Constellation Project

incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina
NI 43-101 Technical Report on Preliminary Economic Assessment

Prepared for:
NGEx Resources Inc.

Prepared by:
Mr Alfonso Ovalle, RM CMC, Amec Foster Wheeler
Mr Cristian Quiñones, RM CMC, Amec Foster Wheeler
Mr Cristian Quezada, RM CMC, Amec Foster Wheeler
Mr David Frost, FAusIMM, Amec Foster Wheeler
Mr Vikram Khera, P.Eng.,Amec Foster Wheeler
Mr Gino Zandonai, RM CMC, DGCS SA

Effective Date: 12 February 2016
Amended Signature Date: 31 March 2016
Project Number: 179770

CERTIFICATE OF QUALIFIED PERSON

I, Alfonso Ovalle, RM CMC, am employed as a Principal Mining Engineer with Amec Foster Wheeler International Ingeniería y Construcción Limitada ("Amec Foster Wheeler").

This certificate applies to the technical report titled "Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment" that has an effective date of 12 February, 2016 (the "technical report").

I am a Registered Member of the Chilean Mining Commission (RM CMC #243). I graduated from the University of Chile as a Civil Mining Engineer in 1970. I enrolled in a Master of Science in Mineral Economics degree course at the Henry Krumb School of Mines, Columbia University, N.Y. from 1972 to 1973.

I have practiced my profession for 47 years since graduation. I have been directly involved in base and precious metals and limestone operations, planning, consulting, and management of underground mines in Chile, Peru, South Africa, Canada and Australia.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* ("NI 43–101").

I have not visited the Constellation Project.

I am responsible for Sections 1.1, 1.3, 1.15.1, 1.15.3, 1.17.1, 1.17.2, 1.17.3, 1.17.4, 1.17.5, 1.20, 1.21, 1.24, 1.25, 1.26, 2.2, 2.4, 2.5, 2.6, 3.1, 3.2, 5, 15, 16.1, 16.3, 16.4, 16.5, 16.6, 16.7, 18.2, 18.3, 18.4, 18.5, 18.6, 18.7, 21.1.1, 21.1.2, 21.1.4, 21.1.5, 21.1.6, 21.1.7, 21.1.8, 21.2.1, 21.2.2, 21.2.4, 21.2.5, 21.2.6, 21.3, 24, 25.9, 25.11, 25.14, 25.15, 25.17, 26.1, 26.2.1, 26.2.2, 26.2.4, 26.2.5, 26.2.7, 26.3, and 27 of the Report.

I am independent of NGEx Resources Inc ("NGEx") as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Constellation Project during the preparation of the Preliminary Economic Assessment on which this technical report is based.

I have previously co-authored a Technical Report on the Los Helados property as follows:

Quiñones, C., Ovalle, A., Frost, D., Priscu, D., Khera, V., Pizarro, N., and Zandoinai, G., 2014: Los Helados Cu-Au Deposit, Atacama Region III, Chile, NI 43-101 Technical Report on Preliminary Economic Assessment: technical report prepared by AMEC and Behre Dolbear for NGEx Resources Inc., effective date 1 October, 2014.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the technical report not misleading.

Dated: 31 March, 2016

"Signed"

Alfonso Ovalle
RM CMC

Amec Foster Wheeler International Ingeniería y
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Av. Apoquindo 3846, Piso 15, Las Condes,
Santiago, Chile
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CERTIFICATE OF QUALIFIED PERSON

I, Cristian Andres Quiñones Constanzo, RM CMC am employed as a geologist with Amec Foster Wheeler International Ingeniería y Construcción Limitada ("Amec Foster Wheeler").

This certificate applies to the technical report titled "Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment" that has an effective date of 12 February, 2016 (the "technical report").

I am a Registered Member of the Chilean Mining Commission (RM CMC #149) and a Member of the Australasian Institute of Mining & Metallurgy (MAusIMM #315413). I graduated from the Universidad de Concepción in Chile, in 2000 as a Geologist.

I have practiced my profession for 16 years. I have been directly involved in precious and base metals exploration, mining, consulting, and project management in Chile, Peru, Brazil, Canada, France, Niger, Kazakhstan and Namibia.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (NI 43–101).

I visited the Constellation Project on April 11, 2014.

I am responsible for Sections 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.25, 1.26, 2, 3.1, 3.2, 4.2, 4.4, 4.5, 4.6, 6.2, 7.1, 7.2, 7.3.2, 7.4, 9.2, 9.3.2, 9.5, 10.2, 10.3, 11.2, 11.3, 12.2, 12.3, 23, 25.1, 25.2, 25.3, 25.4, 25.5, 25.6, 25.17, and 27 of the Report.

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Dated: 31 March, 2016

"Signed"

Cristian Quiñones Constanzo.
RM CMC

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CERTIFICATE OF QUALIFIED PERSON

I, Cristian Quezada, RM CMC, am employed as a principal mining engineer with Amec Foster Wheeler International Ingeniería y Construcción Limitada (“Amec Foster Wheeler”).

This certificate applies to the technical report titled “Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment” that has an effective date of 12 February, 2016 (the “technical report”).

I am a Registered Member of the Chilean Mining Commission (RM CMC #205) and a Member of the Australasian Institute of Mining & Metallurgy (MAusIMM #991839). I graduated from the Universidad de Santiago de Chile as a Civil Mining Engineer in 2005.

I have practiced my profession for 11 years since graduation. I have been directly involved in base metals mining, consulting, and project management in Chile, Argentina, Indonesia, Peru and Brazil.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* (“NI 43–101”).

I have not visited the Constellation Project.

I am responsible for Sections 1.1, 1.3, 1.15.1. 1.15.2, 1.17.1, 1.17.2, 1.17.3, 1.17.5, 1.20, 1.21, 1.24, 1.25, 1.26, 2.2, 2.4, 2.5, 2.6, 3.1, 3.2, 15, 16.1, 16.2, 16.4, 16.5, 16.6, 16.7, 18.1, 18.7, 21.1.1, 21.1.2, 21.1.4, 21.1.5, 21.1.6, 21.1.7, 21.1.8, 21.2.1, 21.2.2, 21.2.4, 21.2.5, 21.2.6, 21.3, 24, 25.9, 25.11, 25.14, 25.15, 25.17, 26.1, 26.2.1, 26.2.2, 26.2.4, 26.2.5, 26.2.7, 26.3, and 27 of the Report.

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Dated: 31 March, 2016

“Signed”

Cristian Quezada
RM CMC

CERTIFICATE OF QUALIFIED PERSON

I, David Frost, FAusIMM, am employed as Technical Director, Process, with Amec Foster Wheeler International Ingeniería y Construcción Lida ("Amec Foster Wheeler").

This certificate applies to the technical report titled "Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment" that has an effective date of 12 February, 2016 (the "technical report").

I am a Fellow of the Australasian Institute of Mining and Metallurgy FAusIMM (#110899). I graduated with a Bachelor of Metallurgical Engineering (B. Met Eng.) from the Royal Melbourne Institute of Technology in 1991.

I have worked as a metallurgist and process engineer for over 24 years since my graduation from university. I have been involved in process operations and process plant design in various commodities and in various capacities during that time. This experience has included lead process and testwork management and design roles for conventional large scale conventional copper flotation and gold projects in South America.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* ("NI 43–101").

I have not visited the Constellation Project.

I am responsible for Sections 1.12, 1.16, 1.17.4, 1.18, 1.19, 1.20, 1.21, 1.24, 1.25, 1.26, 2.2, 2.4, 2.5, 2.6, 3.1, 3.2, 13, 17, 19, 20, 21.1.1, 21.1.3, 21.1.8, 21.2.1, 21.2.3, 21.3, 24, 25.7, 25.10, 25.12, 25.13, 25.14, 25.15, 25.17, 26.2.3, 26.2.5, 26.2.6, 26.3 and 27 of the Report.

I am independent of NGEx Resources Inc ("NGEx") as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Constellation Project during the preparation of the Preliminary Economic Assessment on which this technical report is based.

I have previously co-authored the following Technical Reports on the Los Helados property:

Zandonai, G., Carmichael, R., Charchaflié, D., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear, NGEx, LPF Consulting SRL, and AMEC for NGEx Resources Inc., effective date 15 October, 2013

Zandonai, G., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear and AMEC for NGEx Resources Inc., effective date 15 October, 2013, amended 24 March 2014

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Quiñones, C., Ovalle, A., Frost, D., Priscu, D., Khera, V., Pizarro, N., and Zandonai, G., 2014: Los Helados Cu-Au Deposit, Atacama Region III, Chile, NI 43-101 Technical Report on Preliminary Economic Assessment: technical report prepared by AMEC and Behre Dolbear for NGEx Resources Inc., effective date 1 October, 2014.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the technical report not misleading.

Dated: 31 March 2016

"Signed"

David Frost, F.AusIMM

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Tel (56) 2 210 9500
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CERTIFICATE OF QUALIFIED PERSON

I, Vikram Khera, P.Eng., am employed as a Financial Analyst with Amec Foster Wheeler Americas Ltd ("Amec Foster Wheeler").

This certificate applies to the technical report titled "Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment" that has an effective date of 12 February, 2016 (the "technical report").

I am a member of the Professional Engineers Ontario. I graduated from the University of British Columbia in 2002 with a Bachelor of Applied Science degree.

I have practiced my profession for over 12 years.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 *Standards of Disclosure for Mineral Projects* ("NI 43–101").

I have not visited the Constellation Project.

I am responsible for Sections 1.2, 1.23, 1.24, 1.25, 1.26, 2.2, 2.4, 2.5, 2.6, 3, 22, 25.16, 25.17, 26.2.5, 26.3 and 27 of the technical report.

I am independent of NGEx Resources Inc ("NGEx") as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Constellation Project during the preparation of the Preliminary Economic Assessment on which this technical report is based.

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Dated: 31 March, 2016

"Signed and sealed"

Vikram Khera, P.Eng.

CERTIFICATE OF QUALIFIED PERSON

I Gino Zandonai, RM CMC, am a consulting mining engineer, with a business address at Av. La Dehesa 1201, Oficina 408 Torre Norte,CP 7690277 Lo Barnechea, Santiago, Chile.

This certificate applies to the technical report titled "Constellation Project, incorporating the Los Helados Deposit, Chile and the Josemaría Deposit, Argentina, NI 43-101 Technical Report on Preliminary Economic Assessment" that has an effective date of 12 February, 2016 (the "technical report").

I graduated in civil and mining engineering from the University of La Serena, Chile with degrees of Licenciado en Ciencias de la Ingenieria (B.Sc) in 1989, and from the Colorado School of Mines, Golden, Co, USA, with a M.Sc. in Mining Engineering in 1999.

I am a Registered Member (Record No. 0155) of the Comision Calificadora de Competencias en Recursos y Reservas Mineras (Chilean Mining Commission). I am also a member in good standing of the Australian Institute of Mining and Metallurgy (AusIMM) (Registered Professional, No. 302818) and a member of the Society of Mining, Metallurgy and Exploration (SME #4101891).

I have practiced my profession continuously for 26 years. Since 1989, I have continually been involved in minerals projects for precious and base metals and industrial minerals in Australia, Chile, Bolivia, Mali, Botswana, Mauritania, Greenland, Finland, Sweden, Kyrgyzstan, Russia and Mexico. I have been involved directly in the preparation of feasibility studies and resource estimation of gold, copper and silver projects. I have worked specifically on geological modelling and resource estimation of several porphyry copper–gold deposits, including deposits in Chile and Argentina.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects ("NI 43–101").

I visited the Constellation Project on January 9, 2012.

I am responsible for Sections 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.13, 1.14, 1.25, 1.26, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 4.1, 4.3, 4.5, 4.6, 6.1, 7.1, 7.2, 7.3.1, 7.4, 8, 9.1, 9.3.1, 9.4, 9.5, 10.1, 10.3, 11.1, 11.3, 12.1, 12.3, 14, 23, 25.2, 25.3, 25.4, 25.5, 25.6, 25.8, 25.17, and 27 of the technical report.

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I have co-authored the following technical reports on the Los Helados property and the Josemaría property:

Zandonai, G., Carmichael, R., and Charchaflié, D., 2012: Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by LPF Consulting SRL, NGEx and Micron Geological Limited for NGEx Resources Inc., effective date 15 October, 2012

Zandonai, G.A., Carmichael, R.G. and Charchaflié D., 2013: Updated Mineral Resource Estimate for the Josemaría Property, San Juan Province, Argentina: technical report prepared by Behre Dolbear and NGEx Resources Inc., effective date 27 September 2013

Zandonai, G., Carmichael, R., Charchaflié, D., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear, NGEx, LPF Consulting SRL, and AMEC for NGEx Resources Inc., effective date 15 October 2013

Zandonai, G., 2013: Second Updated Mineral Resource Estimate for the Josemaría Property, San Juan Province, Argentina: technical report prepared by Behre Dolbear for NGEx Resources Inc., effective date 27 September 2013, amended 24 March 2014.

Zandonai, G., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear and AMEC for NGEx Resources Inc., effective date 15 October 2013, amended 24 March 2014.

Quiñones, C., Ovalle, A., Frost, D., Priscu, D., Khera, V., Pizarro, N., and Zandonai, G., 2014: Los Helados Cu-Au Deposit, Atacama Region III, Chile, NI 43-101 Technical Report on Preliminary Economic Assessment: technical report prepared by AMEC and Behre Dolbear for NGEx Resources Inc., effective date 1 October, 2014.

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Dated: 31 March 2016

"Signed"

Gino Zandonai, RM CMC.

IMPORTANT NOTICE

CONTENTS

TABLES

FIGURES

1.0 SUMMARY

1.1 Introduction

The report was amended on 31 March 2016 to correct minor inconsistencies in the original filing between the footnotes to the Mineral Resource tables between Section 14 and Section 1. There are no other changes to the Mineral Resource statements.

NGEx Resources Inc. (NGEx) commissioned AMEC International Ingeniería y Construcción Limitada (Amec Foster Wheeler) to compile an independent NI 43-101 Technical Report (the Report) on the results of a Preliminary Economic Assessment (PEA) of an integrated mining operation that incorporated the Josemaría deposit, located in San Juan Province, Argentina and the Los Helados deposit, located in the Andes Mountains of the Atacama Region in Northern Chile (collectively termed Project Constellation or the Project).

The Report also includes an updated Mineral Resource estimate for the Josemaría deposit. The Report will be used in support of NGEx's press releases entitled "NGEx Announces Positive Result of Preliminary Economic Assessment for Project Constellation - A Combination of Los Helados and Josemaría", dated 7 January 2016 and "NGEx Financial Model Update Based On New Argentina Tax Rules And Files Technical Report For Project Constellation", dated 22 February 2016.

1.2 Key Outcomes

Table 1-1: Key Outcomes

Pre-Tax NPV (8%) & IRR	$4.43 billion NPV 20.7% IRR	
After-Tax NPV (8%) & IRR	$2.61 billion NPV 16.6% IRR	
Payback Period (undiscounted, after-tax cash flow)	3.6 years	
Metals Prices Assumed	$3.00/lb Cu $1,275/oz Au $20.00/oz Ag	
Initial Capital Expenditures	$3.08 billion	
LOM Sustaining Capital Expenditures	$4.36 billion	
LOM C-1 Cash Costs (net of by-product credits)	$1.05/lb Cu payable	
Nominal Mill Capacity	150,000 t/d	
Mine Life	48 years	
Average Annual Metal Production (rounded)	**Life of Mine**	**First Five Years**
	150,000 t Cu	185,000 t Cu
	180,000 oz Au	345,000 oz Au
	1,180,000 oz Ag	1,310,000 oz Ag
LOM Average Process Recovery	88.3% Cu 72.7% Au 61.4% Ag	

Note: All figures reported are in 2015 US dollars and on a 100% Project and 100% equity basis valuation. NPV calculations assume that cash flows occur at the beginning of each year. *The PEA is preliminary in nature and includes the use of Inferred Mineral Resources which are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves and there is no certainty that PEA results will be realized. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*

Project Constellation contemplates sequential production from an open pit mine at Josemaría followed by a block cave, underground mine at Los Helados. The two deposits are located approximately 10 km apart, and material from both deposits will be processed at a centralized facility.

Including pre-stripping, Project Constellation would be in operation for 50 years. The active mine life, excluding pre-stripping is 48 years. Initial development would target the highest-grade portion of the Josemaría deposit, which is a near-surface zone of supergene-enriched mineralization. As the higher-grade material at Josemaría is depleted, production will transition to the high-grade core of the Los Helados deposit. Compared to either deposit when considered as a stand-alone operation, Project Constellation's shared facilities help improve capital efficiency, reduce overall environmental impacts, and dramatically improve project economics.

A central processing facility is planned to be located in Argentina. Material from Josemaría will be transported via a series of three surface conveyors (including two transfer stations) totalling 4.9 km in length, to a stockpile that will be located near the process plant. Material from Los Helados will be transported via an 8.1 km long underground conveyor tunnel and a 2.8 km long surface conveyor which will tie into the existing Josemaría surface conveyor system at the first transfer station. Concentrate will be transported by truck to a port facility in Caldera, on the Chilean coast.

Groundwater will be supplied from a nearby well field in Argentina through an 8 km pipeline to the plant site, and power will be supplied via 250 km of power line construction to connect to the Argentina national grid.

Processing will be by conventional sulphide flotation, following comminution by a high pressure grinding roll (HPGR) circuit at a rate that varies between 150,000 t/d and 120,000 t/d depending on the hardness characteristics of the material being processed. Amec Foster Wheeler believes with additional testing to address concentrate cleanliness and quality, that a life-of-mine average concentrate of 29.0% Cu, 10.4 g/t Au and 70.3 g/t Ag can be produced. Deleterious elements are expected to be below penalty levels. Metallurgical recoveries are forecast to average 88.3% Cu, 72.7% Au and 61.4% Ag.

The base case scenario, which combines Josemaría and Los Helados mineralized material, uses a standard 8% discount rate. The resulting after-tax project net present value (NPV; discounted at 8%) is US$2.61 billion and the internal rate of return (IRR) is 16.6%. The cumulative, undiscounted, cash flow value for Project Constellation is

US$15.95 billion. The initial capital investment for the Project is estimated to be $3.08 billion. Average operating costs are estimated at US$9.34/t, with cash costs, net of by-product credits, of US$1.05/lb Cu produced.

1.3 Cautionary Notes

Section 1.3 of this Report applies to forward-looking statements in Section 1.2 and throughout the Report.

1.3.1 Caution Regarding Use of Inferred in Financial Analysis

The preliminary economic assessment is preliminary in nature, it includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the preliminary economic assessment will be realized.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

1.3.2 Caution Regarding Forward-Looking Information

Certain information and statements contained in this section and in the Report are "forward looking" in nature. Forward-looking statements are described in more detail in Section 22 of this report.

1.3.3 Cautionary Note Regarding Production Dates

The production schedules and financial analysis annualized cashflow table are presented with conceptual years shown. Years shown in these tables are for illustrative purposes only.

1.4 Project Description and Location

1.4.1 Location

Project Constellation is located about 135 km southeast of the city of Copiapó. The Los Helados deposit is centred at 28.3408º S, 69.5857º W in Chile, and the Josemaría deposit is 10 km to the southeast, centred at 28.4359º S, 69.5486º W in Argentina.

1.4.2 Ownership

NGEx holds an indirect 60% interest in the Josemaría deposit through its Argentine subsidiary Deprominsa SA (DPM). Josemaría is subject to a Joint Exploration Agreement with Japan Oil, Gas and Metals National Corporation (JOGMEC) which holds the remaining 40%.

NGEx holds an indirect 60% interest in the Los Helados deposit through its Chilean subsidiary, Minera Frontera del Oro S.C.M (MFDO). Los Helados is subject to a Joint Exploration Agreement with Pan Pacific Copper Co., Ltd. which holds the remaining 40%.

NGEx acts as the operator of both agreements and, in each case, both parties are required to contribute their pro-rata share of expenditures or dilute their interest in the Project.

Additional mineral titles in the Project area are held in the name of Filo del Sol Exploración S.A. (FdS), an indirectly wholly-owned Argentinian subsidiary of NGEx.

For the purposes of this Report, the NGEx parent and subsidiary companies are referred to interchangeably as "NGEx".

1.4.3 Mineral Tenure and Surface Rights

In Argentina, NGEx holds 10 exploitation licences (minas) and two exploration licences (cateos). Total holdings cover an area of approximately 21,400 ha.

NGEx has an occupancy easement for the Batidero Camp at Josemaría, and a road right-of-way, which provides access to the work area. Part of the road right-of-way is within private property. The remainder of the road, and the camp fall within the multiple usage area of the San Guillermo Provincial Reserve. Multiple usage allows mining activities.

In Chile, NGEx is the holder of 30 exploitation mining concessions, 103 exploration mining concessions and three unilateral and irrevocable options to purchase seven exploitation concessions in the Los Helados area. The actual surface area covered by the titles is approximately 18,480 ha.

NGEx previously held a four-year access agreement with the Comunidad Civil Ex Estancia Pulido, to allow exploration and drilling activity at Los Helados. This agreement expired in September 2015. In May 2015, negotiations began with Comunidad Civil Ex Estancia Pulido to conclude a definitive mining easement over 20,000 ha, to allow for mining usage. The negotiations are at an advanced stage and when concluded will include all surface rights needed to support the mine plan in the PEA.

1.4.4 Agreements

The Project is subject to two underlying agreements in Argentina, the Lirio Agreement and the Batidero Agreement, and two separate option agreements for small claim groups within the overall property perimeter in Chile.

The Project benefits from a Protocol "*Proyecto de Prospección Minera Vicuña*" (Vicuña Mining Prospection Project) under the "*Tratado entre la República de Chile y la República Argentina sobre Integración y Complementación Minera*" (Mining Integration and Complementation Treaty between Chile and Argentina), dated January 6, 2006. The Protocol provides a legal framework to facilitate the development of mining projects located in the border area of both countries.

1.4.5 Royalties

In Argentina, the Lirio property is subject to a US$2 million payment within six months of the completion of the second full year of mine operations and a modified 0.5% net smelter return (NSR) less costs, payable over 10 years. The Batidero property is subject to a 7% net profit interest. There is a net smelter return royalty payable to the Province of San Juan which is typically 3%, but can be reduced in certain circumstances. The subset of the Josemaría resource contained in the PEA production plan is entirely within the Lirio property.

There are no royalties payable on the Los Helados deposit. The Government of Chile levies a mining tax that is a tax on operational mining income, applied on a sliding-scale rate basis of between 5% and 14% depending on operating margins.

1.5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

Project Constellation is located in the Andes Mountains, straddling the Chile–Argentina border. Elevations range from approximately 3,000 m to 5,300 m at the pass between Josemaría and Los Helados. Topography is quite rugged on the Chilean (western) slope of the mountains, and more subdued on the Argentine (eastern) slope which is typically comprised of broad, flat-bottomed valleys with moderately steep slopes.

The best access to the Project is from Copiapó, a driving distance of about 170 km, or three hours. Alternate access from Argentina is possible by major provincial highways north through San Jose de Jachal to the town of Guandacol (in La Rioja Province) and from there by approximately 150 km of regional unpaved roads and trails. Total driving time from San Juan is approximately 10 hours.

The climate in the Project area is dry to arid and the temperatures are moderate to cold. Annual precipitation is about 250 mm, with snow at higher altitudes in the winter. Exploration fieldwork is generally possible from mid-October to early May. It is anticipated that mining operations will be conducted year round.

Project Constellation will be a greenfields development. The most important logistics centre in the region is Copiapó. Copiapó has a population of approximately 150,000 people, an airport with daily scheduled flights to Santiago and Antofagasta, and companies that offer mining and exploration services. While farther away, San Juan, Argentina, is also a major mining centre with good mining services available.

1.6 History

There is no record of significant exploration activity at Josemaría or Los Helados prior to NGEx's interest. There are no historical Mineral Resource estimates, and no reported production from the area.

1.7 Geological Setting and Mineralization

Based on geological features and location, the Josemaría and Los Helados deposits are classified as examples of Cu–Au porphyry systems.

The Cu–Au mineralization at Josemaría is mostly hosted by a Miocene porphyry system which forms an elongated body with minimum dimensions of 800 to 900 m north–south, 600 to 700 m east–west and 600 to 700 m vertically. A well-developed leached cap overlies the entire Josemaría deposit, and is related to oxidation at and below the modern-day surface. The leached cap ranges from 10–20 m in thickness.

Mineral zones within the Josemaría deposit were defined by the relative abundance of chalcopyrite, pyrite and chalcocite, as well as the mode of occurrence of chalcocite (hypogene or supergene) and level of oxidation. Chalcopyrite and pyrite are disseminated through the potassic zone, with minor bornite. Quartz–magnetite ± chalcopyrite veining occurs through much of the main mineralized zone, as discrete veins and locally as a more intense stockwork.

The Josemaría deposit remains open to the south, beneath a thickening cover of post-mineral volcanic rocks, and also at depth.

Mineralization at Los Helados is primarily hosted by a Miocene magmatic–hydrothermal breccia that forms a roughly circular, pipe-like body with minimum dimensions of 1,100 m east–west, 1,200 m north–south, and at least 1,500 m vertically. The breccia body is surrounded by a broad halo of moderate to low grade Cu–Au mineralization which diminishes in grade with increasing distance from the breccia contact. The mineralization is dated at 13.13 ± 0.32 Ma. The breccia limits have been established by drilling to the west, east and south; however, the northern limit of the breccia body has not yet been identified. The system also remains open at depth, and the lateral extent of the breccia at depth is poorly constrained by the current drilling.

Four mineral zones are recognized within the deposit based on sulphide occurrence. In order of increasing depth, the zones are: pyrite only, pyrite>chalcopyrite, chalcopyrite>pyrite and chalcopyrite only. This sulphide zoning sequence reflects a progressive downward increase in the amount of chalcopyrite relative to pyrite.

Recent internal NGEx studies have suggested the presence of a discrete, higher-grade breccia phase occurring along the western and southwestern margins of the magmatic–

hydrothermal breccia. This high-grade breccia zone has not been fully delineated, and remains open for further extension.

The knowledge of the Josemaría and Los Helados deposit settings, lithologies, mineralization, and alteration controls on copper grade are sufficient to support Mineral Resource estimation and can support preliminary mine planning at the PEA level.

1.8 Exploration

Work programs conducted by NGEx include geological mapping; soil, rock-chip and talus sampling; a number of geophysical surveys including induced polarization (IP)–resistivity, magnetometer, and Mount Isa Mine's Distributed Acquisition System methodology (MIMDAS) surveys; reverse circulation (RC) and core drilling, and Mineral Resource estimation. A number of environmental baseline studies have been undertaken. A preliminary economic assessment of the potential development of the Los Helados deposit as a stand-alone operation was completed in 2014; that assessment is superseded by the results of the study in this Report.

The exploration programs completed to date are appropriate to the style of the Josemaría and Los Helados deposits.

1.9 Drilling

Nine drilling campaigns have been carried out at the Josemaría deposit, from 2003 to 2014. Drilling at the Josemaría deposit to date totals 61,100 m in 142 drill holes, of which 48 holes (17,535 m) are RC holes, and 94 holes (43,565 m) are core holes.

Eight drilling campaigns have been carried out at the Los Helados deposit, from 2006 to 2015. No drilling was conducted during the 2013–2014 season. Drilling to date totals 75,634 m in 95 drill holes, of which five holes (1,366 m) are RC and 90 holes (74,268 m) are core. The core drilling produced 33,936 m of NQ (47.6 mm diameter) core and 40,332 m of HQ size (63.5 mm) core.

Core was photographed, logged for detailed lithology, alteration and mineralization features, and (RQD) and recovery data were collected. Several of the drill holes were also logged for geotechnical information.

Core recovery data were not systematically collected on holes drilled before the 2010–2011 campaign. Core recovery from holes drilled at Josemaría between 2011 and 2014 averages 94%. Core recovery from holes drilled at Los Helados between 2012 and 2015 averages 97%.

Collar locations were surveyed using a differential global positioning system (GPS) instrument. Down-hole surveys were carried out at 50 m intervals on average, using a Reflex multi-shot instrument up to the 2011–2012 drilling campaign. For the 2012–2013 drilling, a SRG-gyroscope survey was completed for each drill hole by Comprobe Limitada. On average, measurements were collected at 30 m intervals down the hole.

Drill hole orientations are generally appropriate for the mineralization style. The Josemaría and Los Helados deposits are porphyry systems with disseminated mineralization. Reported and described interval thicknesses are considered true thicknesses.

The quantity and quality of the lithological, collar and down-hole survey data collected in the exploration and infill drill programs completed are sufficient to support Mineral Resource estimation and preliminary mine planning at the PEA level.

1.10 Sampling and Analysis

Drill holes were typically sampled on 2 m intervals.

A total of 11,754 core samples were systematically measured at Josemaría for specific gravity (SG), by NGEx technicians using the water displacement method.

A total of 25,158 core samples were systematically measured at Los Helados, beginning with the 2010–2011 drilling program. SG was measured by NGEx technicians using the water immersion method.

Prior to 2009, ALS Chemex (ALS) in Chile was used as the primary analytical laboratory and the analytical package used was a 27-element inductively-coupled plasma atomic emission spectrometry method (ICP-AES) following a four-acid digestion, Au fire-assay atomic absorption (AA) finish and trace mercury by cold vapor/AA.

Beginning in 2009, all samples were analyzed by ACME Analytical Laboratories Ltd. (ACME) in Santiago, Chile following sample preparation at ACME's sample preparation laboratory in Copiapo, Chile (Los Helados) or Mendoza, Argentina (Josemaría).

Sample preparation for core and RC chips from the Josemaría deposit and core from the Los Helados deposit included drying, crushing to better than 85% passing 10 mesh and pulverizing to 95% passing 200 mesh. Sample digestion was done by a multi-acid attack. Gold was determined by fire assay with an atomic absorption spectroscopy (AAS) finish based on a 30 g sample. A suite of 37 elements, including Cu, was determined by ICP-emission spectroscopy (ES) analyses. Samples analyzed before the 2010–2011 campaign had Cu re-assayed by AAS only if the ICP result exceeded the detection upper limit of 10,000 ppm. Beginning in 2010–2011, all samples with copper grades over 5,000 ppm Cu were re-assayed by AAS. Starting in 2011–2012, Cu determinations in all samples were done by both ICP and AAS. Mercury concentration was determined by cold vapour/AA in all samples up to 2010–2011.

Prior to 2009, quality control was limited to the preparation and analysis of field duplicates from the drill samples.

A rigorous quality control (QC) protocol was implemented in 2009–2010, beginning with drill holes LHDH05 (Los Helados) and JMDH08 (Josemaría), and has been followed since then with minor variations. Quality assurance and quality control (QA/QC) includes insertion of standard reference materials (SRMs), coarse blank samples and duplicate samples. A set of 183 coarse rejects from the 2012 drill campaign at Josemaría were selected for re-assaying at SGS Laboratories. A set of 522 pulps, representing 3.5% of total samples for the 2012–2013 drilling campaign at Los Helados, were selected for a second analysis round at ALS in Chile.

Sample collection, preparation, analysis and security for the core drill programs are in line with industry-standard methods for porphyry deposits. The QPs are of the opinion that the quality of the copper and gold analytical data from these programs is sufficiently reliable to support Mineral Resource estimation without limitations on Mineral Resource confidence categories.

1.11 Data Verification

Data verification has been conducted by independent consultants in support of technical reports on the Project. This work has included field visits (drill collar monumenting; location checks for selected drill collars); witness sampling; QA/QC data reviews; spot checks of the assay database against assay certificates; reviews of the lithology and alteration information in drill core against drill logs; reviews of collar elevations in the database against collar elevations in the digital elevation model provided by NGEx; downhole survey deviation reviews; reviews of QA/QC data including standard, blank and duplicate sample performances; and a review of check sampling on pulps completed by a check laboratory.

A reasonable level of verification has been completed during the work conducted to date, and no material issues have been left unidentified from the verification programs undertaken. The data verification programs undertaken on the data collected from the Project adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposit, and adequately support the geological interpretations, and the analytical and database quality. The resulting data can be used to support Mineral Resource estimates and in preliminary mine planning at the PEA level.

1.12 Metallurgical Testwork

A two phase metallurgical test work program for each deposit was conducted at SGS Minerals S.A. (SGS) laboratories in Santiago, Chile under the supervision of Amec Foster Wheeler. Vendor testing was also conducted by Thyssenkrupp on selected samples from the Los Helados deposit.

The main activities completed during the metallurgical test program carried out were:

- Sample selection for the metallurgical test programs

- Chemical characterization including mineralogical analysis
- Physical characterization
- Gold recovery using gravity processing techniques
- Leaching of the Cu and Au oxide ore types (Josemaría deposit only)
- Copper, gold and silver recovery using conventional sulphide flotation practices
- Settling testwork.

The data obtained from the metallurgical test programs were used to develop a relationship between Cu head grade and final Cu recovery to concentrate. This relationship between Cu recovery and Cu head grade was determined from the results of both the open and locked cycle tests and reported a good correlation.

For Josemaría, this relationship was applied to each of the lithologies studied. The copper recoveries are bound by the lower 10^{th} and upper 90^{th} percentile with respect to Cu feed grade, except in the case of the Supergene lithology where a fixed recovery of 85.3% of the feed Cu content was considered. Copper recoveries range from 81.1% to 96.7%, Au and Ag recoveries were fixed for each lithology. Fixed Au recoveries range from 59.2% to 72.6%; fixed Ag recoveries range from 52.9% to 74.9%.

At Los Helados, Cu recoveries range from 84.2% to 93.9%. A fixed global Au recovery estimate of 76% of the feed Au content has been used. Silver recovery is also fixed, at 60% of the feed Au content.

The weighted average, life-of-mine recoveries are forecast to be 88.3% for Cu, 72.7% for Au and 61.4% for Ag.

The Josemaría concentrates showed no major deleterious elements. However, mill feed blending strategies should be employed to generate flotation concentrates that have high Cu grades whilst maintaining minimal deleterious element levels.

No major deleterious elements were noted in the concentrates produced from the testwork completed on Los Helados mineralization. The concentrates are considered to be marketable without incurring penalties for deleterious elements.

1.13 Mineral Resource Estimates

The Josemaría Mineral Resource estimate update is based on data from 116 drill holes totalling 52,725 m of drilling, of which 34 holes (13,164 m) are reverse circulation (RC) and 82 holes (39,561 m) are core holes. The total length of assayed intervals is 51,092 m and there are 27,344 assays.

The Mineral Resource estimate at Los Helados is unchanged from the previous technical report, and is supported by 74 drill holes (five RC and 69 core), and 35,629 assay results.

For each deposit, a two-dimensional (2D) interpretation based on logged data was completed by NGEx geologists on east–west oriented sections spaced 100 m apart. Two-dimensional lines were then exported from GEMS and imported into the Leapfrog geological modelling software and the final three-dimensional (3D) wireframe solids were constructed.

Statistical analyses were performed for Cu, Au, Ag, S, Fe, and As by lithological domain at Josemaría, and for Cu, Au, Ag, Mo, S, Fe and As and SG samples at Los Helados.

The drill hole assays were composited to 2 m intervals. No capping was applied at Josemaría. Depending on the domain, copper grade caps at Los Helados ranged from 2–3%, though most domains were not capped. Gold was capped at 2 g/t Au and Ag at 20 g/t Ag.

Ordinary kriging (OK) and inverse distance squared (ID2) weighting interpolation was done in a single pass. All elements (Cu, Au, Ag, Mo, As, S and Fe) were interpolated using OK. The ID2 weighting method and nearest neighbor (NN) method were performed only for Cu and Au for validation and checking purposes of the global bias. A minimum of two and a maximum of 50 composites, with maximum 15 composites from the same hole were used for the interpolation, to allow maximum spread of the data used to estimate blocks. For estimation of the kriging and block variance, a 3 x 3 x 3 discretization of the block was selected. The major, semi-major and minor axes of the search ellipse were set to the corresponding radius defined by the omni-directional variograms.

Model validation was carried out using visual comparison of blocks and sample grades in plan and section views; statistical comparison of the block and composite grade distributions; and swath plots to compare OK, ID2 and NN estimates.

The classification of the Mineral Resources was done as a two-step process. An initial step which considered the geostatistical analysis of Cu grades in the deposit was modified by a final revision to ensure consistency in the classification.

The following parameters were used to initially classify the resources into Indicated and Inferred:

- Indicated: the distance to the nearest drill hole from the centre of the block was less than or equal to 75 m and there were at least three drill holes used for the grade interpolation and the kriging efficiency estimation was more than 0.33

- Inferred: the distance to the nearest drill hole from the block was 75 to 150 m, there were at least two drill holes used for the grade interpolation, and the kriging efficiency estimation was less than 0.33.

The final step was taken in order to avoid having isolated areas of one classification encapsulated within the other ('spotted dog' effect). Two smoothed buffer wireframes were created in Leapfrog, one at 75 m and one at 150 m. Inferred blocks inside the 75 m wireframe were re-classified as Indicated, while any Indicated blocks outside of the 75 m buffer but within the 150 m buffer were re-classified as Inferred. A final phase of visual inspection of the resulting classification was performed for validation purposes.

In order to evaluate the potential for reasonable prospects of eventual economic extraction for Josemaría, a Whittle pit shell was generated using the following parameters:

- Cu price: US$3.00/lb
- Mining cost: US$2.20/t
- Process cost (including G&A): US$7.40/t processed
- Copper selling cost: US$0.35/lb
- Over-all slope angle: 42º.

The analysis was done based on the copper equivalent (CuEq) grades in the block model. CuEq was calculated using metal prices of US$3.00/lb copper, US$1,400/oz gold and US$23/oz Ag. Mineral Resources for Josemaría are reported at a 0.2% CuEq grade for the sulphide material.

Block cave shapes were generated for Los Helados by using different diluted copper equivalent (CuEq) cutoff grades and calculating a conceptual NPV for each shape. These mining shapes were generated using the following assumptions:

- Cu price: US$3.00/lb
- Au price: US$1,300/oz
- Ag price: US$23/oz
- Operating cost (incl. general and administrative (G&A) costs): US$13.07/t
- Capital cost: Provisional, based on production rate
- Metallurgical recoveries: variable, based on recovery formulae
- Dilution: Laubscher's model.

A CuEq grade was calculated using US$3.00/lb Cu, US$1,300/oz Au and US$23/oz Ag, and includes a provision for selling costs and metallurgical recoveries corresponding to the three metallurgical zones defined by depth below surface. Note that these metal prices and sales costs are not the same as those used in the financial model; these assumptions were only used for the purposes of establishing appropriate copper equivalency formulae. The base-case diluted cutoff grade of 0.33% CuEq was determined as the lowest cutoff grade which produced a positive NPV, and the base case Mineral Resource estimate is the sum of all the blocks within this block cave.

1.14 Mineral Resource Statement

Mineral Resource estimate for Josemaría, assuming open pit mining methods, and the Mineral Resource estimate for Los Helados, assuming block cave underground mining methods, are reported using the 2014 CIM Definition Standards. Indicated and Inferred classifications only have been estimated; no Measured Mineral Resources were classified.

The Mineral Resource estimates were prepared by Mr Gino Zandonai, RM CMC. The Josemaría estimate has an effective date of 7 August, 2015 and the Los Helados estimate has an effective date of 19 September, 2014.

Mineral Resource estimates for Josemaría are included as Table 1-2 and Table 1-3; and the estimates for Los Helados in Table 1-4. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

1.15 Mine Plan

The PEA mine design basis is two mining operations feeding a central process plant. The combined mining and processing operation is collectively called Project Constellation. Mineralization at Josemaría will be mined using conventional open pit methods, whereas the Los Helados deposit will be mined using block caving, with mill feed material from both mines sent to a process plant to be located in Argentina. Material included in the mine plan is a subset of the estimated Mineral Resources.

The mine plan for Josemaría assumes a two-year pre-strip period, and a five-month ramp-up, during which production will increase in stages from 20% to 100%. Full production will extend over a six-year period at 150 kt/d. There is a six-year production ramp-up period for Los Helados and in year 14 of the mining operation, Los Helados will reach peak production of 120 kt/d. Project Constellation will be in operation for 50 years, including the two year pre-stripping period.

Table 1-2: Mineral Resource Estimate (Sulphide) for Josemaría (basecase is highlighted)

Josemaría Indicated Mineral Resources (sulphide)								
	Tonnage	Grade				Contained Metal		
Cutoff (CuEq)	(Mt)	Cu (%)	Au (g/t)	Ag (g/t)	CuEq (%)	Cu (B lbs)	Au (M oz)	Ag (M oz)
0.60	148	0.56	0.38	1.5	0.76	1.8	1.8	6.9
0.50	295	0.47	0.34	1.3	0.65	3.0	3.2	12.6
0.40	559	0.40	0.29	1.2	0.55	4.9	5.2	21.8
0.30	835	0.35	0.25	1.1	0.49	6.5	6.6	29.7
0.20	1,066	0.31	0.22	1.0	0.44	7.4	7.4	34.5
Josemaría Inferred Mineral Resources (sulphide)								
	Tonnage	Grade				Contained Metal		
Cutoff (CuEq*)	(Mt)	Cu (%)	Au (g/t)	Ag (g/t)	CuEq (%)	Cu (billion lbs)	Au (million oz)	Ag (million oz)
0.50	9	0.37	0.28	1.1	0.52	0.1	0.1	0.3
0.40	85	0.31	0.23	1.0	0.45	0.6	0.6	2.7
0.30	236	0.28	0.19	0.9	0.38	1.4	1.4	6.8
0.20	404	0.24	0.15	0.8	0.33	2.0	2.0	10.8

Table 1-3: Mineral Resource Estimate (Oxide) for Josemaría (basecase is highlighted)

Josemaría Indicated Mineral Resources (oxide)						
	Tonnage	Grade			Contained Metal	
Cutoff (Au g/t)	(Mt)	Cu (%)	Au (g/t)	Ag (g/t)	Au (k oz)	Ag (k oz)
0.40	10	0.18	0.46	1.4	150	460
0.30	23	0.16	0.40	1.3	290	950
0.20	43	0.15	0.32	1.2	450	1,610
0.10	77	0.13	0.25	1.0	610	2,520
Josemaría Inferred Mineral Resources (oxide)						
	Tonnage	Grade			Contained Metal	
Cutoff (Au g/t)	(million tonnes)	Cu (%)	Au (g/t)	Ag (g/t)	Au (k oz)	Ag (k oz)
0.40	2	0.00	0.43	1.2	27	73
0.30	3	0.00	0.40	1.1	37	102
0.20	4	0.00	0.34	1.0	48	145
0.10	7	0.02	0.26	0.9	62	214

Notes to accompany Josemaría Mineral Resource tables

1. Mineral Resources have an effective date of 7 August, 2015. The Qualified Person for the estimate is Mr Gino Zandonai, RM CMC.
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability

3. Sulphide Mineral Resources are reported using a copper equivalent (CuEq) cutoff grade. CuEq was calculated using US$3.00/lb copper, US$ 1,400/oz gold and US$23/oz Ag and was based on copper, gold and silver recoveries obtained in metallurgical testwork on four composite samples representing the rhyolite, tonalite, porphyry and supergene zones. Copper recoveries for the rhyolite, tonalite and porphyry zones were calculated as a function of copper grade, ranging from a low of 81% to a high of 97%. Copper recovery in the supergene zone was fixed at 85%. Gold recoveries were fixed between 62% and 73% and silver recoveries were fixed between 53% and 75% depending on the zone.;
4. Mineral Resources are reported within a conceptual Whittle pit that uses the following input parameters: Cu price: US$3.00/lb, mining cost: US$2.20/t, process cost (including G&A): US$7.40/t processed, copper selling cost: US$0.35/lb and Over-all slope angle of 42º
5. Mineral Resources (sulphide) have a base case estimate using a 0.2% CuEq grade; Mineral Resources (oxide) are reported using a 0.2 g/t Au cutoff grade.
6. Totals may not sum due to rounding as required by reporting guidelines.

Table 1-4: Mineral Resource Estimate for Los Helados (basecase is highlighted)

Los Helados Indicated Mineral Resource								
	Tonnage	Resource Grade				Contained Metal		
Cutoff (CuEq)	(million tonnes)	Cu (%)	Au (g/t)	Ag (g/t)	CuEq (%)	Cu (billion lbs)	Au (million oz)	Ag (million oz)
0.58	531	0.50	0.21	1.66	0.65	5.9	3.6	28.3
0.50	981	0.45	0.18	1.56	0.58	9.7	5.7	49.2
0.44	1,395	0.42	0.16	1.52	0.54	12.9	7.2	68.2
0.40	1,733	0.40	0.15	1.45	0.51	15.3	8.4	80.8
0.33	2,099	0.38	0.15	1.37	0.48	17.6	10.1	92.5
Los Helados Inferred Mineral Resource								
	Tonnage	**Resource Grade**				**Contained Metal**		
Cutoff (CuEq)	**(million tonnes)**	**Cu (%)**	**Au (g/t)**	**Ag (g/t)**	**CuEq (%)**	**Cu (billion lbs)**	**Au (million oz)**	**Ag (million oz)**
0.58	There are no Inferred Mineral Resources inside the mining shape at this cutoff grade							
0.50	41	0.41	0.13	1.78	0.51	0.4	0.2	2.3
0.44	176	0.37	0.11	1.61	0.45	1.4	0.6	9.1
0.40	399	0.35	0.10	1.47	0.43	3.1	1.3	18.9
0.33	827	0.32	0.10	1.32	0.39	5.8	2.7	35.1

Notes to accompany Los Helados Mineral Resource table

1. Mineral Resources have an effective date of 19 September 2014. The Qualified Person for the estimate is Mr Gino Zandonai, RM CMC.
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
3. Mineral Resources are reported using a copper equivalent (CuEq) cutoff grade. Copper equivalent is calculated using US$3.00/lb copper, US$1,300/oz gold and US$23/oz Ag, and includes a provision for selling costs and metallurgical recoveries corresponding to three zones defined by depth below surface. The formulas used are: CuEq% = Cu% + 0.6264*Au (g/t) + 0.0047*Ag (g/t) for the Upper Zone (surface to ~ 250 m); Cu% + 0.6366*Au (g/t) + 0.0077*Ag (g/t) for the Intermediate Zone (~250 m to ~600 m); Cu% + 0.6337*Au (g/t) + 0.0096*Ag (g/t) for the Deep Zone (> ~600 m)
4. Cutoff grades refer to diluted cutoff grades used to generate the corresponding block cave shapes. For each cutoff grade, the tonnes and grade represent the total Indicated or Inferred undiluted material within each of these shapes.
5. Mineral Resources are reported within block cave underground mining shapes based on diluted CuEq grades, US$13.07/t operating costs and include a provision for capital expenditure. The base case cutoff grade of 0.33%

CuEq was derived through an economic evaluation of several block cave shapes developed over a range of different cutoff grades and is the cutoff grade which results in a zero net present value

6. Totals may not sum due to rounding as required by reporting guidelines

1.15.1 Geotechnical Considerations

Various rock mechanics studies have been undertaken to support mine design parameter selections for both deposits.

For Josemaría, inter-ramp slope stability was assessed using empirical methods. For a proposed inter-ramp depth of 105 m, maximum inter-ramp angles (IRAs) of 45º and 47º are recommended for the east and west walls, respectively.

Based on empirical methods, caving of the Los Helados rock mass can be achieved with a minimum hydraulic radius (HR) of 39. This equates to a cave initiation footprint approximately 135 x 185 m. Cave initiation can be successfully achieved at Los Helados given the rock mass conditions and proposed mining footprints although the rock mass characteristics suggest that unassisted cave propagation may be an issue with a planned lift height of 1,000 m. The proposed height/width ratios of the cave are 0.56 to 2.75, depending on which side of the cave is considered. This indicates that there could be a risk of cave-stalling, depending on the initiation strategy. The proposed single lift of more than 800 m over the full footprint area is greater than what has currently been done in other existing traditional block cave operations. Only one panel cave mine to date, Cadia East, has been developed a lift height greater than 800 m using advance preconditioning techniques. With appropriate cave initiation and propagation studies in further project stages, and the proposed use of full column hydraulic fracturing (HF) preconditioning, it is considered that the risks of cave-stalling can be mitigated.

The results of the primary fragmentation analysis indicate that in-situ block sizes alone are not viable for efficient cave mining, and that the effects of secondary fragmentation will need to be considered. Draw heights of around 100 m are required before adequate/productive fragment size distributions are produced through secondary fragmentation. The use of confined blasting (CB) preconditioning of the first 100 m of columns is recommended.

Based on empirical analyses, the likely cave angle at Los Helados will be around 75°. The predicted mean caving angle of 75° from the empirical analysis is comparable to data from benchmarking studies from similar block cave mines in porphyry copper systems. A maximum subsidence angle of 60° has been estimated for Los Helados.

1.15.2 Pit Design

The 15 years of open pit life at Josemaría, including two years of pre-stripping, are divided into six conceptual phases, each having a minimum operational width of 150 m, to facilitate the early extraction of the most profitable material, and to defer or minimize waste stripping. Smoothing the pit designs involved redefining the optimized pit shells to provide equipment access, and to ensure that wall slopes are designed in accordance with the recommended slope angles. The final pit design incorporates two main ramps with an exit point at the 4400 level on the north side of the pit; the exit point will be in close proximity to the planned primary crusher location.

Overall loss and dilution was estimated to be less than 1%, and has been incorporated into the block model. The final strip ratio for the designed pit is 0.98:1.

A maximum mining rate of 115 Mt/a is required to provide the nominal 150 kt/d of concentrator feed. The sinking rate, considering each phase separately, is limited to eight mined benches per year, with six benches mined during the first year.

The Josemaría pre-stripping will mine higher, smaller benches for phases 1, 3, 4, 5 and 6 during year -2. The mine plan stockpiles this pre-stripping material in year -1; and it will be reclaimed and fed to the mill in year 1. An elevated cutoff grade strategy was used to develop the PEA mine plan.

1.15.3 Cave Design

The block cave mine design is based on a 1,174,000 m^2 footprint area. The footprint area contains two production lifts, an upper lift (Lift 1), the smaller of the two lifts and a lower lift (Lift 2).

Lift 1 has its undercutting level (UCL-1) at elevation 3,630 metres above sea level (masl), 90 m above the UCL of Lift 2. It will have a 194,000 m^2 footprint, and was designed with a rectangular shape (200 m wide north–south, 970 m long east–west). Mining assumes block caving with load-haul-dump (LHD) equipment for extraction.

Lift 2 has its undercutting level (UCL-2) at elevation 3,540 masl. The lift will have a 980,000 m^2 footprint, and be mined by block caving using LHD equipment.

Intensive pre-conditioning of the whole rock mass was incorporated in the design and will use both HF and fracturing by CB methods. To achieve HF, two hydrofracturing levels were included, the upper hydrofracturing level at 4,120 masl. (HFL-1), 280 m above the lower hydrofracturing level at 3,840 masl (HFL-2), which in turn is 210 m above Lift 1 and 300 m above Lift 2.

The ventilation system design assumes three main intake shafts and three main exhaust shafts.

A 12 km long tunnel (referred to by the tunnel length as Tunnel 12) is planned to access Los Helados from Chile, with a second tunnel, approximately 8 km in length (referred to by the tunnel length as Tunnel 8), used to convey mill feed material from the Los Helados mine to the process plant in Argentina.

1.16 Recovery Plan

The plant will treat material from the Josemaría open pit for the first seven years of operation. In year 8, mill feed material from the underground operation at Los Helados will be introduced to the plant, and blended with Josemaría open pit material. The blended feed will continue for a six-year period. During year 13 of operations, mining from the Josemaría open pit ceases, and for the remaining 35 years of mine life, only underground feed from Los Helados will be processed.

For the Josemaría mill feed material, run-of-mine (ROM) material will be trucked to a primary crusher, crushed, and then sent to the process plant. ROM material from Los Helados will be primary crushed underground, and conveyed to the process plant. The base case comminution circuit design considers a conventional high pressure grind roll (HPGR) crushing circuit followed by conventional ball mill grinding. Conventional sulphide flotation will follow the comminution stage. The tails will go to the tailings storage facility where approximately 20% of the contained water in the tailings will be recovered and sent back to the process plant.

The plant is designed to process 120 kt/d of Los Helados mill feed and 150 kt/d of Josemaría material, which is softer. Additional flotation residence time is required for the Josemaría mill feed.

1.17 Project Infrastructure

1.17.1 Logistics

A new 57 km long, two-lane dirt access road is planned to branch off from highway RN 76 to access the proposed Josemaría mine and the process plant. From that intersection, the Pircas Negras border pass is about 22 km away on the existing road. In Chile, an existing 20 km long single-lane dirt road will be upgraded to a two-way road to access the Los Helados mine from Chilean public road C-35.

The Candelaria port at the city of Caldera was selected for PEA study purposes. The port is about 380 km by road from the Josemaría plant site. Port facilities at Caldera are owned and operated by Minera Candelaria. Project Constellation would require additional port facilities to be constructed to support concentrate export, adjacent to the port owner's existing buildings. Concentrates will be trucked from the plant to the port.

1.17.2 Waste Rock and Tailings Storage

The Josemaría open pit operations will generate a total of 517 Mt of waste material that is proposed to be placed about 1 km south of the open pit.

Tailings will be transported from the process plant, located at an elevation of 4,127 masl, to the tailings storage facility (TSF) site at elevation 4,000 masl at an initial rate of

5,508 m^3/h. A two-stage process will be required, because although the selected site is topographically 100 m lower than the process plant site, there are two ridges that are 200–300 m higher than the plant site that must be crossed. Tailings, thickened to 65%, will be pumped to an intermediate point located 4 km from the plant at 4,150 masl, and then flow by gravity inside a tunnel for 8.1 km to the TSF. Tailings will be deposited by end-discharge, with occasional spigotting, to form smooth tailing beaches. The final dam will be about 180 m high, 1.3 km long, and store approximately 1,900 Mm^3 of tailings.

1.17.3 Site Infrastructure

The PEA design assumes most support facilities will be located in Argentina.

Key infrastructure at Josemaría will include the open pit, process plant, filter plant, ancillary administrative buildings, construction and operations camp, truck-shop, electrical distribution system, water and emergency ponds, and site security.

The major infrastructure at Los Helados will include the block cave mine, explosives magazine, warehouse, administration areas, construction and operations camp, mining contractor facilities, and first aid station.

Accommodations camps will be required at both Josemaría and Los Helados. Both camp designs assume 4,000 person capacities during construction. As construction demand decreases, parts of the camps will be reassigned to operations personnel and operations offices. During operations, it is expected that the Josemaría camp will accommodate about 750 people, and the Los Helados camp about 2,400 people.

A number of tunnels are required, including the access portal to Los Helados, a water diversion tunnel to divert the Los Helados creek around the Los Helados operation, a conveyor tunnel from Los Helados to Josemaría, and a tailings tunnel from the process plant to the TSF.

1.17.4 Water Management

Limited studies have been conducted for water management at Josemaría. The PEA assumes that diversion channels are constructed along the west, south, and east walls of the open pit to convey the diverted surface runoff toward the main basin at the north side of the pit. Ground water will be captured in the ditches included in the road design inside the pit, collected, and then pumped out of the pit zone. The contact water will be collected below the waste rock facility or in a dedicated pond. No allowance for a water treatment plant has been considered at this time.

Mine water at Los Helados will be sourced from dewatering activities associated with development and operations. About 100 L/s is expected (on average), based on the deposit setting and lithologies present.

The industrial water make-up requirement for the process plant is estimated to be 500 L/s (on average), or 0.5 m^3/s. Nearby valley aquifers were considered the most likely water source for PEA purposes; the selected site is located 8 km from the proposed plant site. It was assumed that the selected aquifer could support the full 500 L/s process plant requirements.

1.17.5 Power

Power for the site is assumed to be supplied with electricity through a 250 km long, 220 kV, single-circuit power transmission line connected to the El Rodeo substation in San Juan Province, Argentina. Average consumption is estimated to be 160 MW. A price assumption of $0.078/kWh was used for long-term power supply. Power supply alternatives from Chile were also considered; however, the lower power costs in Argentina led to significant operating costs savings over the life of the operations. For PEA purposes, the power infrastructure will include:

- A 220 kV overhead transmission line from El Rodeo
- A main power substation beside the process plant.

Power will be distributed at 33 kV via localized mine grid. A back-up generator will also be located on site to support key facilities in an emergency.

1.18 Marketing

No formal marketing studies have been conducted for Project Constellation. No contracts are currently in place for any production from the Project.

Metallurgical testwork completed to date indicates that contained Cu, Au and Ag will be payable in the concentrates produced. The testwork also indicates that the concentrate product will be clean, marketable, precious-metals rich, and low in deleterious elements. For the purposes of the PEA, it was assumed that long-term contracts would be established with Asian smelters. Market terms were established based on benchmarking against similar operations from publicly-available information. Opportunities exist for NGEx to receive premium terms for its concentrates. This would need to be explored during future Project-specific marketing studies.

1.19 Environmental, Permitting and Social Licence

NGEx has retained Asesoria Ambiental (AA), based in Argentina and BGC Engineering (BGC) based in Chile to assist with the preliminary environmental baseline studies. Extensive regional field programs were carried out by AA and by BGC during the 2013–2014 and 2014–2015 seasons. Publicly-available information has also been reviewed in depth. Based on the initial assessments, environmental sensitivities are understood to be related chiefly to ARD geochemistry and its effects on water quality, glacial and periglacial cryoforms, atmospheric dust emissions, effects on terrestrial and aquatic biota, and the human and political environment. These sensitivities are typical for a new mine development. However, additional work should be focused on potential effects on these environmental components, and design of the Project to minimize the potential environmental impacts and risks.

A detailed social impact assessment should be completed during future, more detailed studies. It is understood that NGEx maintains community relations and consultation programs that are ongoing and support Project Constellation development plans.

Project development will require submission of a full Environmental Impact Assessment (EIA) study. Following the receipt of environmental approvals, additional permits, licences, authorizations, and certificates will be necessary to proceed to Project construction. During the next study phase, when more information is available on the site and mine layout, the process for obtaining such approvals should commence in parallel with the EIA approval process.

Based on previous similar experience, Amec Foster Wheeler has allocated closure costs of US$148.7 million. Costs are assumed to be incurred at the end of mining operation. These amounts represent about 5% of the total Project initial capital costs.

1.20 Capital Cost Estimate

The LOM capital cost estimate is provided in Table 1-5. Initial capital costs total approximately US$3.08 billion (including pre-stripping costs), sustaining capital costs total about US$4.36 billion, for a total LOM capital cost estimate of approximately US$7.44 billion.

1.21 Operating Cost Estimate

The LOM operating cost estimate is provided in Table 1-6. Over the life of mine, the operating costs will average US$9.34/t processed with cash costs, net of by-product credits, of US$1.05/lb Cu produced, and total US$19.6 billion.

1.22 Financial Analysis

The Project has been valued using a discounted cash flow (DCF) approach. Estimates have been prepared for all the individual elements of cash revenue and cash expenditures for ongoing operations. The base case economic analysis assumes 100% equity financing and is reported on a 100% Project ownership basis.

Capital cost estimates have been prepared for initial development and construction of the Project, starting in year minus three (year -3). In addition to initial capital cost, sustaining capital was included from year one (year 1).

Table 1-5: Capital Cost Estimate

	(US$ Billion)
Open pit mine	0.20
Pre-stripping	0.14
Underground mine	0.09
Plant and processing	0.87
Infrastructure	0.55
Total Direct Costs	*1.85*
Indirect costs	0.48
Owner's costs	0.13
Contingency	0.62
Total Initial Capital Costs	*3.08*
Life-of-mine sustaining capital costs	*4.36*

Table 1-6: LOM Operating Costs (US$t)

Estimated Operating Costs	Josemaría (US$/t)	Los Helados (US$/t)	Life of Mine (US$/t)
Mining (mineralization processed)	3.91	4.43	4.23
Processing	3.60	4.26	4.09
General & Administration	0.80	0.80	0.80
Pumping	0.02	0.02	0.02
Tailings	0.07	0.07	0.07
Other (roads, port, closure, etc.)	0.30	0.06	0.13
Total	***8.70***	***9.64***	***9.34***

The resulting net annual cash flows are discounted back to the date of valuation of start-of-year, year -3, because the actual starting calendar year has not been determined. The currency used to document the cash flow is US$Q3 2015, considering that the estimation was developed during the third quarter of 2015. The IRR is calculated as the discount rate that yields a zero NPV. The payback period is calculated as the time needed to recover the initial capital costs.

Table 1-7 presents a summary of the cashflow analysis, which is displayed graphically in Figure 1-1.

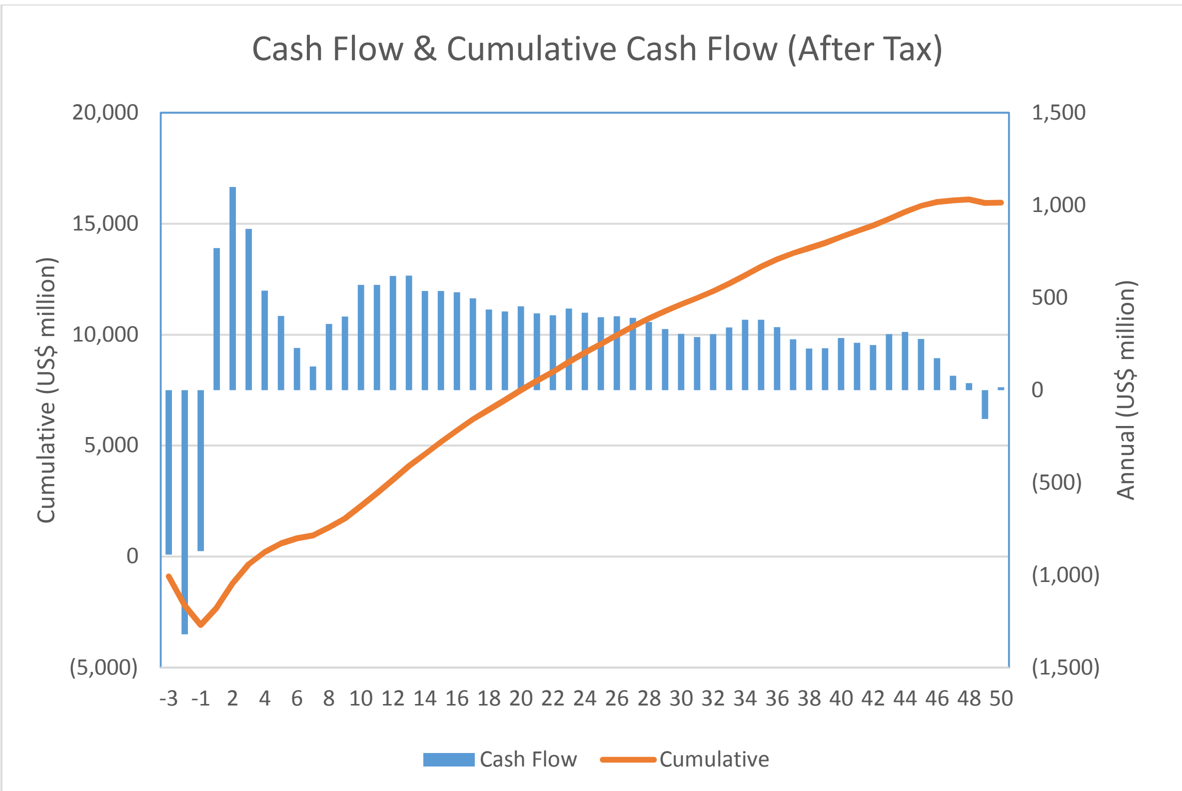
1.23 Sensitivity Analysis

A sensitivity analysis was performed taking into account variations in metal prices (which emulates metal grades and recoveries), operating costs and capital costs. The results are shown in Figure 1-2. The Project is most sensitive to (in order from highest to lowest) metal prices, initial capital cost and operating cost.

Table 1-7: Cashflow Summary Table (base case is highlighted)

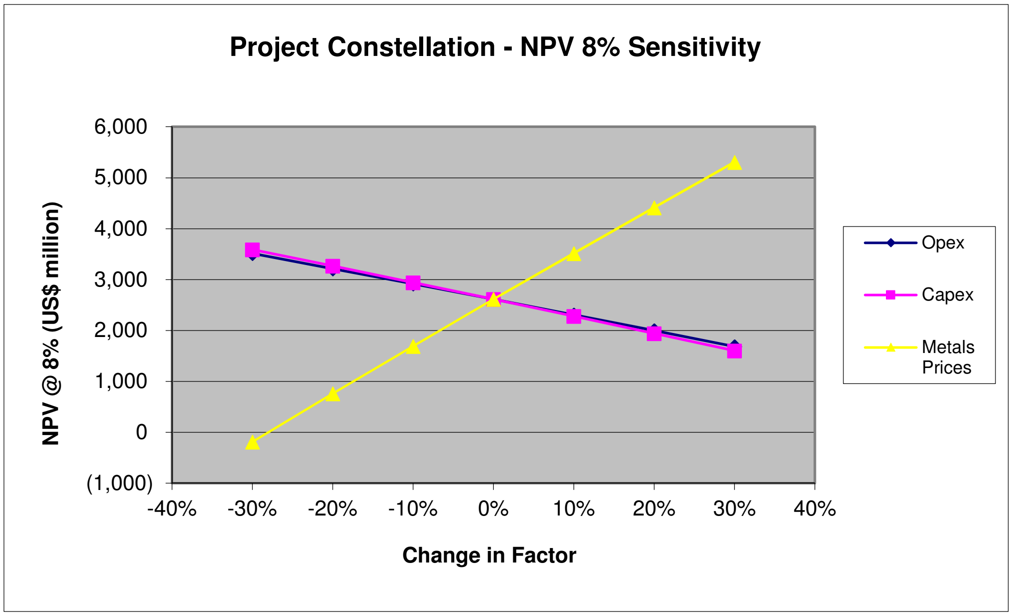
	Unit	Value
Payback (undiscounted; post-tax)	Years	3.6
Cumulative net cash flow (post-tax)	US$ billion	15.95
NPV 5% (post-tax)	US$ billion	4.99
NPV 8% (post-tax)	US$ billion	2.61
NPV 10% (post-tax)	US$ billion	1.65
IRR (post tax)	%	16.6%

Figure 1-1: Projected Life-Of-Mine Cash Flow



Note: Figure prepared by Amec Foster Wheeler. X-axis shows Project years.

Figure 1-2: Sensitivity Analysis



Note: Figure prepared by Amec Foster Wheeler.

1.24 Risks and Opportunities

The main opportunities identified for the Project include:

- Higher metals pricing: The Project has significant leverage to copper prices
- Changes to royalty or tax regimes that may improve the Project's economics.
- Delineation of additional mineralization, in particular higher-grade material, through further exploration
- Potential to heap-leach oxide gold mineralization at Josemaría
- Optimization of the combined mine plan
- Optimization of the block cave assumptions
- Improvements in process plant throughput, concentrate grades, and metallurgical recoveries through additional testwork
- Determining a more cost-effective power supply option
- Potential for regional synergies with other mining operations

Risks noted with the PEA assumptions include:

- Long-term depressed metals prices and fluctuations with metals pricing
- Political risks and uncertainties affecting legislation, regulatory requirements or general business climate in Chile and Argentina
- Inflation and increased prices for infrastructure, equipment and consumables, resulting in changes to operating and capital cost estimates
- Implementation of additional monetary controls or restrictions on imports by the Argentinean government
- Obtaining sufficient surface and water rights on both sides of the border to support the envisaged operation
- Obtaining the appropriate permits to support Project construction and operation
- Timely completion of the environmental permitting process
- Environmental concerns that may be raised due to proximity concerns: the proximity of the El Potro glacial area, rock glaciers in the broader periglacial environment, and cultural heritage sites
- Uncertainties in long term management of acid rock drainage and metal leaching from mine, waste and tailings
- Continuity and effectiveness of community relations programs.

1.25 Conclusions

Based on the assumptions detailed in this Report, the Project shows positive a financial return and supports the declaration of the economic analysis based on Mineral Resources.

Should the NGEx Board make such a decision, there is sufficient support from the Report results for progression to more detailed technical studies.

1.26 Recommendations

A two-phase work program is recommended for a total estimated cost of about US$11 million. The first phase consists of a number of drill and data collection programs in addition to continued environmental baseline studies. The second phase will use the drill program results to update engineering designs and supporting assumptions and culminate in sufficient data and data support to allow completion of a pre-feasibility study (PFS) document. This second phase will also entail the development of a licencing strategy that takes into account the regulatory framework, social context and environmental sensitivities of the Project.

The work program proposed would support completion of a PFS on the Project. The NGEx board of directors has not made a final decision to proceed to a PFS and the timing of such a decision will depend on a number of factors including but not limited to market conditions and availability of financing to complete the studies.

The budget estimates are restricted to technical work, and no provision has been made in the estimates for items such as corporate overheads, land acquisition, legal and other consulting fees, additional work or program changes that may be required as a result of interactions with regulatory agencies, community and stakeholder consultations, permit applications and acquisition, management costs from NGEx, or third-party consultants costs other than technical costs.

The Phase 1 work program consists of geotechnical drilling, hydrogeological field investigations, and survey programs, and is estimated at approximately US$3.9 million.

The Phase 2 work program comprises studies and evaluations covering a number of discipline areas, including geotechnical, mine design, process design, production scheduling, infrastructure, marketing, logistics, improving the understanding of risks and opportunities associated with a Chile–Argentina transboundary operation, and environmental, permitting and stakeholder considerations. Information collated during the second work phase should be incorporated into a stand-alone PFS document. The Phase 2 work is estimated at about US$7.1 million.

2.0 INTRODUCTION

2.1 Terms of Reference

The report was amended on 31 March 2016 to correct minor inconsistencies in the original filing between the footnotes to the Mineral Resource tables between Section 14 and Section 1. There are no other changes to the Mineral Resource statements.

NGEx Resources Inc. (NGEx) commissioned AMEC International Ingeniería y Construcción Limitada (Amec Foster Wheeler) to compile an independent NI 43-101 Technical Report (the Report) on the results of a Preliminary Economic Assessment (PEA) of an integrated mining operation that incorporates the Los Helados deposit, located in the Andes Mountains of the Atacama Region in Northern Chile, and the Josemaría deposit, located in San Juan Province, Argentina (collectively Project Constellation or the Project). The Report also includes an updated Mineral Resource estimate for the Josemaría deposit.

The Report will be used in support of NGEx's press releases entitled "NGEx Announces Positive Result of Preliminary Economic Assessment for Project Constellation - A Combination of Los Helados and Josemaría", dated 7 January 2016 and "NGEx Financial Model Update Based On New Argentina Tax Rules And Files Technical Report For Project Constellation", dated 22 February 2016.

The Project location is shown in Figure 2-1.

The Josemaría deposit is held by Desarrollo de Prospectos Mineros S.A. (DPM), which is an indirectly wholly-owned Argentinian subsidiary of NGEx. For the purposes of this Report, the mineral tenure surrounding, and including, the Josemaría deposit is referred to as the Josemaría Project.

The Los Helados deposit is held by Minera Frontera del Oro (MFDO), an indirectly wholly-owned Chilean subsidiary of NGEx. For the purposes of this Report, the mineral tenure surrounding, and including the Los Helados deposit is referred to as the Los Helados Project.

Additional mineral titles in the Project area are held in the name of Filo del Sol Exploración S.A. (FdS), an indirectly wholly-owned Argentinian subsidiary of NGEx. This mineral tenure is included in the definition of the Los Helados Project for the purposes of this Report.

Collectively, the Los Helados Project and the Josemaría Project form Project Constellation.

For the purposes of this Report, the parent and subsidiary companies are referred to interchangeably as "NGEx".

Figure 2-1: Project Location Plan

Note: Figure after Charchaflié, 2012. Red stars on plan indicate projects held by NGEx, crossed picks are operating mines or development properties held by third parties.

Currency is expressed in U.S. dollars and metric units are used, unless otherwise stated. The Report uses Canadian English.

2.2 Qualified Persons

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

- Mr Alfonso Ovalle, RM CMC, Principal Mining Engineer, Amec Foster Wheeler
- Mr Cristian Quiñones, RM CMC, Principal Geologist, Amec Foster Wheeler
- Mr Cristian Quezada, RM CMC, Principal Mining Engineer, Amec Foster Wheeler
- Mr David Frost, FAusIMM, Technical Director Process, Amec Foster Wheeler
- Mr Vikram Khera, P.Eng., Senior Financial Analyst, Amec Foster Wheeler
- Mr Gino Zandonai, RM CMC.

2.3 Site Visits and Scope of Personal Inspection

Mr Cristian Quiñones visited the Los Helados site on April 11, 2014, and visited the core storage facility in Paipote from May 22–23, 2014. During the site visit, he inspected collar co-ordinates in the field. During the core facility visit, Mr Quiñones reviewed a number of activities and processes related to core logging, core storage, geological interpretation and data management.

Mr Gino Zandonai visited the Josemaría site on January 9, 2012, and visited the core logging facility during January 2012. Mr Zandonai visited the Los Helados site on January 9, 2012 and has been to the core logging facility twice between January 2012 and October 2012. During the site visit, Mr Zandonai reviewed the data collection and drill programs in support of resource estimation. During the core facility visit, he reviewed a number of activities and processes related to core logging, core storage, geological interpretation and data management.

