Taguas Oxide Gold-Silver Project
San Juan, Argentina
Preliminary Economic Assessment
NI 43-101 Technical Report

Prepared for:
Orvana Minerals Corporation

Prepared by:
Joseph Kowalik PhD, QP MMSA (Independent)
Ronald Simpson P.Geo. (Geosim Services Inc.)
Antonio Peralta Romero P.Eng. (Wood PLC)
William Colquhoun Pr Eng, FSAIMM (Wood PLC**)**

Effective Date:
May 14th, 2019

Project Number:
198839

CERTIFICATE OF QUALIFIED PERSON

Joseph J. Kowalik
Senior Consulting Geologist
14583 W 3rd Avenue
Golden CO 80401
Telephone: 303-818-4349
Email: JoeKowalik@yahoo.com

I, Joseph J. Kowalik, do hereby certify that:

1. I am currently an independent consultant residing in Golden, Colorado.
2. This certificate is part of the report titled "Taguas Oxide Gold-Silver Project, San Juan, Argentina, Preliminary Economic Assessment, NI 43-101 Technical Report" that has an effective date of May 14th, 2019 (the "Technical Report").
3. I graduated from Boston University with a Bachelor's Degree in Geology, from the University of Minnesota with a Master's Degree in Geology and Geophysics and from the University of Minnesota with a PhD in Economic Geology.
4. I have practiced my profession as an exploration geologist continuously since graduation. During that time I explored on 5 continents, initially for base-metals (Eastern US and Spain) and later for gold (Spain, Nevada, Siberia, Peru, Ghana, Mauritania) and finally for porphyry coppers in Kazakhstan. The companies that I worked for include 23 years with Newmont Mining , 5 years with Rio Tinto, 2 years with Electrum and 1 year with Centerra Gold.
5. I am a Member and Qualified Person in good standing with the Mining and Metallurgical Society of America (Member #: 01490QP) and I am a Fellow (# 440259) in good standing with the Society of Economic Geologist which I joined in 1986. Locally I am a member in good standing with the Denver Regional Exploration Geologists Society (DREGS).
6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that I do fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
7. I visited the property on six different occasions: September 12-13th, 2015; March 7-9th, 2016; September 6-10th, 2016; February 11-17th, 2017; August 21-25th, 2017; February 13-15th, 2018.
8. I am responsible for the following sections of the report 1.5, 1.6, 1.23, 1.24, 6.0, 7.0, 8.0, 9.0, 10.0, 25.2, 26.1
9. The effective date of the Technical Report is May 14th, 2019.
10. I am independent of the issuer, applying all of the tests in section 1.5 of NI 43-101.
11. I have had no prior involvement with the property that is the subject of this Technical Report.
12. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with the instrument.
13. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
14. I consent to the public filing of this Technical Report, only in its entirety, in connection with a prospectus or any similar offering document, for presentation to any stock exchange or other regulatory authority, and for publication, including electronic publication accessible by the public. This consent extends as well to all other forms of written disclosure.

Dated this 28th day of June 2019

"Original document signed and sealed by
Joseph J. Kowalik"

____

Joseph J. Kowalik, MMSA QP

Joseph J Kowalik
01490QP
Mining & Metallurgical
Society of America

CERTIFICATE OF QUALIFIED PERSON

Ronald G. Simpson, P.Geo.
GeoSim Services Inc.
807 Geddes Road
Roberts Creek, BC, Canada V0N 2W6
Tel: (604) 803-7470
E-mail: rsimpson@geosimservices.com

I, Ronald G. Simpson, P.Geo., do hereby certify:

- I am employed as a Professional Geoscientist with GeoSim Services Inc.
- This certificate applies to the technical report titled "Taguas Oxide Gold-Silver Project, San Juan, Argentina, Preliminary Economic Assessment, NI 43-101 Technical Report" that has an effective date of May 14th, 2019 (the "Technical Report"). I am responsible for Section 14 of the Technical Report.
- I am a Professional Geoscientist (19513) in good standing with the Association of Professional Engineers and Geoscientists of British Columbia. I graduated with a Bachelor of Science in Geology from the University of British Columbia, May 1975.
- I have practiced my profession continuously for 44 years. I have been directly involved in mineral exploration, mine geology and resource estimation with practical experience from feasibility studies.
- 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 property on two occasions. The dates for these visits were August 21-25th, 2017 and February 13-15th, 2018.
- I have read the definition of "independence" set out in Part 1.5 of National Instrument 43-101 ("NI 43-101") and certify that I am independent of the issuer.
- I have had no prior involvement with the Property that is the subject of this Technical Report.
- I have read NI 43-101 and the Technical Report has been prepared in compliance with NI 43-101. I am responsible for Section 1.7, 1.8, 1.10, 1.11, 1.23, 11.0, 12.0, 14.0, 25.4, 25.13
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated at Vancouver, British Columbia, with effective date of May 14, 2019:

"Signed and sealed"

____

Ronald G. Simpson, P.Geo.

wood.

