelaria Underground Mine Showing the Layout of the North Sector

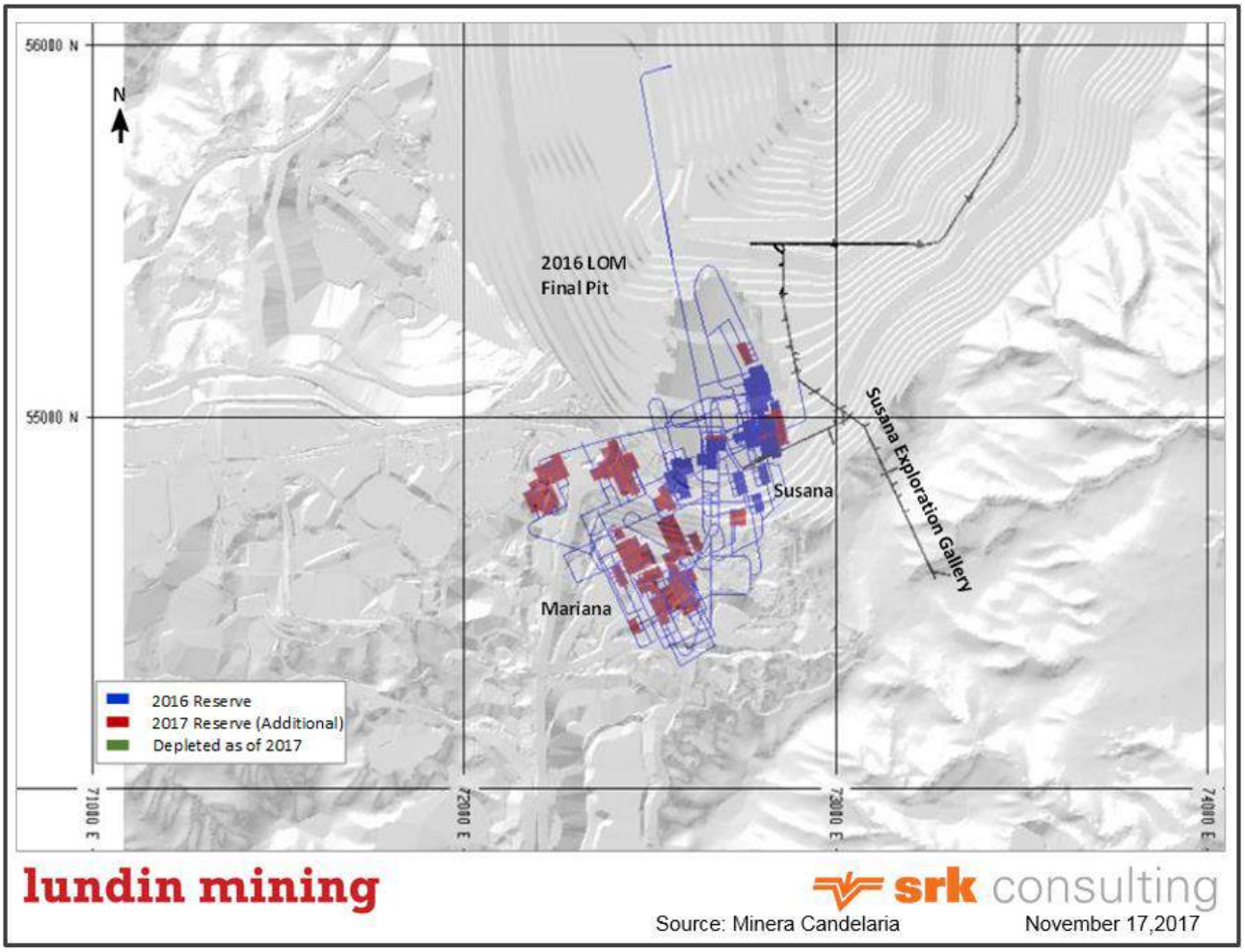


Figure 34: Candelaria Underground Mine Showing the Layout of the South Sector

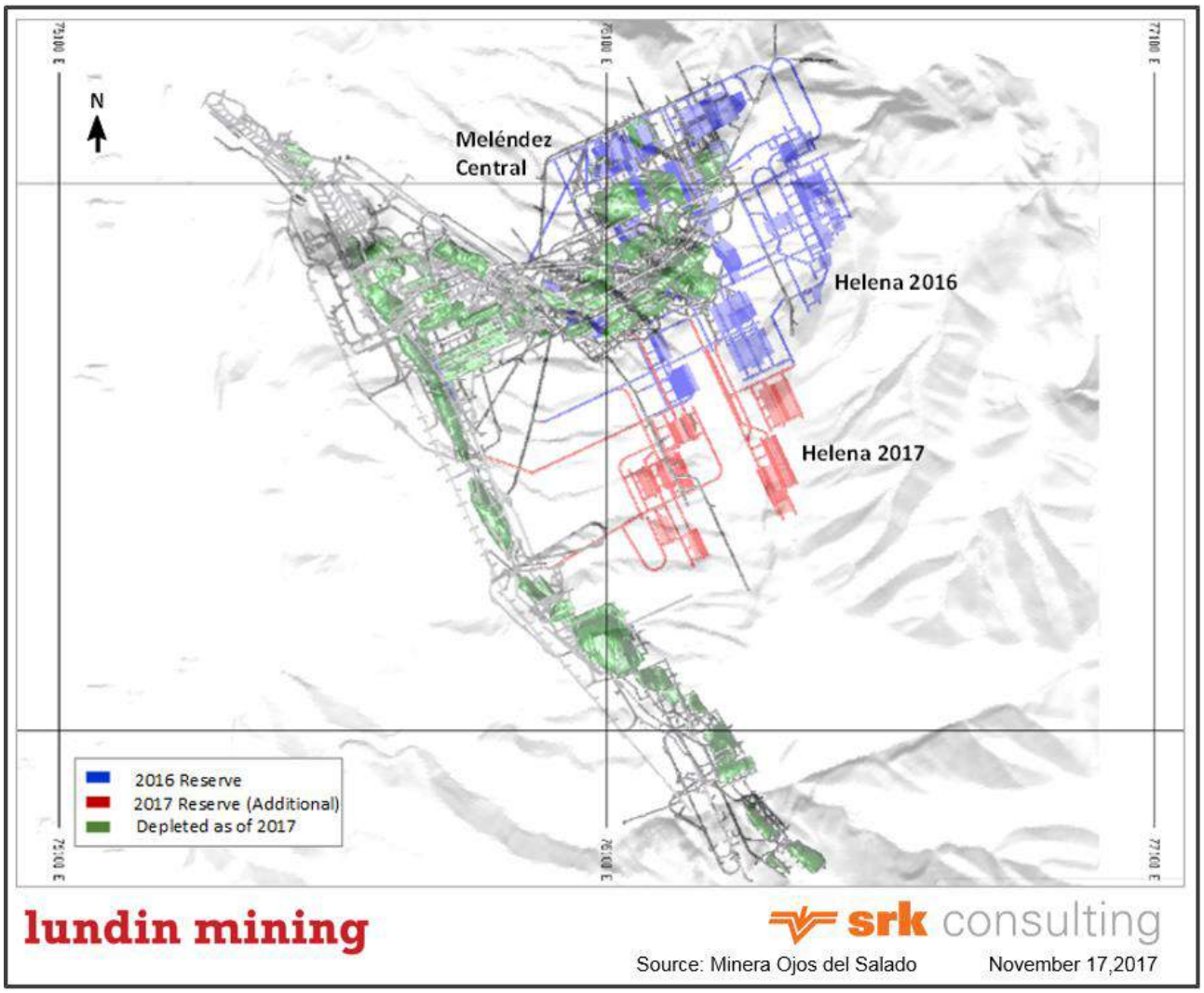


Figure 35: Santos Mine Layout and Sectors
Source: Minera Ojos del Salado

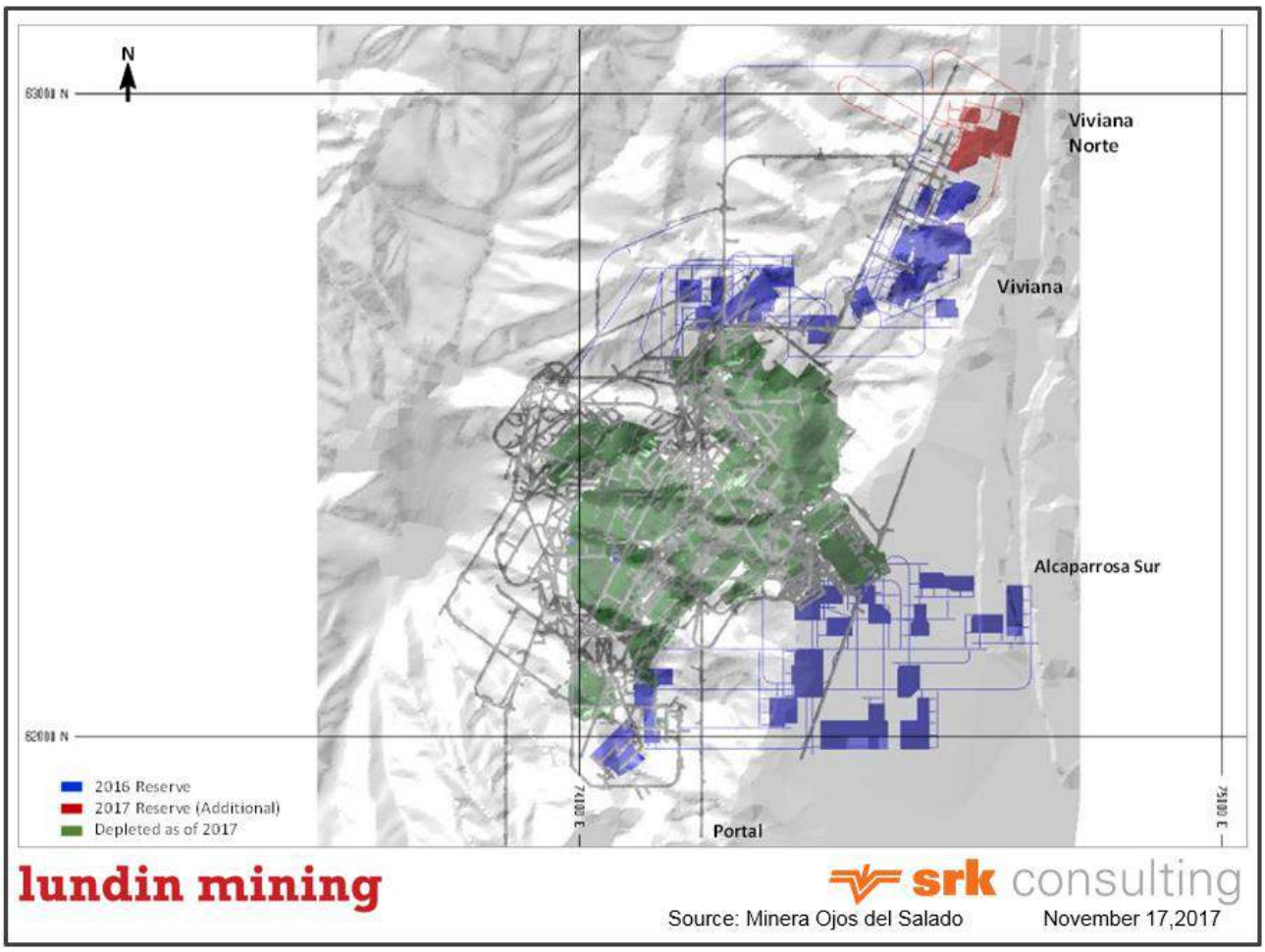


Figure 36: Alcaparrosa Mine Layout and Sectors
Source: Minera Ojos del Salado

The underground mines are relatively dry owing to their location in an arid region. Geotechnical rock mass characterization was completed from core logging, detailed mapping of geological structures, testing of intact material properties, and measuring in situ stresses. Empirical open stope design methodologies were used to determine roof and wall stability and the size of pillars. Numerical analysis simulation tools for mine sequencing analysis were also applied. External consultants undertook global stability analysis of the planned open stoping operations for all three underground mines in 2013 and 2014, and produced the following reports:

- Análisis de Estabilidad Global Complejo Super Nova – Mina Santos, prepared by E-Mining Technology S.A. for Minera Candelaria.
- Análisis de Estabilidad Global – Mina Alcaparrosa, prepared by E-Mining Technology S.A. for Minera Candelaria.
- Analisis Nueva Secuencia De Explotacion Sector Mantos Elisa – Mina Candelaria Norte, prepared by E-Mining Technology S.A. for Minera Candelaria.

SRK is of the opinion that the stopes that support the proposed life of mine plan for the Candelaria, Alcaparrosa, and Santos underground mines can be mined as expected.

The flowsheet for the design and scheduling of the underground Mineral Reserves in the mine plan is shown in Figure 37.

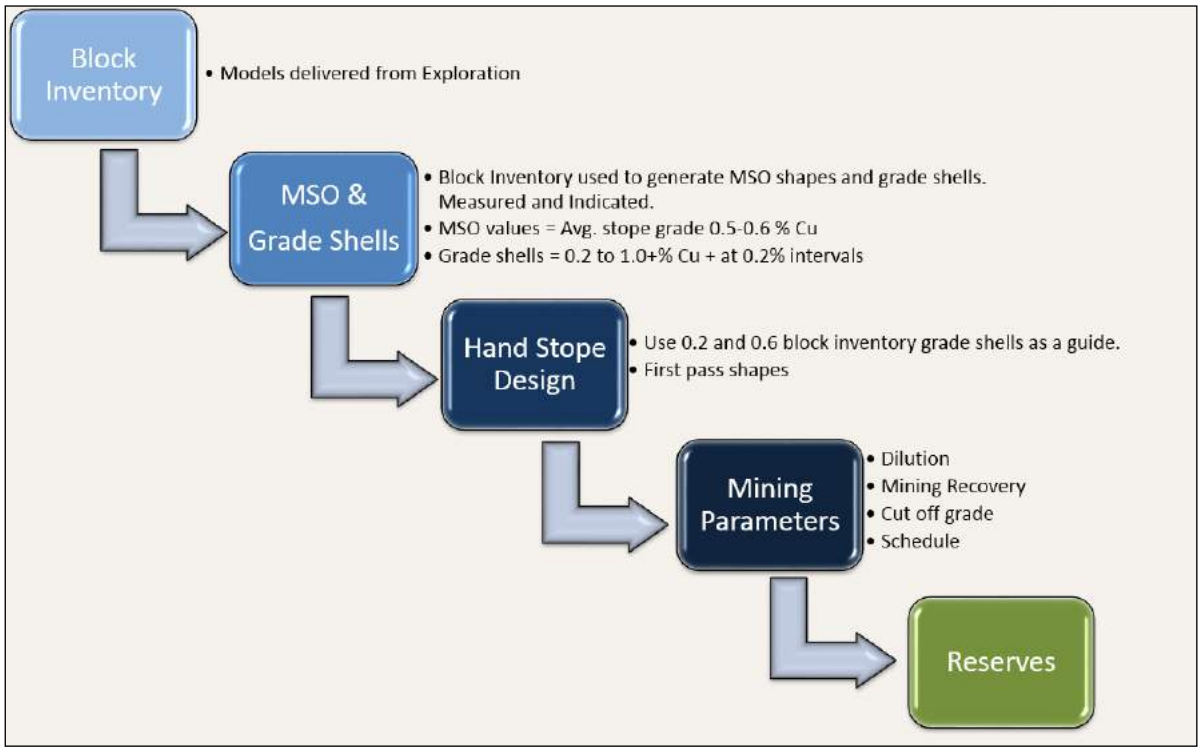


Figure 37: Candelaria Life of Mine Plan Development Process
Source: Minera Candelaria

The three underground mines utilize a sublevel open stoping mining method for ore extraction. This method is ideal for relatively large, vertical, as well as thick deposits with favourable and stable host rock (Figure 38).

Stopes can typically be up to 100 metres high with sublevels at 20- to 60-metre intervals. The length of the stopes is generally 80 metres with widths varying between 20 to 30 metres. Stopes are drilled down from the sublevel drilling drifts as benches using 4.5- to 5.5-inch diameter down-the-hole holes. The holes are loaded and blasted in vertical slices towards an open face. The blasted ore gravitates to the bottom of the stope and is collected through drawpoints at the production level below. This lower level also consists of the haulage drift. The undercut level, which feeds the drawpoints, are 15 to 20 metres high and inclined at 50 to 60 degrees to allow the blasted ore to flow. Conventionally drilled 2.5-inch upholes within the undercut are loaded and blasted along with the down-holes. Once the stope is mined, a remaining rib pillar, which can be another 20 to 30 metres wide, may be blasted into the stope providing higher extraction. A 20-metre structural pillar remains between each stope and no backfill is used at these operations.

Ore is mucked from the drawpoints using surface-type front-end loaders and load haul dump vehicles. The mucked ore is dumped into 30-tonne, highway-type trucks and hauled up the ramp to a surface stockpile for subsequent re-handling and processing.

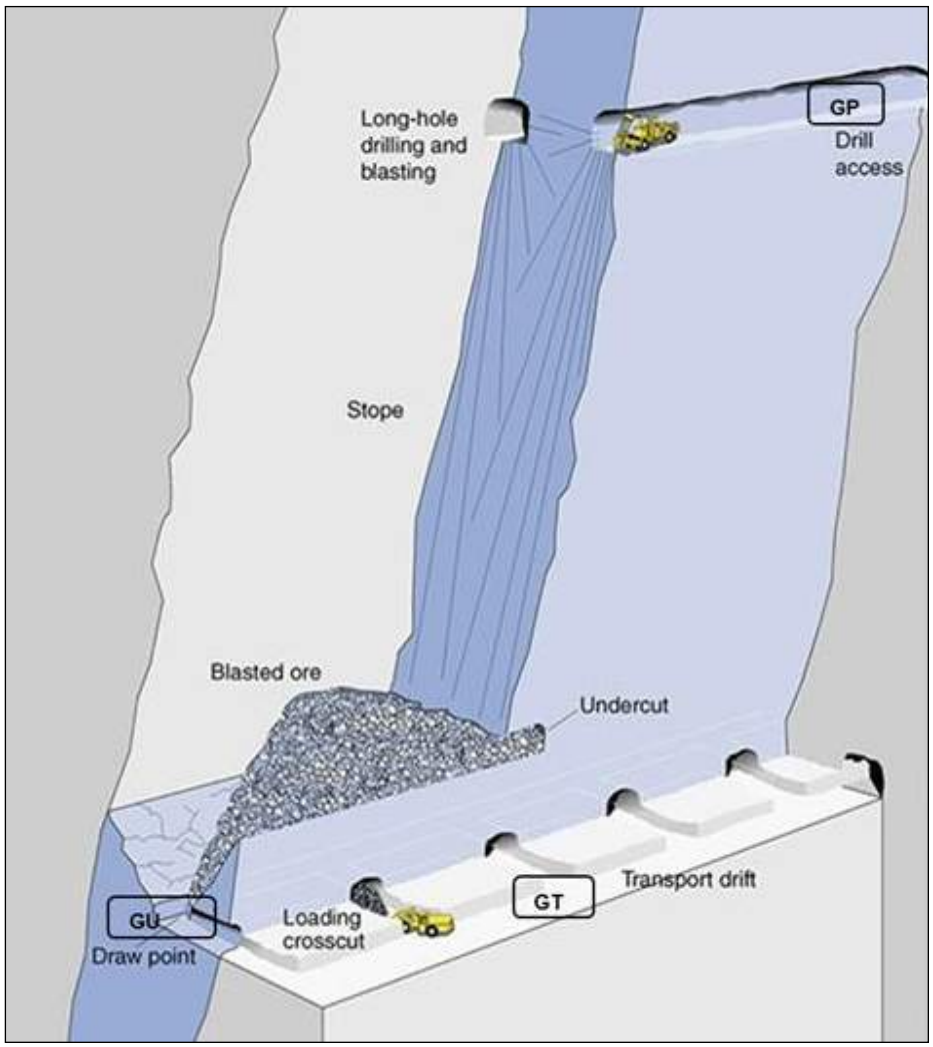


Figure 38: Typical Sublevel Open Stope

Some mineralized material may be irrecoverable at stope completion, while other mineralized material is left in-stope as support pillars, lowering the overall mining recovery. The overall mining recovery varies depending on the type of stope and its geometry. The amount of dilution also varies depending on the stope setting. Dilution typically contains mineralized material with low metal grades. Typical mining recovery and dilution factors are summarized in Table 33.

Table 33: Summary of Stope Setting

Stope Type	Dilution (%)	Recovery (%)
Vertical	18.0	
Inclined	50.0	
Rib	30.0	95
Pillar	40.0	
Structural pillar	50.0	

15.4 Underground Mine Plan

The current scheduled annual production for the Candelaria Underground (North Sector), Santos, and Alcaparrosa mines is summarized in Table 34.

The Candeleria underground mine has seen a significant increase in its production rate in 2016 and 2017. Five new sectors were introduced into the life of mine plan in 2017, namely Lilas (Consuelo, Irma, Cristina), Wendy Norte, and Elisa Norte 2. The increase in the life of mine itself is further enhanced by an earlier start of production from the Susana and Mariana sectors to the south. The forecast pre-production capital expenditure for development of the Candelaria South sector is US$47 million, of which US$20 million is expected to be spent in 2018.

The schedule and ramp-up periods are summarized below:

- 2018 Candelaria Underground (North Sector) continues to ramp up from 2017 production rate of 7,000 tonnes per day to 8,000 tonnes per day.
- 2019 Candelaria Underground (North Sector) ramps up tonnage from 8,000 to 10,000 tonnes per day through to 2030, then ramps down in 2031.
- 2019 Candelaria Underground (South Sector) initiates production at a rate of 2,000 tonnes per day through to 2020.
- 2021 Candelaria Underground (South Sector) ramps up tonnage from 2,000 to 4,000 tonnes per day through to 2028, then ramps down in 2029.

To meet these targets, the following development rates are planned for the Candeleria underground mine:

- North Sector:
  - 2017 H2 to 2025: 750 metres per month
  - 2026: 450 metres per month

- South Sector:
  - 2017 Q4: 200 metres per month
  - 2018: 170 metres per month
  - 2019: 400 metres per month
  - 2020 to 2021: 620 metres per month
  - 2022 to 2023: 260 metres per month

The Santos mine will maintain its current production rate of 5,100 tonnes per day until the end of its life of mine in 2024. This will be achieved by developing 400 metres per month until the fourth quarter of 2020 when the development rate will be reduced to 230 metres per month in 2021.

The Alcaparrosa mine will maintain its current production rate of 4,300 tonnes per day to mid-2023 and then ramp down to the end of mine life in 2024. This is supported by developing 400 metres per month from 2017 to mid-2021 when development rate will be reduced to 150 metres per month in 2022.

Table 34: Underground Mineral Reserve Schedule

Production Plan	2017 H2	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Candelaria UG																
Tonnes (kt)	1,354	2,940	3,813	4,770	5,457	5,482	5,472	5,499	5,484	5,476	5,463	5,491	4,571	4,013	412	65,697
Copper (%)	0.98	1.01	0.98	0.93	0.85	0.91	0.89	0.93	0.87	0.88	0.86	0.83	0.85	0.81	0.74	0.89
Gold (g/t)	0.23	0.26	0.26	0.22	0.20	0.21	0.20	0.21	0.19	0.20	0.19	0.19	0.19	0.16	0.15	0.20
Silver (g/t)	5.46	4.98	4.85	3.81	3.03	3.41	3.51	3.61	3.19	3.22	2.64	2.97	4.11	3.19	3.04	3.53
Santos*																
Tonnes (kt)	914	1,834	1,857	1,822	1,859	1,859	1,803	1,385								13,333
Copper (%)	1.08	1.03	1.06	0.92	0.89	0.97	0.83	0.78								0.94
Gold (g/t)	0.21	0.21	0.26	0.23	0.21	0.23	0.21	0.20								0.22
Silver (g/t)	2.36	2.28	2.19	2.06	2.01	2.03	1.68	1.58								2.02
Alcaparrosa**																
Tonnes (kt)	816	1,569	1,565	1,576	1,576	1,541	1,432	172								10,247
Copper (%)	0.71	0.77	0.76	0.76	0.74	0.78	0.81	0.75								0.77
Gold (g/t)	0.22	0.17	0.15	0.16	0.15	0.16	0.16	0.14								0.16
Silver (g/t)	0.94	0.79	1.21	1.37	1.15	1.46	1.57	1.40								1.23

* Include 32 kt of work-in-progress (WIP) stockpiles
** Include 38 kt of work-in-progress (WIP) stockpiles

15.5 Waste Dumps

The capacity of each of the waste dumps is summarized in Table 35. The waste dump surface area will be increased by approximately 347 hectares with an expanded capacity of approximately 750 million tonnes. The dumps will be constructed in 20-metre lifts and 30-metre wide access ramps.

Table 35: Waste Dump Capacity

Waste Rock Dump	Currently Approved (Mt)	Additional Project (Mt)	Total (Mt)	Currently Approved Elevation (m.a.s.l.)	Projected Elevation (m.a.s.l.)	Final Projected Surface Area (hectare)
North	1,660	610	2,270	832	880	730
Nantoco	315	140	455	840	940	329

Source: Minera Candelaria

The waste dump remaining capacity at Nantoco as of September 30, 2017 was 250 million tonnes. The North and Buitre dumps had 176 and 293 million-tonne capacities, respectively. The total waste requirement at Los Diques was 228 million tonnes. Most of the waste is placed at Los Diques. The LOM plan shows a total waste production of 870 million tonnes indicating that dump designs available now will be adequate for the current LOM plan. The dumps will be constructed in 20-metre lifts and 30-metre wide access ramps.

15.6 Mine Equipment

15.6.1 Open Pit Mine Equipment

The Candelaria Open Pit is a conventional truck and shovel operation. The unit operations are drilling, blasting, grade control, loading, and hauling. The primary loading units are electric cable shovels. The primary drills are rotary diesel-powered units. Support equipment provides development access, road maintenance, and equipment servicing capability. The open pit mine

operates 24 hours per day, 365 days per year. Shift employees work 8-hour shifts. The overall mining rate is currently being increased to over 270,000 tonnes per day. Total primary crusher throughput is variable based upon hardness averaging 78,000 tonnes per day combined open pit and underground ore.

The primary production blasthole drills are rotary machines capable of single pass drilling on a 16-metre bench. The current drill fleet consists one Atlas Copco Pit Viper PV-275, and five PV-351 diesel units. Drill mechanical availability for the fleet averages 85 percent and utilization averages 60 percent. Drill penetration rates are variable ranging from 14 metres per hour in hard rock to 29 metres per hour in weak rock. The fleet will be expanded to a total of 10 drills over the next year including 7 Pit Vipers and 3 Roc drills for wall control blasting.

The rock at the Candelaria Open Pit is hard and fine fragmentation is required in most areas of the pit to maximize throughput to the concentrator. As a result, drill patterns are relatively tight resulting in powder factors ranging from 0.50 to 0.75 kilogram per tonne.

The wall control blasting includes line holes drilled for presplitting. There are three Atlas Copco Roc L8 drills dedicated to line hole drilling. The line holes are normally drilled on 2-metre centres at the recommended bench face angle on a double bench.

Blasting is carried out with heavy ammonium nitrate / fuel oil. Blasthole cuttings are sampled and assayed for copper only for grade control.

The primary loading fleet currently consists of three P&H 4100 (43 cubic metres), three P&H 2800 (28 cubic metres) electric cable shovels and one P&H 2100 (13 cubic metres) electric cable shovel. A PC2000 (12 cubic metres) hydraulic excavator is also being used in narrow operating areas. Additional hydraulic shovels (31 cubic metre) will be added in 2019 and 2020. Rental units are planned in the short term until new machines can be delivered. Support units include one Cat 994 (16 cubic metres) and one Cat 992 (9 cubic metres) wheel loader. The P&H 4100 and P&H 2800 shovels mine stockpiles, ore, and waste. The P&H 2100 re-handles ore from the Candelaria Underground (North Sector) to large haulage trucks for transportation to the primary crusher. The shovel fleet has an average availability of 84 percent and utilization of 82 percent. Minera Candelaria implemented a rebuild program on shovels, completing major rebuilds on five shovels between 2009 and 2011.

Under a major mine equipment re-capitalization programme, new hydraulic excavators/shovels will replace the cable shovels. The P&H4100's will be phased out in 2019, 2020 and 2023 and the P&H2800's will be phased out in 2023, 2025 and 2026 to be replaced by a fleet of Caterpillar 6060 and 6020 hydraulic excavators.