2.4 Effective Dates

The Report has a number of effective dates as follows:

- Date of Mineral Resource estimate for Josemaría: 7 August, 2015
- Date of Mineral Resource estimate for Los Helados: 19 September 2014
- Date of supply of latest information on mineral tenure, surface rights and Project ownership: 30 November, 2015
- Date of initial financial analysis in the PEA: 6 January, 2016
- Date of updated financial analysis based on removal of export tax in Argentina: 12 February 2016

The overall effective date of the Report is taken to be the date of the financial analysis, and is 12 February, 2016.

2.5 Information Sources and References

Dr Peter Cepuritas, MAusIMM (CP), Amec Foster Wheeler's Technical Director Geomechanics visited the Los Helados site from 15–16 January 2015, and provided specialist information on geomechanics to Mr Ovalle. Mr Hans Gopfert, a Principal Mining Engineer with Amec Foster Wheeler, visited the Los Helados and Josemaría sites from 26 to 28 February 2013, and provided specialist information on aspects of the sites to Mr Ovalle.

The key information sources for the Report included previous technical reports and the reports and documents listed in Section 2.6 (Previous Technical Reports), Section 3.0

(Reliance on Other Experts), and Section 27.0 (References) of this Report were used to support the preparation of the Report.

Additional information was sought from NGEx personnel where required.

2.6 Previous Technical Reports

The following technical reports have been filed on the Josemaría Project by NGEx:

- Zandonai, G.A., Carmichael, R.G. and Charchaflié D., 2013: Updated Mineral Resource Estimate for the Josemaría Property, San Juan Province, Argentina: technical report prepared by Behre Dolbear and NGEx Resources Inc., effective date 27 September 2013
- Zandonai, G., 2013: Second Updated Mineral Resource Estimate for the Josemaría Property, San Juan Province, Argentina: technical report prepared by Behre Dolbear for NGEx Resources Inc., effective date 27 September 2013, amended 24 March 2014.

Technical reports prepared prior to NGEx's involvement in the Josemaría deposit included:

- Chapman, J., and Harrop, J., 2004: Summary Report for the Batidero Project, San Juan Province, Argentina: report prepared by Tamri Geological Ltd and Cyberquest Geoscience Ltd. for TNR Gold Corp, 24 August, 2004
- Harrop, J., 2005: Summary Report for the Josemaría-Batidero Project, San Juan Province, Argentina: technical report prepared by Cyberquest Geoscience Ltd. for Tenke Mining Corporation, effective date 20 April, 2005
- Nilsson, J., and Rossi, M., 2006: Preliminary Resource Estimate for the Josemaría Project, San Juan Province, Argentina: technical report prepared by Nilsson Mine Services Ltd and Geosystems International for Tenke Mining Corporation, effective date 12 January 2006
- Nilsson, J., and Rossi, M., 2007: Exploration Update for the Josemaría Project, San Juan Province, Argentina: technical report prepared by Nilsson Mine Services Ltd and Geosystems International for Suramina Resources Inc., effective date 15 June, 2007.

The following technical reports have been filed on the Los Helados Project by NGEx:

- Charchaflié, D. and LeCouteur, P.C., 2012: Geological Report on the Los Helados Property, III Region of Atacama, Chile: technical report prepared by LPF Consulting SRL and Micron Geological Limited for NGEx Resources Inc., effective date 15 February, 2012

- Zandonai, G., Carmichael, R., and Charchaflié, D., 2012: Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by LPF Consulting SRL, NGEx and Micron Geological Limited for NGEx Resources Inc., effective date 15 October, 2012
- Zandonai, G., Carmichael, R., Charchaflié, D., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear, NGEx, LPF Consulting SRL, and AMEC for NGEx Resources Inc., effective date 15 October, 2013
- Zandonai, G., and Frost, D., 2013: Updated Mineral Resource Estimate for the Los Helados Property, Region III of Atacama, Chile: technical report prepared by Behre Dolbear and AMEC for NGEx Resources Inc., effective date 15 October, 2013, amended 24 March 2014
- Quiñones, C., Ovalle, A., Frost, D., Priscu, D., Khera, V., Pizarro, N., and Zandonai, G., 2014: Los Helados Cu-Au Deposit, Atacama Region III, Chile, NI 43-101 Technical Report on Preliminary Economic Assessment: technical report prepared by AMEC and Behre Dolbear for NGEx Resources Inc., effective date 1 October, 2014.

3.0 RELIANCE ON OTHER EXPERTS

The QPs have relied upon the following other expert reports, which provided information regarding mineral rights, surface rights, property agreements, royalties, and taxation of this Report as noted below.

3.1 Ownership, Mineral Tenure and Surface Rights

The QPs have not independently reviewed ownership of the Project area and the underlying property agreements. The QPs have also not independently reviewed the Project mineral tenure and the overlying surface rights. The QPs have fully relied upon, and disclaim responsibility for, information derived from NGEx staff and legal experts retained by NGEx for this information through the following documents:

- Bofill Mir & Álvarez Jana, 2015: Expert Opinion on Mineral Tenure, Surface Rights and other Matters in Support of the NI 43-101 Technical Report Prepared by Amec Foster Wheeler for NGEx Resources Inc. on the Los Helados–Josemaría Project: legal opinion prepared for AMEC on behalf of NGEx by Bofill Mir & Álvarez Jana, abogados, 30 November, 2015, 12 p.
- Perkins, N. and Caruso, F., 2015: Expert Opinion on Mineral Tenure, Surface Rights and other Matters in Support of the NI 43-101 Technical Report Prepared by Amec Foster Wheeler for NGEx Resources Inc. on the Los Helados–Josemaría Project: legal opinion prepared for AMEC on behalf of NGEx by Nicholson and Cano Lawyers, 30 October, 2015, 17 p.
- Perkins, N. and Caruso, F., 2015: Letter to Wojtek Wodzicki, President and CEO, NGEx Resources Inc.: legal opinion prepared for NGEx by Nicholson and Cano Lawyers, 30 October 2015, 22 p.

This information is used in Section 4 of the Report and in support of the Mineral Resource estimate in Section 14 and the financial analysis in Section 22.

3.2 Environmental, Permitting and Social

The QPs have not independently reviewed the Project environmental, permitting and social information. The QPs have fully relied upon, and disclaim responsibility for, environmental and social information derived from experts retained by NGEx for this information through the following documents:

- BGC Engineering, 2013. Proyectos de Exploraciones Minera Vicuña: Los Helados, Josemaría y Filo del Sol: Estudio Glacial y Periglacial. Informe Final. Report prepared for MFDO y DEPROMINSA, March 2013.
- BGC Engineering, 2014a: Los Helados Linea Base Preliminar Geociencias: report to NGEx, October 2014

- BGC Engineering, 2014b: Los Helados Línea Base Preliminar Aire y Agua: report to NGEx, October 2014
- BGC Engineering, 2014c: Los Helados Línea Base Preliminar Biota Terrestre: report to NGEx, October 2014
- BGC Engineering, 2014d: Los Helados Linea Base Preliminar Medio Humano: report to NGEx, October 2014
- BGC Engineering, 2015a: Los Helados, Josemaría, and Filo del Sol – Cryology Summary: report prepared for NGEx, October 2015
- BGC Engineering, 2015b: Environmental Sensitivities for Engineering Design: report prepared for MFDO, July 2015
- BGC Engineering, 2015c: Los Helados Project Baseline Summary: report prepared for MFDO, October 2015
- BGC Engineering, 2015d: Los Helados Project Design Criteria from Environmental Regulations and Guidelines, Rev 1: report prepared for MFDO, March 2015
- BGC Engineering 2015e, Los Helados Línea Base Preliminar Clima y Aire, report prepared for MFDO, August 2015
- BGC Engineering 2015f, Los Helados Línea Base Preliminar Geociencias, report prepared for MFDO, August 2015
- BGC Engineering 2015g, Los Helados Línea Base Preliminar Agua, report prepared for MFDO, October 2015
- BGC Engineering 2015h, Los Helados Línea Base Preliminar Limnología, report prepared for MFDO, October 2015
- BGC Engineering 2015i, Los Helados Línea Base Preliminar Biota Terrestre, report prepared for MFDO, October 2015
- BGC Engineering 2015j, Línea Base Geoquímica – Caracterización de Mineral y Estériles, report prepared for MFDO, September 2015
- Bethsabe Manzanares, 2015: Resumen Ejecutivo Estudios Para la Linea Base Ambiental Proyecto Josemaría: report prepared for NGEx by Asesoría Ambiental, October 2015.

This information is used in Section 20 of the Report and in support of the Mineral Resource estimate in Section 14 and the financial analysis in Section 22.

3.3 Taxation

The QPs have not independently reviewed the Project taxation position. The QPs have fully relied upon, and disclaim responsibility for, taxation information derived from experts retained by NGEx for this information through the following document:

- Bofill Mir & Álvarez Jana, 2014b: Los Helados Project: Preliminary Economic Assessment and NI 43-101 Technical Report – Taxation Narrative: taxation opinion prepared for AMEC on behalf of NGEx by Bofill Mir & Álvarez Jana, abogados, 19 November, 2014, 4 p.
- Nicholson y Cano, 2015: Josemaría & Los Helados Integrated Project: NI 43-101 Technical Report – Taxation Narrative: taxation opinion prepared for Amec Foster Wheeler on behalf of NGEx, 14 December, 2015

This information is used in Section 22 of the Report.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Property and Title in Argentina

Information in this subsection is based on data in the public domain (Baker Mackenzie, 2011; Parravicini, 2014; Fraser Institute, 2014; and Heredia, 2011), and has not been independently verified by Amec Foster Wheeler.

4.1.1 Mineral Tenure

Under the Argentine Mining Code (AMC), two types of permits can be granted, exploration permits (cateos), and exploitation permits (concesión de explotación or mina).

Exploration Permits

Exploration permits typically are awarded in units of 500 ha, termed the measurement unit. Holders may acquire a maximum of 20 measurement units (10,000 ha), but may not hold, in aggregate, any more than 400 measurement units (200,000 ha) in any one Province.

Grant of an exploration permit gives the holder the right to explore and prospect within the measurement unit boundary, for a 150-day period. The term is extended by 50 days for each additional measurement unit that has been granted, with the largest possible term being 1,100 days. However, once 300 days have been reached, where the holding is over four measurement units the holder must relinquish half of the land. At the 700 day point, the holder must relinquish half of the remaining measurement units.

Prior to grant of an exploration permit, holders must pay a one-off fee of ARP$400 for each measurement unit requested, and provide a work plan and commit to starting that work program within 30 days of permit grant. Compensation must be paid to landowners inconvenienced by any exploration activities. An activities report must also be provided to the appropriate regulatory authorities within 90 days after expiry of the measurement unit.

Exploitation Permits

Exploitation permits allow for mining activity. Holders must initially apply for a discovery claim (*manifestación de descubrimiento)* and the application is advertised for public comment.

The measurement unit area for such claims, the *pertenencia*, will vary depending on the mineralization to be exploited. Claims over Au, Ag, and Cu, and, generally, hard rock minerals deposits (e.g. vein-style and discrete deposits) are typically 6 ha in extent;

however, disseminated mineralization style deposits may see claim sizes reach a maximum of 100 ha. Exploitation permits can consist of one or more pertenencias.

Exploitation permit grant is contingent on a number of factors, including:

- Provision of official cartographic coordinates for the deposit and the area required for operating facilities
- Provision of a sample of the mineral discovered
- Approval of an Environmental Impact Assessment (EIA).

Approval and registration of the legal survey request by the relevant Provincial mining authority constitutes formal title to the exploitation permit. Assuming mining is active, and all other requirements are met, exploitation permits can have an indefinite grant period.

After three years from the date the discovery claim was registered, an annual fee (*canon*) becomes payable. The amount of the annual canon depends on the pertenencia size, and ranges from ARP$80 for the 6 ha pertenecias, to ARP$800 for the 100 ha pertenecias.

A further condition is required of a holder, which is to invest, at a minimum, 300 times the value of the annual canon in fixed assets on the exploitation permit over a five-year period. Twenty percent of the required investment must be made each year for the first two years of the designated investment period. For the final three years, the remaining 60% of the investment requirement is at the holder's discretion as to how it is expended. The exploitation permit can be cancelled if the minimum expenditures are not met in the manner stipulated.

Permits may also be cancelled if mining activity ceases for more than four years and the holder has no plans to reactivate mining within a five-year period.

4.1.2 Surface Rights

The AMC sets out rules under which surface rights and easements can be granted for a mining operation, and covers aspects including land occupation, rights of way, access routes, transport routes, rail lines, water usage and any other infrastructure needed for operations.

In general, compensation has to be paid to the affected landowner in proportion to the amount of damage or inconvenience incurred; however, no provisions or regulations have been enacted as to the nature or amount of the compensation payment.

In instances where no agreement can be reached with the landowner, the AMC provides the mining right holder with the right to expropriate the required property.

4.1.3 Water Rights

Typically, Provincial water authorities:

- Issue water usage permits, including usage purpose, amount of water required, how the water is to be delivered to the end-user, and any infrastructure requirements
- Establish a priority system for the permits, based on the type of water consumption
- Govern the duration of issued permits
- Levy usage fees based on the amount of water consumed/used.

Water use rights may be acquired by permit, by concession, and, under laws enacted in some Provinces, through authorization. Revocable permits for water use can be granted for a specific purpose. A grant (*concesión*) is awarded for a time period that is based on the intended use. Some permits can be granted in perpetuity. Water rights transfers accompany land transfers, as the concesión gives its beneficiary the right to use the water.

4.1.4 Environmental Regulations

Minimum environmental standards are enacted federally, with Provincial governments able to enact supplementary legislation to these minimum standards. The AMC incorporates National Law No. 24.585, key features of which include:

- An environmental impact statement (EIS) must be filed with the relevant regulatory authority
- The AMC has adopted a sectorial approach, in that each mining stage, including prospecting, exploration, exploitation, development, extraction, storage and beneficiation phases, as well as mine closure, require separate environmental impact reports (EIRs), each of which are reviewed separately prior to any approval
- If the EIS meets the relevant requirements under National Law No. 24.585, an environmental impact declaration (EID) will be granted; this allows work to commence
- EIDs have a two-year duration, and a set of conditions and requirements that must be met to keep the EID current.

Provinces may also have their own, additional, requirements relating to EIS preparation.

Provinces also regulate the generation of hazardous waste, water extraction for mining purposes, liquid effluent discharges, and soil protection. Some Provinces (e.g. Chubut and Mendoza) have banned open pit mining and/or the utilisation of cyanide and other chemicals in the mining process. Open pit mining and the use of cyanide are both permitted in San Juan Province.

4.1.5 Closure Considerations

Closure must be covered by submission of a new EIR, or an update/amendment to an existing approved EIR. The document must include details of the proposed environmental rehabilitation, reclamation or adjustment activities, and discuss how post-closure environmental impacts will be avoided. The EIR must include data on post-closure monitoring, but current regulatory requirements do not entail submission of formal closure plans.

4.1.6 Fraser Institute Policy Perception Index

Amec Foster Wheeler has used the Policy Perception Index from the 2014 Fraser Institute Annual Survey of Mining Companies report (the Fraser Institute survey) as a credible source for the assessment of the overall political risk facing an exploration or mining project in Argentina. Each year, the Fraser Institute sends a questionnaire to selected mining and exploration companies globally. The Fraser Institute survey is an attempt to assess how mineral endowments and public policy factors such as taxation and regulatory uncertainty affect exploration investment.

Amec Foster Wheeler has relied on the Fraser Institute survey because it is globally regarded as an independent report-card style assessment to governments on how attractive their policies are from the point of view of an exploration manager or mining company and forms a proxy for the assessment by industry of political risk in specific political jurisdictions from the mining industry's perspective.

The 2014 Fraser Institute survey ranks the San Juan Province of Argentina as 24th out of the 122 jurisdictions reviewed.

4.2 Property and Title in Chile

Information in this subsection is based on data in the public domain (Baker Mackenzie, 2013; Barriga, 2011; Fraser Institute, 2014; Vergara and Mackenna, 2011), and has not been independently verified by Amec Foster Wheeler.

4.2.1 Regulations

The state owns all mineral resources, but exploration and exploitation of these resources by private parties is permitted through mining concessions, which are granted by the courts. The concessions grant both rights and obligations, as defined by the Constitutional Organic Law on Mining Concessions and the Mining Code.

4.2.2 Mineral Tenure

Concessions can be mortgaged or transferred and the holder has full ownership rights. An owner is also entitled to obtain rights-of-way. In addition, a concession holder has the right to defend concession ownership against the state and third parties. A concession is obtained by filing a claim and includes all minerals that may exist within its area. Mining rights in Chile are acquired in the following stages.

Pedimento

A *pedimento* is an initial exploration claim whose position is well defined by UTM coordinates which define north–south and east–west boundaries. The minimum size of a pedimento is 100 ha, and the maximum is 5,000 ha with a maximum length-to-width ratio of 5:1.

A pedimento is valid for a maximum period of two years; however, at the end of this period, and provided that no overlying claim has been staked, the claim may be renewed for an additional two years if it is reduced in size by at least 50%. If the yearly claim taxes are not paid on a pedimento, the claim can be restored to good standing by paying double the annual claim tax the following year.

New pedimentos are allowed to overlap with pre-existing ones; however, the underlying (previously-staked) claim always takes precedence, providing the claim holder meets required payment obligations, checks for and corrects minor filing errors, and converts the pedimento to a manifestacion within the initial two-year period.

Manifestacion

Before a pedimento expires, or at any stage during its two-year life, it may be converted to a *manifestacion* or exploration concession (exploration licence). Within 220 days of filing a manifestacion, the applicant must file a “Request for Survey” (*Solicitud de Mensura*).

A manifestacion may also be filed on any open ground without going through the pedimento filing process.

The manifestacion owner is entitled to explore and remove materials for study purposes only (i.e. commercial production is not allowed).

Mensura

Within nine months of the approval of the “Request for Survey” by the court, the claim must be surveyed by a government licensed surveyor. Surrounding claim owners may be present during the survey.

Once surveyed, presented to the court, and reviewed by the National Mining Service (Sernageomin), the application is ruled by the court to be a permanent property right (a *mensural*). The mensural or exploitation (mining) concession is valid indefinitely, and is subject to the payment of annual fees. Once an exploitation concession has been granted, the Owner can actively mine the area.

Claim Processes

At each of the stages of the claim acquisition process, several steps are required before the application is finally approved. Many of the steps involved in establishing the claim are published in Chile's official weekly mining bulletin for the appropriate region. Legislation is being considered that seeks to streamline the processes.

4.2.3 Surface Rights

Ownership rights to the subsoil are governed separately from surface ownership rights. Articles 120 to 125 of the Mining Code regulate mining easements. The Mining Code grants full rights to use the surface land to any owner of a mining exploitation or exploration concession, provided that reasonable compensation is paid to the surface land owner.

4.2.4 Rights-of-Way

The Mining Code also grants general rights to an exploitation concession holder to establish a right of way, again subject to payment of reasonable compensation to the owner of the surface land. Rights-of-way are granted through a private agreement or legal decision which indemnifies the surface land owner. A right-of-way must be established for a particular purpose and expires after cessation of the activities for which the right-of-way was obtained. Exploitation easement owners must provide third parties with usage of the granted right-of-way, providing that this would not affect the mining easement owner's usage.

There is a mining right-of-way tax that provides license protection. This is calculated as a percentage of the *Unidad Tributaria Mensual* (UTM or monthly tax unit) and applies to each hectare of land that is included in a right-of-way or in exploitation concessions. The tax is required to be paid before 31 March of each year.

For rights-of-way the tax rate is currently 10% of a UTM per hectare; for mining exploration concessions the tax rate is currently 2% of a UTM per hectare. The value of the UTM is adjusted each month, based on the prevailing Chilean consumer price index (IPC).

4.2.5 Water Rights

Water is considered part of the public domain and is independent of land ownership. Individuals can obtain rights to use public water. In accordance with the Water Code, water rights are expressed in litres per second (L/s) and usage rights are granted on the basis of total water reserves.

Article 110 of the Mining Code allows an exploitation concession holder to use any water that can be found within the concession boundary.

4.2.6 Environmental Regulations

Environmental impact statements are required for mining projects, and all projects must be approved by the national and/or regional environmental commission.

New regulations were promulgated in 2013 under the Regulations for the System of Environmental Impact Assessment (*Reglamento del Sistema de Evaluación de Impacto Ambiental* or RSEIA). The RSEIA defines what information must be included in an EIS or an EID. A key change includes a requirement for public consultation.

4.2.7 Land Use

Chile's zoning and urban planning are governed by the General Law of Urban Planning and Construction that contains several administrative provisions which are applicable to different geographical and hierarchical levels, and sets specific standards for both urban and non-urban areas.

Projects must also comply with any urban legislation governing land usage.

4.2.8 Closure Considerations

Closure plans must be submitted to Sernageomin prior to mining operations commencing. Closure plan content requirements depend upon the mine capacity and are simplified if the production rate is under 10,000 tonnes per month.

Larger operations must provide a monetary guarantee with the closure plan, which must cover closure and post-closure costs. Sernageomin is required to review the plan, associated costs, and the adequacy of the bond every five years.

4.2.9 Fraser Institute Policy Perception Index

Chile is overall ranked 13 out of the 112 jurisdictions in the 2014 Fraser Institute survey.

4.3 Josemaría

4.3.1 Project Location

The Josemaría deposit is located 10 km south–southeast of the Los Helados deposit, across the international boundary in Argentina (refer to Figure 2-1). The approximate deposit latitude and longitude centroid is 28.4359º S, 069.5486º W (decimal degrees, WGS84 datum).

4.3.2 Project Ownership

NGEx holds an indirect 60% interest in the Josemaría deposit through its subsidiary DPM.

4.3.3 Joint Exploration Agreement

Exploration in the Josemaría area is conducted under the JOGMEC Josemaría joint exploration agreement (the JOGMEC Josemaría JEA), under which JOGMEC earned a 40% interest in the Josemaría Project by having made a cash payment of US$1 million and funded total work expenditures of US$6.13 million. JOGMEC earned its 40% interest during the fourth quarter of 2011. NGEx is the operator of exploration programs conducted under the JOGMEC Josemaría JEA.

4.3.4 Mineral Tenure

Legal opinion was provided that supported that DPM holds six exploitation licences (minas) and two exploration licences (cateos). Total holdings cover an area of 17,149 ha. The Josemaría deposit is located within the "Josemaría 1" exploitation licence (mina).

Details of the identification number, status, area in hectares and name of the titles are presented in Table 4-1. Figure 4-1 is a location plan showing the mineral tenure.

Cateo 338938-L-93 and minas 520-0347-D-99, 414280-L-04, 414281-L-04 are in good standing. Legal opinion provided to Amec Foster Wheeler indicates that the resolution on the legal status of the cateo filed under # 546502-D-94 is pending, the opinion authors did not know if the claim would be conceded, and did not have a probable date of resolution.

Annual exploration fee due to the Province of San Juan is proportional to the mining units covered by the property. Each mining unit covers 100 ha and costs ARP$3,200 per annum.

The Argentine Mining Code also requires the presentation of a plan of investment for each Mina. The plan of investment requires a minimum expenditure of 300 times the annual fee, and must be completed within five years of the plan presentation.

4.3.5 Option Agreements

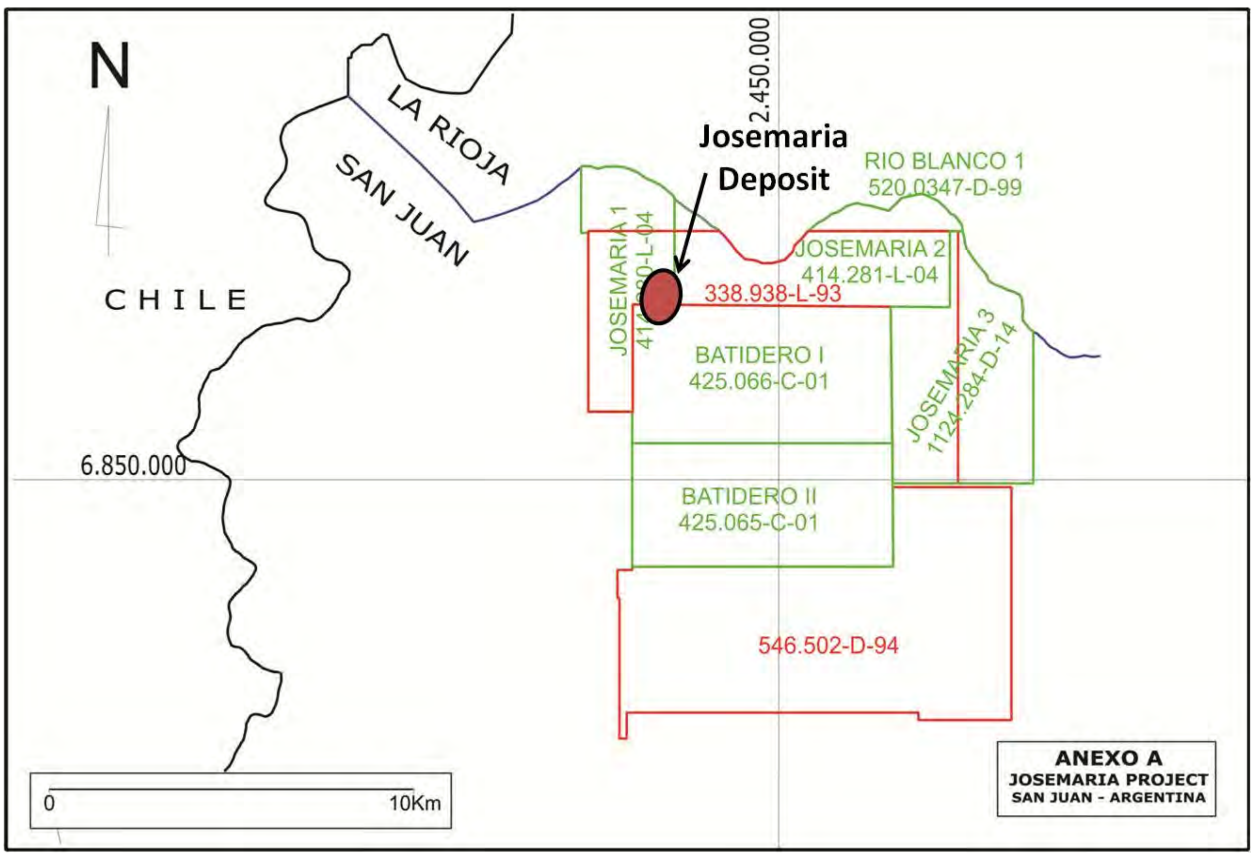
The JOGMEC Josemaría JEA is subject to two underlying agreements: one covering the Lirio property and a separate agreement covering the adjacent Batidero property. Table 4-3 indicated which concessions are incorporated in each agreement.

Table 4-1: Mineral Tenure – Josemaría

Concession	Type	Agreement	File Number	Hectares	Mining Units	Annual Fee (ARP)	5 Year Investment (ARP)
	Cateo	Lirio	338.938-L-93	2,048			
	Cateo	Lirio	546.502-D-94	5,011			
Rio Blanco 1	Mina	Lirio	520-0347-D-99	271	3	9,600	2,880,000
Josemaría 1	Mina	Lirio	414280-L-04	1,222	13	41,600	12,480,000
Josemaría 2	Mina	Lirio	414281-L-04	1,500	15	48,000	14,400,000
Josemaría 3	Mina	Lirio	1124.284-D-14	2,054	21	67,200	20,160,000
Batidero I	Mina	Batidero	425066-C-01	2,656	27	86,400	25,920,000
Batidero II	Mina	Batidero	425065-C-01	2,387	24	76,800	23,040,000

Note: ARP = Argentinean peso

Figure 4-1: Mineral Tenure Map – Josemaría



Note: Figure courtesy NGEx, 2015. Green outline indicates exploitation concession (mina), red outline indicates exploration concession (cateo).

Lirio Property Agreement

The Lirio property was acquired from the Lirio family through an exploration agreement with an option to purchase, dated 15 July, 2003. This option was exercised on 25 June, 2009 for US$813,000.

NGEx and (60%) and JOGMEC (40%) jointly hold a 100% interest in the property subject to a 0.5% net smelter return (NSR) royalty and an additional US$2 million payment within six months of the completion of the second full year of mine operations.

The Lirio property agreement covers the area of the Mineral Resource estimate for the Josemaría deposit.

Batidero Property Agreement

The Batidero property was acquired through an agreement with Compania Minera Solitario S.A. dated 1 July, 2002 and transferred to DPM through public deed No. 01 dated 4 January, 2013. NGEx (60%) and JOGMEC (40%) jointly hold a 100% participating interest in the Batidero property, subject to a 7% net profit interest.

The currently-estimated Mineral Resources for Josemaría do not fall within the Batidero property agreement.

4.3.6 Surface Rights

DPM currently has an occupancy easement for the Batidero camp, and a road right-of-way, which provides access to the work area. Part of the road right-of-way is within private property. The remainder of the road and the camp fall within the multiple usage area that has been designated by the San Guillermo Provincial Reserve. Multiple usage includes allowances for mining activities.

NGEx indicated to Amec Foster Wheeler that the mining authority has not yet determined the compensation to be paid.

4.3.7 Royalties and Encumbrances

Royalties on the Lirio and Batidero properties are discussed in Section 4.3.5.

There is a royalty payable to the Province of San Juan which is typically 3%, but can be reduced in certain circumstances.

4.3.8 Permits

Permits to support current and future work programs are discussed in Section 20.

Surface exploration work in the Josemaría area is permitted under a DIA. The original DIA application was submitted on 10 November, 2006 for the Josemaría 1 and 2 exploitation concessions (minas), and was granted on 16 November, 2010 under Resolution 287-SEM-2010.

On 20 November, 2012, an amendment request was filed to include the Rio Blanco 1 exploitation concession (mina) in the DIA.

The Environmental Impact Report for the Batidero exploitation concessions was filed on 30 April, 2007, and the DIA was granted on 5 August, 2008.

4.3.9 Environmental Liabilities

Existing environmental liabilities are limited to those associated with exploration-stage properties, and would involve removal of the exploration camps and rehabilitation of drill sites and drill site access roads. NGEx endeavours to rehabilitate drill sites at the end of each drill program.

Additional information on the Project environmental setting is included in Section 20.

4.4 Los Helados

4.4.1 Project Location

The Los Helados deposit is located about 125 km southeast of the city of Copiapó in Chile (refer to Figure 2-1). The approximate deposit latitude and longitude centroid is 28.3408º S, 69.5857º W (decimal degrees, WGS84 datum).

4.4.2 Project Ownership

NGEx holds an indirect 60% interest in the Los Helados deposit through its subsidiary, MFDO.

4.4.3 Joint Exploration Agreement

Los Helados is subject to a Joint Exploration Agreement (Joint Venture) with Pan Pacific Copper Co., Ltd. (the PPC JEA), whereby NGEx holds approximately a 60% interest and Pan Pacific Copper Co., Ltd. (PPC) holds approximately a 40% interest in the Los Helados Project.

PPC is a Japanese mining and smelting company that is owned by JX Nippon Mining and Metals (66%) and Mitsui Mining and Smelting (34%).

Each party (Participant) in the PPC JEA is expected to fund its pro-rata share of expenditures or be diluted. If the Participant interest in the Joint Venture is diluted to below 5%, the Participant interest will automatically convert to a 0.5% net smelter return royalty (NSR). The Pan Pacific Copper JEA includes a reciprocal right of first offer in the event that one Participant wishes to sell its interest.

For as long as NGEx holds at least a 50% interest in the Joint Venture, NGEx has the right to act as the Operator.

4.4.4 Mineral Tenure (Chile)

Legal opinion was provided that supported that in Chile, MFDO is owner of 30 exploitation mining concessions, 103 exploration mining concessions and three unilateral and irrevocable options to purchase seven exploitation concessions, which collectively form the Los Helados Project (see also Section 4.4.11). Concessions held by MFDO in Chile total 32,032 ha, including overlapping titles. The actual surface area covered by the titles is approximately 18,480 ha. The Los Helados deposit is covered by concessions “Limite 23 1 al 300” and “Limite 24 1 al 300”.

Details of the identification number, status, area in hectares and name of the titles are presented in Table 4-2 to Table 4-3. Figure 4-2 is a location plan showing the mineral tenure.

4.4.5 Option Agreements

The Los Helados property includes two separate Option Agreements for small claim groups within the overall property perimeter as described below.

Borchert Option Agreements

By public deed dated August 14, 2012 before the Copiapó notary public of Mr. Luis Contreras, Mr. Guillermo Borchert Poblete and Mrs. Judith Perla Bilik Folatre granted to MFDO, two separate unilateral and irrevocable options to purchase the exploitation concessions "Los Helados 1 al 5" and “Odilia 1 al 20” respectively. MFDO may exercise the Option Agreements within the period of five years from the date of the Borchert Option Agreements.

The purchase price of each Option Agreement is US$875,000, to be paid in installments during the term of the Option Agreement. There are no work commitments.

Sociedad Contractual Minera Borchert Billik Option

Sociedad Contractual Minera Borchert Billik granted MFDO a unilateral and irrevocable option on 28 February 2013 to purchase the exploitation mining concessions “El Rancho 1 al 60”, “El Rancho III 1 al 60” and “Napoleón II 1 al 10”, and the right to purchase the “Evelyn 1 al 10” and “Andrea 1 al 10” exploitation mining concessions that were in the process of being granted.

Table 4-2: Chilean Mining Exploitation Concessions – Los Helados

Concession	National ID Number (Rol Nacional)	Status	Holder	Hectares
LIMITE 1 1/40	03203-4788-2	Granted	MFDO	200
LIMITE 2 1/40	03203-4789-0	Granted	MFDO	200
LIMITE 3 1/26	03203-4790-4	Granted	MFDO	116
LIMITE 4 1/35	03203-4791-2	Granted	MFDO	168
LIMITE 5 1/51	03203-4792-0	Granted	MFDO	255
LIMITE 6 1/49	03203-4793-9	Granted	MFDO	234
LIMITE 7 1/30	03203-4794-7	Granted	MFDO	131
LIMITE VEINTITRES 1/10	03203-5806-K	Granted	MFDO	50
LIMITE 8 1 AL 200	03203-6215-6	Granted	MFDO	200
LIMITE 9 1 AL 200	03203-6216-4	Granted	MFDO	200
LIMITE 10 1 AL 200	03203-6217-2	Granted	MFDO	200
LIMITE 11 1 AL 300	03203-6218-0	Granted	MFDO	235
LIMITE 12 1 AL 141	03203-6219-9	Granted	MFDO	141
LIMITE 13 1 AL 20	03203-6220-2	Granted	MFDO	20
LIMITE 14 1 AL 200	03203-6221-0	Granted	MFDO	200
LIMITE 15 1 AL 200	03203-6222-9	Granted	MFDO	200
LIMITE 16 1 AL 220	03203-6223-7	Granted	MFDO	220
LIMITE 17 1 AL 198	03203-6224-5	Granted	MFDO	198
LIMITE 18 1 AL 199	03203-6225-3	Granted	MFDO	199
LIMITE 19 1 AL 190	03203-6226-1	Granted	MFDO	190
LIMITE 20 1 AL 143	03203-6227-k	Granted	MFDO	143
LIMITE 21 1 AL 110	03203-6228-8	Granted	MFDO	110
LIMITE 22 1 AL 14	03203-6229-6	Granted	MFDO	14
LIMITE 23 1 AL 245	03203-6230-k	Granted	MFDO	245
LIMITE 24 1 AL 215	03203-6231-8	Granted	MFDO	215
LIMITE 25 1 AL 129	03203-6232-6	Granted	MFDO	129
LIMITE 26 1 AL 190	03203-6233-4	Granted	MFDO	190
LIMITE 27 1 AL 218	03203-6235-0	Granted	MFDO	218
LIMITE TERCERA 1 AL 100	03203-6214-8	Granted	MFDO	100
LIMITE 26A 1 AL 11	03203-6234-2	Granted	MFDO	11

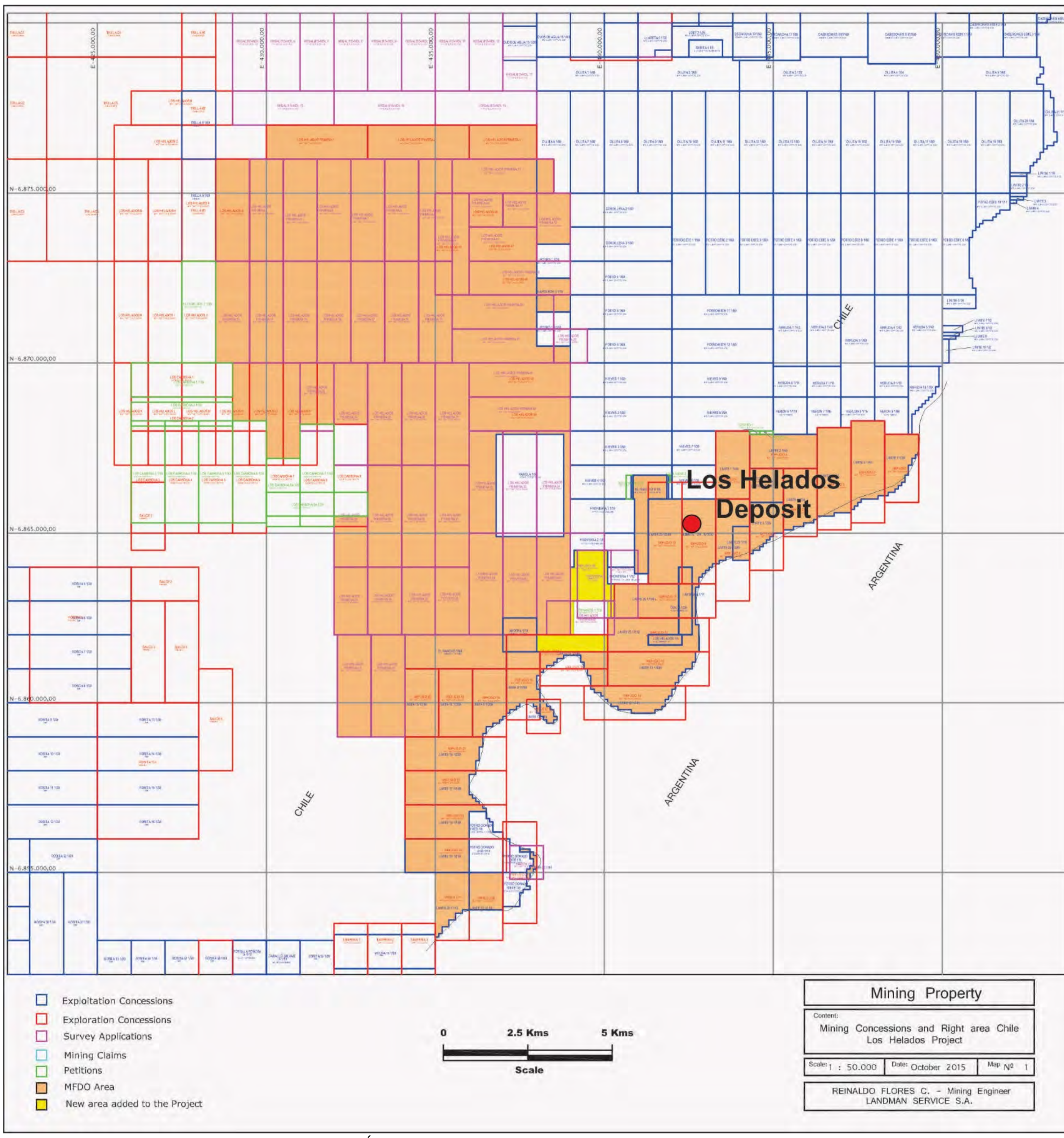
Table 4-3: Chilean Mining Exploration Concessions – Los Helados

Concession	National ID Number (Rol Nacional)	Status	Holder	Hectares	Expiration Date
LOS HELADOS A	03203-D102-6	Granted	MFDO	300	13-Aug-16
LOS HELADOS B	03203-D300-2	Granted	MFDO	300	29-Sep-16
LOS HELADOS C	03203-D286-3	Granted	MFDO	300	11-Sep-16
LOS HELADOS D	03203-D287-1	Granted	MFDO	300	11-Sep-16
LOS HELADOS E	03203-D288-K	Granted	MFDO	300	29-Sep-16
LOS HELADOS F	03203-D289-8	Granted	MFDO	300	29-Sep-16
LOS HELADOS G	03203-D290-1	Granted	MFDO	300	11-Sep-16
LOS HELADOS H	03203-D301-0	Granted	MFDO	300	29-Sep-16
LOS HELADOS I	03203-D292-8	Granted	MFDO	300	11-Sep-16
LOS HELADOS J	03203-D293-6	Granted	MFDO	300	29-Sep-16
LOS HELADOS K	03203-D294-4	Granted	MFDO	300	11-Sep-16
LOS HELADOS L	03203-D295-2	Granted	MFDO	300	29-Sep-16
LOS HELADOS M	03203-D296-0	Granted	MFDO	300	11-Sep-16
LOS HELADOS N	03203-D297-9	Granted	MFDO	300	20-Sep-16
LOS HELADOS O	03203-D298-7	Granted	MFDO	300	11-Sep-16
LOS HELADOS P	03203-D299-5	Granted	MFDO	300	29-Sep-16
REFUGIO 1	03203-D384-3	Granted	MFDO	200	11-Nov-16
REFUGIO 2	03203-D385-1	Granted	MFDO	300	11-Nov-16
REFUGIO 3	03203-D386-K	Granted	MFDO	300	11-Nov-16
REFUGIO 4	03203-D387-8	Granted	MFDO	200	11-Nov-16
REFUGIO 5	03203-D388-6	Granted	MFDO	200	11-Nov-16
REFUGIO 6	03203-D389-4	Granted	MFDO	300	11-Nov-16
REFUGIO 7	03203-D390-8	Granted	MFDO	200	11-Nov-16
REFUGIO 8	03203-D391-6	Granted	MFDO	300	11-Nov-16
REFUGIO 9	03203-D392-4	Granted	MFDO	300	11-Nov-16
REFUGIO 10	03203-D393-2	Granted	MFDO	300	11-Nov-16
REFUGIO 11	03203-D394-0	Granted	MFDO	300	11-Nov-16
REFUGIO 12	03203-D395-9	Granted	MFDO	300	11-Nov-16
REFUGIO 13	03203-D396-7	Granted	MFDO	300	11-Nov-16
REFUGIO 14	03203-D397-5	Granted	MFDO	300	11-Nov-16
REFUGIO 15	03203-D398-3	Granted	MFDO	200	11-Nov-16
REFUGIO 16	03203-D399-1	Granted	MFDO	200	11-Nov-16
REFUGIO 17	03203-D400-9	Granted	MFDO	100	11-Nov-16
REFUGIO 18	03203-D401-7	Granted	MFDO	200	11-Nov-16
REFUGIO 19	03203-D402-5	Granted	MFDO	200	11-Nov-16
REFUGIO 20	03203-D403-3	Granted	MFDO	200	11-Nov-16
REFUGIO 21	03203-D404-1	Granted	MFDO	300	11-Nov-16

Concession	National ID Number (Rol Nacional)	Status	Holder	Hectares	Expiration Date
REFUGIO 22	03203-D405-K	Granted	MFDO	300	11-Nov-16
REFUGIO 23	03203-D406-8	Granted	MFDO	300	11-Nov-16
REFUGIO 24	03203-D407-6	Granted	MFDO	300	11-Nov-16
REFUGIO 25	03203-D408-4	Granted	MFDO	200	11-Nov-16
REFUGIO 26	03203-D409-2	Granted	MFDO	200	11-Nov-16
REFUGIO 27	03203-D410-6	Granted	MFDO	300	11-Nov-16
LOS HELADOS PRIMERA 1	03203-D703-2	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 2	03203-D704-0	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 3	03203-D705-9	Granted	MFDO	200	11-Jun-2017
LOS HELADOS PRIMERA 4	03203-D706-7	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 5	03203-D707-5	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 6	03203-D708-3	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 7	03203-D709-1	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 8	03203-D710-5	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 9	03203-D711-3	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 10	03203-D712-1	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 11	03203-D713-K	Granted	MFDO	100	11-Jun-2017
LOS HELADOS PRIMERA 12	03203-D714-8	Granted	MFDO	200	11-Jun-2017
LOS HELADOS PRIMERA 13	03203-D715-6	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 14	03203-D716-4	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 15	03203-D717-2	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 16	03203-D718-0	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 17	03203-D719-9	Granted	MFDO	300	11-Jun-2017
LOS HELADOS PRIMERA 18	03203-D720-2	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 19	03203-D721-0	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 20	03203-D722-9	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 21	03203-D723-7	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 22	03203-D724-5	Granted	MFDO	100	19-Jun-2017
LOS HELADOS PRIMERA 23	03203-D725-3	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 24	03203-D726-1	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 25	03203-D727-K	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 26	03203-D728-8	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 27	03203-D729-6	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 28	03203-D730-K	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 29	03203-D731-8	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 30	03203-D732-6	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 31	03203-D733-4	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 32	03203-D734-2	Granted	MFDO	300	19-Jun-2017

Concession	National ID Number (Rol Nacional)	Status	Holder	Hectares	Expiration Date
LOS HELADOS PRIMERA 33	03203-D735-0	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 34	03203-D736-9	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 35	03203-D737-7	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 36	03203-D738-5	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 37	03203-D739-3	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 38	03203-D740-7	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 39	03203-D826-8	Granted	MFDO	300	22-Jul-2017
LOS HELADOS PRIMERA 40	03203-D741-5	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 41	03203-D742-3	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 42	03203-D743-1	Granted	MFDO	200	19-Jun-2017
LOS HELADOS PRIMERA 43	03203-D744-K	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 44	03203-D745-8	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 45	03203-D746-6	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 46	03203-D747-4	Granted	MFDO	100	19-Jun-2017
LOS HELADOS PRIMERA 47	03203-D748-2	Granted	MFDO	200	13-Aug-2017
LOS HELADOS PRIMERA 48	03203-D749-0	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 49	03203-D750-4	Granted	MFDO	300	19-Jun-2017
LOS HELADOS PRIMERA 50	03203-D751-2	Granted	MFDO	300	19-Jun-2017
REFUGIO 28	03203-D701-6	Granted	MFDO	200	11-Jun-2017
REFUGIO 29	03203-D702-4	Granted	MFDO	200	11-Jun-2017
MAGDA 27B	03203-D700-8	Granted	MFDO	100	13-Aug-2017

Figure 4-2: Chilean Mineral Tenure Map – Los Helados



Note: Figure courtesy NGEx, prepared for Bofill Mir & Álvarez Jana, 2015.

MFDO could exercise the Option Agreement within a period of four years from the date of the Option Agreement.

The purchase price of the Option Agreement is US$1,150,000, to be paid in installments during the term of the Option Agreement. There are no work commitments.

4.4.6 Surface Rights

Surface land rights in the area of the Los Helados are held by a local community "Comunidad Civil Ex Estancia Pulido". NGEx has previously had a four year access agreement with the community that ran from September 2011 to September 2015. NGEx does not currently own any surface rights at the Los Helados Project.

In May 2015, MFDO began negotiations with Comunidad Civil Ex Estancia Pulido for a definitive mining easement that would cover 20,000 ha, to allow for land usage and construction of mining facilities for the envisaged mine life.

NGEx advised Amec Foster Wheeler that the negotiations are at an advanced stage and when concluded will include all surface rights needed to support the mine plan in the PEA.

4.4.7 Royalties and Encumbrances

The concessions are not subject to royalties, back-in rights or other obligations in favour of third parties and all concessions are free of mortgages, encumbrances, prohibitions and injunctions.

Chilean government royalties are levied in the form of a mining tax on dividends paid by any Chilean company. There is also a specific tax on mining activities. This tax is levied on the operational income obtained by any individual or legal entity that extracts mineral substances and sells them at any state of production. The mining tax rate depends on the values of annual production expressed by the equivalent value of the metric tonne of fine copper. The metric tonne value is calculated using average copper price at the London Metal Exchange (refer to Section 4.2.9).

4.4.8 Permits

Permits to support current and future work programs are discussed in Section 20.

Under resolution N° 73, dated 4 May, 2006, the III Region office of the National Environmental Commission (CONAMA III Region) approved the Environmental Impact Declaration (DIA) presented by MFDO for the first stage of exploration of the Los Helados Project. Under this resolution, MFDO was authorized to conduct an exploration campaign that could include an aggregate amount of 4,000 m of drilling.

Through resolution N° 71, dated 21 March, 2012, the CONAMA III Region approved a subsequent DIA presented by MFDO for the expansion of exploration activities at Los

Helados. Under this resolution, MFDO was authorized to expand the exploration campaign with an approval for an aggregate amount of 180,000 m of drilling to be completed within three years. NGEx is currently in the process of renewing this DIA.

4.4.9 Environmental Liabilities

Existing environmental liabilities are limited to those associated with exploration-stage properties, and would involve removal of the exploration camps and rehabilitation of drill sites and drill site access roads. NGEx endeavours to rehabilitate drill sites at the end of each drill program.

Additional information on the Project environmental setting is included in Section 20.

4.4.10 Social License

A discussion of the social licence and stakeholder liaison is provided in Section 20.

4.4.11 Los Helados Project Mining Tenure in Argentina

Legal opinion was provided that supported that FdS wholly-owns four exploitation licenses (minas) in La Rioja Province. Concessions held by FdS total approximately 4,255 ha.

Details of the identification number, status, area in hectares and name of the titles are presented in Table 4-4. Figure 4-3 is a location plan showing the mineral tenure.

The Potro I and III exploitation licenses (minas) are affected by the unresolved boundary between the provinces of La Rioja and San Juan.

An annual exploration fee due to the Province of La Rioja is paid in proportion to the number of mining units covered by each exploitation license (mina). These fees were increased by the Argentine Government as of the first half of 2015. Each mining unit covers 100 ha and costs ARP$3,200 per year.

The Argentine Mining Code also requires the presentation of a plan of investment for each exploitation license (mina). The plan of investment contemplates a minimum expenditure of 300 times the annual fee and should be accomplished within five years following the presentation.

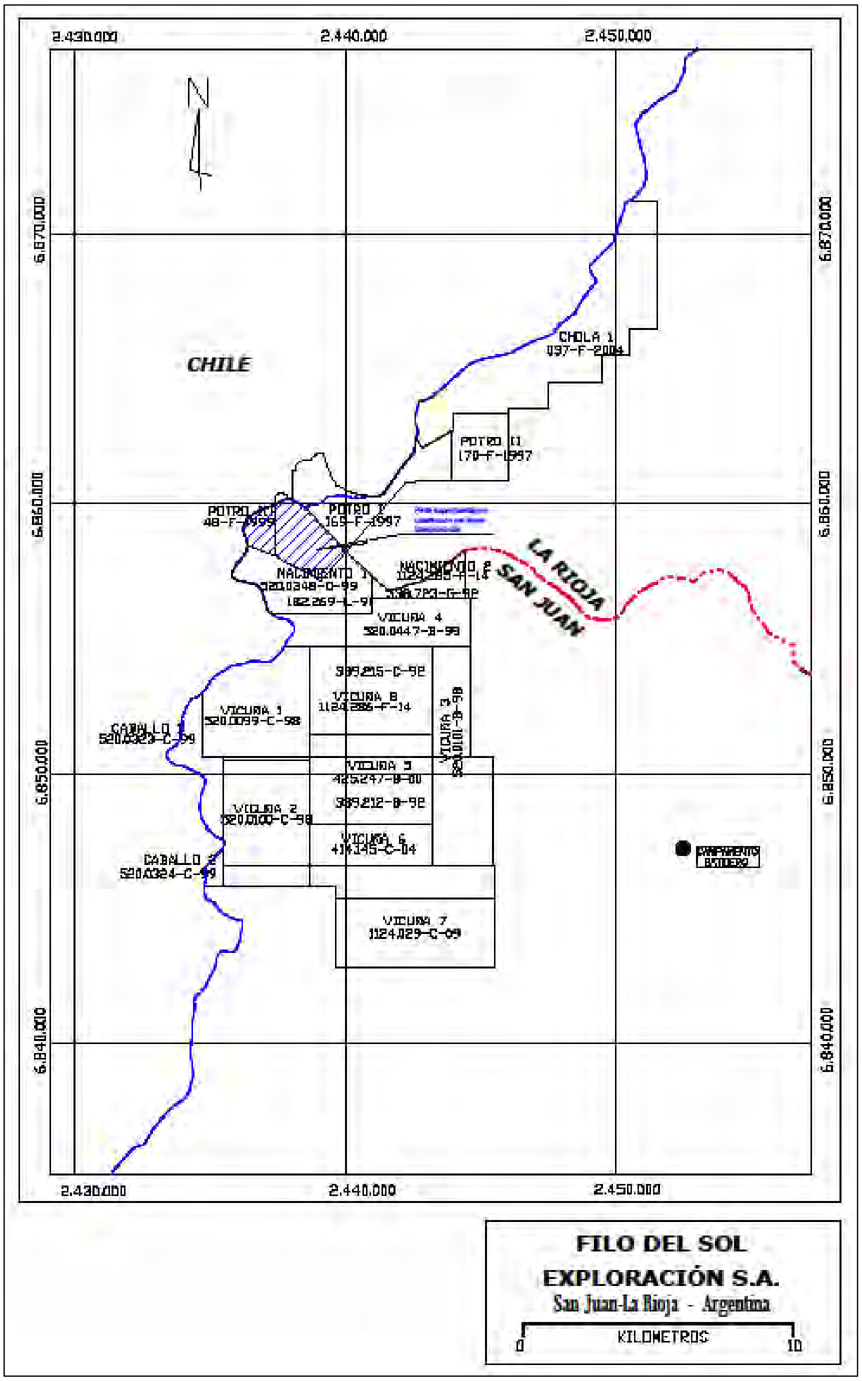
Table 4-4 also shows the annual fees, five-year investment totals, and five-year investment remaining for each concession.

Table 4-4: Exploitation Mining Concessions for the Los Helados Project in Argentina

Concession	File Number	Hectares	Mining Units	Annual Fee (ARP$)	5 Year Investment (ARP$)	Investment Remaining (ARP$)
Chola 1	037-F-04	2,500	25	80,000	6,000,000	0
Potro I	169-F-97	1,073	11	35,200	2,640,000	1,159,000
Potro II	170-F-97	531	6	19,200	1,440,000	1,151,000
Potro III	48-F-99	151	2	6,400	480,000	0

Note: ARP$ = Argentinean peso

Figure 4-3: Los Helados Project Mineral Tenure in Argentina



Note: Figure courtesy NGEx, 2015.

4.5 Mining Integration and Complementation Treaty

On December 29, 1997, Chile and Argentina signed the "*Tratado entre la República de Chile y la República Argentina sobre Integración y Complementación Minera*" (Mining Integration and Complementation Treaty between Chile and Argentina; or the Treaty), in an effort to strengthen their historic bonds of peace and friendship, and intensify the integration of their mining activities.

The Treaty provides a legal framework to facilitate the development of mining projects located in the border area of both countries. The Treaty objective is to facilitate the exploration and exploitation of mining projects within the area of the Treaty.

On August 20, 1999, Chile and Argentina subscribed to the Complementary Protocol and, in this way, on July 18, 2001, an Administrative Commission was created.

Additional Protocols have been signed between Chile and Argentina which provide more detailed regulations applicable to specific mining projects.

One of these Protocols, and the first granted for exploration purposes, is NGEx´s "*Proyecto de Prospección Minera Vicuña*" (Vicuña Mining Prospection Project), dated January 6, 2006. This Protocol allows for prospecting and exploration activities in the Los Helados area. The main benefit of the Vicuña Additional Protocol is the authorization which allows for people and equipment to freely cross the border of both countries in support of exploration and prospecting activities within an area defined as an "operational area".

In September 2012, the "*Proyecto de Prospección Minera Vicuña*" was amended by the "Protocol of Amendment to Article 8". With this amendment, the defined" operational area" was expanded, enabling a new border crossing area to be demarcated.

4.6 Comments on Section 4

- Legal opinion provided supports that NGEx currently holds an indirect 60% interest in the Josemaría deposit through its subsidiary DPM.
- Legal opinion provided supports that NGEx currently holds an indirect 60% interest in the Los Helados deposit through its subsidiary MFDO.
- Additional tenure in Argentina that is included in the Los Helados Project is held by FdS
- Legal opinion provided supports that the mineral tenures held are valid and sufficient to support declaration of Mineral Resources and preliminary mine planning
- At the Report effective date, NGEx did not hold any surface or water rights in Argentina or Chile

- NGEx holds a cross-border protocol "*Proyecto de Prospección Minera Vicuña*" (Vicuña Mining Prospection Project), dated January 6, 2006. The Treaty provides a legal framework to facilitate the development of mining projects located in the border area of both countries. The Treaty objective is to facilitate the exploration and exploitation of mining projects within the area of the Treaty.
- The Josemaría deposit is on the Lirio property which is subject to a 0.5% NSR, payable over 10 years, less costs, and an additional US$2 million payment within six months of the completion of the second full year of mine operations. There is a net smelter return royalty payable to the Province of San Juan which is typically 3% but can be reduced in certain circumstances.
- The Los Helados deposit is subject to royalties in the form of the Chilean mining tax. No other encumbrances were identified in the legal opinions provided on this deposit.
- Existing Project environmental liabilities are limited to those associated with an exploration-stage property
- The QPs were advised by NGEx that NGEx is not aware of any significant environmental, social or permitting issues that would prevent future exploitation of the Project deposit other than as discussed in this Report.

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

5.1 Accessibility

The Josemaría Project area is accessed from San Juan by major provincial highways north through San Jose de Jachal to the town of Guandacol (in La Rioja Province) followed by approximately 150 km of regional unpaved roads and trails (Figure 5-1). Josemaría is approximately 10 hours drive from the city of San Juan.

Alternate access from Chile is provided through the Mining Integration and Complementation Treaty between Chile and Argentina. This treaty allows personnel and equipment to access the Josemaría area from Chile, providing that they also return to Chile and do not cross out of the Treaty area into Argentina. Josemaría is approximately five hours drive from the city of Copiapó.

The city of San Juan (capital of San Juan Province) has a domestic airport with scheduled flights to Buenos Aires and other Argentine cities. The city of Mendoza, south of San Juan city, has an international airport with flights to Santiago and elsewhere.

The Los Helados Project area is located 10 km north–northwest of Josemaría and about 125 km due southeast of the city of Copiapó, Chile (refer to Figure 5-1). The area is accessible by road, a driving distance of about 170 km southeast from Copiapó. Copiapó has a modern airport, with several daily flights to Santiago.

The C-35 paved road from Copiapó passes in a southeasterly direction through the town of Tierra Amarilla and Punta del Cobre, along the Copiapó River valley, through the small villages of Pabellon, Los Loros, La Guardia, and Iglesia Colorada. After these small villages, the road continues towards the El Potro bridge. At about kilometre 130, the paved road ends, and the last 35 km to the project area is gravel. Access is generally possible during the summer months from September to May, but may be curtailed if there is inclement weather.

5.1.1 Climate

The climate in the Project Constellation area is dry to arid and the temperatures are moderate to cold. Annual precipitation is about 250 mm, with snow at higher altitudes in the winter.

Exploration fieldwork is generally possible from mid-October to early May.

It is expected that any future mining operation will be able to be conducted on a year-round basis, based on the success of several other mines operating in similar climates and altitudes in Chile.

Figure 5-1: Project Access Plan

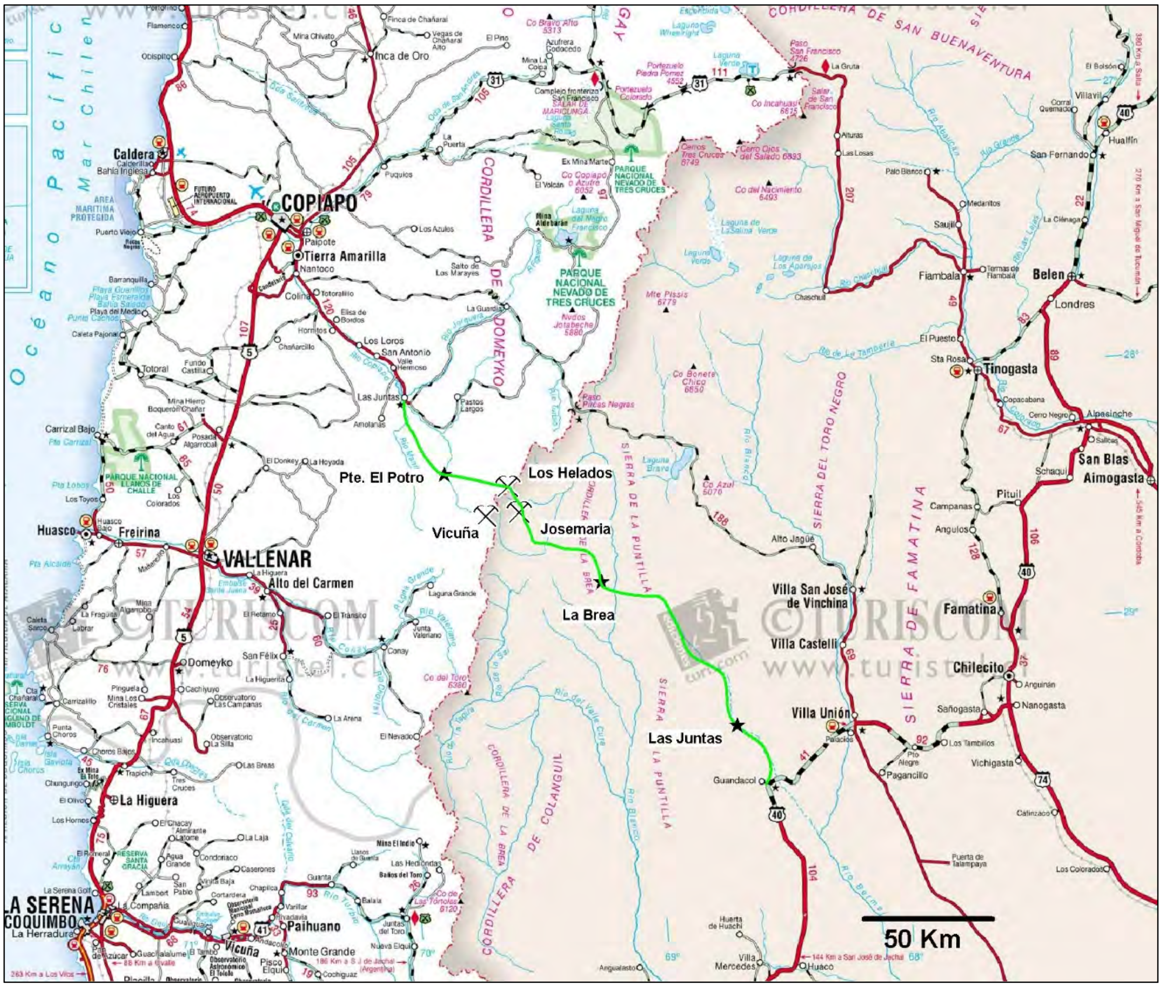


Figure prepared by Amec Foster Wheeler using Turisco map base, 2015.

5.1.2 Local Resources and Infrastructure

Section 18 provides information on the Project infrastructure contemplated as part of the PEA.

Project Constellation will be a greenfields development. The most important logistics centre in the region is Copiapó. Copiapó has a population of approximately 150,000 people, an airport with daily scheduled flights to Santiago and Antofagasta and companies that offer abundant services for mining and exploration.

There is no infrastructure in the area except for two exploration camps located near the Josemaría and Los Helados deposits.

The Josemaría camp is located 7 km south of the Josemaría deposit at an elevation of approximately 4,000 metres above sea level (masl). The Josemaría camp consists of portable structures with infrastructure for septic, water distribution and electricity generation. It is currently configured to house 120 people.

At Los Helados, the exploration camp is located 15 km towards Copiapo from the deposit, at an elevation of 3,400 masl. The camp consists of portable structures with infrastructure for septic, water distribution and electricity generation. It is currently configured to house 120 people.

5.1.3 Physiography

Project Constellation is located in the Andes Mountains, straddling the Chile–Argentina border. Elevations range from approximately 3,000 masl near the Los Helados camp to 5,300 masl at the pass between the Josemaría and Los Helados Projects. Topography is quite rugged on the Chilean (western) slope of the mountains and more subdued on the Argentine (eastern) slope which consists of broad, flat-bottomed valleys with moderately steep slopes. Project Constellation is in a seismically-active area.

Terrain in the Josemaría area and near the proposed processing plant site varies from broad flat alluvial plains 1 km or more wide, to rounded ridges and peaks with varying steepness. Colluvial cover thickens on lower slopes and in places fresh outcrop is difficult to locate.

The Josemaría deposit itself underlies a north–south-trending ridge which lies along the southern side of the broad Rio Blanco river valley. Relief along the ridge ranges from 4,100 masl at the valley bottom at the northern edge to 4,850 masl at the top of the hill in the south.

The Los Helados deposit is located in a valley at an elevation of 4,500 masl. The valley has steep sides to the east and south, and drains toward the north. The elevation change from the bottom of the valley to the top of surrounding peaks is on the order of 1,200 m.

The Los Helados Project area is arid and there is little or no vegetation on the ridges and only minor vegetation in the valleys that have running water. There is no vegetation above the deposits and most of the area overlying them is rock and colluvium. At the lower altitudes near the Los Helados exploration camp, there is sparse vegetation consisting of low bushes and grasses.

Additional information on the flora and fauna in the Project area is included in Section 20.

5.2 Comments on Section 5

- There is sufficient area within the tenure holdings for construction and operation of all required infrastructure

- No surface rights are currently held in some of the areas planned for surface infrastructure; however, the process for obtaining such rights is well understood and there is precedent in Chile and Argentina for grant of surface rights to support mining infrastructure
- Mining activities are expected to be conducted year-round.

6.0 HISTORY

There is no reported production from the Project area.

6.1 Josemaría

Prior to 2001 there is no known history of mineral exploration fieldwork or mining on the Josemaría property other than several regional prospecting programs conducted during the 1990s that probably collected talus or drainage samples, and a program of LANDSAT imagery interpretation, which identified a large area that had spectral response characteristics of hydrothermal alteration.

This activity prompted Sr Lino, a local landholder, to acquire the mineral rights for various areas, including Josemaría.

Rights to the Lino holdings were acquired by Solitario Resources in 1993, and a small amount of prospecting work was completed in the claims area. At the time, the area was referred to as Cateo 17 or the Arroyo Batidero project.

During 1998, Toscana Resources Ltd, (later TNR Resources Ltd, and now TNR Gold Corp) took over Solitario. Exploration work recommenced in 2000, when Solitario had concluded a joint venture exploration agreement with Barrick Exploraciones de Argentina S.A. (BEASA). The agreement created a joint venture, Comparlia Minera San Juan S.A. (CMSJ). However, when the joint venture was dissolved in 2001, CMSJ was deregistered and the mineral tenure returned to Solitario's ownership.

Amec Foster Wheeler was not able to independently verify these work programs.

In June 2002, the parent company of Solitario (then called TNR Resource Ltd) signed an option agreement with Tenke Mining Corporation (now NGEx Resources Inc).

Work conducted by NGEx and precursor companies has included reconnaissance prospecting; geological mapping; talus fines sampling; rock chip and trench sampling; ground-based magnetic, controlled source audio-magnetic telluric (CSAMT) and induced polarization (IP)–resistivity geophysical surveys; reverse circulation (RC) and core drilling; and metallurgical testwork.

Resource estimates were completed on behalf of NGEx in 2006 and updated in 2007 and 2012. A further update is included in Section 14 of this Report.

6.2 Los Helados

There is no record of significant exploration activity prior to NGEx's ground staking in 2004.

Charchaflié and Le Couteur (2012) reported that:

"local residents have indicated the first mineral exploration in the area was carried out by Shell (subsequently Billiton) at the end of the 1980s. This work apparently included geological mapping, rock, talus and stream sediment geochemical sampling, test pits for sampling and mapping, and some geophysical surveying."

"In 1994, Barrick Gold apparently worked in the general area for approximately 15 days, sampling stream sediments and rocks for geochemistry, however results are unknown."

Amec Foster Wheeler was not able to independently verify these work programs.

Work completed by NGEx is discussed in Section 9. Work programs have included LandSAT and ASTER satellite imagery interpretation; preliminary mapping; rock-chip and talus sampling; geophysical surveys including IP–resistivity and magnetometer surveys, Mount Isa Mine's Distributed Acquisition System methodology (MIMDAS), RC and core drilling; and metallurgical testwork.

Mineral Resource estimates were completed on behalf of NGEx in 2012 and updated in 2013 and 2014.

A preliminary economic assessment in 2014 studied the Los Helados deposit as a stand-alone block cave mining operation. Two options were evaluated, a 65 kt/d operation and a larger 130 kt/d throughput alternative, based on an assumption of a conventional sulphide flotation process.

Under the assumptions in the Los Helados 2014 PEA, underground mining of the Los Helados deposit returned positive economics.

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The Andes lies above an active subduction zone, with the Pacific sea floor of the Nazca Plate being consumed beneath the South American Plate. Many geological features of the Andes can be related to the interaction of these two plates at this convergent plate margin.

Late Paleozoic igneous and meta-sedimentary rocks form much of the basement in western Chile and are unconformably overlain by Triassic continental sedimentary rocks in the western part, and continental to marine sedimentary rocks in the eastern coastal belt. Extensional tectonics in Jurassic times developed a major basin east of the present Coast Range of Chile, which was filled with carbonate and terrigenous sediments.

Extensive volcanic and plutonic activity began in the Early Jurassic along a volcanic arc located in what is now the Coast Range. The resulting volcanic rocks of Jurassic-Cretaceous age were mainly subaerial basalts and andesites. Approximately 100 km east of the volcanic arc, carbonates and siliceous clastic marine sediments accumulated in a back-arc basin during the Jurassic. During the Cretaceous, the arc and back-arc basin began to contract due to a change in the subduction regime, and magmatic activity began to migrate eastward, presently being located in the high Andean Cordillera.

Folding and faulting in middle Cretaceous to Recent times resulted in uplift of the Andes, and formation of an elongate basin east of the Coast Range filled with acidic subaerial volcanic rocks (including ignimbrites), clastic sedimentary rocks and carbonates.

Neogene intrusions and associated volcanic rocks form several belts in the central Andes are prospective for porphyry Au–Cu systems (e.g. the Maricunga belt) and high-sulphidation epithermal systems (e.g. the El-Indio–Pascua district). The Miocene Maricunga belt includes at least three main phases of porphyry intrusion and associated alteration and mineralization (Vila and Sillitoe, 1991), while the more southerly El Indio–Pascua district high-sulphidation alteration and mineralization is Late Miocene (Bissig, et al., 2002).

Mpodozis and Kay (2003) proposed that the area between the Maricunga and El Indio–Pascua districts is not barren of similarly-aged intrusions and attendant alteration systems; that in fact it is prospective for similar mineralized systems. Subsequent work by NGEx has shown this to be the case, with the discovery of the Los Helados, Josemaría and Filo del Sol deposits that have Late Oligocene to Late Miocene ages. In addition, intrusions in the region with associated hydrothermal alteration and some similarity to the 'Maricunga-style Au-porphyries' have been dated as Middle Miocene, and there is local evidence of magmatic rocks synchronous with the Late Miocene El Indio mineralization event (Mpodozis and Kay, 2003).

7.2 Project Geology

Project Constellation area is located within the Cordillera Frontal morphostructural unit, as defined by Ramos (1999). Three main elements form the stratigraphic column: Permo–Triassic igneous basement, a mixed sedimentary and volcanic Mesozoic sequence, and igneous Cenozoic units. The Project area stratigraphy and geology are shown in Figure 7-1 and Figure 7-2, respectively. Figure 7-3 is a section through the Project area from Chile to Argentina.