CERTIFICATE OF QUALIFIED PERSON

Antonio Peralta Romero, P.Eng.
400-111 Dunsmuir Street
Vancouver, British Columbia V6B 5W3

I, Antonio Peralta Romero, P.Eng., am employed as a Manager Open Pit Mining Canada with Wood Canada Limited.

This certificate applies to the technical report titled "Taguas Oxide Gold-Silver Project, San Juan, Argentina, Preliminary Economic Assessment, NI 43-101 Technical Report" that has an effective date of May 14th, 2019 (the "Technical Report").

I am a Professional Engineer of Engineers and Geoscientists of British Columbia. I graduated from the University of Guanajuato in 1984 with a B.S. in Mining Engineering, from Queen's University in 1991 with a M.Sc. in Mining Engineering, and from Colorado School of Mines in 2007 with a Ph.D. in Mining and Earth Systems Engineering.

I have practiced my profession for 35 years. I have been directly involved in mine planning and design, ore control, production forecasting and management, and slope stability monitoring, mainly for open-pit precious, base metal mines and iron ore mines.

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) for those sections and sub-sections of the Technical Report that I am responsible for preparing.

I have not visited the Taguas Property.

I am responsible for sections 1.12, 1.13, 1.22-1.24, 15, 16, 21.1.5, 21.2.1, 25.5, 25.10, 25.11 and 25.13 of the Technical Report.

I am independent of Orvana Minerals Corporation as independence is described by Section 1.5 of NI 43–101.

I have had no previous involvement with the Taguas property.

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 section of the Technical Report not misleading.

"Signed and sealed"

Antonio Peralta Romero, P.Eng.
Dated: 26th June 2019

wood.

CERTIFICATE OF QUALIFIED PERSON

Amec Foster Wheeler (Perú) S.A.
Calle Las Begonias 441, Piso 8
San Isidro, Lima 27, Peru

I, William Colquhoun, FSAIMM, am employed as a Principal Metallurgical Consultant with Amec Foster Wheeler (Perú) S.A., a Wood company (Wood), with an address at Calle Las Begonias 441, Piso 8 San Isidro, Lima 27, Perú.

This certificate applies to the technical report titled "Taguas Oxide Gold-Silver Project, San Juan, Argentina, Preliminary Economic Assessment, NI 43-101 Technical Report" that has an effective date of May 14th, 2019 (the "Technical Report").

I am a Fellow of the South African Institute of Metallurgy and a registered Professional Engineer of the Engineering Council of South Africa. I graduated from Strathclyde University with a Bachelor of Science Degree in Chemical and Process Engineering in 1982.

I have practiced my profession for 32 years. I have been directly involved in mining and gold processing operations, metallurgical consulting and engineering studies in Africa, Europe, Australia, Far East and North and 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 Taguas Property.

I am responsible for Sections 1.1-1.4, 1.9, 1.14-1.24, 2.0- 5.0, 13.0, 17.0-24.0, 25.1, 25.3, 25.6-25.13 and 26.2 of the technical report.

I am independent of Orvana Minerals Corporation as independence is described by Section 1.5 of NI 43–101.

I have no previous involvement with the Taguas Project.

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: June 27th, 2019

"Signed"

William Colquhoun, FSAIMM.

Important Notice

This report was prepared as National Instrument 43-101 Technical Report for Orvana Minerals Corp. (Orvana) by Amec Foster Wheeler Peru S.A. (Wood). The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Wood's services, based on i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Orvana subject to terms and conditions of its contract with Wood. Except for the purposed legislated under Canadian provincial and territorial securities law, any other uses of this report by any third party is at that party's sole risk.

Contents

Tables

Figures

1.0 Summary

1.1 Introduction

The Taguas Property is located in San Juan Province, Argentina. The Property has been explored for gold since the mid-1970's leading to the discovery of high-sulfidation style gold-silver mineralization. In 2016, Compañía Minera Piuquenes S.A. – Sucursal Argentina (Piuquenes), then the operator of exploration activities at Taguas, began to focus on the supergene oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV.

In 2018 Orvana Minerals Corporation (Orvana), a Canadian issuer under NI 43-101, began evaluating a transaction to acquire the Taguas Property from Compañía Minera Taguas S.A. (Minera Taguas), to whom the mining concessions are registered. As part of Orvana´s due diligence of the Taguas Property, Orvana retained Amec Foster Wheeler Perú S.A. (Wood) to conduct a preliminary economic assessment (PEA) of a project to mine and treat oxide gold-silver mineralization on the Taguas Property.

1.2 Terms of Reference

This PEA was prepared to assist Orvana in determining the technical merit of acquiring the Taguas Property, to provide a preliminary range of estimated net present value for the Taguas Project and does not include assessment of the transfer of title to Orvana or any royalties or costs associated with such an acquisition.