The Minera Candelaria haulage fleet currently consists of 46 Cat 793 mechanical drive trucks. Three trucks have been permanently shut down. These trucks use light boxes and typically carry loads of between 232 and 237 tonnes. Road conditions in the mine are very good and tire life is 90,000 kilometres. A truck rebuild program is also in place at the Candelaria Open Pit, and trucks are overhauled at 100,000 hours with an extended life expectancy of 75,000 hours. The truck fleet availability is 85 percent and utilization is 87 percent. Loading times for the trucks range from 10.0 minutes with a PC2000 to 1.6 minutes with a P&H 4100. The truck fleet requirement in the LOM plan is expected to peak at 52 units. Rebuilds are planned for six Cat 793C trucks in 2022 while the remainder of the fleet will phased out and replaced with newer technology Cat 793F trucks. A total of 38 new trucks will be purchased over the next four years under the mine equipment re-capitalization programme.

The mine has an extensive fleet of support equipment. The track dozer fleet includes six Cat D10 and two Cat D11 models, which are used on dumps, stockpiles, and in the pit for bench maintenance. Under the re-capitalization programme this dozer fleet will be upgraded with newer models. There are five Cat 824 wheel dozers for road and bench maintenance. In the future, Cat 834 wheel dozers will be introduced. The grader fleet includes three Cat 16M and one Cat 24M models. Replacements for graders are also planned.

The mine support equipment fleet includes five Cat 773 and one Cat 777 water trucks for watering roads and working faces prior to loading to control dust. Replacement Cat 777G water trucks are planned. The excavator fleet includes two Cat 385 models that are used for wall scaling and ditching as required.

A dispatch system is used in the mine. High precision GPS locators are used on the shovels and the drills. Lower precision systems are used on the trucks and the auxiliary equipment.

The open pit mine major equipment additions and replacements for the next four years under the mine recapitalization programme are summarized in Table 36.

Table 36: Open Pit Mine Equipment Additions and Replacements to 2018 2021

Unit Cost	Equipment	2018		2019		2020		2021		Total 2018 - 2021	
US$M		Units	US$M	Units	US$M	Units	US$M	Units	US$M	Units	US$M
4.05	Haulage trucks Cat 793F	5	20.3	25	101.3	6	24.3	2	8.1	38	153.9
2.59	Hydraulic excavator (backhoe)Cat 6020	1	2.6		-	1	2.6		-	2	5.2
5.50	Front end loader Cat 994K	1	5.5		-		-		-	1	5.5
1.11	Wheel dozer Cat 834K	5	5.6		-		-		-	5	5.6
11.00	Hydraulic excavator (backhoe)Cat 6060	2	22.0		-		-		-	2	22.0
1.39	Dozer D10T	3	4.2		-		-		-	3	4.2
2.22	Dozer D11T	2	4.4		-		-		-	2	4.4
1.89	Water truck Cat 777	3	5.7		-	2	3.8		-	5	9.4
0.95	Motor grader Cat 16		-		-	1	0.9		-	1	0.9
2.17	Motor grader Cat 24	2	4.3		-		-	1	2.2	3	6.5
1.17	Excavator Cat 390		-		-	1	1.2		-	1	1.2
	Total		**74.5**		**101.3**		**32.8**		**10.3**		**218.8**

15.6.2 Underground Mine Equipment

All three underground mines utilize conventional surface and underground equipment designed for a hard-rock operational mine. Load haul dump vehicles and front-end loaders are used for mucking ore from the drawpoints and development headings. Currently, these units are not fitted with any remote-control capability. Therefore, any muck past the brow would remain in the stope as unrecovered loss. Blasted ore is mucked into 30-tonne, highway-type trucks. For production ore, typically three to four trucks are assigned to one loader depending on the haul distance. For stope drilling, down-the-hole drills with 4.5-inch diameter holes are used in the sublevels. For draw point drilling, Atlas Copco Simba longhole drills are used. Twin-boom jumbos drill off the development headings and also drill holes for bolting. Man lifts are used for services and the installation of bolts.

The overall mining rate is currently 7,000 tonnes per day for the Candelaria Underground mine (ramping up to 12,000 tonnes per day in 2019 with south sector production initiation, then to 14,000 tonnes per day by 2021, then down to 10,000 tonnes per day from 2028 after the south sector is depleted), 5,00 tonnes per day for the Santos mine and 4,300 tonnes per day for the Alcaparrosa mine.

The mining equipment currently used at the Candeleria underground, Alcaparrosa and Santos mines is summarized in Table 37. All underground mining equipment is owned and operated by contractors.

It should be noted that a transition process of replacing surface types of 30-tonne trucks and loaders to underground types of 60-tonnes trucks and load haul dump vehicles has been initiated at the Candelaria Underground mine. A Caterpillar 65-tonne underground truck has been successfully tested; and ramp and haulage drift rehabilitation (slashing and additional ground support) will be completed in the end of 2017. It is expected that all 30-tonne surface types of trucks and conventional front-end loaders will be replaced by 65-tonne underground types of trucks and load haul dump vehicles, thus increasing productivity and supporting underground production rate increases.

Table 37: Underground Mining Equipment

Equipment	Candeleria Underground	Alcaparrosa and Santos
LHDS	4	4
Front-end Loaders	2	4
Jumbos	4	4
DTH Drills	4	5
Trucks (30 tonnes)	10	16
Simba Drills	1	1
Man Lifts	7	4

15.7 Mining Opportunities

Continued exploration programmes and open pit re-optimizations have been successful in increasing the Mineral Resources and Mineral Reserves at the Candelaria Copper Mining Complex, resulting in a significant increase in the mine lives, particularly, in the three underground mines. In anticipation of further positive exploration results continuing to expand the Mineral Resources and Mineral Reserves, the Candelaria Copper Mining Complex continues conceptual studies to examine potential mine expansion options.

These studies have focused on opportunities to expand production from the higher-grade underground mines, particularly at Candelaria where underground Mineral Resources and Mineral Reserves are largest, exploration potential greatest and permitting is now in place for production of 14,000 tonnes per day. This has culminated in a plan to commence production from the Candelaria Underground (South Sector) with access and infrastructure development due to commence in late 2018, and the purchase of a fleet of state of the art and purpose built 65 tonnes capacity trucks to replace the contractor owned 30 tonne fleet. These and other initiatives will see production from the Candelaria Underground mine reach 14,000 tonnes per day by 2021.

Studies are continuing on the Candelaria Underground (North Sector) with a view to increase production levels further. These studies are reviewing the development requirements, mining methods and layouts to achieve increased production together with enhancements to the materials handling systems including the possible installation of underground crushers and conveyor and/or shaft hoisting systems. Results of theses conceptual mine expansion studies together with their impacts on mine infrastructure and permitting are expected during 2018.

16 Recovery Methods

The Candelaria Copper Mining Complex operates its own processing plants. The Candelaria processing plant receives ore from the Candelaria Open Pit, Candelaria Underground (North Sector) and Alcaparrosa underground mines. It has a nominal capacity of 75,000 tonnes per day. The Pedro Aguirre Cerda (PAC) processing plant receives ore from the Santos underground mine and has a design capacity of 3,800 tonnes per day.

The Candelaria and PAC processing plants have been operating for many years. Other than discussed herein, both processing plants operate with adequate energy, water, and process materials.

16.1 Minera Candelaria Plant

Minera Candelaria is a mature operation that started producing in 1995. Its processing plant has a current nominal capacity of 75,000 tonnes per day of fresh feed and produces a copper concentrate with gold and silver metal as credits. Additionally, Minera Candelaria has an agreement with a third-party company to process Candelaria's flotation tails to recover a magnetite concentrate as an additional by-product credit.

The historical processing performance of Minera Candelaria from 2000 to mid-2017 averaged 25.6 million tonnes per year, equivalent to approximately 70,000 tonnes per day with a utilization of 93 percent, see Figure 39.

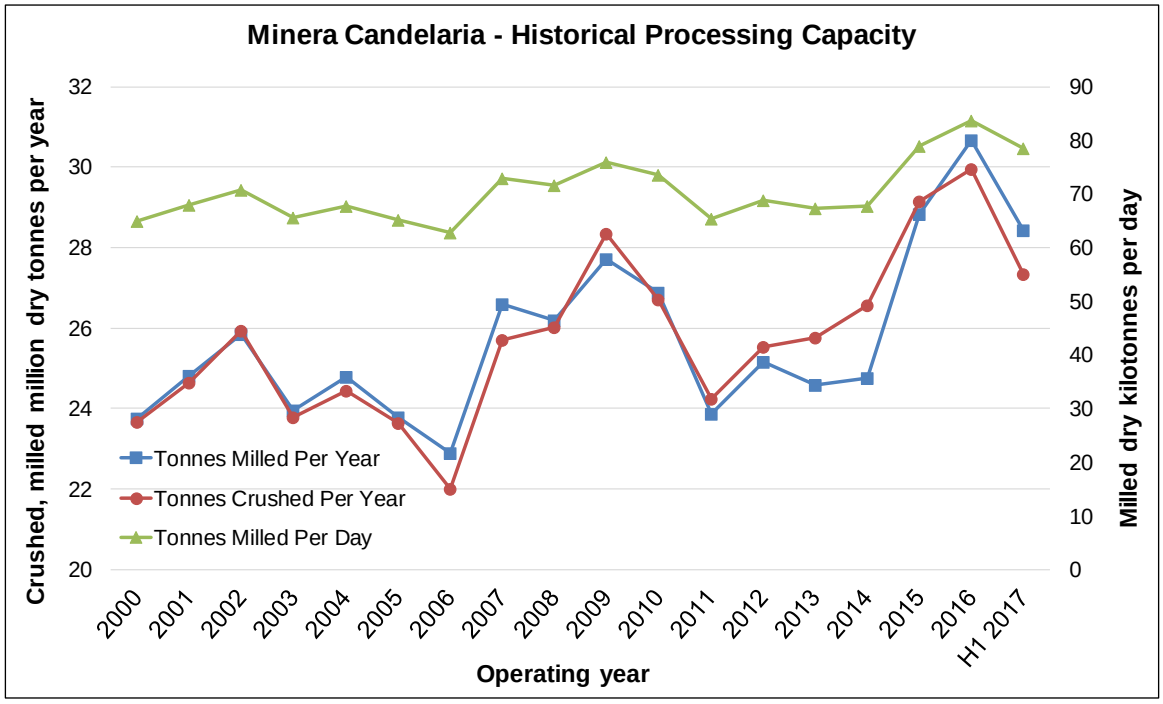


Figure 39: Minera Candelaria Historical Crushing and Processing Capacity

Between 2000 and mid-2017, metallurgical recovery averaged 94 percent for copper, 75 percent for gold and 83 percent for silver (see Figure 40).

Historically, typical Candelaria copper concentrate averages 30 percent copper, 6 grams of gold per tonne (g/t), and 92 g/t silver with a moisture content of 8 percent after filtration.

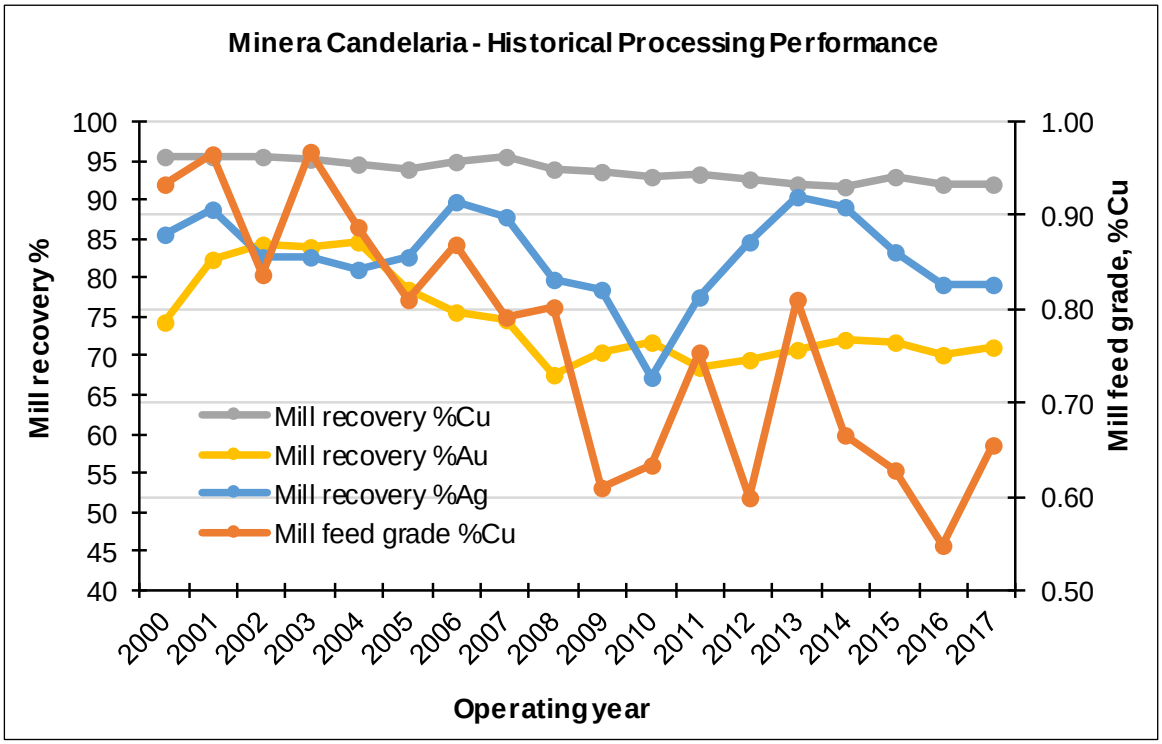


Figure 40: Minera Candelaria Historical Metallurgical Performance

16.1.1 Processing Flowsheet

Minera Candelaria operates a conventional process plant flowsheet that incorporates crushing, two parallel process lines for grinding and flotation, reclaimed process water from the tailings storage facility comprised of conventionally thickened and rockfill embankment dams, final concentrate filtration, and shipping of bulk copper concentrates.

Run of mine ore is trucked to a primary gyratory crusher. The crushed product is conveyed using an overland conveyor belt system to a coarse ore stockpile with a combined live and dead capacity of 500,000 tonnes. Semi-autogenous grinding (SAG) mills are followed by closed-circuit ball mills and pebble crushing with separate grinding of a portion of the crushed pebbles.

A multi-stage flotation circuit using an arrangement of mechanical cells, regrind mill and column cells produces copper concentrate. Final copper flotation concentrate with gold and silver by-product metals is thickened, filtered and stored on site before being trucked to Minera Candelaria's shipping port located in Punta Padrones, near Caldera. Final flotation tails are conventionally thickened and disposed of in a rockfill embankment tailings storage facility. Process water is reclaimed from the tailings reclaim pond and seepage collection system for reuse in the processing plant.

Figure 41 shows the complete Minera Candelaria process flowsheet while Table 38 lists details of the major equipment.

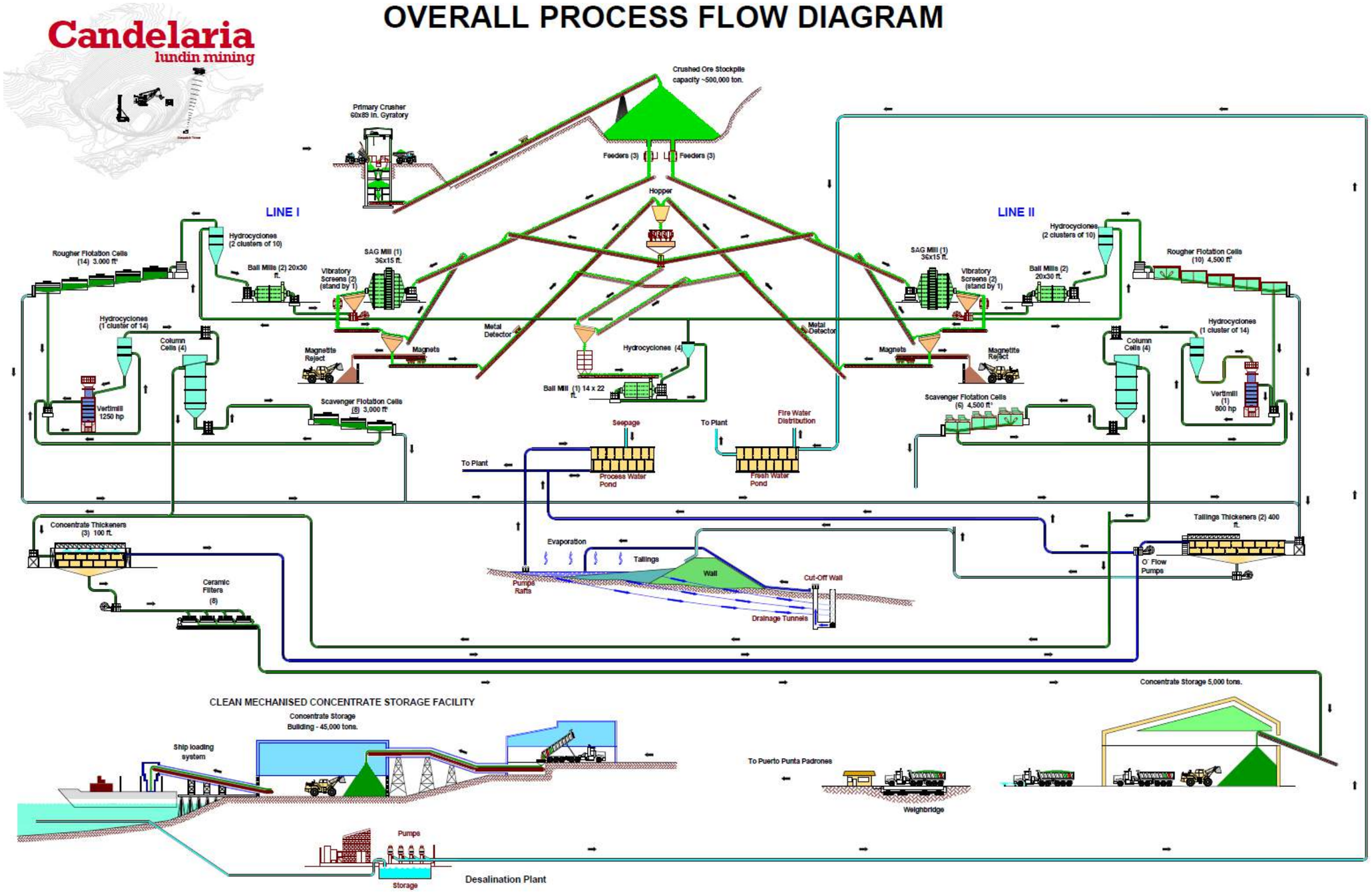


Figure 41: Minera Candelaria Flowsheet
Source: Minera Candelaria

Table 38: Major Processing Equipment and Systems at Minera Candelaria

Area	Unit process	Equipment
Crushing	Primary crusher	Gyratory 60 in x 89 in
Mill	Coarse ore stockpile	500,000 tonnes total
Mill processing line 1	Grinding	SAG mill 36 ft x 15 ft
		3 x pebble crusher
		2 x ball mill 20 ft x 30 ft
		2 x 10 x hydrocyclone
		1 x regrind mill 14 ft x 22 ft (for pebbles)
	Flotation	14 x rougher cells 3000 ft^3
		1 x vertical regrind mill 1250 HP
		4 x column cell
		3 x flotation cells 3000 ft^3
Mill processing line 2	Grinding	SAG mill 36 ft x 15 ft
		3 x pebble crusher
		2 x ball mill 20 ft x 30 ft
		2 x 10 x hydrocyclone
	Flotation	10 x rougher cells 4500 ft^3
		1 x vertical regrind mill 800 HP
		4 x column cell
		6 x flotation cells 4500 ft^3
Final tails	Tailings thickener	2 x 400 ft diameter
Final concentrate	Concentrate thickener	3 x 100 ft diameter
	Filtration	8 x ceramic filters
	Storage	5,000 tonnes total
Port	Storage	45,000 tonnes total
Water supply	Fresh water wells	5 x wells at Alcaparrosa
Water supply	Ocean water	Desalination plant at Punta Padrones

16.1.2 Reagents

Minera Candelaria applies a suite of flotation reagents to maximize recovery of copper and by-product credit metals and for the dewatering of its flotation product. See Table 39 for the list of reagents and range of consumption levels (in grams per tonne).

Table 39: List of Processing Plant Reagents and Consumptions

Reagent	Commercial Name	Manufacturer	Consumption (g/t)	
			minimum	maximum
Primary collector	AP3894	Cytec	6	12
Secondary collector	Hostaflot-Lib K	Sansil-Clariant	3	8
Frother	Nalflote 9837	Nalco	3	10
Lime	Lime	Inacal	400	545
Flocculant concentrate	Optimer 9876	Nalco	2	5
Flocculant tailings	SNF 228	SNF	5	10

16.1.3 Magnetite Recovery

Since 2008, tailings from the Minera Candelaria processing plant have been treated under an agreement with Compañía Minera del Pacifico S.A. (Minera del Pacifico) to produce a magnetite concentrate. The Minera del Pacifico magnetite extraction plant is located to the west of the plant

site area and to the south of the tailings storage facility (see Figure 4). The magnetite concentrate from the plant is transferred via pipeline to Minera del Pacifico's port near Caldera and the remaining non-magnetic material is deposited in the Candelaria tailings storage facility.

The magnetite concentrate produces an additional source of by-product revenue to Minera Candelaria reported in 2015 as US$4 million and US$3 million in 2016. The mine production plan includes 0.9 to 3.4 million tonnes of magnetite from tailings produced annually until 2035, with a magnetic content of 5 to 14 percent iron. The revenue from the magnetite production is linked to global iron ore prices and therefore, similar levels of revenue may not be achieved in the future.

16.2 Minera Ojos del Salado PAC Plant

The PAC concentrator of Minera Ojos del Salado has been in operation since 1929. The concentrator processes 3,800 tonnes per day of fresh feed from the Santos underground mine with an historical average head grade of 0.85 percent copper and a copper recovery of 94 percent. Historically, the copper concentrate produced has averaged 30 percent copper, 5 g/t gold, and 67 g/t silver since 2004. Gold and silver recoveries are slightly lower than Candelaria at 72 percent each.

The current mine plan shows the PAC plant continuing to operate at this capacity until 2021, when it will halt production.

The concentrator flowsheet comprises a closed-circuit crushing plant (Figure 42) including a primary jaw crusher (48 by 60 inches), a secondary cone crusher (Symons 7-foot standard) and two tertiary cone crushers (Symons 7-foot short head).

The grinding plant (see Figure 43) has three ball mills (one 9 by 9 feet and two 10.5 by13 feet) operating in parallel and in closed circuit with hydrocyclone classifiers.

The flotation plant (see Figure 44) uses conventional multi-stage, mechanical, self-aspirated, and forced-air flotation cells (1500, 300 and 100 cubic feet), regrind milling and column cells for the final concentrate cleaning stage. Final concentrate is thickened and filtered with a 30 cubic metre ceramic disc filter. Final flotation tailings from the PAC plant are pumped to the main Minera Candelaria tailings storage facility but are not processed through the magnetite recovery plant.