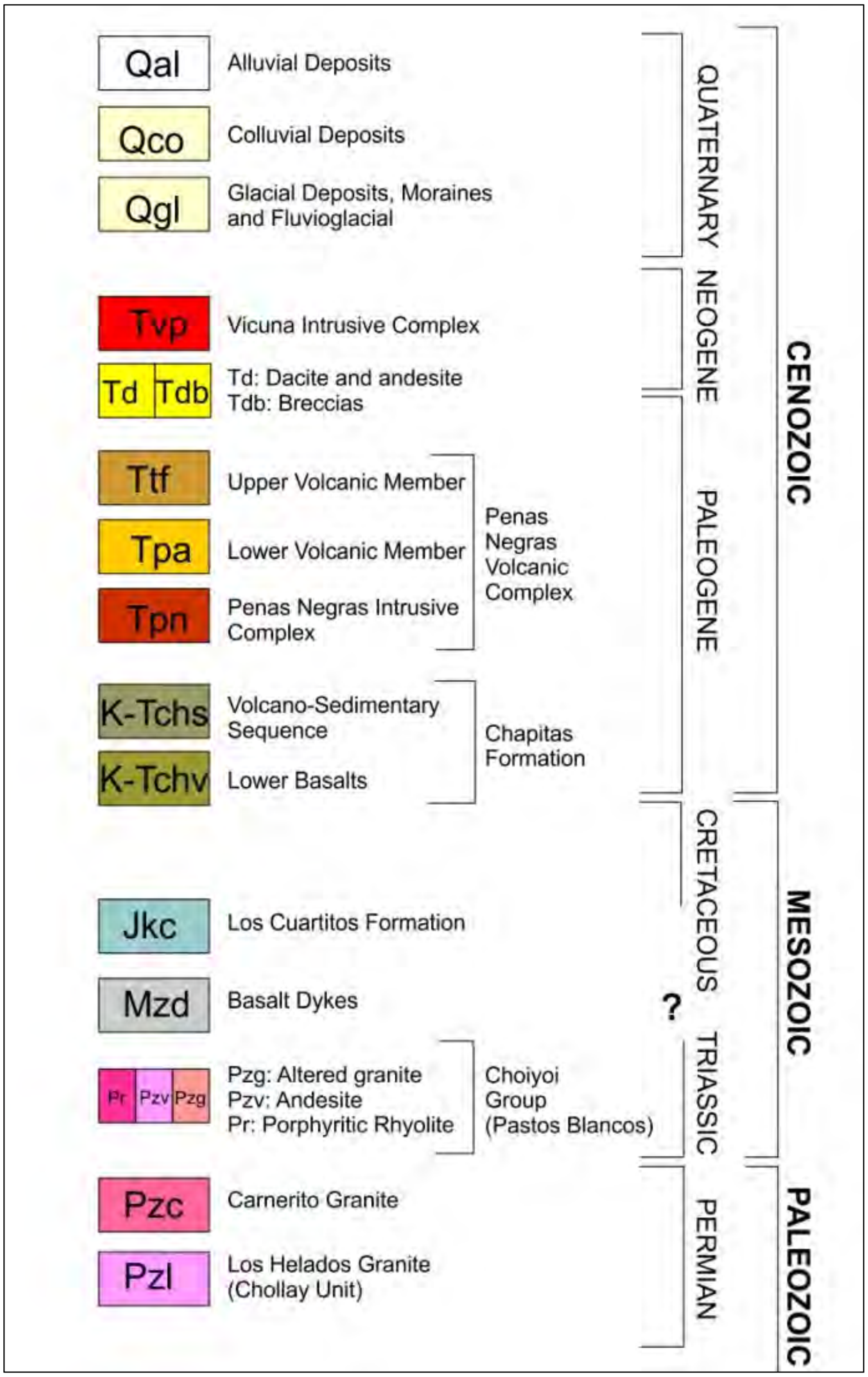
Granite and granodiorite, exposed along north-trending blocks, form the Permo–Triassic igneous basement. Marcos et al., (1971) assigned these rocks to the Permian Carnerito Formation. In Chile, the granitoids exposed near the Los Helados deposit have been assigned to the Chollay Unit (e.g. Caserones Granite, 260 to 250 Ma) within the Montosa–El Potro Batholith (Mpodozis and Kay, 1990), while at Josemaría these equivalent rocks are assigned to the Carnerito Formation. Radiometric ages between 233 and 224 Ma have been reported. Rhyolite and andesite that represent the volcanic equivalents of the late Paleozoic granitoids crop out on both sides of the Andes. These volcanic rocks are referred to as the Pastos Blancos Formation or Choiyoi Volcanics.

Mesozoic rocks are poorly exposed in the Project area. A set of basaltic dikes that cut the granitoids as well as red conglomerates with rhyolite and granite fragments have been tentatively assigned as Mesozoic in age. The Jurassic–Eocene (?) Chapitas Formation, which generally covers but may be concordant with the Choiyoi Group, comprises purple to reddish conglomerate, volcaniclastic agglomerate, sandstone and tuff. It has been tentatively correlated with the Chilean Los Cuartitos Formation (Martin et al., 1995). A series of outcrops located along the Rio Blanco, to the northeast of Josemaría have been assigned to the Chapitas Formation.

The oldest Cenozoic rocks documented in the region are Paleocene to Eocene volcaniclastic assemblages included in the Chapitas Formation (Marcos et al., 1971). Late Eocene back-arc volcanic and volcaniclastic units from the Peñas Negras Complex are exposed near the Los Helados River. Basalt, andesite, dacite and diorite are common lithological units within the Peñas Negras Complex.

Late Oligocene to Miocene igneous units include andesitic to dacitic subvolcanic domes and dioritic to granodioritic porphyries. These units host the mineralization at Los Helados and Josemaría, and are similar to the Pulido Formation and mineralized intrusions of the Maricunga Belt.

Figure 7-1: Regional Stratigraphy of the Cordillera Frontal



Note: Figure courtesy NGEx, 2013. Information modified from Sanguinetti, 2006.

Figure 7-2: Regional Geological Map of the Project Area

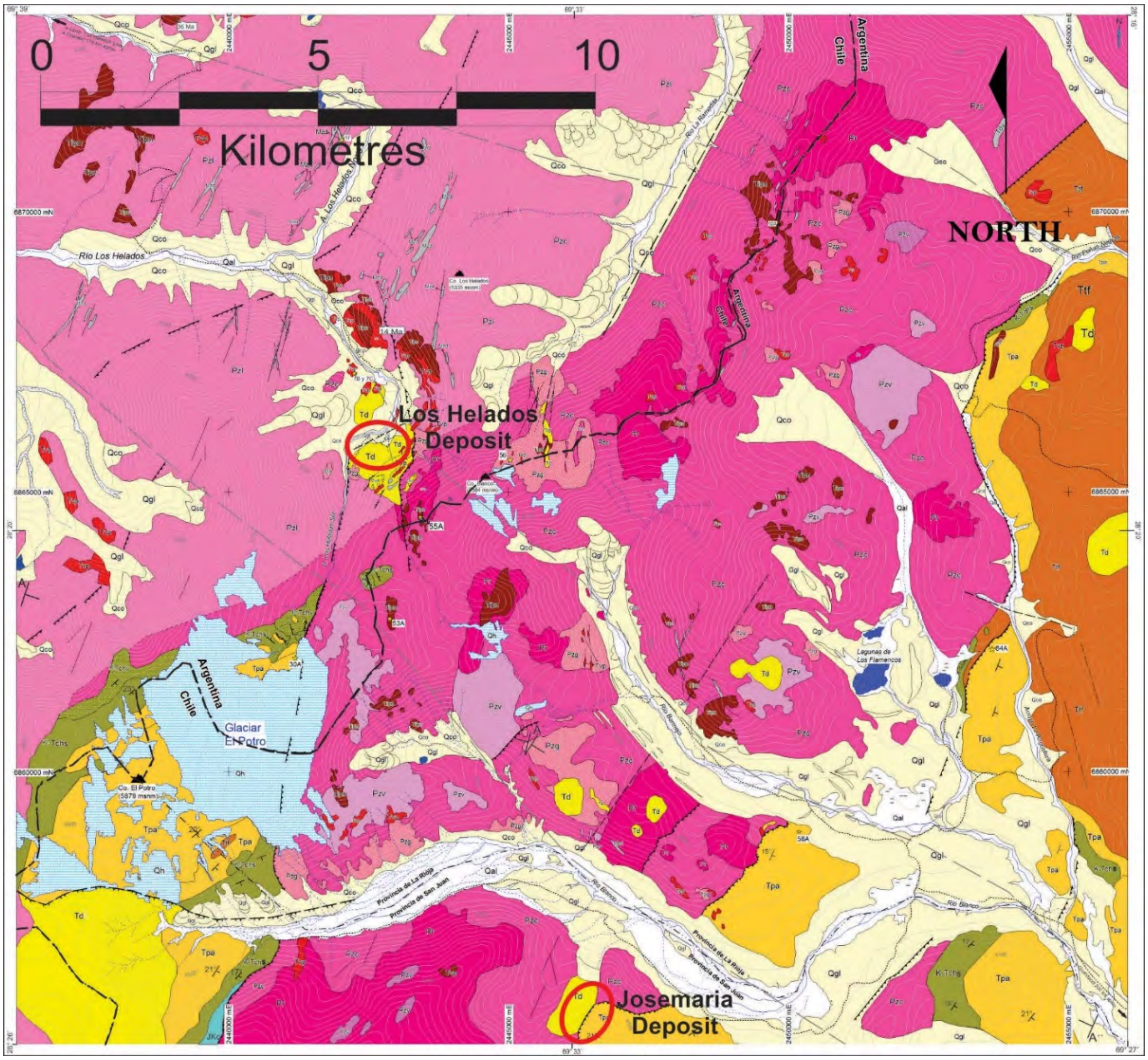
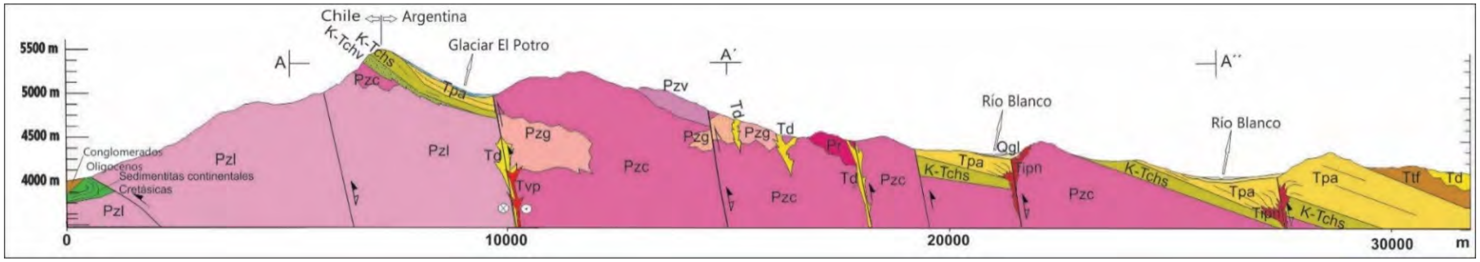


Figure courtesy NGEx, 2013, and modified after Sanguinetti, 2006.

Figure 7-3: Regional Geological Section



Note: Figure from Sanguinetti, 2006.

7.3 Deposit Descriptions

7.3.1 Josemaría

The Josemaría area is centred on a porphyry intrusive complex of Late Oligocene age that intrudes rhyolites and tonalites of presumed Permo–Triassic age (Figure 7-4).

Porphyry intrusions occur in a small clusters along an important structural corridor that displays both pre- and post-mineral displacement. Structures along this corridor played an important role in focusing magmatic phases and their associated hypogene Cu–Au mineralization, as well as controlling the location and distribution of subsequent supergene Cu enrichment. A post-mineral volcanic unit of Early Miocene age partly covers the Josemaría porphyry system.

Lithologies

The host rock units in the Josemaría area are tentatively assigned to the Permo–Triassic Choiyoi Group. The porphyry system was exposed during erosion into the mineralized body in the Early Miocene, and is currently subject to a second erosional phase.

Tonalite

Tonalite intrusive rocks (TONL), the oldest unit, underlie the area to the east of the main structural corridor and host the majority of the mineralization at Josemaría.

Rhyolite

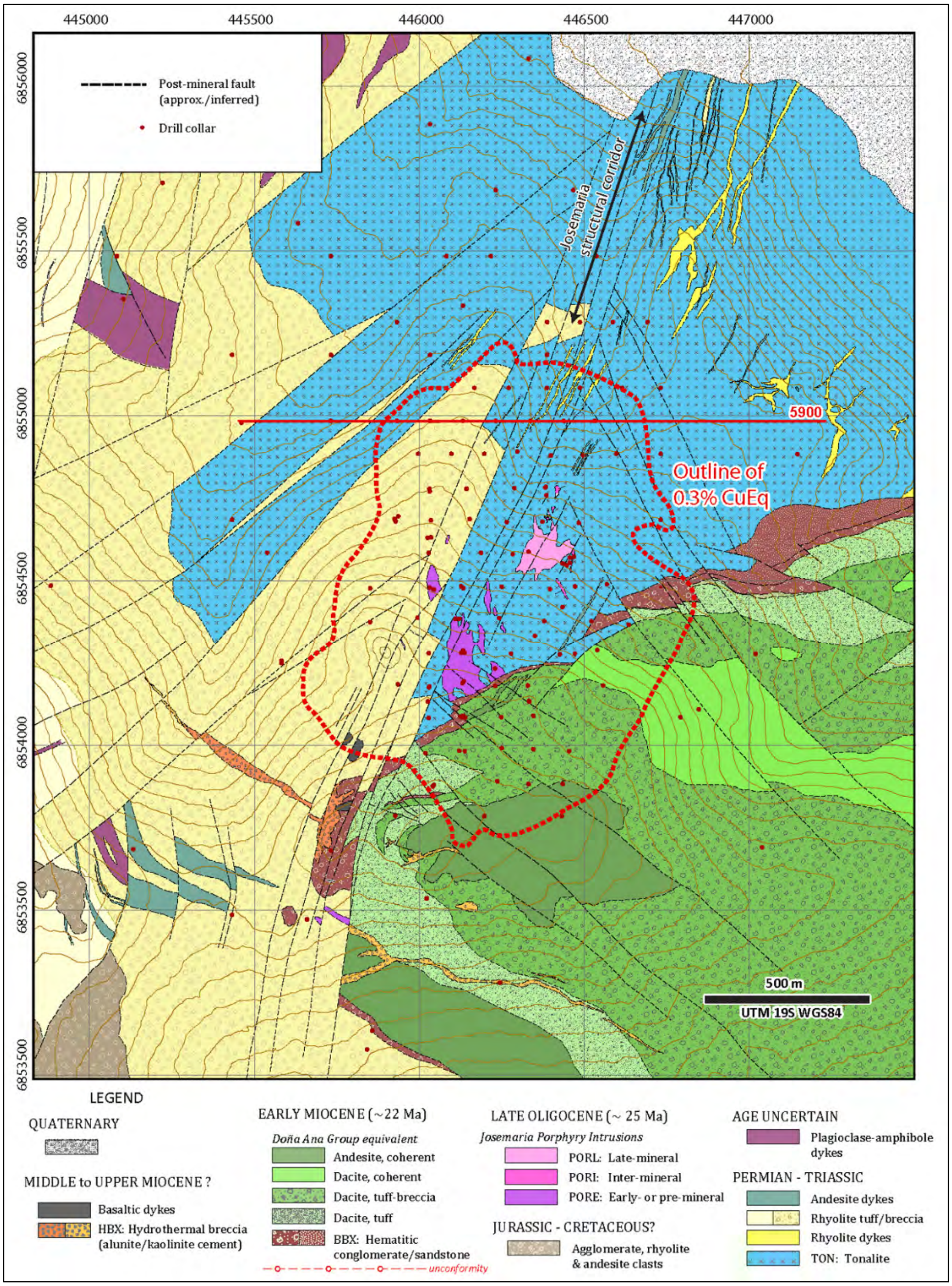
To the west of the main Josemaría structure, rhyolite tuff and tuff-breccia (RHYL) form the predominant unit on surface. These volcaniclastic rhyolites are interpreted to overlie the older tonalite above a Permo–Triassic unconformity.

Porphyry Intrusive Rocks

The Josemaría Late Oligocene porphyry intrusions are centred on the north-facing slope below the height of land at Josemaría. They occur over an approximate 1000 m x 400 m area, to the immediate east of the main structural corridor, predominantly within tonalite. They include a series of feldspar–quartz-phyric dacitic intrusions that have been divided into three stages based on their compositions and relative timing with respect to veining and mineralization:

- Early-mineral (PORE)
- Intermineral (PORI)
- Late-mineral (PORL).

Figure 7-4: Josemaría Geology Map



Note: Figure courtesy NGEx, mapping by F. Devine, 2015.

The intermineral porphyry intrusions are coincident with the centre of the hydrothermal alteration and mineralization that form the porphyry system, and are inferred to be, or be closely related to, the causative intrusions.

Conglomerate and Volcanic Units

A distinct, haematitic conglomeratic unit lies above the unconformable surface. It is overlain by a dacitic to andesitic volcaniclastic and coherent volcanic package of Early Miocene age (PMV) (~22 Ma; Devine and Friedman, 2015).

Hydrothermal Breccias

Hydrothermal breccias (HBX), younger than the porphyry system and also younger than the post-mineral volcanic rocks, are mapped along the southern part of Josemaría. They are narrow, dominantly northwest-trending, quartz–alunite-cemented, polymictic breccias where their trend intersects the Josemaría structural corridor, but taper out into quartz–kaolinite-cemented breccias laterally.

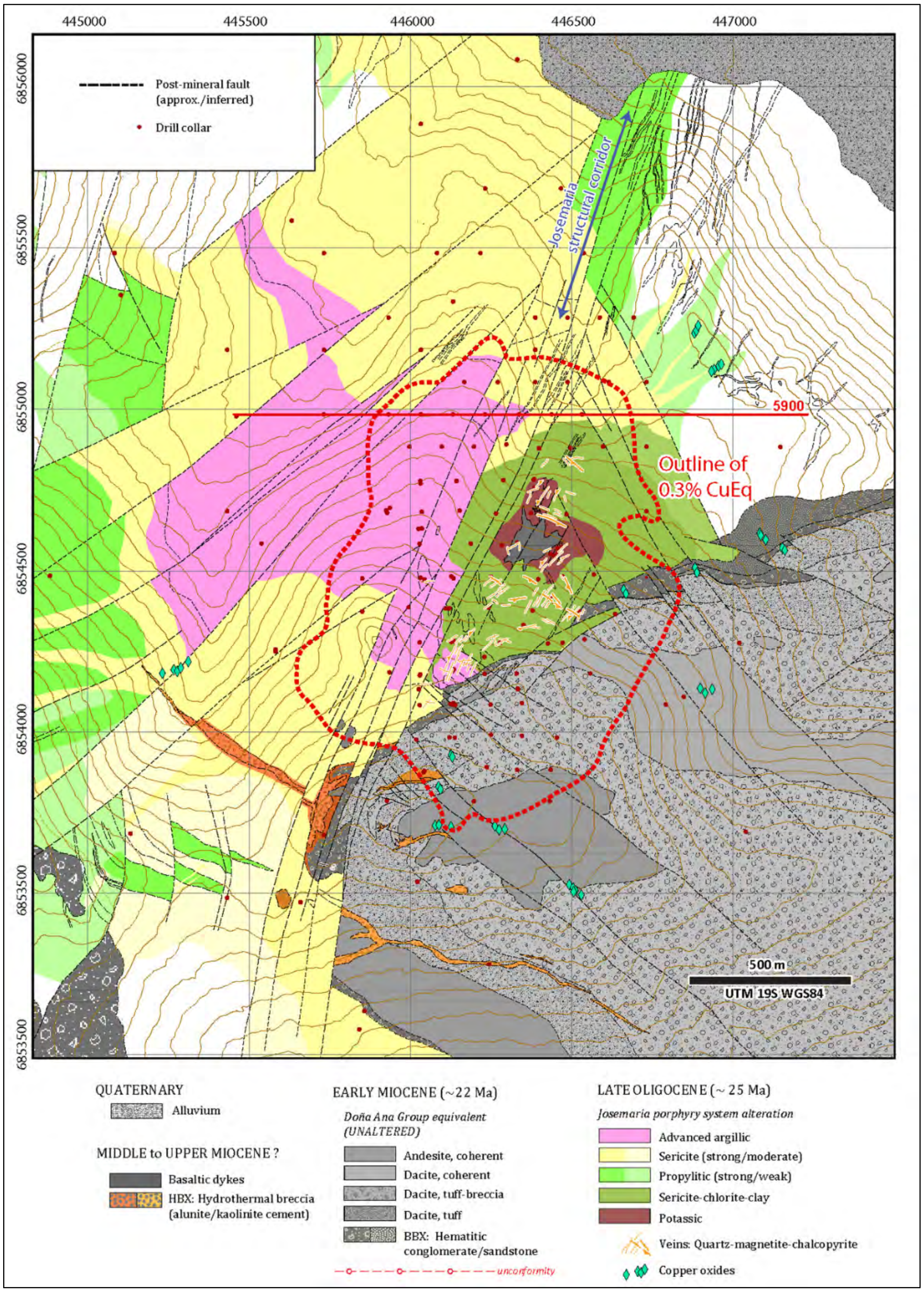
The breccias contain enargite with low gold values (at least where tested), but locally high arsenic values. Associated silica and clay alteration with patches of enargite mineralization is mapped more broadly around these bodies, and extends along post-mineral volcanic layering; similar alteration and arsenic values are found within narrow, structurally-controlled domains along the Josemaría structural corridor.

Alteration

Alteration zonation within the Josemaría porphyry system is centred on the porphyry intrusions (Figure 7-5). Alteration types include: potassic, sericite–chlorite–clay (SCC), sericite, propylitic, and advanced argillic alteration. A section through the deposit showing the alteration relationships is illustrated in Figure 7-6.

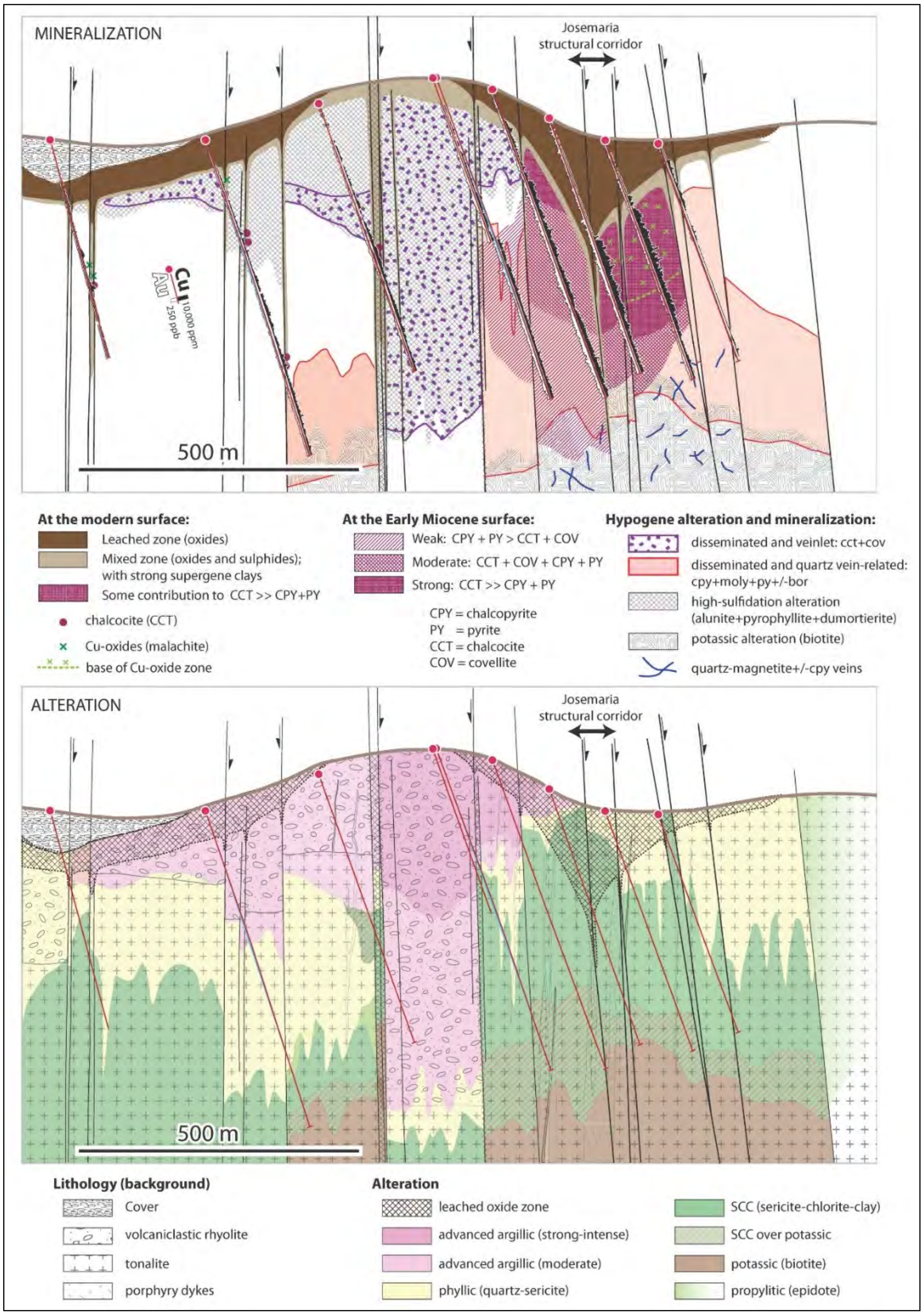
There appears to have been significant telescoping of the system, possibly aided by permeability along pre-mineral structures. Detailed logging shows that in places along the structural corridor, advanced argillic alteration occurs in rocks that display relict potassic alteration. Relationships are complicated by post-mineral movement along structures that now locally juxtapose deeper potassic- and SCC-altered tonalite with advanced argillic-altered rhyolite.

Figure 7-5: Josemaría Alteration Map



Note: Figure courtesy NGEx, mapping by F. Devine, 2015.

Figure 7-6: Josemaría Vertical Section 5900N



Note: Figure courtesy NGEx, mapping by F. Devine, 2015.

Mineral Zones

Mineral zones within the Josemaría deposit were defined by the relative abundance of chalcopyrite, pyrite and chalcocite, as well as the mode of occurrence of chalcocite (hypogene or supergene), and the level of oxidation. Six main zones were modeled (Figure 7-7):

- Cu oxide (CuOx)
- Barren oxide (leached cap) (Ox)
- Pyrite + hypogene chalcocite (PyCc(H))
- Pyrite + supergene chalcocite (PyCc(S))
- Mixed sulphide and oxide (MIX)
- Pyrite + chalcopyrite (PyCpy).

Mineralization

The Cu–Au mineralization at Josemaría is mostly hosted by a Miocene porphyry system which forms an elongated body with minimum dimensions of 800 to 900 m north-south, 600 to 700 m east-west and 600 to 700 m vertically.

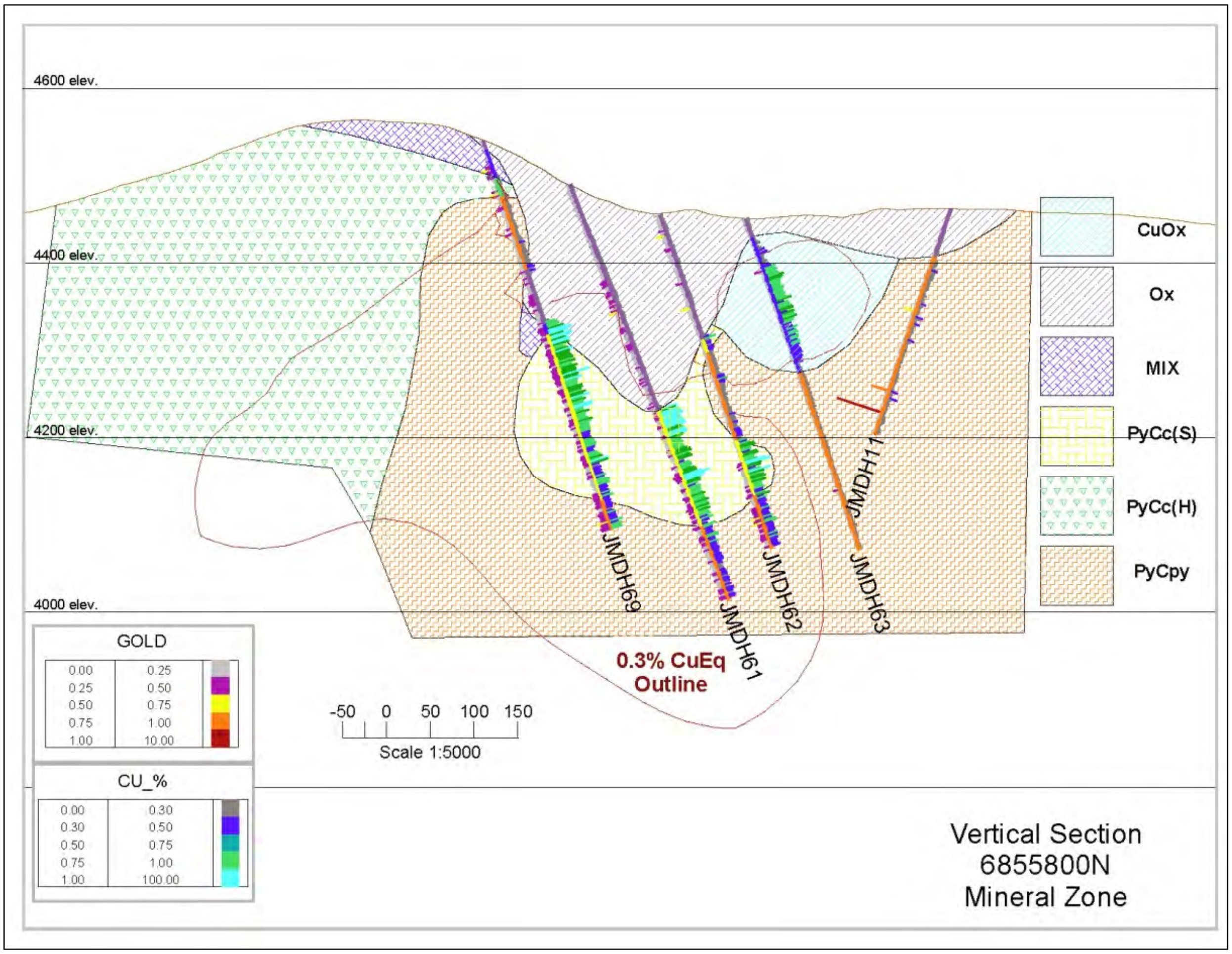
The main hypogene Cu and Au mineralization is associated with the upper parts of the potassic alteration zone. Chalcopyrite and pyrite are disseminated through the potassic zone, with minor bornite. Quartz–magnetite ± chalcopyrite veining occurs through much of the main mineralized zone, as discrete veins and locally as a more intense stockwork.

SCC alteration was not grade destructive, and some of the best Cu grades are found in the SCC domain. However, it is grade destructive where pervasive sericitic alteration overprints mineralization on the outer parts of the system. This type of alteration is commonly accompanied by pyrite.

Hypogene chalcocite mineralization is found predominantly along the western part of the system, associated with the roots of the advanced argillic domain. The occurrence of both hypogene and supergene chalcocite in close proximity complicates the differentiation of these two zones, a situation that is compounded by the fact that they are likely in local gradational contact.

A well-developed leached cap overlies the entire Josemaría deposit, related to oxidation at and below the present topographical surface. The leached zone ranges from 10–20 m in thickness over the relatively impermeable felsic volcanic rocks in the west to a maximum of 230 m into the Josemaría structural corridor and the tonalite farther east.

Figure 7-7: Section 6855800N Mineral Zones



Note: Figure courtesy NGEx, 2013.

Appreciable oxide Cu (malachite and neotocite) mineralization is restricted to a small zone of fractures intersected by drill hole JMDH53 on Section 5800N. A significant Au-rich portion of the leached cap occurs along the centre of the deposit, between section lines 5000N and 5500N. This area corresponds to the central, and perhaps deepest, parts of the advanced argillic alteration zone within the system.

There have been at least two main stages of supergene copper enrichment at Josemaría: the first occurring prior to the deposition of the post-mineral volcanic rocks (PMV), related to the Early Miocene erosional surface represented by the haematitic conglomerate (BBX), and the second phase occurring at the present-day erosional surface. Along the Josemaría structural corridor, a distinct inverted bell-shaped concentration of secondary copper mineralization forms the richest part of the enrichment blanket, focused along the structural zone.

7.3.2 Los Helados

The geological model for the Los Helados deposit consists of a Miocene porphyry/breccia system emplaced at the contact between a Permo-Triassic dacite porphyry intrusion and late Paleozoic granite (Figure 7-8).

Core drilling indicates that the magmatic-hydrothermal breccia system and dacite porphyries host the largest part of the Los Helados Cu and Au mineralization. Both breccias and porphyries intrude a coarse-grained granite pluton that is locally cut by a swarm of mafic dykes. Copper and Au mineralization extends into the granite country rock.

The granite is interpreted to be of late Palaeozoic age and part of the regionally extensive Chollay event. The magmatic-hydrothermal breccia is Miocene in age, indicated by alteration–mineralization–lithology relationships and Re–Os dating on molybdenite (13.13 ± 0.32 Ma; Kapusta, 2012). Mafic-poor dacite or rhyolite porphyries are assigned to the Permo-Triassic, whereas dacite porphyries with euhedral plagioclase phenocrysts, scarce quartz phenocrysts, and prominent biotite 'books' are grouped with the Tertiary magmatic rocks.

The Los Helados area experienced minor post-mineral fault displacement, with only three major faults being mapped to date on the logged sections. The faults are steep and appear to have undergone minor sub-horizontal motion, interpreted by slickenside development.

Lithologies

A typical section through the deposit is shown in Figure 7-9 and displays the main lithological units.

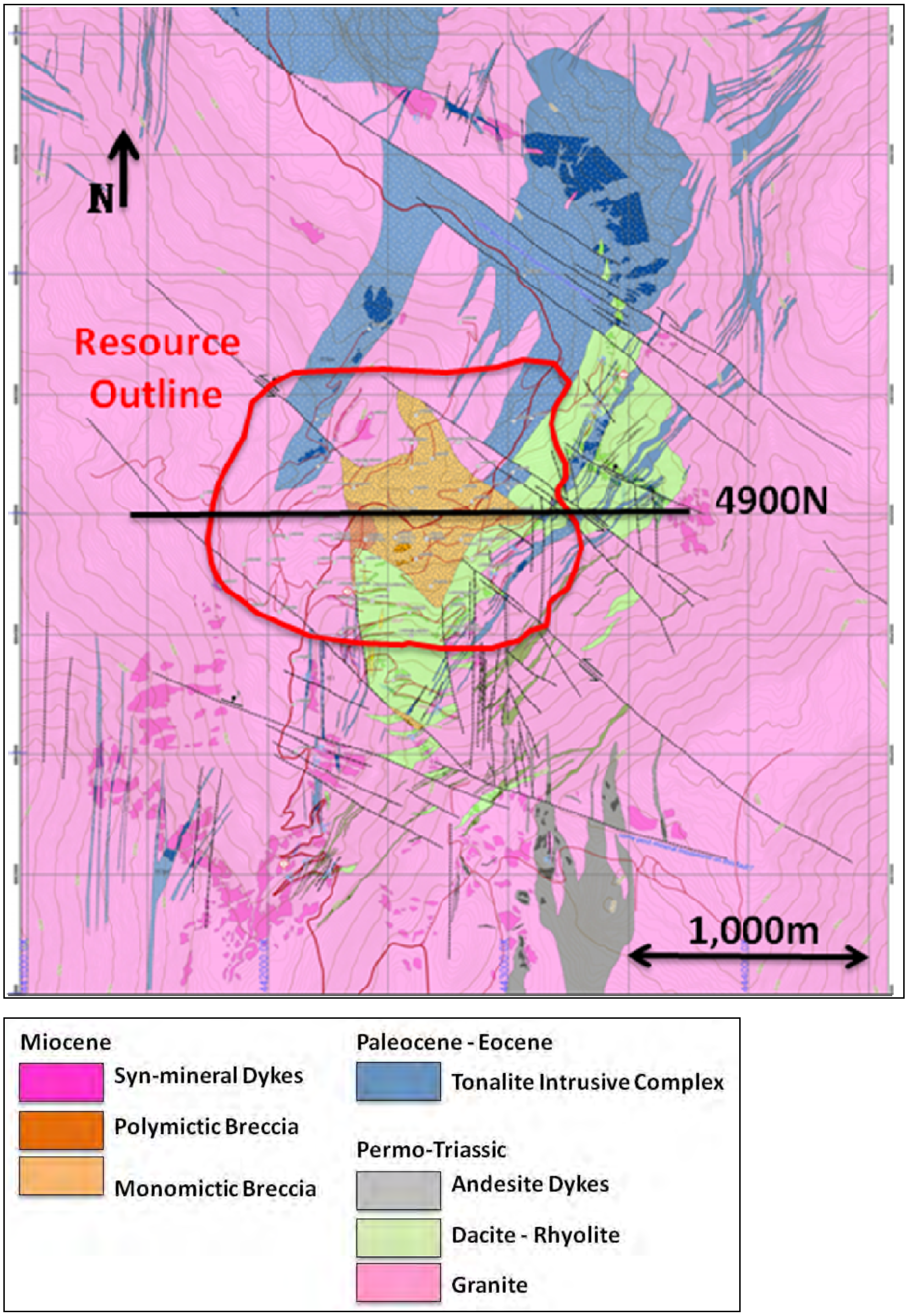
Granite

This unit crops out mostly in the south and east of the mapped area. It is the oldest unit and forms the basement to the Cenozoic magmatic units. The main rock types are coarse-grained granite and granodiorite.

Dacite–Rhyolite

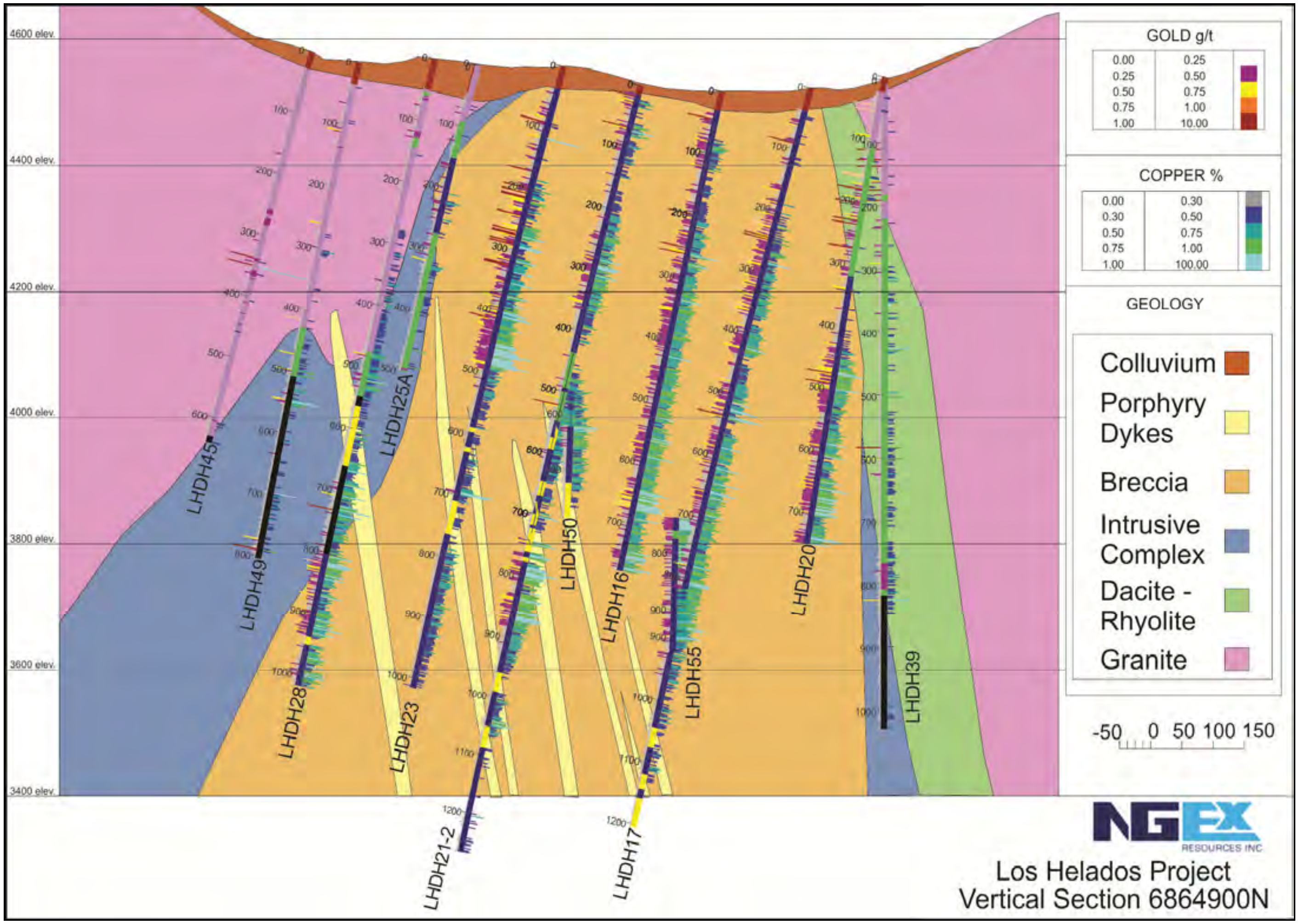
The rhyodacite is primarily an intrusive body, centred near the same area as the much younger Los Helados breccia body. The felsic intrusive rocks are assigned to the Choiyoi Group and Pastos Blancos Formation.

Figure 7-8: Los Helados Deposit Geological Map



Note: Figure courtesy NGEx, 2013

Figure 7-9: Los Helados Section UTM-6,864,900 (4900) North – Lithology (looking north)



Note: Figure courtesy NGEx, 2013

Permo–Triassic Andesite Dykes

A suite of mafic dikes that have a northeast trend, and are vertical to steeply northwest-dipping, are also included in the Permo-Triassic sequence.

Intrusive Complex (CI)

An intrusive complex of tonalitic composition pre-dates the Los Helados breccia body; clasts of the intrusive complex are entrained within the breccia.

The main mass of the intrusive complex is situated in the north of the Los Helados area. Intrusive breccia textures with coarse-grained tonalite are common. Dikes mapped in the area adjacent to the breccia are black and fine-grained to aphanitic.

Miocene Magmatic Hydrothermal Breccia Body (BXM – Monomictic; BXP – Polymictic)

Drilling has confirmed the existence of a single breccia body at Los Helados, although recent work has suggested the occurrence of different breccia phases within it. The deeper and central parts of the breccia tend to be polymictic (BXP), whereas the shallower levels and periphery are monomictic (BXM) in the sense that they contain only dacite porphyry or granite clasts (although several different textural varieties may be present). The monomictic breccia grades imperceptibly outwards and locally upwards to fractured but non-brecciated rock.

The shallower, sericitic parts of the breccia in the northern part of the body are cemented by prominent iron-rich tourmaline (schorl), 10–15 volume % pyrite and late anhydrite. The tourmaline dies out gradually at depth as the breccia becomes chlorite–sericite-altered and increasingly polymictic.

At the deepest levels drilled, the polymictic breccia is intensely biotitised, and is characterised by relatively minor open space and, hence, little hydrothermal cement. The breccia is clast-supported and characterized by subangular fragments (up to 90% in volume) of rhyodacite, intrusive complex, andesite and granite. The matrix is silicified (up to 30%) and commonly contains hydrothermal magnetite, chalcopyrite and pyrite.

Monomictic breccias are located peripheral to polymictic breccias, suggesting that the brecciation process became less energetic outwards. The clasts in the monomictic breccia appear to be little displaced, whereas those in the polymictic variety are appreciably transported and admixed. Although the two breccia varieties are modelled separately, in reality they are transitional.

Fragments within the breccia can be up to several metres in size.

Miocene Dacite Porphyries

At least three generations of dacite porphyry that accompanied the Miocene mineralization event are now recognised at Los Helados. The three are distinguished from the Permo–Triassic dacite porphyries by the euhedral form of the plagioclase phenocrysts, lesser abundance of quartz phenocrysts and presence of prominent biotite 'books'. In contrast, the Permo-Triassic porphyries are notably mafic poor.

The earliest of the porphyries (PDAND) is mainly encountered as clasts at depths of >1,000 m in the central parts of the polymict breccia. The porphyry is clearly early in timing because it is cut by early dark micaceous (EDM) and A-type quartz veinlets that contain medium Cu grades.

Fine-grained, early intermineral dacite porphyry (PANDP) was intersected at the base of holes LHDH17 and 27. Near its contacts with biotitised polymict breccia, the porphyry is cut by a diffuse stockwork of biotite veinlets, suggesting that it may have been emplaced while the breccia was undergoing alteration.

Late intermineral dacite porphyries (PAND) are present as narrow dikes throughout the Los Helados system. The dykes cut and are chilled against the breccia body and appear to post-date the potassic alteration; they contain a few veinlets, mainly of D-type, and have low Cu grades.

Alteration

Four main alteration zones are present in the Los Helados deposit. From the top downwards the alteration types are: advanced argillic; phyllic; SCC; and potassic. Alteration assemblages also include combinations of these principal alteration types, indicating transitional boundaries between the zones.

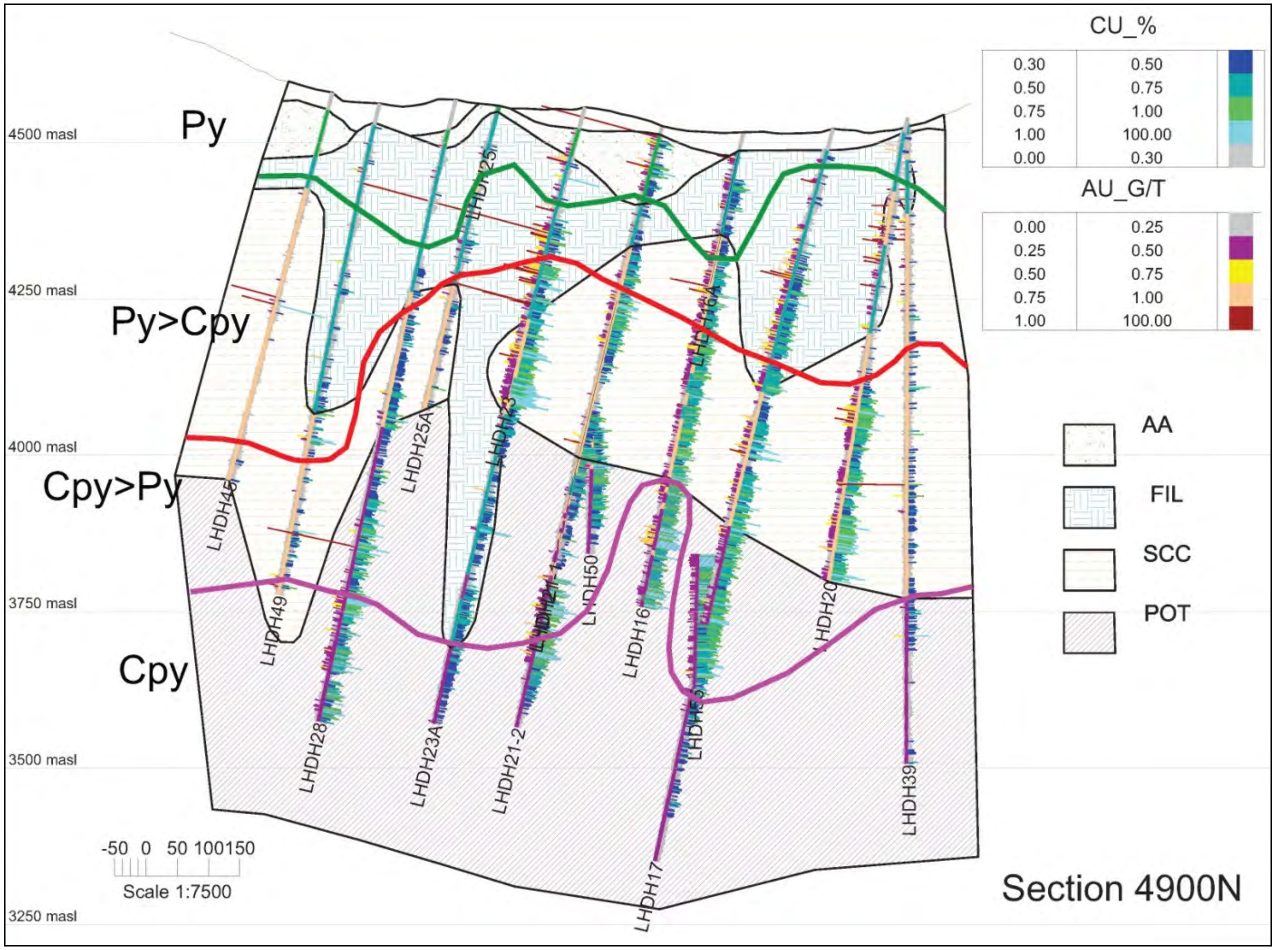
Mineral Zones

Four mineral zones are recognized within the deposit based on sulphide occurrence. Zone definition does not include late pyrite veinlets or the total volume of sulphides present in the rock. In order of increasing depth, the zones are: pyrite-only (Py); pyrite>chalcopyrite (Py>Cpy); chalcopyrite>pyrite (Cpy>Py); and chalcopyrite-only (Cpy).

This sulphide zoning sequence reflects a progressive downward increase in the amount of chalcopyrite relative to pyrite.

Figure 7-10 is a section through the deposit showing the sulphide zoning sequence in relation to the major alteration zones.

Figure 7-10: Los Helados Section UTM-6,864,900 North – Alteration and Mineral Zones (looking north)



Note: Figure courtesy NGEx, 2013

Mineralization

The copper–gold mineralization at Los Helados is primarily hosted by the Miocene magmatic–hydrothermal breccia which forms a roughly circular, pipe-like body with minimum dimensions of 1,100 m east–west, 1,200 m north–south and at least 1,500 m vertically. The breccia body is surrounded by a broad halo of moderate to low grade Cu–Au mineralization which diminishes in grade with increasing distance from the breccia contact.

The breccia limits have been established by drilling to the west, east and south; however, the northern limit of the breccia body has not yet been identified. The system also remains open at depth, and the lateral extent of the breccia at depth is also poorly constrained by the current drilling. The eastern contact appears to be subvertical, whereas the western contact dips outwards at roughly 70°, hence the width of the breccia body increases progressively downwards.

Copper grade increases downwards, either in the lower parts of the sericitic zone or in the underlying chlorite–sericite alteration zone, and elevated grades are maintained into the potassic alteration zone. Although Cu grades typically diminish towards the bottoms of the deepest holes drilled to date, there is an exception in that drill hole LHDH34 encountered some of the better grades of the deposit at depth.

Gold grades generally correlate well with Cu; however, within the sericitic alteration zones, where pyrite content exceeds chalcopyrite, high Au grades can be locally independent from Cu values and are hosted by narrow veins.

Consistently high Cu and Au grades are present in the potassic plus chlorite–sericite and potassic zones where chalcopyrite is more abundant than pyrite.

7.4 Comments on Section 7

The knowledge of the deposit settings, lithologies, mineralization and alteration controls on Cu, Au and Ag grades are sufficient to support Mineral Resource estimation and can support preliminary mine planning at the PEA level.

8.0 DEPOSIT TYPES

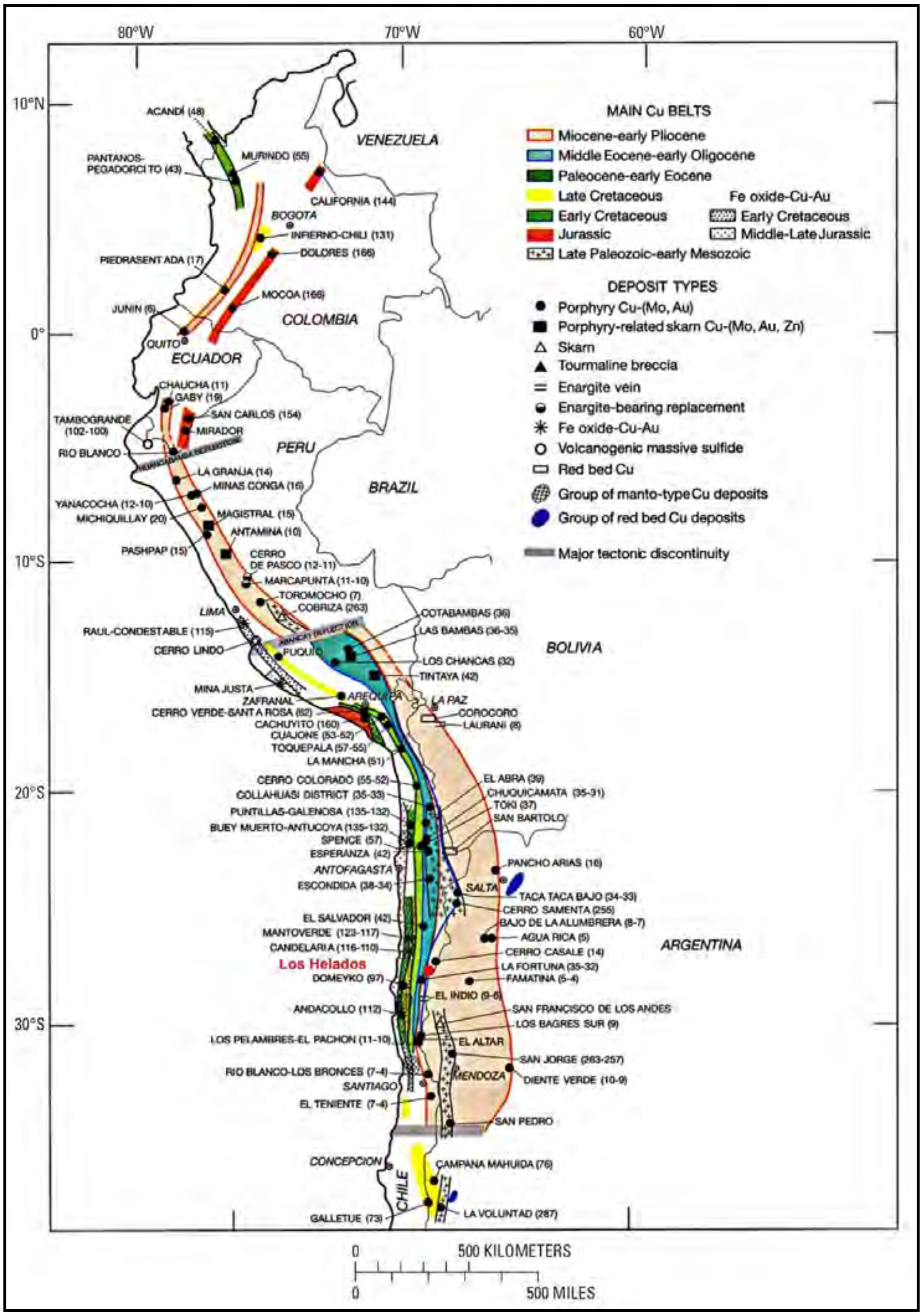
Based on geological features and location, the Josemaría and Los Helados deposits are classified as examples of Cu–Au porphyry systems. Porphyries are well documented along the Andes and represent a widespread type of deposit in Chile (Figure 8-1).

Porphyry deposits in general are large, low- to medium-grade deposits in which primary (hypogene) sulfide minerals are dominantly structurally-controlled and which are spatially and genetically related to felsic to intermediate porphyritic intrusions (Kirkham, 1972). The large size and structural control (e.g., veins, vein sets, stockworks, fractures, 'crackled zones', and breccia pipes) serve to distinguish porphyry deposits from a variety of other deposit types that may be peripherally associated, including skarns, high-temperature mantos, breccia pipes, peripheral geothermal veins, and epithermal precious metal deposits. Secondary minerals may be developed in supergene-enriched zones in porphyry Cu deposits by weathering of primary sulfides. Such zones typically have significantly higher Cu grades, thereby enhancing the potential for economic exploitation (Sinclair, 2006).

Porphyry deposits occur throughout the world in a series of extensive, relatively narrow, linear metallogenic provinces. They are predominantly associated with Mesozoic to Cenozoic orogenic belts in western North and South America and around the western margin of the Pacific Basin, particularly within the South East Asian Archipelago. However, major deposits also occur within Paleozoic orogens in Central Asia and eastern North America, and to a lesser extent, within Precambrian terranes (Sinclair, 2006).

Porphyry deposits are large and typically contain hundreds of millions of tonnes of mineralization, although they range in size from tens of millions to billions of tonnes. Grades for the different metals vary considerably but generally average less than 1%. In typical porphyry copper deposits, Cu grades range from 0.2% to more than 1% Cu; Mo content ranges from approximately 0.005% to about 0.03% Mo; Au contents range from 0.004 g/t Au to 0.35 g/t Au; and Ag content ranges from 0.2 g/t to 5 g/t Ag (Sinclair, 2006).

Figure 8-1: Porphyry Copper Belts and Major Porphyry Copper Deposits in the Andes



Note: Figure courtesy NGEx, October 2013; modified from Sillitoe and Perelló (2005)

8.1 Comments on Section 8

The deposits share geological and geochemical characteristics with porphyry copper systems described above, although the size of the mineralized breccia at Los Helados is unusual.

The Josemaría deposit typifies the central portion of the conceptual model proposed for porphyry systems. The uppermost part has most likely been eroded away. The ultimate size and extent of mineralization is not yet defined at Josemaría.

Current information indicates that Los Helados typifies the uppermost brecciated portion of the conceptual model proposed for porphyry systems. The ultimate size and extent of mineralization is not yet defined at Los Helados.

Similar porphyry copper systems are known in the region, for example at El Morro, located approximately 40 km south of Los Helados.

The deposit model is a reasonable basis for the design of additional exploration programs.

9.0 EXPLORATION

9.1 Josemaría

9.1.1 Grids and Surveys

Josemaría drill collar coordinates are reported using Gauss Kruger coordinates.

The base topography used for Mineral Resource estimation was obtained from PhotoSat Information Ltd. in Vancouver who provided a 5 m digital elevation model (DEM) produced from stereo 2.5 m resolution satellite images.

9.1.2 Geological Mapping

Several phases of geological mapping have been completed at Josemaría, with each phase building on and refining the previous phase. The most recent mapping update was performed by Fionnuala Devine, during January 2014.

9.1.3 Geochemical Sampling

During the period 2003–2005, 315 rock chip and 459 talus fines samples were collected. A central feature of approximately 2.5 km in diameter was delineated by coincident Au, Cu and Mo anomalies and encouraged further exploration studies.

9.1.4 Geophysics

Information in this sub-section is summarized from Nilsson and Rossi (2007), and Zandonai and Frost (2013). A more detailed description of the surveys can be found in those documents.

IP surveys were completed at Josemaría during the 2003–2004, 2006–2007 and 2009–2010 field seasons. Magnetic surveys were done during the 2003–2004, 2004–2005 and 2006–2007 seasons. Other types of geophysical surveys completed include a CSAMT survey conducted in 2003 and a MIMDAS survey undertaken in 2008–2009.

The porphyry intrusive rocks closely correspond to magnetic (high) anomalies, and the main structural features are also outlined by magnetics.

IP chargeability shows a partial pyrite "ring" around the western and northern parts of the main deposit. The response to the south and east appears to be masked by the post-mineral volcanic cover and chargeability is generally low in this area.

9.1.5 Pits and Trenches

Trenches were completed primarily following road cuts. Samples were taken over a 3 m interval whenever possible. However, since the trenches followed roads with curves, sampled lengths are greater than the direct (line-of-sight) distance from the beginning to the end of the trench.

9.2 Los Helados

9.2.1 Grids and Surveys

Drill collar data are reported using the WGS84 datum.

The base topography used for Mineral Resource estimation was obtained from PhotoSat Information Ltd. in Vancouver who provided a 5 m digital elevation model (DEM) produced from stereo 2.5 m resolution satellite images.

9.2.2 Geological Mapping

LandSAT and ASTER satellite imagery interpretation was conducted as part of early-stage exploration target definition.

Several phases of geological mapping have been completed at Los Helados, with each phase building on and refining the previous phase. The most current geological map was completed by Fionnuala Devine in February 2015.

9.2.3 Geochemical Sampling

During the period 2004–2010, 156 rock chip, and 322 soil and talus samples were collected.

Rock chip samples returned relatively low copper and gold grades consistent with the observed lithological and alteration assemblages on surface. These results were interpreted to indicate a potential porphyry system at depth.

Soil and talus geochemistry proved to be a useful tool define the mineralization. Although Cu and Au grades were relatively low in the soil and talus samples, the shape of the resulting anomaly showed a good correlation to surface exposures of dacite and breccias.

9.2.4 Geophysics

Information in this sub-section is summarized from Charchaflié and Le Couteur (2012). A more detailed description of the surveys can be found in that document.

IP geophysical surveying was carried out at Los Helados over the main deposit area during the 2005–2006, 2009–2010, 2010–2011 and 2011–2012 field seasons. Magnetometry and two lines of MIMDAS surveying have also been completed.

The IP surveys outline a pyritic halo that shows as a high chargeability ring feature around the breccia body.

9.2.5 Pits and Trenches

Minor surface trenching was completed at Los Helados during the 2004–2005, season with some low-grade copper and gold mineralization detected as a result of the program.

9.3 Exploration Potential

9.3.1 Josemaría

The Josemaría deposit remains open to the south, beneath a thickening cover of post-mineral volcanic rocks, and also at depth. Drilling was planned with a conceptual open-pit configuration in mind, and only two drill holes were extended beyond depths of about 600 m (JMDH06 and 07). Both drill holes encountered lower-grade mineralization; however, they intersected the porphyry unit, which tends to be lower grade, and potential remains to extend the mineralization at depth within the tonalite unit.

9.3.2 Los Helados

The Los Helados deposit remains open at depth and to the north. Recent internal NGEx studies have indicated the presence of a discrete, higher-grade breccia phase along the western and southwestern breccia margins. The breccia dips at about 70º to the west, and remains untested below these drill holes.

The genetic model for the deposit, and porphyry deposits in general, describes breccias as occurring, and being sourced from, the upper portions of mineralizing porphyry systems. Los Helados is unique in that it is a single, very large, breccia body rather than a more typical porphyritic intrusive with disseminated and stockwork-hosted mineralization. The genetic model, as well as analogy with other porphyry deposits in the Andes, suggests there is potential to continue to expand the deposit at depth.

Drilling has intersected the boundary between the breccia and host granite to the south, west and east of the deposit; however granite has not been intersected to the north, and the breccia remains open in this direction.

9.4 Regional Targets

Several exploration targets were developed in the Project Constellation area during the surface exploration programs that led to the discovery of the Josemaría and Los Helados deposits. At that time, prior to the discovery of Josemaría and Los Helados, several targets were being advanced in parallel, ultimately resulting in the initial drill programs. Once the two main deposits were discovered, all the exploration effort shifted to deposit definition drilling, and exploration on the other exploration targets was suspended.

These additional targets include geochemical anomalies similar in size and tenor to those that were identified over the known deposits, and have coincident geophysical targets and mapped alteration features that are consistent with porphyry-style mineralization. The highest-priority targets occur along two parallel north–south-oriented trends interpreted to represent large-scale structural breaks. The western trend includes the Los Helados deposit, while the eastern trend links the Josemaría deposit in the south with the Caserones deposit in the north. These targets, as defined by copper in talus fine samples, are shown in Figure 9-1.

Given that porphyry deposits occur in clusters, and the exploration targets are in the vicinity of the Josemaría and Los Helados deposits, there is excellent exploration potential to identify additional porphyry-hosted mineralization. Additional exploration work is recommended in order to continue to advance them.

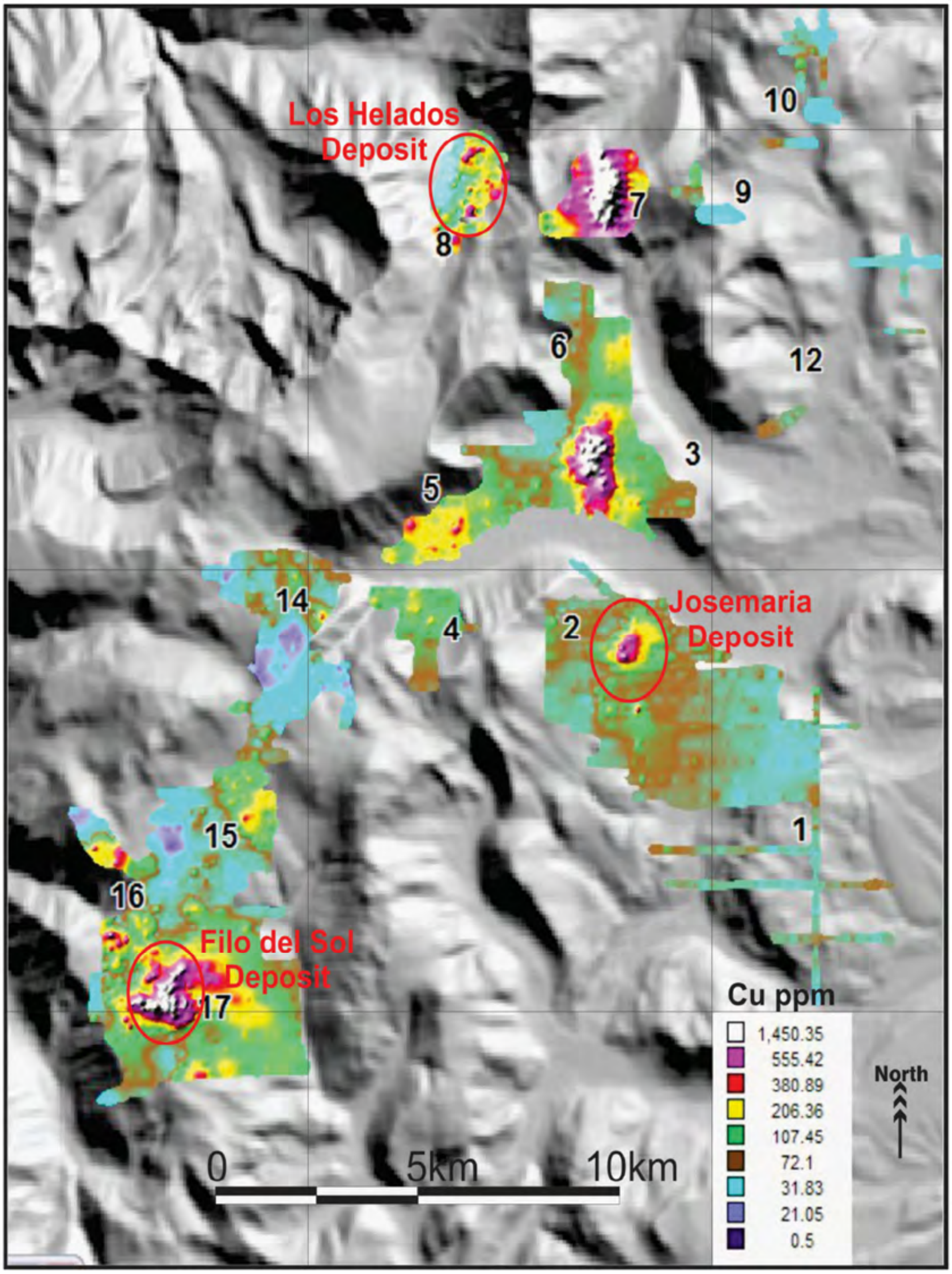
9.5 Comments on Section 9

The Josemaría and Los Helados deposits were discovered as the result of a systematic regional exploration program initiated in 2003, followed by drilling in 2004 and 2006 respectively. Both deposits remain open to potential expansion through additional drilling:

- The Los Helados deposit remains open at depth and to the north
- The Josemaría deposit remains open at depth and to the south.

The exploration programs also discovered several similar target areas which remain to be followed up and offer excellent potential for new discoveries within Project Constellation area.

Figure 9-1: Exploration Targets



Note: Figure courtesy NGEx, 2015.

10.0 DRILLING

10.1 Josemaría

10.1.1 Drill Programs

Nine drilling campaigns have been carried out at the Josemaría deposit, from 2003 to 2014. Drilling at the Josemaría deposit to date totals 61,100 m in 142 drill holes (Table 10-1), of which 48 holes (17,535 m) are RC holes, and 94 holes (43,565 m) are core holes. More than 90% of the metres drilled were HQ (63.5 mm diameter core).

Drill hole collar locations are shown in Figure 10-1.

10.1.2 Geological Logging

Drill core was transported by pick-up truck from the drill sites to the Josemaría camp. At the camp core logging facility, the core was photographed, logged for rock quality designation (RQD) and recovery, and a quick log of the key geological features was prepared. The core was then prepared for cutting and sampling. Prior to the 2011–2012 season, core was cut at the field camp, but during the 2011–2012 and 2013–2014 campaigns the core was cut at the NGEx sampling facility located in San Juan. Detailed geological logging was also completed in San Juan.

10.1.3 Recovery

Core recovery data was not systematically collected on holes drilled before 2011–2012 campaign. Visual inspection by Charchaflié (reported in Charchaflié and Le Couteur, 2012) indicated that overall recovery is very good, and estimated to be more than 90%.

Core recovery data were collected systematically for all holes drilled between 2011 and 2014, and averages 94%.

Recovery was measured with a metric tape between drill core marks, annotated and the percentage recovery calculated. RQD was calculated as the total length of recovered core that exceeded or equals 10 cm.

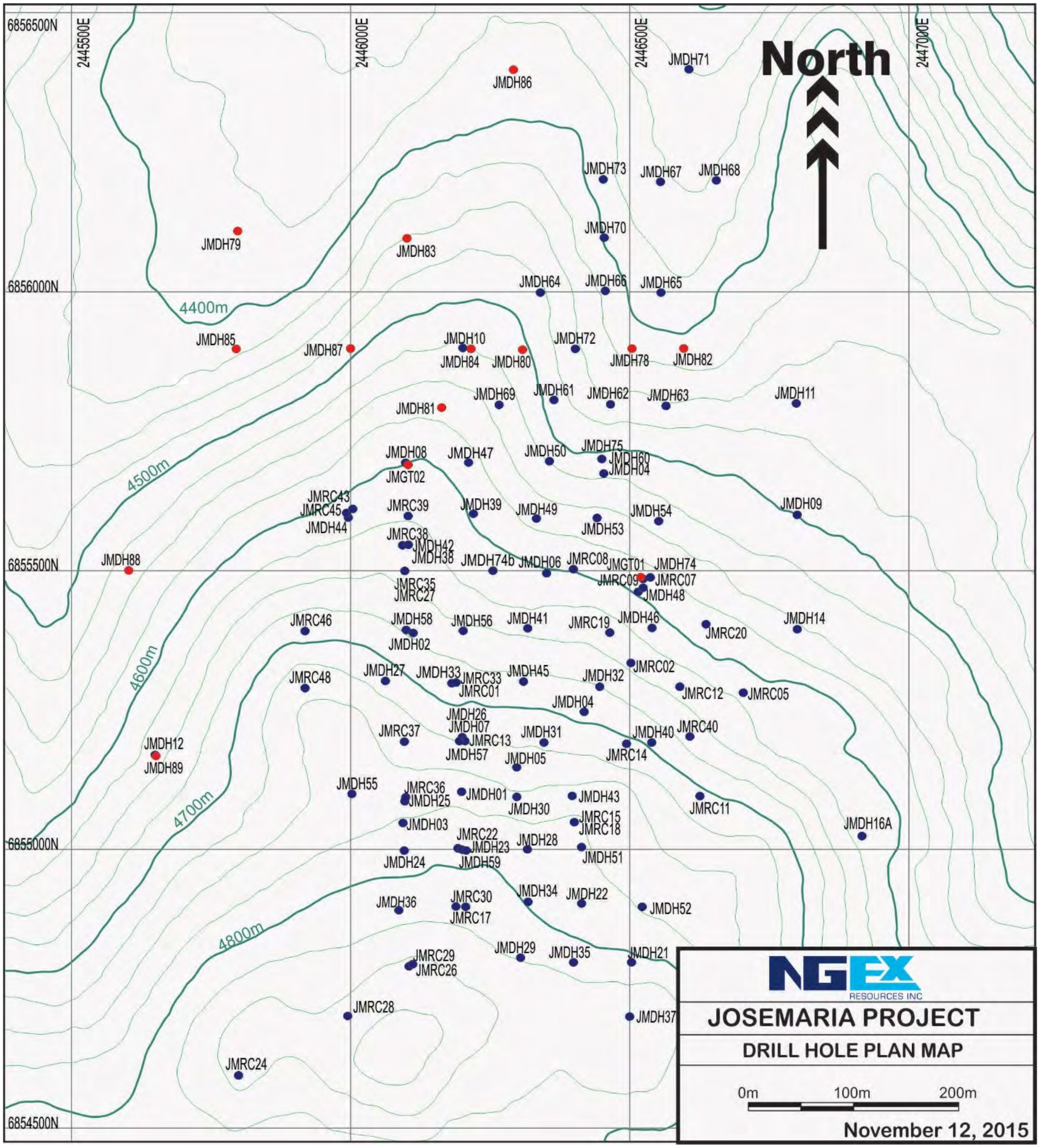
10.1.4 Collar Surveys

Drill sites are initially located in the field by hand-held global positioning system (GPS) instrument, and are marked with stakes for the collar location and a front and back site indicating the azimuth. The drill is moved on to the site and then lined up with the stakes by the supervising geologist. Following completion of the drill hole, final collar locations were surveyed using a differential GPS instrument.

Table 10-1: Drill Summary Table – Josemaría

Year	RC Holes	RC Metres	Core Holes	Core Metres
2003–2004	10	3,475	—	—
2004–2005	21	7,822	5	2,406
2005–2006	—	—	2	1,700
2006–2007	17	6,238	0	—
2007–2008	—	—	—	—
2008–2009	—	—	—	—
2009–2010	—	—	7	2,253
2010–2011	—	—	8	2,419
2011–2012	—	—	39	19,236
2012–2013	—	—	19	8,241
2013–2014	—	—	14	7,310
Totals	***48***	***17,535***	***94***	***43,565***

Figure 10-1: Drill-Hole Collar Location Map, Josemaría



Note: Figure courtesy NGEx, 2015

10.1.5 Downhole Surveys

Downhole surveys were carried out using a Reflex multi-shot instrument at, on average, 50 m intervals within the hole.

Beginning in the 2012–2014 season (JMDH78) a SRG-gyroscope survey was completed for each drill hole by Comprobe Limitada, with measurements collected at 30 m intervals down the hole.

Earlier core and RC holes were not surveyed for down-hole deflection. Hole deflection is typically less than 0.001 degree per metre in dip and 0.01 degree per metre in azimuth. Given the low deflection of the holes and the continuous, disseminated nature of the mineralization, the lack of survey data from the RC holes is not considered by the QP to be a significant issue.

10.1.6 Sample Length/True Thickness

The Josemaría deposit is a porphyry deposit that contains disseminated mineralization. Reported and described interval thicknesses are considered true thicknesses. A drill section through the deposit illustrating the typical drill orientations in relation to the mineralization is illustrated in Figure 10-2.

10.2 Los Helados

10.2.1 Drill Programs

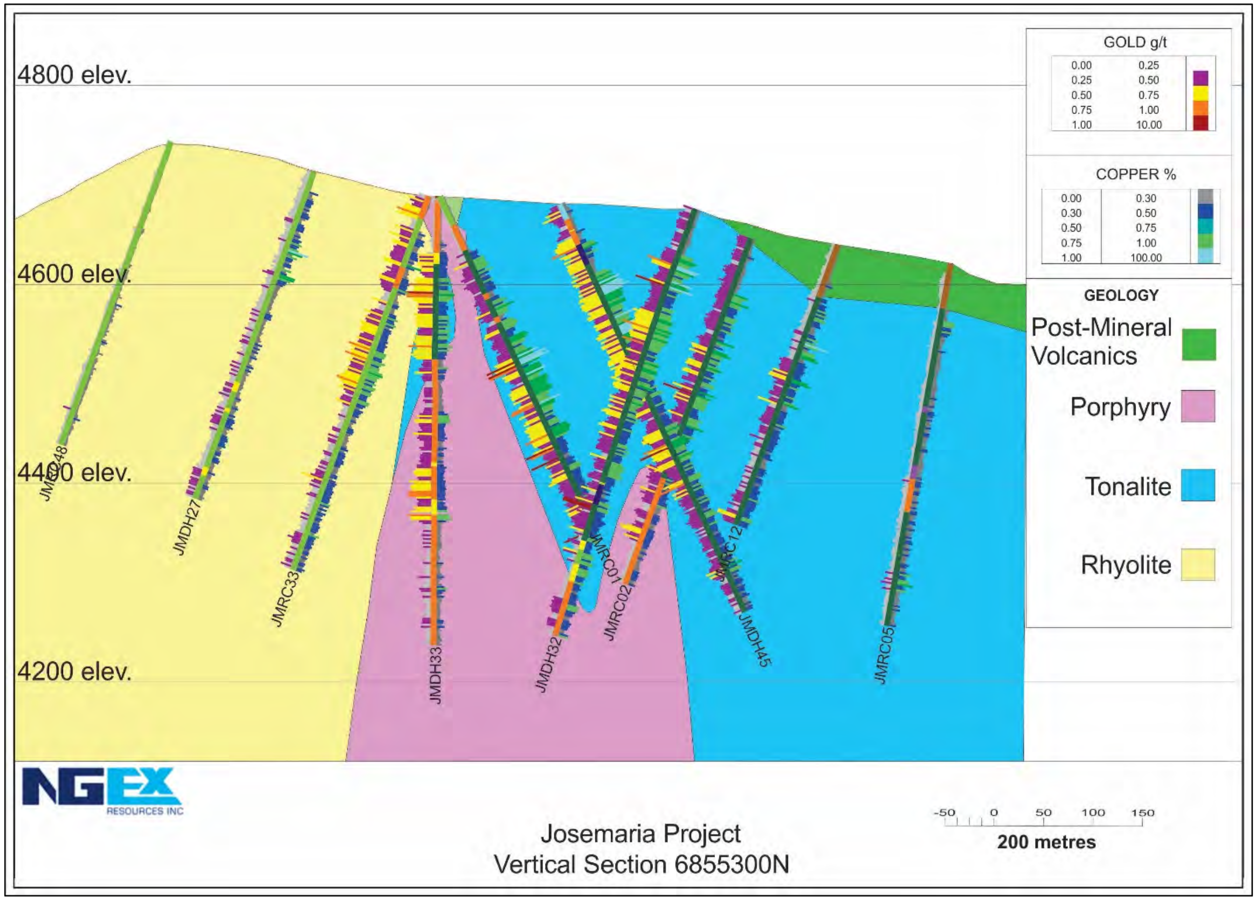
Eight drilling campaigns have been carried out at the Los Helados deposit, from 2006 to 2015. No drilling was conducted during the 2013–2014 season.

Drilling to date totals 75,634 m in 95 drill holes (Table 10-2), of which five holes (1,366 m) are RC and 90 holes (74,268 m) are core. The core drilling produced 33,936 m of NQ (47.6 mm diameter) core and 40,332 m of HQ size (63.5 mm) core. This drilling includes three holes (LHDHG01, LHDHG02 and LHDHG03) drilled for geotechnical information which were not sampled for assay.

The drilling included a number of holes drilled in one season and subsequently re-entered, and deepened in a later season. If this deepening was successful, no new drill-hole name was created. For some holes, however, the drill string wedged off the main hole and a new drill-hole was named above the final depth. In these cases, the new drill hole was indicated by a -1 or -2 following the original drill-hole name.

Drill hole collar locations are shown in Figure 10-3.

Figure 10-2: Example Drill Section 5300N, Josemaría

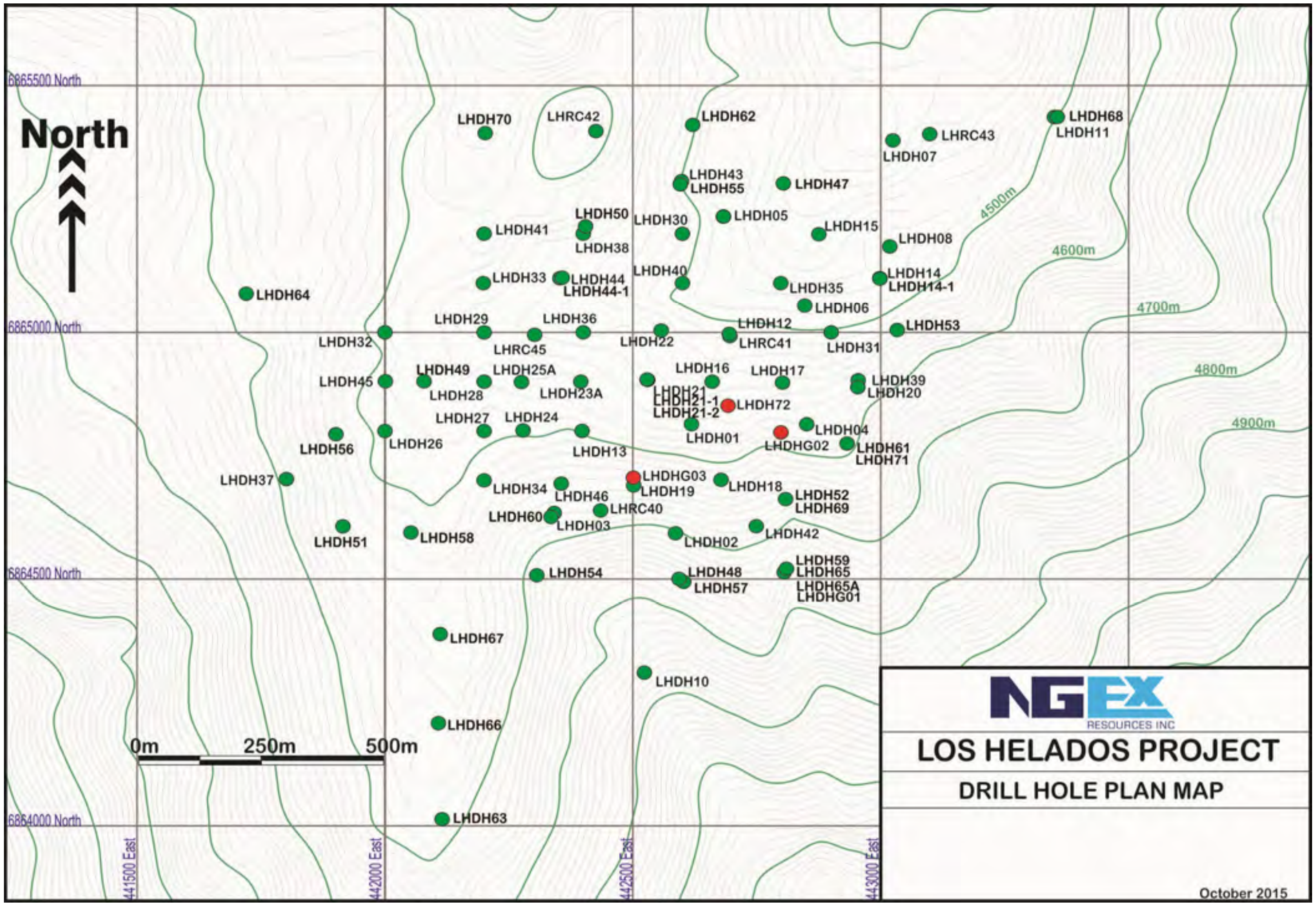


Note: Figure courtesy NGEx, 2015.

Table 10-2: Drill Summary Table – Los Helados

Season	Drill Type	Number Of Holes	Metres
2006–2007	RC	5	1,366
2007–2008	Core	2	1,037
2008–2009	Core	2	1,529
2009–2010	Core	6	4,031
2010–2011	Core	14	9,641
2011–2012	Core	27	22,022
2012–2013	Core	36	32,665
2013–2014	Core	—	—
2014–2015	Core	3	3,341
Total		***95***	***75,634***

Figure 10-3: Drill-Hole Collar Location Map, Los Helados



Note: Figure courtesy NGEx, 2015.

10.2.2 Geological Logging

Drill core was transported by pickup truck by company personnel from the drill sites to the Los Helados camp. At the camp core logging facility, the core was photographed, logged for RQD and recovery, and a quick log of the key geological features was prepared. The core was then packaged for delivery by NGEx personnel to the company's core logging and sampling facility located in Paipote for sampling, detailed logging, and core storage.

10.2.3 Recovery

Core recovery data was not systematically collected on holes drilled before the 2010–2011 campaign. Visual inspection by Charchaflié (as reported in Charchaflié and Le Couteur 2012), indicated that overall recovery was very good and was estimated to be more than 90%.

Starting with the 2011–2012 field season, core recovery and RQD were measured at the camp. Recovery was measured with a metric tape between drill core marks, annotated and the percentage recovery calculated. RQD was calculated as the total length of recovered core that exceeded or equals 10 cm.

Core recovery from holes drilled between 2012 and 2015 averages 97%.

10.2.4 Collar Surveys

Collar survey methods in use at Los Helados were similar to those described for Josemaría.

10.2.5 Downhole Surveys

The RC holes and the first four core holes were not surveyed down-hole for azimuth or inclination. Measurements from LHDH23 and LHDH24 were accidentally erased before being downloaded to a computer.

Down-hole surveys were carried out using a Reflex multi-shot instrument up to the 2011–2012 drilling campaign. On average, measurements were collected at 50 m intervals down the hole.

For the 2012–2013 and 2014–2015 drilling, a SRG-gyroscope survey was completed for each drill hole by Comprobe Limitada. On average, measurements were collected at 30 m intervals down the hole.

10.2.6 Sample Length/True Thickness

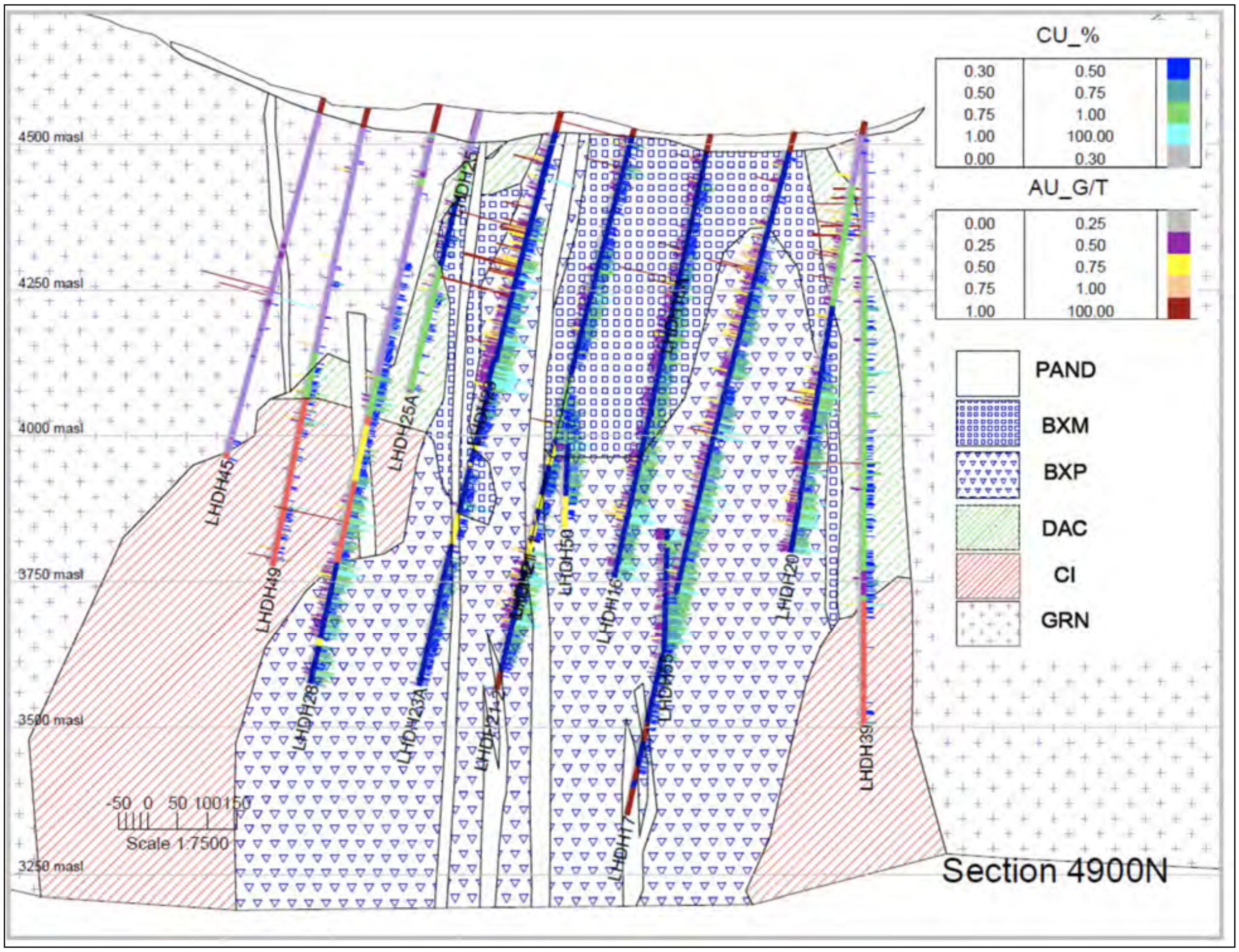
The Los Helados deposit is a porphyry deposit with disseminated mineralization. Reported and described interval thicknesses are considered true thicknesses. A drill section through the deposit illustrating the typical drill orientations in relation to the mineralization is illustrated in Figure 10-4.

10.3 Comments on Section 10

In the opinion of the QP, the quantity and quality of the lithological, collar and down-hole survey data collected in the exploration and infill drill programs completed at Josemaría and Los Helados are sufficient to support Mineral Resource estimation and preliminary mine planning at the PEA level.

Three additional holes were drilled at Los Helados during the 2014–2015 field season (LHDH72, LHDHG02 and LHDHG03). Only one of these drill holes, LHDH72, was assayed; the other two drill holes were geotechnical holes and have been retained as whole core. Information from LHDH72 does not have a material impact on the resource estimate or the block model for Los Helados. The drill hole will locally support potential confidence category upgrades for some of the resource blocks.

Figure 10-4: Example Drill Section 4900 N, Los Helados



Note: Figure courtesy NGEx, October 2013. Figure illustrates drill hole orientations, and provides histograms showing copper and gold grade variations including areas of higher grades in a lower-grade interval. The lithological interpretation shown has been simplified from the actual more detailed geological interpretation used in the wire-framing.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

11.1 Josemaría

11.1.1 Surface Sampling Methods

Talus Sampling

The following information on talus samples is included in Nilsson and Rossi (2007).

"Sampling of talus fines carried out by Deprominsa and Solitario has used a compositing method that results in samples representative of 100 m along the sampling line. Talus fines were collected as composites of 10 sites located at 10 m intervals, centred if possible, on a 100 m line station."

Chip Sampling

The following information on surface chip samples is included in Nilsson and Rossi (2007).

"Chip sampling followed conventional methods of following as close to the centre line of the sample as practical. Samples were chipped not cut. The majority of chip samples were taken along road-cut type trenches. Sample width was kept constant within each trench as much as possible."

11.1.2 Drill Sampling

Pre-2007 Drill Sampling

The following information on pre-2007 drill sampling is included in Nilsson and Rossi (2007).

"Both reverse circulation (RC) and diamond drill core (DDH) drilling has been completed at Josemaría.

The entire length of the holes have been carefully logged, on a systematic 2 m interval in the case of RC, and on a systematic 1m core length in the case of DDH holes. RC chips were collected at the drill in large sacks weighing about 40kg. These were taken to the camp where they were weighed and run through a quartering and homogenizing process using riffle splitters that results in a 5kg split for shipment to the lab. Representative samples are retained as a geological record of the hole and for re-assay.

The core intervals were split in half by saw with one half then being submitted for assay and the balance being store in San Juan for reference. Also, from the saved one half core, samples were taken for density measurements.

No geologic breaks dictated breaks in the uniform 2m (RC) or 1m (DDH) sampling, which is appropriate for a bulk tonnage, low-grade deposit. HQ diameter core was drilled to provide adequate sample weights. The average weight of a half core sample for a 2 m interval is 8.0kg, and therefore a significant weight that provides for sample preparation and assaying.

The rock is generally very competent, and overall recoveries are in the order of 95% or better, with only very occasional fracture zones having recoveries of less than 70%."

NGEx Sampling

Sampling since 2009 has been performed on core. Core was sampled continuously from the beginning of recovery to the end of the hole. Samples are generally 2 m long (except for JMDH01 to 07 that were sampled on 1 m intervals). Drill core was cut in half using a circular, water-cooled rock saw. Half-cores are randomly weighed and compared in order to verify that 50% of the material was sampled.

One half of the core was used as a geochemical sample and the other stored in boxes or trays for reference and future revisions.

11.1.3 Density Determinations

A total of 11,752 core samples have been systematically analyzed for specific gravity (SG) since the 2011–2012 drilling program. Specific gravity was measured by NGEx technicians using the water immersion method at the NGEx core logging and sampling facility in San Juan.

11.1.4 Analytical and Test Laboratories

Surface and RC samples were analysed by ALS Chemex (ALS) in Chile. At the time of analysis, ALS held ISO9001 accreditations for selected procedures.

From 2009, all core samples have been analyzed by ACME Laboratories in Chile (ACME). ACME's accreditations have included ISO9001:2000 and ISO/IEC17025. Sample preparation was undertaken at ACME's sample preparation laboratory in Mendoza, Argentina, which holds ISO 9000:2001 accreditation.

SGS Laboratories (SGS) in Chile was used as an umpire laboratory during 2012–2013. At the time the analyses were performed, SGS held ISO/IEC17025 accreditations.

ACME and ALS were also used for surface sample analyses.

11.1.5 Sample Preparation and Analysis

Surface and RC Samples

Information on sample preparation and analysis for the surface (talus and rock chip) and RC programs is summarized from Nilsson and Rossi (2007).

Sample preparation included; drying the sample, crushing to >70% passing -2 mm mesh, and pulverizing to >85% passing -75 µm screen.

Gold was determined using an AAS finish on a 50 g sample. The detection limit and the upper range of this method was 0.005 and 10 ppm Au respectively.

The sample was also digested using a $HF–HNO_3–HClO_4$ acid digestion, HCl leach and finished using ICP-AES for 27 elements. In addition, Hg was determined using an aqua regia digestion and cold vapour AAS.

Core

Sample preparation included drying the sample, crushing to better than 85% passing 10 mesh and pulverizing to 95% passing 200 mesh.

Sample digestion was done by a multi-acid attack with the exception of one submission during the 2009–2010 campaign.

Gold was determined by fire assay with an atomic absorption spectroscopy (AAS) finish based on a 30 g sample. A suite of 37 elements, including copper, was determined by ICP-emission spectroscopy (ES) analyses.

Samples analyzed before the 2010–2011 campaign had Cu re-assayed by AAS only if the ICP result exceeded the upper detection limit of 10,000 ppm. Beginning in 2010, all samples with copper grades over 5,000 ppm Cu were re-assayed by AAS. Starting in 2012, Cu determinations in all samples were done by both ICP and AAS.

Mercury concentration was determined by cold vapour/AA in all samples up to 2010.

11.1.6 Quality Assurance and Quality Control

Surface and RC Sampling

In their 2007 report, Nilsson and Rossi noted:

"There is only limited information on the overall precision of the assay data, and no information regarding its accuracy. As the project moves forward, it becomes imperative that a full sample QA/QC program be developed"

"Duplicate samples were collected in the field and routinely examined using regression methods. There are a total of 447 duplicate samples at this stage of the project.

Statistical analyses made on these duplicates indicate that the overall precision of the samples is good or very good."

Core Sampling

A quality control protocol was implemented in the 2009–2010 season, beginning with JMDH08; the program, with some minor variations, has been followed since that date. The programs include blanks, duplicates and standard reference materials inserted in the sampling sequence.

The programs included a total of seven quality control samples inserted for every 77 samples submitted to the laboratory to provide sufficient controls for the 78 and 36 element trays used in the laboratory. These control samples consist of:

- Standard #1 (medium-grade, approximately deposit average grades)
- Standard #2 (low-grade, approximately equates to the cutoff grade used in estimation), implemented during the 2011–2012 campaign
- Blank (coarse material)
- Field duplicate (second half core)
- Preparation duplicate (second pulp)
- Assay duplicate (second assay).

Reference Materials

Certified reference materials (CRMs) utilized in the 2009–2010 and 2010–2011 campaigns were acquired from SGS in Argentina.

In September 2011, five standard reference materials (SRMs) were prepared by NGEx using selected coarse rejects from the previous drill season at Los Helados and used during the 2011–2012 campaign. The samples were prepared by Vigalab SA (Vigalab; now part of the Intertek Group). At the time, Vigalab held ISO9001:2009 accreditation.

Five analytical laboratories located within the region were used to perform a round robin test of results: ACME, Activation Laboratories Ltd (Actlabs; at the time, Actlabs was ISO 17025 accredited and/or certified to 9001: 2008), SGS, ALS and Vigalab. Based on the round robin results, the SRMs were been assigned an averaged best value.

Coarse Blanks

Blank material was obtained from an andesite outcrop located a few kilometres away from the deposit.

Duplicates

Field duplicates were obtained by cutting a half-core into quarter core to be analyzed independently.

External Assay Checks

A set of 183 coarse rejects from the 2012 drill campaign were selected for re-assaying at SGS Laboratories. Grades reported by ACME on the coarse rejects ranged from 0.093 to 11.10% Cu and 0.05 to 0.751 g/t Au.

Samples were submitted for preparation at the SGS facilities in San Juan, Argentina and assayed in Callao, Peru.

11.1.7 Databases

Drill hole data are stored in a GEOVIA GEMS database, which is a Microsoft Access database platform created and manipulated using GEMS.

Data stored for each drill hole includes collar information, downhole surveys, codes and comments for lithology, alteration and mineralization, assays, specific gravity, magnetic susceptibility, recovery, RQD and metallurgical sample information.

11.1.8 Sample Storage

Drill core is stored in a core storage yard in San Juan.

The laboratory returns the pulps and coarse reject for each sample that has been sent for analysis. These are stored at the San Juan facility.

11.1.9 Sample Security

The logging facility is fenced, locked when not occupied, and is secure. Samples are handled only by company employees or their designates (i.e. laboratory personnel).

NGEx noted that samples are in the control of an NGEx employee or contractor to NGEx from the time they leave the site until they arrive at the San Juan logging facility.

11.2 Los Helados

11.2.1 Sampling Methods

Surface Sampling

The following information on surface samples is taken from Charchaflié and Le Couteur (2012).

Soil and talus samples were collected from small holes deep enough to sample the interval below the iron-cemented horizon. Talus samples were composited from 10 stations located within 5 m along 100 m long, east–west or north–south oriented lines. Sampled material was finer than #10 Tyler mesh.

Rock outcrops and trenches were sampled by collecting approximately 1–3 kg of chips. The sample location, length and a geological description were recorded.

Drill Sampling

RC holes drilled during the 2006–2007 campaign were sampled on 2 m intervals.

Core was sampled continuously from the beginning of recovery to the end of the hole. Samples are generally 2 m long (except for the initial drill holes, LHDH 01 to 04, which were sampled on 1 m intervals). Core was oriented in the drill box prior to sampling to ensure that vein material would be evenly sampled. Drill core was cut in half using a circular, water-cooled rock saw. Half-cores were randomly weighed and compared in order to verify that 50% of the material was sampled.

One half of the core is used as a geochemical sample and the other half is stored in boxes or trays for reference and future revisions. Prior to 2011, rice sacks were delivered to the laboratory using a private courier with dispatch tracking. Beginning in October 2011, samples were delivered directly to the ACME preparation facilities in Copiapó by NGEx personnel, considerably reducing turn-around times from previous programs.

11.2.2 Density Determinations

A total of 25,158 core samples have been systematically measured for SG, beginning with the 2010–2011 drilling program. Specific gravity was measured by NGEx technicians using the water immersion method at the Company core logging and sampling facility in Paipote. Density information for the estimate was based on the median (50% percentile) value of all samples within each lithological domain (Table 11-1).

11.2.3 Analytical and Test Laboratories

RC holes. At the time of analysis, ALS held ISO9001 accreditations for selected procedures.

The primary assay laboratory for the core drilling programs has been ACME. Sample preparation was performed at ACME's sample preparation laboratory in Copiapo, Chile.

Vigalab was used as an umpire (check) laboratory. .

Table 11-1: Los Helados Specific Gravity Values by Lithological Domain

	BXM	BXP	DAC	CI	GRN	PAND	PANDP
Value	2.68	2.66	2.67	2.73	2.66	2.62	2.62

11.2.4 Sample Preparation and Analysis

RC

For the RC drill program, the analytical package used was a 27 element suite via four-acid digest, ICP-AES analysis and for gold, a fire-assay AA finish. Mercury was analysed by cold vapour/AA.

Details related to sample preparation and chain of custody are unavailable.

Core

The sample preparation and analytical protocols described for Josemaría core samples were also used for Los Helados samples.

11.2.5 Quality Assurance and Quality Control

RC

Charchaflié and Le Couteur (2012) reported that 32 field duplicates representing 3.2% of total samples were collected and no blanks or standard materials were inserted in sample batches to control laboratory performance, and the quality of analytical data.

As there are only five RC holes in the deposit and the 1,366 m of drilling in these holes represents about 2% of the current Project drill status, Amec Foster Wheeler considers that the lack of quality assurance/quality control (QA/QC) data for the RC drilling is not a significant risk to the resource estimate.

Core

Insertion Rates

No QA/QC program was in place for samples from drill holes LHDH01 to LHDH04, from the 2009–2010 drill program, which corresponds to 2,540 samples representing 3.6% of the metres drilled.

A quality control program was implemented for the 2009-2010 drilling campaign, beginning with LHDH05, and has been in place for all subsequent drill programs. The 2010–2011 campaign included two standards, whereas for subsequent campaigns three standards were used. Coarse blank samples and duplicate samples were inserted and collected from the beginning of the QA/QC programs.

Reference Materials

NGEx acquired CRMs from SGS Argentina and CDN Laboratories and used these CRMs for drill programs completed prior to 2012.

NGEx used materials from Los Helados to create SRMs for the 2011–2012 and 2012–2013 drilling campaigns. The samples were prepared by Vigalab. Coarse rejects were selected from drill-hole intervals in the database with assayed Cu and Au grades. Each grade range was used to generate a standard for that range. The resulting standard material was subject to round-robin analysis at four laboratories in Chile, ACME, Actlabs, ALS and Vigalab. Each laboratory received one envelope of each of the three standard materials. Data from the four laboratories were considered in assigning best values to the SRMs.

Coarse Blanks

NGEx obtained blank material from an andesite outcrop located near Los Helados for the 2011–2012 drilling campaign. During the 2012–2013 campaign, material used for blanks was white quartz, which was purchased in Copiapó.

Duplicates

NGEx collected field duplicates, coarse duplicates and pulp duplicates during both the 2011–2012 and 2012–2013 drilling campaigns.

External Assay Checks

A set of 522 pulps, representing 3.5% of total samples for the 2012–2013 drilling campaign, were selected for a second analysis round at ALS in Chile.

11.2.6 Databases

Drill hole data are stored in a GEOVIA GEMS database, which is a Microsoft Access database platform created and manipulated using GEMS.

Data stored for each drill hole include collar information, downhole surveys, codes and comments for lithology, alteration and mineralization, assays, specific gravity, magnetic susceptibility, recovery, RQD and metallurgical sample information.

11.2.7 Sample Storage

Drill core is stored in a core storage yard at Paipote. RC drill chips are stored in lidded, plastic core trays, most of which are also kept in Paipote.

The laboratory returns the pulps and coarse reject for each sample that has been sent for analysis. These are stored at the Paipote facility.

During 2015, due to unseasonable heavy rains, a portion of the drill core stored in the facility was affected by flooding.

11.2.8 Sample Security

The logging facility is fenced, locked when not occupied, and is secure. Samples are handled only by company employees or their designates (i.e. laboratory personnel).

NGEx noted that samples are in the control of an NGEx employee or contractor to NGEx from the time they leave the site until they arrive in Paipote.

11.3 Comments on Section 11

Sample collection, preparation, analysis and security for RC and core drill programs are in line with industry-standard methods for porphyry deposits.

Specific gravity data are collected using industry-standard methods. There are sufficient estimates to support tonnage estimates for the various lithologies.

Drill programs included insertion of blank, duplicate and standard reference material samples.

QA/QC program results do not indicate any problems with the analytical programs (refer to discussion in Section 12).

The QP is of the opinion that the quality of the Cu and Au analytical data is sufficiently reliable to support Mineral Resource estimation without limitations on Mineral Resource confidence categories.

Should silver become a significant contributor to future Mineral Reserve estimates, then additional verification of Ag assays and an independent SRM for Ag will be required.

12.0 DATA VERIFICATION

12.1 Josemaría

Where data verification has been completed as part of technical reports for Josemaría, the findings from the reports are summarized in the following sub-sections. More detailed information can be found in the cited reports.

12.1.1 Nilsson and Rossi (2006, 2007)

Data verification included spot checks of selected assay values in the database against laboratory certificates, checks on topography and density; and reviews of duplicate samples.

"The authors believe the data provided to be reliable and is not aware of any reasons for concern regarding data validity."

12.1.2 Behre Dolbear (2013)

Checks completed included spot checks of database assays against the laboratory certificates; and review of lithology and alteration information in drill logs against the drill core.

In the central part of the deposit there is reasonably good outcrop or subcrop. Surface trench samples from this area confirm the presence of copper mineralization over a broad area. Verification carried out included an overview of the general nature of the site, checking locations of the drill collars, and a brief examination of core samples selected to observe the nature of the Cu mineralization and a range of alteration types logged by NGEx geologists.

In Behre Dolbear's opinion, verification was adequate to confirm that, as represented by NGEx, Josemaría was a Cu (Au) mineralized deposit associated with high level siliceous porphyry intrusives and associated breccias, that it contained significant disseminated and vein copper mineralization, both oxide and sulphide, and displayed alteration types characteristic of a porphyry environment.

12.1.3 Amec Foster Wheeler (2014)

QA/QC

A review of the 2013–2014 QA/QC data was conducted. Elements reviewed included twin-sample duplicate data, pulp duplicate data, standard reference material data, and blank data. Findings were:

- Twin-sample duplicate data were within acceptable limits

- Examination of 38 twin-sample pairs showed no failures
- Examination of 39 coarse duplicates showed no failures
- Examination of 38 pulp duplicates showed one failure for Cu and three failures in the Au duplicates; however, as the failure rate was below the generally accepted 10% threshold, the analytical precision during the 2013–2014 NGEx exploration program is considered acceptable
- The biases calculated for Cu in the SRM data ranged between 2.4% and 6.5%; Au ranged between -1.2% and 8.6%. The laboratory accuracy for this reference material is questionable and should be investigated
- Examination of 75 coarse blanks showed that no significant contamination occurred during sample preparation.

Database

Amec Foster Wheeler reviewed the drilling database, which contains 126 drill holes. No errors which would affect Mineral Resource estimation were found.

12.2 Los Helados

Where data verification has been completed as part of technical reports for Josemaría, the findings from the reports are summarized in the following sub-sections. More detailed information can be found in the cited reports.

12.2.1 Charchaflié and Le Couteur, 2012

Following data verification that included checking of assay values for surface, RC and core samples, witness sampling, drill collar location checks, and a petrographic review, Charchaflié and Le Couteur concluded:

"Verification was adequate to conclude that Los Helados was a Cu–Au mineralized deposit associated with high-level siliceous porphyry intrusions and associated breccias, the deposit contained significant disseminated and vein chalcopyrite, and displayed alteration types characteristic of a porphyry environment."

12.2.2 Behre Dolbear (2013)

Data verification included witness sampling; QA/QC data reviews; spot checks of the assay database against assay certificates; and the lithology and alteration information in drill core were reviewed and checked against the drill logs. No issues that would affect Mineral Resource estimation were noted from the reviews.

12.2.3 Amec Foster Wheeler (2014)

Data verification comprised checking drill collar locations in the field; review of selected Au, Ag, and Cu assays in the database against original assay certificates; checks on geological logging consistency; checks on collar elevations in the database against digital terrain model elevations; down-hole survey deviations; and checks on QA/QC data.

Amec Foster Wheeler concluded that the data verification programs undertaken on the data collected from the Project adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposit, and adequately support the geological interpretations, the analytical and database quality. The data is considered sufficiently reliable to be used in Mineral Resource estimation and preliminary mine planning at the PEA level.

12.3 Comments on Section 12

The QP considers that a reasonable level of verification has been completed at Los Helados and Josemaría during the work conducted to date, and that no material issues would have been left unidentified from the verification programs undertaken.

Mineral Resource estimates and preliminary mine planning can be supported by the data collected.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Metallurgical Testwork

13.1.1 Introduction

The Josemaría and Los Helados metallurgical testwork programs were conducted at SGS Minerals S.A. (SGS) in Santiago, Chile. Three separate reports were produced by SGS, two for the Los Helados Project and one for the Josemaría Project (two distinct and separate test work programs compiled into a single report):

- Programa Metalúrgico de Conminución y Flotación en Mineral de Cobre - Oro, Proyecto Los Helados - 2013
- Programa Metalúrgico de Conminución y Flotación en Mineral de Cobre - Oro, Proyecto Los Helados – Fase II - 2015
- Programa Metalúrgico de Conminución y Flotación en Mineral de Cobre - Oro, Proyecto Josemaría – Fase I y Fase II – 2015.

Vendor testing was also conducted by Thyssenkrupp on selected samples from the Los Helados deposit.

The main activities completed during the development of the metallurgical test program in support of the PEA were:

- Sample selection for the metallurgical test programs
- Chemical characterization including mineralogical analysis
- Physical characterization
- Gold recovery using gravity processing techniques
- Leaching of the copper and gold oxide ore types (Josemaría deposit only)
- Copper, gold and silver recovery using conventional sulphide flotation practices
- Settling testwork.

13.2 Josemaría

13.2.1 Geometallurgical Domains

Two phases of metallurgical testwork have been completed at Josemaría. Sample selection for the Phase I metallurgical test program was based on the then current geological model for the deposit which divided the deposit into five geometallurgical domains as follows:

- Copper oxide
- Gold oxide
- Transitional
- Upper fresh sulphide zone
- Lower fresh sulphide zone.

Composite samples were selected to represent each of these zones (Table 13-1).

Following the completion of the Phase I program, an updated geological model was developed for Josemaría. Accordingly, during the Phase II testwork program, the sample selection was modified to reflect this revised interpretation of the geometallurgical domains, and now divided the deposit into four zones as follows:

- Supergene
- Rhyolite
- Tonalite
- Porphyry.

Composite samples representing each of these four zones were created (Table 13-2).

The Phase II program included the selection of 25 variability samples for comminution and flotation testing.

13.2.2 Head Sample Characterization

A representative split from each of the five composite samples from Phase I and four composite samples of Phase II were chemically analyzed for contained elements. The average of the elements analyzed is shown in Table 13-3 and Table 13-4.

The results highlighted the variation between the composites with respect to Cu grade, soluble copper (Cu sol) content, S content and As content, and that the composites are likely to be different in nature with respect to mineralogy and physical characteristics.

13.2.3 Mineralogy

A QemScan (scanning electron microscope) mineralogical analysis was completed on representative splits for each of the lithology composite samples generated in both the Phase I and II programs to determine the mineral composition of each sample being tested. This mineralogical analysis assists in the development of the optimal process flowsheet for the orebody tested. Knowledge of the feed sample mineralogy assists in the improvement of metal recoveries, concentrate metal grades and the quality of final concentrates produced.

Table 13-1: Composite Description, Josemaría Phase I

Deposit Zone	Depth from Surface (m)	Proportion Of Cu This Zone Represents In The Deposit (%)	Proportion Of Tonnage This Zone Represents In The Deposit (%)	Sample ID
Oxide-rich Au	Surface	1	2	Oxide Au
Oxide-rich Cu	Surface	4	3	Oxide Cu
Transitional	40 m from the base of the oxide zone	12	8	Transition
Sulphide Upper Fresh	100 to 300	34	32	Upper Fresh
Sulphide Lower Fresh	> 300 m depth	50	55	Lower Fresh

Table 13-2: Composite Description, Josemaría Phase II

Zone of the Deposit	Main Characteristic	Proportion Of Cu This Zone Represents In The Deposit (%)	Proportion Of Tonnage This Zone Represents In The Deposit (%)	Sample ID
Supergene	Mineralogical enrichment zone	8	4	Supzone
Rhyolite	Lithology	21	24	Rhyzone
Tonalite	Lithology	55	54	Tonzone
Porphyry	Lithology	16	18	Porzone

Table 13-3: Head Grade Chemical Characterization, Josemaría Phase I

Sample ID/Test	CuT %	Cu Sol %	Fe %	S %	Au g/t	Ag g/t	Mo ppm	As ppm	Hg ppm
Upper Fresh	0.402	<0.005	3.32	3.34	0.335	1.5	74	69	<2
Lower Fresh	0.346	<0.005	3.27	3.21	0.233	2.7	50	156	<2
Transition	0.527	0.054	3.53	2.39	0.273	2.3	71	41	<2
Oxide Au	0.029	NR	4.01	0.43	0.393	2.4	64	13	-
Oxide Cu	0.298	NR	3.88	0.46	0.226	2.9	70	<1	-

Note: CuT = total copper; Cu sol = soluble copper. NR = No test result available

Table 13-4: Head Grade Chemical Characterization, Josemaría Phase II

Sample ID/Test	CuT %	Cu Sol %	Fe %	S %	Au g/t	Ag g/t	Mo ppm	As ppm	Hg ppm
Supzone	0.617	0.047	2.95	1.34	0.32	1.6	60.5	11	<2
Rhyzone	0.338	0.013	3.40	3.48	0.22	0.6	98.5	50	<2
Tonzone	0.331	0.003	3.01	1.16	0.25	1.3	87.0	13	3
Porzone	0.306	0.005	2.45	2.39	0.33	1.6	50.0	29	<2

Note: CuT = total copper; Cu sol = soluble copper.

The mineralogical analysis highlighted the variation in pyrite to copper sulphide ratios seen in the different zones, with the highest ratio reported in the rhyolite zone:

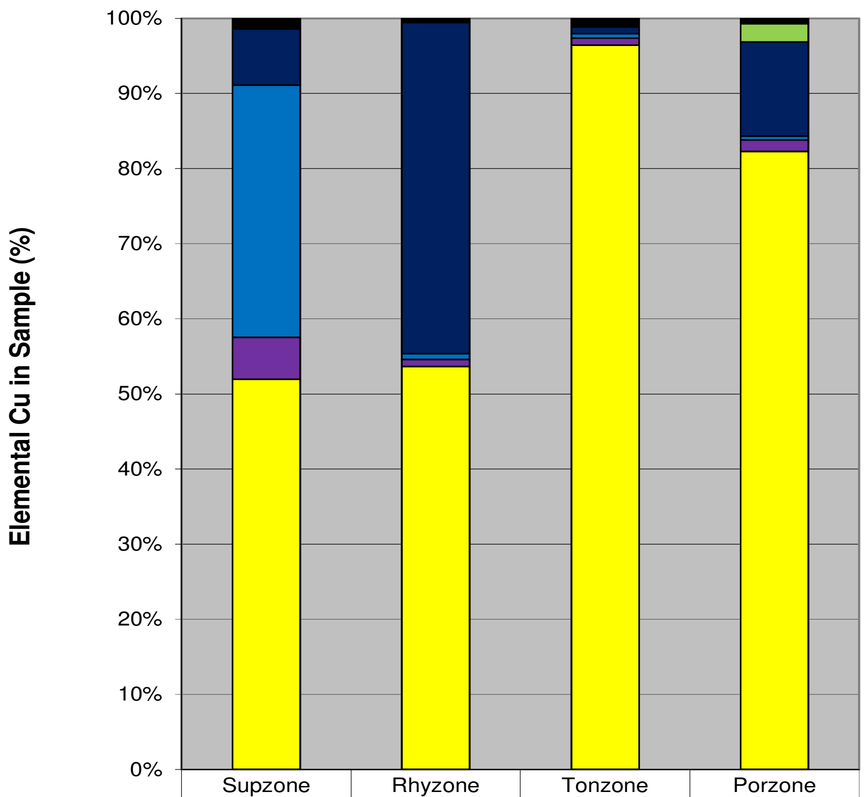
- Rhyzone (Rhyolite zone) composite: 10.7:1
- Supzone (Supergene zone) composite: 1.5:1
- Tonzone (Tonalite zone): 2.3:1
- Porzone (Porphyry zone): 4.4:1.

The higher the pyrite to copper sulphide ratio, the more difficult it can be to separate copper minerals from pyrite using conventional sulfide flotation techniques.

Chalcopyrite comprised the main source of copper mineralization in all four samples. While all of the samples contained secondary copper sulphide minerals, the content and sulphide type was different for each sample. These differences have the potential to impact both copper recoveries and final copper concentrate grades (Figure 13-1).

The two composite samples with the highest secondary copper sulphide proportions are the Supzone and Rhyzone composite samples, which deported main secondary sulphide minerals of chalcocite and covellite respectively. The other two composite samples reported lower proportions of secondary copper sulphide minerals.

Figure 13-1: Elemental Copper Deportment, Josemaría



	Supzone	Rhyzone	Tonzone	Porzone
Others	1,29	0,47	1,15	0,71
Tennantite/Enargite	0,10	0,07	0,00	2,43
Covellite	7,52	44,11	0,89	12,53
Chalcocite	33,56	0,75	0,59	0,54
Bornite	5,59	0,94	0,93	1,52
Chalcopyrite	51,94	53,67	96,44	82,27

Sample

Note: Figure prepared by Amec Foster Wheeler, 2015. Note, the table accompanying the figure uses the Spanish protocol where decimal points are represented by commas. So 1,29 = 1.29.

13.2.4 Physical Characterization

In the first phase of the physical characterization testwork program, testwork was carried out on representative splits for each of the five composite samples. The characterization work included Bond work index (Bwi), Bond rod work index (Rwi), abrasion index (Ai), physical parameter tests including SAG mill competency (SMC) and SAG power index (SPI) testing, and SG tests. Average results are included in Table 13-5.

Table 13-5: Composite Sample Physical Characterization, Josemaría Phase I

Sample ID/Test	Specific Gravity	Bond Ball BWi (kWh/mt)	Bond Rod RWi (kWh/mt)	Bond Abrasion index Ai	SMC (A x b)	SPI (min)
Upper Fresh	2.80	10.9	11.9	0.111	45.1	98
Lower Fresh	2.75	12.3	12.3	0.120	50.3	91
Transition	2.79	11.9	11.3	0.119	58.4	69
Oxide Au	2.78	11.8	11.0	0.107	92.0	59
Oxide Cu	2.75	12.2	11.4	0.064	50.0	79

Using the SMC test results, the Upper Fresh, Lower Fresh, and Oxide Cu samples can be classified as medium–hard material; the Transition sample can be classified as moderately soft material; and the Oxide Au sample can be classified as soft material. All of the samples are classified as medium hard using the SPI test procedure. The descriptive classifications used compare the results of the individual test to a database of historical data collected on material tested by these methods.

The Bwi and Rwi results indicate that all of the samples tested are moderately hard. Finally, all the samples tested reported a low Ai classification. The results indicate that both the upper and lower fresh samples can be processed at high throughput rates and the Transition sample at very high throughput rates using a conventional SAG–ball mill comminution circuit and with low wear and grinding media consumption rates. The Oxide samples will not be processed in the combined plant.

In the Phase II testwork program, physical characterization test work was carried out on four composite samples and 25 variability samples. Work completed included Bwi, Rwi, SMC, Ai, and specific gravity tests. Results are shown in Table 13-6 for the composite samples and Table 13-7 for the variability samples.

The results show that there are differences in the hardness of the material within each zone defined (Table 13-8). The Supergene zone includes material classified as very hard to soft. The Rhyolite zone included material classified as hard to moderately soft. The Tonalite and the Porphyry zones reported lower variability in terms of A x b values; the Tonalite zone reported material classified as very hard to hard, while the Porphyry zone reported material classified as hard to medium.

Table 13-6: Composite Sample Physical Characterization, Josemaría Phase II

Sample ID/Test	Specific Gravity (t/m^3)	Bond Abrasion Index Ai
Supzone	2.785	0.161
Rhyzone	2.849	0.169
Tonzone	2.892	0.206
Porzone	3.114	0.161

Table 13-7: Variability Sample Physical Characterization, Josemaría Phase II

Zone/Parameter	Sample ID/Test	Specific Gravity	Bond Ball BWi (kWh/mt)	Bond Rod RWi (kWh/mt)	SMC (A x b)
Supergene	VAR 1 to VAR 7	2.722 to 3.131	10.44 to 18.73	9.85 to 16.29	29.3 to 74.6
Rhyolite	VAR 8 to VAR 13	2.792 to 3.111	8.81 to 11.52	9.11 to 13.47	35.2 to 61.9
Tonalite	VAR 14 to VAR 18	2.695 to 2.808	13.94 to 17.71	13.32 to 14.45	27.0 to 35.6
Porphyry	VAR 19 to VAR 25	2.742 to 2.911	11.24 to 14.76	10.51 to 12.49	36.7 to 50.8

Table 13-8: Physical Hardness Results

Lithology	A x b Range		
	From	To	Average
Supergene	29.3	74.6	46.7
Rhyolite	35.2	61.9	46.1
Tonalite	27.0	37.2	31.9
Porphyry	36.7	50.8	42.4

13.2.5 Gravity Recoverable Gold

Standard Knelson three-stage gravity recoverable Au tests were performed. The results indicate that the deposit does not contain appreciable free Au and that most of the Au in the deposit is contained in sulphide minerals. This conclusion is supported by the results of the sulphide flotation test work which produced high Au recoveries. The results do not support incorporation of a gravity-recoverable Au circuit into the proposed processing flowsheet.

13.2.6 Conventional Flotation

The Phase I sulphide flotation test program was developed for the production of an Au–Ag rich Cu concentrate processing the Transition, Upper Fresh and Lower Fresh composites.

Two separate locked cycle tests (LCTs) were completed utilizing two different sets of process conditions (Figure 13-2).

Variables included:

- Rougher flotation:
  - Primary grind feed size effect
  - Collector effect
  - Frother effect
  - Feed solids percentage effect
  - pH effect for pyrite depression
  - Rougher stage flotation residence time.
- Cleaning flotation:
  - Rougher concentrate regrind size effect
  - First stage cleaning pH effect
  - First cleaning stage flotation residence time.

The samples tested reported high global Cu and Au grades and recoveries using conventional sulphide flotation. Some impurities were reported at mid-levels in the final concentrates produced. However, this was considered to be an artifact of the sample selection process for the Phase I testwork. A different sample selection methodology was employed for Phase II testwork, based upon an updated geological model.

The Phase II sulphide flotation test program was conducted on the Supzone, Rhyzone, Tonzone and Porzone selected composite samples. Variables tested in these open cycle tests (OCTs) were the same as those noted for Los Helados material in the Phase II testwork for that deposit (see Section 13.3).

One LCT was completed for the selected and OCT-optimised circuit conditions for the Supzone, Rhyzone, Tonzone and Porzone composite samples. Table 13-9 and Table 13-10 show the final results for each sample from the locked cycle tests, based on the average of the last three flotation cycles.

In general, the samples tested reported high Cu, Au and Ag recoveries using conventional sulphide flotation. The concentrates can be considered saleable due to the Cu concentrate grade and low impurity levels

Figure 13-2: Flotation Block Flow Diagram, OCT and LCT Modes for Los Helados and Josemaría

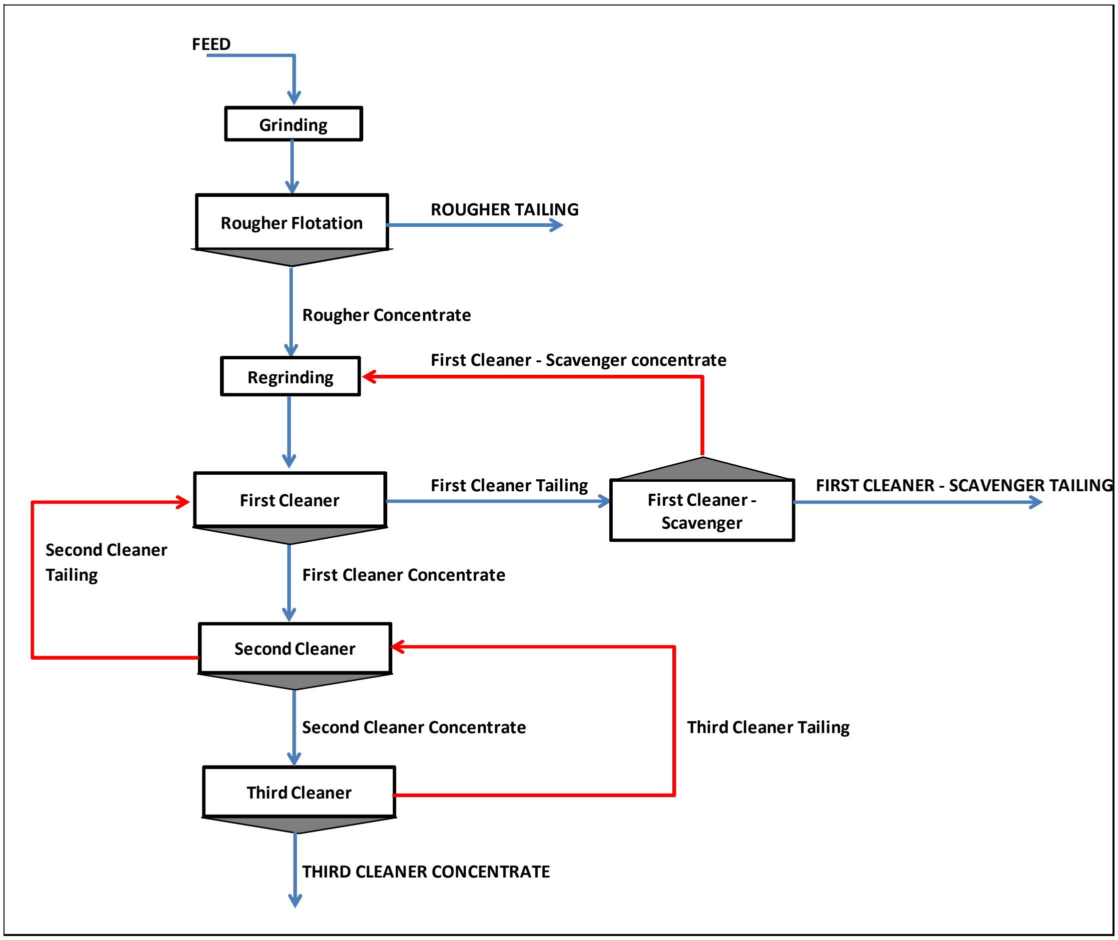


Figure prepared by Amec Foster Wheeler, 2015.

Table 13-9: Composite Samples Metal Recovery from Flotation LCT, Josemaría Phase II

Sample ID	Calculated Feed Cu Grade %	Mass to Concentrate %	Global Recovery to Final Concentrate				
			Cu %	Au %	Ag %	Fe %	S %
Supzone	0.61	1.74	85.3	72.2	78.3	15.0	48.1
Rhyzone*	0.32	0.98	89.0	59.9	68.1	7.9	10.4
Tonzone	0.33	1.24	90.6	77.0	51.1	10.3	35.6
Porzone*	0.29	1.28	90.0	62.6	60.3	14.7	22.2

Table 13-10: Composite Samples Elements and Impurities Contained in the LCT Final Concentrate, Josemaría Phase II

Element	Final Concentrate Grades			
	Supzone	Rhyzone	Tonzone	Porzone
Calculated feed Cu grade %	0.61	0.32	0.33	0.29
Cu %	30.0	28.9	24.3	20.3
Au g/t	13.7	11.0	18.0	13.7
Ag g/t	52.4	49.0	48.1	54.8
Fe %	25.4	25.9	23.7	31.6
S %	36.2	36.2	28.3	37.1
Cu Sol %	0.353	0.105	0.093	0.021
Cd %	0.003	0.003	0.004	0.002
Zn %	0.544	0.111	0.187	0.161
As %	0.07	0.308	0.095	0.20
Insoluble %	7.47	8.5	15.7	11.94
Hg ppm	0.8	3.1	1.0	0.5
Sb %	0.008	0.02	0.033	0.026
Cl %	0.054	0.018	0.009	0.072

A total of 25 variability samples were tested using OCTs. Finally, 10 of the 25 variability samples were selected for LCTs. As expected, due to the variable mineralogy differences between the composites tested, there are differences in the copper recoveries for each of the variability samples and differences in the final copper concentrates produced (Table 13-11 to Table 13-13). Optimisation for each mineralogy will require a specific set of flotation conditions for maximum metal recoveries and copper concentrate grades.

Table 13-11: Variability Samples Metal Recovery from Flotation LCT, Josemaría Phase II

Sample ID	Calculated Feed Cu Grade %	Mass to Concentrate %	Global Recovery to Final Concentrate				
			Cu %	Au %	Ag %	Fe %	S %
VAR 3	0.65	1.71	72.5	66.3	71.6	10.7	54.4
VAR 7*	0.39	1.07	80.2	43.5	69.0	7.2	45.1
VAR 9*	0.37	1.06	88.1	62.2	78.7	13.6	17
VAR 10*	0.35	1.54	90.5	69.1	75.4	30.5	33.9
VAR 12**	0.33	2.27	89.8	75.0	77.4	48.3	55.7
VAR 14	0.40	1.46	92.2	75.8	67.2	13.2	23.9
VAR 16	0.36	1.47	90.7	64.1	76.6	9.4	60.5
VAR 18*	0.25	1.07	82.6	57.5	75.0	10.8	46.7
VAR 20*	0.24	1.22	82.4	57.7	43.0	8.6	13.0
VAR 25*	0.30	1.38	85.4	53.1	55.5	9.0	18.6

Table 13-12: Variability Samples Elements and Impurities Contained in the LCT Final Concentrate, Josemaría Phase II

Element	Final Concentrate Grades				
	VAR 3	VAR 7	VAR 9	VAR 10	VAR 12
Calculated Feed Cu grade %	0.65	0.39	0.37	0.35	0.33
Cu %	27.7	29.5	30.7	20.8	13.1
Au g/t	7.1	7.1	9.8	7.0	5.5
Ag g/t	33.1	54.7	35.9	45.2	48.7
Fe %	21.6	21.3	26.5	27.0	40.8
S %	31.8	30.2	38.1	35.2	46.4
Cu Sol %	0.76	0.435	0.285	0.175	0.174
Cd %	<0.001	0.002	0.004	0.004	0.002
Zn %	0.066	0.093	0.035	0.196	0.122
As %	0.086	0.064	0.273	0.464	0.300
Insoluble %	17.41	21.8	6.38	13.28	5.29
Hg ppm	1.7	1.1	3.2	1.5	1.7
Sb %	<0.005	<0.005	0.04	<0.005	0.020
Cl %	0.018	0.045	IS	0.018	0.018

Table 13-13: Variability Samples Elements and Impurities Contained in the LCT Final Concentrate, Josemaría Phase II

Element	Final Concentrate Grades				
	VAR 14	VAR 16	VAR 18	VAR 20	VAR 25
Calculated feed Cu grade %	0.40	0.36	0.25	0.24	0.30
Cu %	25.4	22.5	19.7	16.2	18.7
Au g/t	14.9	11.0	8.2	7.8	8.8
Ag g/t	43.3	78.7	76.3	21.8	52.3
Fe %	26.9	24.7	23.6	18.7	18.5
S %	31.4	28.2	29.2	23.9	22.2
Cu Sol %	0.143	0.07	0.102	0.089	0.108
Cd %	0.002	0.004	0.01	0.002	0.008
Zn %	0.369	0.219	0.327	0.041	1.005
As %	0.033	0.16	0.36	0.007	0.24
Insoluble %	29.16	32.97	23.70	20.98	28.2
Hg ppm	<0.1	0.2	<0.1	0.7	0.6
Sb %	<0.005	0.078	0.009	<0.005	0.41
Cl %	0.018	0.027	0.018	0.018	0.036

13.2.7 Recovery Estimates

Copper Recovery

The data obtained from the Phase II metallurgical test program were used to develop a relationship between feed Cu head grade and final Cu recovery to concentrate for each of the lithologies studied. In the case of the Supergene lithology, however, a fixed recovery of 85.3% of the feed Cu content was considered. These relationships evaluated the results from both OCTs and LCTs, and reported reasonable correlations in each case.

The metallurgical test program algorithms that were developed are:

- *Rhyolite - Cu Recovery (%) = 56.472 x (Cu Head Grade (%)) + 68.696*
- *Tonalite - Cu Recovery (%) = 61.985 x (Cu Head Grade (%)) + 68.856*
- *Porphyry - Cu Recovery (%) = 41.403 x (Cu Head Grade (%)) + 74.953*
- *Supergene – 85.3% of feed content – Fixed.*

The algorithms are bounded by the lower 10^{th} (0.22% Cu) and upper 90^{th} percentile (0.45% Cu) with respect to the Cu feed grade. The minimum Cu recoveries are therefore 81.1% for rhyolite, 82.5% for tonalite and 84.1% for porphyry, and the maximums are 94.1% for rhyolite, 96.7% for tonalite and 93.6% for porphyry.

Gold Recovery

It was decided to use a fixed gold recovery for each lithology at this stage. Further testwork is required to confirm if alternate correlations exist. The actual gold recoveries are shown in Table 13-14 by lithology composite.

Silver Recovery

It was decided to use a fixed silver recovery for each lithology at this stage. Further testwork is required to confirm if alternate correlations exist. Test results for silver were included in Table 13-14.

13.2.8 Metallurgical Variability

The metallurgical testwork to date is based on samples which adequately represent the variability for this stage of study. Additional variability testwork will be required to support more detailed studies. Physical characterisation was conducted on variability samples along with some preliminary flotation testwork. The results indicate that additional tests will be required to confirm the physical characteristics of the different lithological zones and to confirm the copper recovery algorithms developed and possibly develop gold and silver algorithms.

13.2.9 Deleterious Elements

No major issues with deleterious elements were noted from the testwork completed. However, there are some zones within the Josemaría deposit that have elevated arsenic levels. Mill feed blending strategies should be employed to generate flotation concentrates that have high Cu grades whilst minimizing the As and other deleterious element contributions to levels below penalty impositions in the final concentrate.

13.3 Los Helados

13.3.1 Geometallurgical Domains

In Phase I of the program, tests were conducted on three different composite samples representing different depths within the deposit (Table 13-15). Each composite was made up of 20 individual core sub-samples. The aim at the time was to select samples that were representative of the deposit grades and lithologies from three depth intervals. Upon completion of the first metallurgical testwork program, the deposit was assumed to be homogeneous throughout with respect to chemical and physical characteristics.

Table 13-14: Gold and Silver Recoveries – Josemaría

Lithology	Au Recovery %	Ag Recovery %
Supergene	67.2	73.0
Rhyolite	61.7	74.9
Tonalite	72.6	67.5
Porphyry	59.2	52.9

Table 13-15: Composite Description, Los Helados Phase I

Deposit Zone	Depth From Surface (m)*	Proportion of Cu This Zone Represents In The Deposit (%)	Proportion of Tonnage This Zone Represents In The Deposit (%)
Upper	0 to 200–250	6	9
Intermediate	200–250 to 500–600	32	34
Deep	deeper than 500–600	62	57

Note: * zones are defined in the block model based on geological interpretation, and therefore have a variable depth

An updated geological model was subsequently developed for Los Helados, which led to a second testwork phase focusing primarily on the behaviour of the deposit at different treatment stages or periods within the life-of-mine (LOM) production plan. In the second round of metallurgical testwork the deposit homogeneity was confirmed. Three separate composites were created representing production years 1–7, production years 8–15 and production years 16 onward (16+) of the LOM production plan (Table 13-16).

The portions of the individual samples that remained following creation of the Phase II samples were used to create 30 variability samples for comminution and flotation testwork.

13.3.2 Head Sample Characterization

A representative split from each of three different composite samples from each of the Phase I and II programs were chemically analyzed for contained elements. The results show that there was some variability in Cu feed grades for all of the composite samples, and low impurity levels throughout the deposit (Table 13-17 and Table 13-18).

Table 13-16: Composite Description, Los Helados Phase II

Deposit Zone	Main Characteristic	Proportion Of Tonnage This Zone Represents In The Deposit (%)	Sample ID
Years 1–7	Early production period	13	Years 1–7
Years 8–15	Mid production period	17	Years 8–15
Year 16 onward	Later production period	70	Year 16+

Table 13-17: Head Grade Chemical Characterization, Los Helados Phase I

Sample ID/Test	CuT %	Fe %	S %	Au g/t	Ag g/t	Mo ppm	As ppm	Hg ppm
Upper zone	0.293	3.71	4.29	0.244	0.85	4	20	<2
Intermediate zone	0.468	3.72	3.61	0.205	1.45	71	7	<2
Deep zone	0.812	4.14	2.96	0.249	2.70	54	<1	<2

Table 13-18: Head Grade Chemical Characterization, Los Helados Phase II

Sample ID/Test	CuT %	Cu Sol %	Fe %	S %	Au g/t	Ag g/t	Mo ppm	As ppm	Hg ppm
1-7 years	0.543	0.006	3.28	2.78	0.17	2.7	30	5	<0.1
8-.15 years	0.585	0.003	4.34	3.59	0.22	2.5	28	4	<0.1
+16 years	0.456	0.003	3.88	3.19	0.17	0.5	66	5	<0.1

Note: CuT = total copper; Cu Sol = soluble copper.

13.3.3 Mineralogy

A QemScan mineralogical analysis was completed on representative splits of each of the samples for the Phase I and Phase II programs to understand the mineralogy of each of the zones in the deposit. The analysis showed that the samples contain mainly quartz and phyllosilicates, indicating that the amount and type of gangue mineral is consistent at different depths within the deposit.

Other minor minerals noted in the samples include feldspars, Fe and Ti oxides, pyrite, and Cu sulphide minerals.

The pyrite to Cu sulphide weight ratio is shown in Table 13-19. The higher the pyrite to Cu sulphide ratio, the more difficult it can be to separate Cu minerals from pyrite using conventional sulfide flotation techniques.

Table 13-19: Los Helados - Py:Cp Ratios.

Sample	Py : Cp Ratio
Upper	6.4
Intermediate	2.8
Deep	0.8
1-7 years	1.5
8-15 years	2.5
+16 years	2.7

In order to improve this separation, the Phase II testwork program targeted:

- Use of optimum regrind sizes in cleaner flotation
- Pyrite depression using lime buffering
- Selective flotation techniques using selective collectors.

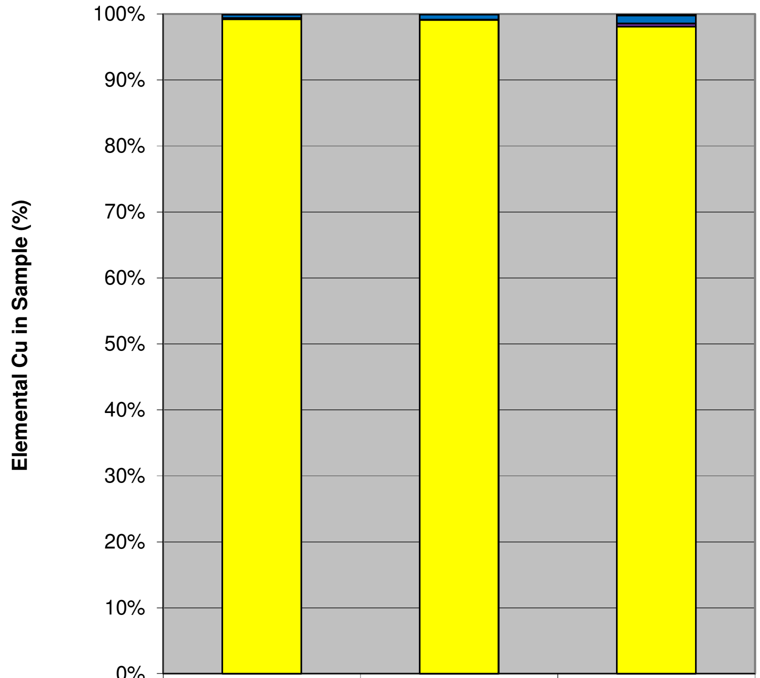
The mineralogical analysis indicated that the main Cu sulphide mineral present is chalcopyrite (97% average by weight) with traces of chalcocite/digenite and bornite (Figure 13-3).

13.3.4 Physical Characterization

Physical characterization testwork was carried out on representative splits for each of the three samples for the Phase I program. The characterization work included Bond ball mill work indices (BWi), Bond rod mill work indices (RWi), abrasion indices (Ai), SAG power index (SPI) testing, and semi-autogenous grind (SAG) mill competency (SMC) tests. The average results for these tests are provided in Table 13-20.

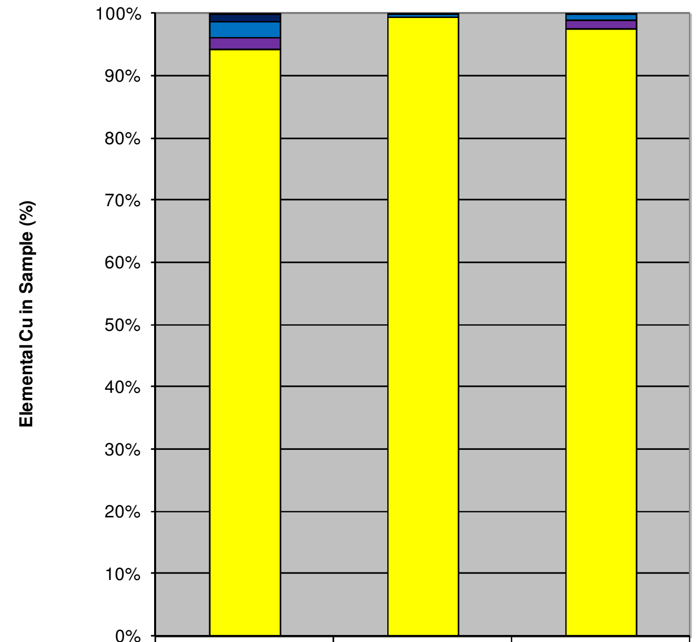
The results show that the three composite samples tested can be classified as hard material according to the SMC test results. This classification was also confirmed by the results of the SPI test conducted. In relation to the Bwi and Rwi results, the three composite samples tested can be considered as moderately hard. Finally, all the samples tested reported a low Ai classification (low to moderate consumption rates of grinding media and other process plant wear consumables).In Phase II of the program, physical characterization test work was carried out on three composite samples and 30 variability samples. Specifically, the characterization work included Bwi, Rwi and SMC testing. Additional work included specific gravity and Ai determinations for each of the three composite samples (Table 13-21). The variability test results (Table 13-22) show that the hardness of the material within each zone defined is very homogeneous and classified as very hard material (A x b < 30) to hard material (A x b 30 to 38). This confirmed the Phase I tests results that the deposit is homogeneous from a hardness perspective and contains very competent material throughout.

Figure 13-3: Elemental Copper Deportment, Los Helados



	1-7 years	8-15 years	+ 16 years
Tennantite/Enargite	0,06	0,00	0,14
Covellite	0,03	0,06	0,05
Chalcocite	0,55	0,77	1,25
Bornite	0,14	0,07	0,49
Chalcopyrite	99,22	99,11	98,07

Sample



	Upper zone	Intermediate zone	Deep zone
Enargite/Tennantite	0.28	0.00	0.00
Covellite	1.06	0.06	0.07
Chalcocite/Digenita	2.60	0.53	1.03
Bornite	1.90	0.07	1.36
Chalcopyrite	94.16	99.34	97.54

Note: Phase I to right, Phase II to left. Figure prepared Amec Foster Wheeler, 2015. Table to the left uses the Spanish convention where decimal points are represented as commas, e.g. 0,06 = 0.06.

13.3.5 Gravity Recoverable Gold

Standard Knelson three-stage gravity recoverable gold tests were conducted. The results indicate that the deposit does not contain appreciable free Au and that most of the Au in the deposit is contained in sulphide minerals. This conclusion is supported by the results of the sulphide flotation test work which has good Au recoveries. The results do not support incorporation of a gravity-recoverable Au circuit into a proposed flowsheet.

13.3.6 Conventional Flotation

A sulphide flotation program was developed in the Phase I program on three fresh composite samples for the production of Au–Ag rich Cu concentrates, using a conventional sulphide flotation circuit flowsheet. The flotation program consisted of the evaluation of roughing and cleaning stages with the following variables assessed:

- Primary grind and cleaner regrind size effects
- Collector, frother and pulp solids percentage effect on rougher flotation
- Evaluation of pH on rougher and cleaner flotation stages.

For the Phase II program, the flotation testwork was performed on three new composites and 30 variability samples in order to improve the copper recoveries and grades from the first program and to understand the deposit variability. Flotation parameter evaluations were performed on the three composite samples, and the optimum parameters then applied to the variability samples in OCTs.

The flowsheet used was outlined in Figure 13-2. Variables for the OCTs included:

- Rougher flotation:
  - Primary grind feed size effect
  - Collector effect
  - pH and depressor effect for pyrite depression
  - Rougher stage flotation residence time.
- Cleaning flotation:
  - Rougher concentrate regrind size effect
  - pH and depressor effect for pyrite depression
  - First cleaning stage flotation residence time.

Table 13-20: Composite Samples Head Physical Characterization, Los Helados Phase I

Sample ID/Test	Specific gravity	Bond Ball BWi (kWh/mt)	Bond Rod RWI (kWh/mt)	Bond Abrasion index Ai	SMC Axb	DWi Kwh/m^3	Mia Kwh/t	Mih kWh/t	Mic kWh/t
Upper zone	2.78	16.03	16.3	0.081	31.9	8.54	23.5	18.2	9.4
Intermediate zone	2.82	17.10	16.4	0.155	29.1	9.31	25.4	20.1	10.4
Deep zone	2.83	16.12	15.8	0.185	28.1	9.50	26.2	20.8	10.7

Table 13-21: Composite Samples Head Physical Characterization, Los Helados Phase II

Sample ID/Test	Specific Gravity	Bond Abrasion Index (Ai)
Years 1–7	2.762	0.265
Years 8–15	2.792	0.223
Years 16+	2.760	0.197

Table 13-22: Variability Samples Physical Characterization Los Helados Phase II

Zone/Parameter	Sample ID/Test	Specific Gravity	Bond Ball BWi (kWh/mt)	Bond Rod RWi (kWh/mt)	SMC (A x b)
Years 1–7	VAR 1 to VAR 10	2.61 to 2.74	15.16 to 20.18	13.48 to 17.90	22.0 to 28.7
Years 8–15	VAR 11 to VAR 20	2.66 to 2.77	15.82 to 18.73	14.84 to 17.82	22.0 to 26.0
Years 16+	VAR 21 to VAR 30	2.66 to 2.76	15.57 to 18.92	14.53 to 18.28	23.0 to 31.8

The variables were optimised and then applied to the LCTs conducted on the composite and variability samples. Tests were predominantly completed using fresh (tap) water, although some initial OCTs were also conducted using seawater.