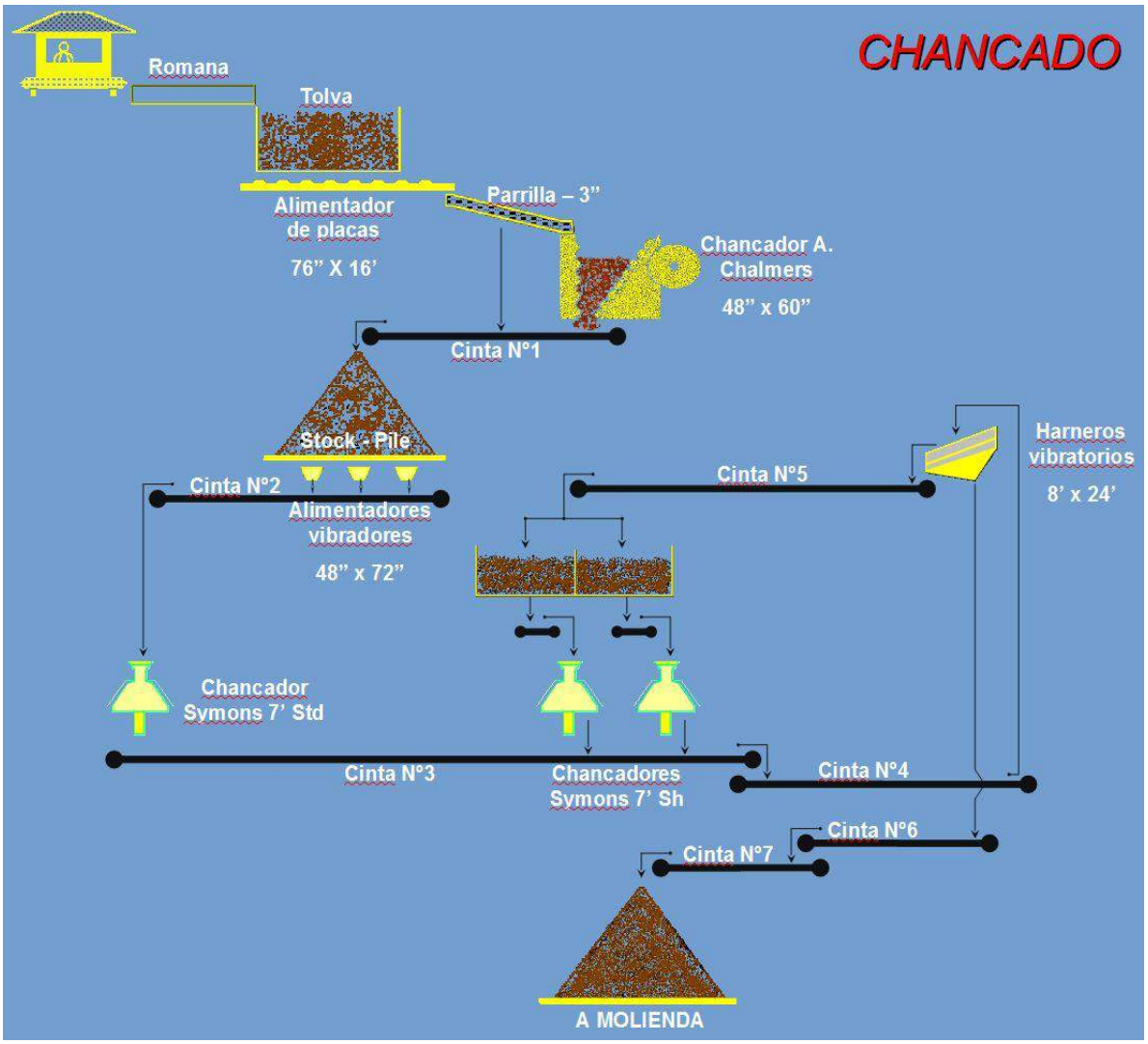


Figure 42: Ojos del Salado Crushing Plant Flowsheet

Source: Minera Ojos del Salado

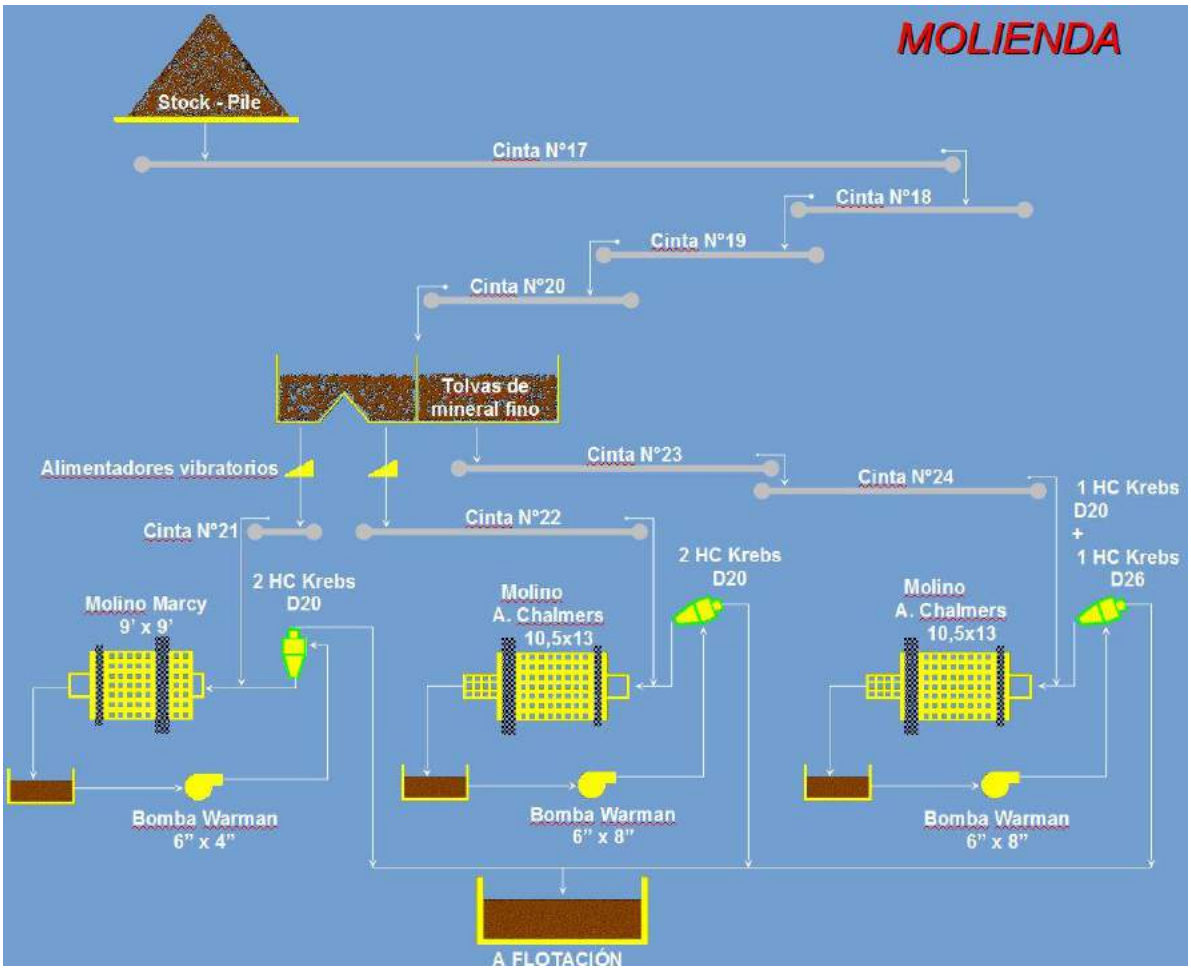


Figure 43: Ojos del Salado Grinding Plant Flowsheet

Source: Minera Ojos del Salado

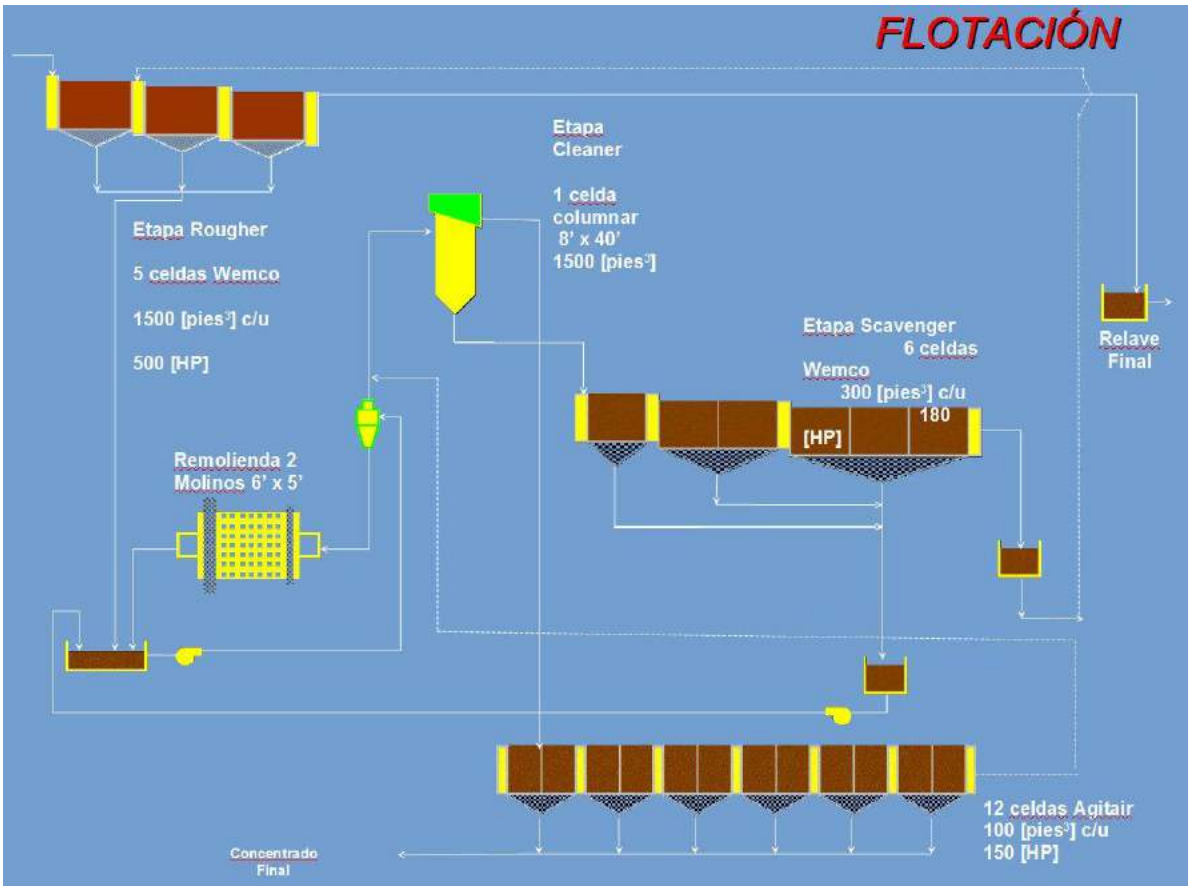


Figure 44: Ojos del Salado Flotation Plant Flowsheet
Source: Minera Ojos del Salado

16.3 Minera Candelaria Tailings Storage Facility

The Minera Candelaria tailings storage facility, located to the northwest of the open pit (Figure 4), currently receives flotation tailings from the Minera Candelaria and Minera Ojos del Salado processing plants. The Minera Candelaria flotation tailings are thickened and pumped to the tailings storage facility at an average solids concentration of 50 percent. The Minera Ojos del Salado flotation tails are pumped unthickened at an average solids concentration of 35 percent.

The Minera Candelaria tailings storage facility currently has three embankment dams (Main, North and South), built with mine waste material with a final designed crest elevation of 800 metres above sea level. Construction of the final dam configuration was completed in 2015. A small containment dike (Decidida) is built from borrow material on the western edge of the facility. The dams have a filter system comprised of varying combinations of granular material, geotextile and/or HDPE liner on the upstream slope. The downstream slope of the dams is 1.6(H):1.0(V) and the upstream slope is 1.8(H):1.0(V), except for the Decidida dam where both slopes are 1.8(H):1.0(V). All of the dams are constructed using the downstream method.

At the end of 2017, the remaining storage capacity is forecast to be 7.1 million cubic metres. This includes the additional storage obtained by a reduction in the freeboard from 5.0 to 1.5 metres, the key permits for which were granted in April and May 2016. This capacity is sufficient to receive

tailings until June 2018 at the current production throughput, when the tailings level will reach 798.5 metres above sea level. Plans have been developed to change the tailings spigotting and distributions methods to allow another eight months of storage capacity but it is unlikely that this will be required.

The currently proposed closure plan for the Minera Candelaria tailings storage facilities includes a cover of granular material with channels to direct surface run-off towards a spillway located at the south-east end of the South dam.

16.4 Los Diques Tailings Storage Facility

A new tailings storage facility, known as Los Diques, to the southwest of the open pit and plant sites (see Figure 4), has been designed to replace the Candelaria tailings storage facility. The Los Diques tailings storage facility will have an approximate designed capacity of 600 million tonnes, to a final crest elevation of 873 metres above sea level, which is more than that is required by the current projected mine life. The Los Diques tailings storage facility is a key part of the "Candelaria 2030 - Operational Continuity Project" environmental impact study that was submitted to the environmental authorities in September 2013 and approved with conditions in July 2015. Key sectorial permits for Los Diques including those from the Servicio Nacional de Geología y Minería (SERNAGEOMIN) and the General Directorate of Water (DGA) were granted in July and August 2016 respectively allowing the main dam construction activities to commence.

The new tailings storage facility is designed with three embankments, all of them built from mine waste material, with transition and filter zones built from engineered fill borrowed from inside the containment area. The main embankment will have underdrains to facilitate water recovery. The design includes a geomembrane on the upstream slope and a grout curtain for the north and south embankments only. In addition, a cut-off wall and drain wall are proposed, along with extraction wells to collect seepage water for recirculation to the processing plant.

The currently proposed Los Diques closure plan includes a cover and a spillway on the North dam that will direct surface run-off to a drainage canal located on the west boundary of the dam. Water that is collected in the drainage canal will be routed to the pit.

At the end of October 2017, the construction of Los Diques is well advanced, with the project progress at 84 percent complete (see Figure 45). Placement of first tailings material is scheduled for the first quarter of 2018. All power line and road diversions are complete, placement of mine waste on the main embankment has reached the planned height of the starter dam, the cut-off wall and seepage collection system is complete and the tailings distribution lines is well advanced. Pre-wetting of the ground behind the dam has commenced and seepage to the collection system is occurring. The project forecast capital cost is US$295 million with expenditures of US$135 million and US$30 million in 2017 and 2018.

Future phases of the Main dam planned to start in 2019 have been initiated ahead of schedule, taking advantage of synergies with the current project and the availability of mine waste from the open pit. This will lead to capital cost savings on future embankment raises.

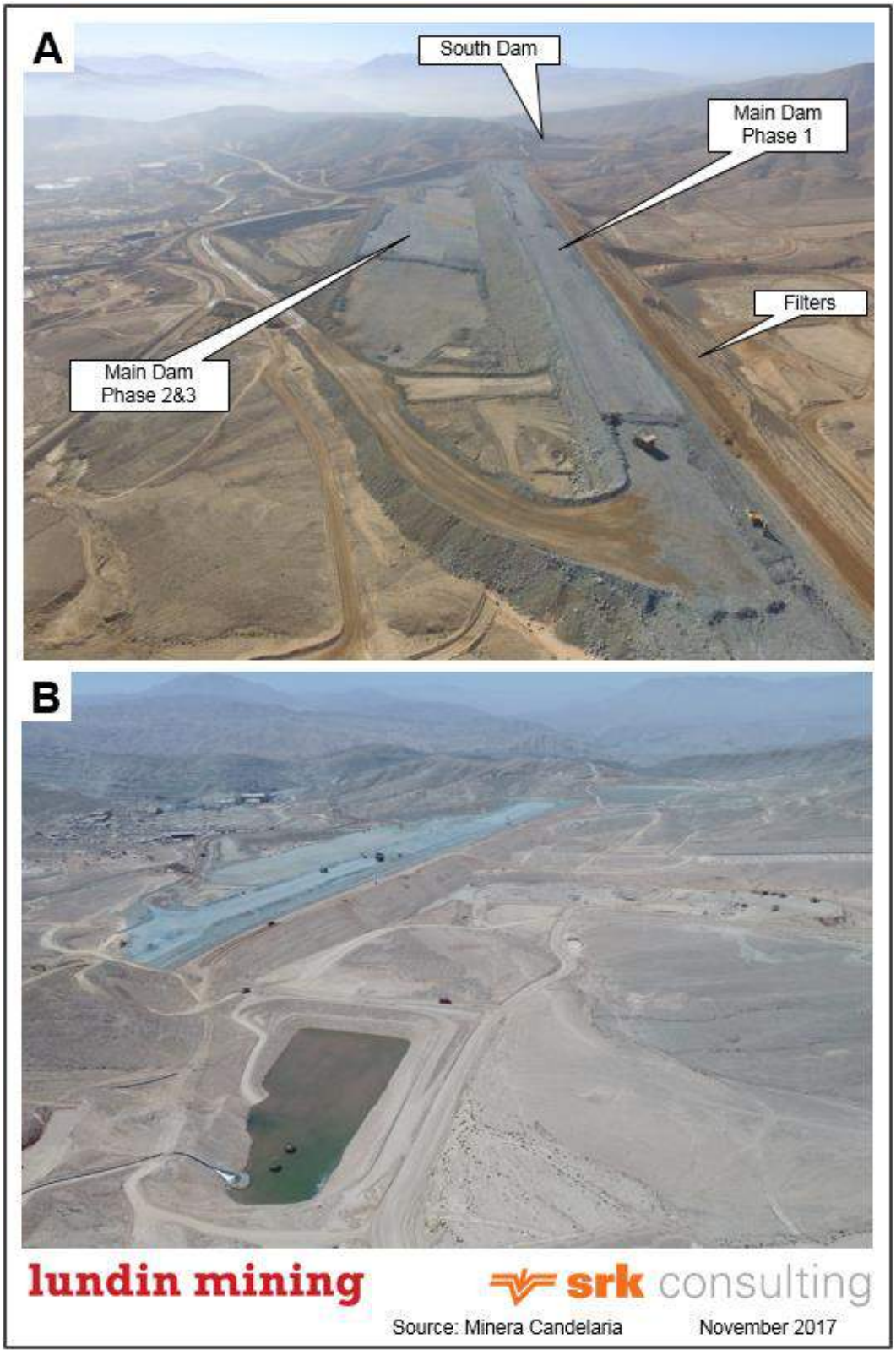


Figure 45: Los Diques Tailings Storage Facility, November 2017

A. Main Dam and South Dam from the East

B. Main Dam showing preparation for pre-wetting activities

16.5 Process Improvement Initiatives

The success of the recent exploration programmes in discovering additional Mineral Resources and Reserves have resulted in an increased mine life for the Candelaria Copper Mining Complex. A feasibility study has been undertaken to evaluate potential expansion of the main Minera Candelaria processing plant to add 15 to 20 percent throughput capacity. The study identified that pre-crushing the SAG mill feed was a key element and would allow an increase in grinding circuit throughput without impacting the flotation feed and recoveries. At this time, pre-crushing of the SAG mill feed has not been considered in the plant expansion plans.

The milling circuit currently operates at maximum power draw so plant throughput is determined by ore hardness and size. The study also identified the need to optimize the secondary milling circuit to balance power requirements for the entire comminution circuit. There is also a possible need to expand flotation and downstream circuit capacities.

The expansion of the plant as envisaged in the Feasibility Study has not been advanced at this stage pending further reviews and optimizations of the mine plans. However, the process improvement initiatives that were highlighted by the study are being implemented on their individual merits and will each contribute to improved metallurgical performance. The forecast cumulative impact of these initiatives is an additional 4,000 tonnes per day of throughput and an additional 1.7 percent copper recovery. These are shown below in Table 40.

These process improvement initiatives have been approved and a programme has been developed that will see all the modifications completed by late 2019 at an estimated capital cost of US$79.5 million, with approximately US$50 million to be spent in 2018 and the remainder in 2019.

Table 40: Process Improvement Initiatives

Initiative	Benefit	Estimated Cost, $M	Forecast Completion
Primary Crusher Motor Upgrade	Increasing the rating of the crusher motor will allow the crusher to restart under load which will increase utilisation.	2.2	Oct 2018
Ball Mill Repowering	Additional power available to the secondary ball mills which can be utilised by increasing the speed of the mills and ball load, will assist in maintaining the product grind size and will contribute to improved copper recoveries.	32.1	Sep 2019
Cyclones and Feed Pump Upgrade	Upgrading the cyclones, cyclone feed pumps and pipelines will allow more optimal flotation feed densities and improved classification.	15.2	Mar 2019
Flotation Upgrade	The rougher flotation cells have been identified as having performance limitations. Modifications are available to overcome these legacy limitations and will lead to recovery improvements.	4.5	Dec 2018
Pebble Circuit Upgrade	The current pebble crusher circuit does not treat all of the pebbles generated by the SAG mills. Redesigning the feed distribution will greatly assist in reducing the amount of recycle back to the mill feed. It is estimated that an additional 4ktpd of primary SAG mill feed can be achieved with this modification in place.	22.0	Jun 2019
Water Upgrades	De-bottlenecking modifications to the desalination plant and replacement of degraded sections of the delivery pipeline.	3.5	Jun 2019
Total		**79.5**	

Figure 46 and Figure 47 show the forecasted life of mine plant throughput by source and the expected copper head grade and modelled recovery. The expected outcomes from the process improvement initiatives are included in this forecast. With increased Mineral Resources and Reserves, the option of operating the Candelaria concentrator at 15 to 20 percent higher throughput will continue to be reviewed. This will necessitate pre-crushing all or a percentage of the SAG mill feed in a new separate add-on circuit.

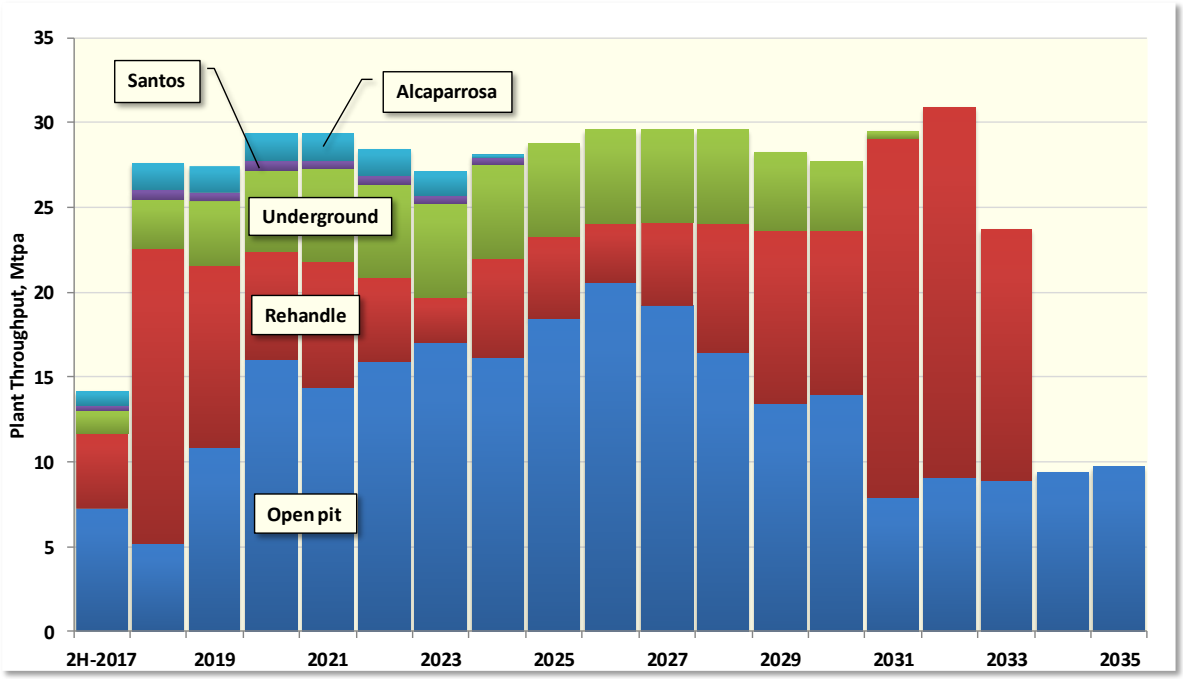


Figure 46: Candelaria Life of Mine Forecasted Throughput by Source

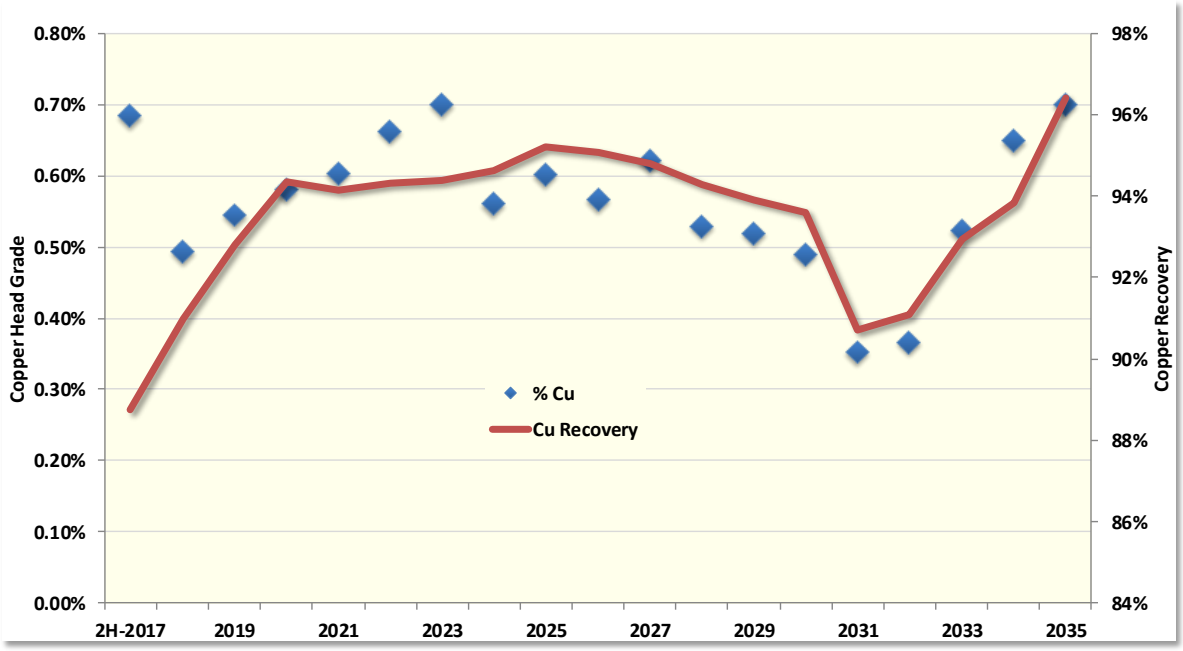


Figure 47: Candelaria Life of Mine Forecasted Copper Grade and Recovery

17 Project Infrastructure

This section provides a summary of the major infrastructure of the Candelaria Copper Mining Complex. This section is compiled from information collected during the site visit when all major infrastructure was visited by SRK. The major infrastructure is shown in Figure 4.

17.1 Candelaria Copper Mining Complex

The Minera Candelaria infrastructure includes:

- The Candelaria Open Pit with a capacity of approximately 270,000 tonnes of rock per day.
- Surface waste dumps located to the north and southwest of the Candelaria Open Pit.
- The Candelaria processing plant with a capacity of 75,000 tonnes per day.
- The Candelaria Underground mine with a current ore capacity of 7,000 tonnes per day (which will be ramped up to 14,000 tonnes per day later in 2021 with the start of production from the Candelaria Underground South Sector) and access from a portal located within the Candelaria Open Pit.
- The Candelaria tailings storage facility located northwest of the Candelaria Open Pit. This will be replaced in 2018 by the new Los Diques tailings storage facility located to the east of the open pit and mine facilities.
- Ancillary mine services and administrative buildings and road accesses.
- The off-site Punta Padrones port located at Caldera with a 45,000-wet metric tonne designed storage capacity and 1,000 wet metric tonnes per hour loading capacity.
- A desalination plant adjacent to the port facility and commissioned in January 2013 with a capacity of 500 litres per second and related aqueduct to connect to the Bodega pump station (80 kilometres).
- A pipeline from the Bodega pump station to the Candelaria plant site (40 kilometres).

The Minera Ojos del Salado infrastructure includes:

- The Alcaparrosa underground mine with an ore capacity of 4,300 tonnes per day and access by a portal.
- The Santos underground mine with an ore capacity of 5,100 tonnes per day and access by a separate portal.
- The PAC processing plant with a capacity of 3,800 tonnes per day.
- Ancillary surface service buildings and road accesses.

17.2 Power Supply

Power supply for the Candelaria Copper Mining Complex, as well as the port and desalination facilities, is supplied under a contract with GENER (AES Gener S.A.) since July 2012. The contract is in place for 10 years. The contract has a number of maximum and minimum power supply limits with a maximum capacity of approximately 135 megawatts and under all foreseen future operating circumstances these are likely to be met. Typical combined maximum demands for the mines, port, and desalination plant are approximately 110 megawatts.

In 2016, Minera Candelaria and Minera Ojos del Salado consumed 807 and 66 gigawatt hours, respectively, for a combined total of 872 gigawatt hours per year. Reported power costs in 2016 and 2017 year to date were US$0.094 and U$$0.108 per kilowatt hour respectively.

17.3 Punta Padrones Port Facilities

Minera Candelaria infrastructure includes the Punta Padrones port facilities located at Caldera on the Pacific Ocean seaboard (Figure 1 and Figure 3). It has been in operation since 1995. The facility comprises a covered concentrate warehouse with a capacity of 45,000 wet metric tonnes and a telescopic ship loader that has a capacity of 1,000 wet metric tonnes per hour. The facility is equipped with dust collection systems and all concentrate truck discharge and warehouse loader activities take place inside covered buildings. The telescopic ship loader is PLC controlled and conveyor discharge to the ship hold is via an "elephant's trunk."

The port is able to accommodate ships of up to 58,000 metric tonnes with drafts of up to 12.4 metres. Typically, three vessels are loaded per month. The total capacity of the port is approximately 3.5 million wet metric tonnes per annum. The maximum annual concentrate production over the remaining life of mine is approximately 600,000 wet metric tonnes per annum. Overall utilization of the port is therefore low and the excess capacity is potentially available for cost savings and sharing with other concentrate exporters.

17.4 Fresh Water Supply

Historically, the Candelaria Copper Mining Complex sourced fresh water from deep wells in the nearby Copiapó aquifer for which the mines held and continue to hold water rights. During the 2000s, water levels in many of these wells dropped significantly and some went dry.

Following an extensive examination of alternative water supplies, including more distant ground water wells, Minera Candelaria opted to construct a desalination plant at the Punta Padrones port site and pump the water 110 kilometres to the mine site via a dedicated pipeline and booster pump station (Figure 48). The desalination plant was originally designed at 300 litres per second and was later expanded to 500 litres per second.

The desalination plant itself consists of three, nominal 150 litres per second lines comprising pre-filtration, ultra-filtration, micro-filtration ahead of conventional reverse osmosis. The reverse osmosis plant includes 468 pressure vessels with 3,276 membranes operating at a pressure exceeding 1,000 pounds per square inch. The desalination plant was commissioned in early 2013 and reached nameplate capacity later that year. In November 2013, extraction from groundwater sources in the Copiapó aquifer was stopped, except for water for potable supply and emergencies.

In addition to the desalination plant, the mines also source water from Agua Chañar, a private company that treats the sewage from Copiapó and Tierra Amarilla. The Agua Chañar water is supplied under a 10-year contract to mid-2020 to Minera Candelaria and Minera del Pacifico, who operates the magnetite recovery from the tailings plant. The agreement established with Aguas Chañar requires that it supplies a minimum of 175 litres per second with 70 percent of the water supplied to Minera Candelaria and 30 percent to Minera del Pacifico.

The environmental approval of the Candelaria 2030 project requires gradual reduction in the consumption of treated wastewater from the current level of 175 litres per second to zero, constituting a 25 percent reduction every three years. The water requirements can be met by pumping additional desalinated seawater from the plant at Punta Padrones.