In general terms, the composite samples tested reported good results using conventional sulphide flotation with respect to global Cu and Au grades and recoveries (Table 13-23 and Table 13-24).

Three out of the 30 variability samples were additionally tested using LCTs. The variability samples tested reported high global Cu and Au recovery results using conventional sulphide flotation (Table 13-25 and Table 13-26). Thus, the recovery results from the variability samples confirm those for the composite sample LCTs.

In terms of third cleaner Cu concentrate grade, high recovery results were reported for the years 1–7 and years 8–15 composite samples. However, a low final copper concentrate grade was reported for the years 16+ composite sample. This is explained by the high percentage of pyrite estimated to be contained in the final concentrate (Table 13-27), because the increased pyrite recovered to the concentrate dilutes the recovered copper.

Table 13-23: Composite Samples Metal Recovery from Flotation LCT, Los Helados Phase II

Zone/Parameter	Calculated Feed Cu grade %	Mass to Concentrate %	Global Recovery to Final Concentrate				
			Cu %	Au %	Ag %	Fe %	S %
Years 1–7	0.522	1.59	91.1	69.7	77.8	15.5	19.3
Years 8–15	0.569	1.95	90.8	73.1	49.3	14.2	19.5
Years 16+	0.454	1.78	91.8	68.1	66.1	14.1	20.7

Table 13-24: Composite Samples Elements and Impurities Contained in the LCT Final Concentrate, Los Helados Phase II

Element	Final Concentrate Grades		
	Years 1–7	Years 8–15	Years 16+
Calculated feed Cu grade %	0.522	0.569	0.454
Cu %	29.9	26.5	23.4
Au g/t	6.5	8.3	6.8
Ag g/t	70	50	53
Fe %	28.1	29.5	31.8
S %	33.7	34.7	37.3
Cu Sol %	0.042	0.088	0.091
Cd %	<0.001	<0.001	<0.001
Zn %	0.284	0.062	0.108
As %	0.024	0.013	0.005
Insoluble %	6.17	8.58	7.52
Hg ppm	3.1	1.2	0.7
Sb %	<0.005	<0.005	<0.005
Cl %	0.021	0.031	0.011

Table 13-25: Variability Samples Metal Recovery from Flotation LCT, Los Helados Phase II

Zone/Parameter	Calculated Feed Cu Grade %	Mass to Concentrate %	Global Recovery to Final Concentrate				
			Cu %	Au %	Ag %	Fe %	S %
VAR 5	0.663	2.15	92.1	76.0	66.4	18.3	25.2
VAR 17	0.510	1.73	90.8	72.7	66.2	10.5	18.7
VAR 29	0.490	2.45	89.5	70.7	40.0	20.9	18.1

Table 13-26: Variability Samples Elements and Impurities Contained in the LCT Final Concentrate, Los Helados Phase II

Element	Final Concentrate Grades		
	VAR 5	VAR 17	VAR 29
Calculated feed Cu grade %	0.663	0.510	0.490
Cu %	28.3	26.8	17.9
Au g/t	9,0	7.0	7.4
Ag g/t	70	63	18
Fe %	28.5	27.7	36.6
S %	33.3	31.7	39.8
Cu Sol %	0.112	0.111	0.126
Cd %	<0.001	<0.001	<0.001
Zn %	0.132	0.097	0.036
As %	<0.005	<0.005	0.009
Insoluble %	5.03	7.12	4.31
Hg ppm	<0.1	0.4	0.7
Sb %	<0.005	<0.005	<0.005
Cl %	0.01	<0.005	0.013

Table 13-27: Pyrite Content Estimation in Feed and Concentrate LCT, Los Helados Phase II

Zone/Parameter	Sample ID	Calculated Feed Cu Grade %	Feed Estimated Pyrite Content %	Concentrate Cu Grade %	Concentrate Estimated Pyrite Content %
Years 1–7	Years 1–7	0.522	5.1	29,9	3.9
Years 8–15	Years 8–15	0.569	7.8	26,5	13.4
Years 16+	Years 16+	0.454	7.6	23,4	24.2
Years 1–7	VAR 5	0.663	6.02	28.3	7.73
Years 8–15	VAR 17	0.510	8.74	26.8	8.90
Years 16+	VAR 29	0.490	8.23	17.9	44.84

Additional optimization work will need to be conducted for the years 16+ years sample in order to improve the overall concentrate copper grade.

13.3.7 Recovery Estimates

Copper Recovery

The data obtained from both metallurgical test programs was used to develop a relationship between Cu head grade and final Cu recovery to concentrate. This relationship between Cu recovery and Cu head grade was determined considering the results from both the open and locked cycle tests and reported a good correlation.

The metallurgical test program algorithm that was developed is:

- *Cu Recovery (%) = 9.1316 x LN (Cu Head Grade %) + 97.485*

The algorithm is bounded by a lower value of 0.23% Cu and an upper value of 0.68% Cu with respect to the Cu feed grade. The minimum Cu recovery is therefore 84.2% and maximum is 93.9% of the contained feed Cu content.

Gold Recovery

A preliminary relationship between Cu recovery and Au recovery was anticipated during the first study stage but this could not be supported during the second stage of testing. It was decided to use a fixed Au recovery at this stage. Further flotation testwork on variability samples may determine if alternate correlations exist. A fixed global Au recovery estimate of 76% of the feed Au content is used.

Silver Recovery

During the first phase of testwork a relationship between Cu recovery and Ag recovery was developed but could not be substantiated by the second phase of testing. It was decided to use a fixed Ag recovery at this stage in the absence of an obvious relationship. A fixed global Ag recovery estimate of 60% of the feed Ag content is used.

13.3.8 Metallurgical Variability

The metallurgical testwork to date is based on samples which adequately represent the variability of the deposit with respect to physical and chemical characterisation for this stage of study. Additional testwork will be required to support more advanced mining studies. Physical characterisation was conducted on variability samples with relatively consistent results. Flotation open circuit tests confirmed that the deposit is reasonably homogeneous with respect to physical and chemical properties. Based upon the mining method proposed limited variability testing will be required going forward.

13.3.9 Deleterious Elements

No major deleterious elements issues were noted in the concentrates produced from the testwork completed. The concentrates are considered to be marketable without incurring penalties for deleterious elements.

13.4 Comments on Section 13

The QP notes:

- The samples tested for both the Josemaría and Los Helados deposits are considered to be representative of the mill feed to be treated in the combined processing facility
- High Cu recoveries were achieved for both the Josemaría and Los Helados deposits using a conventional sulphide flotation process. The process also reported relatively high Au and average Ag recoveries
- Concentrates containing saleable Cu grades were obtained using a conventional sulphide flotation process. Valuable Au and Ag concentrations also reported to the final Cu concentrate
- Low levels of concentrate impurities such as As, Cd and Hg reported to the final Cu concentrate, and are below the generally accepted levels at which penalties are imposed. For the Josemaría deposit attention should be paid to mill feed blending
- Settling test work was also completed on the Josemaría and Los Helados deposits but is not reported in Section 13. It was conducted on final flotation tailings material and produced the initial parameters for tailings thickening design
- Pyrite and some impurities are still reporting to the final flotation concentrate samples from both deposits. Since the flowsheet used for metallurgical testwork was fixed, there is potential that these impurities could be reduced, based on concentrate analyses and the mineralogies present, resulting in higher Cu concentrate grades
- Additional variability testwork should be developed for both deposits to confirm Cu, Au and Ag recovery algorithms and to improve Cu concentrate grades.

14.0 MINERAL RESOURCE ESTIMATES

The Mineral Resource estimate discussed in this section for Josemaría is a newly-updated estimate, based on additional drill data collected since the previous 2013 estimate.

The Los Helados resource estimate is unchanged from that described in Quinones et al., (2014).

14.1 Josemaría

14.1.1 Introduction

Mr Gino Zandonai prepared the updated Josemaría estimate. Mineral Resource estimates are based on 116 drill holes totalling 52,725 m of drilling, of which 34 holes (13,164 m) are RC and 82 holes (39,561 m) are core holes. Some early exploration holes which were drilled on the property but distal to the deposit were not included in the resource estimate. The total length of assayed intervals is 51,092 m and there are 27,344 assays.

14.1.2 Geological Models

A two-dimensional (2D) interpretation based on the logged data was completed by NGEx geologists on east–west oriented sections spaced 100 m apart. Two-dimensional lines were then exported from GEMS and imported into Leapfrog geological modelling software and the final three-dimensional (3D) wireframe solids were constructed.

Three separate geological models were constructed to guide resource estimation: lithology; alteration and mineral zones. These models were used with the assay data to develop an understanding of the main controls on mineralization, to provide input into the block model and to control the interpolation. The primary controls on mineralization at Josemaría are a combination of the mineral zones and lithologies, and the mineral zone wireframes were the primary controls for the interpolation, using hard boundaries between different zones. Three lithology solids (PMV, HBX and PORL) were also used in the interpolation.

14.1.3 Exploratory Data Analysis

Statistical analyses were performed for Cu, Au, Ag, S, Fe and As by lithological domain. Reviews included the number of samples, total length, minimum, maximum mean value, standard deviation, and co-efficient of variation (CV).

Copper and Au assay grades exhibit a moderate correlation. The coefficient of correlation between Cu and Au obtained from the least square linear regression is around 0.636, while the coefficient of correlation between Au and Ag is 0.475.

Hard boundaries were used between the different units during estimation.

14.1.4 Density Assignment

SG values used in estimation are outlined in Section 11. Average SGs for each mineral zone were calculated as summarized in Table 14-1.

14.1.5 Grade Capping/Outlier Restrictions

No capping was applied.

14.1.6 Composites

The drill hole assays were composited to 2 m to maintain the majority sampling interval (86% of assayed intervals at 2 m) and to avoid spreading composites across geological domains in case of bigger composite size. Geological codes for lithology, mineral zone and alteration were assigned to each composite. There are a total of 23,622 composites in the database, all of which have assay values assigned.

14.1.7 Variography

Experimental variogram analysis for Cu, Au, Ag, As, Fe and S was performed using the composites based on the mineral zone and post-mineral volcanic unit.

The experimental variography was performed using the Super VISOR 3-D variogram modeller software (Supervisor).

Directional variograms were explored within each domain. The best geospatial correlation of samples is described by omnidirectional variograms over any specific preferential orientation, demonstrating the widespread disseminated nature of the mineralization in the deposit.

Omnidirectional experimental variograms were fitted with single and multiple nested spherical models where applicable, these variograms describe the spatial continuity, in all directions, of the mineralization in the deposit. Down-hole variograms at smaller lags were used to determine the nugget effect which was then manually entered when calculating a 3D auto-fit model based on the omnidirectional variograms.

14.1.8 Estimation/Interpolation Methods

A 3D block model of the deposit was built with 25 x 25 x 15 m blocks for Mineral Resource estimation purposes. The block model covered an area of 1.5 km by 2.1 km on plan, and had a 1.5 km vertical extent.

Table 14-1: Density Data, Josemaría

RockType / Mineral Zone	SG
Post Mineral Volcanics (PMV)	2.58
Hydrothermal Breccia (HBX)	2.69
Late Porphyry (PORL)	2.65
Pyrite – Chalcocite (hypogene) (PyCC(h))	2.70
Pyrite - Chalcopyrite	2.65
Oxide (OX)	2.58
Supergene (PyCC(s))	2.72

The interpolation plan and the search distances for ordinary kriging (OK) and inverse distance weighting to the second power (ID2) methods were based on the geostatistical analysis and variogram parameters. According to this plan, total Cu, Au, Ag, As, S and Fe values were interpolated within the mineral zones in the model. All elements were interpolated using OK. The ID2 weighting method and nearest-neighbour (NN) method was performed only for Cu and Au for validation and checking purposes of the global bias.

OK and ID2 interpolation was done in a single pass. A minimum of two and a maximum of 50 composites, with maximum 15 composites from the same hole, were used for the interpolation to allow maximum spread of the data used to estimate blocks. For estimation of the kriging and block variance, a 3 x 3 x 3 discretization of the block was selected. The major, semi-major and minor axis of the search ellipse was set to the corresponding radius defined in by the omnidirectional variograms.

14.1.9 Block Model Validation

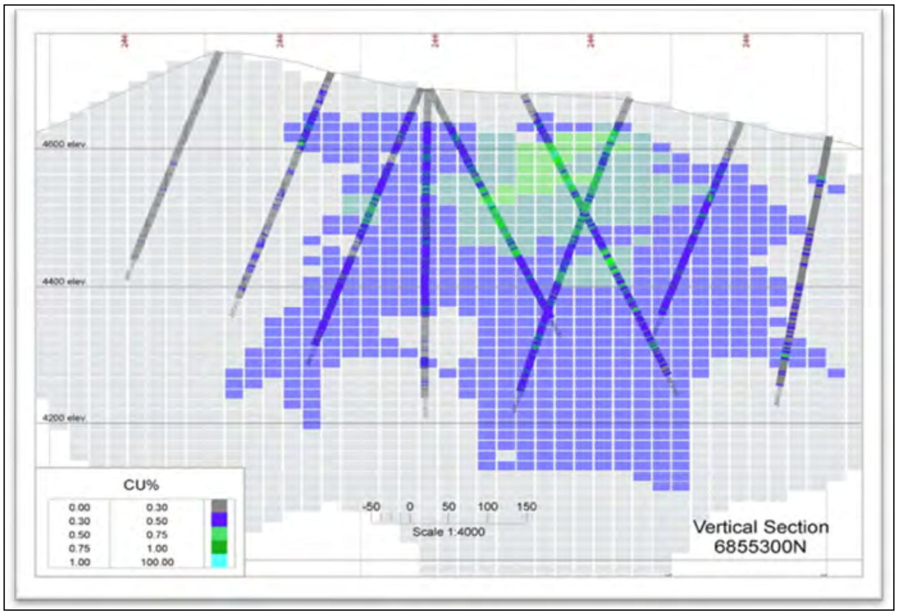
Validation steps included:

- Statistic validation comparing average grade of blocks and composites
- Swath plots comparing kriged block with NN and ID2 models
- Visual validation in plans and sections (Figure 14-1 and Figure 14-2).

The estimated block grades show good correlation with adjacent composite grades; however, due to the large volume of some of the mineralogical domains, there is trend to smooth the kriged block mean when compared to the composites mean

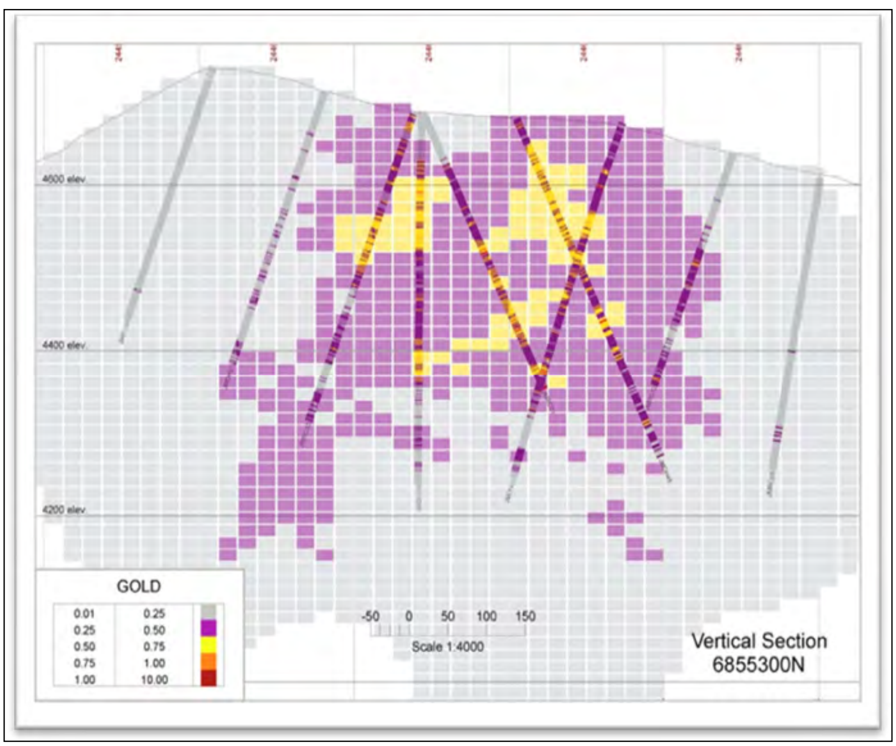
Swath plot results show a good comparison between the ID2 and OK estimate and, as expected, OK has smoothed the data against the NN estimates.

Figure 14-1: Copper Blocks with Drill Holes (Section 6855300N)



Note: Figure courtesy NGEx, 2015.

Figure 14-2: Gold Blocks with Drill Holes (Section 6855300N)



Note: Figure courtesy NGEx, 2015.

14.1.10 Classification of Mineral Resources

Mineral Resource classification uses the 2014 CIM Definition Standards. Classifications were based on a two-step process, as follows:

- Indicated: the distance to the nearest drill hole from the centre of the block was less than or equal to 75 m and there were at least three drill holes used for the grade interpolation and the kriging efficiency estimation was more than 0.5
- Inferred: the distance to the nearest drill hole from the block was 75 to 150 m and there were at least two drill holes used for the grade interpolation and the kriging efficiency estimation was less than 0.5.

Two smoothed buffer wireframes were created in Leapfrog as the final step; one at 75 m and one at 150 m. Inferred blocks inside the 75 m wireframe were re-classified as Indicated, while any Indicated blocks outside of the 75 m buffer but within the 150 m buffer were re-classified as Inferred.

A final phase of visual inspection of the resulting classification was performed for validation purposes.

14.1.11 Reasonable Prospects of Eventual Economic Extraction

In order to evaluate for reasonable prospects of eventual economic extraction, a Whittle pit shell was generated using the following parameters:

- Cu price: US$3.00/lb
- Mining cost: US$2.20/t
- Process cost (including general and administrative (G&A) costs): US$7.40/t processed
- Copper selling cost: US$0.35/lb
- Over-all pit slope angle: 42º.

The analysis was done based on the copper equivalent (CuEq) grades in the block model. CuEq was calculated using US$3.00/lb copper, US$1,400/oz gold and US$23/oz Ag and was based on Cu, Au and Ag recoveries obtained in metallurgical testwork on four composite samples representing the rhyolite, tonalite, porphyry and supergene zones. Copper recoveries for the rhyolite, tonalite and porphyry zones were calculated as a function of Cu grade, ranging from a low of 81% to a high of 97%. Copper recovery in the supergene zone was fixed at 85%. Gold recoveries were fixed between 62% and 73% and Ag recoveries were fixed between 53% and 75% depending on the zone.

14.1.12 Mineral Resource Statement

The Mineral Resource estimate assuming open pit mining methods is reported using the 2014 CIM Definition Standards. Indicated and Inferred classifications only have been estimated; no Measured Mineral Resources were classified.

The Mineral Resource estimate was prepared by Mr Gino Zandonai, RM CMC.

Mineral Resources are summarized in Table 14-2 and Table 14-3 for sulphide and oxide materials respectively. The estimate has an effective date of 7 August, 2015. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

As the Josemaría deposit is an early-stage project, no engineering or infrastructure data or studies are available to evaluate economic development parameters for the Mineral Resource. The base case cutoff grade of 0.20% CuEq for sulphide material (highlighted in Table 14-2) is based on the assumptions stated in footnotes 1 and 2 of Table 14-2 and 14-3, and 0.2 g/t Au for oxide material (highlighted in Table 14-3) was chosen based on comparison with other similar, nearby deposits. These projects provide useful benchmarks and have been used to select the base-case cutoff grade for oxide Josemaría Mineral Resources.

14.1.13 Factors That May Affect the Mineral Resource Estimate

Mineral Resource estimates may be affected by the following factors:

- Changes in interpretations of mineralization geometry and continuity of mineralization zones
- Input parameters used in the Whittle shell that constrains Mineral Resources amenable to open pit mining methods
- Metallurgical and mining recoveries
- Operating and capital cost assumptions
- Metal price and exchange rate assumptions
- Concentrate grade and smelting/refining terms
- Confidence in the modifying factors, including assumptions that surface rights to allow infrastructure such as tailings storage facilities and desalination plants to be constructed will be forthcoming.
- Delays or other issues in reaching agreements with local or regulatory authorities and stakeholders.
- Changes in land tenure requirements or in permitting requirements from those discussed in this Report.

Table 14-2: Mineral Resource Estimate (Sulphide) for Josemaría, Assuming Open Pit Mining Methods (basecase is highlighted)

Josemaría Indicated Mineral Resources (sulphide)								
	Tonnage	Grade				Contained Metal		
Cutoff (CuEq)	(million tonnes)	Cu (%)	Au (g/t)	Ag (g/t)	CuEq (%)	Cu (billion lbs)	Au (million oz)	Ag (million oz)
0.60	148	0.56	0.38	1.5	0.76	1.8	1.8	6.9
0.50	295	0.47	0.34	1.3	0.65	3.0	3.2	12.6
0.40	559	0.40	0.29	1.2	0.55	4.9	5.2	21.8
0.30	835	0.35	0.25	1.1	0.49	6.5	6.6	29.7
0.20	**1,066**	**0.31**	**0.22**	**1.0**	**0.44**	**7.4**	**7.4**	**34.5**
Josemaría Inferred Mineral Resources (sulphide)								
	Tonnage	Grade				Contained Metal		
Cutoff (CuEq)	(million tonnes)	Cu (%)	Au (g/t)	Ag (g/t)	CuEq (%)	Cu (billion lbs)	Au (million oz)	Ag (million oz)
0.50	9	0.37	0.28	1.1	0.52	0.1	0.1	0.3
0.40	85	0.31	0.23	1.0	0.45	0.6	0.6	2.7
0.30	236	0.28	0.19	0.9	0.38	1.4	1.4	6.8
0.20	**404**	**0.24**	**0.15**	**0.8**	**0.33**	**2.0**	**2.0**	**10.8**

Table 14-3: Mineral Resource Estimate (Oxide) for Josemaría, Assuming Open Pit Mining Methods (basecase is highlighted)

Josemaría Indicated Mineral Resources (oxide)						
	Tonnage	Grade		Contained Metal		Grade
Cutoff (Au g/t)	(million tonnes)	Au (g/t)	Ag (g/t)	Au (thousand oz)	Ag (thousand oz)	Cu (%)
0.40	10	0.46	1.4	150	460	0.18
0.30	23	0.40	1.3	290	950	0.16
0.20	**43**	**0.32**	**1.2**	**450**	**1,610**	**0.15**
0.10	77	0.25	1.0	610	2,520	0.13
Josemaría Inferred Mineral Resources (oxide)						
	Tonnage			Contained Metal		Grade
Cutoff (Au g/t)	(million tonnes)	Au (g/t)	Ag (g/t)	Au (thousand oz)	Ag (thousand oz)	Cu (%)
0.40	2	0.43	1.2	27	73	0.00
0.30	3	0.40	1.1	37	102	0.00
0.20	**4**	**0.34**	**1.0**	**48**	**145**	**0.00**
0.10	7	0.26	0.9	62	214	0.02

Notes to accompany Josemaría Mineral Resource tables

1. Mineral Resources have an effective date of 7 August, 2015. The Qualified Person for the estimate is Mr Gino Zandonai, RM CMC.
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
3. Sulphide Mineral Resources are reported using a copper equivalent (CuEq) cutoff grade. CuEq was calculated using US$3.00/lb copper, US$ 1,400/oz gold and US$23/oz Ag and was based on copper, gold and silver recoveries obtained in metallurgical testwork on four composite samples representing the rhyolite, tonalite, porphyry and supergene zones. Copper recoveries for the rhyolite, tonalite and porphyry zones were calculated as a function of copper grade, ranging from a low of 81% to a high of 97%. Copper recovery in the supergene zone was fixed at 85%. Gold recoveries were fixed between 62% and 73% and silver recoveries were fixed between 53% and 75% depending on the zone.;
4. Mineral Resources are reported within a conceptual Whittle pit that uses the following input parameters: Cu price: US$3.00/lb, mining cost: US$2.20/t, process cost (including G&A): US$7.40/t processed, copper selling cost: US$0.35/lb and Over-all slope angle of 42º
5. Mineral Resources (sulphide) have a base case estimate using a 0.2% CuEq grade; Mineral Resources (oxide) are reported using a 0.2 g/t Au cutoff grade.
6. Totals may not sum due to rounding as required by reporting guidelines.

14.2 Los Helados

14.2.1 Introduction

The Mineral Resource estimate for the Los Helados deposit was prepared by and under the supervision of, Mr Gino Zandonai, RM CMC. The Mineral Resource estimate is supported by 74 drill holes (five RC and 69 core), and 35,629 assay results.

Three drill holes were drilled subsequent to the resource estimate, during the 2014–2015 field season (LHDH72, LHDHG02 and LHDHG03). Only one of these drill holes, LHDH72 was assayed, the other two were geotechnical holes and have been retained as whole core. The data from LHDH72 provide an excellent check on the validity of the block model and the assayed values correspond very well to the grades of the adjacent blocks.

14.2.2 Geological Models

A 2D interpretation based on logged data was completed by NGEx geologists on east–west oriented sections spaced 100 m apart. Two-dimensional lines were then exported from GEMS and imported into the Leapfrog geological modelling software and the final 3D wireframe solids were constructed.

Three separate layers within the model were constructed to guide the resource estimation: lithology; alteration and mineral zones (minzones). Prior to the completion of the geological model, metallurgical zone models were also constructed in order to assign each block to a metallurgical sample domain.

14.2.3 Exploratory Data Analysis

Statistical analyses were performed for Cu, Au, Ag, Mo, S, Fe and As and SG samples and included reviews of the number of samples, total length, minimum, maximum mean value, standard deviation, and CV.

All lithological contacts were treated as hard boundaries during the grade interpolation process.

14.2.4 Density Assignment

Density values used in estimation are outlined in Section 11.

14.2.5 Grade Capping/Outlier Restrictions

An examination of the grade distributions resulted in grade capping being applied in certain domains. Depending on the domain, Cu caps ranged from 2–3% Cu, though most domains were not capped. Gold was capped at 2 g/t Au and Ag at 20 g/t Ag.

14.2.6 Composites

The drill hole assays were composited to 2 m intervals to maintain the majority sampling interval (93% of assayed intervals at 2 m) and to avoid spreading composites across geological domains in case of larger composite sizes.

14.2.7 Variography

Experimental variogram analysis for Cu, Au, Ag, Mo, As, Fe and S was performed using the composites based on the lithology domains. The experimental variography was performed using Supervisor.

14.2.8 Estimation/Interpolation Methods

A 3D block model of the deposit was built with 25 x 25 x 15 m (X,Y,Z) blocks for Mineral Resource estimation purposes. The block model covered an area of 2.5 km by 1.95 km on plan, and had a 2.5 km vertical extent.

The interpolation plan and the search distances for OK and ID2 weighting methods were based on the geostatistical analysis and variogram parameters. According to this plan, Cu, Au, Ag, Mo, As, S and Fe were interpolated within the lithology zones in the model. All elements were interpolated using OK. The ID2 and NN methods were performed only for Cu and Au for validation and checking purposes of the global bias.

OK and ID2 interpolation was done in a single pass. A minimum of two and a maximum of 50 composites, with maximum 15 composites from the same hole were used for the interpolation, to allow maximum spread of the data used to estimate blocks. For estimation of the kriging and block variance, a 3 x 3 x 3 discretization of the block was selected. The major, semi-major and minor axes of the search ellipse were set to the corresponding radius defined by the omnidirectional variograms.

14.2.9 Block Model Validation

Model validation was carried out using visual comparison of blocks and sample grades in plan and section views. A statistical comparison of the block and composite grade distributions and swath plots to compare OK, ID2 and NN estimates were used.

14.2.10 Classification of Mineral Resources

Mineral Resource classification uses the 2014 CIM Definition Standards. Classifications were based on a two-step process, as follows:

- Indicated: the distance to the nearest drill hole from the centre of the block was less than or equal to 75 m and there were at least three drill holes used for the grade interpolation and the kriging efficiency estimation was more than 0.33

- Inferred: the distance to the nearest drill hole from the block was 75 to 150 m, there were at least two drill holes used for the grade interpolation, and the kriging efficiency estimation was less than 0.33

Two smoothed buffer wireframes were created in Leapfrog, one at 75 m and one at 150 m. Inferred blocks inside the 75 m wireframe were re-classified as Indicated, while any Indicated blocks outside of the 75 m buffer but within the 150 m buffer were re-classified as Inferred. A final phase of visual inspection of the resulting classification was performed for validation purposes.

14.2.11 Reasonable Prospects of Eventual Economic Extraction

Mining shapes were generated using the following assumptions:

- Cu price: US$3.00/lb
- Au price: US$1,300/oz
- Ag price: US$23/oz
- Operating cost (incl. G&A): US$13.07/t
- Capital cost: Provision based on production rate
- Metallurgical recoveries as follows (average life-of-mine):
  - Upper Zone (between the surface and 200–250 m depth): 83.1% Cu, 72.8% Au and 31% Ag
  - Intermediate Zone (between 200–250 m and approximately 500–600 m depth): 90.2% Cu, 80.3% Au and 54.9% Ag
  - Deep Zone (>500–600 m depth): 93.1% Cu, 82.5% Au and 70.5% Ag.
- Dilution: Laubscher's model.

A CuEq grade was calculated using US$3.00/lb Cu, US$1,300/oz Au and US$23/oz Ag, and includes a provision for selling costs (Table 14-4) and metallurgical recoveries corresponding to the three zones that were defined by depth below surface.

Table 14-4: Parameters to Estimate Equivalent Copper

Parameter	Value	Units
Metal Price		
Copper	3.00	US$/lb
Gold	1,300	US$/oz
Silver	23	US$/oz
Selling Costs		
Copper	0.359	US$/lb
Gold	5	US$/oz
Silver	0.4	US$/oz

Note that these metal prices and sales costs are not the same as those used in the financial analysis in Section 22; these assumptions were only used for the purposes of establishing appropriate copper equivalency formulae.

The formulae used are:

- CuEq% = Cu% + 0.6264*Au (g/t) + 0.0047*Ag (g/t) for the Upper Zone (surface to ~ 250 m)
- CuEq% = Cu% + 0.6366*Au (g/t) + 0.0077*Ag (g/t) for the Intermediate Zone (~250 m to ~600 m)
- CuEq% = Cu% + 0.6337*Au (g/t) + 0.0096*Ag (g/t) for the Deep Zone (> ~600 m).

The base-case diluted cutoff grade of 0.33% CuEq was determined as the lowest cutoff grade which produced a positive NPV, and the base case Mineral Resource estimate is the sum of all the blocks within this block cave.

14.2.12 Mineral Resource Statement

The Mineral Resource estimate assuming block cave underground mining methods is reported using the 2014 CIM Definition Standards. Indicated and Inferred classifications only have been estimated; no Measured Mineral Resources were classified.

The Mineral Resource estimate was prepared by Gino Zandonai, RM CMC.

Mineral Resources are summarized in Table 14-5. The estimate has an effective date of 19 September, 2014. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Table 14-5: Mineral Resource Estimate for Los Helados Assuming Underground Block Cave Methods (base case is highlighted)

Los Helados Indicated Mineral Resource								
	Tonnage	**Resource Grade**				**Contained Metal**		
Cutoff (CuEq)	**(million tonnes)**	**Cu (%)**	**Au (g/t)**	**Ag (g/t)**	**CuEq (%)**	**Cu (billion lbs)**	**Au (million oz)**	**Ag (million oz)**
0.58	531	0.50	0.21	1.66	0.65	5.9	3.6	28.3
0.50	981	0.45	0.18	1.56	0.58	9.7	5.7	49.2
0.44	1,395	0.42	0.16	1.52	0.54	12.9	7.2	68.2
0.40	1,733	0.40	0.15	1.45	0.51	15.3	8.4	80.8
0.33	**2,099**	**0.38**	**0.15**	**1.37**	**0.48**	**17.6**	**10.1**	**92.5**
Los Helados Inferred Mineral Resource								
	Tonnage	**Resource Grade**				**Contained Metal**		
Cutoff (CuEq)	**(million tonnes)**	**Cu (%)**	**Au (g/t)**	**Ag (g/t)**	**CuEq (%)**	**Cu (billion lbs)**	**Au (million oz)**	**Ag (million oz)**
0.58	There are no Inferred Mineral Resources inside the mining shape at this cutoff grade							
0.50	41	0.41	0.13	1.78	0.51	0.4	0.2	2.3
0.44	176	0.37	0.11	1.61	0.45	1.4	0.6	9.1
0.40	399	0.35	0.10	1.47	0.43	3.1	1.3	18.9
0.33	**827**	**0.32**	**0.10**	**1.32**	**0.39**	**5.8**	**2.7**	**35.1**

Notes to accompany Los Helados Mineral Resource table

1. Mineral Resources have an effective date of 19 September 2014. The Qualified Person for the estimate is Mr Gino Zandonai, RM CMC.
2. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability
3. Mineral Resources are reported using a copper equivalent (CuEq) cutoff grade. Copper equivalent is calculated using US$3.00/lb copper, US$1,300/oz gold and US$23/oz Ag, and includes a provision for selling costs and metallurgical recoveries corresponding to three zones defined by depth below surface. The formulas used are: CuEq% = Cu% + 0.6264*Au (g/t) + 0.0047*Ag (g/t) for the Upper Zone (surface to ~ 250 m); Cu% + 0.6366*Au (g/t) + 0.0077*Ag (g/t) for the Intermediate Zone (~250 m to ~600 m); Cu% + 0.6337*Au (g/t) + 0.0096*Ag (g/t) for the Deep Zone (> ~600 m)
4. Cutoff grades refer to diluted cutoff grades used to generate the corresponding block cave shapes. For each cutoff grade, the tonnes and grade represent the total Indicated or Inferred undiluted material within each of these shapes.
5. Mineral Resources are reported within block cave underground mining shapes based on diluted CuEq grades, US$13.07/t operating costs and include a provision for capital expenditure. The base case cutoff grade of 0.33% CuEq was derived through an economic evaluation of several block cave shapes developed over a range of different cutoff grades and is the cutoff grade which results in a zero net present value
6. Totals may not sum due to rounding as required by reporting guidelines

14.2.13 Factors That May Affect the Mineral Resource Estimate

Mineral Resource estimates may be affected by the following factors:

- Changes in interpretations of mineralization geometry and continuity of mineralization zones
- Assumptions used in generating the block cave shapes for the Mineral Resources considered amenable to underground mining methods, including geotechnical and hydrogeological parameters
- Metallurgical and mining recoveries
- Operating and capital cost assumptions
- Metal price and exchange rate assumptions
- Concentrate grade and smelting/refining terms
- Confidence in the modifying factors, including assumptions that surface rights to allow infrastructure such as tailings storage facilities and desalination plants to be constructed will be forthcoming
- Delays or other issues in reaching agreements with local or regulatory authorities and stakeholders
- Changes in land tenure requirements or in permitting requirements from those discussed in this Report.

14.3 Comments on Section 14

Mineral Resource estimates are reported in accordance with the 2014 CIM Definition standards, and are acceptable to inform mine planning at the PEA level.

The oxide mineralization is not included in the PEA mine plan discussed in this Report, but remains a Project opportunity (see Section 24).

A significant portion of the Mineral Resources at Josemaría are not included in the PEA mine plan outlined in this Report. However, inclusion of this material remains an opportunity for mine life extension and/or process plant expansion, see Section 24.

15.0 MINERAL RESERVE ESTIMATES

This section is not relevant to this Report.

16.0 MINING METHODS

The mine plan discussed in this section is partly based on Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the preliminary assessment based on these Mineral Resources will be realized.

16.1 Introduction

The PEA mine design basis is two mining operations feeding a central process plant. Mineralization at Josemaría would be mined using conventional open pit methods, whereas the Los Helados deposit will be mined using block caving, with mill feed material sent to a process plant to be located 4 km from the Josemaría deposit.

Material included in the mine plan is a subset of the estimated Mineral Resources.

The subset of Mineral Resources (assuming an elevated cutoff grade) for Josemaría used in the mine plan is:

- Indicated: 529 Mt grading 0.36% Cu, 0.26 g/t Au and 1.08 g/t Ag
- Inferred: 14 Mt grading 0.21% Cu, 0.10 g/t Au and 0.60 g/t Ag

The subset of Mineral Resources for Los Helados used in the mine plan is:

- Indicated: 1,280 Mt grading 0.40% Cu, 0.15 g/t Au and 1.44 g/t Ag
- Inferred: 277 Mt grading 0.34% Cu, 0.10 g/t Au and 1.43 g/t Ag.

The mine plan for Josemaría assumes a two-year pre-strip period, and a five-month ramp-up. Full production will extend over a six-year period at 150 kt/d. There is a six-year production ramp-up period for Los Helados and in year 16 of the mining operation, Los Helados will reach peak production of 120 kt/d. The Project will operate for 50 years, including the pre-strip period.

16.2 Josemaría

16.2.1 Geotechnical Considerations

Geotechnical studies for Josemaría were based on previous geotechnical investigations. Stage 1 site investigations consisted of a review of RQD drill core logging (6,625 m on 16 holes) made by NGEx and limited point load tests (63 tests). A Stage 2 study consisted of the drilling of two specific geotechnical drill cores (1,075 m), analysis of results from geomechanical laboratory tests (30 unconfined compressive strength (UCS), 11 triaxial, 15 direct shear, 11 elastic constant, 179 point load tests), drill core logging, televiewer data, and hydrological tests. These data were used to construct a conceptual geotechnical and hydrogeological model for Josemaría.

Conceptual slope stability analyses were undertaken using rock mass strength estimates and ground water conditions taken from the hydrogeological model. The results indicated that overall slope failure through the rock mass is unlikely with conceptual level overall slope angle design parameters and that stability will be controlled by the inter-ramp and bench scale stability.

Inter-ramp slope stability was assessed using empirical methods. For a proposed inter-ramp depth of 105 m, maximum inter-ramp angles (IRAs) of 45º and 47º are recommended for the east and west walls, respectively.

Based on the discontinuity data, conceptual level kinematic analyses were undertaken which indicate that, assuming a maximum bench height of 15 m, bench face angles of 70° are achievable for the west wall. However, analysis of discontinuity data suggests that the east wall stability will be affected by the formation of wedges along structures. The geotechnical study recommended that bench faces on the east wall be restricted to bench face angles of 65°, with minimum bench widths of 8 m and 8.5 m for the east and west walls, respectively. Bench face angles of 70° can be utilized for the east wall to simplify PEA designs, as long as additional catch bench capacity (minimum of 10 m) is incorporated.

A geotechnical catch bench of 20 m wide is recommended every 105 m, where no ramp section is present to reduce the overall slope.

For unconsolidated or partially consolidated materials (overburden, gravel, soil, etc.), a bench face angle of 38° should be considered. A 20 m geotechnical berm should be placed between the rock and the overburden contact.

For waste rock facilities, a maximum bench face angle of 38° is recommended and should have a minimum set back of 50 m from the start of the pit crest in the overburden. Maximum lift heights of 150 m are recommended with 50 m berms.

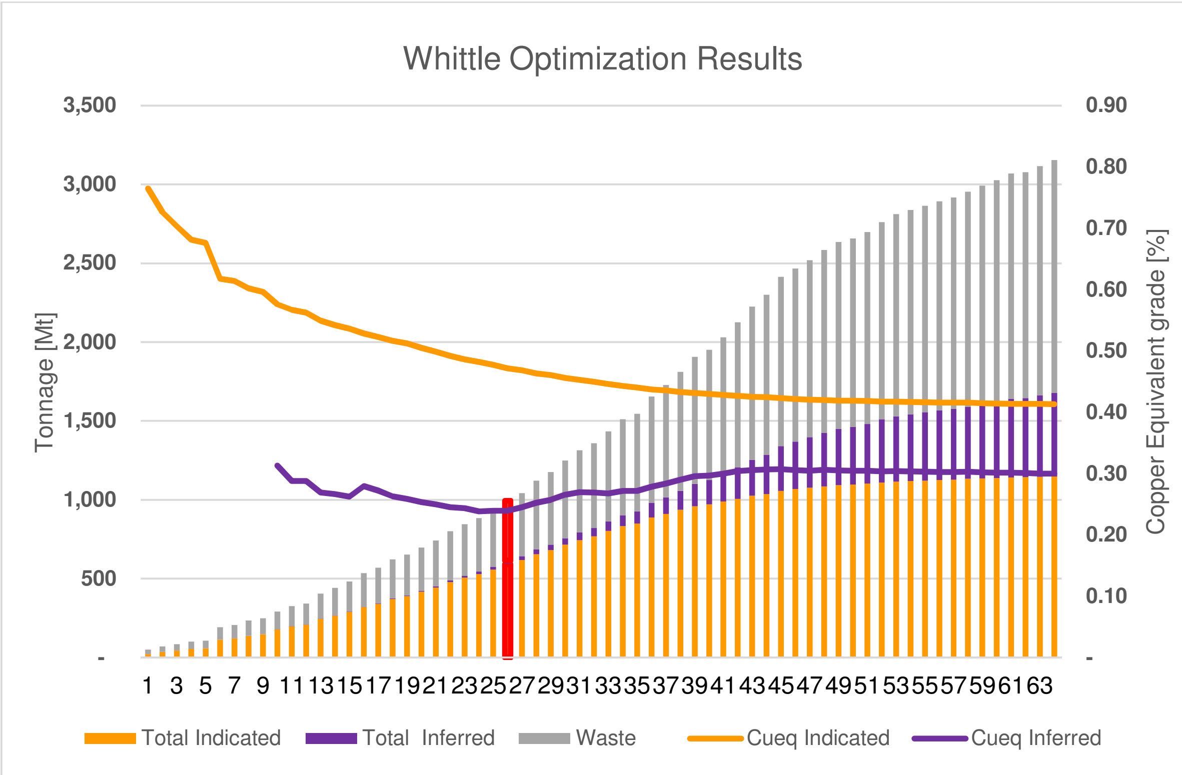
16.2.2 Pit Design Optimizations

The block model and its attributes were imported using Gems software. The definition of the final pit limit was created using the Whittle software package. This software was also used to delineate the phases and the phase sequencing. The economic parameters, metal prices and costs, as well as the metallurgical recoveries used are summarized in Table 16-1. The results of the runs are shown in Figure 16-1.

Table 16-1: Open Pit Whittle Design Parameters

Design Criteria	Value	Units
Open pit overall slope angle	40	º
Mining recovery	100	%
Mining dilution	-	%
Average mining cost	2.56	US$/t
Reference mining cost estimation	2.35	US$/t
MCAF down by bench	0.024	US$/t
MCAF up by bench	0.017	US$/t
Total processing cost flotation	8.16	US$/t
Metal Recovery - copper	Variable	%
Metal Recovery - gold	Variable	%
Metal Recovery - silver	Variable	%
Concentrate grade	28	%
Concentrate moisture	8	%
Concentrate shipping - wet tonnes	1	US$/t
Concentrate ocean freight - wet tonnes	60	US$/t
Concentrate port handling - wet tonnes	2	US$/t
Gold payable	98	% paid
Gold deductions	1	g/t
Copper payable	100	% paid
Copper deductions	1	%

Figure 16-1: Whittle Optimization Results



Note: Figure prepared by Amec Foster Wheeler, 2015. X-axis in years. CuEq = Copper equivalent grade (CuEq).

The copper equivalent (CuEq) value is determined using the equation:

$$\mathrm{CuEq} = Cu + \frac{(PAu - SC\ Au) \times Rec\ Au}{(PCu - SC\ Cu) \times RecCu} \times Au \times CF_p \times CF_u + \frac{(PAg - SC\ Ag) \times Rec\ Ag}{(PCu - SC\ Cu) \times RecCu} \times Ag \times CF_p \times CF_u$$

Where:

CuEq: Copper equivalent (%)
Cu: Copper grade (%)
Au: Gold grade (g/t)
Ag: Silver Grade (g/t)
Rec Cu: Copper recovery (%)
Rec Au: Gold recovery (%)
Rec Ag: Silver recovery (%)
PCu: Copper price (US$/lb)
PAu: Gold price (US$/oz)
PAg: Silver price (US$/oz)
SC Cu: Copper selling cost (US$/lb)
SC Au: Gold selling cost (US$/oz)
SC Ag: Silver selling cost (US$/oz)
CFp: Price conversion factor from US$/lb to US$/oz/t (CFp = 14.5830)
CFu: Units conversion factor from ppm to percent (CFu = 0.0001)

Whittle was run starting at a revenue factor of 0.37 and finishing at a revenue factor of 1.0 in 0.1 steps. Pit 26 was selected to guide the pit design work.

The subset of the Mineral Resource estimate within the pit 26 Whittle run is:

- Indicated Mineral Resources: 593 Mt grading 0.34% Cu, 0.25 g/t Au and 1.04 g/t Ag
- Inferred Mineral Resources: 21.6 Mt grading 0.17% Cu, 0.12 g/t Au and 0.55 g/t Ag.

The selected pit represents a small portion of the Josemaría Mineral Resource estimate; however, the pit selection is based on supplying mill feed ahead of the underground operation and not on maximizing the open pit value.

16.2.3 Phase Selection and Design Criteria

Amec Foster Wheeler adopted the pit, ramp, and waste rock facility (WRF) design criteria shown in Table 16-2. Once the conceptual phase designs were completed, a comparison was carried out on the final design versus the original Whittle results to identify any differences between the final designed pit and the Whittle pit for which it was based.

The 15 years of open pit life, including two years of pre-stripping, are divided into six conceptual phases (Figure 16-2), each having a minimum operational width of 150 m, to facilitate the early extraction of the most profitable material, and to defer or minimize waste stripping.

Smoothing the pit designs involved redefining the optimized pit shells to provide equipment access and to ensure that wall slopes are designed in accordance with the recommended slope angles.

16.2.4 Final Design

The final pit design incorporates two main ramps with an exit point at the 4400 level on the north side of the pit; the exit point will be in close proximity to the planned primary crusher location.

A maximum mining rate of 115 Mt/a is required to provide the nominal 150 kt/d of concentrator feed. The sinking rate, considering each phase separately, is limited to eight mined benches per year, with six benches mined during the first year.

The final pit design contains the following subset of the Mineral Resource estimate:

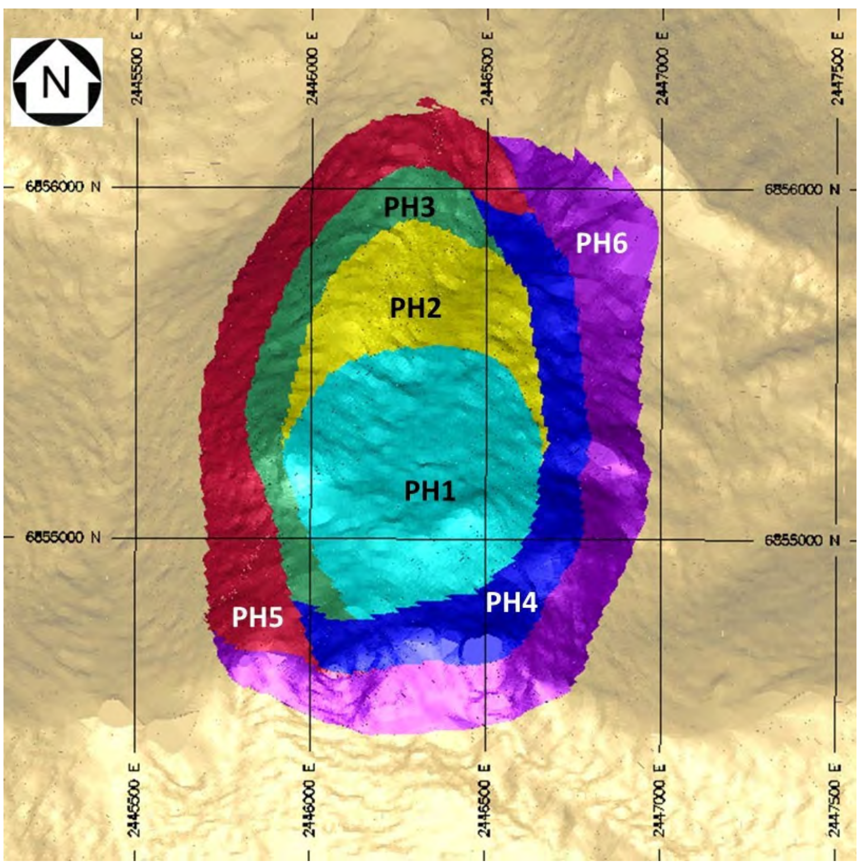
- Indicated: 529 Mt grading 0.36% Cu, 0.26 g/t Au and 1.08 g/t Ag (includes a CuEq grade of 0.50% CuEq)
- Inferred: 14 Mt grading 0.21% Cu, 0.10 g/t Au and 0.60 g/t Ag (includes a CuEq grade of 0.27% CuEq).

Table 16-2: Design Criteria

Area	Design Criteria	Value	Units
Pit Design	Bench Height	15	m
	Bench Face Angle	70	°
	Inter-Ramp Slope Angle	45	°
	Berm Width	12.42	m
Ramp Design	Ramp Width	32	m
	Ramp Slope	10	%
	Switchback Width	64	m
Waste Dump Design	Average Density*	1.9	t/m^3
	Lift Height	150	m
	Face Angle	37	°
	Berm	50	m

Note: * assumes 32% swell factor.

Figure 16-2: Pit Phases



Note: Figure prepared by Amec Foster Wheeler, 2015.

16.2.5 Consideration of Marginal Cutoff Grades and Dilution

Cutoff Grade

An elevated cutoff grade strategy is used in the mine plan. The marginal cutoff grade is 0.11% total copper (CuT) and the elevated cutoff grade is 0.16% CuT. To increase the NPV for the PEA study, the material between marginal and elevated cutoff grade was treated as waste and sent to the waste facility. However, during operations, this decision may be reconsidered, and the portion between the marginal and elevated cutoffs may be sent to the mill.

Mining Loss and Dilution

Mining loss and dilution consists of two types:

- Lateral
- Vertical.

The quantity of lost and diluting material in the lateral case is determined by the angle of the dig face (70°), which defines a lateral influence of 2.7 m. The assumption for bench elevation control for the vertical case was 0.5 m total or 0.25 m on average in either direction.

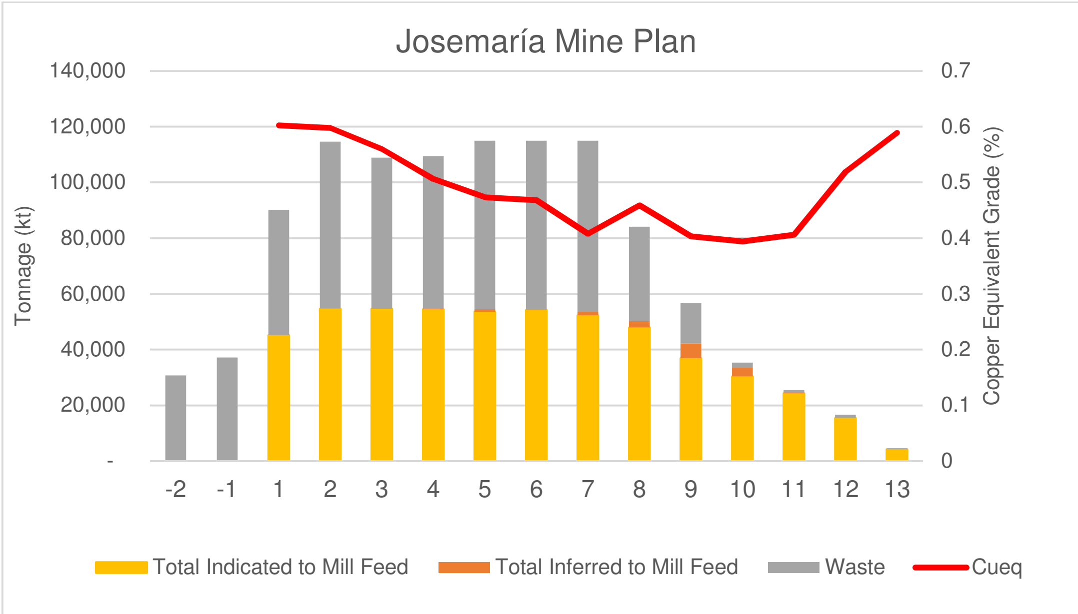
Overall loss and dilution was estimated to be less than 1% and has been incorporated into the block model.

16.2.6 Production Schedule

The Josemaría pre-stripping will mine higher, smaller benches for phases 1, 3, 4, 5 and 6 during year -2. The mine plan stockpiles this pre-stripping material in year -1; and the stockpiles will be reclaimed and fed to the mill in year 1.

Figure 16-3 and Table 16-3 show the planned material movement by year from the open pit.

Figure 16-3: Josemaría Mine Plan



Note: Figure prepared by Amec Foster Wheeler, 2015. Cueq = Copper equivalent grade (CuEq).

Table 16-3: Josemaría Production Schedule

Production Year	Waste (kt)	Indicated Tonnage (kt)	Indicated Cu Grade (%)	Indicated Au Grade (g/t)	Indicated Ag Grade (g/t)	Indicated CuEq (%)	Inferred Tonnage (kt)	Inferred Cu Grade (%)	Inferred Au Grade (g/t)	Inferred Ag Grade (g/t)	Inferred CuEq (%)
-2	30,693	—	—	—	—	—	—	—	—	—	—
-1	37,104	—	—	—	—	—	—	—	—	—	—
1	44,966	45,184	0.42	0.37	1.05	0.60	50	0.18	0.20	0.76	0.31
2	59,864	54,750	0.42	0.35	1.33	0.60	—	—	—	—	—
3	54,179	54,699	0.41	0.29	1.13	0.56	51	0.19	0.14	0.55	0.26
4	54,687	54,448	0.37	0.27	1.10	0.51	302	0.19	0.12	0.58	0.26
5	60,457	53,598	0.34	0.25	1.04	0.48	945	0.24	0.12	0.60	0.30
6	60,579	54,280	0.34	0.24	1.00	0.47	141	0.18	0.13	0.50	0.25
7	61,416	52,355	0.31	0.19	1.06	0.41	1,229	0.16	0.09	0.40	0.21
8	33,790	47,975	0.33	0.25	1.00	0.47	2,294	0.23	0.13	0.64	0.31
9	14,506	36,909	0.30	0.23	0.86	0.42	5,249	0.22	0.10	0.62	0.27
10	1,823	30,407	0.31	0.19	1.05	0.41	3,082	0.20	0.06	0.59	0.24
11	979	24,267	0.31	0.17	1.11	0.41	234	0.17	0.08	0.72	0.22
12	1,106	15,513	0.42	0.18	1.18	0.52	—	—	—	—	—
13	395	4,198	0.47	0.22	1.59	0.59	—	—	—	—	—

16.2.7 Blasting and Explosives

The PEA study has assumed that there will be separate explosive magazines for each deposit, one in Argentina and the other in Chile.

Explosives will be received from suppliers and stored on surface. The magazine will have a one month capacity, to minimize the transportation of explosives on public roads. Explosives delivered for the open pit blast holes will be supplied directly from the main magazine. The bulk of the material will be ANFO, plus initiators and blasting caps.

Explosives will be used in the open pit for two main purposes:

- Production blast holes
- Secondary blasting of boulders

These activities will be an ongoing operation until production ends.

The explosive used in these activities will be distributed each time there is a blast at the open pit, which may occur on a daily basis or less frequently once the operation is optimized.

16.2.8 Mining Equipment

Primary and support equipment requirements for the proposed open pit operation are summarized in Table 16-4.

16.2.9 Manpower Considerations

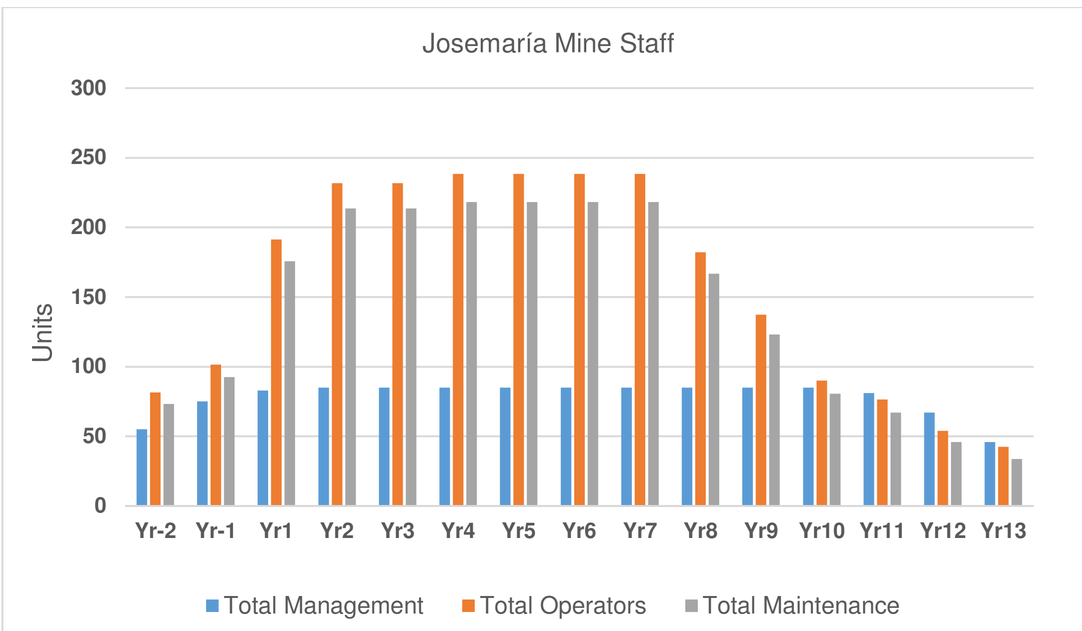
Josemaría will operate 24 hours per day, 365 days per year using four crews for continuous coverage. Each crew will rotate on a seven day on, seven day off basis with two crews scheduled per day each working a 12 hour shift. Administrative and supporting areas will work nine hours per day on a 5 x 2 schedule.

Assumed staffing levels are illustrated in Figure 16-4.

Table 16-4: Equipment Requirements, Josemaría

Period	Units	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13
Production drills PV311		4	5	10	12	12	12	12	12	12	9	6	4	3	2	1
Loading fleet PC800		1	1	2	3	3	3	3	3	3	3	2	1	1	—	—
Loading fleet L2350		1	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Haul truck Komatsu 930		6	8	17	21	21	21	21	21	21	16	11	7	5	3	1
Bulldozer D11	n°	3	3	5	6	6	6	6	6	6	5	4	3	3	2	2
Wheel Dozer 844	n°	2	2	3	4	4	4	4	4	4	3	3	2	2	2	2
Motor Grader 16M	n°	1	1	2	2	2	3	3	3	3	2	2	1	1	1	1
Water truck 777	n°	1	1	2	2	2	3	3	3	3	2	2	1	1	1	1
Excavator 6018	n°	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Figure 16-4: Staffing Assumptions, Josemaría



Note: Figure prepared by Amec Foster Wheeler, 2015.

16.3 Los Helados

16.3.1 Geotechnical Considerations

Geotechnical evaluations were performed using available geological models, and drill hole data from 45 holes in the exploration database that had lithology, survey and geotechnical data such as RQD (measured by NGEx).

These data were augmented by specific geotechnical core logging performed on six drill holes (3,350 m) to estimate the rock mass rating (RMR_{L90},) with 18 UCS laboratory tests and 717 point load tests also performed.

Subsequent to this, a dedicated block cave geomechanics study was conducted, which included drilling two oriented geotechnical drill holes (2,100 m). Testing included; televiewer surveys, Lugeon testing (also known as Packer testing, which is an in-situ testing method widely used to estimate the average hydraulic conductivity of rock formations), and 230 point load tests.

An additional geomechanics laboratory testing program was conducted consisting of 84 UCS tests, 46 elastic property tests, 51 tensile tests, and 55 triaxial tests. Geotechnical logging, televiewer surveys and Lugeon tests were also performed on a single core hole (1,100 m) drilled as part of this campaign.

The Los Helados block cave geomechanics study examined the rock mechanics aspects and risks associated with block cave mining, including the development of key geotechnical design criteria.

The main rock mechanics risks that were identified were:

- The throughput and cutoff grade strategy study assumed that draw columns as high as 1,000 m can be successfully undercut and mined. It is understood that Cadia East is using draw columns of 800 m and is using preconditioning to prepare these heights for undercutting. Amec Foster Wheeler is of the opinion that draw columns can be extended beyond 800 m with proper preconditioning and draw point construction.

Opportunities include:

- The current design involves an upper central lift, with a base-case extraction method using load-haul-dump vehicles (LHDs). An alternate extraction option using a rock breaker-grizzly-and-ore-passes (RGO) mining method was also considered for the upper lift with a potential to increase production rates. This method was trialed in one primary block at El Teniente with some success. The success of this method in hard rock is dependent on whether draw point fragmentation size can be naturally achieved or whether fragmentation size can be reduced using preconditioning and also taking advantage of improved rock breaker technology.

The main conclusions and recommendations from the block cave geomechanics study were:

- Based on empirical methods, caving of the Los Helados rock mass can be achieved with a minimum hydraulic radius (HR) of 39. This equates to a cave initiation footprint of approximately 135 x 185 m. It is concluded that cave initiation can be successfully achieved at Los Helados given the rock mass conditions and proposed mining footprints
- The rock mass characteristics suggest that unassisted cave propagation may be an issue at Los Helados, with a planned lift height of 1,000 m. The proposed height/width ratios of the cave are 0.56 to 2.75, depending on which side of the cave is considered. This indicates that there could be a risk of cave-stalling, depending on the initiation strategy. The proposed single lift of more than 800 m over the full footprint area is greater than what has currently been done in other existing traditional block cave operations. Only one panel cave mine to date, Cadia east, has developed a lift greater than 800m using advance preconditioning techniques. With appropriate cave initiation and propagation studies in further project stages, and the proposed use of full column hydraulic fracturing (HF) preconditioning, it is considered that the risks of cave-stalling for the project can be mitigated. In order to ensure cave propagation of the proposed 1,000 m column, the design will incorporate a HF preconditioning lift located at 3,840 mRL. HQ diameter preconditioning holes will be drilled on a 70 m x 82 m grid spacing, using 300 m up-holes and 300 m down-holes. To complete the full column HF, two design options are possible. Both options will have the same lower HF level at 3,840 masl. The difference between the two options is that one has a second HF lift at 4,120 masl and the second option assumes 500 m down-holes are drilled from surface within the central footprint zone. The first option has been selected for the PEA mine design, and the second option could be evaluated in more detail at a later study stage.
- The results of the primary fragmentation analysis indicate that in-situ block sizes alone are not viable for efficient cave mining, and that the effects of secondary fragmentation will need to be considered. Draw heights of around 100 m are required before adequate/productive fragment size distributions are produced through secondary fragmentation. The use of confined blasting (CB) preconditioning of the first 100 m of columns is recommended for efficient productivity using 6 yd^3 LHDs. The current design assumes 100 m of CB, using up-holes from the undercut on a 12 m x 17 m spacing.
- Based on empirical analyses, the likely cave angle at Los Helados will be around 75°. The predicted mean caving angle of 75° from the empirical analysis is comparable to data from benchmarking studies from similar block cave mines in

porphyry copper systems. A maximum subsidence angle of 60° has been estimated for Los Helados. No infrastructure has been planned within the caved zone or subsidence zones. Although the deposit is near the Argentinean border, the proposed mine area is fully located within Chile, and the predicted caved zone will not cross the border; however, some surface deformations are likely.

16.3.2 Mining Method Selection

A review of potential mining methods was completed in 2014, options included; open pit operation, underground operation, and a combined open pit and underground (hybrid) operation. The evaluation of these options indicated that the best return came from the underground only mining scenario. Mining options assuming underground methods were then assessed. The deposit is massive, approximately cylindrical, and has a near-vertical dip. The most appropriate mining methods for this geometry were considered to be block caving, sub-level caving (SLC) and sub-level stoping (SLS). Based on a combination of cost and the deposit geometry, block caving was selected as the preferred mining method.

16.3.3 Consideration of Marginal Cutoff Grades and Dilution

Equations Used to Derive the Cutoff Grades

In assessing the tonnage and grade subset of the Mineral Resource estimate that would be captured by the block cave, a CuEq grade was used (incorporating Cu, Au and Ag grades), for three major geometallurgical zones or domains, each of which had a variable metallurgical recovery.

The resulting equations are:

- Upper Zone (surface to ~200–250 m depth):
  – CuEq% = Cu% + 0.6264*Au (g/t) + 0.0047*Ag (g/t).
- Intermediate Zone (~200–250 m to ~500–600 m depth):
  – CuEq% = Cu% + 0.6366*Au (g/t) + 0.0077*Ag (g/t).
- Deep Zone (> ~500–600 m depth):
  – CuEq% = Cu% + 0.6337*Au (g/t) + 0.0096*Ag (g/t).

Dilution

Dilution in the case of block caving was derived using Laubscher´s dilution matrix, which is a widely-accepted methodology employed by the main operating block caving mines. It is based on vertical dilution and does not consider lateral dilution. Starting with the in-situ block model, a diluted block model is calculated using a 50% dilution entry point. All calculations to determine the height of draw of block caving are undertaken using the diluted model.

16.3.4 Design Assumptions

A trade-off study was performed to evaluate different throughput rates (60, 90, 120, 150 and 180 kt/d) and a declining cutoff grade strategy, where a decrease in metal prices was used as a proxy for declining copper grades. Copper price points evaluated included US$1.60/lb, US$1.90/lb, US$2.20/lb and US$2.50/lb. Figure 16-5 illustrates the change in the footprint that occurs with changing copper prices.

The results showed that the deposit can sustain production rates at 180 kt/d or more, with increasing economic returns at higher throughput rates (Figure 16-6).

For the purposes of this PEA, the 120 kt/d option was selected, which is similar in throughput rate used for the stand-alone 2014 PEA completed for Los Helados. The selection rationale was partly because this rate provided greater cost certainty, and partly because of the increased risks involved in achieving the higher throughput rates.

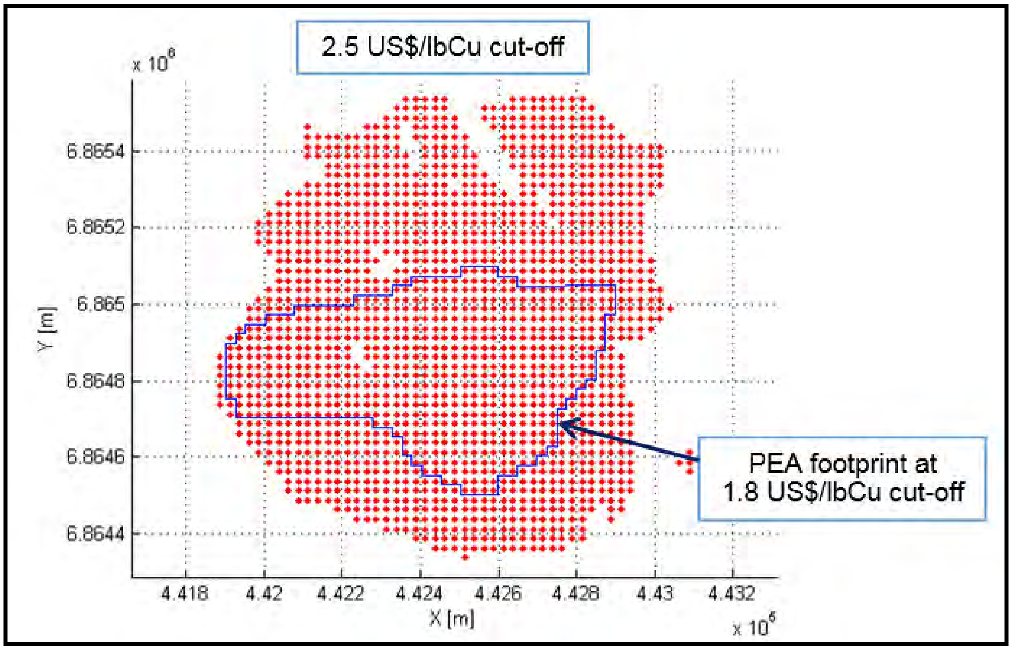
This PEA has assumed that high draw columns can be successfully undercut and mined using proper preconditioning and draw point construction. Accordingly, mining will include intensive preconditioning of the whole rock mass, which will ensure cave propagation, mitigation of rock bursting activity and adequate extraction rates, to support a successful block cave operation.

16.3.5 Design Criteria

A number of design changes were made in the 2015 mine plan to the previous mine plan assumptions in the 2014 PEA that evaluated a Los Helados-only scenario, including:

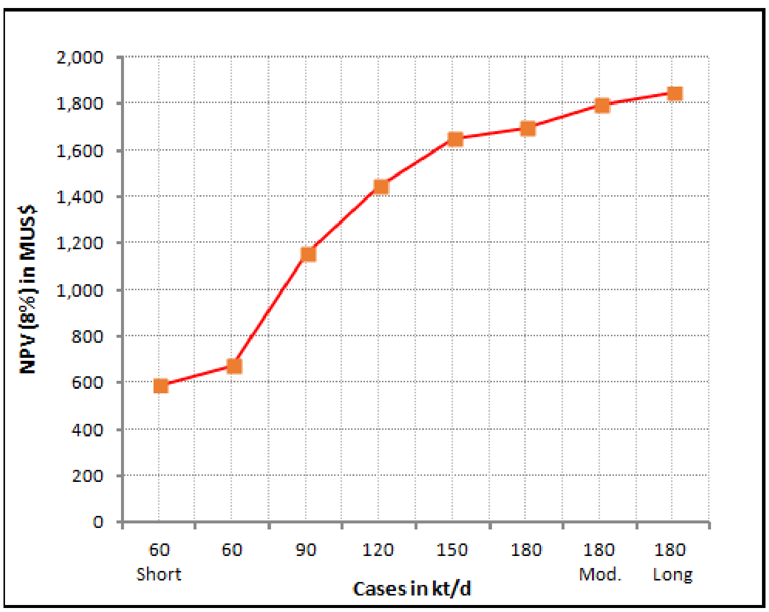
- The cave footprint was significantly enlarged by incorporating lower-grade material in the updated 2015 mine plan, and extraction columns were re-defined by using an increasing copper cutoff price strategy over time.
- An upper lift was incorporated in the central part of the footprint, 90 m above the original level. This results in the operations accessing higher grades in the initial mine plan, since this higher-grade area is undercut first.

Figure 16-5: Changes in Footprint in Response to Changing Cutoff Grades



Note: Figure prepared by Amec Foster Wheeler, 2015. In this figure, the change to metal prices is used as the proxy for changes in cutoff grades.

Figure 16-6: Graph of Conceptual NPVs for Throughput Alternatives



Note: Figure prepared by Amec Foster Wheeler, 2015.

The 2015 block cave mine design is based on a 1,022,000 m^2 footprint area. The footprint area contains two production lifts. Lift 1, the upper and smaller of the two lifts, and Lift 2, the lower and larger of the two lifts (Figure 16-7). Designs include:

- Lift 1 will have its undercutting level (UCL-1) at elevation 3,630 masl, 90 m above the UCL of Lift 2. It will have a 194,000 m^2 footprint, and was designed with a rectangular shape (200 m wide north–south, 970 m long east–west). Mining assumes block caving with load-haul-dump (LHD) equipment for extraction. The mineralized material handling arrangements for Lift 1 to the underground crushers is illustrated in Figure 16-8. Upper Lift 1 has the LHDs dumping into 120 m ore passes connected to the haulage level, from where the mill feed material will be trucked to one of three underground gyratory primary crushers
- Lift 2, has its undercutting level (UCL-2) at elevation 3,540 masl. The lift will have an 828,000 m^2 footprint, and be mined by block caving using LHD equipment. Lift 2 has LHDs dumping into 30 m ore passes connected to the haulage level, from where the mill feed will be trucked to the three primary crushers (Figure 16-9).

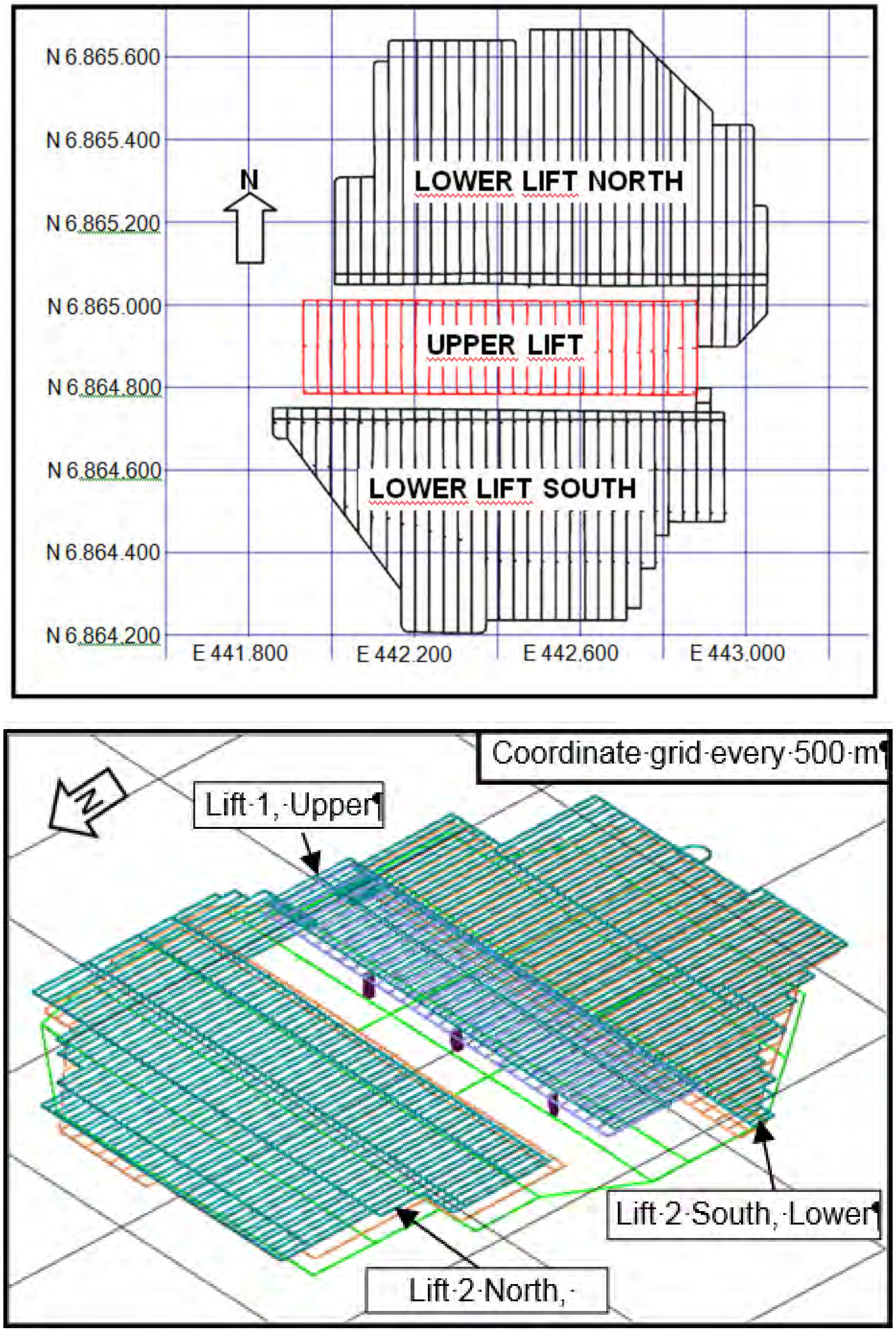
All preparation work at Los Helados will occur below the rock mass to be extracted, except for two rock mass pre-conditioning levels inside the rock mass. The preparation development below the rock mass occurs in the following four levels for each lift:

- The undercutting level, composed of a series of parallel tunnels to perform drilling and blasting required to produce caving.
- The production level comprises parallel drifts where the draw points and dumping points are located. LHD equipment extracts the ore from the draw points and takes it to the dumping points, after a short haul. The production level is 15 m below the undercutting level.
- The intake ventilation level, which is 20 m below the production level, is for fresh air, which is distributed to the production level by means of vertical ventilation raises.
- The exhaust ventilation level, which is 30 m below the production level for Lift 1 and 50 m below the production level for Lift 2, is for spent air, which is exhausted from the production level by means of vertical ventilation raises.

Additionally, there are two common levels serving Lifts 1 and 2:

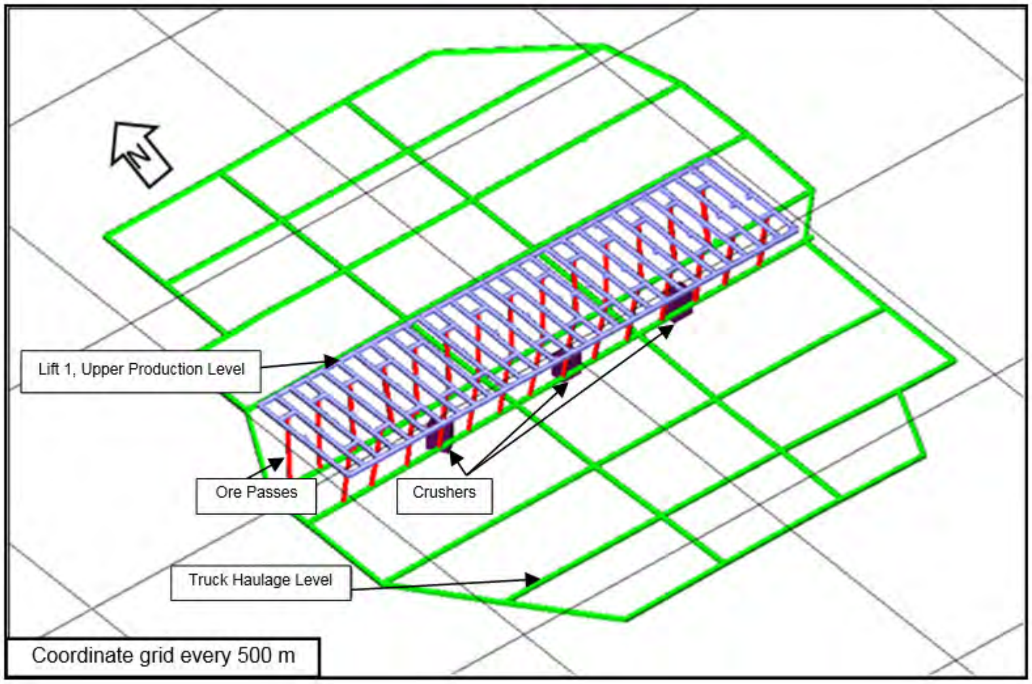
- The truck haulage level, 120 m below the production level in Lift 1 and 30 m below the production level in Lift 2, receives the ore dumped in the production level into near vertical ore passes connecting to the truck haulage level. The receiving end of the ore pass is equipped with chutes to load the trucks that haul the ore to the three underground primary crushers.
- The conveyor level is located 40 m below the truck haulage level.

Figure 16-7: Production Lifts (plan view top; 3D view below)



Note: Figure prepared by Amec Foster Wheeler, 2015. In this image, upper lift = Lift 1; lower lift = Lift 2, which has been broken into northern and southern sectors.

Figure 16-8: Mineralized Material Handling Arrangement for Lift 2



Note: Figure prepared by Amec Foster Wheeler, 2015.

Figure 16-9: Mining Design for Lift 2, Crushers and Haulage Level

Note: Figure prepared by Amec Foster Wheeler, 2015.

Intensive pre-conditioning of the whole rock mass was incorporated in the design and will use both hydraulic fracturing (HF) and fracturing by confined blasting (CB) methods. To achieve HF, two hydrofracturing levels were included, the upper hydrofracturing level at 4,120 masl. (HFL-1), 280 m above the lower hydrofracturing level at 3,840 masl. (HFL-2), which in turn is 210 m above Lift 1 and 300 m above Lift 2.

The entire footprint area and the complete height of the columns will be hydrofractured using a 70 m x 82 m drill hole grid with hydrofractures every 1.5 m in each hole. To achieve CB, 100 m long upward vertical blast holes drilled in a 20 m x 17 m grid from the undercutting levels will be used.

The access inclines to both HF levels were positioned in such a manner that they will not be affected by early subsidence. This was done in order to have access for as long as practicable, and to defer expenditure for as long as possible.

On the production level, an El Teniente-type design was adopted on a 17 m x 20 m grid, adequate for the expected fragmentation of the ore. The design pattern considers production drifts (4.0 m x 4.0 m) every 34 m and straight draw bell drifts (4.0 m x 4.0 m) at 60° angle to the production drifts, spaced every 20 m. The draw bell drives are used to construct the trenches (draw bells) that connect to the undercut level. These draw bells are created by drilling and blasting. Once they are opened, two draw points per draw bell are constructed, with heavy support in the brows in order to withstand the erosion of the mineralized material that must flow through the draw points.

Overall, the mine plan assumes that to produce from Lifts 1 and 2, there will be 12 different levels and about 249 km of drifts and raises.

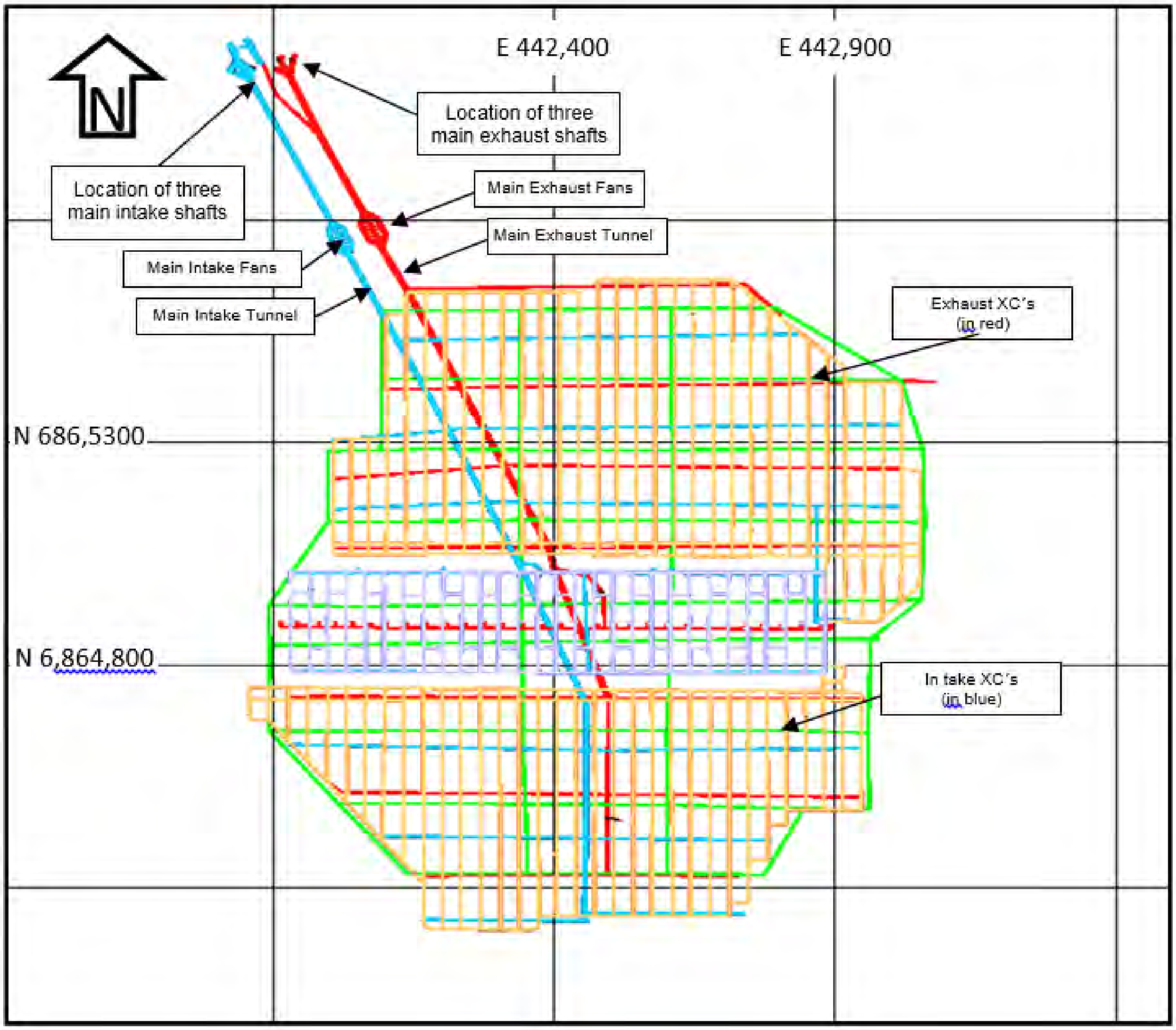
From data collected during recent hydrogeological site investigations, rock-mass permeabilities are anticipated to be extremely low, with secondary porosity of major large-scale structures controlling likely inflows, connectivity and storability. Maximum inflows are anticipated to commence early in mine production, with the potential to reach around 700 L/s after breakthrough and a dramatic drop-off after three to five years, possibly to a maximum of 250 L/s.

16.3.6 Ventilation

The ventilation system design assumes three main intake shafts and three main exhaust shafts. These six shafts will each be vertical, 6.2 m diameter, raise bored, and approximately 1 km long. They will be located to the north, 600 m away from the edge of the mine footprint in order not to be affected by the subsidence arising from extraction of lower Lift 2. A schematic view of the ventilation layout is included as Figure 16-10.

The total installed power will be 5.3 MW to produce a total airflow of 3,600 kcfm. Two main intake fans and two main exhaust fans will be installed at 3,475 masl elevation inside the mine along the main intake and exhaust ventilation tunnels.

Figure 16-10: Ventilation Schematic



Note: Figure prepared by Amec Foster Wheeler, 2015.

An air heating station operated with diesel fuel will be located on surface at elevation 4,470 masl to heat intake air and to provide ventilation air for appropriate working conditions.

The main ventilation tunnels will be centrally located with respect to the mine footprint. The main intake ventilation tunnel will decline to elevation 3,505 masl where the intake ventilation level for Lift 2 will be located. The main exhaust ventilation tunnel, will decline to elevation 3,495 masl where the exhaust ventilation level for Lift 2 will be located.

Ventilation crosscuts in the intake level, spaced every 200 m, will distribute the fresh air in the entire footprint. The spent air will be exhausted by ventilation crosscuts in the exhaust ventilation level, also spaced every 200 m but offset to the intake crosscuts, and evacuate the spent air in the entire footprint.

16.3.7 Access Tunnel

A 12 km long tunnel (Tunnel 12) is planned to access Los Helados from Chile, with a second tunnel, approximately 8 km in length (Tunnel 8), planned to be used to convey mill feed material from the mine to the process plant in Argentina.

Tunnel 12 will be opened from the mine portal in the Chilean side at elevation 3,333 masl, and be 6 m in diameter. It will be near-horizontal, with a +1% slope from the portal to the mine to allow mine drainage by gravity. Operations and construction personnel will be bused from the accommodation camp to the portal.

As Tunnel 12 advances toward the mine, the first detour will be a ramp accessing the hydrofracturing levels. The second detour will be the connection to the main ventilation shafts. The third detour will be the connection to the main ramp accessing all levels. In summary these will involve:

- An incline sloping at 15% to access the hydrofracturing level
- A short 12% incline allowing for access to the main ventilation shaft locations
- A horizontal tunnel to access the location of the west spiral ramp or SR1, which will allow access to the truck haulage level and to all Lift 1 and Lift 2 levels.

There will be a second spiral ramp (SR2) on the east side, connecting the truck haulage level and the levels of Lift 2 and Lift 2, which will be developed after SR1, but before the subsidence effects from Lift 2 affect the Lift 1 levels.

Tunnel 12 will connect directly with Tunnel 8. The design for Tunnel 8 slopes 9.5% going up from the Los Helados mine to the tunnel portal in Argentina. The tunnel diameter will also be 6 m. Mill feed will have to be raised 700 m vertically from the Los Helados mine to the mine portal in Argentina. The conveyor will have a transfer station outside the portal to the surface conveyor going to the Josemaría plant. There will be a 3 km long initial stretch up to the transfer station where the Josemaría open pit mine conveyor will be located, and mill feed material will be transferred to a common conveyor going to the process plant.

16.3.8 Production Schedule

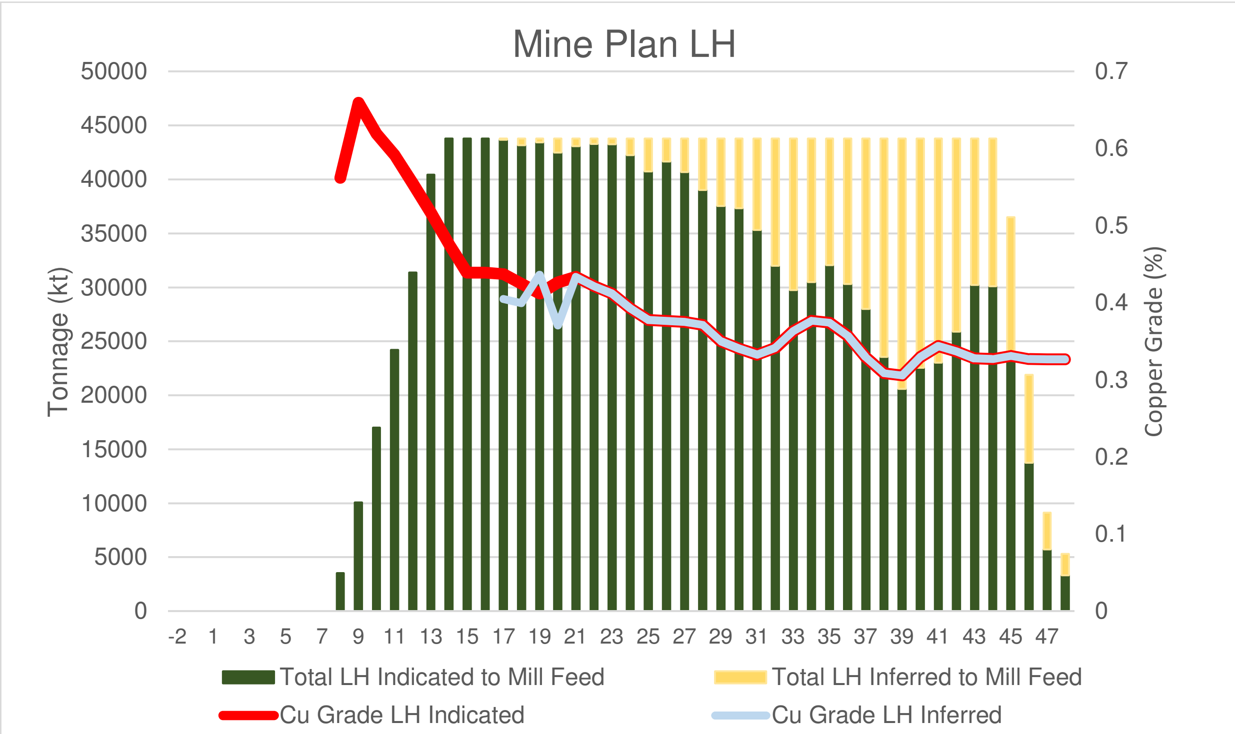
The proposed production schedule for Los Helados is included in Table 16-5 and shown in Figure 16-11. Note that the years shown apply to the underground operation only, not to the combined open pit and underground mine plan.

Table 16-5: Los Helados Production Schedule

Production Year	Indicated Tonnage (kt)	Cu Grade (%)	Au Grade (g/t)	Ag Grade (g/t)	Inferred Tonnage (kt)	Cu Grade (%)	Au Grade (g/t)	Ag Grade (g/t)
-2								
-1								
1								
2								
3								
4								
5								
6								
7								
8	3,541	0.56	0.17	1.91				
9	10,074	0.66	0.20	2.30				
10	17,009	0.62	0.20	2.17				
11	24,200	0.59	0.21	2.11				
12	31,390	0.56	0.21	2.01				
13	40,442	0.52	0.20	1.79				
14	43,800	0.48	0.21	1.60				
15	43,800	0.44	0.21	1.42				
16	43,800	0.44	0.20	1.44				
17	43,668	0.44	0.18	1.45	132	0.41	0.15	1.31
18	43,160	0.42	0.15	1.51	640	0.40	0.12	1.40
19	43,441	0.41	0.14	1.50	359	0.44	0.13	1.67
20	42,486	0.43	0.15	1.54	1,314	0.37	0.11	1.39
21	43,080	0.43	0.16	1.55	720	0.43	0.14	1.65
22	43,284	0.42	0.16	1.48	516	0.42	0.15	1.58
23	43,261	0.41	0.17	1.41	539	0.41	0.15	1.50
24	42,240	0.39	0.17	1.34	1,560	0.39	0.15	1.43
25	40,728	0.38	0.17	1.27	3,072	0.38	0.15	1.36
26	41,645	0.38	0.18	1.27	2,155	0.38	0.16	1.36
27	40,682	0.38	0.17	1.32	3,118	0.38	0.15	1.40
28	39,018	0.37	0.16	1.36	4,782	0.37	0.15	1.46
29	37,537	0.35	0.15	1.32	6,263	0.35	0.13	1.42
30	37,335	0.34	0.13	1.29	6,465	0.34	0.12	1.39
31	35,322	0.33	0.12	1.27	8,478	0.33	0.11	1.37
32	31,997	0.34	0.12	1.31	11,803	0.34	0.10	1.42

Production Year	Indicated Tonnage (kt)	Cu Grade (%)	Au Grade (g/t)	Ag Grade (g/t)	Inferred Tonnage (kt)	Cu Grade (%)	Au Grade (g/t)	Ag Grade (g/t)
33	29,759	0.36	0.13	1.42	14,041	0.36	0.11	1.56
34	30,482	0.38	0.13	1.44	13,318	0.38	0.11	1.57
35	32,049	0.37	0.13	1.40	11,751	0.37	0.11	1.53
36	30,307	0.36	0.13	1.36	13,493	0.36	0.11	1.48
37	28,014	0.33	0.12	1.26	15,786	0.33	0.10	1.38
38	23,564	0.31	0.11	1.19	20,236	0.31	0.09	1.33
39	20,602	0.31	0.11	1.17	23,198	0.31	0.09	1.33
40	22,537	0.33	0.12	1.29	21,263	0.33	0.10	1.46
41	23,018	0.34	0.12	1.38	20,782	0.34	0.10	1.55
42	25,888	0.34	0.11	1.33	17,912	0.34	0.09	1.48
43	30,232	0.33	0.10	1.28	13,568	0.33	0.09	1.39
44	30,100	0.33	0.10	1.26	13,700	0.33	0.09	1.37
45	23,652	0.33	0.10	1.26	12,848	0.33	0.09	1.38
46	13,758	0.33	0.10	1.18	8,142	0.33	0.08	1.30
47	5,712	0.33	0.10	1.17	3,413	0.33	0.08	1.29
48	3,317	0.33	0.10	1.17	1,982	0.33	0.08	1.29

Figure 16-11:Los Helados Mine Plan



Note: Figure prepared by Amec Foster Wheeler. Prior to Year 21, the Indicated and Inferred copper grades are different; however, after Year 21, the Indicated and Inferred copper grades are the same, and the red Indicated line is identical to the blue Inferred line.

16.3.9 Blasting and Explosives

The PEA study has assumed that there will be separate explosive magazines for each deposit, one in Argentina and the other in Chile.

Explosives will be received from suppliers and stored on surface in the main explosives magazine. This magazine will have a one month capacity, to minimize the transportation of explosives on public roads. The bulk of the material will be ANFO, plus initiators and blasting caps

Underground explosives magazines will be located in Lift 1 and Lift 2 to service development and secondary reduction needs. Each magazine will have a one week capacity.

Explosives will be used underground for five main purposes:

- Preparation development of mineralized areas
- Draw bell construction
- Undercutting

- Development in barren material
- Secondary blasting of boulders and hang ups.

The first four activities are ongoing operations up to until about four years prior to the end of underground production. The last activity will be an ongoing operation until production ends.

The explosive used in these activities will be distributed on a shift basis from the underground weekly magazines.

16.4 Mining Equipment

Primary and support equipment requirements for the proposed block cave operation are summarized in Table 16-6.

16.5 Manpower Considerations

The total estimated workforce for Los Helados is approximately 2,400 persons, based on benchmarking to analogous operations.

16.6 Integrated Schedule

A figure showing the proposed integrated schedule for the Josemaría and Los Helados operations that displays the relative contributions from each of the proposed mines is included in Figure 16-12. The integrated mine plan is included as Table 16-7.

16.7 Comments on Section 16

The PEA mine plan is based on a subset of the Mineral Resource estimates and assumes open pit mining of the Josemaría deposit will be followed by block caving operations at the Los Helados deposit.

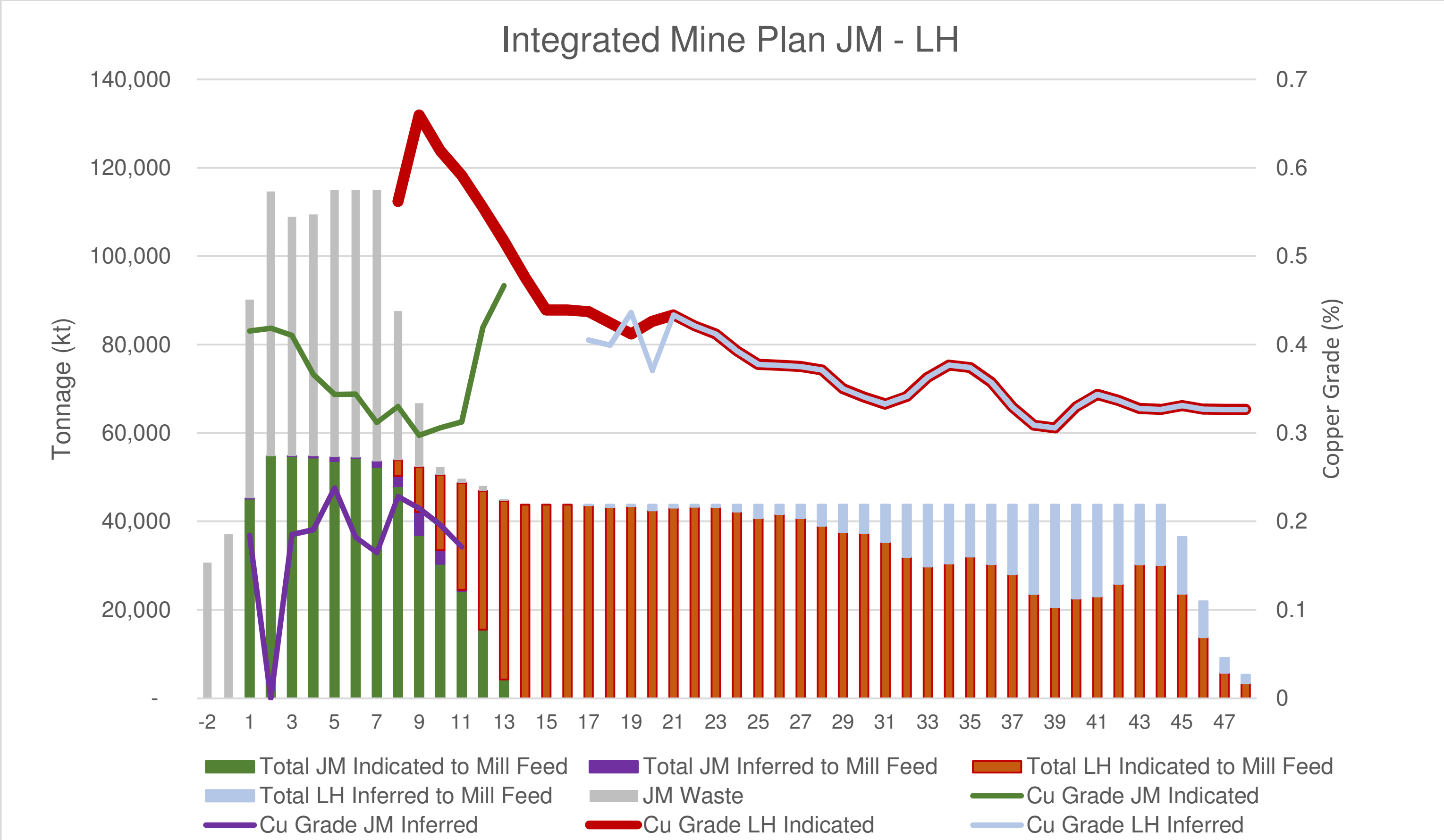
The open pit will operate for 15 years, including two years of pre-stripping. The block cave will operate for 41 years, with a six-year ramp-up period. The operations overlap during the six-year block cave ramp up-period. Project Constellation is expected to be in operation for 50 years, including the pre-stripping period.

Table 16-6: Equipment Requirements, Los Helados

Area	Item	Quantity
Crushing	Crushers	3
	Electrical sub-station	3
HF levels	Pump, pre-fracturing	5
	Jumbo, long hole drilling	2
Undercutting level	Jumbo, long hole drilling	2
	Auxiliary fans	8
	Explosive charger	1
Development	Pre-production Development Jumbo	12
	Production development jumbo	5
	Explosive charger	5
Production level Lift1	Initial rock breakers	29
	Stand-by Rock Breakers	6
	Initial LHDs	30
	Stand-by LHDs	6
Production level Lift2	Initial rock breakers	30
	Stand-by Rock Breakers	12
	Initial LHDs	30
	Stand-by LHDs	6
Ventilation level	Main fans	4
	Secondary fans	95
	Electrical sub-station	1
Conveyor level	Conveyor	8,147*
	Underground electrical sub-station	1
	Surface electrical sub-station	1

Note: * Figure is length of conveyor in metres.

Figure 16-12: Integrated Production Plan, Josemaría and Los Helados



Note: Figure prepared by Amec Foster Wheeler, 2015. Prior to Year 21, the Indicated and Inferred copper grades are different; however, after Year 21, the Indicated and Inferred copper grades are the same, and the red Indicated line is identical to the blue Inferred line.

Table 16-7: Combined Production Plan, Josemaría and Los Helados

Production Year	JM Waste	Total Indicated				Total Inferred			
		Tonnage	Cu Grade	Au Grade	Ag Grade	Tonnage	Cu Grade	Au Grade	Ag Grade
	(kt)	(kt)	(%)	(g/t)	(g/t)	(kt)	(%)	(g/t)	(g/t)
-2	30,693	—	—	—	—	—	—	—	—
-1	37,104	—	—	—	—	—	—	—	—
1	44,966	45,184	0.42	0.37	1.05	50	0.18	0.20	0.76
2	59,864	54,750	0.42	0.35	1.33	—	—	—	—
3	54,179	54,699	0.41	0.29	1.13	51	0.19	0.14	0.55
4	54,687	54,448	0.37	0.27	1.10	302	0.19	0.12	0.58
5	60,457	53,598	0.34	0.25	1.04	945	0.24	0.12	0.60
6	60,579	54,280	0.34	0.24	1.00	141	0.18	0.13	0.50
7	61,416	52,355	0.31	0.19	1.06	1,229	0.16	0.09	0.40
8	33,790	51,516	0.35	0.24	1.06	2,294	0.23	0.13	0.64
9	14,506	46,983	0.37	0.22	1.17	5,249	0.22	0.10	0.62
10	1,823	47,416	0.42	0.19	1.45	3,082	0.20	0.06	0.59
11	979	48,467	0.45	0.19	1.61	234	0.17	0.08	0.72
12	1,106	46,903	0.51	0.20	1.73	—	—	—	—
13	395	44,640	0.51	0.20	1.77	—	—	—	—
14		43,800	0.48	0.21	1.60	—	—	—	—
15		43,800	0.44	0.21	1.42	—	—	—	—
16		43,800	0.44	0.20	1.44	—	—	—	—
17		43,668	0.44	0.18	1.45	132	0.41	0.15	1.31
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34		30,482	0.38	0.13	1.44	13,318	0.38	0.11	1.57
35		32,049	0.37	0.13	1.40	11,751	0.37	0.11	1.53
36		30,307	0.36	0.13	1.36	13,493	0.36	0.11	1.48
37		28,014	0.33	0.12	1.26	15,786	0.33	0.10	1.38
38		23,564	0.31	0.11	1.19	20,236	0.31	0.09	1.33
39		20,602	0.31	0.11	1.17	23,198	0.31	0.09	1.33
40		22,537	0.33	0.12	1.29	21,263	0.33	0.10	1.46
41		23,018	0.34	0.12	1.38	20,782	0.34	0.10	1.55
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47		5,712	0.33	0.10	1.17	3,413	0.33	0.08	1.29
48		3,317	0.33	0.10	1.17	1,982	0.33	0.08	1.29

17.0 RECOVERY METHODS

17.1 Process Flow Sheet

The conceptual flow sheet selected for the plant design is shown in Figure 17-1.

The metallurgical testwork programs reviewed two alternative comminution technologies:

- Conventional semi-autogenous grind (SAG) milling
- High pressure grinding rolls (HPGR).

While both methods appeared to be effective, based on the testwork completed, a decision was made to proceed with HPGR technology due to the estimated significant LOM operating cost savings.

17.2 Plant Design

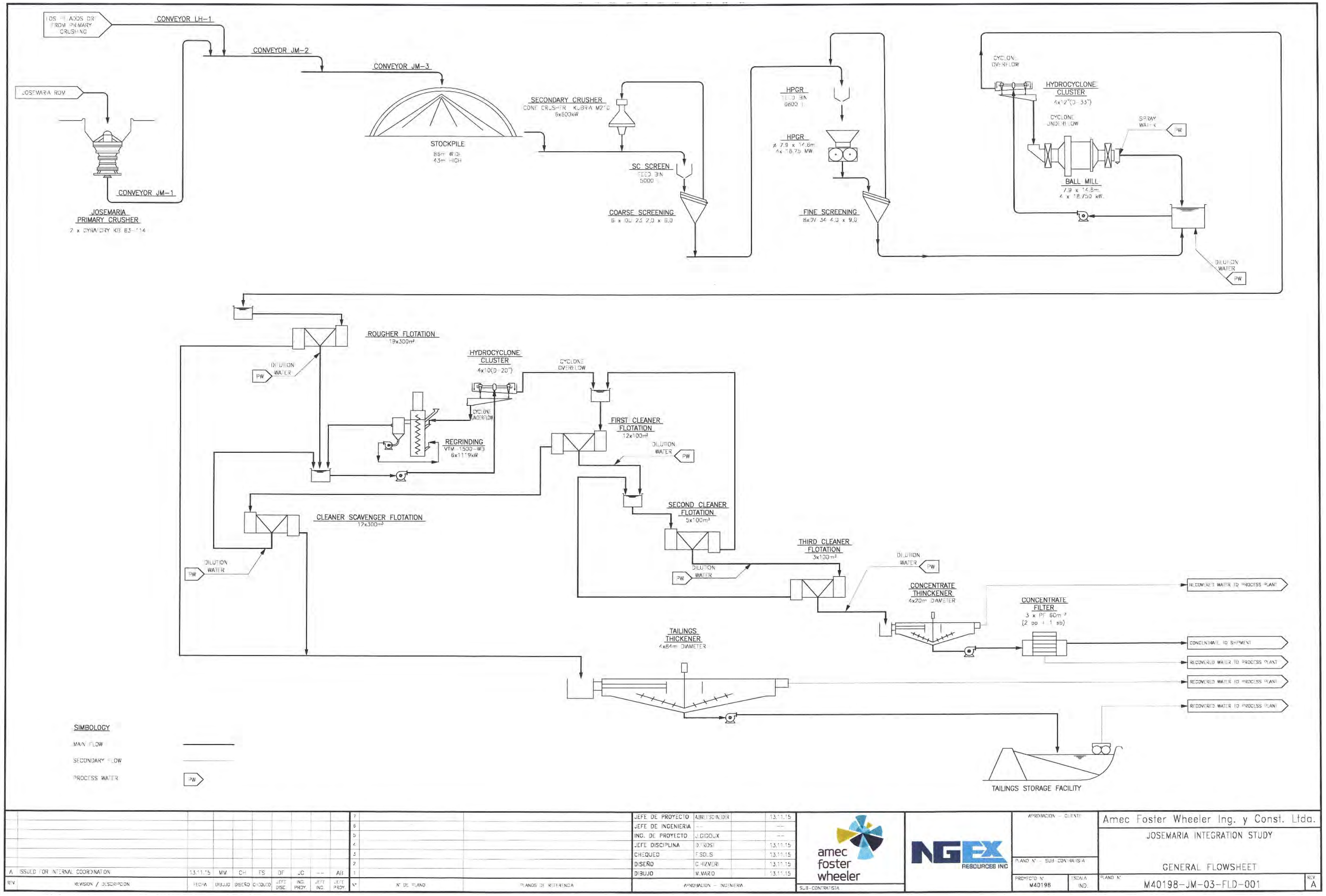
During the first seven years of operation, the plant will only treat material from Josemaría. The Josemaría open pit will be located approximately 4 km from the proposed process plant site. In year 8, mill feed material from the underground operation at Los Helados will be introduced to the plant, and blended with Josemaría open pit material. The blended feed will continue for a six-year period while Los Helados ramps-up to full production. In year 14 of operations, the open pit mining at Josemaría ceases, and for the remaining mine life, only underground feed from Los Helados will be processed

Mill feed from the Josemaría open pit and Los Helados underground deposit will be conveyed to the process plant facility. Four conveyors will be constructed, not including the tunnel conveyor from Los Helados to the surface:

- JM1: 1.36 km
- JM2: 1.57 km
- JM3: 1.99 km
- LH1: 2.80 km.

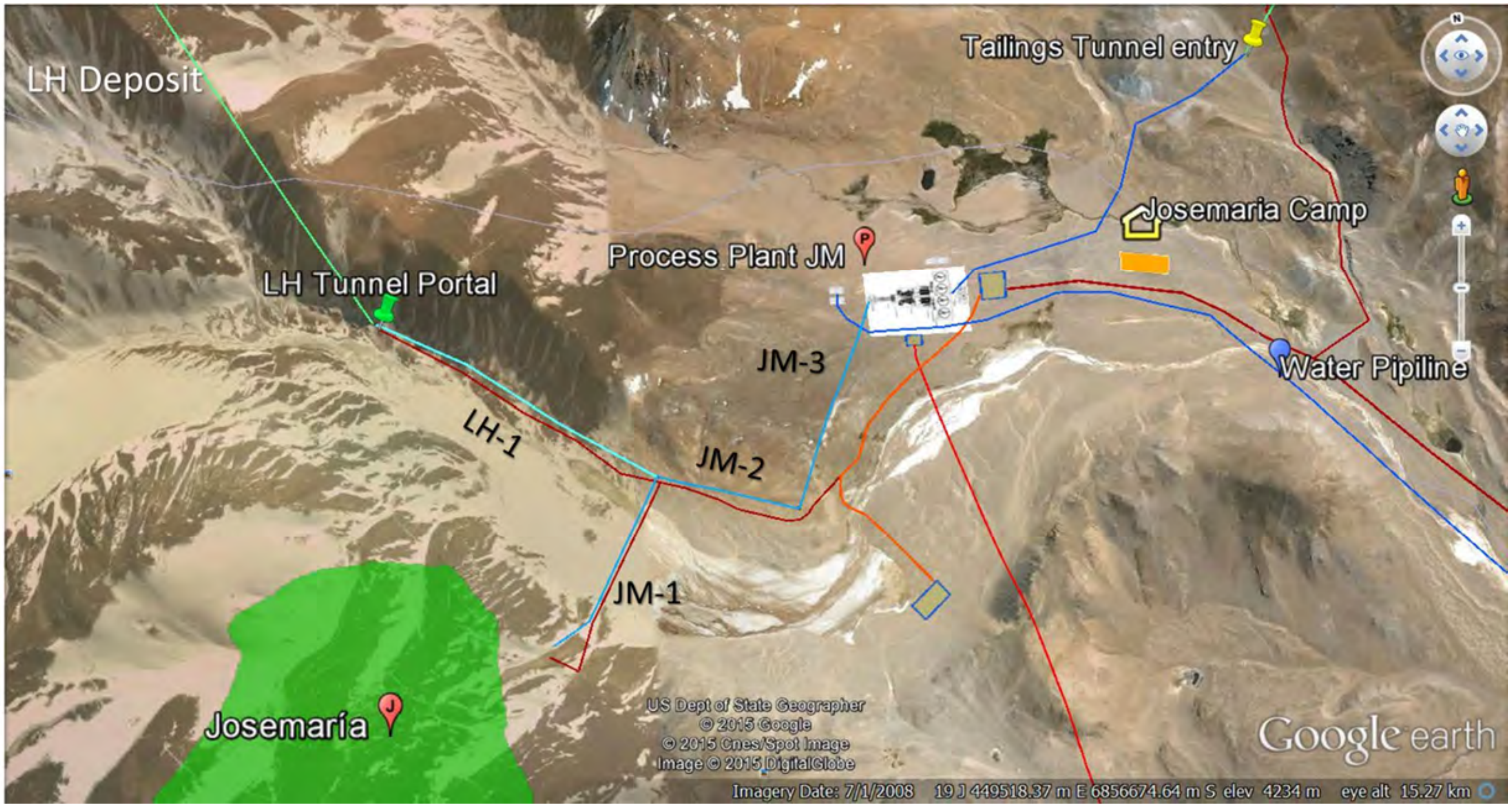
A schematic showing the approximate conveyor locations is included in Figure 17-2.

Figure 17-1: Process Flow Sheet



Note: Figure prepared by Amec Foster Wheeler, 2015.

Figure 17-2: Proposed Site Layout Plan



Note: Figure prepared by Amec Foster Wheeler, 2015.

For the Josemaría mill feed material, run-of-mine (ROM) material will be trucked from inside the pit to two gyratory jaw crushers that will be located just outside of the Josemaría open pit. The material will be primary crushed and then conveyed to a common primary crushed stockpile located at the plant via the conveying system (JM1, JM2 and JM3).

ROM material from Los Helados will be primary crushed underground in jaw gyratory crushers, and conveyed to the surface via an underground conveying system. At surface, the mill feed will be transferred to the surface conveyors, and transported to the central primary crushed stockpile at the plant using a conveying system that will consist of the LH1, JM2 and JM3 conveyors.

The base case comminution circuit design is a conventional high pressure grinding roll (HPGR) crushing circuit followed by conventional ball mill grinding. Design was based on the more competent Los Helados material, since this is the primary mill feed source for the life of mine, and not on the less competent Josemaría material.

Primary crushed material from the primary crushed ore stockpile will be control-fed to conveyors and then to a conventional secondary screening circuit where the material will be combined with secondary cone crushed product. The combined new feed and secondary crushed product will then be fed to a storage bin, and control-fed to six conventional vibrating screens. Screen undersize material will be conveyed to a storage bin feeding the HPGR crushers, whilst screen oversize material will be fed to the secondary crushing. The undersize material will be combined with screen oversize product from the HPGR crushers. This combined material will be control-fed individually to four separate HPGR crushers with the product being conveyed to eight vibrating discharge screens located at the discharge of four ball mills (two screens per mill) operating in parallel. Ball mill discharge screen undersize material will flow into the ball mill discharge hopper where it will be pumped to a bank of hydro-cyclones for classification. Cyclone underflow will flow by gravity to a distribution box and be split evenly to the ball mills, whilst cyclone overflow will be directed to the copper sulphide flotation area.

Conventional sulphide flotation will follow the comminution stage. This circuit will commence with a rougher flotation section. Rougher flotation concentrate will be produced and directed to a vertical mill regrind stage in closed circuit with hydrocyclones. Overflow pulp from the hydrocyclones will be directed to three sequential stages of conventional cleaning flotation. Cleaner scavenger flotation will be installed on the discharge from the first cleaning stage.

Tailings from the rougher flotation and cleaner scavenger flotation stages will be combined and will report to the final tails thickener, where 74% of the water will be recovered. The tails will go to the tailings storage facility where approximately 20% of the contained water in the tailings will be recovered and sent back to the process plant.

Copper concentrate from the third cleaner stage will be directed to the concentrate thickener and filtration stages. The water obtained from the concentrate thickener, tailings thickener and concentrate filter will also be recovered and sent back to the process plant.

17.3 Process Design Criteria

The plant design is based upon the ability to process 120 kt/d of Los Helados mill feed, but also maximise metal recoveries from the Josemaría deposit which will be processed at 150 kt/d through the same comminution circuit (Table 17-1). Additional flotation residence time requirements will be needed for the Josemaría mill feed material.

Figure 17-3 shows the ROM mineral size distribution.

17.4 Equipment Sizing

The main comminution equipment was sized using power-based in house calculation tools, conventional simulator programs, METSO simulation for the re-grind mill and Thyssenkrupp vendor calculations for the HPGR crushers. Table 17-2 summarizes the main equipment list.

17.5 Reagent and Consumables Consumption

Table 17-3 summarizes the reagent consumption for the flotation circuit and thickening stages; and includes the consumables consumption for the comminution circuit including HPGR crushers.

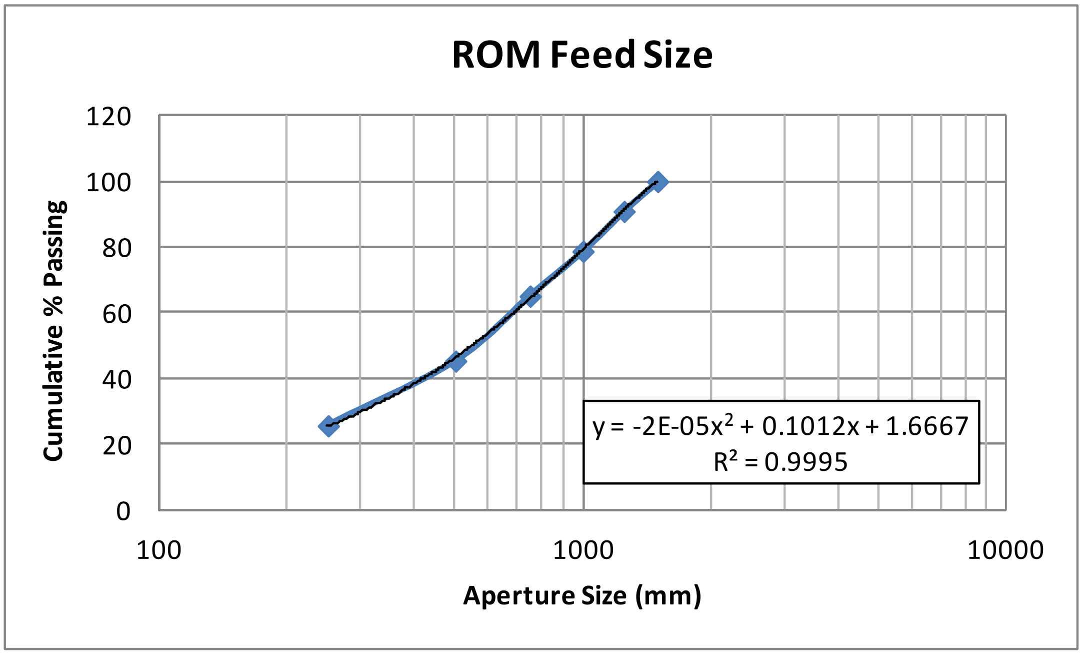
Table 17-1: Plant Design Criteria

Plant Area	Area	Item/Rate
General Plant Operation	Mine production rate – Josemaría	54,750,000 dry t/a
	Mine production rate – Los Helados	43,800.000 dry t/a
	Plant operation	365 d/a; 24 h/d
	Plant design capacity – Josemaría	150,000 dry t/d
	Plant design capacity – Los Helados	120,000 dry t/d
	Plant design capacity – Josemaría	6649 dry t/h
	Plant Design Capacity – Los Helados	5320 dry t/h
	Plant utilization:	0.94
	Make –up process water	Fresh water
	Specific gravity - Josemaría	2.69
	Specific gravity – Los Helados	2.74
	Abrasion index – Josemaría	0.187
	Abrasion index – Los Helados	0.228
	A x b index – Josemaría	32.8
	A x b index – Los Helados	23.1
	Bond ball mill work index – Josemaría	15
	Bond ball mill work index – Los Helados	19.3
Primary Crushing	ROM size distribution	see Figure 17-3
	ROM moisture content	3% w/w
	Estimated F80	143 mm
	Utilization	0.7
	Crusher type – Josemaría	Jaw gyratory (mining area)
	Crusher type – Los Helados	Standard gyratory
	Maximum size allowed	1,600 mm
Primary Crushed Material Stockpile	Type	Conical
	Structure	Closed structure
	Dimension	43 m high x 86 m wide
	Total capacity	149,791 t
	Live capacity	37,448 t
	Live capacity time	6 hours
	Bulk density	1.8 t/m^3
Secondary Crushing	Estimated F80	143 mm
	Estimated T80	50 mm
	Utilization (individual)	0.8
	Utilization (combined)	0.94
	Crusher type	Cone crusher

Plant Area	Area	Item/Rate
HPGR	Specific energy requirement - design	2.89 kWh/t
	Estimated F80	50 mm
	Estimated T80	3.25 mm
	Abrasion Index	0.265
	Specific Gravity	2.74
	Utilization	0.94
Ball Mill	Utilization	94%
	Specific energy requirement – design	13.1 kWh/t
	Estimated T80	3.25 mm
	Target P80 – Los Helados	125 µm
	Target P80 – Josemaría	160 µm
	Percentage of critical mill speed	0.78
	Total charge volume	0.34
	Hydrocyclone cluster	
	Solids percentage overflow	35% w/w
	Solids percentage underflow	75% w/w
	Pressure	69 KPa
	Utilization	0.94
	Recirculating load	1.5
Flotation	Average copper head grade – Both Deposits	0.38%
	Average copper head grade – Josemaría	0.36%
	Average copper head grade – Los Helados	0.39%
	Average gold head grade – Both Deposits	0.17 g/t
	Average gold head grade - Josemaría	0.25 g/t
	Average gold head grade – Los Helados	0.15 g/t
	Mass pull to the final concentrate	0.34% of new feed
	Final copper concentrate grade – LOM average	29.1%
	Useful volume factor	0.85
	Utilization	94%
Rougher Stage	Pulp pH	8
	Mass pull to concentrate - Design	12.8% of new feed
	Stage copper recovery – Design	93.7%
	Effective flotation residence time – Josemaría	19 min
	Effective flotation residence time – Los Helados	24 min
	Undiluted concentrate percent solids	30 % w/w
	Diluted concentrate percent solids	25 % w/w
Cleaning Stages	Pulp pH – 1st Cleaner	10.5

Plant Area	Area	Item/Rate
	Pulp pH – 2nd Cleaner	11.5
	Pulp pH – 3rd Cleaner	11.5
	Pulp pH – Cleaner Scavenger	10.5
	Cleaning stages copper recovery – Design	94.8%
	1st Cleaner flotation residence time – Design	7.5 min
	2nd Cleaner flotation residence time – Design	5.0 min
	3rd Cleaner flotation residence time – Design	5.0 min
	Cleaner scavenger residence time - Design	30 min
	Undiluted concentrate percent solids – cleaners	20% w/w
	Undiluted Cleaner Scavenger concentrate percent solids	17% w/w
	1st Cleaner diluted concentrate percent solids	18% w/w
	2nd and 3rd Cleaner, Cleaner Scavenger diluted concentrate percent solids	15% w/w
Regrind Stage	New feed F80	90 µm
	Target P80	45 µm
	Estimated specific energy requirement	4.9 kWh/t
	Utilization	94%
	Hydrocyclone cluster	
	Solids underflow density	75% w/w
	Pressure	125 KPa
	Recirculating load	1.5
Thickening Design	Settling rate – Concentrate	0.15 $t/h/m^2$
	Settling rate – Tailings	0.26 $t/h/m^2$
	Thickening stages – Concentrate	2 series stages (plant area and filter plant area)
	Filter plant thickener underflow concentrate density	65% solids w/w
	Tailings thickener underflow density	65% solids w/w
	Flocculent dose rate – Tails thickeners	3 g/t new feed
Concentrate Filter	Filtering rate	450 $kg/h/m^2$
	Filtered concentrate moisture content	8% w/w
	Utilization	0.8
Tailings Storage Facility	Water recovered	20% water to TSF

Figure 17-3: ROM Mineral Size Distribution



Note: Figure prepared by Amec Foster Wheeler, 2015.

Table 17-2: Major Equipment List

Area	Item	Qty.	Sizing	Installed Power/Unit (kW)
Primary Crushing	Primary crushing (Josemaría)	2	Primary crusher 63-114	1,200
Secondary Crushing	Coarse screening	6	DU 23 2.0x6.0 DD, decks: 100 mm/50 mm	55
	Secondary crushers	6	Kubria M210, P100 = 50 mm	600
Tertiary Crushing	Tertiary crushers	4	24/17-8 roll diameter 2.4 m Roll width 1.65 m (w/motor)	2 x 2,650
	Fine screening	8	DU 34 4.0 x 9.0 DD BA Decks: 6 mm	132
Grinding and Classification	Ball milling	4	7.9 x 14.6 m EGL	18,750
Flotation and Regrinding	Rougher flotation	19	Conventional cell Forced air – 300 m^3	250
	First cleaning flotation	12	Conventional cell Forced air – 100 m^3	110
	Second cleaning flotation	5	Conventional cell Forced air – 100 m^3	110

Area	Item	Qty.	Sizing	Installed Power/Unit (kW)
	Third cleaning flotation	3	Conventional cell Forced air – 100 m^3	110
	Cleaning scavenger flotation	12	Conventional cell Forced air – 300 m^3	250
	Regrind milling	6	Vertical mill VTM-1500-WB	1,119
Concentrate Thickening	Concentrate thickening	4	Conventional thickener 20 m Diameter	25
Tails Thickening	Tails thickening	4	Conventional thickener 84 m diameter	110
Concentrate Filtering	Filtration	3	Vertical filter press PF 60 (120 m^2 total area)	110

Table 17-3: Reagent and Consumables Consumption Estimate

	Area	Item/Rate
Reagents	Lime addition rate (total) CaO	0.45 g/t new feed
	Collector SASCOL 95	25 g/t new feed
	Collector MATCOL TC-123	5 g/t new feed
	Frother MIBC	10 g/t new feed
	Tailings thickener flocculent dose rate	3 g/t plant feed rate
Consumables	Primary crusher liners - Josemaría	720 t/a
	Ball mill liners - Josemaría	79 g/t
	Ball mill liners – Los Helados	108 g/t
	Regrind mill liners – Josemaría	4.6 g/t
	Regrind mill liners – Los Helados	4.6 g/t
	Ball mill media – Josemaría	691 g/t
	Ball mill media – Los Helados	864 g/t
	Regrind mill media – Josemaría	60 g/t
	Regrind mill media – Los Helados	108 g/t
	Secondary crusher liners - both	5 t/a
	HPGR crushing rolls – Josemaría	3.2 tyres/a
	HPGR crushing rolls – Los Helados	4 tyres/a

17.6 Comments on Section 17

The decision to use HPGR technology was based on early-stage metallurgical testwork results and a high-level financial analysis. A more detailed techno-economic trade-off study on SAG versus HPGR should be conducted. Additional physical characterization and flotation optimization tests should be conducted on mineralization variability from both deposits. This should include further SAG mill competency and bench-scale HPGR testing, particularly with respect to the Josemaría deposit. Results from this work program should be incorporated in more detailed project studies.

In this study, the plant is to be located in Argentina close to the Josemaría deposit. This impacts on the selected HPGR comminution route as unit energy costs are lower than in Chile, and it is assumed that a sufficient supply of fresh water with low salt content will be available for process make up. Available water supplies from the Josemaría region should be used for metallurgical testwork going forward.

Due to the aridness of the region, water recovery processes should be reviewed as part of more detailed studies. Areas to assess include consideration of tailings thickening to either paste or filtered tailings which would reduce the water requirement, thereby reducing pumping and pipeline capital and operating costs.

18.0 PROJECT INFRASTRUCTURE

A schematic showing the conceptual facilities layout is included as Figure 18-1 and a more detailed plan of the facilities locations in relation to the Chile–Argentina border is included as Figure 18-2.

18.1 Josemaría

The Josemaría site will host the majority of the major infrastructure, including the process plant, the tailings storage facility, workshops, and camp (Figure 18-3).

18.1.1 Road and Logistics

Road Access

The Josemaría mine and process plant will be accessed by a 57 km long two-way dirt access road that will branch off from highway RN 76. From the intersection with the Josemaría access road, RN 76 continues 22 km to the northwest to the international border crossing between Argentina and Chile at Pircas Negras. Southeast of the intersection, RN 76 provides access to RN 40, the main north–south highway in western Argentina.

The new Josemaría access road will require three creek crossings.

Dirt roads will connect various mine facilities, including the proposed open pit, truck-shop, conveyor locations, process plant and crushers, electrical substations, and administrative buildings.

Mill Feed Conveyors

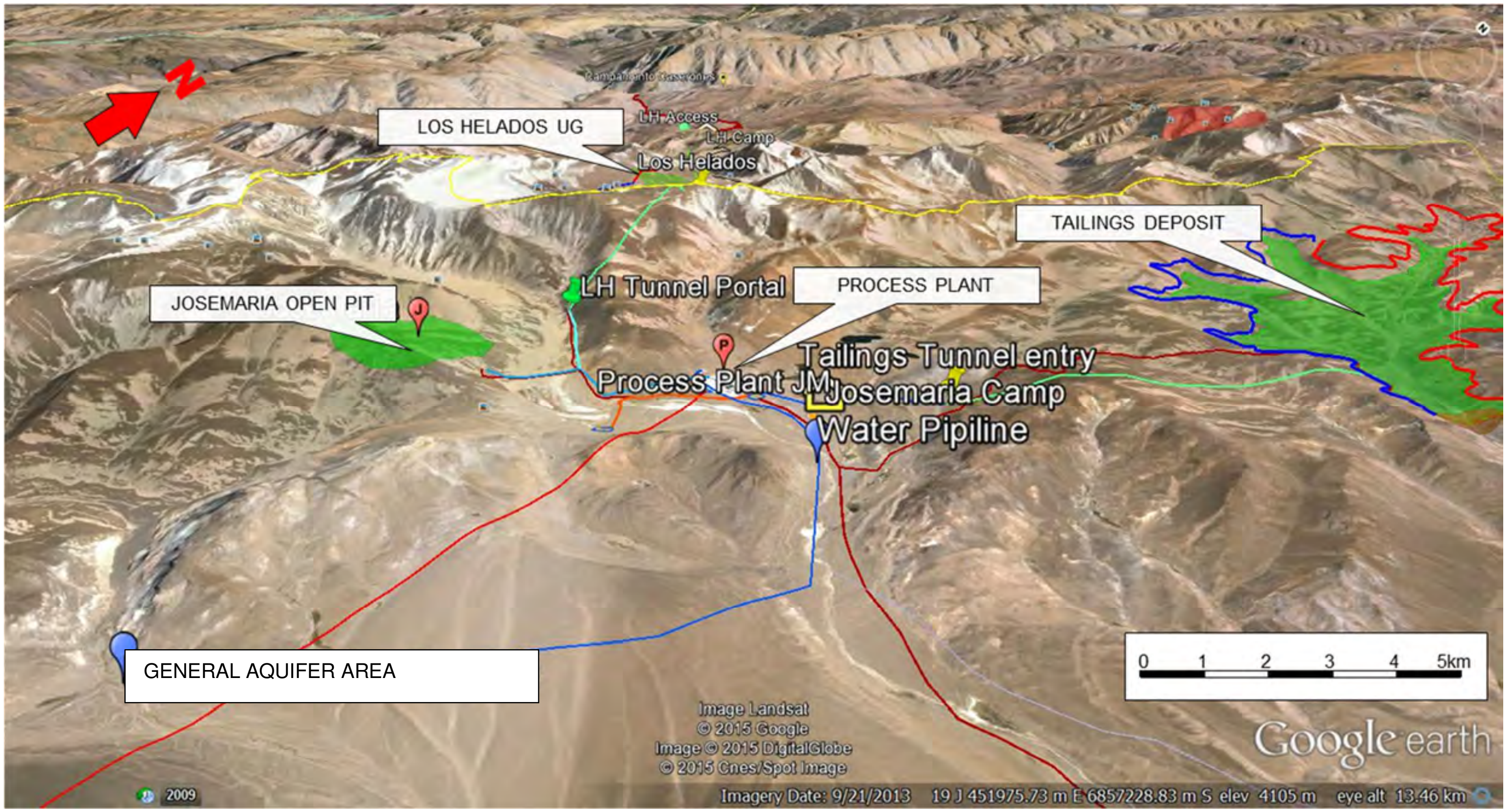
Mill feed material from the Josemaría open pit will be transported 4.9 km from the primary crushers via three surface conveyors (JM 1 to JM 3; refer to Section 17), and two transfer stations, to a stockpile that will be located near the process plant.

Concentrate Transport

Concentrate will be transported by truck from the Josemaría filter plant in Argentina to the port at Caldera in Chile, a total distance of 381 km. It is assumed that concentrate will be transported by contractors. The proposed route is as follows:

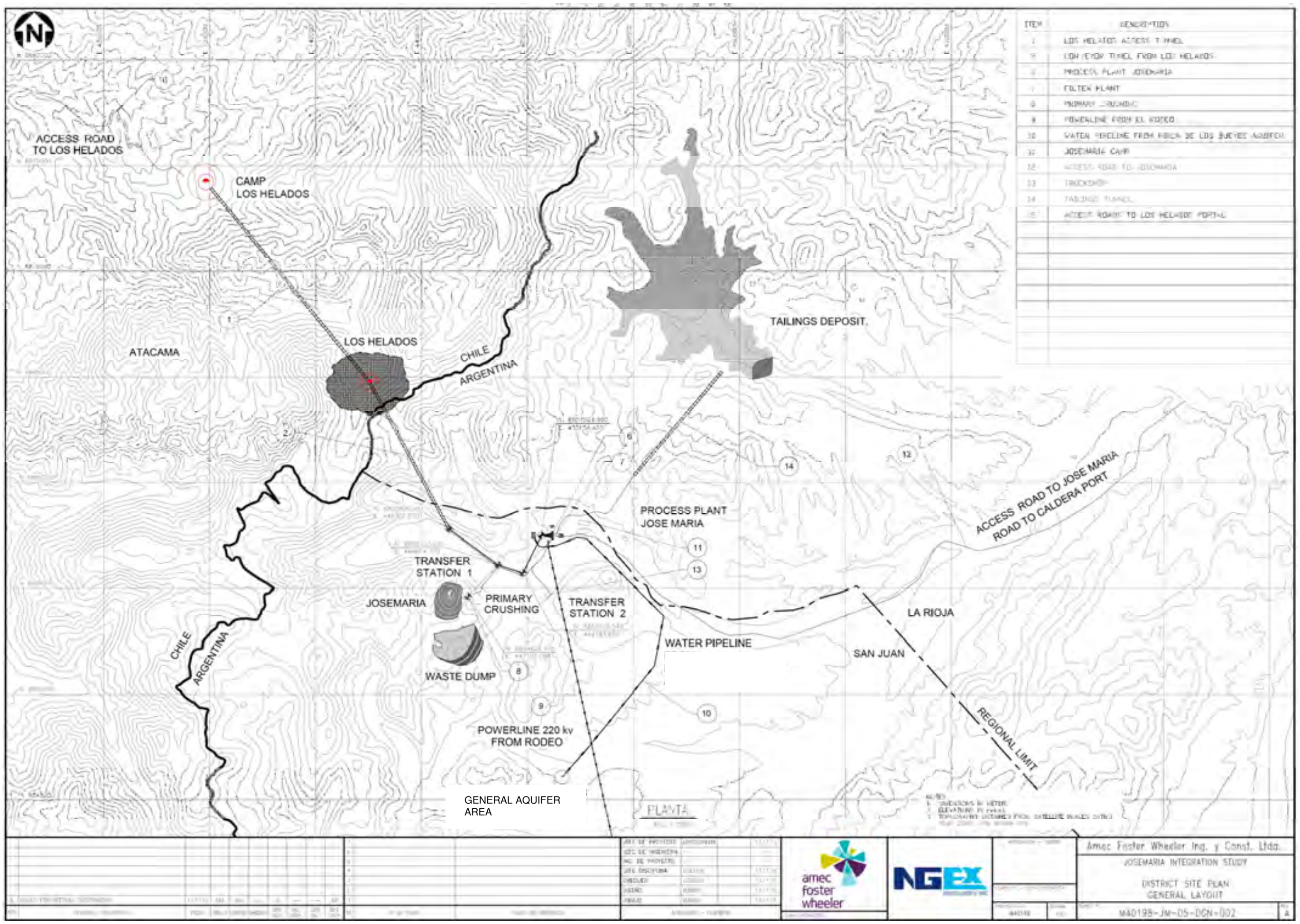
- 57 km from the plant site to the junction with RN 76 via the Josemaría access road
- 22 km on RN 76 to the Pircas Negras international border crossing
- 167 km to Tierra Amarilla taking routes C-359, C-459, and C-503
- 135 km on routes C-35, C397 and route 5 to the port at Caldera.

Figure 18-1: Schematic Showing Facilities Location as Envisaged in PEA



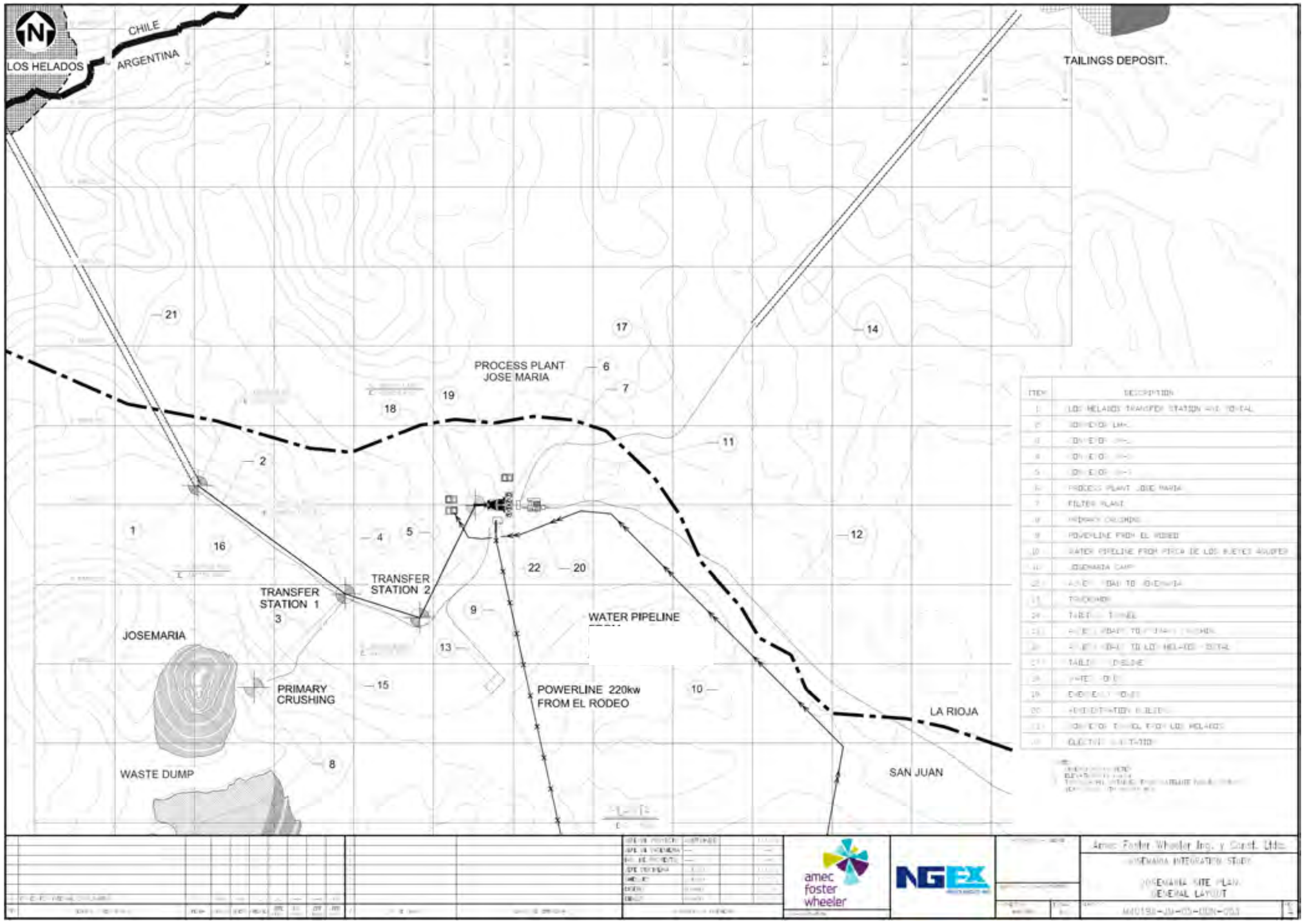
Note: Figure prepared by Amec Foster Wheeler, using Google Earth backdrop, 2015.

Figure 18-2: General Infrastructure Layout Plan



Note: Figure prepared by Amec Foster Wheeler, 2015. Grid squares on figure are 5 km x 5 km. Area shown for Los Helados is the ultimate subsidence zone limit.

Figure 18-3: Josemaría Infrastructure Layout Plan



Note: Figure prepared by Amec Foster Wheeler, 2015. Grid squares are 1,250 x 1,250 m.

18.1.2 Waste Storage Facilities

The Josemaría operation will generate a total of 517 Mt of waste material which is proposed to be placed in a waste storage facility that would be located about 1 km south of the open pit.

18.1.3 Tailings Storage Facilities

The tailings storage facilities are discussed in Section 20.

18.1.4 Water Management

The water management assumptions are discussed in Section 20.

18.1.5 Surface Infrastructure

Infrastructure at Josemaría will include:

- Process plant, including filter plant
- Ancillary site buildings
  - Administrative building
  - Assay laboratory and small metallurgical laboratory
  - Change-room
  - Polyclinic with an ambulance
  - Fully-equipped rescue unit
  - Cafeteria.
- Construction and operations camp
- Truck-shop to service mining trucks for the open pit operation
- 23 kV power distribution system to all operating areas
- Water ponds
- Emergency ponds
- Site security
- Parking for buses and light vehicles
- Potable water system
- Sewage treatment plant.

18.1.6 Accommodations Camp

Site selection for the proposed accommodation camp is provisional, and based on satellite image interpretations. The camp will consist of modular prefabricated two-story buildings. The camp design assumes a 4,000 person capacities during construction. As construction demand decreases, parts of the camps will be reassigned to operations personnel and operations offices. During operations, it is expected that the Josemaría camp will accommodate about 750 persons.

18.2 Los Helados

18.2.1 Road and Logistics

Road Access

The existing 20 km long single-lane dirt road will be upgraded to a two-way road to access the Los Helados mine from Chilean public road C-35. This road will allow access to Copiapó, the proposed port location in Caldera, and to Route 5, the main north–south highway in Chile.

Dirt roads will connect various mine facilities, including the mine portal and the accommodation–construction camps.

Mill Feed Conveyors

Mill feed from the Los Helados mine will be transported via a series of conveyors from the primary crushers located on the mine transport level at 3,456 masl to the Josemaría process plant. The first conveyor will be situated within an 8 km long tunnel; the second conveyor will be a 2.8 km long surface conveyor that will tie into the Josemaría conveyor system at the first transfer station.

18.2.2 Waste Storage Facilities

About 2.6 Mt of waste rock will be generated during mine development and ramp-up, and brought to surface. The PEA mine plan assumes this material will be used in construction of the contractor camp and in support of operations (e.g. laydown pads).

18.2.3 Tailings Storage Facilities

The tailings storage facilities are discussed in Section 20.

18.2.4 Water Management

The water treatment assumptions are discussed in Section 20.

18.2.5 Surface Infrastructure

The PEA design assumes the support for the Los Helados operations will be provided from Josemaría. This will include major equipment maintenance and fuel provision.

Surface infrastructure required to support operations will include:

- Equipment shop for major repairs
- Explosives magazine
- Warehouse
- Water treatment plant
- General mine offices
- Control room and training center
- First aid station and mine rescue room
- Construction and operations camp
- Mining contractor facilities.

Additional equipment that will be required and can be placed either on surface, or underground, would include:

- Change house
- Instrumentation shop.

18.2.6 Camps and Accommodation

Site selection is provisional, and based on satellite image interpretations. The camp for Los Helados is assumed to be adjacent to the portal. The camp will consist of modular prefabricated two-story buildings.

The camp designs assume a 4,000 person capacity during construction. As construction demand decreases, parts of the camp will be reassigned to operations personnel and operations offices. During operations, it is expected that the Los Helados camp will accommodate about 2,400 persons.

18.2.7 Underground Infrastructure

Underground facilities at Los Helados would include:

- Equipment shop for minor repairs
- Store room
- Fuel system

- Explosives magazine, weekly
- Concrete plant
- Sampling room
- Refuges
- Lunch rooms
- Offices, map and meeting room, training room
- First aid station
- Water tanks.

18.3 Port Facilities

The Candelaria port adjacent the city of Caldera was selected for PEA study purposes. Port facilities at Caldera are owned and operated by Minera Candelaria. The port is about 380 km by road from the filter plant site.

The Project would require additional port facilities to be constructed to support concentrate export, adjacent to Minera Candelaria's existing buildings, including the following:

- A truck unloading area; trucks will be used to transport the concentrate from Josemaría to port.
- A closed-stockpile building. Concentrate from the trucks will be stored in a stockpile; concentrate will be reclaimed from the stockpile via front-end loaders with a capacity of about 850 t/h and loaded into a conveyor.
- A conveyor system to convey concentrate to the existing Candelaria ship loading facility.

18.4 Power and Electrical

Electrical demand has been estimated to be 160 MVA. A number of alternatives for supply were considered from within Chile and Argentina. For PEA purposes, a 250 km, 220 kV single-circuit power line from the El Rodeo power station, located in San Juan Province in Argentina, was assumed. Sourcing the power supply from Argentina was considered the best alternative at this study stage due to the lower power costs in Argentina, and the fact that the process plant, the biggest power user, is planned to be located in Argentina.