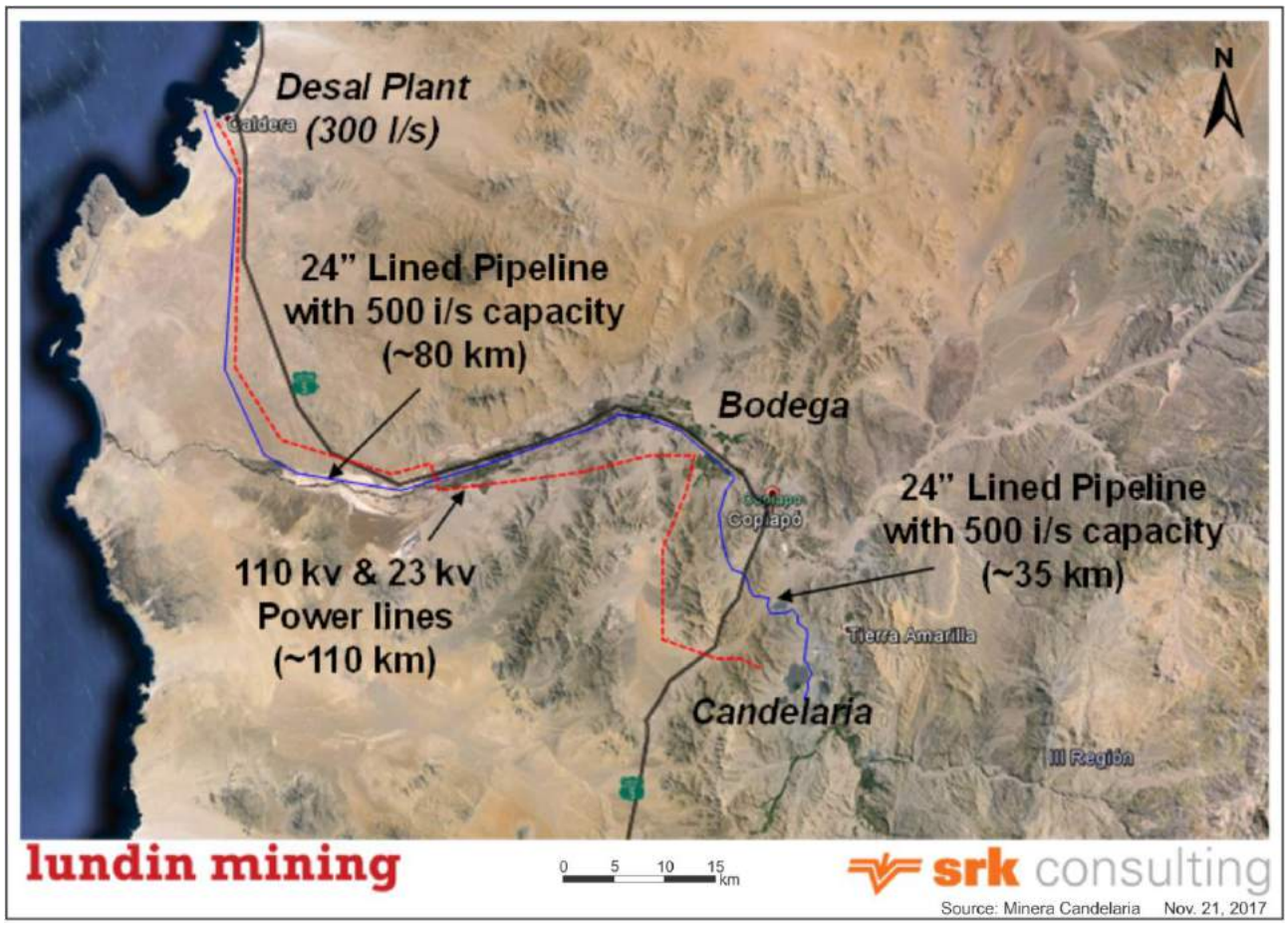


Figure 48: Desalination Plant Location and Pipeline to Candelaria Site
Source: Minera Candelaria

18 Market Studies and Contracts

The Candelaria Copper Mining Complex has been selling copper sulphide concentrates to customers worldwide according to established contracts for many years. Market studies are therefore not relevant to the purpose of this technical report. This section summarizes the key contracts.

The quality of the copper concentrates produced by the Candelaria Copper Mining Complex is excellent. The concentrates are clean and have very low content of critical elements such as lead, arsenic, antimony, bismuth, and mercury. The range of the zinc content in the Candelaria copper concentrates is very wide (0.1 percent to 3.75 percent) and may, from time to time, result in modest penalties from some copper smelters.

Copper concentrates from Minera Candelaria and Minera Ojos de Salado, have significant by-product credits of gold and silver. Technically, the copper concentrates have no limitations and can be treated at all copper smelters worldwide.

The Minera Candelaria concentrate is primarily sold through eight long-term contracts under a range of quantity options and destinations. One of these expire at the end of 2017, another at the end of 2018, with the remainder running until at least the end of 2019. All contracts are referenced against annual copper smelter treatment terms. The concentrate is shipped from the Punta Padrones port facility to destinations in Europe, China, Japan and Korea. As necessary, and to adjust for production variability, a small portion of concentrate production is sold into the spot market at then-current market terms for destinations similar to the above.

The Minera Ojos de Salado copper concentrate is currently sold under two long-term contracts: one for domestic delivery in Chile and one for delivery to Japan. The contracts run to the end of 2018 and 2019, respectively, and both are referenced against annual copper smelter treatment terms.

The sales contracts are a mix of “block” and “brick” contracts. Under a “block” contract, 100 percent of the terms are based on the current year’s annual terms, while under a “brick” contract, the terms for each year are being based on 50 percent at the prior year’s annual terms and 50 percent at the current year’s annual terms.

Minera Candelaria and Minera Ojos del Salado have entered into two Contracts of Affreightments (COA) with two different shipping companies. These COAs are valid through 2018, with options for one additional year. The existing COAs cover all present sales destinations.

In addition to copper concentrate sales, Minera Candelaria has an agreement with Minera del Pacifico to process Candelaria’s flotation tailings to produce a magnetite concentrate and this produces an additional source of by-product revenue.

19 Environmental Studies, Permitting, and Social or Community Impact

This section documents a review of the environmental and social aspects of the Minera Candelaria and Minera Ojos del Salado operations. This section was compiled from information made available by Lundin and a site visit on November 7 and 8, 2017.

19.1 Environmental Studies and Regulatory Framework

Chile has in place a comprehensive regulatory framework governing both environmental approvals and associated construction and operating permits, generally referred to as Environmental Sectorial Permits (*Permisos Ambientales Sectoriales*, or PAS). The Environmental Impact Evaluation System *(Sistema de Evaluación de Impacto Ambiental*, or SEIA) came into being in 1994 with the promulgation of Law 19.300. The implementing regulations have been modified on more than one occasion since then as the system has evolved, most recently in 2013. The SEIA is administered by the Environmental Evaluation Service (*Servicio de Evaluación Ambiental*, or SEA), an arm of the Environment Ministry (*Ministerio del Medio Ambiente*, or MMA).

Mining and other activities (with the notable exception of agriculture) in Chile are subject to environmental review and can be approved via three mechanisms, as follows:

1. A Pertinencia de Ingreso (or Pertinencia) is a document prepared for small projects or minor modifications to existing projects, which demonstrates that the effects of the proposed action are below the threshold requiring formal environmental review. Once approved by the SEA the project or modification can proceed without undergoing environmental review (although sectorial permits, or modifications to existing permits, may be required).
2. An Environmental Impact Declaration (*Declaración de Impacto Ambiental*, or DIA) is required to be submitted by the proponent for projects or project modifications that are significant enough to warrant environmental review but which are not expected to result in significant environmental impacts, as these are defined legally.
3. An Environmental Impact Study (*Estudio de Impacto Ambiental*, or EIA) is required to be submitted by the proponent for projects or project modifications where significant environmental impacts are expected to occur, and where specific measures for impact avoidance, mitigation or compensation will need to be agreed upon.

The SEA approves DIAs and EIAs following regulatory review and (in the case of EIAs) formal public consultation, by issuing an Environmental Qualification Resolution (*Resolución de Calificación Ambiental*, RCA). RCAs can run to several hundred pages in length for complex projects, and usually contain numerous conditions of approval related to both environmental and social aspects of project development, that must be adhered to by the project proponent during all phases of the project life cycle.

Once a proponent obtains an RCA, the environmental issues associated with the related sectorial permits are considered to have been resolved and the necessary sectorial permits must be obtained, and cannot be rejected on environmental grounds. These permits normally require a period of several months following the completion of the environmental review and are required prior to commencement of project construction or modification.

19.2 Permitting and Compliance

19.2.1 Environmental Approvals

Minera Candelaria

The original Candelaria project was submitted to a voluntary environmental assessment process and was approved by resolution ORD No. 817 on June 9, 1992. The Candelaria mine officially started operations on March 9, 1995.

The Candelaria operation has undergone a series of modifications since the early 1990s, which have been permitted through Pertinencias, DIAs and EIAs (Table 41 and Table 42).

The most recent major environmental permitting effort was the "Candelaria 2030" EIA which was submitted to the SEA in September 2013. The EIA included, among other things, an extension to the mine life and the development of the Los Diques tailings storage facility. The SEA issued RCA No. 133/2015 approving the Candelaria 2030 EIA in July 2015. Construction of the Los Diques tailings storage facilities embankment commenced in August 2016 following receipt of the major construction permits.

The Candelaria 2030 RCA included a number of conditions related to additional monitoring activities and impact mitigation and compensation measures, mainly for air, water and biological resources. None of the approval conditions put at risk the technical or economic feasibility of the operation.

Table 41: Minera Candelaria Environmental Approvals (RCAs*)

Project	Legal Reference*
EIA Candelaria project Phase I	N° 817/1992
EIA Port facilities Punta Padrones	N° 001/1994
EIA Candelaria project Phase II	N°1/1997
DIA Reception and storage of tailings from Minera Ojos del Salado	N° 044/1977
DIA Auxiliary fuel tank Candelaria mine	N° 006/1998
DIA Mixing plan of diesel and used oil	N°104/1998
DIA Copper concentrate transport to new destinations	N° 26/2000
DIA Exploration ramp Candelaria Underground (North Sector)	N° 084/2001
DIA Candelaria Underground (North Sector) project	N° 094/2003
DIA Modification of the feeding system of tailings dam	N° 116/2005
DIA Reception and processing mineral from Alcaparrosa mine	N° 012/2005
DIA Exploration ramp Candelaria Underground (South Sector)	N° 04/2005
DIA Candelaria Underground (North Sector) expansion	N° 175/2007
DIA Optimization pebbles circuit	N° 106/2007
DIA Water pipeline Chamonate - Candelaria	N° 273/2008
EIA Candelaria desalination plant	N° 129/2011
DIA Growth of height La Candelaria tailings dam wall	N° 74/2012
EIA Candelaria 2030 - Project operational continuity	N° 133/2015

* Environmental Approval Resolution (RCA)

Table 42: Changes at Candelaria Approved Under *Pertinencias*

Project /Activity	Legal Reference
Modification of concentrate route	Letter N° 1088/2011, SEA Atacama
Modification of the path of the power line between the mine and the desalinization plant	Letter N° 1424/2011, SEA Atacama
Extension of life of mine Expansion Candelaria Underground (North Sector)	Letter N° 911/2012, SEA Atacama
Operational optimization Candelaria Underground mine	Resolution N°062/2017, SEA Atacama

Minera Ojos del Salado

The Santos mine and PAC processing plant were developed prior to 1994 when the environmental regulatory regime was different from the present day. The Alcaparrosa mine received environmental approval in 1996 with subsequent amendments, most recently via a Pertinencia that extended the approval for mine operation to the end of 2017. In December 2016, the Candelaria Copper Mining Complex submitted an EIA to extend the Alcaparrosa mine life to 2022. At the end of November 2017, this EIA remains under review by the SEA. The major technical issues are substantially resolved, Lundin expects to receive an RCA by the end of 2017. Failing this, Lundin may seek an interim extension of the existing environmental permit, or may suspend operations at Alcaparrosa until the SEA issues the RCA.

Tailings from the PAC plant are deposited in the Candelaria tailings storage facilities under an environmental approval granted in 1997 and extended to the end of 2017. On November 21, 2017, the SEA issued an RCA approving a DIA for continuing tailings deposition through 2030. None of the conditions of approval are material to the operation of the PAC plant or the tailings storage facility. Environmental permits and Pertinencias related to Minera Ojos del Salado are listed in Table 43 and Table 44.

Table 43: Summary of Minera Ojos del Salado Approvals (RCAs*)

Project /Facility	Description	Approval Reference*
EIA Alcaparrosa mine	2,500 tonnes per day process in Aguirre Cerda plant	N° 2/1996
DIA Tailings transport to Candelaria	Transport of tailings N° 8 to Candelaria	N° 048/1997
EIA Modification to Alcaparrosa mine	Process in Aguirre Cerda plant 725,000 tonnes per year between 1998 – 2006 913,000 – 1,450,000 tonnes per year between 2007 – 2008 570,000 tonnes per year in 2010	N° 6/1999
DIA Cerro Negro mine exploration	12 boreholes	N° 002/ 2000
DIA Modification II Alcaparrosa project	Transport of 4,000 tonnes per day to Candelaria plant (new road)	N° 003/2005
DIA Tortolitas mine exploration	10 boreholes	N°089/2005
DIA Slag removal/tunnel remediation of Edwards smelter	Environmental management and closure of two abandoned facilities (slag deposit and tunnel) from old Edwards smelter	N° 118/2005
DIA Environmental improvement of six tailings dams	Environmental remediation of six old abandoned tailings dams	N° 228/ 2007
DIA Mineral transportation between Santos mine and Alcaparrosa mine	Transportation of approximatively 1,400 tonnes per day of ore from Santos to Alcaparrosa	N°204/2008

* Environmental Approval Resolution (RCA)

Table 44: Minera Ojos del Salado Changes Approved Under *Pertinencia*

Project/Activity	Description	Legal Reference
Tailings transport to Candelaria	Extension until 2017 to the tailings N° 8 transport to Candelaria tailings dam	Letter N° 552/2012
Alcaparrosa mine life extension	Extension of mine life for three years, to end of 2015	Letter N°001/2013
Alcaparrosa mine life extension	Extension of mine life for two years, to end of 2017	Resolution N°239/2015
Santos mine update of exploitation method	Incorporation of north and south extensions of the northeast area	Resolution N° 107/2016

Sectorial Permits

Environmental sectorial permits (PAS) are required for construction and operation of new facilities constructed under the approval of a Pertinencia or RCA. These permits are granted by as many as ten different public agencies including the General Water Directorate (*Dirección General de Aguas*, DGA), the National Geology and Mining Service (*Servicio Nacional de Geología y Minería*, SERNAGEOMIN) and the Health Ministry (*Ministerio de Salud*).

Minera Candelaria

The Candelaria Copper Mining Complex has all required permits in place and, through its Environmental Management System keeps a detailed record of each permit and its compliance status. Since 1992, approximately 850 specific sectorial permits were obtained.

During the Candelaria 2030 environmental permitting process 150 sectorial permits were identified, mostly related to the development of the Los Diques tailings storage facilities. The two most important construction permits for Los Diques were granted by the SERNAGEOMIN in July 2016 and by the DGA in August 2016. Earthworks for the main embankment commenced shortly thereafter, and construction is on schedule.

Sectorial permitting activities continue on an ongoing basis and are not anticipated to have any impact on schedule or budget of the remaining construction activities for Los Diques.

The main permit pending from SERNAGEOMIN, the Technical Permit for the Port and Plant Operations, is under review and approval is expected in late December 2017. In addition, there is a pending approval of the Candelaria 2030 Closure Plan, which is also expected from SERNAGEOMIN in late December 2017 or January 2018.

Minera Ojos del Salado

The Minera Ojos del Salado operations are associated with approximately 150 specific sectorial permits. As with Minera Candelaria detailed records of all permits and their compliance status are maintained.

The dates on which the main environmental and sectorial permits for Minera Candelaria and Minera Ojos del Salado are needed are shown in Figure 49.

Figure 49: Required Dates for Main Environmental and Sectorial Permits

19.2.2 Environmental Compliance

The Candelaria Copper Mining Complex operates in compliance with its environmental approvals and sectorial permits. Internal and external audits are conducted to monitor compliance with respect to conditions of approval and permit stipulations.

There is currently one ongoing legal challenge related to the environmental permits. The details around this challenge are summarized in the following section.

SMA Charges

The Environmental Superintendent (*Superintendencia de Medio Ambiente*, SMA) is the arm of the Environment Ministry that is responsible for monitoring and enforcing compliance with environmental approval (RCA) conditions and applicable environmental legal requirements. In 2013 and 2014, prior to Lundin's acquisition of its interest in the mine, the SMA conducted two inspections of the Candelaria mine and port facilities. In May 2015, the SMA issued Extent Resolution No. 1/ROL D-018-2015 detailing 16 charges against the Candelaria Copper Mining Complex for alleged non-compliance with its environmental approvals. Nine of the charges were classified as "serious" and seven as "minor".

Following approximately 18 months of information exchange, the SMA issued Extent Resolution No. 1111/2016 in December 2016. With this resolution, the SMA eliminated four of the 16 charges, reduced four from "serious" to "minor", maintained three as "serious" and maintained five as "minor". The SMA levied a fine totaling 5,049 annual tax units (UTA), equivalent to approximately US$4 million. Of this total fine amount, approximately 90 percent was linked to a single charge related to the allegation that the Candelaria Copper Mining Complex did not reduce groundwater consumption sufficiently to reflect the increasing rate of recirculation from the tailings storage

facility and the additional supply of treated domestic waste water from Aguas Chañar and desalinated seawater.

The Candelaria Copper Mining Complex has challenged the sanctioning resolution before the Environmental Courts (Tribunal Ambiental). In addition, a third party has also filed a challenge before the Environmental Court, claiming in effect that the SMA has been too lenient in the sanctioning process. In March 2017, the SMA rejected the third-party claim.

In June 2017, Candelaria presented its appeal to the Environmental Court. It is expected that the process may take up to a year or more to be resolved. Depending on the outcome of the appeals process before the Environmental Court, this case could be appealed to the Supreme Court (Corte Suprema). The Candelaria Copper Mining Complex does not foresee any impact of this legal process on production.

19.3 Environment Management

The Candelaria Copper Mining Complex is located near the town of Tierra Amarilla and near an agriculture area of the Copiapó valley. In this region mining activities coexist with communities and agricultural activities. The Copiapó River Basin has significant shortages of groundwater resources and aquifer levels have decreased over time due to water extraction for agricultural, industrial and domestic uses.

The Copiapó valley is located in the southern margins of the Atacama Desert and is characterized by an arid climate. The Tierra Amarilla area has an average annual temperature of 17 degrees Celsius, an average relative humidity of 60 percent and an annual average precipitation of 17 millimetres. In the coastal area, Caldera has an average annual temperature of 15 degrees Celsius, an average relative humidity of 82 percent and annual average precipitation of 6 millimetres. Rainfall is irregular from year to year and several years typically pass between significant precipitation events, which are often associated with the El Niño phenomenon.

The operations are located in the lower portion of the El Bronce and El Buitre sub-basins. Both sub-basins are oriented east-west, and drain towards the Copiapó River.

19.3.1 Key Environmental Issues

The key environmental management aspects managed by the Candelaria Copper Mining Complex are related to the specific sensitivities of the region, as summarized in the following sections.

Water Supply

Taking in consideration the sensitivities of water resources in the Copiapó basin, the Candelaria Copper Mining Complex has developed and implemented a water resource optimization plan for its operations. Since 2013, the operations have eliminated groundwater use for processing activities. The main sources of water are now derived from recirculation of water from the tailings storage facilities, treated domestic waste water from the Aguas Chañar treatment plant in Copiapó and desalinated seawater pumped from the desalination plant located adjacent to the marine terminal at Caldera. Water from groundwater wells remains available in case of emergency and maintenance and for the supply of potable water.

One of the conditions of approval of the Candelaria 2030 EIA is the gradual phase out of the use of water from the Aguas Chañar wastewater treatment plant. By July 2025, the operations will depend solely on water from the desalinization plant.

The Alcaparrosa mine environmental permit currently in process will add a new commitment related to compensation for the effect on the aquifer that will result from the use of about 12 litres per second of water from the underground mine. The effect of the extraction will be compensated by the cessation of extraction of groundwater from Candelaria's well, currently used by Aguas Chañar, and will have no effect on water availability for the Candelaria and Ojos de Salado operations.

Water Quality

Water quality management and control of potential water loss from the mining facilities are important issues addressed through the environmental management of the operations.

The existing Candelaria tailings storage facilities and the new Los Diques tailings storage facilities which is under construction have been designed to minimize water losses and maximize water reuse in the processing plant.

For the Los Diques facilities, hydrogeological studies indicate that seepage flows will be low and will flow towards the current open pit mine, which will act as a sink. Preferential infiltration flows occur toward the pit, at depths greater than 500 metres below surface, deeper than the depth of the Copiapó aquifer in the area, which is located at depths between 40 and 120 metres.

Generally, both waste rock and tailings at Candelaria exhibit a low potential for acid rock drainage and the arid climate results in conditions whereby the amount of rain water coming into contact with tailings and waste rock is minimal. Hence the long-term risk of acid rock drainage and associated impacts to surface and/or groundwater quality is considered very low. Despite this, the authorities raised concerns during the review of the proposed Candelaria 2030 EIA about potential seepage from the tailings storage facilities and any associated impacts on the Copiapó River basin. As a result, one of the approval conditions is that, if water is present in any of the wells of the Los Bronces drainage (P1 and PP2 monitoring wells), the Candelaria Copper Mining Complex must proceed immediately with the hydrogeological isolation of the Los Bronces sub-basin from the Copiapó area aquifer system, by a mechanism that will require approval from the environmental authorities.

Air Quality

The Candelaria Copper Mining Complex operates close to populated areas where agriculture is a significant land use along with a number of other mining operations. Air quality, notably fugitive dust from mining, transportation and other activities, is a relevant environmental issue. In their comments on the Candelaria 2030 project, the authorities pointed out that the area is technically saturated for respirable particulate matter (PM 10 and PM 2.5), although the area is not officially designated as such. In this context, the Candelaria Copper Mining Complex utilizes a series of measures to control dust emissions, including a road wetting plan, nebulizers on stockpiles, crusher dust collectors, and internal monitoring of emission control. The approval of the Candelaria 2030 project added a number of additional mitigation measures, which are being implemented in accordance with the RCA.

A new commitment included in the new Alcaparrosa EIA evaluation includes paving of some sections of the access road to the project.

Environmental Monitoring Program

Since 1993 an environmental monitoring program has been in place to identify any changes in environmental conditions with respect to the baseline dataset. The results are periodically sent to the responsible government authorities. The monitoring program includes groundwater quality and

levels, dust, noise and vibration, and marine parameters, among others. A summary of the current monitoring program is provided in Table 45.

Table 45: Environmental Monitoring Program

Item	Parameter	Frequency	Area
Air Quality / Meteorology	PM 10, and PM 2, 5 (particular matter less than 10 microns)	Every three days	Tierra Amarilla Caldera Nantoco
	Settleable dust (TDS) and Fe, Cu; As and SiO2 composition	Monthly	Candelaria mine Punta Padrones Nantoco
	Wind velocity and direction	Continuous	Candelaria mine Caldera Punta Padrones
	Evaporation from tailings dam (l/s)	Continuous	Mine
Noise and Vibrations	NPS	Annual	Tierra Amarilla Caldera
	Vertical acceleration	Annual	Tierra Amarilla
Water	Phreatic levels	Monthly	Mine area/El Bronce drainage Tierra Amarilla Paipote Aquifer 4 area
	Underground water quality	Biannual and annual, depending on parameter	Mine area/El Bronce drainage Tierra Amarilla Paipote Aquifer 4 area
	Recirculated water quality	Biannual and annual	Mine
	Drinking water quality	Monthly	Port
	Fresh water consumption, water from sewage plant, desalinated water, and recirculated water (m^3)	Monthly	Mine
Marine Area Desalination Plant	Oceanographic parameters in sea water column	Biannual	Punta Padrones
	Metals and granulometry in sediments		
	Seawater communities		
	Plankton communities		
	Fish fauna		
	Water quality in brine discharge	Depending on production of desalinated water	
Marine Area Punta Padrones Port	Metals, temperature, salinity, dissolve oxygen in sea water column; metals and granulometry in sediments	Biannual	Punta Padrones
	Seawater communities		
Piedra Colgada Wetland	Physical, biological, hydro biological characteristics	Biannual	Piedra Colgada
Puerto Viejo	Physical, biological, hydro biological characteristics	Biannual	Copiapó River mouth

Coupled with the monitoring plan described above, the Candelaria Copper Mining Complex has developed and implemented a plan to comply with the commitments of the Candelaria 2030 approval resolution, including maintaining relevant records and reporting to the responsible government authorities in the required timelines.

Currently the Candelaria Copper Mining Complex is using SIGEA, a software for monitoring the company's environmental management through an Internet platform.

Environmental Management System

The environmental management system of the Candelaria Copper Mining Complex is certified under the ISO 14001 Standard. The most recent re-certifications took place in March 2015 for Minera Candelaria and in September 2016 for Minera Ojos del Salado.

During 2017, the Candelaria Copper Mining Complex has been implementing the updated standard ISO 14.001 in all their areas. An external audit is planned for January 2018.

Since the Lundin acquisition, the Candelaria Copper Mining Complex has been integrated into Lundin's sustainability practices, the targets and commitments of which address occupational health and safety, environmental performance, sustainability policy and management systems, water management, energy and greenhouse gas management, mineral waste management, mine closure, biodiversity management, and stakeholder engagement.

The approval of the Candelaria 2030 project (RCA N°133/2015) added additional monitoring requirements which are being implemented.

19.3.2 Mine Closure Planning

The Candelaria Copper Mining Complex has developed a closure plan for each of the Minera Candelaria and Minera Ojos del Salado operations in accordance with applicable legal requirements, specifically Law 20.551/2011 and Supreme Decree N°41/2012, in addition to the corporate standards of Lundin. The competent authority for approving Mine Closure Plans (MCPs) in Chile is SERNAGEOMIN. Under current law, mining projects with an extraction capacity of over 10,000 tonnes per month must provide a financial guarantee, the amount of which will be determined based on the periodic re-evaluation of the closure plan implementation and management costs.

The status of the Minera Candelaria closure plan is as follows:

- The re-evaluation of the closure plan was submitted in November 2014 and approved by SERNAGEOMIN through Resolution No. 1883 issued in July 2015.
- Estimated closure costs are US$ 42.4 million including direct costs (US$ 24.0 million), indirect cost (US$9.2 million), contingencies (US$8.0 million), and post-closure costs (US$1.2 million).
- Minera Candelaria provided the required guarantees (20 percent of the present value of the closure costs) during 2016. The balance must be paid on completion of two-thirds of the mine life. Guarantees are being paid according to the closure plan schedule.
- The approved closure plan does not include the project's modification under the Candelaria 2030 project (which includes the Los Diques tailings storage facilities). An updated mine closure plan was submitted to SERNAGEOMIN for review in December 2016, and is currently under review. Its approval is expected during 2018.

The status for the Minera Ojos del Salado closure plan is as follows:

- The updated closure plan, including closure cost estimates, was approved by SERNAGEOMIN on May 16, 2014 through Resolution No 394.
- Estimated closure costs are US$7.9 million including direct costs (US$3.9 million), indirect cost (US$ 1.4 million), contingencies (US$2.0 million), and post-closure costs (US$0.6 million).

- Minera Ojos del Salado has provisioned 20 percent of the financial guarantee. Guarantees are being paid according to what was stipulated in the closure plan.
- Any extension to the Alcaparrosa mine's life beyond the current life of mine will require an update of the closure plan and a new financial guarantee. The updated closure plan for Minera Ojos del Salado is under development, and is expected to be finished at the end of 2017.
- The legacy abandoned facilities (old tailings and slag deposit) have already been closed and remediated to the satisfaction of SERNAGEOMIN.

19.4 Social and Community Issues

The Candelaria Copper Mining Complex is located near the community of Tierra Amarilla. This proximity can result in potential impacts from noise, dust, visual intrusion, blasting and vehicular traffic. The concentrate storage shed, marine terminal and desalination plant are located near the community of Caldera. Linear infrastructure and activities including power lines, water pipelines and concentrate transport are located in the vicinity of smaller towns, among which Indigenous communities ("Colla") are located.

Minera Candelaria and Minera Ojos del Salado are subject to the requirements of the Chilean regulatory process and must also meet the corporate requirements set by Lundin related to stakeholder engagement, impact management and social investment.

The social and community requirements from the Chilean regulatory process include commitments to consistent engagement and communication processes with local communities and nearby small-scale miners in order to assess and manage potential impacts and risks. The mine must also meet commitments to local employment and procurement. Other requirements include monitoring and mitigation of blasting impacts.

With respect to Lundin's requirements, Minera Candelaria must meet the commitments outlined in the Responsible Mining Policy and Responsible Mining Framework. The Policy and Framework describe Lundin's specific commitments and sets the direction for how operations and projects will comply with Lundin's corporate values and guiding principles. A Stakeholder Engagement Standard and Guideline have been rolled out at all operations and project sites. Lundin corporate offices, as well as operations and project sites, are expected to have site-specific and culturally-appropriate procedures in place for consultation and engagement with stakeholders, as well as the resources available to support these engagement efforts. The goal of these activities is to identify and prioritize affected and interested stakeholders of Lundin's business activities and to integrate the results of engagement efforts into operational decision-making. The Candelaria Copper Mining Complex has processes in place to identify, map, and analyze their stakeholders from direct and indirect influence areas who may be affected by the operations, with special attention given to vulnerable groups such as women, children, and those considered vulnerable within a socioeconomic context.