Power infrastructure will include:

- 220 kV overhead transmission line from El Rodeo

- Main power substation besides the process plant
- Power distribution systems at 33 kV to:
  - Los Helados mine
  - Josemaría mine and primary crushing area
  - Process plant
  - Truck-shop
  - Camp
  - Water pump station at the aquifer
  - Water reclaim pump station at the TSF.
- Emergency generation plant at the power substation; the site distribution voltages will be:
  - Primary distribution: 33 kV, Phase 3, 50 Hz
  - Secondary distribution: 4.16 kV, Phase 3, 50 Hz.

Power feed lines to Los Helados will be routed inside the conveyor tunnel.

Power supply for the Los Helados camp may be available from Chile and should be the subject of additional study.

18.5 Fuel

Fuel will be delivered to the Josemaría mine site using tanker trucks. The fuel storage tanks will be single-walled within a lined containment berm. Tank design will comply with appropriate regulatory requirements.

Fuel would be trucked up the Los Helados access road to support mining activities at Los Helados.

18.6 Waste Treatment

It is assumed that solid wastes will be trucked to an approved landfill. Waste lubricants and hydraulic oils from vehicle maintenance will be stored in dedicated tanks and sent to a recycling facility off site. Their disposal will be contracted to an approved treatment contractor

18.7 Comments on Section 18

Infrastructure requirements have been assessed at the PEA level to support open pit and underground mining activities.

19.0 MARKET STUDIES AND CONTRACTS

19.1 Market Studies

No formal marketing studies have been conducted for Project Constellation. Information in this sub-section has been sourced from Wood Mackenzie's global Cu long-term outlook Q3 2015 (Wood Mackenzie, September 2015).

Wood Mackenzie estimates that total world Cu consumption (refined consumption and direct use scrap) will grow by 2.3% in 2015, taking consumption to 22.1 Mt. For 2016 and 2017, global refined consumption growth rates are estimated at 3.5% and 2.9% respectively, supported by a projected improvement in economic growth as well as a lower price environment and ongoing tightness in scrap availability.

Thereafter, Wood Mackenzie's macroeconomic forecast factors in a slowdown in GDP growth rates in 2018, which is expected to reduce Cu consumption growth in that year. Over the longer term Wood McKenzie forecasts an average annual growth rate of approximately 1.6% leading to total refined consumption tonnage of 31.5 Mt in 2035.

With current market cost pressure and limited new mine supply entering the market over the next few years, Wood Mackenzie is forecasting only a modest surplus and is suggesting the market will remain relatively tight in the long term. The current lower price environment, escalating capital costs, and negative market sentiment towards large development projects is resulting in under investment in the Cu mining space in the near term. Given the lengthy time to develop new projects, Wood Mackenzie is forecasting the Cu market to return to a modest deficit by 2020.

As the pace of supply growth slows relative to demand beyond 2017, inventories will be drawn down and prices will begin to slowly recover. Growing supply deficits from 2020 will provide the trigger for prices to rally, which will encourage additional production back into the market. Initially this will be satisfied either by the reactivation of closed mines, new discoveries at currently producing mines, incremental expansions, mine life extensions and then, eventually, through the development of greenfield projects.

19.1.1 Concentrate

NGEx used metallurgical testwork indications to derive the projected concentrate grades noted in Table 19-1 and Table 19-2 for each deposit, and in Table 19-3 for the LOM.

Table 19-1: Projected Copper Concentrate Grades, Josemaría

Element	Final Projected Concentrate Grades				
	Supzone	Rhyzone	Tonzone	Porzone	LOM *
Proportion in deposit %	4.0	24.0	54.0	18.0	100.0
Calculated feed Cu grade %	0.61	0.32	0.33	0.29	0.33
Cu %	30.0	28.9	24.3	20.3	24.9
Au g/t	13.7	11.0	18.0	13.7	15.4
Ag g/t	52.4	49.0	48.1	54.8	49.7
Fe %	25.4	25.9	23.7	31.6	25.7
S %	36.2	36.2	28.3	37.1	32.1
Cu Sol %	0.353	0.105	0.093	0.021	0.09
Cd %	0.003	0.003	0.004	0.002	0.00
Zn %	0.544	0.111	0.187	0.161	0.18
As %	0.07	0.308	0.095	0.2	0.16
Insoluble %	7.47	8.5	15.7	11.94	12.97
Hg ppm	0.8	3.1	1	0.5	1.41
Sb %	0.008	0.02	0.033	0.026	0.03
Cl %	0.054	0.018	0.009	0.072	0.02

Note: * based upon grades tested and proportions

Table 19-2: Projected Copper Concentrate Grades, Los Helados

Element	Final Projected Concentrate Grades			
	1–7 years	8–15 years	16+ years	LOM *
Proportion in deposit %	11.0	22.0	67.0	100.0
Calculated feed Cu grade %	0.522	0.569	0.454	0.487
Cu %	29.9	26.5	23.4	24.8
Au g/t	6.5	8.3	6.8	7.1
Ag g/t	70.0	50.0	53.0	54.2
Fe %	28.1	29.5	31.8	30.9
S %	33.7	34.7	37.3	36.3
Cu Sol %	0.042	0.088	0.091	0.08
Cd %	<0.001	<0.001	<0.001	<0.001
Zn %	0.284	0.062	0.108	0.12
As %	0.024	0.013	0.005	0.01
Insoluble %	6.17	8.58	7.52	7.60
Hg ppm	3.1	1.2	0.7	1.07
Sb %	<0.005	<0.005	<0.005	<0.005
Cl %	0.021	0.031	0.011	0.02

Note: * based upon grades tested and proportions

Table 19-3: Projected Copper Concentrate Grades, Project Constellation

Element	Final Projected Concentrate Grades		
	Josemaria	Los Helados	Overall LOM *
Proportion processed %	24.0	76.0	100.0
Calculated feed Cu grade %	0.33	0.49	0.45
Cu %	24.9	24.8	24.8
Au g/t	15.4	7.1	9.1
Ag g/t	49.7	54.2	53.1
Fe %	25.7	30.9	29.6
S %	32.1	36.3	35.3
Cu Sol %	0.09	0.08	0.09
Cd %	0.003	0.001	0.002
Zn %	0.18	0.12	0.13
As %	0.16	0.01	0.05
Insoluble %	12.97	7.60	8.89
Hg ppm	1.41	1.07	1.15
Sb %	0.028	0.005	0.010
Cl %	0.02	0.02	0.02

Note: * based upon grades tested and proportions

The testwork completed to date indicates that contained Cu, Au and Ag would be payable in the concentrates produced. The testwork also indicates that the concentrate product would be marketable, precious-metals rich, and low in deleterious elements. The primary market for the material is copper smelters. However, commodities trading companies, mining companies, or other less traditional outlets may also show interest in the offtake for blending purposes given the low levels of deleterious elements and high precious-metals content.

The concentrate results presented in Table 19-1 to Table 19-3 are indicative of the actual concentrates produced from testwork. A review of the concentrates produced in the testwork indicates that the overall concentrate quality and cleanliness can be improved. Amec Foster Wheeler believes that the concentrates produced can approach a life-of-mine average of 29.0% Cu, 10.4 g/t Au and 70.3 g/t Ag.

For the purposes of the PEA, it was assumed that long-term contracts would be established with Asian smelters.

19.1.2 Smelter and Refining Terms

The commercial terms noted below have been benchmarked against similar operations from publicly-available information:

- Long-term treatment and refining charges (TC/RCs) of $85/t and $0.085/lb for copper concentrates
- Refining charges of $5/oz Au and $0.30/oz Ag
- Asian-style smelting terms:
  - 96.5% copper content paid subject to a 1% minimum deduction
  - Gold is payable on a sliding scale based on the gold grade contained in the concentrate (provided the level is above 1 g per dmt) and is estimated to average 95.5% gold payable over the life of mine
  - 90% silver payable, provided level is above 30 g per dmt.
- Ocean freight of $55/wmt (8% moisture content assumed).

These terms are used in support of the financial analysis in Section 22.

Opportunities exist for NGEx to receive premium terms for its clean, precious metals rich concentrates. This potential upside should be evaluated during future Project-specific marketing studies.

19.2 Commodity Price Projections

According to Wood Mackenzie (Q3 2015 Copper Long-Term Outlook):

"For industries such as copper that are in structural deficit, that is, with long-term demand significantly in excess of base case production intentions, our view is of the opinion that while there are various techniques used by the industry to project long-term copper prices, incentive pricing provides the most appropriate estimate of long-term cycle average prices. The incentive price analysis examines the price required to provide an investor a given rate of return for each project, and calculates the price required in theory to warrant investment in sufficient cumulative capacity to meet potential demand. In this context the long-term can be considered the average price over the next cycle, i.e. the decade over which a project would expect to see payback.

As commodity prices begin to recover, and copper prices start to rise from 2018, cost escalation will re-emerge along with currency appreciation of the commodity-producing countries. Moreover, some of the projects that could potentially be brought on stream over the long term cannot realistically be built and ramped up to full capacity within 10 years. If these projects are not developed, then other higher cost projects will be needed to fill the 'supply gap' that begins to emerge from 2020. Moreover, if companies require *higher IRRs, then a higher copper price would be required to incentivise sufficient output. Taking all of these factors into account, and despite the recent reduction in operating and capital costs, Wood Mackenzie estimates that a long-term incentive price of $3.50/lb will be required to bring on adequate mine output in order to maintain market equilibrium and retain a reasonable market balance over the next decade."*

For the purposes of the economic analysis in Section 22, the long-term prices used for the 2015 financial model base case are presented in Table 19-4.

Table 19-4: Long-term Metal Price Assumptions

Metal	Unit	Price Assumed
Cu	US$/lb	3.00
Au	US$/oz	1,275
Ag	US$/oz	20

These prices represent a more conservative pricing forecast than detailed above. The metals pricing used was derived from the average of the long-term price projections from a number of analyst and bank forecasts.

19.3 Contracts

No contracts are currently in place for any production from the Project.

Most copper concentrates are traded on the basis of term contracts. These frequently run for terms of one to 10 years, although many long-term contracts are treated as evergreen arrangements that continue indefinitely with periodic renegotiation of key terms and conditions.

Generally, a term contract is a frame agreement under which a specified tonnage of material is shipped from mine to smelter, with charges re-negotiated at regular intervals (e.g. annual or biannual). Spot contracts are normally one-off arrangements with a merchant for the sale of concentrates. The material is paid for in much the same way as a concentrate shipped under a term contract. Merchant business is a mixture of single consignments of concentrates and one-off contracts with smelters and long-term contracts with both miners and smelters.

19.4 Comments on Section 19

The QP recommends that an independent marketing study should be prepared to support more detailed studies and the declaration of Mineral Reserves.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 Sources of Information

Section 20 has been prepared with information provided by BGC Engineering Inc and its subsidiary BGC Ingeniería Ltda (jointly BGC), by Asesoría Ambiental and by Amec Foster Wheeler. The high cordillera setting and glaciology (refer to Section 20.2) is described from BGC's summary report of the glaciology of the Vicuña District (BGC 2015a). The Josemaria environmental assessment (Section 20.3) has been described by Amec Foster Wheeler from Asesoría Ambiental's report on the baseline characterization (Bethsabé Manzanares 2015). The Los Helados environmental assessment (Section 20.4) has been described from BGC's summary report of the baseline characterization (BGC 2015c). The project environmental design (Section 20.5), closure plan (Section 20.6), community engagement (Section 20.7) and permitting (Section 20.8) subsections have been prepared by Amec Foster Wheeler.

Further information can be obtained from the referenced reports. The sources of all the studies, data, and findings described below can be found in these referenced reports.

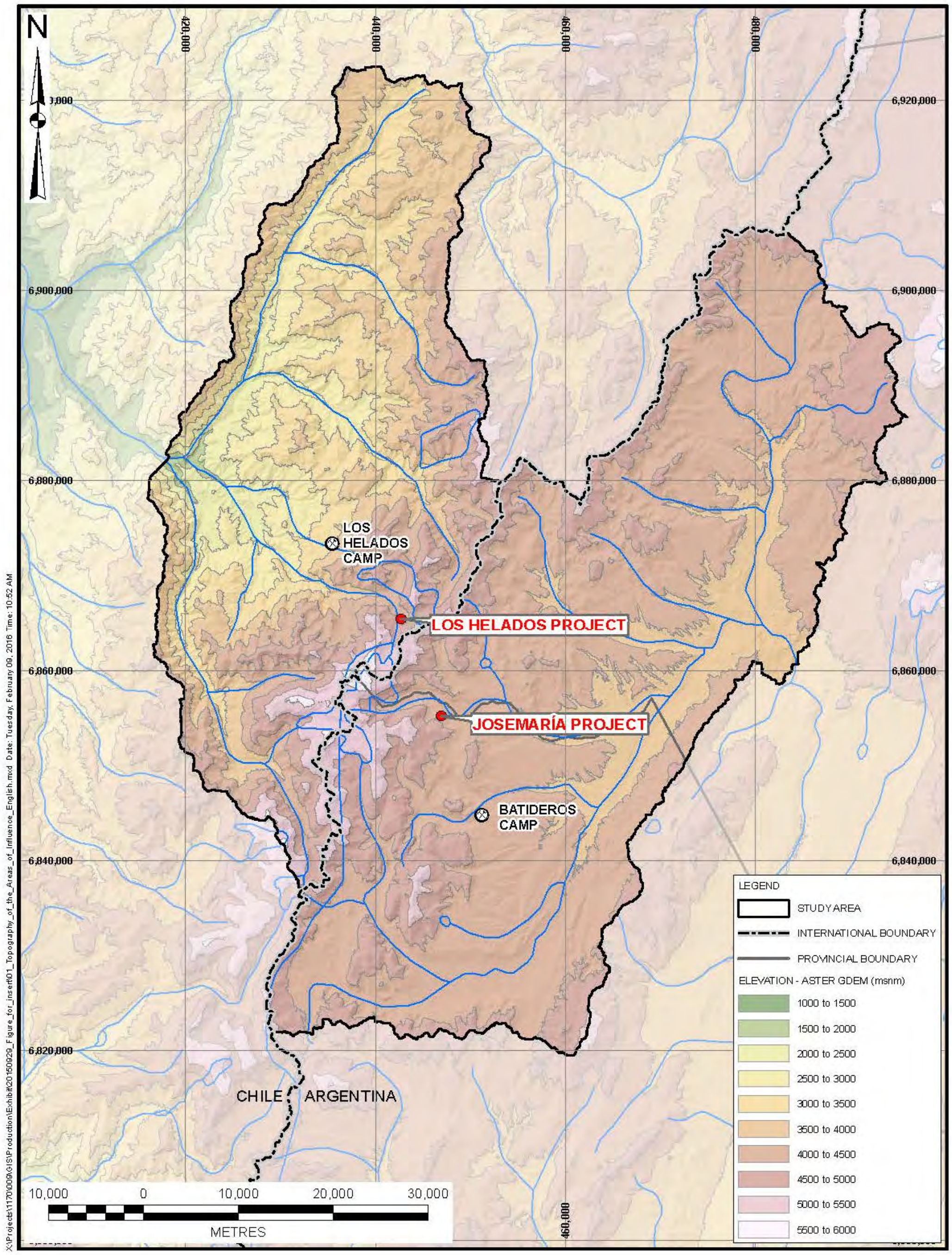
20.2 High Cordillera Setting and Glaciology

20.2.1 Relief and Climate

The Josemaria and Los Helados mineral deposits are located within the Vicuña exploration district that was studied by BGC in order to characterize the cryological conditions of the area. The Vicuña Exploration District is at approximately 170 km southwest of Copiapó (Chile) and 460 km northeast of San Juan (Argentina), at elevations varying between 2,720 and 5,830 masl. It covers a large area, as shown in Figure 20-1 extending over the entire exploration district beyond the Los Helados and Josemaria mineral deposit areas.

The heterogeneous, spatial distribution of the cryosphere in the Andes responds to the large variability in topographical and meteorological conditions typical for mountainous environments. Between April 2014 and January 2015, BGC installed three automatic weather stations (AWS), one in each of the project areas and one close to the ridgeline of the international border. Additionally, an existing station located near the Los Helados camp has been recording data since May 2012. Based on the local information collected and regional information from public stations located in the nearby areas, BGC prepared a weather and climate characterization (BGC 2015k and BGC 2015l).

Figure 20-1: Vicuña Exploration District with the Location of the Los Helados and Josemaria Projects



Note: Figure courtesy BGC, 2015.

In the above-mentioned report, by incorporating findings from a literature study, BGC also prepared a description of the climate on a regional scale with a brief glaciation history, the Köppen-Geiger climate classification (Köppen and Geiger, 1930), and an identification of the observed climate changes and future projections based on recent climate models by the Intergovernmental Panel on Climate Change (IPCC). The main findings from the weather and climate studies carried out to date can be summarized as follows:

- The two climatic zones found in the project are Cold Desert Mountain (BWk) and Dry High Mountain (ET)
- The project area is located within the "Arid Diagonal". The “Arid Diagonal” separates the Central Northern Andes from the Central Southern Andes, where the former are under the influence of the tropical atmospheric circulation. Here rainfall occurs mainly during the austral summer whereas in the Central Southern Andes the highest amount of rainfall happens during the winter
- Past glaciations in the project area occurred mainly due to wetter conditions and lower air temperatures with the main glacial advance occurring approximately 14,000–24,000 years ago
- In the last few decades an increase in regional air temperatures has been observed
- The decrease in the frequency and magnitude of precipitation observed reflects one of the biggest climatic changes during the last 40 years
- In terms of local climate, the study area has a natural variability influenced by ocean currents and cycles such as the Pacific Decadal Oscillation (PDO) and the El Nino Southern Oscillation (ENSO) all of which having inter-annual variations. In addition, local frontal convergences can produce shorter term rainfall events in the summer months of January and February
- According to the IPCC (IPCC, 2014), increases in air temperature by about 0.6ºC to 2°C are projected for the (moderate greenhouse gas concentration trajectories) RCP4.5 scenario and by about 2.2ºC to 7°C for the (extreme greenhouse gas concentration trajectories) RCP8.5 scenario, by the end of the century. It is worth noting that under the low concentrations scenario RCP2.6, the temperature rise is less marked.

20.2.2 Glacial Cryoforms

Glacial cryoforms characterize the glacial environment and comprise surficial ice and snow/ice bodies in the high Andean terrain where air temperatures are below 0°C for most of the time, and freezing conditions persist. A preliminary cryoform inventory was prepared using low resolution imagery (ASTER and Landsat) available in 2012. The inventory was updated in 2014 and 2015 using high resolution (<1 m) satellite imagery. This latest inventory resulted in the following forms being identified:

In total, 11 glaciers with a total area of 16.75 km² were mapped at elevations between 4,712 and 5,750 masl. Of these:

- Three (1.21 km²) are located in Argentina.
- Six (5.44 km²) are located in Chile.
- Two (9.92 km²) are straddling the international border, including Glaciar Del Potro.

Also, 98 glacierets were mapped with a total area of 3.29 km² and elevations between 4,576 and 5,782 masl. Of these:

- 64 (2.03 km²) are located in Argentina.
- 31 (1.13 km²) are located in Chile.
- Three glacierets are straddling the international border.

20.2.3 Periglacial Cryoforms

Periglacial cryoforms characterize the periglacial environment and comprise landforms that are the result of the combined action of cryotic conditions and the cycling of thawing and freezing of the ground. Some of them may present interstitial ice in terrain where air temperatures have been sufficiently low for sufficient time to allow ice to form below ground level, if water availability is enough for its development. Periglacial cryoforms are visually recognized by the combined effects of the presence of ground ice and thawing freezing cycles, on the deformation of the landform. According to the prevailing definition in South America, the periglacial environment is accompanied by permafrost ground conditions.

Satellite imagery was evaluated and geographical relationships were developed that describe the topographical distribution of periglacial cryofoms and permafrost. The spatial analysis was carried out within Geographical Information System (GIS). The inventory of cryoforms mapped in Chilean and Argentinean sides of the Vicuña District is summarized as follows:

- Rock glaciers were found to occur between 3,818 and ,5055 masl
  - 32 rock glaciers were mapped in Argentina, covering a total area of 2.90 km²
  - 75 rock glaciers were mapped in Chile, covering a total area of 15.46 km²
- Protalus ramparts were found to occur between 4,116 and 4,912 masl
  - 37 protalus ramparts were mapped in Argentina, covering a total area of 0.86 km²

- 57 protalus ramparts were mapped in Chile, covering a total area of 2.59 km^2

The periglacial landforms were also investigated by the analysis of InSAR remote sensing data to estimate rates of deformation, and thermal infrared photography at ground level to detect the boundaries of the cryoforms and the presence of flowing water.

20.2.4 Permafrost

Permafrost is a thermal condition of the ground, and is defined as ground that remains below 0°C for at least two consecutive years, independently of the presence of ground ice.

In 2013, BGC developed a preliminary, probabilistic permafrost distribution model for the Vicuña Exploration District (BGC 2013), which was updated in 2014 and 2015 using new data obtained during ground truthing, from remote sensing and from the periglacial monitoring program. The main results of the modelling are summarized as follows:

- A total area of 4,536 km^2 was modelled, of which 2,255 km^2 (50% of the total area) are within a zone identified as having an extremely low probability for the presence of permafrost
- An area of 1,217 km^2, or 27% of the total area, is in a zone with a very low to low probability of permafrost being present
- An area of 1,064 km^2 (23%), is located in a zone with a medium, high or very high probability of permafrost to be present.

The combination of topographical information and the modelled permafrost probability allows the development of a relationship between the probabilities for the presence of permafrost as a function of elevation and slope orientation in the whole study area. To validate the permafrost distribution model, field observations were compared with the results from the model. The comparison shows that field observations and measurements are consistent with the permafrost probabilities modelled.

20.2.5 Environmental and Engineering Considerations

The characterization of the glacial and periglacial environment is part of the baseline information required for the development of an Environmental Impact Assessment (EIA). For a project that straddles Chile and Argentina in the South American Cordillera it is a spatially extensive component interacting with multiple aspects of the natural environment such as meteorology and hydrology. Besides, it is currently an important aspect within environmental regulations which are socially sensitive in some countries in South America. In engineering terms, the characterization of the glacial and periglacial environment, its thermal condition and spatial distribution, physical state, evolution and relationship with geomorphological features and geohazards is important, as it may affect the design and construction of infrastructure related to the mine development.

20.3 Josemaría Environmental Studies

20.3.1 Baseline Studies

The baseline information presented in this sub-section is summarized from the preliminary and primarily regional studies undertaken by Asesoría Ambiental in the "Estudios para la Línea de base Ambiental Proyecto Josemaría", dated October 2015. The study area in the Asesoría Ambiental baseline work was approximately 2,000 km^2.

A summary of the work undertaken follows.

Rock Characterization

The geochemical conditions in the Josemaría deposit were based on an assessment of the relative abundance of chalcopyrite, pyrite and chalcocite, as well as the mode of occurrence of chalcocite (hypogene or supergene) and level of oxidation. However, deposit-specific testwork should be carried out to identify if the rock types are susceptible to acid rock drainage (ARD) generation.

Air and Water

The Josemaría area is located within the "Arid Diagonal" zone that separates the Central Northern Andes from the Central Southern Andes. Rainfall mainly occurs in the Central Northern Andes during the summer, whereas in the Central Southern Andes rainfall is typically greatest during the winter.

The study area is influenced by cycles such as the Pacific Decadal Oscillation (PDO) and the El Niño Southern Oscillation (ENSO).

A regional hydrological assessment completed as part of the PEA found that the regional surface drainage grids are poorly developed. The main water course is the Macho Muerto River. The system is sensitive to slight geomorphological, tectonic, hydrogeological and climatic variations.

A regional groundwater hydrogeology study was completed to identify any aquifers present, and current groundwater levels.

Water characteristics of the Macho Muerto and Rio Blanco basin streams were monitored between October 2013 and July 2015. The monitoring results show that all of the Macho Muerto basin water contains calcium sulphate and the Rio Salado area has elevated sodium chloride levels. The Rio Blanco water has SO_4 values that vary from 2,100 mg/L to 800 mg/L at the river mouth.

Aquatic Biota

No fish were observed during the aquatic biology study. This may be due to a number of factors that could include:

- A lack of food in the rivers and streams
- Winter/summer freeze/thaw cycles
- Chemical characteristics of the water
- Proximity of some watercourses to naturally eroding mineralization.

Flora

The main flora species represent grassland and riparian vegetation types.

Fauna

The most common wildlife species found in the area are birds, carnivorous mammals and reptiles. Birds and mammals typically seasonally migrate to more favorable climates.

Reserves

There are two reserves located in the Josemaría influence area:

- San Guillermo Biosphere Reserve
- Laguna Brava Provincial Reserve and Ramsar site.

The San Guillermo biosphere reserve is located in the north of the San Juan Province. The Project area is located in an area of the reserve that has been identified as suitable for multiple usage, including mining.

The Laguna Brava Reserve is located in the northwest of La Rioja Province. Mining is permitted in the reserve's multiple use areas.

Natural and Cultural Heritage

A regional archeological survey over an approximately 2,000 km^2 area identified 179 sites of archeological or heritage interest; 77 of which were located in the San Juan Province and the remainder were in La Rioja Province. It is expected that none of these sites will be impacted by the future development of Project Constellation.

Most of the sites identified are attributed to human occupation before the Spanish conquest. Some of the sites are well-preserved, and at least four are considered to have been built during the Inca Empire.

20.3.2 Environmental Considerations

A comprehensive assessment of potential environmental effects will be required as part of the EIA and will be completed to complement that proposed Project development schedule. The assessment will include development of a detailed mine waste management plan, including mine waste geochemical characterization. In addition, an assessment of impacts to water quality and quantity due to dewatering will be required, and the use of contact water in mining activities needs to be quantified.

20.3.3 Considerations of Social and Community Impacts

Josemaría is a remote greenfields site, and has no local settlements in the areas identified for infrastructure locations in the PEA.

Despite the lack of settlement, a social impact assessment will need to be performed to identify stakeholders and the actual areas that will be affected. Consultation activities will be required.

Mitigation measures to avoid, reduce or compensate for potential project effects will need to be developed and supported by comprehensive environmental and social baseline investigations and engineering studies.

20.4 Los Helados Environmental Studies

20.4.1 Areas of Influence

The task of setting the areas of influence was carried out by conceptualizing the environmental aspects[1] of a large, underground copper mine project, and considering the areas that could be affected by those aspects. Each successively larger area of influence includes the preceeding smaller area. This methodology of setting Areas of Influence (AI) is based on experience gained from similar projects and the professional judgement of the BGC environmental team. These areas have been termed the deposit, local, district and regional AI in progressively larger areas surrounding the mineral deposit within Chilean territory. Argentine territory was considered outside of the Los Helados study area for the purposes of the study, even though it cannot be discounted as an area of influence.

As a result of this analysis, environmental components have been studied within each AI, corresponding to:

- Deposit AI – geochemistry (of the mineral deposit)

[1] The term “aspects” is used here in the sense given by the ISO 14000 standard of environmental management. It should be noted that an aspect may arise in one area, but generate potential effects in a larger area, so the latter is taken as the aspect’s area of influence.

- Local AI – geology, geomorphology, geohazards, natural heritage, cultural heritage
- District AI – atmospheric dispersion, hydrology, hydrogeology, water chemistry, aquatic biota, vegetation, wildlife
- Regional AI – climate, social, infrastructure, land use (conservation areas).

20.4.2 Baseline Characterization

The environment has been described in terms of sixteen components, grouped into six themes. In addition, a report describing the geochemistry of the ore and waste materials has been compiled (BGC 2015j). Tailings geochemistry testwork is ongoing. The thematic reports are as follows:

- Geosciences (BGC 2015f) covering: geology, geomorphology, geohazards and seismicity.
- Air and Climate (BGC 2015e) covering: climate and atmospheric dispersion of dust.
- Water (BGC 2015g) covering: hydrometeorology, surface and groundwater hydrology and hydrochemistry.
- Limnology (BGC 2015h) covering: stream sediments, water quality and aquatic biota.
- Terrestrial Biota (BGC 2015i) covering: flora and vegetation, wildlife and habitat.
- Human Environment (BGC 2014d) covering: socioeconomy, infrastructure, cultural heritage and natural heritage.

The list of environmental components to be studied in the source scoping study was derived from the national environmental assessment regulation DS40/2012 (Servicio de Evaluación Ambiental 2012) and from the International Finance Corporation's Sustainability Performance Standards (IFC 2012), but excluding components that require more project definition in order to be characterized appropriately, namely the air quality, noise, vibration, soil, aesthetic landscape and the marine environment components. The socioeconomic study was limited to the use of secondary information and has not been updated in the 2014–2015 period.

Geochemistry

Work Done

In the Deposit AI, geochemical analysis has been carried out of three seeps in the surface area of the mineral deposit and 102 samples of geological materials representing waste rock from the mineral deposit itself. The samples of material representing waste rock were subject to mineralogical analysis, acid base accounting

(ABA) tests and shake flask extraction (SFE) tests. Two samples of the waste rock materials were submitted to humidity cell tests, which have been terminated in July 2015.

In addition, mineralogical and chemical analysis of ore, concentrate and tailings were obtained from metallurgical testwork being carried out by Amec Foster Wheeler's process engineering team. Samples of ore (30 individual head samples and three composite samples) were obtained from the metallurgical testwork for environmental geochemistry analysis, and were subjected by BGC to ABA tests, trace element concentrations by AAS and ICP tests, and mineralogy by QEMSCAN.

Summary Findings

The geological and geochemical conditions at the mineral deposit scale are characterized by the presence of extensive hydrothermal alteration and sulphide mineralization that contributes to acid rock drainage (ARD) in the Los Helados River and influence water quality further downstream. BGC's testwork carried out in this study shows that most of the rock types within the deposit are susceptible to ARD generation, with the cogeneration of metal leaching of Al, Cu, Fe, Cd, Co and Zn, and anions of sulphate and chloride.

Geosciences

Work Done

A map of the Local AI at a 1:50,000 scale has been developed for geology, using pre-existing, published mapping of the area (Moscoso et al., 2010 and Sanguinetti 2006). This map was updated on the basis of information gathered in a field campaign carried out by BGC personnel in January 2015. The regional seismicity has been described from the records of the USGS National Earthquake Information Center.

A map of the Local AI at a 1:50,000 scale has been developed for geomorphology. This was derived from BGC's image interpretation of Aster, Geoeye and Pleiades satellite imagery, followed by field checking of the interpretation by BGC personnel in January 2014. A similar area map has been developed for geohazards as a product derived from the interpretation of the geomorphological processes in the area. The geomorphological mapping has identified rock fall, debris avalanche, debris flow, debris flood and landslide deposits.

Summary Findings

The geochemistry, geomorphology and geohazards components of the environment have developed in response to the underlying geology and the enveloping climate. These influences determine the types of landforms, surface processes, surface and groundwater hydrology, which in turn give rise to the variation in soils across the area and determine which are propitious for the development of vegetation and wildlife support. The combined effect of climate and geology gives rise to an altitude dependent ecosystem, with contrasts between the two principal domains of the main high altitude cordillera (>3,500 masl) versus the middle altitude piedemont (>1,500 <3,500 masl). The same drivers generate differing natural hazards or instabilities in the differing domains. The boundary between the two domains is marked by a prominent, geological fault striking northeasterly, which brings into contact a Permo–Triassic intrusive pluton forming the high cordillera to the southeast, with a Jurassic to early Tertiary sedimentary sequence forming the piedemont to the northwest. BGC has called this the "Falla Campamento" or Camp Fault.

Air and Climate

Work Done

The climate has been described in its synoptic (i.e. continental margin) setting and in its regional (i.e. Copiapo River basin) setting. Modelling of air mass movements was carried out by the consultant GeoAire for BGC (GeoAire 2014). A 80 km x 80 km area of the model's grid was exported and then remodeled on local topography by the Caltec modelling program in a 50 km x 50 km area, in order to simulate the potential dispersion of particulate material towards sensitive receptors previously identified in the Local AI as glaciers, wetlands and local community cultivated areas.

Summary Findings

The region is subject to the El Niño Southern Oscillation (ENSO) climatic cycles that produce occasional wet years followed by a series of dry years in each cycle, generally every three to six years, and the Pacific Decadal Oscillation that produces climate cycles of several decades is length, such as the current trend towards a warmer, drier climate. The current study has been carried out in the arid phase in Chile of the ENSO cycle.

Climate determines the atmospheric conditions and air circulation patterns that are modelled for airborne contaminant dispersion. The preliminary model shows the predominant tendency for a south-easterly dispersion of atmospheric contaminants such as particulate material; that is to say towards the Argentine border.

Water

Work Done

Surface hydrological trends in the District AI have been derived from the General Water Directorate's five decades of records of flow gauging stations in the Copiapo basin. In addition, in its study, BGC has carried out manual streamflow campaigns covering up to thirteen locations distributed in the Pulido River and its headwaters with seven points located along the drainage path from the mineral deposit area, and one point located upstream of the mineral deposit area.

Groundwater hydrology information has been obtained from a desktop review of existing publications covering the Copiapo River valley, as well as information available in the EIA's carried out for the Caserones and El Morro mining projects, the latter two being near the Local AI. Thus, hydrogeological characteristics based on geological similarities and literature values have been estimated for the District AI.

From surface water sampling campaigns, water and stream sediment samples have been analyzed from the Pulido River and its main tributaries at up to 13 locations, especially several points along the drainage path from the Los Helados River near the mineral deposit area.

Summary Findings

A conceptual flow model and first approximation to a water balance has been drawn up in BGC's water thematic report, incorporating precipitation, evaporation, sublimation, snow/ice melt, infiltration, runoff and groundwater flow. The principal features of this model can be summarized as follows.

Climate drives the precipitation, melting and evaporation balance that generates surface and groundwater flow from the high glacial environment, through periglacial conditions to mid-altitude fluvial systems that drain to the coast through the Copiapo River system. The cryological conditions, surface geomorphological features and underlying geology determine the partitioning of surface water and groundwater. Based on the stream flow measurements available, the streams in the Local AI have a snowmelt and icemelt driven regime, with low flow during the winter and early spring period and peak flows coincident with the summer melt season.

Water quality is strongly affected by underlying geology with hydrothermally altered bedrocks in the mineralized area of the high cordillera providing natural acidity, metals (especially Cu and Zn), fluoride, and sulphate loading to the surface waters. The physical and chemical properties of the surface waters in the Los Helados river are highly variable (two to three orders of magnitude between samples), depending on the flow and turbidity conditions. However, as water traverses the Mesozoic bedrocks at the mid-altitudes, it is progressively diluted, neutralized and buffered by carbonate and bicarbonate to near neutral pH and less variable chemistry.

Limnology

Work Done

Aquatic biota and its habitat were studied for BGC by CEDREM Consultores in 2014 (CEDREM 2014a). Reconnaissance was carried out in approximately 40 locations in the water courses of the District AI. The limnology survey in 2015 as carried out for BGC by consultant Centro de Ecología Aplicada (CEA 2015), covering 20 points (including 17 inherited from the CEDREM study), in three campaigns corresponding to spring, summer and winter. In addition to the limnological observations and measurement of physical properties of the water, the survey included sampling for aquatic flora and fauna in order to determine species that are present.

Summary Findings

According to CEDREM and CEA, of the three main contributors to the Pulido river, the Del Potro river has the least favorable habitat for fresh water aquatic life. This river shows semi-turbid water both in the melt season and the autumn, which restricts the development of aquatic biota. Nevertheless, the limnology campaigns found diverse species of insects, one species of arachnid, three species of amphibian in protected categories (Rhinella Atacamensis, Rhinella spinulosa and Pleurodema thaul), and one introduced fish species (Salmo trutta or brown Trout).

Flora and Fauna

Work Done

The flora and vegetation mapping has been carried out for BGC by CEDREM Consultores (CEDREM 2014b and CEDREM 2015a), as has wildlife and habitat mapping (CEDREM 2014c and CEDREM 2015b). Maps of the District AI at a 1:50,000 scale have been developed outlining vegetation formations and occurrence of flora and fauna species falling into various conservation categories. The mapping was carried out by way of image interpretation of Pleiades and Worldview satellite images supplemented by field traverses with sampling. Areas of greater floral richness have been mapped at a 1:10,000 scale. In addition, night-time field studies were carried out in order to identify nocturnal fauna species.

Summary Findings

The climatic conditions, availability of water resources and altitudinal gradient produce a differentiation between azonal dense humid vegetation (wetlands or “vegas), zonal sparse to less dense arid vegetation and unvegetated immature soils and bedrock. Altogether in the Local AI, of a total of 260 identified flora species, 15 protected species have been identified. They are associated both with azonal and zonal vegetation formations.

Wildlife habitats are mapped out, based on the vegetation formations. Wildlife is found concentrated around the more densely vegetated, humid areas. This is grazing and foraging area for herbivores like guanacos, and is reproductive area for frogs, ducks and geese. They also attract carnivores like foxes, pumas and birds of prey. The more arid zonal vegetation areas actually host a greater variety of wildlife including large mammals, small mammals, lizards and seed-eating birds, but the density per hectare is lower than in the humid vegetation habitats. The rocky areas are host to small mammals and birds that find refuge in this habitat. Altogether in the Local AI, of a total of 96 identified wildlife species, 23 protected species have been identified (10 under the conservation categories and 13 covered by the hunting law). Eleven of these protected species are low mobility, amphibians and reptiles. They are associated both with azonal and zonal vegetation formations.

The Human Environment

Work Done

Background on the social baseline and on the infrastructure and land use baseline was prepared for BGC by the consultant Knight Piésold (Knight Piésold 2014a and 2014b, respectively). The social characterization of the Regional AI has been prepared from publicly available, secondary sources such as the 2002 and 2012 census information for Region III of Atacama. Secondary information has been compiled on the local communities in and around the Local AI, supplemented by a two-day field visit in October 2013.

A description of the infrastructure of the Regional AI has been prepared from secondary sources. In addition, a specific study of the road network between Caldera and Iglesia Colorada was carried out at a reconnaissance level for BGC by the consultant Ambitrans (Ambitrans 2014). Information on restrictions to land use was compiled in the different classes of protected area in the National System of State Protected Areas: national parks, natural reserves and national biodiversity priority sites.

A compilation of official geological mapping (Moscoso et al., 2010) was carried out by BGC on the paleontological sites and formations in and around the Local AI in order to develop a thematic map of paleontology. In addition, information concerning the Caldera coastal fossiliferous site was obtained from the Paleontological Museum in Caldera.

Background on the archaeology baseline was prepared for BGC by the consultant Centro de Estudios Humanos y Patrimoniales (CEHP 2014). A literature survey of archaeological finds was carried out in and around the Local AI, supplemented by two reconnaissance field visits in January and April 2014, in order to identify the archaeological sensitivities of the area.

Summary Findings

The socioeconomic system has developed in the Copiapo Valley and then by extension in the Atacama Region over the millennium and largely over last two centuries by dependence on the primary productive activities of agriculture and mining. Secondary activities of infrastructure development, governance, public services and cultural activities have developed in support of the primary productive activities.

Populated localities are found in specific places in the District AI where there are: soils for cultivation, vegetation (grasses and trees) for livestock, and water for irrigation, livestock and human consumption. These conditions are met at the middle altitude stream reaches of the District AI where subsistence agriculture is practiced at isolated localities, and at lower altitudes in the Pulido and Copiapo River valleys in the Regional AI where intensive, commercial agriculture is practiced. In the Local AI, there are a few families with homesteads based on extensive, subsistence agriculture. The families in this area, though not afiliated to the Colla indigenous group according to the secondary information available to BGC, may have genealogical and cultural links with this ethnic group.

In the Regional AI, the most significant natural heritage site is the extensive fossiliferous site located at the coast near Caldera, which is internationally known for the fossil beds with abundant whale and shark remains.

The cultural heritage is related to the pre-historical establishment of human communities and the historical development around the primary productive activities and secondary supporting activities. In the Local AI, the most significant findings are:

- The El Torín settlement and cemetery site near La Semilla, in the Del Potro River approximately 3.5 km upstream of the confluence with the Del Medio River. The site contains living areas and a number of burial mounds from which skeletal remains were recovered in a 1980s period archaeological investigation (Niemeyer H, et al, 1989)
- The Inca ritual site located on Cerro El Potro. Little remains of the ritual site, but there is a publication about the site which raises its scientific profile and relevance for the cultural heritage authorities (Moyano R, 2009).

20.4.3 Environmental Considerations

Sensitive issues related to a given project can be grouped as: on the one hand sensitive aspects of the project activities and facilities which may stress or disturb the environment, and on the other hand sensitive receptors and factors in the environment that may be stressed or disturbed. In the Los Helados area of influence, the following sensitivities have been identified by BGC (BGC 2015b) and should be taken into account in the design of the project, in the planning of the environmental permitting process and in the community relations efforts.

Geoscience Sensitivities

Glacial Landforms

The Los Helados mineral deposit is adjacent to a group of surface ice and snow bodies that includes glaciers, glacierettes and perennial snow fields on the ridge centered on Cerro El Potro, that forms the frontier with Argentina. The surface ice and snow bodies that lie along the ridgeline are potentially sensitive to sedimentable dust from the mining operation and other upwind sources of dust.

Periglacial Landforms

The mineral deposit is emplaced in the periglacial environment with periglacial landforms where rock glaciers occupy a proportion of the high altitude terrain. The authorities are anticipated to require an assessment of the impact of the project on rock glaciers.

ARD Potential

The mineral deposit itself has rock characteristics that make it potentially acid generating and susceptible to metal leaching when exposed to the atmosphere and in contact with water, as described in the results of the geochemical test work on waste rock.

Natural Hazards

Natural hazards are not sensitive receptors like the other environmental components, but are phenomena that can increase the environmental risks of a project if mining works are located in their path. The seismic activity of the region, rapid runoff associated with steep gradients in the drainage basin and erodible soils result in a terrain that is susceptible to natural hazards.

Air Quality Sensitivities

Dust Dispersion

The elements of the landscape that are potentially sensitive to the dispersion of sedimentable dust, whether of natural or artificial origin, are specifically the surface ice and snow bodies, the high altitude wetlands and the cultivated areas.

Water and Limnology Sensitivities

Water Supply and Water Quality

In the Local AI and downstream in the District AI, resources sensitive to water supply and water quality have been identified as: wetland areas, rivers and streams with amphibian and fish habitat, areas of subsistence cultivation and commercial vineyards, and groundwater resources under license for supply to agricultural and mining users.

Flora and Fauna Sensitivities

Habitat and Vegetation Formations

There are several types of habitat that are described as sensitive, on the basis of the dependence of wildlife on these habitats for refuge, reproduction and feeding. They include high and middle altitude wetlands, the dry scrub areas (xerophytic formations) and rocky outcrops in the vicinity of water courses. Several of these habitats which contain categories of protected flora species have been mapped in the area, and this factor also contributes to their classification as sensitive habitat. Wetlands, native forest and xerophytic formations are also classed by the Agriculture and Cattle Service as subject to environmental management plans, in the case of intervention by human activities. Therefore, to the extent that these environments are affected by project activities, they are expected to be subject to specific management plans.

Protected Wildlife Species

Protected wildlife species in various conservation categories have been observed in the field mapping. The most sensitive are those wildlife species that have restricted distribution (such as bats) or are of limited mobility, such as amphibians, lizards and small mammals.

Human, Land Use and Cultural Sensitivities

Commercial Agriculture

In the middle to lower elevations in the Copiapo basin, there is intensive cultivation of vineyards and smaller areas of fruit orchards that are particularly sensitive to sedimentable dust, water availability and water quality. Furthermore, the cultivated land is sensitive to new infrastructure development.

Road Infrastructure

The northwest–southeast axis of roads that link the Panamerican Highway and the urban areas in the coastal range to agricultural and mining areas in the interior is very sensitive to traffic congestion and to traffic hazards, due to physical constrictions in the urban areas and in the interior valleys.

Tourism Priority Areas

Tourism development areas have also been designated by the regional government, to promote tourism that benefits from the diverse, attractive landscapes in the region that are sensitive to industrial development. In the Regional AI the middle and upper Copiapo River system is covered by a Tourism Priority Area as far upstream as the Pulido–Del Potro confluence.

Biodiversity Priority Sites

The Copiapo River Biodiversity Priority Site covers the Copiapó River system all the way up to its headwaters. This is sensitive to impacts in surface water. It is defined as a priority site in the regional biodiversity conservation strategy.

Paleontological Sites

In the Regional AI, The most significant natural heritage site is the extensive fossiliferous site located at the coast near Caldera, which is internationally-known for the fossil beds with abundant whale and shark remains. This is sensitive to infrastructure development near the town of Caldera.

Archaeological Sites

In the Local AI, archaeological sites are sensitive to infrastructure development and the presence of a workforce. The most significant findings are:

- The El Torín settlement and cemetery site near La Semilla, in the Del Potro River approximately 3.5 km upstream of the confluence with the Del Medio River. This site is well known to the local community
- The Inca ritual site located on Cerro El Potro. This site is of scientific interest.

Protected Areas

The marine area to the south of Caldera, from Bahia Inglesa to Puerto Viejo on the Copiapo River estuary is assigned to fishery reserves to protect the livelihood of the local fishermen and the ecology of the nearshore marine environment. In addition, there are coastal protection areas around Caldera designated for the protection of marine water quality. This area is sensitive to any developments along the shoreline and in the near shore marine environment.

The International Border

The location of the project adjacent to the Argentine border and within a bi-national protocol zone for the development of mineral resources, raises the political sensitivity of the project, and subjects it to scrutiny in terms of cross-border movements and cross-border environmental impacts.

Summary

During Project advancement, for the development of the environmental assessment it is expected that more information be collected and compiled to allow the responsible management of the key sensitive aspects outlined above. Although there may be short-term and long-term environmental effects which result from the Project, the types of potential effects that can currently be forecast are considered to be manageable through effective mitigation and/or compensation measures.

20.4.4 Considerations of Social Impacts

Although the Project location is currently remote from villages and settlements, a detailed social impact assessment is recommended and should address any effects on the local communities that are located in the El Potro basin.

20.5 Project Environmental Design

20.5.1 Tailings Storage Facility

Site Selection

Satellite imagery was reviewed to identify potential locations for a tailings storage facility (TSF) in the vicinity of the proposed process plant location at Josemaría. Of the 44 potential sites identified, eight were considered for the purposes of the PEA. The potential site selected for the PEA mine design takes into account the tailings transport distance, pumping elevations, and the resulting basin surface area (Figure 20-2).

Design Considerations

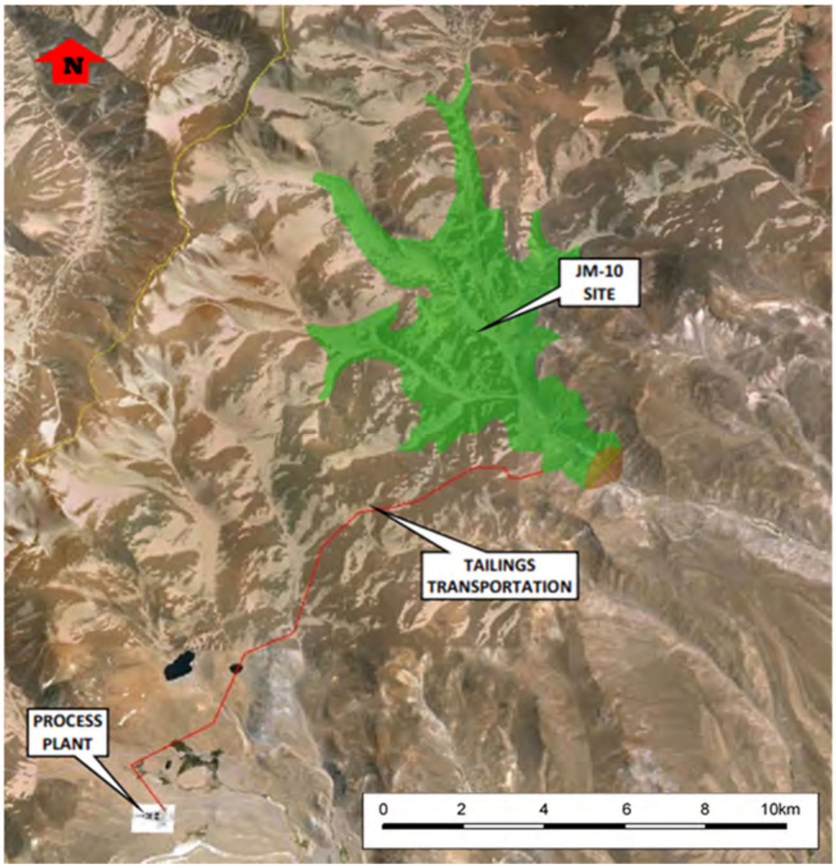
A conceptual TSF impoundment was designed, and assumes a conventional tailings deposition plan, since no tailings rheology studies have been performed. Design criteria are summarized in Table 20-1. The dam will be constructed using borrow materials, as the proposed TSF location is too far from the Josemaría pit to effectively use waste rock from that source.

A starter dam was included in the design to ensure that there is sufficient capacity in the first three years to support operations. The upstream face of the starter dam will be lined to ensure appropriate tailings containment until the tailings beach is established. Once the starter dam is built and operations begin, a construction program will be implemented to balance the dam raising and tailings deposition rates. For PEA purposes, five raises are assumed. The final dam will be about 180 m high, 1.3 km long, and store approximately 1.9 billion m^3 of tailings.

Tailings Transport

Tailings will be transported from the process plant located at an elevation of 4,127 masl to the selected TSF site at elevation 4,000 masl. The initial transport rate will be 5,508 m^3/h. A two-stage conveyance process will be required (Figure 20-3), because although the selected site is topographically 100 m lower than the process plant site, there are two ridges that are 200–300 m higher than the plant site that must be crossed.

Figure 20-2: Conceptual Tailings Storage Facility Location

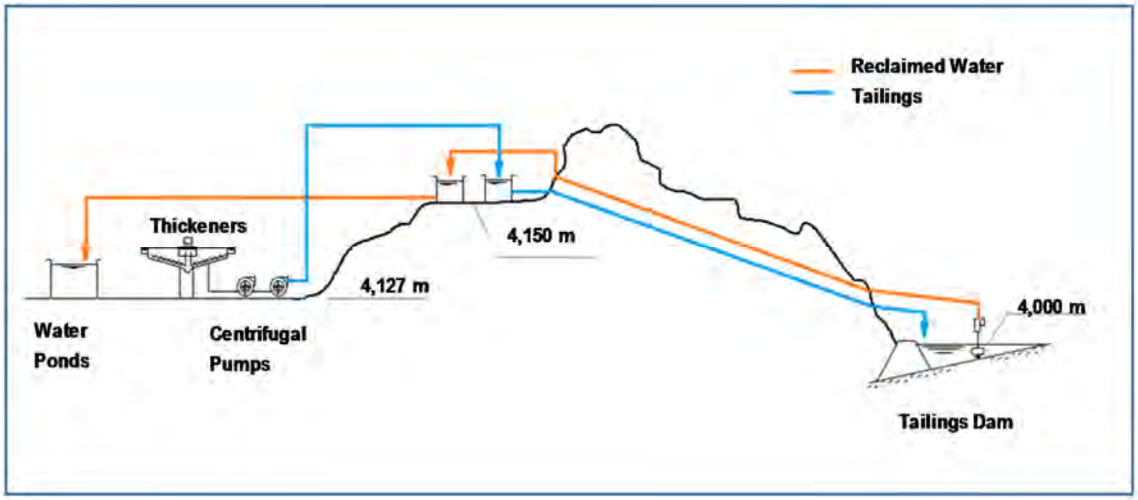


Note: Figure prepared Amec Foster Wheeler, using Google Earth backdrop, 2015.

Table 20-1: TSF Conceptual Design Parameters

Design Parameters	Unit	Value
Tailings volume to be stored	Mm^3	1,900
Average solids concentration on tailings	%	65
Specific gravity		2.81
Tailings density	$Tonnes/m^3$	1.72
Plant elevation	masl	4120
Dam type		Conventional
Construction material		Borrow material
Construction method		Downstream growth
Crest width	m	40(*)
Upstream slope	H:V	2:1
Downstream slope	H:V	2:1
Freeboard	m	3

Figure 20-3: Tailings Transport Schematic



Note: Figure prepared Amec Foster Wheeler, 2015. Note vertical scale has been exaggerated to allow representation of the proposed surface infrastructure.

Tailings, thickened to 65%, will be pumped to an intermediate point located at 4,150 masl. and 3.9 km from the plant, then flow by gravity inside an approximately 8 km long tunnel to the TSF. Tailings will be deposited by end-discharge, with occasional spigotting, to form smooth tailing beaches.

Tailings Water Management

The TSF design includes a provision for four perimeter diversion channels, which will intercept the non-contact water coming from the watershed (Table 20-2). The captured surface water flows will be conducted around the TSF, and discharged downstream of the tailings dam wall.

Because site-specific hydrogeological studies have not been conducted to date, these designs are conceptual and will need to be revised as such data are collected and evaluated. A maximum daily precipitation of 92.6 mm was assumed for the 100-year return period event.

Water will be reclaimed at the rate of 1,404 m^3/h of clear water from the TSF for use in the process plant. It will be pumped from the TSF along the tailings tunnel to a header tank at the intermediate point, then gravity-flow to the water storage ponds at the plant.

Table 20-2: Diversion Channel Design Assumptions

Channel	Width (m)	Height (m)	Slope	Length (km)
East 2	2.2	2.05	1.5:1	23
East 1	3	2.6	1.5:1	15
West 2	1.8	1.7	1.5:1	10
West 1	2.3	2.25	1.5:1	16.4

Closure

The TSF will become a flat tailings basin at closure, with no pond water. The tailings beach will be covered to international standards applicable given the Project environment, and a permanent overflow spillway will be constructed to safely convey the probable maximum flood.

20.5.2 Josemaría Site Water Management

Limited site-specific hydrogeological studies have been undertaken for the Josemaría area. As a result, Amec Foster Wheeler has made a number of assumptions for the hydrogeological setting that include the rate of surface and groundwater flows near the proposed mine and the tailings dam. The PEA assumes that there will be no requirement for water treatment.

Open Pit

The mine drainage and dewatering system will be designed to perform the following tasks:

- Dewater the rock mass to maintain pit wall stability
- Drain water and prevent water pressures from building up behind the pit walls
- Control surface water and runoff and prevent it from entering the pit
- Capture precipitation and drain it away from roads and active mining areas
- Remove surface water within the pit to prevent flooding of the working areas.

Preventing surface water from draining into the open pit is essential for wall stability, safe working conditions, water quality, and costs. Diversion channels will be constructed along the west and south and east walls of the open pit to convey the diverted basin catchment toward the main basin at the north side of the pit.

Ground water will be captured in the ditches included in the road design inside the pit, collected, and then pumped out of the pit zone. The contact water will be collected below the waste rock facility or in a dedicated pond within the plant footprint. No allowance for a water treatment plant has been considered at this time.

Process Plant Water Supply

The industrial water make-up requirement is estimated to be 500 L/s on average, or 0.5 m^3/s.

Two potential surface make-up water sources were identified from available information:

- Macho Muerto River; subsequently discounted as the monthly average value of 1.9 m^3/s would not be sufficient to meet the expected plant demand
- Jachal River; subsequently discounted due to the 150 km distance from the plant site.

Three potential underground sources were reviewed:

- Rio Blanco valley
- Pircas de los Bueyes valley
- Macho Muerto valley.

These valley aquifers were considered the most likely water sources for PEA purposes. An average distance of 8 km from the proposed plant site was assumed (refer to Figure 18-1). It was assumed that the aquifers could supply the full 500 L/s process plant requirements.

Water will be pumped from the aquifers to an intermediate holding tank, then pumped to the process plant water holding ponds.

20.5.3 Los Helados Water Management

Water Supply

Mine water will be sourced from dewatering activities associated with development and operations. About 100 L/s is assumed on average.

Mine Water Management

Inflow mine water will be collected in HFL-1 and HFL-2, and sent to tanks located in HFL-1 and in the access ramp to HFL-2. Additional water collected from mine inflows on other levels will be pumped to the tanks. Outtake Ventilation Level 2 (OVL-2) will be the water drainage level for the entire mine. Collected water will be sent to the Tunnel 12 ditch and evacuated by gravity to surface, where a water treatment plant will purify it, so that it is suitable for surface discharge.

Outwash Flow Diversion

A diversion will be required to direct flow of Los Helados creek away from the Los Helados subsidence zone. This will consist of a diversion channel and a short tunnel. The concrete diversion channel will be about 3 km long with an average slope of 2%, the same slope as for the water diversion tunnel. The water diversion tunnel will have a length of approximately 1.6 km.

20.6 Closure Plan

The reclamation objectives will be met by developing a Closure Plan that details the following activities:

- Where possible, return the site to a viable self-sustaining ecosystem compatible with the surrounding environment and post-mining land use
- Ensures the natural integration of disturbed areas into the surrounding landscape and, where possible, restores the overall natural conditions of the mine site
- Ensures the long-term physical stability of engineered structures
- Ensures the chemical stability of mining products so that water resources are protected and sustained
- Returns the land to the pre-mining level of productivity, wherever possible
- Develops measures to prevent or minimize discharges of contaminants to surface water, groundwater, air, and soils, or when these is not possible treat the effluent to appropriate standards
- Meets or exceeds applicable regulatory requirements and standards for protection of human health and the environment
- Presents a durable and cost-effective strategy that minimizes the long-term expenditure of post-closure maintenance and monitoring.

As possible, work related to closure procedure will be completed progressively during operation of the mine at the areas that will no longer be needed for the operation. This concept of progressive remediation while mining is considered an industry best management practice, respects the environment, and improves performance when final closure is to be implemented. Once a decision has been made to permanently close the site, it is anticipated that the major closure activities would be completed within a period of approximately two years, if not already completed progressively.

Monitoring of various site aspects such as water quality, TSF stability, and diversion channels is expected to continue over an extended period of time. Monitoring will be undertaken to ensure that reclamation and closure activities are successful. Ongoing monitoring and maintenance will be required for the tailings dam, subsidence area and other permanent works that will remain at the mine site.

Monitoring is separated into two main phases:

- Closure monitoring. Closure monitoring begins at the end of mining and continues until reclamation and closure activities have ceased. Closure monitoring will be for five to 10 years.
- Post-closure monitoring. The post-closure monitoring phase will begin after final closure. Post-closure monitoring will be undertaken for at least five years.

The level of monitoring required for these phases will be a function of environmental performance of the site and national requirements, such as physical and chemical stability of the site. The need for environmental monitoring is expected to decline once the project facilities have been fully decommissioned, dismantled and removed and the site has been reclaimed. Reductions in monitoring frequency will be a function of environmental performance and it can be demonstrated that the reclamation work has achieved the agreed objectives. Clear identification of the objectives, such as water quality parameters, will be key to the development and implementation of the monitoring program.

The main monitoring targets for the Project will be physical stability, chemical stability and water resources.

20.6.1 Closure Cost Estimate

In the absence of a detailed closure plan, the closure cost estimate was assumed as a percentage of the overall Project initial capital costs.

Amec Foster Wheeler has estimated US$148.7 million will cover likely closure costs. The costs assume about US$12.4 million will be required to rehabilitate the surface at Los Helados, and the main closure expenditure will be incurred at Josemaría, estimated at US$136.3 million.

20.7 Community Engagement

NGEx has been actively engaged with local communities within the area of influence of the Project from the earliest exploration programs to date. The Company has developed a comprehensive community engagement program in conjunction with the Lundin Foundation (a charitable Foundation funded by the Lundin Family) and local communities. Programs developed by the Company and the Lundin Foundation include:

- Emerging Entrepreneurs Fund: A loan guarantee program for micro-entrepreneurs developed in conjunction with the Lundin Foundation and a major Chilean bank. The program targets "unbanked" members of the community who are typically unable to access bank loans.

- Fondos Concursables: The Company has set up a Fund to support various community development initiatives and projects. Decisions on which projects to fund are made by a committee made up of NGEx and Community Representatives. Over 20 projects have received funds since 2014.
- Local Labour Force Development: The Company has initiated discussions with the University of Atacama on programming / partial scholarships to support increased local hiring both for companies and contractors working in the region.
- The company supports a municipal program that delivers water to rural residents without access to potable water
- The Company has a program developed in conjunction INDAP a Chilean government agency to support small-scale farmers in the region.

20.8 Project Permitting

20.8.1 Permitting in Argentina

A comprehensive environmental assessment will be necessary for the Project in order to obtain the necessary approval for each of the project stages, construction, operation and closure. This assessment will be conducted in compliance with Argentinian regulations:

- Ley N°24.585, Ley de Protección Ambiental Minera
- Ley 24.196, Ley de Inversiones Mineras

Once the environmental assessment is approved by Argentinian authorities, a variety of permits, licenses and authorizations will be required to proceed with the construction and operation of the Project. Main permitting requirements include:

- EIA Amendments (if changes are made to the Project)
- Certificate of Hazardous Waste management, which must be renewed each year
- Registration as consumer of liquid fuels
- Affiliation to a Workplace Insurance Company, (ART: Aseguradoras de Riesgo de Trabajo)
- Certificate of Non Existence of Archaeological and Paleontology Remains
- Registration as explosives user.

20.8.2 Permitting in Chile

Project development will require submission of a full Environmental Impact Assessment study. Following the receipt of environmental approvals, additional permits, licences, authorizations, and certificates will be required to proceed to Project construction.

Main permits and authorisations that are required include:

- Favorable environmental qualification resolution
- Mining Closure Plan
- Registration for regular explosive consumer
- Presentation of hazardous waste management plan
- Project approval for sewage water treatment
- Project approval for drinking water treatment
- Favorable report for construction (land use)
- Water delivery service
- Industrial water removal from Quebrada Seca to the Los Helados Project
- Fuel delivery service
- Initiation of drilling work
- Drilling and probing work
- Removal of drilling samples.

20.9 Comments on Section 20

NGEx has retained Asesoría Ambiental (AA), based in Argentina and BGC Engineering (BGC) based in Chile to assist with the preliminary environmental baseline studies. Extensive regional field programs were carried out during the 2013/14 and 2014/15 seasons. Publicly available information has also been reviewed in depth.

Additionally, NGEx has contracted BGC to perform glacial studies, and this work has been ongoing for approximately three years. Additional work will need to be focused on any potential effects to the broader glacial environment since the El Potro glacial area is within the district area of influence.

Generally, environmental sensitivities appear to be related to natural hazards, effluent geochemistry, atmospheric emissions, and effects on terrestrial and aquatic biota, and the human and political environment. These sensitivities are typical for a new mine development in the Andes mountains.

NGEx maintains multiple community relations programs as described above, and consultation programs are ongoing to support future Project development plans.

A formal EIA will need to be completed for the proposed Project and a comprehensive assessment of the potential environmental effects of the Project will be conducted at that time. The Project is expected to require the completion of an EIA and permitting processes.

21.0 CAPITAL AND OPERATING COSTS

21.1 Capital Cost Estimates

Capital costs estimates were allocated to:

- Initial capital
  - Direct costs
  - Indirect costs
  - Owner costs
  - Contingency.
- Sustaining capital.

Due to the long mine life, it is expected that no significant salvage values will be obtained for major equipment that was purchased new at the start of the Project.

21.1.1 Basis of Estimate

The accuracy of the estimates contained within the PEA study varies due to the different methods of derivation used to estimate the costs. The capital cost estimate for this PEA is a Type 5 study according to Amec Foster Wheeler standards, which are based on AACE recommendations and have an accuracy of -30% to +50% at the 85% confidence level.

21.1.2 Mine Capital Costs

The mine capital costs include the direct and indirect costs, and a contingency factor of 20% was applied.

The initial capital for both the Josemaría and Los Helados mines has been defined as the infrastructure and footprint development required prior to the first year of process plant production. This includes the Los Helados access tunnel, conveyor tunnel, and the diversion channel and tunnel required to re-route glacial run-off water.

For the Josemaría open pit, development will be undertaken using operations personnel.

It is envisaged that the Los Helados mine development will be undertaken by a contractor, but with time, mining operations could transfer to an Owner operations crew.

Mining capital costs are summarized in Table 21-1.

Table 21-1: Mining Capital Cost Summary

Area	Subarea	US$ x 1,000
Los Helados	Mine capex	3,400
	Chile access tunnel 11.5 km	85,512
Josemaría	Mine capex	204,103
	Pre-stripping	143,994
Total		***437,009***

21.1.3 Process Capital Costs

The estimate includes:

- Primary crushing (Josemaría)
- Stockpile
- Conveyors
- Grinding and screening (HPGR)
- Flotation
- Regrinding
- Concentrate thickening
- Tails thickening
- Reagents
- Concentrate filtering (filter plant).

Process-related capital costs are summarized in Table 21-2.

Table 21-2: Process Capital Costs

Area	Subarea	US$ x 1,000
Process Plant	Primary crushing area	59,711
	Josemaría ore conveyors to Josemaría stockpile	61,236
	Stockpile + reclaiming + conveyor to secondary crushing	53,000
	HPGR comminution with process area buildings	333,334
	Flotation	110,113
	Regrinding	59,417
	Concentrate thickening (2)	5,211
	Concentrate pipeline	50
	Tailing thickening	114,586
	Provision for ancillary equipment and laydown area	25,474
	Filter plant	47,134
Total		***869,265***

21.1.4 Infrastructure Capital Costs

Infrastructure costs used in this estimate have been derived through various methods ranging from direct quotes for equipment to order-of-magnitude estimates made on the basis of comparisons with similar items purchased recently for other projects.

The main infrastructure contributors to the capital cost estimate include:

- Port
- Roads
- Water supply
- TSF
- Water diversion channels.
- Filter plant
- Truck-shop
- Power supply
- Construction and operations camps
- Other facilities (fuel supply, offices, warehouse, workshop, laboratories, potable water facilities, fire water facilities, plant water treatment facilities).

Infrastructure capital costs are summarized in Table 21-3.

Table 21-3: Infrastructure Capital Costs

Area	Subarea	US$ x 1,000
Infrastructure	Access road to Los Helados Mine from public road in Chile	15,800
	Access road to Josemaría process plant from RN76 (56 km) towards Pircas Negras pass	69,799
	Internal roads Josemaría site	14,644
	Process plant infrastructure	38,485
	Water supply from underground aquifers (pumps, tanks & pipeline)	25,275
	Power line from El Rodeo power substation	150,000
	220 / 23 kV substation - power distribution 23 kV	44,661
	Tailings storage facility	93,115
	Truck-shop	40,000
	Port infrastructure in Chile	50,315
	Operations camp at Josemaría	2,100
Total		***544,193***

21.1.5 Indirect Capital Costs and Contingency

Indirect costs were estimated as 35% of the direct cost. This is typical for projects at this stage of development. Contingency factors were applied to the capital cost estimates and range from 20% to 30%. Overall project contingency is expected to be $665 million.

Indirect capital costs and the contingency allocation are summarized in Table 21-4.

21.1.6 Owner (Corporate) Capital Costs

Owner's costs represent a 6% allocation of the direct and indirect cost including the mine direct cost; accordingly, an Owner's cost of US$133 million was estimated. No contingency was applied to the Owner's costs. Owners' costs are included in Table 21-4.

Table 21-4: Indirect, Contingency and Owner Capital Costs

Area	Subarea	US$ x 1,000
Indirect Costs	Project indirect costs	401,405
	Construction camp for Josemaría 4,000 person	48,000
	Construction camp for Los Helados 4,000 person	28,800
	Subtotal Project Indirect Costs	*478,205*
Owner's Costs	Owner's costs	132,965
Contingency	Total contingency	*617,428*
Total		***1,228,598***

21.1.7 Sustaining Capital

The sustaining capital cost includes ongoing costs for facilities and equipment required to maintain or increase production for the mine and certain ongoing infrastructure sustaining projects. No expansions are considered.

No open pit mining sustaining capital was included for Josemaría due to the short mine life envisaged in the PEA.

The Los Helados mine sustaining capital estimate includes the ventilation system, mine infrastructure, underground crushers and material handling, and the development of various levels associated with the block cave.

Total sustaining capital is estimated at $4.4 billion over the life of the project. The bulk of this figure is made up of capital required for the ongoing development of the block cave ($2.4 billion) and replacement of underground mining equipment ($1.4 billion).

Sustaining capital costs are summarized in Table 21-5.

21.1.8 Capital Cost Summary

The overall capital cost estimate is summarized in Table 21-6.

Table 21-5: Sustaining Capital Costs

Area	Subarea	US$ x 1,000
Sustaining	LH Sustaining Capital - Mine Equipment	1,355,308
	Camp upgrade for Los Helados 2400 pps	19,200
	Diversion Tunnel	4,510
	Diversion Channel	499
	Operations Camp in Chile for LH 2400pps	7,200
	Primary Crushed LH ore Conveyor	28,475
	LH Sustaining Capital - Mine Development	2,108,783
	Connecting tunnel - 8.1 km	66,501
	JM Sustaining Capital - Mine Equipment	62,097
	Sustaining Capital - Tailings	318,097
	Mine Access tunnel	14,456
	Contingency	377,751
Total		***4,362,877***

Table 21-6: Capital Cost Estimate

	(US$ Billion)
Open pit mine	0.20
Pre-stripping	0.14
Underground mine	0.09
Plant and processing	0.87
Infrastructure	0.55
Total Direct Costs	*1.85*
Indirect costs	0.48
Owner’s costs	0.13
Contingency	0.62
Total Initial Capital Costs	*3.08*
Life-of-mine sustaining capital costs	*4.36*

21.2 Operating Cost Estimates

21.2.1 Basis of Estimate

Operating costs detailed in the PEA were derived from a variety of sources including, but not limited to, benchmarking analysis, derivation from first principles, and factoring from other costs contained within this study.

The operating cost estimate is considered to have a level of accuracy of –25% to +35%. The overall assumptions for operating costs comprise:

- Costs are presented in 2015 US dollars, unless stated otherwise.
- The costs per tonne of material treated (US$/t) provided in this report are the average costs over the life of the mine (LOM).
- The long-term power cost used was US$0.078/kWh.

Personnel salaries, hourly rates, and overheads for the Los Helados mine are based on information from similar operations in Chile.

The following items are excluded from the overall operating costs:

- Escalation and exchange rate fluctuations
- Exploration
- Permits
- Import duties
- Taxes
- Interest and financing charges.
- Mine or plant closure/rehabilitation activities (considered in capex)
- Operating cost contingency.

The following is a description of the basis of estimate considered in particular for the process plant operating cost. Two separate costs have been estimated, one when processing ore from the Josemaría deposit and the other for ore from the Los Helados deposit.

The basis of estimate for the process plant is as follows;

- A power consumption allowance of 15% has been included for minor equipment items
- The price of consumables, reagents and salaries of the people at the plant have been considered constant throughout the LOM
- Personnel salaries, hourly rates, and overheads are based on information from similar Argentinean operations
- The maintenance service costs are calculated as a percentage of the total capital equipment cost estimate excluding installation. The percentages utilized was 4% for the main equipment and 7% for conveyors

- Reagent consumptions have been estimated from metallurgical testwork completed.

The consumable costs for ball mills have been estimated from the Moly-Cop tools program. The HPGR consumables were provided by Thyssenkrupp and have been confirmed using the Amec Foster Wheeler estimation database. Consumables for secondary crushing and regrinding have been obtained from benchmarking and consumables for filtering area from vendor information.

21.2.2 Mine Operating Costs

The estimation of mining cost for Josemaría was based on a fixed mining cost of US$2.00/t and was developed from benchmarking work completed by Amec Foster Wheeler. For re-handle, a cost of US$0.80/t was used.

Mining operating total expenditure for Los Helados is estimated at a LOM total of US$6,901 million, which results in a total average mining cost of US$4.43/t.

21.2.3 Process Operating Costs

The most significant process cost is power, followed by consumables. Minor costs include labour, reagent, maintenance, service and spare parts replacement. Operating costs were estimated for the different throughput rates that will occur with the initial open pit mining operation (150 kt/d), and the later block cave operation (120 kt/d) and are presented in Table 21-7 and Table 21-8.

The concentrate sales operating costs include the inland and ocean freight costs, storage and handling costs, marketing costs, losses, insurance and other miscellaneous costs.

21.2.4 Infrastructure Operating Costs

The average tailings storage facility and tailings water reclaim operating cost is US$0.13/t.

Energy consumption has been estimated as 2.34 kW for each 1 L/s of water transported. Maintenance service cost for the associated equipment is estimated to be US$0.006/t and the energy cost is US$0.018/t. The total average pumping operating cost over the LOM is US$0.023/t.

Other general costs for the Project include winter operations and road maintenance within the site. The average cost over the LOM is US$0.50/t.

21.2.5 General and Administrative Operating Costs

General and administrative (G&A) costs used in the PEA were derived through factoring of costs from other similar operations considering the relevant economies of scale; therefore, a G&A cost of US$0.80 was applied over the LOM.

Table 21-7: Operating Cost Estimate, Concentrator for 150 kt/d – Josemaría

Overall	US$/t of Plant Feed	LOM Cost (US$ M)
Labour	0.22	121
Maintenance Service	0.30	161
Power	1.48	803
Reagents	0.26	139
Consumables	1.34	729
Total	**3.60**	**1,953**

Table 21-8: Operating Cost Estimate, Concentrator for 120 kt/d – Los Helados

Overall	US$/t of Plant Feed	LOM Cost (US$ M)
Labour	0.23	364
Maintenance Service	0.39	609
Power	1.79	2,781
Reagents	0.26	398
Consumables	1.59	2,483
Total	**4.26**	**6,635**

21.2.6 Operating Cost Summary

Overall LOM operating costs are provided in Table 21-9 and Table 21-10.