The Candelaria Copper Mining Complex has a strong and established stakeholder engagement program and the Community Relations team is constantly increasing its interactions with its local communities and other stakeholders, such as social organizations, local and regional authorities, fishermen and Indigenous groups.

Stakeholder engagement systems and practices include the following examples:

- Implementation of a Stakeholder Engagement Plan, which guides the Community Relations team's annual activities and ensures a proactive approach to engagement, impact management and social investment.

- Implementation of a grievance/suggestions mechanism, which provides all stakeholders with an opportunity to express concerns, request information and make suggestions. Each concern, request and suggestion is documented and processed, actioned and responded to in a timely manner.
- The opening of the Tierra Amarilla's community office in 2014, creating a new engagement point with the community closest to the mine and milling operations. Strategically located at the centre of town, this office receives an average of 800 visitors per month. Visitors have direct access to local staff, free and open computer and internet use, document printing facilities, technological skills training workshops and training class rooms. Stakeholders can also engage with Candelaria Human Resources staff regarding interest in employment opportunities.
- Similarly, in September 2016, a community office was opened in Caldera, the community nearest the port and desalination plant operations. Opportunities for direct interaction with local community relations staff, training and education programs, computer and internet access, employment opportunities, and specific programs for fisherman are offered at this location.
- The Candelaria Copper Mining Complex also organizes regular mine site visits by interested members of the public. During 2016, more than 300 community members visited Candelaria's facilities, including the plant, open pit lookout, truck shop, underground mine, port and desalination plant.
- In response to some specific stakeholder feedback relating to water use and management and a lack of understanding on the desalination process, Minera Candelaria has proactively extended site visits to these community members to provide information on the desalination process and demonstrate its leadership in water management in the Atacama region.
- Community forums, called "Encuentros con Candelaria", consisting of open meetings have been conducted to share relevant information about the company's strategic plan and initiatives on topics related to safety, environmental, operational and social performance.

The Candelaria Copper Mining Complex has also established voluntary agreements with multiple stakeholders:

- Tierra Amarilla Agreement: This historic agreement established by the Candelaria Copper Mining Complex with the local government makes available more than US$16 million to develop a portfolio of community programs in areas such as housing, culture and health services improvements. Minera Candelaria is working collaboratively with the Municipality to ensure these projects are relevant and impactful.

- Fishermen Development Fund: As most of Caldera's residents are either directly or indirectly linked to the fishing industry, Minera Candelaria has established this fund to offer local fishermen resources to develop individual or collective projects in the four main areas of housing, health, education and economic development. The goal of the fund is to strengthen livelihoods and social connections. Associated projects have benefited more than 800 fishermen and their families since 2014.

Complimentary to these stakeholder engagement systems and practices and agreements, social investment and shared value creation programs are being developed and implemented throughout the communities surrounding Candelaria and include:

- Investment focus on economic development and innovation through local supplier programs.
- Skills development and employability.
- Health and wellness.
- Youth sports development.

Examples of community investment programs include:

- Entre Rieles Market: Minera Candelaria provided funding to the Caldera Municipality – Women's Entrepreneur Union for the construction of this new public space and market, which will help small businesses develop and grow their markets and improve their commerce channels.
- Technical Education Program: A collaboration between the local district mining companies and the local technical high school, this program helps improve students' opportunities and academic performance by providing technical training from our teams, internships, guided tours and training courses to improve their employability.
- Flood Relief: Following the March 2015 and May 2017 catastrophes due to the flooding of the Atacama Region, Minera Candelaria provided immediate emergency relief and aid to local communities, working in partnership with the regional and local government.
- Entrepreneur Reactivation Grant Fund: After the 2015 flood event, Minera Candelaria established an economic reactivation fund to enable local businesses that were damaged by the disaster to rebuild their business.
- Community Infrastructure Improvement Program: In this program, local social organizations present ideas and projects to improve their community centres. The program has helped improve over 30 centres, which are now being used for training, women's programs, child care, etc.
- Colla Indigenous Community Centre: One of the only community centres available for Indigenous communities, the Serrania Poblete Colla community centre is located in the heart of the Colla territory and is being used to promote cultural awareness, provide training and attract tourism to the region.
- Indigenous Work Table: Given the recent appearance of some Indigenous communities in the Tierra Amarilla area, it is planned during year 2018 to put in operation an Indigenous Work Table.

The Candelaria Copper Mining Complex has developed a local contracting program, and currently 95 percent of the workforce resides in the Atacama Region. Also, a program of local suppliers was put in place in partnership with CORFO (National Corporation for the Promotion of Production).

Since May 2017, a 5-year Strategic Development Plan has been developed to align the Candelaria Copper Mining Complex as a catalyst for the development of the Atacama Region, together with the generation of public-private partnerships. The key pillars of the process are economic development, education, welfare and social and environmental innovation.

20 Capital and Operating Costs

20.1 Operating Costs

The forecast operating costs for the next four years at Minera Candelaria and Minera Ojos del Salado are shown in Table 46.

Total Minera Candelaria unit costs are expected to remain reasonably static over the next four years. Costs have risen slightly compared to those published in the previous technical report as a result of the changed open pit phasing, increased waste stripping and the short-term use of contractors in the open pit mine. Diesel, electricity and supplies costs are also slightly higher than those previously forecast, as are labour costs with a new labour contract.

At the Minera Ojos del Salado operations, unit operating costs have also increased slightly with higher underground mining contract rates as well as the higher energy, consumables and labour costs noted above.

Table 46: Forecast Unit Operating Costs

Candelaria	Unit	2018	2019	2020	2021	Average 2018-2021
Mining cost - OP	US$/t mined	3.30	2.40	2.20	2.50	2.60
Mining cost - UG	US$/t mined	16.00	14.90	14.90	14.70	15.00
Processing cost	US$/t milled	7.20	6.80	6.50	6.60	6.70
G&A cost	US$/t milled	2.60	2.40	2.20	2.20	2.30
Total Unit Cost	**US$/t milled**	22.20	21.80	20.40	20.90	21.30
Ojos del Salado						
Mining cost	US$/t mined	19.30	20.00	20.60	21.60	20.40
Processing cost	US$/t milled	8.10	7.90	7.90	7.90	8.00
G&A cost	US$/t milled	1.70	2.00	1.70	1.70	1.80
Total Unit Cost	**US$/t milled**	**30.10**	**31.00**	**31.50**	**32.20**	**31.20**

The following sections present a breakdown of the mining, processing, and general and administrative operating costs.

20.1.1 Mining Operating Costs

Table 47 presents a breakdown of the forecast Candelaria Open Pit mining costs.

The average open pit mining cost over the next four years, including capitalized waste stripping is forecast to be US$2.60 per tonne of material mined. Costs have risen slightly over the previous forecast with the planned use of mining contractors in 2018 and 2019 and as a result of new phasing in the open pit. Annual fluctuations in the unit cost are also the result of changing haul depths and lengths associated with the latest open pit mine plans as well as variations in the quantities of ore and waste mined each year. The total costs presented in Table 46 include the costs for both ore production and waste stripping with the latest phasing of the open pit resulting in a higher stripping ratio over the next four-year period than in previous mine plans.

Table 47: Forecast of Candelaria Open Pit Mining Costs

Candelaria Mining Cost - Open Pit	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t mined	0.70	0.50	0.50	0.60	0.60
Contractors	US$/t mined	0.80	0.60	0.30	0.40	0.50
Supplies	US$/t mined	1.20	0.90	1.00	1.10	1.00
Energy	US$/t mined	0.60	0.50	0.50	0.50	0.50
Other	US$/t mined	-0.00	-0.00	-0.00	-0.10	-0.00
Total Unit Cost	**US$/t mined**	**3.30**	**2.40**	**2.20**	**2.50**	**2.60**
Total Cost						
Labour	US$M	58.9	56.5	56.3	56.3	57.0
Contractors	US$M	63.9	66.3	36.3	37.2	50.9
Supplies	US$M	97.1	90.8	106.1	107.4	100.4
Energy	US$M	47.5	49.0	49.6	48.3	48.6
Other*	US$M	-3.0	-3.7	-4.5	-5.1	-4.1
Total Cost	**US$M**	**264.4**	**258.9**	**243.8**	**244.1**	**252.8**
Capitalized Waste Stripping	**US$M**	**197.1**	**169.2**	**133.9**	**141.0**	**160.3**
Total Cost excl. Capitalized Waste	**US$M**	**63.7**	**89.7**	**109.9**	**103.1**	**92.5**
Total Unit Cost excl. Waste Stripping	**US$/t mined**	**0.80**	**0.80**	**1.00**	**1.00**	**0.90**

* The negative values under Other refer to the transportation of Alcaparrosa and Santos mines ores to the Candelaria plant, which is undertaken by Minera Candelaria, while the costs are allocated to Minera Ojos del Salado.

Table 47 also shows the effect on the open pit operating cost with the removal of waste stripping costs that are capitalized. Lundin capitalizes waste stripping costs when experienced strip ratios are above the average planned strip ratio for each open pit phase under development. Total capitalized waste stripping costs have increased from previous forecasts largely as a result of changes in the stripping ratio over the next four years.

The forecast operating costs of the Candelaria Underground mine operations are presented in Table 48. The average forecast underground mining cost over the next four years at Candelaria is US$15.00 per tonne, which is slightly lower than previously forecast because of greater tonnages mined and the internalization of haulage activities.

The forecast costs of the Minera Ojos del Salado underground mine operations, Santos and Alcaparrosa, are shown in Table 49.

The forecast average Minera Ojos del Salado unit underground mining cost over the next four years is approximately US$20.40 per tonne. Both the Santos and Alcaparrosa mines are operated by a common contractor on unit rate contracts and these contract rates have risen slightly over previous years. The mine lives at Santos and Alcaparrosa have both been extended to 2024.

Table 48: Forecast of Operating Cost for Candelaria Underground Operations

Candelaria Mining Cost - UG	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	2.20	1.80	2.10	2.10	2.00
Contractors	US$/t	10.40	9.10	8.20	8.30	8.80
Supplies	US$/t	1.60	2.40	2.90	2.50	2.40
Energy	US$/t	1.00	0.90	0.90	1.00	0.90
Other	US$/t	0.80	0.80	0.80	0.80	080
Total Unit Cost	**US$/t**	**16.00**	**14.90**	**14.90**	**14.70**	**15.00**
Total Cost						
Labour	US$M	7.0	7.6	10.6	12.4	9.4
Contractors	US$M	33.3	37.7	41.9	48.7	40.4
Supplies	US$M	5.3	9.9	14.6	14.4	11.1
Energy	US$M	3.1	3.7	4.3	5.8	4.2
Other	US$M	2.7	3.4	4.2	4.8	3.8
Total Cost	**US$M**	**51.4**	**62.3**	**75.8**	**86.0**	**68.9**

Table 49: Forecast of Operating Cost for Ojos del Salado Underground Operations

Ojos del Salado Mining Cost	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	1.30	1.40	1.40	1.40	1.40
Contractors	US$/t	15.90	16.60	17.20	18.10	17.00
Supplies	US$/t	0.60	0.50	0.50	0.50	0.50
Energy	US$/t	0.90	0.90	0.90	0.90	0.90
Other	US$/t	0.60	0.60	0.60	0.60	0.60
Total Unit Cost	**US$/t**	**19.30**	**20.00**	**20.60**	**21.60**	**20.40**
Total Cost						
Labour	US$M	4.8	5.1	5.1	5.1	5.1
Contractors	US$M	57.0	60.0	62.2	65.2	61.1
Supplies	US$M	2.1	1.8	1.9	1.9	1.9
Energy	US$M	3.3	3.2	3.1	3.1	3.2
Other	US$M	2.1	2.1	2.1	2.1	2.1
Total Cost	**US$M**	**69.4**	**72.2**	**74.5**	**77.5**	**73.4**

20.1.2 Processing Operating Costs

A breakdown of the forecast Minera Candelaria processing costs including primary crushing and conveying, flotation plant and water supply are shown in Table 50.

The forecast average unit processing cost for Minera Candelaria over the next four years is US$6.70 per tonne, with the varying unit costs year on year largely influenced by changes in throughput and the treatment of stockpiled material. Costs have increased slightly from those published in the previous technical report largely as a result of higher energy, a new union labour agreement and contracted maintenance activities.

The forecast processing costs for the next four years for Minera Ojos del Salado are presented in Table 51.

Table 50: Forecast of Minera Candelaria Processing Cost

Minera Candelaria Processing Cost	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	1.30	1.30	1.20	1.20	1.30
Contractors	US$/t	1.20	1.00	0.90	0.90	1.00
Supplies	US$/t	2.10	2.00	1.90	2.00	2.00
Energy	US$/t	3.10	3.00	3.00	3.00	3.00
Other*	US$/t	-0.50	-0.50	-0.50	-0.50	-0.50
Total Unit Cost	**US$/t**	**7.20**	**6.80**	**6.50**	**6.60**	**6.70**
Total Cost						
Labour	US$M	32.9	32.6	33.1	33.1	32.9
Contractors	US$M	29.4	24.8	24.5	24.9	25.9
Supplies	US$M	53.9	50.7	51.4	54.7	52.7
Energy	US$M	79.8	76.7	80.7	81.2	79.6
Other*	US$M	-13.7	-13.5	-13.4	-13.6	-13.6
Total Cost	**US$M**	**182.4**	**171.3**	**176.2**	**180.3**	**177.5**

* The negative values under Other refer to the transportation of Alcaparrosa and Santos mines ores to the Candelaria plant, that is undertaken by Minera Candelaria, while the costs are allocated to Minera Ojos del Salado.

Table 51: Forecast of Minera Ojos del Salado Processing Cost

Minera Ojos del Salado Processing Cost	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	0.90	0.80	0.90	0.80	0.90
Contractors	US$/t	2.00	2.00	2.00	2.00	2.00
Supplies	US$/t	1.30	1.30	1.40	1.30	1.30
Energy	US$/t	1.30	1.30	1.30	1.30	1.30
Other	US$/t	2.60	2.50	2.40	2.50	2.50
Total Unit Cost	**US$/t**	**8.10**	**7.90**	**7.90**	**7.90**	**8.00**
Total Cost						
Labour	US$M	3.0	2.9	2.9	2.9	2.9
Contractors	US$M	6.8	6.9	6.7	6.9	6.8
Supplies	US$M	4.5	4.6	4.6	4.6	4.6
Energy	US$M	4.4	4.4	4.4	4.4	4.4
Other	US$M	8.8	8.4	8.3	8.5	8.5
Total Cost	**US$M**	**27.4**	**27.2**	**26.9**	**27.3**	**27.2**

The average processing cost for Minera Ojos del Salado over the next four years is forecast at US$8.00 per tonne. This is a combination of costs for treating Santos ore at the PAC plant plus Alcaparrosa ore and a small amount of Santos ore at the Candelaria plant. The PAC plant is considerably smaller than the Candelaria plant with higher operating costs that average US$14.00 per tonne. Energy and supplies make up the largest cost element, while labour and contractor costs are proportionately larger, given the significantly smaller plant size.

20.1.3 General and Administrative Costs

A breakdown of the forecast general and administration (G&A) costs for Minera Candelaria is shown in Table 52.

Table 52: Forecast of Minera Candelaria General and Administration Cost

Candelaria G&A Cost	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	0.90	1.00	0.90	0.90	0.90
Contractors	US$/t	1.40	1.10	1.10	1.00	1.20
Supplies	US$/t	0.30	0.20	0.20	0.20	0.20
Energy	US$/t	0.00	0.00	0.00	0.00	0.00
Other*	US$/t	-0.00	-0.00	-0.00	-0.00	-0.00
Total Unit Cost	**US$/t**	2.60	2.40	2.20	2.20	2.30
Total Cost						
Labour	US$M	22.8	25.0	25.0	25.0	24.4
Contractors	US$M	36.9	29.1	28.7	28.1	30.7
Supplies	US$M	6.9	5.9	5.7	5.8	6.1
Energy	US$M	0.6	0.6	0.6	0.6	0.6
Other*	US$M	-0.4	-0.4	-0.4	-0.4	-0,4
Total Cost	**US$M**	**66.9**	**60.2**	**59.6**	**59.1**	**61.5**

* The negative values under Other refer to the forecast of the laboratory cost, which is allocated to processing costs.

The forecast average unit general and administration (G&A) cost for the Minera Candelaria mines over the next four years is US$2.30 per tonne. Forecast G&A costs have risen slightly from previous cost estimates largely because of the increase in operating supplies costs (computer and IT equipment replacement programs). Total annual costs over the period range between US$59 and US$67 million.

The forecast G&A costs at the Minera Ojos del Salado mines are summarized in Table 53. The forecast average unit G&A cost for Minera Ojos del Salado over the next four years is estimated at US$1.80 per tonne.

Table 53: Forecast of Minera Ojos del Salado General and Administration Cost

Minera Ojos del Salado G&A Cost	Unit	2018	2019	2020	2021	Average 2018-2021
Unit Cost						
Labour	US$/t	0.40	0.40	0.50	0.40	0.40
Contractors	US$/t	1.10	1.20	1.10	1.00	1.10
Supplies	US$/t	0.20	0.30	0.20	0.20	0.20
Energy	US$/t	0.00	0.00	0.00	0.00	0.00
Other	US$/t	0.00	0.00	0.00	0.00	0.00
Total Unit Cost	**US$/t**	**1.70**	**2.00**	**1.70**	**1.70**	**1.80**
Total Cost						
Labour	US$M	1.4	1.5	1.5	1.5	1.5
Contractors	US$M	3.7	4.2	3.7	3.6	3.8
Supplies	US$M	0.6	0.9	0.6	0.6	0.7
Energy	US$M	0.0	0.0	0.0	0.0	0.0
Other	US$M	0.0	0.0	0.0	0.0	0.0
Total Cost	**US$M**	**5.7**	**6.7**	**5.9**	**5.7**	**6.0**

20.1.4 C1 Cash Costs

For 2017, the forecast combined Candelaria Copper Mining Complex C1 cash operating cost is estimated to be less than US$1.20 per pound. From 2018 to 2021, the forecast C1 cash costs will range from US$1.50 to US$1.70 per pound of copper net of by-product credits and the effect of the Franco-Nevada gold and silver streaming agreement. The forecast C1 cash cost for the following four years are shown below in Table 54.

Coincident with Lundin's acquisition of the Candelaria Copper Mining Complex, the company entered into a definitive agreement with Franco-Nevada (Barbados) Corporation, a subsidiary of Franco-Nevada to sell to Franco-Nevada a gold and silver stream from the Candelaria Copper Mining Complex in exchange for an upfront deposit of US$648 million payable at closing. Under the agreement, Franco-Nevada acquired 68 percent of the gold and silver production until 720 kilo ounces of gold and 12 million ounces of silver have been delivered. Thereafter, Franco-Nevada will be entitled to receive 40 percent of the gold and silver production from the operation. In addition to the upfront deposit, for each ounce of gold and silver delivered, Franco-Nevada will make ongoing payments equal to the lesser of (1) the prevailing market prices and (2) US$400 per ounce gold and US$4.00 per ounce silver. The ongoing payments for gold and silver will be subject to a 1 percent inflationary adjustment, beginning three years after the closing of the acquisition. It should be noted that the agreement with Franco-Nevada is with a separate wholly-owned subsidiary of Lundin and it is not an encumbrance or obligation on either Minera Candelaria or Minera Ojos del Salado. The effect of the agreement is reflected in the C1 cash costs below to allow an assessment of the economic impact to Lundin.

Life of mine C1 cash costs are forecast to be US$1.39 per pound of copper net of by-product credits and the Franco-Nevada gold and silver streaming agreement. Fluctuations in the cash cost are largely driven by the changes in the copper head grade in the open pit, and hence copper metal production, over the LOM.

Table 54: C1 Copper Cash Costs*

	Unit	2018	2019	2020	2021	Average LoM
Minera Candelaria	US$/lb Cu	1.55	1.45	1.40	1.41	1.35
Minera Ojos del Salado	US$/lb Cu	1.84	1.85	2.04	2.16	1.94
Candelaria Copper Mining Complex	**US$/lb Cu**	**1.61**	**1.53**	**1.51**	**1.52**	**1.39**

* Net of By-Projects and Effect of the Franco-Nevada Stream Agreement. The C1 cash cost represents the cash cost incurred at each processing stage, from mining through to recoverable metal delivered to market, less net by-product credits

20.2 Capital Costs

The forecast Minera Candelaria capital investment plan for the period from 2018 to 2026 is summarized in Table 55.

As shown, total capital expenditures excluding waste stripping over the period 2018 to 2021 are forecast at US$614.1 million and from 2022 to 2026 at US$338.3 million.

In the Candelaria Open Pit, a major recapitalization of the open pit mine equipment fleet has been approved, as detailed in chapter 15. This includes new trucks, shovels and ancillary equipment at a forecast total cost of US$218.8 million over the next four years.

Table 55: Forecast Capital Investment Plan for Minera Candelaria

Candelaria Capital Costs	Unit	2018	2019	2020	2021	Total 2018-2021	Total 2022-2026
Mine Open Pit	US$M	103.3	105.8	44.3	11.6	265.0	64.1
Mine Underground	US$M	55.1	41.5	22.5	23.8	142.9	68.9
Mill	US$M	61.0	31.2	4.9	3.9	101.1	28.6
Tailings	US$M	34.4	5.6	8.0	31.3	79.3	176.6
G&A	US$M	9.1	10.9	5.9		26.0	
Total	**US$M**	**262.8**	**195.1**	**85.6**	**70.6**	**614.1**	**338.3**
Capitalized Waste	**US$M**	**197.1**	**169.2**	**133.9**	**141.0**	**641.3**	**441.0**
Total Cost	**US$M**	**459.9**	**364.3**	**219.5**	**211.6**	**1,255.4**	**779.2**

Capital costs for the Candelaria Underground mine have increased significantly and represent the development and supporting mine infrastructure for the expanded production in the north sector of the Candelaria Underground and the initial development of the south sector of the mine. The south sector of the mine will be undertaken by owner operator teams and equipment. The forecast pre-production capital expenditure for development of the Candelaria Underground (South Sector) is US$47 million, of which US$20 million is expected to be spent in 2018. Total forecast underground capital costs at Candelaria over the next 4 years are US$142.9 million.

Candelaria mill capital costs are forecasted to be US$101.1 million over the next four years. These costs include a series of process improvement initiatives discussed in section 16.3. The total estimated cost of these improvements includes major upgrades to the primary crusher, pebble circuit, ball mill, cyclone and flotation cell for US$79.5 million, with an additional US$21.6 million estimated for smaller upgrade items such as DCS migration, courier replacement, mill monitoring systems, ball mill crown pinion replacement, transformers, building repairs and desalination plant membranes.

Tailings capital costs include the completion of the initial phase of the new Los Diques tailings storage facility, which is expected in mid-2018 and the early commencement of subsequent phases of the facility reducing both operating and capital costs over the long term.

G&A costs include a number of environmental and local community initiatives.

Lundin capitalizes waste stripping costs when experienced strip ratios are above the average planned strip ratio for each open pit phase under development. During the production phase of the Candelaria Open Pit, waste stripping costs, which provide probable future economic benefits and improved access to the orebody are capitalized to mineral properties. Capitalized waste stripping from the open

pit is forecast to be US$641.3 million for the period 2018 to 2021, and represents the changed phasing of the open pit and the increased stripping ratio over the short term.

The forecast capital expenditure estimate for the two-contractor operated Minera Ojos del Salado mines over the next four years totals US$71.3 million, as it can be seen in Table 56. This is a significant increase over previous forecasts and reflects the capitalization of mine access development in waste and the extension of both the Santos and Alcaparrosa mine lives to 2024. A US$6.8 million allowance has also been made under G&A to extend the PAC plant tailings pipeline to Los Diques in 2019.

Table 56: Forecast Capital Investment Plan for Minera Ojos del Salado

Ojos del Salado Capital Costs	Unit	2018	2019	2020	2021	Total 2018-2021	Total 2022-2026
Mine	US$M	22.7	14.9	13.1	9.2	60.0	2.2
Mill	US$M	0.8	0.5	-	-	1.3	0.0
Tailings	US$M	-	-	-	-	-	-
G&A	US$M	2.9	7.1	-	-	10.0	-
Total Cost	**US$M**	**26.4**	**22.5**	**13.1**	**9.2**	**71.3**	**2.2**

21 Economic Analysis

Producing issuers may exclude the information required under Economic Analysis (Item 22 of Form 43-101F1) for technical reports on properties currently in production unless the technical report includes a material expansion of current production.

22 Adjacent Properties

There are no adjacent properties that are relevant to the purpose of this technical report.

23 Other Relevant Data and Information

There is no other relevant data available about the Candelaria Copper Mining Complex.

24 Interpretation and Conclusions

The Candelaria Copper Mining Complex is a world class copper mining operation with a long life potential. In 2017, the two operations' combined contained metal in concentrate (100% basis) is forecast to be 184 kilotonnes of copper and 105,000 ounces of gold. Based on the June 30, 2017 Mineral Reserves, the projects are expected to continue operations until 2035. Aggressive ongoing resource expansion exploration, however, has the potential to extend the mine life beyond 2035 and further change the projected copper production profile by replacing low grade open pit and stockpile mill feed with higher grade ore extracted from the expanding underground mines and deferred depletion of the low-grade stockpiles. There are opportunities to increase the throughput capacity of the Candelaria plant through improvement initiatives currently under implementation and modifications to the grinding circuits.

A team of independent consultants returned to the Candelaria Copper Mining Complex during the fourth quarter of 2017 to review changes to the assets since December 2016. The technical information about the Candelaria Copper Mining Complex is extensive and attests to the overall high quality of the exploration, mine planning, and design work completed by site personnel, as is expected from such a world class asset.

SRK examined the exploration, geology, Mineral Resource modelling, mine designs, Mineral Reserve estimates, processing, and environmental aspects of the Candelaria Copper Mining Complex. The purpose of the investigation was to confirm that the Mineral Resource and Mineral Reserve estimates prepared by mine personnel were prepared in compliance with generally recognized industry best practices and can be reported according to Canadian Institute of Mining, Metallurgy and Petroleum *Definition Standards for Mineral Resources and Mineral Reserves* (May 2014).

The Mineral Resources and Mineral Reserves are distributed in one open pit mine and three separate underground mines. SRK audited a representative sample of the various block models and mine designs. For those models, SRK was able to replicate the tabulations prepared by mine personnel within rounding errors. On the basis of the results from the audit sample, SRK concludes that the Mineral Resources and Mineral Reserves Statements for the Candelaria Copper Mining Complex as of June 30, 2017 are appropriately categorized and free of material errors. Financial information examined during the SRK investigations confirm that the Mineral Reserves are economic under the assumptions considered.

SRK draws the following conclusions:

- The Candelaria Copper Mining Complex is world class mining operations with a long-life potential.
- Recent Mineral Resource modelling methodology revisions, including the integration of previously separate Mineral Resource models has enhanced the mineral resource estimation process while also contributing to Mineral Resource increases.
- The LOM plan forecasts depletion of Mineral Reserves in 2035.
- Mineral Reserves are estimated using a copper price of US$2.75 per pound and a gold price of US$1,000 per ounce.
- The "Candelaria 2030 - Project Operational Continuity," which includes the new Los Diques tailings storage facility, was approved in July 2015.

- At the end of October 2017, construction of Los Diques is well advanced, with the project progress at 84 percent complete, and the placement of first tailings remaining scheduled for the first quarter of 2018.
- The mines have their own state of the art export port facility at Punta Padrones with significant excess capacity.
- Ongoing aggressive exploration has defined new Mineral Resources and Mineral Reserves in the underground mines, significantly extending their lives. Further exploration success has the potential to extend their lives further and potentially allow increasing their throughput. This will improve the copper production profile by replacing low-grade open pit and stockpile mill feed with higher-grade underground ore and will defer stockpile depletion.
- The proposed aggressive exploration program (US$119 million from 2017 to 2021) will continue to add Mineral Resources and Mineral Reserves if implemented.
- Recent exploration in other parts of the large properties has identified several other exploration targets, with good potential for identifying new IOCG sulphide deposits in this exceptional IOCG deposit district.
- Exploration has been successful in extending the life of the Candelaria Copper Mining Complex to at least 2035. This success, coupled with the potential for further discoveries, has the potential to extend the life of the mining complex further, but will require modifications to the existing permits.
- A major mine open pit equipment re-capitalization programme has been approved that will improve equipment efficiency and reliability. A number of process improvements are also proposed that will see increases in plant throughout and recovery. The result of these initiatives, coupled with increased Mineral Reserves, results in an improved copper production schedule over the life of mine.
- Due to the extensions to the mine lives, conceptual studies and a Feasibility Study have been initiated to investigate potential options for production throughput expansions of the underground mines and the main Candelaria processing plant.
- The environmental permit for the Alcaparrosa mine ends in 2017, and an EIA was submitted to the regulatory authorities to extend the mine life until 2022. At the time of writing this the EIA remains under review by the SEA. The major technical issues are substantially resolved, Lundin expects to receive an RCA by the end of 2017. Failing this, Lundin may seek an interim extension of the existing environmental permit, or may suspend operations at Alcaparrosa until the SEA issues the RCA.
- The permit for the extension of the deposition of tailings from PAC Plant in the Candelaria tailings storage facility until 2030 was received in November 2017.
- In May 2015, Minera Candelaria received from the Superintendent of Environment notification of 16 environmental non-compliance violations, nine of which were classified as serious. The Superintendent of Environment rejected a Compliance Program and "descargos" submitted by Minera Candelaria and applied fines totalling approximately US$4 million. Minera Candelaria challenged this claim in the Environmental Court. The process is ongoing, and although the Court may decide to uphold these fines, the outcome of this process should have no impact on the operations.

Other than what has been disclosed in this technical report, SRK is not aware of any other significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the Mineral Resource and Mineral Reserve estimates prepared for the Candelaria Copper Mining Complex.

25 Recommendations

The Candelaria Copper Mining Complex comprises several operating copper mines with a combined life of mine projected to 2035 with the depletion of the Mineral Reserve estimates disclosed herein. Since 2010, aggressive exploration has defined several new sulphide mineralization zones amenable to underground mining. These significant discoveries together with ongoing mine optimization studies have a positive impact on the life and value of the Candelaria Copper Mining Complex by replacing low-grade open pit and stockpile plant feed with higher-grade underground ore, thereby deferring processing low grade work-in-progress stockpiles to a later date. The increase in underground Mineral Reserves have had a positive impact on the life of the underground mines. Lundin should continue with the studies initiated in 2016 to investigate expansion options for the underground mines, re-optimization of the open pit mine, and increase the throughput of the main Candelaria process plant.

SRK recommends that more mined-out underground stopes are surveyed to validate mineability factors used in the conversion of Mineral Resources to Mineral Reserves.

SRK strongly recommends that Lundin continues its aggressive exploration programs that have been very successful in increasing the Mineral Resources and the Mineral Reserves of the Candelaria Copper Mining Complex.

The recent exploration discoveries at depth and to the south of the open pit highlight the good exploration potential for the discovery of new sulphide deposits elsewhere on the large exploration properties controlled by the Candelaria Copper Mining Complex. In this context, the work on regional exploration targeting should continue, including the use of high resolution geophysical data.

26 References

AMEC International Ingeniería y Construcción Limitada (AMEC), 2013a: Estimation of useful life of Minera Candelaria. Nr. M40210-FO-00-RPT-001. Freeport-McMoRan Copper & Gold Inc., Project No. M40210, Compañia Contractual Minera Ojos del Salado. Issued: Dec. 9, 2013.

AMEC International Ingeniería y Construcción Limitada (AMEC), 2013b: Estimation of useful life of Minera Ojos del Salado. Freeport-McMoRan Copper & Gold Inc., Project No. M40231, Compañia Contractual Minera Ojos del Salado (LOM 2013). Issued: Nov. 27, 2013.

Aminpro Chile, 2016. Candelaria – Aumento de Capacidad, Report P2016-045, dated December 16, 2016.

Arevalo, C., Grocott, J., Martin, W., Pringle, M., Tayler, G., 2006: Structural Setting of the Candelaria Fe Oxide Cu-Au Deposit, Chilean Andes (27°30' S), Economic Geology, 101, p. 819-841.

Chlumsky, Armbrust and Meyer, LLC (CAM), 2012: Resource and Reserve Verification, Candelaria Project, Copiapó, Chile. Report prepared for Freeport-McMoRan Inc. on Feb. 3rd, 2012.

Dallmeyer, D., Brown, M., Grocott, J., Taylor, G.K., and Treloar, P., 1996: Mesozoic magmatic and tectonic events within the Andean plate boundary zone, 26º-27º 30', North Chile: Constraints from 40Ar/39Ar mineral ages: Journal of Geology, v. 104, p. 19–40.

Freeport-McMoRan (FMMR), 2014a: Candelaria & Ojos del Salado Overview, Exploration Review, March 2014 Presentation.

Freeport-McMoRan (FMMR), 2014b: Mine Candelaria, Geology Superintendence, June 2014 Presentation.

Marschik, R., and Fontbote, L., 2001: The Candelaria-Punta del Cobre Iron Oxide Cu-Au(-Zn-Ag) Deposits, Chile, Economic Geology, 96, p. 1799-1826.

Laznicka, P., 2010: Giant Metallic Deposits: Future Sources of Industrial Minerals, Springer, 2nd edition, p. 950.

Richards, J.P., and Mumin, A.H., 2013: Magmatic-hydrothermal processes within an evolving Earth: Iron oxide-copper-gold and porphyry Cu ± Mo ± Au deposits, Geology, 41, p. 767-770.

Sillitoe, R., 2003: Iron oxide-copper-gold deposits: an Andean view, Mineralium Deposita, 38, p. 787-812.

SGS Minerals S.A., 2017. Programa de Pruebas Piloto de Molienda SAG y Molienda de Bolas Para Minera Candelaria, Report OL-380, dated January 6, 2017.

SRK, 2014: Technical Report for the Compañía Minera Candelaria and Minera Ojos del Salado Copper Projects, Atacama Province, Region III, Chile. Technical Report prepared by SRK Consulting (Canada) Inc. for Lundin Mining Corporation and dated October 6, 2014.

SRK, 2017: Technical Report for the Candelaria Coper Mining Complex, Atacama Province, Region III, Chile. Technical Report prepared by SRK Consulting (Canada) Inc. for Lundin Mining Corporation and dated January 17, 2017.

Starkey & Associates, 2016. Candelaria Project SAGDesign Test Work Results For 3 Samples, S&A Project No. S205, dated November 11, 2016.

APPENDIX A

List of Exploitation and Exploration Concessions

Schedule A –-Minera Candelaria Mining Exploitation Concessions

	Nacional Rol	Name	Area (ha)	Registration Information					Status
				Page	No.	Year	Register	City	
1	03203-1863-7	AFUERINA 1/12	53	1404	278	10/10/1991	Property	Copiapo	Granted
2	03203-1817-3	AGUILA 1/12	50	1727 V	299	09/07/1990	Property	Copiapo	Granted
3	03203-1987-0	AGUILA 31/35	23	1005	182	17/07/1991	Property	Copiapo	Granted
4	03203-1287-6	ALCE 1/3	9	78	37	10/03/1986	Property	Copiapo	Granted
5	03203-1775-4	ANA 6	5	2676	536	18/12/1990	Property	Copiapo	Granted
6	03203-1904-8	ANDALUCIA 1/10	50	27 V	5	Año 1991	Property	Copiapo	Granted
7	03202-1986-8	ANDREA 10 1/20	100	285	62	30/07/2015	Property	Caldera	Granted
8	03202-1987-6	ANDREA 11 1/20	100	291	63	30/07/2015	Property	Caldera	Granted
9	03202-1988-4	ANDREA 12 1/20	100	297	64	30/07/2015	Property	Caldera	Granted
10	03202-1989-2	ANDREA 13 1/20	100	303	65	30/07/2015	Property	Caldera	Granted
11	03202-1990-6	ANDREA 14 1/40	146	453	87	28/09/2015	Property	Caldera	Granted
12	03202-1991-4	ANDREA 15 1/40	200	309	66	30/07/2015	Property	Caldera	Granted
13	03202-1992-2	ANDREA 16 1/40	200	315	67	30/07/2015	Property	Caldera	Granted
14	03202-1993-0	ANDREA 17 1/60	300	322	68	30/07/2015	Property	Caldera	Granted
15	03202-1994-9	ANDREA 18 1/60	300	329	69	30/07/2015	Property	Caldera	Granted
16	03202-1983-3	ANDREA 7 1/20	100	267	59	30/07/2015	Property	Caldera	Granted
17	03202-1984-1	ANDREA 8 1/20	100	273	60	30/07/2015	Property	Caldera	Granted
18	03202-1985-K	ANDREA 9 1/20	100	279	61	30/07/2015	Property	Caldera	Granted
19	03201-9704-K	ANDREA CINCO 1/40	200	3778	754	26/09/2013	Property	Copiapo	Granted
20	03201-A368-6	ANDREA CUATRO 1/6	16	2728	517	24/06/2013	Property	Copiapo	Granted
21	03201-A369-4	ANDREA CUATRO 11/20	48	4655 V	950	13/11/2013	Property	Copiapo	Granted
22	03201-A370-8	ANDREA CUATRO 21/30	70	2734 V	518	24/06/2013	Property	Copiapo	Granted
23	03201-A366-K	ANDREA DOS 1	2	4650 V	949	13/11/2013	Property	Copiapo	Granted
24	03201-9705-8	ANDREA SEIS 21/40	100	3784 V	755	26/09/2013	Property	Copiapo	Granted
25	03201-A364-3	ANDREA UNO 1/4	10	2740	519	24/06/2013	Property	Copiapo	Granted
26	03201-A365-1	ANDREA UNO 11/20	30	4644 V	948	13/11/2013	Property	Copiapo	Granted
27	03203-2009-7	ANGELICA 11/13	3	662	112	28/05/1991	Property	Copiapo	Granted
28	03203-2717-2	ANTONIA 1/10	100	1772	318	27/10/1993	Property	Copiapo	Granted
29	03203-2718-0	ANTONIA 11/20	100	1780	319	27/10/1993	Property	Copiapo	Granted
30	03203-2719-9	ANTONIA 21/30	70	1788	320	27/10/1993	Property	Copiapo	Granted
31	03203-2720-2	ANTONIA 31/40	100	1796	321	27/10/1993	Property	Copiapo	Granted
32	03203-2721-0	ANTONIA 41/50	100	1804	322	27/10/1993	Property	Copiapo	Granted
33	03203-2722-9	ANTONIA 51/70	100	1811	323	27/10/1993	Property	Copiapo	Granted
34	03203-2723-7	ANTONIA 71/80	100	1818 V	324	27/10/1993	Property	Copiapo	Granted
35	03203-2724-5	ANTONIA 81/90	100	1826	325	27/10/1993	Property	Copiapo	Granted
36	03203-2108-5	ANTONIA I 1/24	120	204 V	37	08/02/1994	Property	Copiapo	Granted
37	03203-0053-3	AURORA (R)	1	150 V	255	Año 1904	Property	Copiapo	Granted
38	03202-0932-3	BAHIA IV 1/10	40	12	4	14/09/1999	Property	Caldera	Granted
39	03202-0933-1	BAHIA V 1/30	150	21	6	07/12/1999	Property	Caldera	Granted
40	03202-0934-k	BAHIA VI 1/9	39	26	7	07/12/1999	Property	Caldera	Granted
41	03203-4953-2	BELLAVISTA 1/8	24	1467 V	366	21/12/2009	Property	Copiapo	Granted
42	03203-4955-9	BELLAVISTA 11/14	16	56 V	14	13/01/2010	Property	Copiapo	Granted
43	03203-4956-7	BELLAVISTA 15/18	20	63	15	13/01/2010	Property	Copiapo	Granted
44	03203-4954-0	BELLAVISTA 9/10	6	1474	367	21/12/2009	Property	Copiapo	Granted
45	03203-0230-7	BERTA DOS AL ESTE	3	316	119	19/08/1939	Property	Copiapo	Granted
46	03203-0229-3	BERTA UNO AL NORTE	4	316	119	19/08/1939	Property	Copiapo	Granted
47	03203-1622-7	BRISA 1/10	50	2232 V	383	03/09/1990	Property	Copiapo	Granted
48	03203-1623-5	BRISA 21/40	60	13 V	3	11/01/1991	Property	Copiapo	Granted
49	03203-1624-3	BRISA 41/45	25	21	4	Año 1991	Property	Copiapo	Granted
50	03203-1370-8	BRONCE 1/10	100	142	31	09/02/1987	Property	Copiapo	Granted
51	03203-1371-6	BRONCE 11/20	89	81	23	23/01/1987	Property	Copiapo	Granted
52	03203-1372-4	BRONCE 21/30	100	134	30	09/02/1987	Property	Copiapo	Granted
53	03203-1373-2	BRONCE 31/36	47	91 V	24	23/01/1987	Property	Copiapo	Granted
54	03203-1704-5	BRONCE 37	1	935 V	226	26/07/1989	Property	Copiapo	Granted
55	03203-1705-3	BRONCE 38	2	942	227	26/07/1989	Property	Copiapo	Granted
56	03203-1374-0	BRONCE 41/50	100	102	25	23/01/1987	Property	Copiapo	Granted
57	03203-1441-0	BRONCE 51/70	100	470	118	09/09/1987	Property	Copiapo	Granted
58	03203-1479-8	BRONCE 71/89	86	418 V	166	19/10/1988	Property	Copiapo	Granted
59	03203-1583-2	BRONCE 91/100	50	966	158	17/04/1990	Property	Copiapo	Granted

Continued

	Nacional Rol	Name	Area (ha)	Registration Information					Status
				Page	No.	Year	Register	City	
60	03203-1584-0	BRONCE 101/115	75	959	156	12/04/1990	Property	Copiapo	Granted
61	03203-3940-5	BRONCE CINCO 16/30	50	475 V	136	22/05/2000	Property	Copiapo	Granted
62	03203-3939-1	BRONCE CUATRO 1/30	123	465	135	22/05/2000	Property	Copiapo	Granted
63	03203-3938-3	BRONCE TRES 1/30	150	2164	486	18/10/2011	Property	Copiapo	Granted
64	03203-3945-6	BRONCE VEINTE 1/10	28	1407	323	18/11/1999	Property	Copiapo	Granted
65	03203-1905-6	CALEDONIA 1/5	25	34 V	6	Año 1991	Property	Copiapo	Granted
66	03203-4354-2	CARLA 10 11/15	23	67 V	33	08/02/2005	Property	Copiapo	Granted
67	03203-2762-8	CAROLITA CINCO 1/10	28	540	85	11/04/1994	Property	Copiapo	Granted
68	03203-2782-2	CAROLITA CUATRO 1/10	100	1787 V	316	26/12/1996	Property	Copiapo	Granted
69	03203-2688-5	CAROLITA DOS 1/25	78	2069 V	372	28/12/1993	Property	Copiapo	Granted
70	03203-2689-3	CAROLITA DOS 31	1	2079	373	28/12/1993	Property	Copiapo	Granted
71	03203-2781-4	CAROLITA TRES 1/14	124	1776 V	315	26/12/1996	Property	Copiapo	Granted
72	03203-2685-0	CAROLITA UNO 1/15	59	2046	369	28/12/1993	Property	Copiapo	Granted
73	03203-2686-9	CAROLITA UNO 16/22	7	2054	370	28/12/1993	Property	Copiapo	Granted
74	03203-2687-7	CAROLITA UNO 34/35	2	2062	371	28/12/1993	Property	Copiapo	Granted
75	03203-3346-6	Carolita VEINTIDOS 1/5	24	1495 V	261	08/10/1996	Property	Copiapo	Granted
76	03203-2330-4	CHIQUITA	3	1083 V	343	03/06/1992	Property	Copiapo	Granted
77	03203-2331-2	CHIQUITA I	1	1076 V	342	03/06/1992	Property	Copiapo	Granted
78	03203-1338-4	CIERVO 1/3	9	85	38	10/03/1986	Property	Copiapo	Granted
79	03203-1808-4	CONDOR 1/3	6	1754	302	09/07/1990	Property	Copiapo	Granted
80	03203-2095-K	CORA 1/20	140	1352 V	266	07/10/1991	Property	Copiapo	Granted
81	03203-2154-9	CORA 21/40	200	1758	332	09/12/1991	Property	Copiapo	Granted
82	03203-1749-5	COSTANERA 1/12	43	1648 V	281	Año 1990	Property	Copiapo	Granted
83	03203-1645-6	CRUCES 1/20	100	952	155	12/04/1990	Property	Copiapo	Granted
84	03203-1646-4	CRUCES 21/40	77	1768 V	304	09/07/1990	Property	Copiapo	Granted
85	03203-1647-2	CRUCES 41/66	130	2217 V	381	30/08/1990	Property	Copiapo	Granted
86	03203-4995-8	CRUCES DOS 1/26	68	610 V	138	22/06/2010	Property	Copiapo	Granted
87	03203-1772-k	CRUCES I 16/20	14	1750	331	09/12/1991	Property	Copiapo	Granted
88	03203-1773-8	CRUCES I 21/27	10	1646	316	13/11/1991	Property	Copiapo	Granted
89	03203-0784-8	DECIDIDA 1/2	10	261	140	Año 1956	Property	Copiapo	Granted
90	03203-0775-9	DELIRIO (SLM)	5	929	148	06/04/1990	Property	Copiapo	Granted
91	03203-5820-5	DESPRECIADA 1/2	6	2921 V	612	20/08/2012	Property	Copiapo	Granted
92	03203-0324-9	DESPRECIADA 1/6 (1)	5	180 V	82	14/09/1948	Property	Copiapo	Granted
93	03203-0289-7	DICHOSA	5	272 V	99	13/12/1936	Property	Copiapo	Granted
94	03203-7012-4	ELENA 1 1/8	22	4519	955	28/12/2015	Property	Copiapo	Granted
95	03203-7013-2	ELENA 1 11/12	4	3837	779	11/11/2015	Property	Copiapo	Granted
96	03203-1463-1	ESPERANZA 1/7	22	1652 V	317	13/11/1991	Property	Copiapo	Granted
97	03203-1409-7	ESTEBAN 1/4	14	499 V	70	01/02/1990	Property	Copiapo	Granted
98	03201-B587-0	ESTELA 1 1/40	200	4209 vta	1038	11/12/2014	Property	Copiapo	Granted
99	03201-B595-1	ESTELA 10 1/60	300	780 vta	161	11/02/2015	Property	Copiapo	Granted
100	03201-B596-K	ESTELA 11 1/30	145	4236 vta	1042	11/12/2014	Property	Copiapo	Granted
101	03201-B597-8	ESTELA 12 1/22	110	787 vta	162	11/02/2015	Property	Copiapo	Granted
102	03201-B598-6	ESTELA 12 31/43	39	793 vta	163	11/02/2015	Property	Copiapo	Granted
103	03201-B599-4	ESTELA 13 1/60	300	800	164	11/02/2015	Property	Copiapo	Granted
104	03201-B600-1	ESTELA 14 1/40	200	807	165	11/02/2015	Property	Copiapo	Granted
105	03201-B601-K	ESTELA 15 1/40	200	4243 vta	1043	11/12/2014	Property	Copiapo	Granted
106	03202-1941-8	ESTELA 16 1/40	200	436	84	27/08/2015	Property	Caldera	Granted
107	03201-B588-9	ESTELA 3 1/50	240	4216	1039	11/12/2014	Property	Copiapo	Granted
108	03201-B589-7	ESTELA 4 1/7	21	753 vta	157	11/02/2015	Property	Copiapo	Granted
109	03201-B289-8	ESTELA 5 1/60	214	1922	369	12/05/2015	Property	Copiapo	Granted
110	03201-B590-0	ESTELA 6 31/50	100	759 vta	158	11/02/2015	Property	Copiapo	Granted
111	03201-B591-9	ESTELA 7 1/40	196	766	159	11/02/2015	Property	Copiapo	Granted
112	03201-B592-7	ESTELA 8 1/44	212	4223 vta	1040	11/12/2014	Property	Copiapo	Granted
113	03201-B593-5	ESTELA 8 45/60	80	4230 vta	1041	11/12/2014	Property	Copiapo	Granted
114	03201-B594-3	ESTELA 9 1/60	300	773 vta	160	11/02/2015	Property	Copiapo	Granted
115	03201-C331-8	ESTELA A11 1/2	9	2056 v	573	18/11/2016	Property	Copiapo	Granted
116	03201-C330-k	ESTELA A2 1/48	240	2049 v	572	18/11/2016	Property	Copiapo	Granted
117	03203-0053-3	ESTRELLA (R)	2	147	253	Año 1904	Property	Copiapo	Granted
118	03203-5824-8	FLORENCIA 14 1/9	35	2434 V	528	26/07/2012	Property	Copiapo	Granted

Continued

Nacional RoI	Name	Area (ha)	Registration Information				Status
			Page	No.	Year	Register City	
119 03203-5825-6	FLORENCIA 15 1/5	15	2442 V	529	26/07/2012	Property Copiapo	Granted
120 03203-6400-0	FLORENCIA 18 2	5	669 V	185	13/03/2014	Property Copiapo	Granted
121 03203-5826-4	FLORENCIA 22 1/15	51	2449 V	530	26/07/2012	Property Copiapo	Granted
122 03203-5822-1	FLORENCIA 4 1/5	12	2426	527	26/07/2012	Property Copiapo	Granted
123 03203-7023-k	FLORENCIA A18 21/24	11	163 v	45	26/01/2016	Property Copiapo	Granted
124 03203-7021-3	FLORENCIA A3 1/12	21	270 v	58	02/02/2016	Property Copiapo	Granted
125 03203-0322-2	FUNDENTE 1/5	18	130	95	08/10/1951	Property Copiapo	Granted
126 03203-5821-3	FUNDENTES 1/20	81	1905 V	429	21/06/2012	Property Copiapo	Granted
127 03203-7092-2	GEMA II 1/40	158	2061 v	574	18/11/2016	Property Copiapo	Granted
128 03203-7093-0	GEMA III 1/40	200	768	192	15/04/2016	Property Copiapo	Granted
129 03203-7094-9	GEMA IV 1/10	50	774 v	193	15/04/2016	Property Copiapo	Granted
130 03203-7095-7	GEMA V 1/20	100	340	76	12/02/2016	Property Copiapo	Granted
131 03203-1655-3	GRANATE 120/126	14	40 V	5	02/01/1990	Property Copiapo	Granted
132 03203-0419-9	INDEPENDENCIA 1/20	50	264 V	109	13/12/1958	Property Copiapo	Granted
133 03203-0814-3	INDEPENDENCIA (SLM)	2	835	149	06/04/1990	Property Copiapo	Granted
134 03203-1464-K	LA PIRITA 1/7	43	100	39	09/04/1988	Property Copiapo	Granted
135 03203-4748-3	LA PITA 1/15	51	1459 V	365	21/12/2009	Property Copiapo	Granted
136 03203-1676-6	LA POLLITA 1/13	39	623	160	10/05/1989	Property Copiapo	Granted
137 03203-4749-1	LA POLO 1/6	18	1480	368	21/12/2009	Property Copiapo	Granted
138 03203-0097-5	LA Siete POR CIENTO 1/3	15	294	133	12/12/1955	Property Copiapo	Granted
139 03203-1204-3	LAR 1/10	50	220 V	111	22/08/1983	Property Copiapo	Granted
140 03203-2405-k	MACARENA 111/129	173	1357 V	261	13/09/1993	Property Copiapo	Granted
141 03203-2484-k	MACARENA 131/140	90	1437 V	271	20/09/1993	Property Copiapo	Granted
142 03203-2486-6	MACARENA 176/180	20	1049 V	203	18/08/1993	Property Copiapo	Granted
143 03203-2406-8	MACARENA 181/195	150	1366 V	262	13/09/1993	Property Copiapo	Granted
144 03203-2487-4	MACARENA 196/200	10	1375 V	263	13/09/1993	Property Copiapo	Granted
145 03203-2488-2	MACARENA 211/240	291	1057	204	18/08/1993	Property Copiapo	Granted
146 03203-2407-6	MACARENA 241/260	182	1384	264	13/09/1993	Property Copiapo	Granted
147 03203-2408-4	MACARENA 261/270	100	1393 V	265	13/09/1993	Property Copiapo	Granted
148 03203-2489-0	MACARENA 271/273	26	1403	266	13/09/1993	Property Copiapo	Granted
149 03203-2490-4	MACARENA 274/280	35	1412 V	267	13/09/1993	Property Copiapo	Granted
150 03203-2491-2	MACARENA 281	4	1421	268	13/09/1993	Property Copiapo	Granted
151 03203-2493-9	MACARENA 288/297	94	1066 V	205	18/08/1993	Property Copiapo	Granted
152 03203-2494-7	MACARENA 298/305	73	1075	206	18/08/1993	Property Copiapo	Granted
153 03203-2495-5	MACARENA 306/307	3	1083	207	18/08/1993	Property Copiapo	Granted
154 03203-2496-3	MACARENA 316/325	21	1090 V	208	18/08/1993	Property Copiapo	Granted
155 03203-2497-1	MACARENA 336	1	1100	209	18/08/1993	Property Copiapo	Granted
156 03203-2409-2	MACARENA 346/365	200	683 V	144	19/05/1993	Property Copiapo	Granted
157 03203-2498-k	MACARENA 366/385	200	1107 V	210	18/08/1993	Property Copiapo	Granted
158 03203-2499-8	MACARENA 386/405	200	1115 V	211	18/08/1993	Property Copiapo	Granted
159 03203-2500-5	MACARENA 406/425	78	454	106	21/04/1993	Property Copiapo	Granted
160 03203-2501-3	MACARENA 426/433	26	1123 V	212	18/08/1993	Property Copiapo	Granted
161 03203-2502-1	MACARENA 434/437	19	1132 V	213	18/08/1993	Property Copiapo	Granted
162 03203-2503-k	MACARENA 442/444	5	1140	214	18/08/1993	Property Copiapo	Granted
163 03203-2504-8	MACARENA 445/464	58	1148	215	18/08/1993	Property Copiapo	Granted
164 03203-1501-8	MANTO PEDREGAL 1/3	12	1049	251	22/08/1989	Property Copiapo	Granted
165 03203-7004-3	MARTITA 1 1/2	3	3115	646	10/09/2015	Property Copiapo	Granted
166 03203-6273-3	MARTITA 10 1/40	163	745	156	11/02/2015	Property Copiapo	Granted
167 03203-6495-7	MARTITA 6 1/17	68	662	184	13/03/2014	Property Copiapo	Granted
168 03203-7005-1	MARTITA 9 1	1	3121 v	647	10/09/2015	Property Copiapo	Granted
169 03203-0053-3	MERCEDES (R)	1	130 V	227	Año 1905	Property Copiapo	Granted
170 03203-1893-9	MILANO 41/44	18	484 V	77	23/04/1991	Property Copiapo	Granted
171 03203-1894-7	MILANO 51/54	15	1012	183	17/07/1991	Property Copiapo	Granted
172 03203-0853-4	NIC CARTER 1/2	7	134 V	95	08/09/1942	Property Copiapo	Granted
173 03203-1474-7	NIC CARTER II 1/20	78	1119 V	349	11/06/1992	Property Copiapo	Granted
174 03203-1502-6	OCHO POR CIENTO 1/5	18	1035	249	22/08/1989	Property Copiapo	Granted
175 03203-1438-0	OJANCO 1/20	86	205	73	22/06/1988	Property Copiapo	Granted
176 03203-1666-9	OJANCO 61/84	120	2430 V	429	19/10/1990	Property Copiapo	Granted
177 03203-1667-7	OJANCO 85/96	60	1300 V	216	10/05/1990	Property Copiapo	Granted