21.3 Comments on Section 21

The capital costs estimate for this PEA study corresponds to a Type 5 study and have an accuracy of -30% to +50% at the 85% confidence. The operating cost estimate is considered to have a level of accuracy of –25% to +35%.

The Project initial capital cost estimate is US$3.1 billion.

Operating costs over the LOM are estimated at US$19.7 billion, and averages US$9.34/t over the LOM.

Unit costs for the process plant and infrastructure capital costs at the Josemaría site were estimated from similar projects. However, during more detailed studies specific construction costs should be obtained that reflect construction conditions at high altitudes in San Juan Province.

Table 21-9: LOM Operating Costs (U$/t)

Estimated Operating Costs	Josemaría (US$/t)	Los Helados (US$/t)	Life of Mine (US$/t)
Mining (mineralization processed)	3.91	4.43	4.23
Processing	3.60	4.26	4.09
General & Administration	0.80	0.80	0.80
Pumping	0.02	0.02	0.02
Tailings	0.07	0.07	0.07
Other (Roads, Port, closure, etc.)	0.30	0.06	0.13
Total	***8.70***	***9.64***	***9.34***

Table 21-10: Total LOM Operating Costs

Item	Area	Unit	Value
Mine Costs	Josemaría open pit (mill feed)	US$ M	1,082
	Josemaría open pit (waste)	US$ M	1,039
	Los Helados underground (Mill feed)	US$ M	6,901
	Subtotal	*US$ M*	*9,022*
Process Plant Costs	Processing	US$ M	8,588
	Make-up Water Pumping	US$ M	50
	Tailings Facility Costs	US$ M	149
	Other Processing Costs	US$ M	105
	Subtotal	*US$ M*	*8,892*
General and Administrative Costs	Total G&A	US$ M	1,680
	Subtotal	*US$ M*	*1,680*
Closure Costs	Total Closure	US$ M	*149*
	Subtotal	*US$ M*	*149*
Total Operating Costs		***US$ M***	***19,743***

22.0 ECONOMIC ANALYSIS

The Report is partly based on Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the preliminary assessment based on these Mineral Resources will be realized.

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

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

- There being no signification disruptions affecting the development and operation of the Project
- The availability of certain consumables and services and the prices for power and other key supplies being approximately consistent with assumptions in the Report
- Labor and materials costs being approximately consistent with assumptions in the Report
- Permitting and arrangements with stakeholders being consistent with current expectations as outlined in the Report
- All environmental approvals, required permits, licenses and authorizations will be obtained from the relevant governments and other relevant stakeholders within the expected timelines indicated in the Report

- Certain tax rates, including the allocation of certain tax attributes, being applicable to the Project
- The availability of financing for NGEx's planned development activities
- The timelines for exploration and development activities on the Project
- Assumptions made in Mineral Resource estimates, including, but not limited to, geological interpretation, grades, metal price assumptions, metallurgical and mining recovery rates, geomechanical and hydrogeological assumptions, capital and operating cost estimates, and general marketing, political, business and economic conditions.

The production schedules and financial analysis annualized cash flow table are presented with conceptual years shown. Years shown in these tables are for illustrative purposes only. Additional mining, technical, and engineering studies are planned which may alter the Project assumptions as discussed in this Report, and may result in changes to the calendar timelines presented. No development approval has been forthcoming from the NGEx Board, and statutory permits, including environmental permits, are required to be granted prior to mine commencement.

22.1 Methodology Used

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

Capital cost estimates have been prepared for initial development and construction of the Project, starting in year minus three (year -3). In addition to initial capital cost, sustaining capital was included from year one (year 1).

The resulting net annual cash flows are discounted back to the date of valuation of start-of-year year -3, because the actual starting calendar year has not been determined. The currency used to document the cash flow is US$Q3 2015, considering that the estimation was developed during the third quarter of 2015. The IRR is calculated as the discount rate that yields a zero NPV. The payback period is calculated as the time needed to recover the initial capital costs.

22.2 Financial Model Parameters

22.2.1 Mineral Resources and Mine Life

A subset of the Mineral Resources estimated in Section 14 was used in Section 16 to determine the production schedule.

The production program for Josemaría includes a pre-stripping period of two years and a ramp-up period of one year until reaching the full production rate. Steady-state production will then be maintained for six years before a final six years of production ramp-down until the end of production, resulting in 13 years of total production.

The production program for Los Helados starts in year 8 of production from Josemaría and includes a ramp-up period of six years until reaching the full production rate. Steady state production will then be maintained for 31 years before a final four years of production ramp-down until the end of production, resulting in 41 years of production.

In total, the production period for the Project is 48 years.

22.2.2 Metallurgical Recoveries

The average recoveries for each of the payable metals over the financial model LOM are included in Table 22-1.

22.2.3 Smelting and Refining Terms

Three end products will be produced: copper, gold and silver. The smelting and refining terms considered in the PEA were based on information provided by NGEx shown in Table 22-2. Sales costs used are summarized in Section 21.

22.2.4 Metal Prices

This Report utilized consensus metal prices derived from the average of the long-term price projections from a number of analyst and bank forecasts as summarized in Section 19.

Metal prices were kept constant throughout the life of the Project, due to the significant Project construction and ramp-up periods.

22.2.5 Capital Costs

Capital costs are discussed in Section 21.

22.2.6 Operating Costs

Operating costs are discussed in Section 21.

Table 22-1: Metallurgical Recoveries

Commodity	Average Head Grade		Average Global Recovery		Average Concentrate Grade	
	Josemaría	Los Helados	Josemaría	Los Helados	Josemaría	Los Helados
Copper	0.36%	0.39%	89.0%[1]	88.1%[2]	30.2%	28.6%
Gold	0.25 g/t	0.14 g/t	67.4%[1]	76.0%	16.4 g/t	9.2 g/t
Silver	1.07 g/t	1.44 g/t	66.9%[1]	60.0%	62.9 g/t	72.0 g/t

Notes:

(1): *Variable: From NGEx Block Model*

(2): *Cu Recovery (%) = 9.1316 LN (Cu Head Grade %) + 97.485*

Table 22-2: Smelting and Refining Terms

Commodity	Pay Factor		Unit Deduction	Treatment Charge	Refining Charge
Copper	96.5%		1.00 %	85 (US$/ dmt conc)	0.85 US¢/pay lb
Gold					
	no payment	If less than 1 g/dmt conc	—	—	5 US$/pay oz
	90%	If 1–3 g/dmt conc	—	—	
	92%-94%	If 3–5 g/dmt conc	—	—	
	95%-96%	If 5–10 g/dmt conc	—	—	
Silver					
	90.0%	If over 0.30 g/dmt conc	—	—	30 US¢/pay oz

22.2.7 Royalties

The Provincial Mining Royalty payable in Argentina is estimated at US$327 million.

The Chilean Mining Tax payable is estimated at US$470 million.

22.2.8 Working Capital

A working capital allocation was included in the cash flow model. The allocation varies throughout the Project life, starting at US$98.8 million, and peaking at US$116.4 million.

It was assumed that the working capital will be at least 10% of the operating cost. It was also assumed that all of the working capital can be recovered at Project termination. Thus, the sum of all working capital over the life-of-mine is zero.

22.2.9 Taxes

Depreciation

As operations will be carried out in both Argentina and Chile, asset depreciation analysis took into account recommendations from accounting and legal firms retained by NGEx (Nicholson y Cano Abogados and Bofill Mir & Alvarez Jana Abogados).

The capital investment in Argentina was allocated to two different capital classes as provided by the special accelerated regime set forth in Mining Investment Law 24.196. The depreciation structure is included in Table 22-3. The capital investment in Chile was allocated via a straight-line depreciation method, therefore a constant temporal depreciation was assumed. The depreciation structure for the capital investment employed the categories and timelines established by the Chilean Internal Revenue Service (Servicios de Impuestos Internos, or SII) included in Table 22-4.

Mining Specific and First Government Taxes

The after-tax cashflow assumes that Project Constellation becomes registered in the Argentine Mining Investment Registry, and that NGEx is subject to the Mining Investment Law 24.196 regulations. An estimated total of US$18.6 million has been spent to date in Argentina, of which US$15.8 million is allowable for the double tax deduction (figures provided by NGEx).

For cashflow calculations, irrespective of time schedules, it has been assumed that 100% of the VAT paid is refunded, and that the promotional regime is in place. Accordingly, VAT has not been modeled. The time value of money is assumed as minimal. It was presumed that all required equipment will be exempt from import duties. Based on current legislation, a 3% provincial mining royalty and a 35% corporate income tax rate is included. For the purposes of this model, a 10% export tax on concentrate is not included as a result of the announcement from the Argentine government on 12 February 2016, which removes this tax.

For taxation purposes the following assumptions were made:

- No dividends are payable and all profits are retained in Argentina
- The impact of the MDIT is negligible and is not included
- The turnover tax does not apply due to an exemption available in San Juan Province
- NGEx is exempt from the San Juan Province stamp tax
- A joint venture or a similar structure is established, and double taxation issues are not a concern
- All other minor taxes and customs fees are not included.

Table 22-3: Depreciation Structure defined by Law 24.196 (Argentina)

Capital Cost	Category	Useful Life Estimate (Years)	Factor for Accelerated Depreciation
Equip & Construction to provide Infrastructure	1	3	First year: 60% Second year: 20% Third year: 20%
Machinery & Equipment not included above	2	3	First year: 1/3 Second year: 1/3 Third year: 1/3

Table 22-4: Depreciation Structure defined by the SII (Chile)

Capital Cost	Category	Useful Life Estimate (Years)	Useful Life (years)	
			Normal Depreciation	Accelerated Depreciation
Mine Pre-stripping	1	15–20	20	6
Fleet (Project Equipment)	2	9	9	3
Mine Development (*)	3	15–20	20	6
Concrete Buildings	4	15–20	20	6
Machinery and Equipment	5	5–10	9	3
TSF	6	15–20	10	3
Prefabricated Buildings	7	15–20	20	6

* Mine development has specific depreciation allocations that are based on considerations relating to development and construction timing

The latest Chilean taxation law was enacted 1 October, 2014 and has two tax treatment options. The semi-integrated system applies 27% as a first category tax rate. The attributed system applies 25% as a first category tax rate, but in addition a 35% withholding tax will apply each year, even if no distribution of dividends will be made. The mining tax noted above will still be payable.

As NGEx plans to re-invest profits in Chile, a 27% semi-integrated system was applied because no dividends will be payable outside Chile.

It was assumed that for the purposes of this Report, Project Constellation was subject to income and/or revenue taxes as shown in Table 22-5. The total taxable income over the duration of the Project is estimated at US$23,039 million. Government taxes payable for the duration of the Project are estimated at US$1,785 million in Argentina, and US$4,722 million in Chile.

22.2.10 Closure Costs and Salvage Value

As noted in Section 21, no salvage value has been allocated.

The closure cost estimate totals US$148.7 million, comprising US$136.3 million for closure costs at Josemaría, and US$12.4 million for closure at Los Helados. This amount is treated as a negative capital cost at the end of the life-of-mine. No provision has been made to accumulate this amount over the life of the Project.

Under Internal Revenue Service (IRS) rulings, in order to deduct the expenses incurred in the closure of the mine, several requirements must be met, such as the fulfillment of environmental mitigation requirements that would be contained in the Project's RCA or Environmental Qualification Resolution.

22.2.11 Financing

The base case economic analysis assumes 100% equity financing and is reported on a 100% project ownership basis.

22.2.12 Inflation

The base case economic analysis assumes constant prices with no inflationary adjustments. Capital and operating costs are based on Q3 2015 United States dollars. For tax purposes the exchange rate variations and inflation are considered to be taxable events.

22.3 Financial Results

The base case scenario, which combines Josemaría and Los Helados, uses a standard 8% discount rate. The resulting after-tax project NPV (discounted at 8%) is US$2.61 billion and the IRR is 16.6%. The cumulative, undiscounted, cash flow value for Project Constellation is US$15.95 billion. Payback (post-tax) is achieved in 3.6 years.

A summary of the results is provided in Table 22-6. Cashflow over the LOM is shown in Figure 22-1. The C1 cash cost breakdown is provided in Table 22-7. The life of mine average cash cost (C1) is US$1.05/lb payable, after secondary metal credits. Table 22-8 to Table 22-10 present the cashflow on an annualized basis.

22.4 Sensitivity Analysis

A sensitivity analysis was performed taking into account variations in metal prices (which emulates metal grades and recoveries), operating costs and capital costs. The results are shown in Figure 22-2 to Figure 22-3. The results show that the Project is most sensitive to (in order from highest to lowest) metal prices, initial capital cost and operating cost.

Table 22-11 provides a summary of the sensitivity of estimated NPVs for the Project's updated cash flows at various copper prices and discount rates (Au and Ag held flat at US$1,275/oz and US$20/oz respectively).

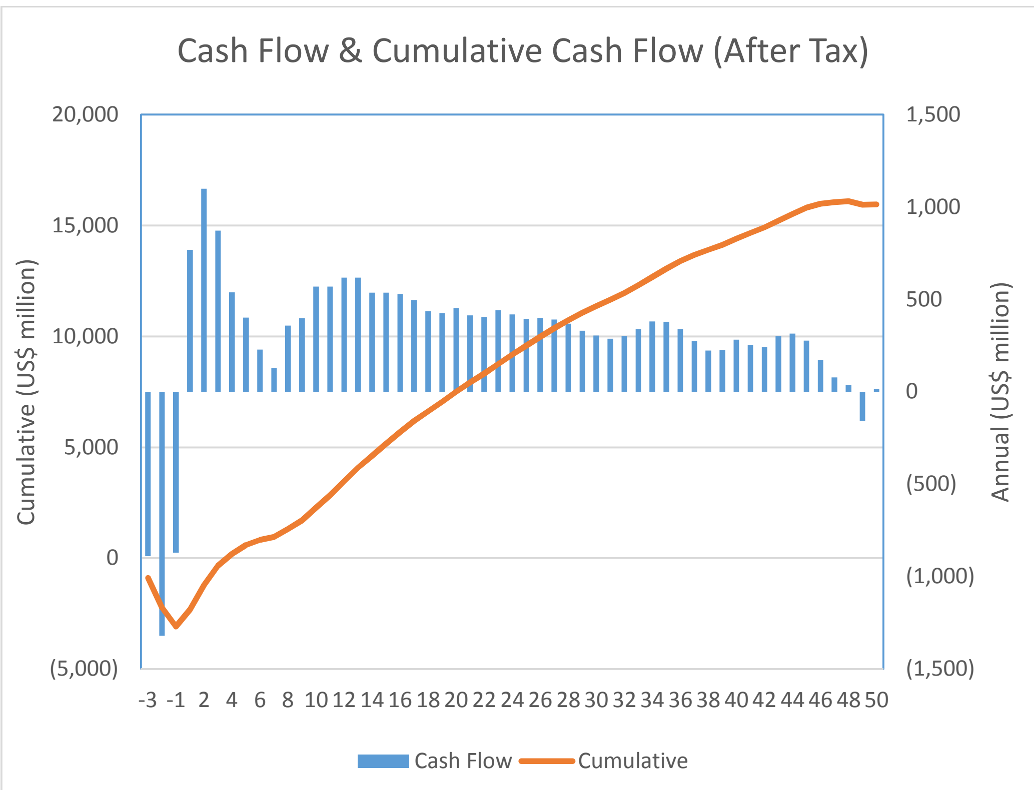
Table 22-5: Tax Assumptions for the Project

Taxes	Unit	Value
Corporate income tax rate in Argentina	%	35
Corporate income tax rate in Chile	%	27

Table 22-6: Cashflow Summary Table (base case is highlighted)

	Unit	Value
Payback (undiscounted; post-tax)	Years	3.6
Cumulative net cash flow (post-tax)	US$ billion	15.95
NPV 5% (post-tax)	US$ billion	4.99
NPV 8% (post-tax)	US$ billion	2.61
NPV 10% (post-tax)	US$ billion	1.65
IRR (post tax)	%	16.6%

Figure 22-1: LOM Cashflow (post-tax)



Note: Figure prepared by Amec Foster Wheeler. X-axis shows Project years.

Table 22-7: Cash Costs Summary

	Unit	LOM Total	Cost per Tonne Milled (US$/t)	Cost per Pound Cu Payable (US$/lb)
Cash costs				
Mining	US$M	8,878	4.23	0.59
Process	US$M	8,588	4.09	0.57
G&A	US$M	1,680	0.80	0.11
Other operating	US$M	304	0.15	0.02
Smelter deductions	US$M	2,246	1.07	0.15
Treatment charges	US$M	2,066	0.98	0.14
Refining charges	US$M	1,330	0.63	0.09
Concentrate transport	US$M	2,642	1.26	0.18
Sub-total	US$M	27,734	13.21	1.85
Credits				
Au	US$M	(10,836)	(5.16)	(0.72)
Ag	US$M	(1,112)	(0.53)	(0.07)
Sub-total	US$M	(11,948)	(5.69)	(0.80)
Adjusted cash costs				
Total	US$M	15,785	7.52	1.05

Table 22-8: Cashflow on an Annualized Basis (Year 1 to Year 14)

	Units	Total	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Production																			
Josemaría (Argentina)																			
Ore	Mt	542,160	—	—	—	45,234	54,750	54,750	54,750	54,543	54,421	53,584	50,269	42,158	33,489	24,501	15,513	4,198	—
Copper grade	%	0.36%	—	—	—	0.41%	0.42%	0.41%	0.37%	0.34%	0.34%	0.31%	0.33%	0.29%	0.30%	0.31%	0.42%	0.47%	—
Gold grade	g/t	0.25	—	—	—	0.37	0.35	0.29	0.27	0.25	0.24	0.19	0.25	0.21	0.18	0.17	0.18	0.22	—
Silver grade	g/t	1.07	—	—	—	1.05	1.33	1.13	1.10	1.04	1.00	1.05	0.99	0.84	1.00	1.11	1.18	1.59	—
Contained metal																			—
Copper	Kt	1,925	—	—	—	188	229	224	200	187	187	166	163	121	99	76	65	20	—
Gold	Koz	4,436	—	—	—	537	613	503	474	430	423	327	396	289	194	132	89	29	—
Silver	Koz	18,638	—	—	—	1,533	2,338	1,987	1,938	1,815	1,741	1,805	1,592	1,132	1,080	873	591	214	—
Recovered metal																			—
Copper	Kt	1,713	—	—	—	169	209	199	182	166	164	145	143	108	88	67	57	17	—
Gold	Koz	2,990	—	—	—	361	415	336	324	293	273	212	270	201	135	91	60	20	—
Silver	Koz	12,466	—	—	—	1,034	1,600	1,378	1,303	1,222	1,176	1,166	1,039	748	704	565	386	145	—
Los Helados (Chile)																			
Ore	Mt	1,557,279	—	—	—	—	—	—	—	—	—	—	3,541	10,074	17,009	24,200	31,390	40,442	43,800
Copper grade	%	0.39%	—	—	—	—	—	—	—	—	—	—	0.56%	0.66%	0.62%	0.59%	0.56%	0.52%	0.48%
Gold grade	g/t	0.14	—	—	—	—	—	—	—	—	—	—	0.17	0.20	0.20	0.21	0.21	0.20	0.21
Silver grade	g/t	1.44	—	—	—	—	—	—	—	—	—	—	1.91	2.30	2.17	2.11	2.01	1.79	1.60
Contained metal																			
Copper	Kt	6,063	—	—	—	—	—	—	—	—	—	—	20	66	105	143	174	209	208
Gold	Koz	7,248	—	—	—	—	—	—	—	—	—	—	19	63	110	160	208	263	289
Silver	Koz	71,912	—	—	—	—	—	—	—	—	—	—	217	745	1,187	1,642	2,025	2,325	2,249
Recovered metal																			
Copper	Kt	5,339	—	—	—	—	—	—	—	—	—	—	18	62	97	131	159	189	187
Gold	Koz	5,509	—	—	—	—	—	—	—	—	—	—	14	48	83	122	158	200	220

	Units	Total	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Silver	Koz	43,147	—	—	—	—	—	—	—	—	—	—	130	447	712	985	1,215	1,395	1,349
Gross Revenue																			
Josemaría (Argentina)																			
Copper	$M	10,933	—	—	—	1,080	1,335	1,268	1,160	1,062	1,045	927	911	685	562	427	361	109	—
Gold	$M	3,641	—	—	—	440	506	409	394	357	332	258	329	244	164	111	73	24	—
Silver	$M	224	—	—	—	19	29	25	23	22	21	21	19	13	13	10	7	3	—
Sub-total	$M	14,799	—	—	—	1,539	1,869	1,703	1,578	1,440	1,399	1,206	1,259	943	738	548	441	135	—
Los Helados (Chile)																			
Copper	$M	34,063	—	—	—	—	—	—	—	—	—	—	116	394	620	839	1,015	1,208	1,195
Gold	$M	6,707	—	—	—	—	—	—	—	—	—	—	18	59	102	148	192	243	268
Silver	$M	777	—	—	—	—	—	—	—	—	—	—	2	8	13	18	22	25	24
Sub-total	$M	41,547	—	—	—	—	—	—	—	—	—	—	136	461	735	1,005	1,229	1,476	1,487
Total	$M	56,346	—	—	—	1,539	1,869	1,703	1,578	1,440	1,399	1,206	1,395	1,404	1,473	1,553	1,670	1,612	1,487
Revenue Costs																			
Josemaría (Argentina)																			
Treatment	$M	(482)	—	—	—	(46)	(58)	(53)	(53)	(47)	(44)	(41)	(40)	(33)	(27)	(20)	(15)	(4)	—
Refining	$M	(327)	—	—	—	(33)	(40)	(38)	(35)	(32)	(31)	(28)	(27)	(21)	(17)	(13)	(11)	(3)	—
Transport, handling & insurance	$M	(618)	—	—	—	(60)	(75)	(68)	(68)	(61)	(57)	(52)	(52)	(42)	(34)	(25)	(19)	(5)	—
Sub-total	$M	(1,428)	—	—	—	(139)	(173)	(160)	(155)	(140)	(132)	(120)	(119)	(95)	(78)	(58)	(45)	(13)	—
Los Helados (Chile)																			
Treatment	$M	(1,584)	—	—	—	—	—	—	—	—	—	—	(5)	(17)	(27)	(37)	(45)	(53)	(53)
Refining	$M	(1,003)	—	—	—	—	—	—	—	—	—	—	(3)	(12)	(18)	(25)	(30)	(36)	(35)
Transport, handling & insurance	$M	(2,023)	—	—	—	—	—	—	—	—	—	—	(7)	(22)	(35)	(47)	(57)	(68)	(67)
Sub-total	$M	(4,611)	—	—	—	—	—	—	—	—	—	—	(15)	(51)	(80)	(109)	(132)	(157)	(155)
Total	$M	(6,038)	—	—	—	(139)	(173)	(160)	(155)	(140)	(132)	(120)	(135)	(146)	(159)	(167)	(177)	(170)	(155)
Export Taxes & Royalties																			
Josemaría (Argentina)	$M	(343)	—	—	—	(36)	(45)	(39)	(36)	(34)	(33)	(28)	(29)	(22)	(16)	(11)	(10)	(3)	—

	Units	Total	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Los Helados (Chile)	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	$M	(343)	—	—	—	(36)	(45)	(39)	(36)	(34)	(33)	(28)	(29)	(22)	(16)	(11)	(10)	(3)	—
Net Revenue	$M	49,965	—	—	—	1,364	1,651	1,504	1,387	1,266	1,234	1,058	1,231	1,236	1,298	1,375	1,484	1,439	1,331
Operating Costs																			
Josemaría (Argentina)																			
Mining	$M	(1,977)	—	—	—	(175)	(229)	(218)	(219)	(230)	(230)	(230)	(168)	(113)	(71)	(51)	(33)	(9)	—
Process	$M	(1,953)	—	—	—	(160)	(196)	(196)	(196)	(196)	(195)	(193)	(183)	(151)	(117)	(90)	(57)	(22)	—
G&A	$M	(434)	—	—	—	(36)	(44)	(44)	(44)	(44)	(44)	(43)	(40)	(34)	(27)	(20)	(12)	(3)	—
Other	$M	(215)	—	—	—	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(6)	(5)	(4)	(2)	(1)	—
Sub-total	$M	(4,579)	—	—	—	(378)	(477)	(466)	(467)	(477)	(477)	(474)	(398)	(304)	(220)	(164)	(105)	(35)	—
Los Helados (Chile)																			
Mining	$M	(6,901)	—	—	—	—	—	—	—	—	—	—	(19)	(47)	(76)	(106)	(136)	(174)	(188)
Process	$M	(6,635)	—	—	—	—	—	—	—	—	—	—	(26)	(50)	(75)	(115)	(141)	(173)	(186)
G&A	$M	(1,246)	—	—	—	—	—	—	—	—	—	—	(3)	(8)	(14)	(19)	(25)	(32)	(35)
Other	$M	(238)	—	—	—	—	—	—	—	—	—	—	(1)	(1)	(2)	(4)	(5)	(6)	(6)
Sub-total	$M	(15,020)	—	—	—	—	—	—	—	—	—	—	(49)	(106)	(167)	(243)	(306)	(386)	(415)
Total	$M	(19,598)	—	—	—	(378)	(477)	(466)	(467)	(477)	(477)	(474)	(448)	(410)	(387)	(407)	(411)	(421)	(415)
Capital Costs																			
Initial	$M	(2,935)	(889)	(1,258)	(788)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pre-stripping	$M	(144)	—	(61)	(83)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sustaining	$M	(4,363)	—	—	—	(118)	(58)	(73)	(83)	(132)	(269)	(258)	(222)	(237)	(121)	(121)	(138)	(133)	(157)
Working capital	$M	—	—	—	—	(99)	(18)	16	14	16	4	5	(10)	(7)	(11)	(6)	(12)	7	12
Total	$M	(7,442)	(889)	(1,320)	(870)	(217)	(76)	(57)	(69)	(117)	(266)	(253)	(232)	(244)	(132)	(127)	(151)	(127)	(146)
Income and Mining Tax																			
Argentina income tax	$M	(1,785)	—	—	—	—	—	—	(109)	(312)	(270)	(262)	(204)	(175)	(126)	(108)	(102)	(90)	—
Chile mining tax	$M	(470)	—	—	—	—	—	—	—	—	—	—	—	(3)	(11)	(18)	(24)	(29)	(24)
Chile income tax	$M	(4,722)	—	—	—	—	—	—	—	—	—	—	(17)	(55)	(91)	(152)	(191)	(218)	(211)
Total	$M	(6,978)	—	—	—	—	—	—	(109)	(312)	(270)	(262)	(204)	(193)	(184)	(210)	(272)	(305)	(273)

	Units	Total	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
After Tax Cash Flow	**$M**	**15,947**	**(889)**	**(1,320)**	**(870)**	**769**	**1,098**	**872**	**539**	**402**	**229**	**128**	**359**	**398**	**569**	**569**	**618**	**619**	**536**
Discounted (@ 8%) Net Cash Flow	**$M**	**2,613**	**(889)**	**(1,222)**	**(746)**	**610**	**807**	**593**	**339**	**234**	**124**	**64**	**166**	**171**	**226**	**209**	**210**	**195**	**156**

Table 22-9: Cashflow on an Annualized Basis (Year 15 to Year 30)

	Units	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Production																	
Josemaría (Argentina)																	
Ore	Mt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Copper grade	%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold grade	g/t	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver grade	g/t	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Contained metal																	
Copper	Kt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Recovered metal																	
Copper	Kt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																	
Ore	Mt	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800
Copper grade	%	0.44%	0.44%	0.44%	0.42%	0.41%	0.42%	0.43%	0.42%	0.41%	0.39%	0.38%	0.38%	0.38%	0.37%	0.35%	0.34%
Gold grade	g/t	0.21	0.20	0.18	0.15	0.14	0.15	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.16	0.15	0.13
Silver grade	g/t	1.42	1.44	1.45	1.51	1.50	1.54	1.55	1.48	1.41	1.34	1.28	1.28	1.32	1.37	1.33	1.31

	Units	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Contained metal																	
Copper	Kt	192	192	191	186	180	186	190	185	180	172	165	165	164	163	153	149
Gold	Koz	299	276	257	209	196	207	223	230	242	236	235	246	243	229	205	181
Silver	Koz	1,998	2,021	2,048	2,125	2,118	2,166	2,186	2,088	1,991	1,892	1,801	1,798	1,862	1,931	1,877	1,840
Recovered metal																	
Copper	Kt	171	171	170	165	160	165	169	164	160	151	145	144	144	142	133	129
Gold	Koz	227	210	195	159	149	157	170	175	184	179	179	187	184	174	156	138
Silver	Koz	1,199	1,213	1,229	1,275	1,271	1,300	1,312	1,253	1,194	1,135	1,080	1,079	1,117	1,158	1,126	1,104
Gross Revenue																	
Josemaría (Argentina)																	
Copper	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																	
Copper	$M	1,093	1,091	1,088	1,053	1,019	1,054	1,077	1,044	1,018	966	924	921	918	907	851	825
Gold	$M	276	255	238	193	181	191	207	213	224	218	218	227	224	212	190	168
Silver	$M	22	22	22	23	23	23	24	23	22	20	19	19	20	21	20	20
Sub-total	$M	1,391	1,369	1,348	1,269	1,223	1,268	1,308	1,279	1,263	1,204	1,161	1,168	1,162	1,140	1,060	1,012
Total	$M	1,391	1,369	1,348	1,269	1,223	1,268	1,308	1,279	1,263	1,204	1,161	1,168	1,162	1,140	1,060	1,012
Revenue Costs																	
Josemaría (Argentina)																	
Treatment	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refining	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transport, handling & insurance	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																	
Treatment	$M	(49)	(50)	(50)	(48)	(46)	(48)	(51)	(49)	(48)	(46)	(44)	(44)	(44)	(43)	(40)	(39)

	Units	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Refining	$M	(32)	(32)	(32)	(31)	(30)	(31)	(32)	(31)	(30)	(29)	(27)	(27)	(27)	(27)	(25)	(24)
Transport, handling & insurance	$M	(62)	(64)	(63)	(61)	(59)	(61)	(65)	(63)	(62)	(58)	(56)	(56)	(56)	(55)	(52)	(50)
Sub-total	$M	(143)	(146)	(145)	(140)	(136)	(140)	(147)	(143)	(140)	(133)	(127)	(127)	(126)	(125)	(117)	(113)
Total	$M	(143)	(146)	(145)	(140)	(136)	(140)	(147)	(143)	(140)	(133)	(127)	(127)	(126)	(125)	(117)	(113)
Export Taxes & Royalties																	
Josemaría (Argentina)	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Net Revenue	$M	1,247	1,223	1,203	1,129	1,087	1,128	1,161	1,135	1,123	1,071	1,034	1,041	1,036	1,015	943	899
Operating Costs																	
Josemaría (Argentina)																	
Mining	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Process	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G&A	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																	
Mining	$M	(189)	(189)	(189)	(189)	(189)	(190)	(190)	(190)	(191)	(191)	(192)	(192)	(192)	(193)	(193)	(194)
Process	$M	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)
G&A	$M	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)
Other	$M	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)
Sub-total	$M	(415)	(416)	(416)	(416)	(416)	(417)	(417)	(417)	(418)	(418)	(419)	(419)	(419)	(420)	(420)	(421)
Total	$M	(415)	(416)	(416)	(416)	(416)	(417)	(417)	(417)	(418)	(418)	(419)	(419)	(419)	(420)	(420)	(421)
Capital Costs																	
Initial	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pre-stripping	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sustaining	$M	(94)	(76)	(83)	(100)	(79)	(70)	(142)	(145)	(93)	(80)	(72)	(67)	(72)	(81)	(71)	(64)
Working capital	$M	10	3	3	9	5	(5)	(4)	3	1	6	3	(0)	0	0	1	0

	Units	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Total	$M	(84)	(73)	(80)	(91)	(74)	(75)	(146)	(142)	(91)	(74)	(68)	(67)	(72)	(81)	(70)	(64)
Income & Mining Tax																	
Argentina income tax	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chile mining tax	$M	(19)	(17)	(25)	(20)	(18)	(20)	(21)	(20)	(20)	(17)	(15)	(16)	(15)	(15)	(11)	(9)
Chile income tax	$M	(192)	(188)	(185)	(164)	(153)	(163)	(162)	(152)	(153)	(143)	(137)	(140)	(138)	(130)	(112)	(101)
Total	$M	(210)	(205)	(210)	(184)	(171)	(183)	(183)	(172)	(173)	(160)	(153)	(156)	(153)	(145)	(123)	(110)
After Tax Cash Flow	**$M**	**537**	**529**	**497**	**437**	**426**	**454**	**414**	**405**	**441**	**419**	**394**	**400**	**391**	**369**	**330**	**304**
Discounted (@ 8%) Net Cash Flow	**$M**	**145**	**132**	**115**	**94**	**85**	**83**	**71**	**64**	**64**	**57**	**49**	**46**	**42**	**37**	**30**	**26**

Table 22-10: Cashflow on an Annualized Basis (Year 31 to Year 50)

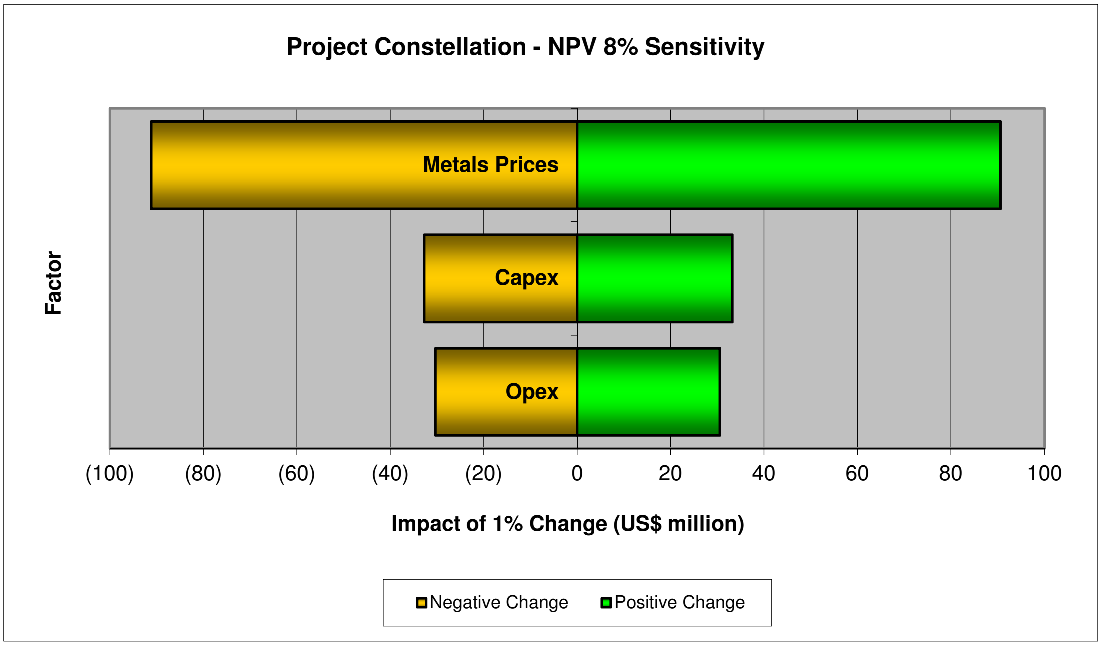
	Units	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Production																					
Josemaría (Argentina)																					
Ore	Mt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Copper grade	%	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold grade	g/t	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver grade	g/t	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Contained metal																					
Copper	Kt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Recovered metal																					
Copper	Kt	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	Koz	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

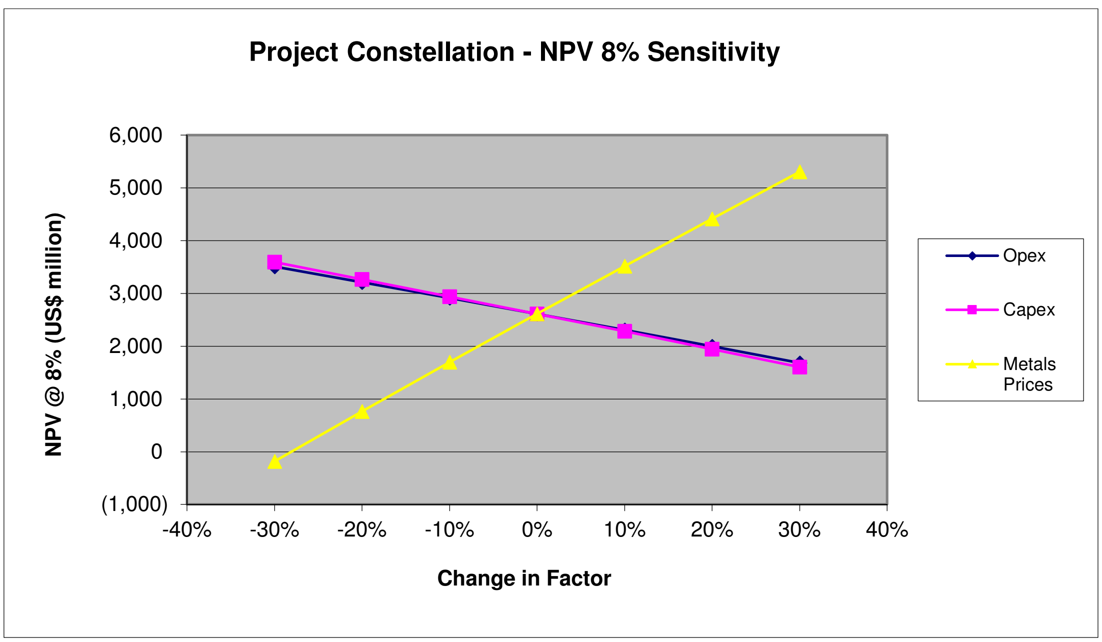
	Units	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Los Helados (Chile)																					
Ore	Mt	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	43,800	36,500	21,900	9,125	5,299	—	—
Copper grade	%	0.33%	0.34%	0.36%	0.38%	0.37%	0.36%	0.33%	0.31%	0.31%	0.33%	0.34%	0.34%	0.33%	0.33%	0.33%	0.33%	0.33%	0.33%	—	—
Gold grade	g/t	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.09	0.09	0.09	—	—
Silver grade	g/t	1.29	1.34	1.47	1.48	1.44	1.39	1.30	1.26	1.25	1.37	1.46	1.39	1.31	1.29	1.30	1.22	1.22	1.22	—	—
Contained metal																					
Copper	Kt	146	149	159	165	164	156	144	135	134	144	151	148	144	143	121	72	30	17	—	—
Gold	Koz	170	165	171	174	174	171	161	148	144	153	151	145	141	137	112	64	27	16	—	—
Silver	Koz	1,819	1,885	2,066	2,085	2,024	1,963	1,835	1,768	1,765	1,931	2,053	1,962	1,848	1,820	1,526	862	357	207	—	—
Recovered metal																					
Copper	Kt	126	130	139	145	143	136	125	116	115	125	131	128	124	123	104	62	26	15	—	—
Gold	Koz	129	125	130	132	133	130	122	112	110	116	115	110	107	104	85	49	20	12	—	—
Silver	Koz	1,092	1,131	1,240	1,251	1,214	1,178	1,101	1,061	1,059	1,158	1,232	1,177	1,109	1,092	916	517	214	124	—	—
Gross Revenue																					
Josemaría (Argentina)																					
Copper	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gold	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Silver	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																					
Copper	$M	804	827	886	923	915	870	794	740	731	795	833	815	790	788	666	394	164	95	—	—
Gold	$M	157	152	159	161	161	158	149	137	134	142	140	134	131	127	104	60	25	14	—	—
Silver	$M	20	20	22	23	22	21	20	19	19	21	22	21	20	20	16	9	4	2	—	—
Sub-total	$M	981	999	1,066	1,106	1,098	1,049	963	896	884	958	995	970	941	934	786	463	193	112	—	—
Total	$M	981	999	1,066	1,106	1,098	1,049	963	896	884	958	995	970	941	934	786	463	193	112	—	—

	Units	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Revenue Costs																					
Josemaría (Argentina)																					
Treatment	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refining	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Transport, handling & insurance	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sub-total	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)																					
Treatment	$M	(38)	(39)	(42)	(44)	(43)	(41)	(38)	(35)	(35)	(38)	(40)	(39)	(37)	(37)	(32)	(19)	(8)	(5)	—	—
Refining	$M	(24)	(24)	(26)	(27)	(27)	(26)	(23)	(22)	(22)	(23)	(24)	(24)	(23)	(23)	(20)	(12)	(5)	(3)	—	—
Transport, handling & insurance	$M	(49)	(50)	(54)	(56)	(55)	(53)	(48)	(45)	(44)	(48)	(50)	(49)	(48)	(48)	(40)	(24)	(10)	(6)	—	—
Sub-total	$M	(110)	(114)	(122)	(127)	(126)	(119)	(109)	(102)	(100)	(109)	(114)	(112)	(108)	(108)	(91)	(54)	(22)	(13)	—	—
Total	$M	(110)	(114)	(122)	(127)	(126)	(119)	(109)	(102)	(100)	(109)	(114)	(112)	(108)	(108)	(91)	(54)	(22)	(13)	—	—
Export Taxes & Royalties																					
Josemaría (Argentina)	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Los Helados (Chile)	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Net Revenue	$M	870	886	945	979	973	929	854	794	784	849	881	859	832	826	695	409	170	99	—	—
Operating Costs																					
Josemaría (Argentina)																					
Mining	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Process	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G&A	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	(136)	—

	Units	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Sub-total	$M	—	—	—	-	—	—	—	—	—	—	—	—	—	—	—	—	—	—	(136)	—
Los Helados (Chile)																					
Mining	$M	(194)	(195)	(195)	(195)	(196)	(196)	(197)	(197)	(198)	(198)	(199)	(199)	(199)	(200)	(168)	(103)	(46)	(28)	—	—
Process	$M	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(186)	(146)	(93)	(39)	(25)	—	—
G&A	$M	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(29)	(18)	(7)	(4)	—	—
Other	$M	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(5)	(3)	(1)	(1)	(12)	—
Sub-total	$M	(421)	(422)	(422)	(422)	(423)	(423)	(424)	(424)	(425)	(425)	(425)	(426)	(426)	(427)	(348)	(216)	(93)	(58)	(12)	—
Total	$M	(421)	(422)	(422)	(422)	(423)	(423)	(424)	(424)	(425)	(425)	(425)	(426)	(426)	(427)	(348)	(216)	(93)	(58)	(149)	—
Capital Costs																					
Initial	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pre-stripping	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sustaining	$M	(60)	(55)	(63)	(47)	(43)	(51)	(62)	(72)	(62)	(54)	(116)	(117)	(32)	(8)	(9)	—	—	—	—	—
Working capital	$M	0	(0)	(1)	(1)	0	1	1	1	0	(1)	(1)	0	0	(0)	10	17	15	4	(8)	15
Total	$M	(60)	(55)	(64)	(48)	(43)	(50)	(61)	(71)	(62)	(55)	(116)	(117)	(32)	(8)	1	17	15	4	(8)	15
Income & Mining Tax																					
Argentina income tax	$M	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chile mining tax	$M	(8)	(8)	(10)	(11)	(11)	(9)	(6)	(3)	(2)	(4)	(4)	(3)	(1)	(1)	(1)	—	—	—	—	—
Chile income tax	$M	(95)	(98)	(110)	(118)	(116)	(107)	(88)	(72)	(67)	(82)	(80)	(70)	(71)	(74)	(69)	(37)	(14)	(8)	—	—
Total	$M	(103)	(106)	(120)	(129)	(127)	(116)	(94)	(75)	(70)	(86)	(84)	(73)	(72)	(75)	(70)	(37)	(14)	(8)	—	—
After Tax Cash Flow	**$M**	**287**	**303**	**339**	**380**	**380**	**340**	**275**	**224**	**227**	**282**	**255**	**243**	**302**	**315**	**277**	**172**	**78**	**37**	**(156)**	**15**
Discounted (@ 8%) Net Cash Flow	**$M**	**23**	**22**	**23**	**24**	**22**	**18**	**14**	**10**	**10**	**11**	**9**	**8**	**9**	**9**	**7**	**4**	**2**	**1**	**(3)**	**0**

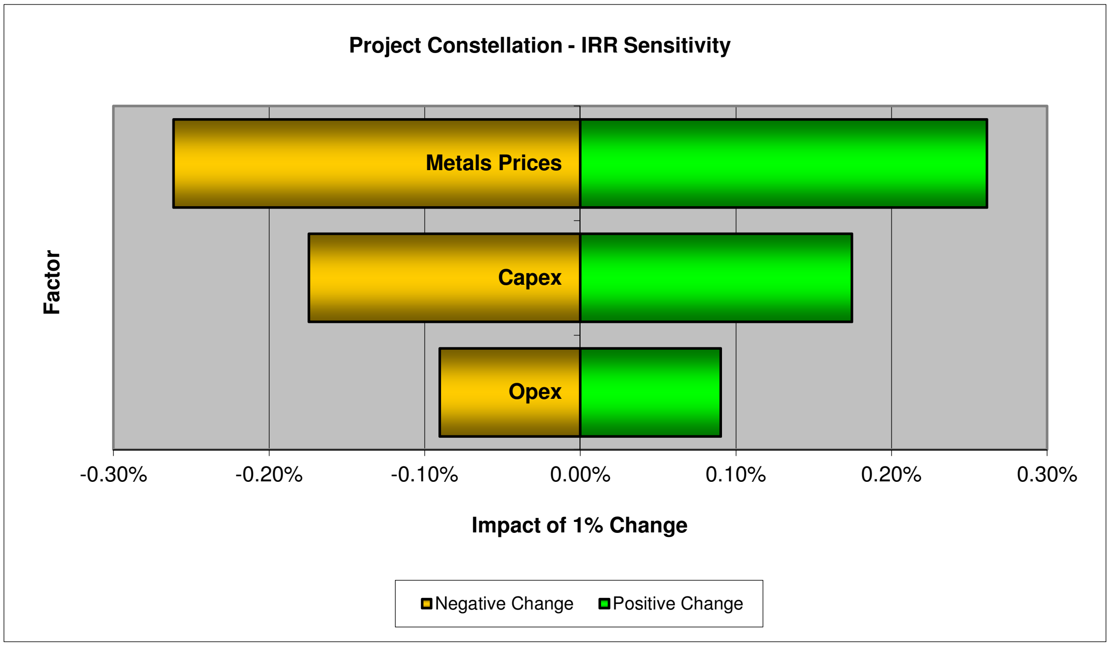
Figure 22-2: Sensitivity Analysis (NPV8%)

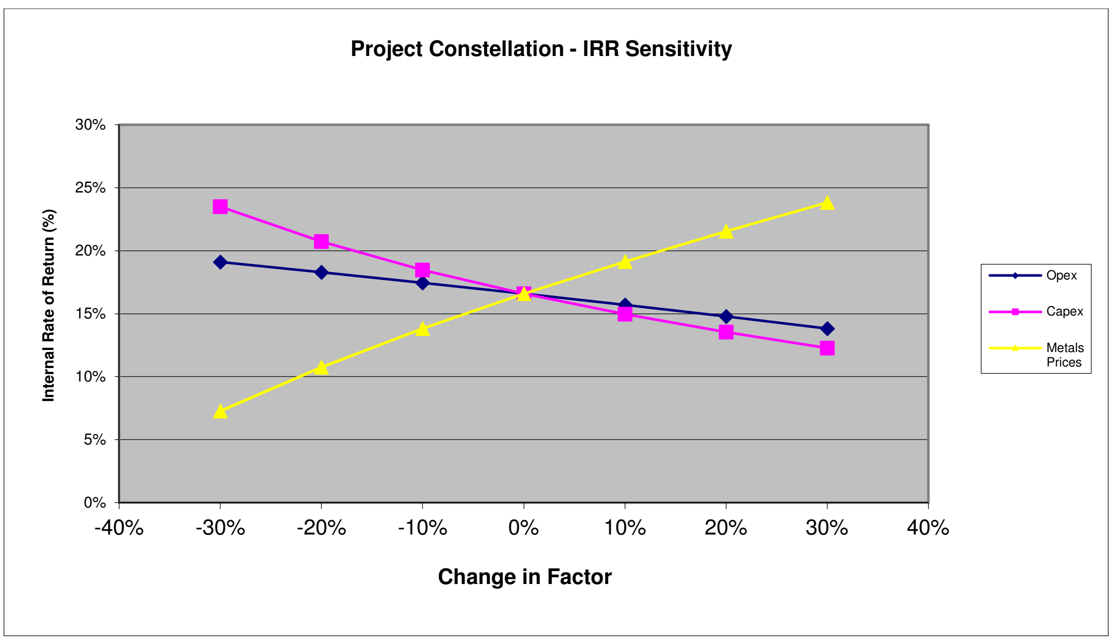




Note: Figures prepared by Amec Foster Wheeler, 2016

Figure 22-3: Sensitivity Analysis (IRR%)





Note: Figures prepared by Amec Foster Wheeler, 2016

Table 22-11:Sensitivity to Discount Rate and Copper Prices (basecase is highlighted)

	$2.50/lb Copper		$3.00/lb Copper		$3.50/lb Copper	
	Pre-Tax (US$ billion)	After-Tax (US$ billion)	Pre-Tax (US$ billion)	After-Tax (US$ billion)	Pre-Tax (US$ billion)	After-Tax (US$ billion)
Discounted at 5%	4.95	3.08	7.77	4.99	10.59	6.87
Discounted at 8%	**2.57**	**1.36**	**4.43**	**2.61**	**6.28**	**3.84**
Discounted at 10%	1.60	0.66	3.07	1.65	4.54	2.62

22.5 Comments on Section 22

Under the assumptions discussed in this Report, the Project has a positive NPV.

On 12 February, 2016, President Mauricio Macri of Argentina announced the elimination of export duties for metallic and non-metallic minerals. Amec Foster Wheeler has assumed that the appropriate legislation will be enacted in support of the announcement, and the financial analysis is presented with the export tax payment removed.

23.0 ADJACENT PROPERTIES

This section is not relevant to this Report.

24.0 OTHER RELEVANT DATA AND INFORMATION

24.1.1 Project Opportunities

Opportunities include, but are not limited to:

- Higher metals pricing, particularly for copper, than used as a long-term forecast in the financial model. WoodMackenzie (Q3 2015, Long Term Copper Outlook) predicts that $3.50/lb of copper is required to incentive new projects which will be required to supply an anticipated market deficit in copper by 2020. The Project has significant leverage to copper pricing, and project returns at this higher copper price assumption increase substantially
- Changes in existing laws, potential imposition of more advantageous laws in the future, and/or potential changes to royalty or tax regimes which may improve the Project's economics, particularly following the recent change of government in Argentina
- Capital cost estimates in the current study have in part been developed through benchmarking against projects built at the height of the commodity cycle. Recent decreases in labour and material costs may not be fully captured by these estimates
- Delineation of additional mineralization, in particular higher-grade material, through further exploration:
  - The Los Helados deposit remains open at depth and to the north, therefore there is potential to delineate additional deep materialization and contemplate a second, lower lift to the block cave
  - The Josemaría deposit remains open at depth, and to the south
  - Regionally, there are at least three targets with strong geochemical signatures and surface indications of porphyry-style mineralization within 7 km of the proposed plant location. If additional exploration at any of these targets was successful, there could be potential to add feed to the proposed process plant.
- Potential to exploit the oxide gold resource at Josemaría using less capital intensive and potentially lower cost heap leaching methods. Initial bottle roll tests yielded encouraging recoveries. Further study is necessary but if the early results are confirmed, this material could supplement cash flow in the early years of the Project. This is material that is currently assumed to be mined as waste
- Optimization of the combined mine plan. In particular, the 15-year mine life (including pre-stripping) currently envisaged at Josemaría leaves significant existing resources out of the Project mine plan. Opportunity exists to potentially:

- Defer the development of Los Helados and continue to exploit the open pit at Josemaría, extending the project mine life
- Return to the open pit at Josemaría following the exhaustion of the block cave at Los Helados, extending the project mine life
- Expand the process plant and continue to feed the Project from both deposits in tandem, increasing annual production.

• The PEA block cave mine design is based on limited geotechnical information and conservative design criteria were incorporated in the design, specifically:

  - Assumptions as to items such as caveability, fragmentation prediction, extraction grid, orientation of galleries, orientation of caving face, pillar design, subsidence angle may improve with additional geotechnical data
  - The costs associated with development, drilling, and materials which support the hydrofracturing assumptions in the block cave could be reduced. Additional geotechnical information could prove these conservative assumptions are not necessary and/or there may be opportunity to drill these hydro-fracking holes from surface as part of an in-fill drilling program required to improve the confidence level of the resource, thus “dual-purposing” the in-fill drilling program.

• Improvements in process plant throughput, concentrate grades, and metallurgical recoveries through additional testwork

• Determining a more cost-effective power supply option through review of additional power supply alternatives

• Potential for regional synergies with established mining operations and/or other properties in the region which could dramatically reduce the capital cost required and the environmental footprint of the project. This could include potential to:

  - Share infrastructure installations such as roads, power, water, and port capacity
  - Share installed processing capacity and existing tailings facilities.

24.1.2 Project Risks

Risks include, but are not limited to:

- Lower metals pricing, particularly for copper, than used as a long-term forecast in the financial model. The Project has significant leverage to copper pricing, and project returns at lower copper prices decrease substantially
- Inflation, increased prices for Project equipment, materials, consumables, and maintenance of existing or implementation of additional monetary controls or restrictions on import by the Argentinean government
- Possibility of different interpretations of how the different fiscal regimes (treatments of taxes, royalties, depreciation and amortization, etc.) in Chile and Argentina would be allocated to the cash flows assumed in the financial model
- Capital and operating cost increases (mine, plant, port, infrastructure)
- The mine plan for the Los Helados block cave is a relatively high tonnage block cave operation. There is a risk that the ramp-up and ramp-down periods assumed could be slower than anticipated, potentially impacting cash flow. This risk, however, is mitigated by the potential to feed the process plant with additional material from the Josemaría open pit to ensure the process plant capacity is optimized at all times
- The current mine design is predicated on the use of high columns; this assumption should be reviewed when more geotechnical data are available
- Obtaining sufficient surface rights on both sides of the border to support infrastructure design on a timely and reasonable basis
- Obtaining the appropriate permits on a timely basis to support Project construction and operation while managing the complications of the cross-border nature of the Project
- The environmental permitting process being able to be completed in the timeline envisaged in the PEA
- Environmental concerns that may be raised due to proximity concerns: the proximity of the El Potro glacial area, rock glaciers in the broader periglacial environment, and cultural heritage sites
- Uncertainties in long term management of acid rock drainage and metal leaching from mine, waste and tailings
- Continuity and effectiveness of community relations programs.

25.0 INTERPRETATION AND CONCLUSIONS

In the opinion of the QPs, the following interpretations and conclusions are appropriate to the review of data available, and work performed, in support of this Report:

25.1 Mineral Tenure, Surface Rights and Royalties

Legal opinion provided supports that NGEx currently holds an indirect 60% interest in the Josemaría and Los Helados Projects.

Legal opinion provided supports that the mineral tenures held are valid and that the mineral tenure is sufficient to support declaration of Mineral Resources and preliminary mine planning.

DPM currently has an occupancy easement for the Batidero Camp, and a road right-of-way, which provides access to the work area. Part of the road right-of-way is within private property. The remainder of the road and the camp fall within the multiple usage area that has been designated by the San Guillermo Provincial Reserve. Multiple usage includes allowances for mining activities. Surface land rights in the area of the Los Helados are held by a local community "Comunidad Civil Ex Estancia Pulido". In May 2015, MFDO began negotiations with Comunidad Civil Ex Estancia Pulido for a definitive mining easement that would cover 20,000 ha, to allow for land usage and construction of mining facilities for the envisaged mine life. The negotiations are at an advanced stage and when concluded will include all surface rights needed to support the mine plan in the PEA.

Within the Josemaría area, the Lirio property is subject to a 0.5% NSR, payable over 10 years, less costs, and an additional US$2 million payment within six months of the completion of the second full year of mine operations. The Batidero property is subject to a 7% net profit interest, however, none of the material considered in the PEA mine plan is subject to this NPI. There is a net smelter return royalty payable to the Province of San Juan which is typically 3% but can be reduced in certain circumstances.

There are no royalties payable on Los Helados. The Government of Chile levies a mining tax that is a tax on operational mining income, applied on a sliding-scale rate basis of between 5% and 14% depending on operating margins.

NGEx is not aware of any significant environmental, social or permitting issues that would prevent future exploitation of the Project deposit other than as discussed in this Report.

25.2 Exploration

Exploration activities conducted by NGEx have identified the Los Helados and Josemaría deposits. Exploration activities completed have been appropriate to the deposit style.

Once the two main deposits were discovered, all the exploration effort shifted to deposit definition drilling, and exploration on the other exploration targets was suspended. These additional targets include geochemical anomalies similar in size and tenor to those that were identified over the known deposits, and have coincident geophysical targets and mapped alteration features that are consistent with porphyry-style mineralization. Given that porphyry deposits occur in clusters, and the exploration targets are in the vicinity of the Josemaría and Los Helados deposits, there is excellent exploration potential to identify additional porphyry-hosted mineralization. Additional exploration work is recommended in order to continue to advance them.

The Josemaría deposit remains open to the south, beneath a thickening cover of post-mineral volcanics, and also at depth. The Los Helados deposit remains open at depth and to the north.

25.3 Geology and Mineralization

The knowledge of the deposit settings, lithologies, mineralization and alteration controls on copper and gold grades are sufficient to support Mineral Resource estimation and can support preliminary mine planning at the PEA level.

25.4 Drilling

The quantity and quality of the lithological, collar and down-hole survey data collected in the exploration and infill drill programs completed are sufficient to support Mineral Resource estimation and preliminary mine planning at the PEA level.

25.5 Sampling and Assay

The quality of the copper and gold analytical data is sufficiently reliable to support Mineral Resource estimation without limitations on Mineral Resource confidence categories.

Should silver become a significant contributor to future Mineral Reserve estimates, then additional verification of Ag assays and an independent SRM for silver will be required.

25.6 Data Verification

A reasonable level of verification has been completed during the work conducted to date, and that no material issues would have been left unidentified from the verification programs undertaken. Mineral Resource estimates and preliminary mine planning can be supported by the data collected.

25.7 Metallurgical Testwork

Two phases of metallurgical testwork have been conducted on each deposit.

Recovery estimates for Cu, Au, and Ag have been established from this work. High Cu recoveries were achieved for both the Los Helados and Josemaría deposits using a conventional sulphide flotation process. The process also reported relatively high Au and average Ag recoveries. Concentrates containing saleable Cu, Au and Ag grades were obtained using a conventional sulphide flotation process.

The metallurgical testwork to date is based on samples which adequately represent the variability of the deposit with respect to physical and chemical characterisation for this stage of study. Additional testwork will be required to support more detailed studies.

At Los Helados, flotation open circuit tests confirmed that the deposit is reasonably homogeneous with respect to physical and chemical properties. Based upon the mining method proposed limited variability testing will be required going forward. For Josemaría, results indicate that additional variability tests will be needed to confirm the physical characteristics of the different lithological zones and to confirm the copper recovery algorithms developed and possibly develop gold and silver algorithms.

Low levels of concentrate impurities such as As, Cd, and Hg reported to the final Cu concentrate, and are below the generally accepted levels at which penalties are imposed. For the Josemaría deposit attention should be paid to mill feed blending.

There is still some pyrite reporting to the final flotation concentrate samples for both deposits. It is understood from analysis of these concentrates and the minerals present, and due to the fact that fixed flowsheet conditions were employed, that these levels of pyrite could be reduced for both deposit concentrates, resulting in higher Cu grade concentrates.

25.8 Mineral Resource Estimation

Mineral Resource estimation follows standard industry procedures. Mineral Resources are classified using the 2014 CIM Definition Standards. Estimates assume open pit mining at Josemaría and block cave mining at Los Helados. Reasonable prospects of eventual economic extraction were applied, considering those mining methods, and appropriately constrain the estimates.

Factors that can affect the estimates include: changes in interpretations of mineralization geometry and continuity of mineralization zones; assumptions used in generating the block cave shapes, including geotechnical and hydrogeological parameters; assumptions used in generating the Whittle shell constraining the open pit estimates;

metallurgical and mining recoveries; operating and capital cost assumptions; metal price and exchange rate assumptions; concentrate grade and smelting/refining terms; confidence in the modifying factors, including assumptions that surface rights to allow infrastructure such as tailings storage facilities and desalination plants to be constructed will be forthcoming; delays or other issues in reaching agreements with local or regulatory authorities and changes in land tenure requirements or in permitting requirements from those discussed in this Report.

25.9 Mine Planning

The PEA mine plan is based on a subset of the Mineral Resource estimates and assumed open pit mining of the Josemaría deposit and block caving operations at the Los Helados deposit.

The open pit will operate for 15 years, including two years of pre-stripping. The block cave will operate for 41 years, with a six-year ramp-up period. Considering the six year period where production from both deposits will feed the process plant, the mine will be in operation for 50 years, including two years of pre-stripping.

25.10 Recovery Plan

The process plan will use a conventional crush and flotation circuit consisting of jaw gyratory crushers, HPGR and ball mills feeding a rougher flotation/scavenger flotation circuit. The final product will be a precious-metals rich copper concentrate.

Water obtained from the concentrate thickener, tailings thickener and concentrate filter will be recovered and sent back to the process plant.

Tailings will be transported in slurry form to the TSF.

Concentrate will be trucked to the port of Caldera for shipping, a distance of about 381 km.

Additional physical characterization and flotation optimization tests (SAG mill competency and bench-scale HPGR testing) should be conducted on variability samples from both deposits.

The decision to proceed with the comminution HPGR circuit is based upon limited metallurgical testing and financial analysis.

25.11 Infrastructure

There is currently no infrastructure on site at either deposit, other than the exploration camps.

The major infrastructure items contemplated in the PEA include:

- The open pit mine;

- The block cave mine;
- Accommodation camps;
- Tunnels 8 and 12;
- Tunnels for tailings and water diversion;
- The process plant (including conveyor systems);
- The waste rock dump
- The tailings storage facility
- Administration offices,
- Site security,
- Upgraded road accesses, and
- Electrical distribution systems.

The PEA assumes most support for the Los Helados operations will be provided from Josemaría.

The study assumes all power will be sourced in Argentina. However, power supply for the surface camp at Los Helados may be able to be obtained from Chile and should be the subject of additional study.

25.12 Marketing

No formal marketing studies have been conducted for the Project. No contracts are currently in place for any production from the Project.

The testwork completed to date indicates that contained Cu, Au and Ag would be payable in the concentrates produced. The testwork also indicates that the concentrate product would be clean, is marketable, precious-metals rich, and low in deleterious elements.

The commercial smelting and refining terms used in the Report have been benchmarked against similar operations from publicly-available information.

Metal prices used are based on consensus long-term prices sourced from banks and analysts.

25.13 Environmental, Permitting and Social Licence

NGEx has undertaken preliminary baseline studies for priority environmental components for the Project, including such components as ARD geochemistry, meteorology, glaciology / permafrost, surface water, flora and fauna and archaeology.

This work has been completed using publicly-available information for the regional studies, and field mapping and sampling campaigns for the Project areas of influence around the mineral deposits.

The Project is expected to require the completion of an EIA and permitting processes in both Chile and Argentina. The environmental approvals process is expected to require an extended period of time due to the regulatory requirements for community consultation, review of protected areas and permanent environmental impacts. Following the receipt of environmental approvals, additional permits, licences, authorizations, and certificates will be required to proceed to Project construction.

Although there may be short-term and long-term environmental effects which result from the Project, the types of potential effects that can currently be forecasted are considered to be manageable through effective mitigation and/or compensation measures. Additional work will be needed to adequately characterize the environmental sensitivities in the Project areas of influence, and adapt the Project design to minimize the environmental impacts and risks.

As possible closure and remediation work will be completed progressively during operation of the mine at the areas that will no longer be needed for the operation. Once a decision has been made to permanently close the site, it is anticipated that the major closure activities would be completed within a period of approximately two years, if not already completed progressively. Closure monitoring will begin at the end of mining and continues until reclamation and closure activities have ceased and closure objectives have been met.

NGEx maintains community relations and consultation programs that are ongoing and support Project development plans.

25.14 Capital Costs

The accuracy of the estimates contained within this study varies due to the different methods of derivation used to estimate the costs. The capital costs estimate for this PEA is a Type 5 study according to Amec Foster Wheeler standards which are based on AACE recommendations and have an accuracy of -30% to +50% at the 85% confidence level.

25.15 Operating Costs

Operating costs detailed in the PEA were derived from a variety of sources including, but not limited to, benchmarking analysis, derivation from first principles, and factoring from other costs contained within this study.

The estimate is considered to have a level of accuracy of ± 30–35%.

25.16 Financial Analysis

Under the assumptions in the Report, the Project shows a positive cashflow.

On 12 February, 2016, President Mauricio Macri of Argentina announced the elimination of export duties for metallic and non-metallic minerals. Amec Foster Wheeler has assumed that the appropriate legislation will be enacted in support of the announcement, and the financial analysis is presented with the export tax payment removed.

25.17 Conclusions

Based on the assumptions detailed in this Report, the Project shows positive a financial return and supports the declaration of the economic analysis based on Mineral Resources.

Should the NGEx Board make such a decision, there is sufficient support from the Report results for progression to more detailed technical studies.

26.0 RECOMMENDATIONS

A two-phase work program is recommended. The first phase consists of a number of drill and data collection programs. The second phase will use the drill program results to update engineering designs and supporting assumptions and culminate in sufficient data and data support to allow completion of a pre-feasibility study (PFS) document.

The work program proposed would support completion of a PFS on the Project. The NGEx board of directors has not made a final decision to proceed to a PFS and the timing of such a decision will depend on a number of factors including but not limited to market conditions and availability of financing to complete the studies.

The budget estimates are restricted to technical work, and no provision has been made in the estimates for items such as corporate overheads, land acquisition, legal and other consulting fees, additional work or program changes that may be required as a result of interactions with regulatory agencies, community and stakeholder consultations, permit applications and acquisition, management costs from NGEx, or third-party consultants costs other than technical costs.

26.1 Phase 1

The Phase 1 work program comprises data collection and preliminary data evaluation.

26.1.1 Drilling

Additional geotechnical information should be collected in support of future PFS site designs at Josemaría, including:

- 3 drill holes (1,800 m) in support of open pit designs including pit slope parameters
- 3 drill holes (900 m) in support of proposed tunnel routes and portal/exit locations
- 15 drill holes, each approximately 30 m deep (450 m) in support of locations for key infrastructure (plant, waste rock facilities, tailings facilities).

Additional geotechnical information should be collected in support of future PFS site designs for Los Helados, including:

- Approximately five additional core holes (about 6,000 m) of infill and geotechnical drilling are recommended for Los Helados. The primary purpose of these holes is to provide additional information to be used in the geotechnical studies described below. As these holes will be drilled within the area where Indicated Mineral Resources have been classified, they may also support potential upgrades to the resource confidence category
- 7 drill holes (1,300 m) in support of proposed tunnel routes and portal/exit locations.

Amec Foster Wheeler has assumed all-in costs for the geotechnical drill programs of US$300/m.

26.1.2 Survey

The border between Chile and Argentina is not well defined at a district scale, and is less defined at the Project scale. A mapping project to establish a coordinated mine grid system for the Project should be completed.

A detailed assessment of all available routes from Josemaría to the port of Caldera should be undertaken.

26.1.3 Hydrogeology

Hydrogeological field investigations should be conducted to provide support for water source assumptions. The capacity of the local aquifers to support the PEA pumping assumptions must be confirmed. This may require completion of test water bore holes, and review of water source alternatives.

A total of four drill holes (400 m) has been allocated. Amec Foster Wheeler has assumed all-in costs for the hydrogeological drill programs, including testing, of US$325/m.

26.1.4 Environment

In preparation for the pre-feasibility study, continuity should be ensured in the priority environment studies. This would include meteorology, glaciology, surface water and ground water investigations. A budget allocation of US$500,000.

26.2 Phase 2

26.2.1 Geotechnical Studies

To reduce uncertainty in the geotechnical assumptions to a level that can support PFS evaluations, the following should be completed.

Josemaría

The data collected during the Phase 1 drilling program should be reviewed and interpreted, and used to update the geotechnical assumptions for the open pit and infrastructure locations.

Los Helados

The data collected during the Phase 1 drilling program should be reviewed and interpreted, and used to update the geotechnical assumptions for the block cave and infrastructure locations.

Additional geomechanical studies at Los Helados should be undertaken to reduce uncertainties. In order to advance the Project to a PFS level, a sound understanding of rock strength, variability, and discontinuity characteristics, as well as the hydrogeological and in situ stress regimes will be required. It will be critical to expand studies to all rock types across the cave footprint to reduce geotechnical uncertainty.

At Los Helados recommended work for the next phase includes:

- Studies to improve the understanding of rock mass strength variability across the site
- Studies to improve the understanding and viability of the proposed tunnel alignments
- Studies to provide more detailed fragmentation studies and cave performance parameters
- Detailed subsidence studies including numerical modelling, rock reinforcement and ground support estimation based on excavation strategy and in situ stress measurements, excavation stability and other geomechanical risks such as water/mud in-rushes and seismicity.

26.2.2 Mine Design and Production Schedule

A number of trade-off studies should be considered in support of optimizing the integrated mine design, including consideration of alternatives to:

- The timing, scheduling and mine life of the Josemaría open pit
- Block cave design to include a step-cave concept
- Underground extraction options
- Materials handling systems selected and configuration of these systems
- Mine ventilation
- Inclusion of a heap leach

26.2.3 Process Design

Once the appropriate geotechnical assessments are complete, a review should be conducted to confirm assumptions as to locations of the key process infrastructure components, based on the updated geotechnical information.

A trade-off study should be completed on the use of HPGR technology, because the decision was based on early-stage metallurgical testwork results and a high-level financial analysis. A more detailed techno-economic trade-off study on SAG versus HPGR should be conducted.

Additional physical characterization and flotation optimization tests should be conducted on mineralization variability from both deposits. This should include further SAG mill competency and bench-scale HPGR testing, particularly with respect to the Josemaría deposit.

26.2.4 Infrastructure

A review should be conducted of all infrastructure location and design assumptions. This should include:

- Seismic risk study for all mining and infrastructure areas
- Additional modeling in support of mine dewatering and project water supply
- Proposed locations of the mill feed material handling systems (e.g. conveyors, transfer stations)
- A trade-off study that assesses the optimal tailings disposal method, TSF locations and construction methods
- A review of power supply alternatives
- Alternative considerations for tunnel and road locations
- Review of optimal camp locations
- Consideration of alternative concentrate transport routes
- Evaluation of assumptions as to the port infrastructure and port access.

26.2.5 Marketing, Logistics and Financial Analysis

No formal marketing studies have been completed and the assumed terms are benchmarked against existing operations. Project-specific studies should include:

- Formal marketing study
- Transportation logistics study
- Studies to improve the understanding of risks and opportunities associated with a Chile–Argentina transboundary operation (e.g. taxation, royalties and duties).

26.2.6 Environmental, Permitting and Stakeholder Considerations

A pre-feasibility level, project-licensing strategy should be designed that takes into account the regulatory framework, social context and environmental sensitivities of the Project. A coordinated approach will be required to attain a compatible strategy on both sides of the international border.

The following steps are recommended for the formulation and execution of the licensing strategy to the pre-feasibility level:

- Align the legal, environmental and social licensing strategy to the strategic objectives of the project
- Carry out a risk assessment on these strategies and generate risk response approaches
- Design a plan for the Environmental Impact Assessment (EIA), permitting and public participation, addressing the issues identified to date and promoting feedback into the strategy
- Carry out an evaluation of alternative project options and configurations
- Analyze the environmental aspects of the preferred option in order to understand the interaction with sensitive issues and areas
- Apply environmental design criteria based on national regulations and international guidelines
- Carry out a baseline environmental program tailored to the preferred project configuration ahead of feasibility level engineering
- Feed findings from the baseline program back into the EIA, permitting and public participation plan.

Amec Foster Wheeler notes that as the PFS progresses, information resulting from the Phase 1 work should be incorporated into the ongoing environmental work.

26.2.7 Report Compilation

Information collated during the second work phase should be incorporated into a stand-alone PFS document.

26.3 Budget Estimate

Table 26-1 summarizes the costs to complete Phases 1 and 2 of the recommendations.

Table 26-1: Recommendations Costs

Program Phase	Area	Estimated Costs (US$ x 1,000)
Phase 1		
	Geotechnical Drilling	3,135
	Hydrogeology	130
	Survey	100
	Environmental studies	500
	Subtotal	*3,865*
Phase 2		
	Geotechnical Studies	2,000
	Mine Design & Production Schedule Optimization	250
	Process Design Optimization	200
	Infrastructure	1,050
	Logistics Studies & Marketing	200
	Environmental Studies and Field Work	2,000
	Study Management	400
	Contingency	1,000
	Subtotal	*7,100*
Total		***10,965***

27.0 REFERENCES

Item 27 Requirements: Include a detailed list of all references cited in the technical report

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