Continued

Nacional RoI	Name	Area (ha)	Registration Information					Status
			Page	No.	Year	Register	City	
178 03201-5472-3	OJANCO CINCO 3/5	8	540	176	09/04/1998	Property	Copiapo	Granted
179 03201-5473-1	Ojanco Cinco 6/15 (14/15)	12	546 V	177	09/04/1998	Property	Copiapo	Granted
180 03201-5465-0	OJANCO CUATRO 4/14	78	164 V	27	18/01/1999	Property	Copiapo	Granted
181 03201-5987-3	OJANCO DOS 1	1	869 V	227	07/12/2000	Property	Copiapo	Granted
182 03203-3616-3	OJANCO DOS 1/4	16	773	267	08/06/1998	Property	Copiapo	Granted
183 03203-3618-k	OJANCO DOS 11/16	36	786 V	269	08/06/1998	Property	Copiapo	Granted
184 03203-3617-1	OJANCO DOS 6/9	6	779 V	268	08/06/1998	Property	Copiapo	Granted
185 03203-2264-2	OJANCO I 41/50	50	492	78	23/04/1991	Property	Copiapo	Granted
186 03201-5988-1	OJANCO SEIS 1/18	61	236 V	69	11/04/2001	Property	Copiapo	Granted
187 03201-5461-8	OJANCO TRES 11/20	49	1177 V	340	14/07/1998	Property	Copiapo	Granted
188 03201-5463-4	OJANCO TRES 24/38	33	499 V	170	09/04/1998	Property	Copiapo	Granted
189 03201-5460-k	OJANCO TRES 4/10	17	1033 V	316	08/07/1998	Property	Copiapo	Granted
190 03201-5474-k	OJANCO VEINTIUNO 1/3	6	555 V	178	09/04/1998	Property	Copiapo	Granted
191 03201-5476-6	Ojanco VEINTIUNO 12/16	15	561 V	179	09/04/1998	Property	Copiapo	Granted
192 03201-5475-8	OJANCO VEINTIUNO 5/10	41	1062 V	320	08/07/1998	Property	Copiapo	Granted
193 03203-5261-4	OLI CINCO 1/4	20	438 V	99	27/02/2012	Property	Copiapo	Granted
194 03203-3612-0	PAME DOS 26/36	39	184	30	09/02/1999	Property	Copiapo	Granted
195 03203-3613-9	PAME DOS 38/66	83	1296 V	364	17/08/1998	Property	Copiapo	Granted
196 03203-3609-0	PAME UNO 24/28	7	1290 V	363	17/08/1998	Property	Copiapo	Granted
197 03203-3607-4	PAME UNO 6/7	3	793 V	270	08/06/1998	Property	Copiapo	Granted
198 03203-1497-6	PELIGROSA 1/20	88	713	178	05/06/1989	Property	Copiapo	Granted
199 03203-1403-8	PELUSIN 1/10	50	35	12	04/02/1988	Property	Copiapo	Granted
200 03203-1744-4	POLA 1/4	17	1029 V	176	30/04/1990	Property	Copiapo	Granted
201 03203-1585-9	PROTECTORA 1/10	50	487	68	31/01/1990	Property	Copiapo	Granted
202 03203-1586-7	PROTECTORA 21/40	100	1364 V	267	07/10/1991	Property	Copiapo	Granted
203 03203-1587-5	PROTECTORA 41/52	54	1372	268	07/10/1991	Property	Copiapo	Granted
204 03203-1588-3	PROTECTORA 55/68	67	1488	243	31/05/1990	Property	Copiapo	Granted
205 03203-1625-1	PUDU 1/2	2	2225	382	03/09/1990	Property	Copiapo	Granted
206 03202-0849-1	PUNTA PADRONES 1/33	132	55	9	24/06/1997	Property	Caldera	Granted
207 03203-1099-7	RENO 1/6	24	81 V	79	25/06/1979	Property	Copiapo	Granted
208 03203-1506-9	RESCATADA 1/8	36	181	61	09/02/1989	Property	Copiapo	Granted
209 03203-1626-k	RINCON 1/2	5	403	57	31/01/1990	Property	Copiapo	Granted
210 03203-0325-7	RINCONADA 1/5 (1/3)	12	464	136	26/09/1966	Property	Copiapo	Granted
211 03203-1431-3	RORO 1/6	30	261 V	94	11/08/1988	Property	Copiapo	Granted
212 03203-2327-4	ROSALIA I	1	1152	353	11/06/1992	Property	Copiapo	Granted
213 03203-2328-2	ROSALIA II	1	1158	354	11/06/1992	Property	Copiapo	Granted
214 03203-2329-0	ROSALIA III	1	1836 V	472	09/10/1992	Property	Copiapo	Granted
215 03203-2903-5	ROSICLER CUATRO 1/40	188	1214	232	14/09/1994	Property	Copiapo	Granted
216 03203-2904-3	ROSICLER DOS 1/31	140	1438	265	05/10/1994	Property	Copiapo	Granted
217 03203-2906-k	ROSICLER TRES 1/20	200	1430	264	05/10/1994	Property	Copiapo	Granted
218 03203-2037-2	ROSITA	1	927 V	171	17/07/1991	Property	Copiapo	Granted
219 03203-0077-0	SAN GREGORIO	5	173	72	28/07/1939	Property	Copiapo	Granted
220 03203-1496-8	SAN JOSE 1/5	25	748	191	30/06/1989	Property	Copiapo	Granted
221 03203-1755-k	SAN JOSE Y SOFIA 1	10	2080	356	14/08/1990	Property	Copiapo	Granted
222 03203-0053-3	SAN LUIS (R)	4	152	256	Año 1904	Property	Copiapo	Granted
223 03203-1022-9	SAN PANCRACIO 1/3	13	102 V	49	11/07/1972	Property	Copiapo	Granted
224 03203-1789-4	San Pedro I 11/20,31/34, 46/48	79	1386 V	227	15/05/1990	Property	Copiapo	Granted
225 03203-1790-8	SAN PEDRO II 1/48	48	1378	226	15/05/1990	Property	Copiapo	Granted
226 03203-0053-3	SAN RAMON	1	54 V	19	Año 1968	Property	Copiapo	Granted
227 03203-1788-6	SANTA GEMITA II 1/20	123	2543	450	23/11/1990	Property	Copiapo	Granted
228 03203-1680-4	SANTA GEMITA III 1/20	190	927	225	26/07/1989	Property	Copiapo	Granted
229 03203-1742-8	SANTA GEMITA IV 1/5	50	2691	538	19/12/1990	Property	Copiapo	Granted
230 03203-1743-6	SANTA GEMITA V 1/10	100	2145	368	24/08/1990	Property	Copiapo	Granted
231 03203-0112-2	SANTA ROSA 1/10	49	321	142	22/06/1959	Property	Copiapo	Granted
232 03203-1698-7	SANTA SOFIA 1/60	60	664 V	166	12/05/1989	Property	Copiapo	Granted
233 03203-1756-8	SANTA TERESA I 1/20	100	1842 V	473	13/10/1992	Property	Copiapo	Granted
234 03203-1757-6	SANTA TERESA II 1/20	100	1849	474	13/10/1992	Property	Copiapo	Granted
235 03203-1758-4	SANTA TERESA III 1/20	100	1856 V	475	13/10/1992	Property	Copiapo	Granted

Continued

	Nacional Rol	Name	Area (ha)	Registration Information					Status
				Page	No.	Year	Register	City	
236	03203-1846-7	SUR 1/2	2	2331	400	12/09/1990	Property	Copiapo	Granted
237	03201-7174-1	Tolito SEGUNDA 1/6 (R)	30	574	160	09/07/2007	Property	Copiapo	Granted
238	03203-1480-1	VENADO 1/22	104	568	234	22/12/1988	Property	Copiapo	Granted
239	03203-1543-3	VENADO 25/39	65	1213	290	10/10/1989	Property	Copiapo	Granted
240	03203-1663-4	VENADO II 1/10	33	386	55	31/01/1990	Property	Copiapo	Granted
241	03203-1759-2	VENADO II 17/46	150	573	82	28/02/1990	Property	Copiapo	Granted
242	03203-2451-3	VENTARRON 1/20	88	577 V	130	05/05/1993	Property	Copiapo	Granted
243	03203-1478-k	VIENTO 1/20	100	95 V	35	13/01/1989	Property	Copiapo	Granted
244	03203-1408-9	VIENTO 21/31	41	150 V	32	09/02/1987	Property	Copiapo	Granted
245	03203-1544-1	VIENTO 41/58	90	869 V	214	19/07/1989	Property	Copiapo	Granted
246	03203-1545-k	VIENTO 59/84	130	502	132	20/04/1989	Property	Copiapo	Granted
247	03203-1546-8	VIENTO 85/102	90	508 V	133	20/04/1989	Property	Copiapo	Granted
248	03203-1508-5	VIENTO 103/122	100	102	36	13/01/1989	Property	Copiapo	Granted
249	03203-1664-2	VIENTO II 21/29	41	1745 V	301	09/07/1990	Property	Copiapo	Granted
250		ESTELA B6 1-20	100				Discovery	Copiapo	In Process
251		ESTELA B6 21-40	100				Discovery	Copiapo	In Process
252		JUANITA 2 1-20	100				Discovery	Copiapo	In Process
253		JUANITA 3 1-4	24				Discovery	Copiapo	In Process
254		JUANITA 4 1-8	40				Discovery	Copiapo	In Process

Schedule A – Minera Candelaria Exploration Concessions

	Nacional Rol	Name	Area (ha)	Registration Information						Status	Expiration Date
				Page		Number	Year	Register	City		
1	03203-E313-K	Bellavista B1	100	2928	v	1999	6/13/2016	Discover	Copiapo	Granted	4/29/2018
2	03203-E316-4	MARTITA C10	300	2930	v	2000	6/13/2016	Discover	Copiapo	Granted	4/29/2018
3	03203-E317-2	MARTITA C11	300	2932		2001	6/13/2016	Discover	Copiapo	Granted	4/29/2018
4	03203-E318-0	MARTITA C23	300	2934		2002	6/13/2016	Discover	Copiapo	Granted	4/29/2018
5	03203-E319-9	MARTITA C24	300	2935	v	2003	6/13/2016	Discover	Copiapo	Granted	4/29/2018
6	03203-E314-8	MARTITA C25	200	2937	v	2004	6/13/2016	Discover	Copiapo	Granted	4/29/2018
7	03203-E315-6	MARTITA C26	100	2939		2005	6/13/2016	Discover	Copiapo	Granted	4/29/2018
8	03203-E406-3	MARTITA C13	300	5320		3514	11/21/2016	Discover	Copiapo	Granted	9/15/2018
9	03203-E404-7	MARTITA C3	300	5313		3510	11/21/2016	Discover	Copiapo	Granted	9/15/2018
10	03203-E405-5	MARTITA C7	300	5316	v	3512	11/21/2016	Discover	Copiapo	Granted	9/15/2018
11	03203-E387-3	MARTITA C8	100	5318		3513	11/21/2016	Discover	Copiapo	Granted	9/16/2018
12	03203-E386-5	MARTITA C4	300	5314	v	3511	11/21/2016	Discover	Copiapo	Granted	9/23/2018
13	03203-L211-6	LICHA A3	100	5636	v	3741	12/13/2016	Discover	Copiapo	Granted	10/4/2018
14	03203-E421-7	MARTITA C17	300	5644	v	3745	12/13/2016	Discover	Copiapo	Granted	10/4/2018
15	03203-E422-5	MARTITA C19	200	5646	v	3746	12/13/2016	Discover	Copiapo	Granted	10/4/2018
16	03203-E423-3	MARTITA C21	200	5650	v	3748	12/13/2016	Discover	Copiapo	Granted	10/4/2018
17	03203-E428-4	MARTITA C12	300	5642	v	3744	12/13/2016	Discover	Copiapo	Granted	10/12/2018
18	03203-E426-8	MARTITA C2	300	5638	v	3742	12/13/2016	Discover	Copiapo	Granted	10/12/2018
19	03203-E429-2	MARTITA C20	200	5648	v	3747	12/13/2016	Discover	Copiapo	Granted	10/12/2018
20	03203-E427-6	MARTITA C6	300	5640	v	3743	12/13/2016	Discover	Copiapo	Granted	10/12/2018
21	03201-L268-k	MARTITA C1	300	116	v	70	1/12/2017	Discover	Copiapo	Granted	10/24/2018
22	03203-E490-k	MARTITA C5	300	118		71	1/12/2017	Discover	Copiapo	Granted	10/24/2018
23	03203-E491-8	MARTITA C9	300	120		72	1/12/2017	Discover	Copiapo	Granted	10/24/2018
24	03201-L274-4	LICHA A2	200	121	v	73	1/12/2017	Discover	Copiapo	Granted	10/25/2018
25	03203-E510-8	MARTITA C16	200	123	v	74	1/12/2017	Discover	Copiapo	Granted	10/25/2018
26	03203-E454-3	MARTITA C22	100	127		76	1/12/2017	Discover	Copiapo	Granted	10/28/2018
27	03203-E452-7	MARTITA C14	300	125	v	75	1/12/2017	Discover	Copiapo	Granted	11/7/2018
28	03202-2909-K	CALDERA 1	200	29		15	1/13/2017	Discover	Caldera	Granted	11/8/2018
29	03202-2910-3	CALDERA 2	200	31		16	1/13/2017	Discover	Caldera	Granted	11/8/2018
30	03202-2912-K	CALDERA 3	100	33		17	1/13/2017	Discover	Caldera	Granted	11/8/2018
31	03202-2911-1	CALDERA 4	100	35		18	1/13/2017	Discover	Caldera	Granted	11/8/2018
32	03203-E453-5	MARTITA C18	100	662		434	2/20/2017	Discover	Copiapo	Granted	11/11/2018
33	03201-L390-2	LICHA A1	200	664	v	435	2/20/2017	Discover	Copiapo	Granted	12/17/2018
34	03203-E542-6	MARTITA C15	300	660	v	433	2/20/2017	Discover	Copiapo	Granted	12/17/2018
35	03201-L853-K	JUANITA 2A	100	4051		2629	9/4/2017	Discover	Copiapo	Granted	7/19/2019
36	03203-E720-8	SUR 1	100	4049		2628	9/4/2017	Discover	Copiapo	Granted	7/19/2019
37		ANDREA C10	100					Discover	Caldera	In Process	
38		ANDREA C11	100					Discover	Caldera	In Process	
39		ANDREA C12	100					Discover	Caldera	In Process	
40		ANDREA C13	100					Discover	Caldera	In Process	
41		ANDREA C14	200					Discover	Caldera	In Process	
42		ANDREA C15	200					Discover	Caldera	In Process	
43		ANDREA C16	200					Discover	Caldera	In Process	
44		ANDREA C17	300					Discover	Caldera	In Process	
45		ANDREA C18	300					Discover	Caldera	In Process	
46		ANDREA C7	100					Discover	Caldera	In Process	
47		ANDREA C8	100					Discover	Caldera	In Process	
48		ANDREA C9	100					Discover	Caldera	In Process	
49	03201-M147-6	ESTELA C1	200					Discover	Copiapo	In Process	
50	03201-M150-6	ESTELA C10	300					Discover	Copiapo	In Process	
51	03201-M144-1	ESTELA C11	200					Discover	Copiapo	In Process	
52	03201-M145-K	ESTELA C12	300					Discover	Copiapo	In Process	
53	03201-M179-4	ESTELA C13	300					Discover	Copiapo	In Process	
54		ESTELA C14	200					Discover	Copiapo	In Process	
55	03201-M151-4	ESTELA C15	200					Discover	Copiapo	In Process	
56		ESTELA C16	200					Discover	Caldera	In Process	
57	03201-M148-4	ESTELA C2	300					Discover	Copiapo	In Process	
58		ESTELA C3	300					Discover	Copiapo	In Process	
59	03201-M142-5	ESTELA C4	100					Discover	Copiapo	In Process	

Continued

Nacional Rol	Name	Area (ha)	Registration Information					Status	Expiration Date
			Page	Number	Year	Register	City		
60 03201-M146-8	ESTELA C5	300				Discover	Copiapo	In Process	
61 03201-M149-2	ESTELA C6	300				Discover	Copiapo	In Process	
62	ESTELA C7	200				Discover	Copiapo	In Process	
63 03201-M143-3	ESTELA C8	300				Discover	Copiapo	In Process	
64	ESTELA C9	300				Discover	Copiapo	In Process	
65 03201-K221-8	JUANITA 3 (renewal)	100				Discover	Copiapo	In Process	
66	JUANITA A4	100				Discover	Copiapo	In Process	

Schedule B – Minera Ojos del Salado Mining Exploitation Concessions

	Nacional Rol	Name	Area (has)	Page	Registration Information No.	Year	Register	City	Status
1	03203-1642-1	ALBA 127/156	132	1164 V	281	22/09/1989	Property	Copiapo	Granted
2	03203-1643-k	ALBA 157/160	11	470	66	31/01/1990	Property	Copiapo	Granted
3	03203-1644-8	ALBA 163/169	22	478 V	67	31/01/1990	Property	Copiapo	Granted
4	03203-1637-5	ALBA 17/36	100	1064 V	181	30/04/1990	Property	Copiapo	Granted
5	03203-1638-3	ALBA 37/56	100	1157 V	280	22/09/1989	Property	Copiapo	Granted
6	03203-1639-1	ALBA 57/76	100	447	63	31/01/1990	Property	Copiapo	Granted
7	03203-0748-1	ALCAPARROSA	5	163 V	207	24-07-1877	Property	Copiapo	Granted
8	03203-0749-k	ALCAPARROSA II y IV	10	370	137	05/09/1939	Property	Copiapo	Granted
9	03203-0932-8	ALTA SIERRA 1/11 (2)	8	86	33	31/03/1965	Property	Copiapo	Granted
10	03201-0095-K	AURORA	5	4	2	15/01/1954	Property	Copiapo	Granted
11	03203-2165-4	Blanca Torre de Carrizalillo 1/25	20	1906	482	20/10/1992	Property	Copiapo	Granted
12	03201-5796-k	BONANZA CUARTA 1/60	300	347 V	78	22/03/1999	Property	Copiapo	Granted
13	03201-5728-5	BONANZA DOS 1/10	40	177 V	29	09/02/1999	Property	Copiapo	Granted
14	03201-5797-8	BONANZA SEXTA 1	1	354 V	79	22/03/1999	Property	Copiapo	Granted
15	03201-5800-1	Bonanza Sexta 11,12,33/60	150	370	82	22/03/1999	Property	Copiapo	Granted
16	03201-5798-6	BONANZA SEXTA 6	1	359 V	80	22/03/1999	Property	Copiapo	Granted
17	03201-5799-4	BONANZA SEXTA 7/10	13	364 V	81	22/03/1999	Property	Copiapo	Granted
18	03201-5795-1	BONANZA TERCERA 1/60	300	340 V	77	22/03/1999	Property	Copiapo	Granted
19	03201-5189-9	BONANZA UNO 1/40	200	288 V	44	27/02/1997	Property	Copiapo	Granted
20	03203-5656-3	BRISA CUATRO 1/2	6	747 V	148	21/02/2013	Property	Copiapo	Granted
21	03203-6329-2	BRISA SIETE 1/2	2	689 V	188	13/03/2014	Property	Copiapo	Granted
22	03203-5655-5	BRISA TRES 1/2	2	2457 V	531	26/07/2012	Property	Copiapo	Granted
23	03203-6486-8	BUITRE 2 1/48	217	682	187	13/03/2014	Property	Copiapo	Granted
24	03201-0728-8	CARMEN	5	253	94	08/11/1935	Property	Copiapo	Granted
25	03203-3245-1	CARO TRES 37	1	230 V	34	19/02/1996	Property	Copiapo	Granted
26	03203-1876-9	CAROLITA 1/7	22	1296	243	26/09/1991	Property	Copiapo	Granted
27	03203-3170-6	CAROLITA SEIS 1/10	30	1919	302	01/12/1995	Property	Copiapo	Granted
28	03201-2431-K	CECILIA 1/106	506	173	71	24/04/1986	Property	Copiapo	Granted
29	03203-1978-1	CHICA 1/3	4	997 V	181	17/07/1991	Property	Copiapo	Granted
30	03203-1981-1	CHICA 14/20	31	1222	365	03/07/1992	Property	Copiapo	Granted
31	03203-1982-k	CHICA 22/25	7	971 V	178	17/07/1991	Property	Copiapo	Granted
32	03203-1983-8	CHICA 26/31	13	988 V	180	17/07/1991	Property	Copiapo	Granted
33	03203-1984-6	CHICA 32/38	24	979	179	17/07/1991	Property	Copiapo	Granted
34	03203-1985-4	CHICA 39	1	965 V	177	17/07/1991	Property	Copiapo	Granted
35	03203-1979-k	CHICA 4/12	20	957 V	176	17/07/1991	Property	Copiapo	Granted
36	03203-1970-6	CLAUDIA 1/17	17	153 V	25	18/02/1991	Property	Copiapo	Granted
37	03203-2980-9	COALA DOS 11/24	51	42 V	6	05/01/1995	Property	Copiapo	Granted
38	03203-2981-7	COALA TRES 13/20	32	51	7	05/01/1995	Property	Copiapo	Granted
39	03201-5126-0	CONDOR 1/20	100	847	143	30/06/1997	Property	Copiapo	Granted
40	03201-2201-5	Cooperativa Agustina 1/10	50	438	136	18/11/1980	Property	Copiapo	Granted
41	03203-6954-1	CORA A1 1/60	300	2819 v	592	27/07/2015	Property	Copiapo	Granted
42	03203-6955-K	CORA A2 1/60	300	2827	593	27/07/2015	Property	Copiapo	Granted
43	03203-6956-8	CORA A3 1/40	200	2848	595	27/07/2015	Property	Copiapo	Granted
44	03203-6957-6	CORA A4 1/39	177	2834	594	27/07/2015	Property	Copiapo	Granted
45	03203-6958-4	CORA A5 1/43	168	3843	780	11/11/2015	Property	Copiapo	Granted
46	03203-6959-2	CORA A6 1/7	16	4277	912	14/12/2015	Property	Copiapo	Granted
47	03203-1662-6	CORITA 1/8	40	1896 V	326	19/07/1990	Property	Copiapo	Granted
48	03203-0276-5	COTOPAXI 1/5 (3)	15	483	124	16/11/1962	Property	Copiapo	Granted
49	03201-5991-1	CRUCES NUEVE 1/20	100	829 V	207	29/11/2000	Property	Copiapo	Granted
50	03203-4067-5	CRUCES OCHO 1/15	75	816 V	205	29/11/2000	Property	Copiapo	Granted
51	03203-4068-3	CRUCES OCHO 41/60	85	823	206	29/11/2000	Property	Copiapo	Granted
52	03201-5990-3	Cruces SIETE 1/20 y 31/50	120	810	204	29/11/2000	Property	Copiapo	Granted
53	03201-2203-1	CUTANA 1/10	47	138	44	02/07/1971	Property	Copiapo	Granted
54	03203-6881-2	DANIELA DIEZ 1/3	12	813 vta	166	11/02/2015	Property	Copiapo	Granted
55	03201-0180-8	DESCUBRIDORA 1/2	10	123	62	09/10/1952	Property	Copiapo	Granted
56	03203-0294-3	DESCUIDADA II (R)	2	8	3	08/01/1940	Property	Copiapo	Granted
57	03203-0782-1	DESCUIDADA VI (R)	3	113	56	15/05/1952	Property	Copiapo	Granted
58	03203-0296-K	DESEADA	5	71	34	Año 1942	Property	Copiapo	Granted

Continued

Nacional RoI	Name	Area (has)	Page	Registration Information No.	Year	Register	City	Status
59 03201-1509-4	DESPRECIADA 1/2	10	1	1	06/05/1947	Property	Copiapo	Granted
60 03203-2751-2	DICASO 1/40 (1/9)	45	131 V	61	16/04/1981	Property	Copiapo	Granted
61 03201-0034-8	ESCAPADA	30	406 V	177	01/11/1938	Property	Copiapo	Granted
62 03201-2118-3	GLADYS 1/73	358	111 V	57	09/04/1981	Property	Copiapo	Granted
63 03203-1648-0	GRANATE 1/21	105	1279	213	11/05/1990	Property	Copiapo	Granted
64 03203-1649-9	GRANATE 22/41	100	1293 V	215	11/05/1990	Property	Copiapo	Granted
65 03203-1650-2	GRANATE 42/48	28	1761	303	09/07/1990	Property	Copiapo	Granted
66 03203-1651-0	GRANATE 64/76	42	1249	210	11/05/1990	Property	Copiapo	Granted
67 03203-1652-9	GRANATE 86/90	15	190 V	21	09/01/1990	Property	Copiapo	Granted
68 03203-1653-7	GRANATE 92/104	65	425	60	31/01/1990	Property	Copiapo	Granted
69 03203-1654-5	GRANATE 105/119	45	1695 V	294	05/07/1990	Property	Copiapo	Granted
70 03203-1632-4	HERCULES 35/60	90	610	87	08/03/1990	Property	Copiapo	Granted
71 03203 1633-2	HERCULES 63/90	112	1903 V	327	23/07/1990	Property	Copiapo	Granted
72 03203 1634-0	HERCULES 91/101	40	1306 V	217	10/05/1990	Property	Copiapo	Granted
73 03203-1885-8	HERCULES II 1/12	30	257 V	40	12/02/1992	Property	Copiapo	Granted
74 03203-3224-9	JILGUERO DOS 1/10	20	36 V	5	03/01/1996	Property	Copiapo	Granted
75 03203-3621-k	Jilguero Secunda 21/23	3	1395 V	321	18/11/1999	Property	Copiapo	Granted
76 03203-3968-5	Jilguero Secunda 41/45	9	1401	322	18/11/1999	Property	Copiapo	Granted
77 03203-0829-1	LA DICHOSA 1/2	10	304 V	137	12/12/1955	Property	Copiapo	Granted
78 03203-2800-4	LADRILLOSDOS 27/39	14	2037	368	28/12/1993	Property	Copiapo	Granted
79 03203-2810-1	LADRILLOSTRES 1/10	30	1206 V	231	14/09/1994	Property	Copiapo	Granted
80 03203-2811-k	LADRILLOSTRES 51/52	5	1560 V	284	19/10/1994	Property	Copiapo	Granted
81 03203-2799-7	LADRILLOSUNO 1/22	69	2025 V	367	28/12/1993	Property	Copiapo	Granted
82 03201-2169-8	LAS ADRIANITAS 1/28	45	266 V	124	18/06/1970	Property	Copiapo	Granted
83 03203-4107-8	LAS PINTADAS 1/37	172	1	1	04/01/2001	Property	Copiapo	Granted
84 03203-4109-4	LAS PINTADAS 121/125	7	24 V	3	04/01/2001	Property	Copiapo	Granted
85 03203-4110-8	LAS PINTADAS 131/135	18	32	4	04/01/2001	Property	Copiapo	Granted
86 03203-4111-6	LAS PINTADAS 141	3	38 V	5	04/01/2001	Property	Copiapo	Granted
87 03203-4108-6	LAS PINTADAS 61/120	251	11	2	04/01/2001	Property	Copiapo	Granted
88 03203-0440-7	LASTENIA	2	58	95	16-07-1890	Property	Copiapo	Granted
89 03203-0444-k	LAURA REBECA (SLM)	2	434	189	15/12/1938	Property	Copiapo	Granted
90 03203-0445-8	LAURA SEGUNDA (SLM)	2	434	189	15/12/1938	Property	Copiapo	Granted
91 03201-7107-5	LECHUZA 1/40	198	65	32	24/03/2008	Property	Copiapo	Granted
92 03201-8842-3	LECHUZA SUR 1/15	53	2464 V	532	26/07/2012	Property	Copiapo	Granted
93 03201-5125-2	LEON 1/20	100	855	144	30/06/1997	Property	Copiapo	Granted
94 03203-4028-4	MACA DOS 61/62	2	485 V	141	08/06/2000	Property	Copiapo	Granted
95 03203-2481-5	MACARENA 61/70	71	1023 V	200	18/08/1993	Property	Copiapo	Granted
96 03203-2479-3	MACARENA 11/28	144	1014	199	18/08/1993	Property	Copiapo	Granted
97 03203-2480-7	MACARENA 41/49	10	587	131	05/05/1993	Property	Copiapo	Granted
98 03203-2506-4	MACARENA 469/478	31	1164	217	18/08/1993	Property	Copiapo	Granted
99 03203-2508-0	MACARENA 495/497	6	1182 V	219	18/08/1993	Property	Copiapo	Granted
100 03203-2483-1	MACARENA 101/110	55	1040 V	202	18/08/1993	Property	Copiapo	Granted
101 03203 2505-6	MACARENA 467	4	1157	216	18/08/1993	Property	Copiapo	Granted
102 03203 2507-2	MACARENA 485/494	16	1174	218	18/08/1993	Property	Copiapo	Granted
103 03203-2482-3	MACARENA 81/87	65	1032 V	201	18/08/1993	Property	Copiapo	Granted
104 03203-2517-k	MACARENA 969/978	32	1231	225	18/08/1993	Property	Copiapo	Granted
105 03203-4014-4	MAK CUATRO 1/4	6	491	142	08/06/2000	Property	Copiapo	Granted
106 03203-0564-0	MALAQUITA 1/156	589	183	56	08/07/1968	Property	Copiapo	Granted
107 03203-1736-3	MALAQUITA 157	1	580	83	28/02/1990	Property	Copiapo	Granted
108 03203-1976-5	MALAQUITA 159/161	6	835 V	132	08/05/1992	Property	Copiapo	Granted
109 03201-2302-k	MAMIÑA 1/125	582	219 V	117	26/06/1981	Property	Copiapo	Granted
110 03203-0843-7	MANTO MONSTRUO UNO	5	192	87	27/10/1948	Property	Copiapo	Granted
111 03203-0700-7	Marcela del Carmen 1/5	25	235	155	07/12/1950	Property	Copiapo	Granted
112 03201-7795-2	MARK 1/40	200	445	100	27/02/2012	Property	Copiapo	Granted
113 03201-7797-9	MARK 101/160	300	452 V	101	27/02/2012	Property	Copiapo	Granted
114 03201-7798-7	MARK 161/193	134	1370	308	16/06/2011	Property	Copiapo	Granted
115 03201-7799-5	MARK 201/259	249	1379 V	309	16/06/2011	Property	Copiapo	Granted
116 03201-7800-2	MARK 261/318	243	1389 V	310	16/06/2011	Property	Copiapo	Granted
117 03201-7796-0	MARK 41/100	300	1362 V	307	16/06/2011	Property	Copiapo	Granted

Continued

Nacional Rol	Name	Area (has)	Page	Registration Information No.	Year	Register	City	Status
118 03201-9234-K	MARK I 1/40	200	1913 V	430	21/06/2012	Property	Copiapo	Granted
119 03201-9235-8	MARK II 1/60	300	3410 V	700	21/09/2012	Property	Copiapo	Granted
120 03201-9236-6	MARK III 1/60	300	1919 V	431	21/06/2012	Property	Copiapo	Granted
121 03201-9237-4	MARK IV 1/33	134	3417	701	21/09/2012	Property	Copiapo	Granted
122 03201-9238-2	MARK V 1/59	249	3426	702	21/09/2012	Property	Copiapo	Granted
123 03201-9239-0	MARK VI 1/54	238	56	11	10/01/2013	Property	Copiapo	Granted
124 03201-9240-4	MARK VI 55/57	4	3435	703	21/09/2012	Property	Copiapo	Granted
125 03201-9241-2	MARK VI 59/60	3	1926	432	21/06/2012	Property	Copiapo	Granted
126 03203-3260-5	MARTA 1/30 (27/28)	8	192	49	16/06/1964	Property	Copiapo	Granted
127 03203-1891-2	MILANO 1/10	35	477 V	76	23/04/1991	Property	Copiapo	Granted
128 03203-1988-9	MONUNA 1/2	2	951 V	175	17/07/1991	Property	Copiapo	Granted
129 03203-1989-7	MONUNA 3	2	945 V	174	17/07/1991	Property	Copiapo	Granted
130 03203 1990-0	MONUNA 7	3	939 V	173	17/07/1991	Property	Copiapo	Granted
131 03203 1991-9	MONUNA 8	1	933 V	172	17/07/1991	Property	Copiapo	Granted
132 03201-5048-5	NATALIA 1/3 (R)	6	799 V	144	Año 1996	Property	Copiapo	Granted
133 03203-2065-8	NEGRA 1/30	300	608	97	06/04/1992	Property	Copiapo	Granted
134 03203 0625-6	ÑA LU 1/6	30	158	59	03/03/1959	Property	Copiapo	Granted
135 03203-1971-4	OLGA 1/10	47	146 V	24	18/02/1991	Property	Copiapo	Granted
136 03203-3477-2	PANDA CUARTA 1/20	100	1558	266	26/11/1997	Property	Copiapo	Granted
137 03203-3472-1	PANDA CUATRO 1	4	1546	264	26/11/1997	Property	Copiapo	Granted
138 03203-3473-k	PANDA CUATRO 2/8	21	1551 V	265	26/11/1997	Property	Copiapo	Granted
139 03203-3824-7	PANDA CUATRO 9/10	6	1028 V	196	05/07/1999	Property	Copiapo	Granted
140 03203-3750-k	PANDA QUINTA 1/24	111	63 V	21	31/01/2000	Property	Copiapo	Granted
141 03203-3474-8	PANDA SEGUNDA 1/15	75	1564 V	267	26/11/1997	Property	Copiapo	Granted
142 03203-3475-6	PANDA TERCERA 1/10	50	1570 V	268	26/11/1997	Property	Copiapo	Granted
143 03203-3476-4	PANDA TERCERA 11/30	100	1577 V	269	26/11/1997	Property	Copiapo	Granted
144 03203-0663-9	PEDRO A. CERDA 1/10	40	487 V	125	01/12/1962	Property	Copiapo	Granted
145 03203-5801-9	PINTA 1	3	2472	533	27/07/2012	Property	Copiapo	Granted
146 03203-5802-7	PINTA 2/11	30	2478 V	534	27/07/2012	Property	Copiapo	Granted
147 03203-1657-k	PINTADAS 21/39	71	498 V	79	23/04/1991	Property	Copiapo	Granted
148 03203-1659-6	PINTADAS 66/72	27	60 V	7	02/01/1990	Property	Copiapo	Granted
149 03203-1660-k	PINTADAS 79/96	81	1737	300	09/07/1990	Property	Copiapo	Granted
150 03203 1658-8	PINTADAS 45/65	80	1267 V	212	10/05/1990	Property	Copiapo	Granted
151 03203-2249-9	PINTADAS 73	1	616	98	06/04/1992	Property	Copiapo	Granted
152 03203 1818-1	PINTADAS II 1/15	50	1257 V	211	10/05/1990	Property	Copiapo	Granted
153 03203-3703-8	POR SI ACASO 1	2	1428	387	16/09/1998	Property	Copiapo	Granted
154 03201-9891-7	PUNTA NEGRA A 1/40	200	675 V	186	13/03/2014	Property	Copiapo	Granted
155 03203-2912-4	QUILIMARI I 1/11	102	1274	194	27/07/1995	Property	Copiapo	Granted
156 03203-0677-9	REBECA SEGUNDA (SLM)	1	434	189	15/12/1938	Property	Copiapo	Granted
157 03203-0725-2	RELAVE 1/2	10	118	53	07/04/1953	Property	Copiapo	Granted
158 03203-2111-5	RENACER 14/26	55	1135 V	351	11/06/1992	Property	Copiapo	Granted
159 03203-2112-3	RENACER 28/32	20	1144	352	11/06/1992	Property	Copiapo	Granted
160 03203-2113-1	RENACER 35/51	57	1575	286	19/10/1994	Property	Copiapo	Granted
161 03203-2110-7	RENACER 4/13	30	582 V	152	07/07/2000	Property	Copiapo	Granted
162 03203-2114-k	RENACER 55/58	20	1585	287	19/10/1994	Property	Copiapo	Granted
163 03203-2115-8	RENACER 69/83	69	178	34	07/02/1994	Property	Copiapo	Granted
164 03203-2116-6	RENACER 84/92	37	807 V	121	20/05/1994	Property	Copiapo	Granted
165 03203-2118-2	RENACER 105/135	103	186 V	35	07/02/1994	Property	Copiapo	Granted
166 03203-0588-8	RESGUARDO 1/4	4	418 V	65	31/07/1963	Property	Copiapo	Granted
167 03203-0678-7	RESGUARDO (SLM)	1	192	79	09/06/1939	Property	Copiapo	Granted
168 03203 1482-8	ROCIO 1/8	55	209 V	72	Año 1989	Property	Copiapo	Granted
169 03203-0980-8	SAN ESTEBAN	5	48 V	10	14/01/1958	Property	Copiapo	Granted
170 03203-2750-4	SAN JOSE Y SOFIA 2	10	2080	356	14/08/1990	Property	Copiapo	Granted
171 03203-2752-0	SAN PEDRO I 1/10,21/30,35/45	155	1386 V	227	15/05/1990	Property	Copiapo	Granted
172 03203-2749-0	SAN PEDRO II 49/68	20	1378	226	15/05/1990	Property	Copiapo	Granted
173 03203-0904-2	SANTA AURORA 1/8	32	121 V	49	03/05/1967	Property	Copiapo	Granted
174 03203-0888-7	Santos Veta y Stos Mantos	8	306	119	10/08/1937	Property	Copiapo	Granted
175 03203-0054-1	SOFIA	1	85 V	90	05-07-1890	Property	Copiapo	Granted

Continued

	Nacional Rol	Name	Area (has)	Page	Registration Information No.	Year	Register	City	Status
176	03203-3908-1	SOL SEGUNDA 10/12	3	376 V	83	22/03/1999	Property	Copiapo	Granted
177	03203-3909-k	SOL SEGUNDA 13/22	30	382 V	84	22/03/1999	Property	Copiapo	Granted
178	03201-4993-2	Suerte Cinco 1-60 (1,2,3,7,8,13)	80	221	33	19/02/1996	Property	Copiapo	Granted
179	03203-2759-8	TAURO TRES 1 (SLM)	10	1225 V	234	16/09/1994	Property	Copiapo	Granted
180	03203-2760-1	TAURO TRES 3 (SLM)	1	693 V	106	04/05/1994	Property	Copiapo	Granted
181	03203-0139-4	TERESA MARIA	3	57 V	38	31/07/1943	Property	Copiapo	Granted
182	03203-0145-9	TIRANA	5	113 V	56	27/07/1949	Property	Copiapo	Granted
183	03203-1590-5	TORO 1/20	100	574 V	151	09/05/1989	Property	Copiapo	Granted
184	03203 1595-6	TORO 101/120	99	653	164	10/05/1989	Property	Copiapo	Granted
185	03203 1596-4	TORO 121/133	39	645	163	10/05/1989	Property	Copiapo	Granted
186	03203-1591-3	TORO 21/40	94	630 V	161	10/05/1989	Property	Copiapo	Granted
187	03203 1592-1	TORO 41/60	100	580 V	152	09/05/1989	Property	Copiapo	Granted
188	03203 1593-K	TORO 61/75	72	639	162	10/05/1989	Property	Copiapo	Granted
189	03203 1594-8	TORO 81/100	100	587	153	09/05/1989	Property	Copiapo	Granted
190	03203-0985-9	VERI 1/11	48	302 V	100	21/09/1967	Property	Copiapo	Granted
191	03203-0603-5	VETA GRUESA	2	7 V	3	28/03/1918	Property	Copiapo	Granted
192	03203-6774-3	VIENTO A10 1	3	866 v	174	18/02/2015	Property	Copiapo	Granted
193	03203-6775-1	VIENTO A11 1/20	96	872	175	18/02/2015	Property	Copiapo	Granted
194	03203-7239-9	PORFIA 1/5	10	587 v	169	04/04/2017	Property	Copiapo	Granted
195	03203-1454-2	SAN CARLOS 1/2 (R)	6				Discovery	Copiapo	In Process

Schedule B – Minera Ojos del Salado Exploration Concessions

	Nacional Rol	Name	Area (ha)	Registration Information						Status	Expiration Date
				Page		No.	Year	Register	City		
1	03203-E175-7	PORFIA 1	200	1,911		1294	4/15/2016	Discover	Copiapo	Granted	13/01/2018
2	03201-K910-7	MARK C1	200	2918		1993	6/13/2016	Discover	Copiapo	Granted	29/04/2018
3	03201-K911-5	MARK C2	200	2920		1994	6/13/2016	Discover	Copiapo	Granted	29/04/2018
4	03201-K912-3	MARK C3	300	2921	v	1995	6/13/2016	Discover	Copiapo	Granted	29/04/2018
5	03201-K913-1	MARK C4	300	2923	v	1996	6/13/2016	Discover	Copiapo	Granted	29/04/2018
6	03201-K914-K	MARK C5	300	2925		1997	6/13/2016	Discover	Copiapo	Granted	29/04/2018
7	03201-K915-8	MARK C6	300	2927		1998	6/13/2016	Discover	Copiapo	Granted	29/04/2018
8	03201-K909-3	NEGRA C1	200	2916	v	1992	6/13/2016	Discover	Copiapo	Granted	29/04/2018
9	03203-E312-1	NEGRA C2	200	3992		2703	8/8/2016	Discover	Copiapo	Granted	17/06/2018
10	03203-E396-2	CAMILA C3	300	5325	v	3517	11/21/2016	Discover	Copiapo	Granted	15/09/2018
11	03203-E408-K	VIENTO D4	300	5329		3519	11/21/2016	Discover	Copiapo	Granted	15/09/2018
12	03203-E409-8	VIENTO D8	200	5333		3521	11/21/2016	Discover	Copiapo	Granted	15/09/2018
13	03203-E382-2	VIENTO D3	300	5327		3518	11/21/2016	Discover	Copiapo	Granted	26/09/2018
14	03203-E415-2	CAMILA C1	200	5634	v	3740	12/13/2016	Discover	Copiapo	Granted	29/09/2018
15	03203-E416-0	VIENTO D2	300	5631		3738	12/13/2016	Discover	Copiapo	Granted	29/09/2018
16	03203-E378-4	BUITRE C2	300	5321	v	3515	11/21/2016	Discover	Copiapo	Granted	30/09/2018
17	03203-E380-6	CAMILA C2	300	5323	v	3516	11/21/2016	Discover	Copiapo	Granted	30/09/2018
18	03203-E417-9	VIENTO D6	200	5633		3739	12/13/2016	Discover	Copiapo	Granted	30/09/2018
19	03203-E384-9	VIENTO D7	200	5331		3520	11/21/2016	Discover	Copiapo	Granted	30/09/2018
20	03203-E385-7	VIENTO D9	300	5334	v	3522	11/21/2016	Discover	Copiapo	Granted	30/09/2018
21	03203-E381-4	VIENTO D1	300	113		68	1/12/2017	Discover	Copiapo	Granted	18/11/2018
22	03203-E383-0	VIENTO D5	300	114	v	69	1/12/2017	Discover	Copiapo	Granted	18/11/2018
23	03203-D655-9	VIENTO C1 (renewal)	100	3510		2495	6/16/2015	Discover	Copiapo	Granted	20/03/2019
24	03203-D663-K	VIENTO C2 (renewal)	100	3511	v	2496	6/16/2015	Discover	Copiapo	Granted	20/03/2019
25	03203-D656-7	VIENTO C3 (renewal)	100	3513	v	2497	6/16/2015	Discover	Copiapo	Granted	20/03/2019
26	03203-D662-1	VIENTO C4 (renewal)	100	3515		2498	6/16/2015	Discover	Copiapo	Granted	20/03/2019
27	03203-D658-3	VIENTO C5 (renewal)	100	3517		2499	6/16/2015	Discover	Copiapo	Granted	20/03/2019
28	03203-D661-3	VIENTO C6 (renewal)	100	3518	v	2500	6/16/2015	Discover	Copiapo	Granted	20/03/2019
29	03203-D657-5	VIENTO C7 (renewal)	100	3520		2501	6/16/2015	Discover	Copiapo	Granted	20/03/2019
30	03203-D660-5	VIENTO C8 (renewal)	100	3522		2502	6/16/2015	Discover	Copiapo	Granted	20/03/2019
31	03203-D659-1	VIENTO C9 (renewal)	100	3524		2503	6/16/2015	Discover	Copiapo	Granted	20/03/2019
32	03201-L837-8	NORTE 2	300	4035		2621	9/4/2017	Discover	Copiapo	Granted	27/06/2019
33	03201-L838-6	NORTE 6	200	4037		2622	9/4/2017	Discover	Copiapo	Granted	27/06/2019
34	03203-E708-9	SUR 5	200	4039		2623	9/4/2017	Discover	Copiapo	Granted	27/06/2019
35	03203-E709-7	SUR 9	200	4041		2624	9/4/2017	Discover	Copiapo	Granted	27/06/2019
36	03203-E721-6	SUR 4	300	4045		2626	9/4/2017	Discover	Copiapo	Granted	19/07/2019
37	03201-L854-8	NORTE 4	300	4047		2627	9/4/2017	Discover	Copiapo	Granted	24/07/2019
38	03203-E722-4	SUR 7	300	4043		2625	9/4/2017	Discover	Copiapo	Granted	24/07/2019
39	03201-L850-5	NORTE 1	100				11/2/2017	Discover	Copiapo	Granted	27/07/2019
40	03201-L851-3	NORTE 5	100				11/2/2017	Discover	Copiapo	Granted	27/07/2019
41	03203-E716-K	SUR 3	300				11/2/2017	Discover	Copiapo	Granted	27/07/2019
42	03203-E717-8	SUR 8	200				11/2/2017	Discover	Copiapo	Granted	27/07/2019
43	03201-L891-2	NORTE 3	300	4657		2987	10/2/2017	Discover	Copiapo	Granted	17/08/2019
44	03203-E730-5	SUR 10	300	4661	v	2990	10/2/2017	Discover	Copiapo	Granted	17/08/2019
45	03203-E728-3	SUR 2	300	4658	v	2988	10/2/2017	Discover	Copiapo	Granted	17/08/2019
46	03203-E729-1	SUR 6	300	4660		2989	10/2/2017	Discover	Copiapo	Granted	17/08/2019
47	03203-D949-3	CORA C3 (renewal)	100					Discover	Copiapo	In Process	
48		Cora D1	300					Discover	Copiapo	In Process	
49		Cora D2	300					Discover	Copiapo	In Process	

Continued

Nacional RoI	Name	Area (ha)	Registration Information				Status	Expiration Date
			Page	No.	Year	Register City		
50	Cora D3	200				Discover Copiapo	In Process	
51	Cora D4	300				Discover Copiapo	In Process	
52	Cora D5	300				Discover Copiapo	In Process	
53	Cora D6	100				Discover Copiapo	In Process	
54	NORTE 7	200				Discover Copiapo	In Process	
55	Porfia A1	200				Discover Copiapo	In Process	

Signature Page

Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile

Prepared for:

Lundin Mining Corporation
Suite 1500, 150 King Street West
Toronto, Ontario, Canada
M5H 1J9

Prepared by:

SRK Consulting (Canada) Inc.
Suite 1500, 155 University Avenue
Toronto, Ontario, Canada
M5H 3B7

SRK Project Number 3CL016.002

Effective date: June 30, 2017
Signature date: November 30, 2017

Authored by:

["*signed*"] Jean-François Couture, PGeo Associate Consultant (Geology)	["*signed*"] Glen Cole, PGeo Principal Consultant (Resource Geology)	["*signed*"] Gary Poxleitner, PEng Principal Consultant (Mining Engineering)
["*signed*"] John Nilsson, PEng Independent Consultant (Mining Engineering)	["*signed*"] Adrian Dance, PEng Associate Consultant (Mineral Processing)	["*signed*"] Cameron C. Scott, PEng Principal Consultant (Environment)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, Jean-François Couture, do hereby certify that:

1) I am an Associate Consultant (Geology) of the firm of SRK Consulting (Canada) Inc. with an office at Suite 1500, 155 University Avenue, Toronto, Ontario, M5H 3B7;
2) I am a graduate of the Université Laval in Quebec City with a BSc. in Geology in 1982. I obtained a MScA in Earth Sciences and a PhD in Mineral Resources from Université du Québec à Chicoutimi in 1986 and 1994, respectively. I have practiced my profession continuously since 1982. From 1982 to 1988, I conducted regional mapping programs in the Precambrian Shield of Canada, from 1988 to 1996; I conducted mineral deposit studies for a variety of base and precious metals deposits of hydrothermal and magmatic origins. From 1996 to 2000, I was a Senior Exploration Geologist responsible for the development, execution and management of exploration program for base and precious metals in Precambrian terranes, including volcanogenic sulphide deposits. Since 2001 I have authored and co-authored several independent technical reports on several base and precious metals exploration and mining projects worldwide;
3) I am a Professional Geoscientist registered with the Association of Professional Geoscientists of the province of Ontario (APGO#0197) and l'Ordre des Géologues du Québec (OGQ#1106);
4) I have visited the subject projects from July 6 to 10, 2015;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Sections 1 to 11, 18, 21, 22, 23, 26 and parts of 24 and 25, and accept professional responsibility for those sections of this technical report;
8) In 2014, 2015 and 2017, I have co-authored previous technical reports about the subject property for Lundin Mining Corporation and Franco-Nevada Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Lundin Mining Corporation to prepare a technical report for the Candelaria Copper Mining Complex located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Chile and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

[“*signed*”]

Toronto, Ontario
November 30, 2017

Jean-François Couture, PGeo (APGO#0197)
Associate Consultant (Geology)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, Glen Cole, do hereby certify that:

1) I am a Principal Consultant (Resource Geology) with the firm of SRK Consulting (Canada) Inc. with an office at Suite 1500, 155 University Avenue, Toronto, Ontario, M5H 3B7;
2) I am a graduate of the University of Cape Town in South Africa with a BSc (Hons) in Geology in 1983; I obtained a MSc (Geology) from the University of Johannesburg in South Africa in 1995 and a MEng in Mineral Economics from the University of the Witwatersrand in South Africa in 1999. I have practiced my profession continuously since 1986. Between 1986 and 1989 I worked as a staff geologist on various Anglo-American mines. Between 1989 and 2005 I worked at several exploration projects, underground and open pit mining operations in Africa and held various senior positions, with the responsibility for estimation of Mineral Resources and Mineral Reserves for development projects and operating mines. Since 2006, I have estimated and audited Mineral Resources for a variety of early and advanced international base and precious metals projects;
3) I am a Professional Geoscientist registered with the Association of Professional Geoscientists of the Province of Ontario (APGO#1416), the Association of Professional Engineers and Geoscientists of the Province of Saskatchewan (PEGS#26003) and am also registered as a Professional Natural Scientist with the South African Council for Scientific Professions (Reg#400070/02);
4) I have personally inspected the subject projects on various occasions from June 16 to 18, 2014, December 14 to 16, 2016 and on November 8 and 9, 2017;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Sections 13 and parts of 24 and 25, and accept professional responsibility for those sections of this technical report;
8) In 2014, 2015, and 2017 I have co-authored previous technical reports about the subject property for Lundin Mining Corporation and Franco-Nevada Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Lundin Mining Corporation to prepare a technical report for the Candelaria Copper Mining Complex located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Chile and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["*signed*"]

Toronto, Ontario
November 30, 2017

Glen Cole, PGeo (APGO#1416)
Principal Consultant (Resource Geology)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, Adrian Dance, do hereby certify that:

1) I am an Associate Consultant (Metallurgy) with the firm of SRK Consulting (Canada) Inc. with an office at 22nd Floor, 1066 West Hastings Street, Vancouver, British Columbia, Canada;
2) I am a graduate of the University of British Columbia in 1987 and the University of Queensland in 1991 where I obtained a BASc in Mineral Processing and a PhD in Mineral Processing. I have practiced my profession continuously since 1991 where I have both worked at copper processing operations in Canada and Peru as well as consulted on a range of copper-gold processing projects around the world;
3) I am a professional engineer registered with the APEGBC, license # 37151;
4) I have not personally visited the subject projects but relied on a site visit conducted on November 8 and 9, 2017 by Glen Cole, PGeo (APGO#1416), a co-author of this technical report;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Sections 12, 16 and parts of 20 and accept professional responsibility for those sections of this technical report;
8) I have participated in a review of Candelaria's grinding circuit performance in 2006, and in 2014, 2015 and 2016, I have co-authored previous technical reports about the subject property for Lundin Mining Corporation and Franco-Nevada Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Lundin Mining Corporation to prepare a technical report for the Candelaria Copper Mining Complex located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Chile and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["*signed*"]
Vancouver, British Columbia — Adrian Dance (PEng #37151)
November 30, 2017 — Associate Consultant (Metallurgy)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, Benny Zhang, do hereby certify that:

1) I am a Principal Consultant (Mine Engineering) with the firm of SRK Consulting (Canada) Inc. with an office at Suite 1500, 155 University Avenue, Toronto, Ontario, M5H 3B7;
2) I graduated with a Bachelor of Engineering degree in Mining Engineering from Central South University, China in 1984, and a Master of Engineering degree in Applied Rock Mechanics for Mine Planning from McGill University, Canada in 2006. I have practiced my profession for 32 years. I have been directly involved in mine operations, mine design and planning, technical review and audit, due diligence, mining project valuation, equipment selection, ventilation, rock mechanics and ground support, and providing various technical services for more than 50 base metal and precious metal mines / projects, including base metal sulphide deposit projects. Since 2000 I have been focusing my career on mining project related consulting services worldwide
3) I am a Professional Engineer registered with Professional Engineers Ontario (PEO#100115459);
4) I have personally inspected the subject projects between December 14 and 16, 2016 and on November 8 and 9, 2017;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for parts of Sections 14, 15, 20, 24, and 25, and accept professional responsibility for those sections of this technical report;
8) In 2017, I co-authored a previous technical report about the subject property for Lundin Mining Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Lundin Mining Corporation to prepare a technical report for the Candelaria Copper Mining Complex located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Chile and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["*signed*"]
Toronto, Ontario
November 30, 2017

Benny Zhang, PEng (PEO#100115459)
Principal Consultant (Mine Engineering)

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, John Nilsson, do hereby certify that:

1) I am President with the firm of Nilsson Mine Services with an office at 20263 Mountain Place, Pitt Meadows, British Columbia;
2) I am a graduate of Queen's University in Kingston, Ontario with a BSc in Geology in 1977, I obtained an MSc in Mining Engineering from Queen's University in 1990. I have practiced my profession continuously since 1977.
3) I am a professional Engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia (#20697);
4) I have personally inspected the subject projects between June 10 and 12, 2014, June 16 and 18, 2014, from July 6 to 10, 2015, from December 14 to 16, 2016 and from October 9 to 13, 2017;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for parts of Sections 14, 15, 20, 24 and 25, and accept professional responsibility for those sections of this technical report;
8) In 2014, 2015 and 2017, I have co-authored previous technical reports about the subject property for Lundin Mining Corporation and Franco-Nevada Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) Nilsson Mine Services Ltd. was retained by Lundin Mining Corporation to prepare sections of a technical report, including contributions to a Mineral Reserve Statement, for the Candelaria Copper Mining Project located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["*signed*"]

Pitt Meadows, British Columbia
November 30, 2017

John Nilsson, PEng (APEGBC#20697)
President Nilsson Mine Services Ltd.

CERTIFICATE OF QUALIFIED PERSON

To accompany the report entitled *Technical Report for the Candelaria Copper Mining Complex, Atacama Region, Region III, Chile* and having an effective date of June 30, 2017.

I, Cameron C. Scott, do hereby certify that:

1) I am a Principal Consultant (Geotechnical Engineering) with the firm of SRK Consulting (Canada) Inc. with an office at Suite 2200, 1066 West Hastings Street, Vancouver, British Columbia, Canada;
2) I am a graduate of the University of British Columbia in 1974, I obtained a BASc Degree in Geological Engineering and subsequently was granted an MEng. I also obtained a Degree in Civil Engineering (Geotechnical Option) by the University of Alberta in 1984. I have practiced my profession continuously since 1974. I have worked as a Geotechnical Engineer for a total of 40 years. Most of my professional practice has focused on the geotechnical and hydrogeological aspects of mining, including the site selection, design, permitting, operation and closure of mine waste facilities in Canada, the US, Mexico, Central and South America, Europe and various countries within the former Soviet Union.
3) I am a professional Engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia (#11523) since 1978;
4) I have not personally visited the subject projects but relied on a site visit conducted on November 8 and 9, by Glen Cole, PGeo (APGO#1416), a co-author of this technical report;
5) I have read the definition of Qualified Person set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
6) I, as a Qualified Person, am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
7) I am the co-author of this report and responsible for Section 19, and accept professional responsibility for that section of this technical report;
8) In 2014, 2015 and 2017, I have co-authored previous technical reports about the subject property for Lundin Mining Corporation and Franco-Nevada Corporation;
9) I have read National Instrument 43-101 and confirm that this technical report has been prepared in compliance therewith;
10) SRK Consulting (Canada) Inc. was retained by Lundin Mining Corporation to prepare a technical report for the Candelaria Copper Mining Complex located in Chile in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and Canadian Securities Administrators' National Instrument 43-101 guidelines. This assignment was completed using the environmental and social requirements applicable at the time in Chile and taking cognisance of good international industry practice as specified in the IFC Performance Standards;
11) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Compañía Contractual Minera Candelaria and Compañía Contractual Minera Ojos del Salado copper projects or securities of Lundin Mining Corporation; and
12) That, as of the effective date of this technical report, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

["*signed*"]
Cameron C. Scott (PEng #11523)
Principal Consultant (Geotechnical Engineering)

Vancouver, British Columbia
November 30, 2017