The effective date of this report is May 14th, 2019.

Geosim Services Inc. (Geosim) of Vancouver was contracted to prepare a Mineral Resource estimate and Wood was contracted to prepare preliminary mine, process and infrastructure design, cost estimates and a financial analysis of the Taguas Project.

Wood has prepared this report with Geosim, independent geological consultant Dr. J. Kowalik, and support from Minera Taguas, the owner of the Taguas Mining Concessions, led by Sergio Palma, based in Mendoza and San Juan Argentina.

Units of measure in this report are metric, time is expressed in years (y) and days (d) and currency is expressed in United States Dollars unless otherwise indicated.

This report provides a summary of the Taguas PEA for disclosure under NI 43-101 guidelines.

1.3 Project Setting

The Taguas Project site is located at an elevation of 3,500 m to 4,300 m above sea level on the eastern flank of the Andes mountain range in the Province of San Juan in northern Argentina. The site is approximately 200 km north of the town of Tudcum and can be reached from the road to the Veladero mine site, which is operated by Barrick Gold.

The Project site has a dry summer season from December to April during which most exploration activities have occurred. Up to two meters of snow can fall during the winter season from May to November.

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

The Taguas Property is comprised of 15 mining concessions and one road easement totalling 3,273.87 ha and is registered to Minera Taguas (Novoa, 2018).

The Taguas Property is currently owned by Minera Taguas. On May 14, 2019, Orvana entered into an Asset Purchase Agreement to acquire the Taguas Property from Minera Taguas in exchange for a 2.5% net smelter royalty. The closing of the acquisition remains subject to completion of due diligence by Orvana and will be subject to approval by securities regulators in Canada and the TSX stock exchange. Once the acquisition is completed, Orvana intends to hold title to the Taguas Property and operate the Project under an Argentinian subsidiary.

Surface rights holders for the Taguas Property are Barrick Exploraciónes Argentina S.A. and the Sociedad Anónima de Explotación y Comercio Minero Colanguil Limitada

Water rights have been requested and granted to conduct exploration activities at Taguas. Water concessions for mine operations have not yet been granted, but preliminary hydrological studies and site water balance indicate that sufficient surface water can be obtained to support a mining operation on the Property and permits to draw water can be obtained as the proposed Taguas Project advances.

The Taguas Property is subject to a 3% royalty charged by the Province of San Juan. No other potential royalty has been considered in the present Taguas PEA.

1.5 Geology and Mineralization

The Taguas Property is host to a high-sulfidation epithermal gold-silver system hosted in altered Tertiary age rhyolite volcaniclastic rocks.

Supergene-oxidized gold-silver mineralization occurs on the south half of the Taguas Property at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV. The oxide gold-silver mineralization consists of sub-vertical, northeast striking mineralized structures in an envelope of lower-grade mineralization. The high-grade zones measure 1.5 m to 8 m wide and have lengths of 40 m to over 500 m. The high-grade zones consist of relatively continuous mineralization with gold grades ranging from 0.2 g/t Au to over 4.0 g/t Au and 10 g/t Ag to over 50 g/t Au. Oxidation extends from surface to approximately 200 m below surface.

Sulfide (pyrite-enargite) gold-silver mineralization has been encountered on the north half of the property at Cerro Campamento, and Cerro Silla Sur. Intersections with grades of over 50 g/t Au and 100 g/t Ag have been encountered over down-hole lengths of 1.5 m to 5.0 m in discrete mineralized vein structures.

Evidence of copper-gold porphyry mineralization has also been found on the Taguas Property.

The understanding of the regional and property-scale geology is sufficiently advanced to allow for construction of geological models to support Mineral Resource estimation for the Project.

1.6 History

Regional grassroots exploration began in the mid-1970s. Minera Aguilar explored the Taguas Property discovering high-grade gold-silver mineralization at Cerro Taguas Sur, Cerro Campamento and the Leonor vein at Cerro Silla Sur. Work during this period included surface prospecting, airborne and surface geophysics, diamond drilling and underground exploration development and sampling. Minera Aguilar's interest in the Property was eventually taken over by Minera Taguas and exploration activities were operated by Piuquenes.

In 2010 Compañía de Minas Buenaventura S.A.A. (Buenaventura) did a due diligence investigation of the higher grade sulfide gold-silver occurrences at Cerro Campamento and Cerro Silla Sur. Buenaventura conducted a re-logging and re-sampling program but did not execute new field work of its own.

From 2011 to 2013 Gold Fields Limited (Gold Fields) explored sulfide mineralization at Cerro Silla Sur, Cerro Taguas and Cerro Campamento under a joint venture (JV) agreement with Piuquenes. Gold Fields executed re-logging, re-sampling, data verification, drilling and assay quality assurance and quality control (QA/QC) work.

Piuquenes re-started exploration activities on the Property following the Gold Fields JV. In 2016 Piuquenes began to focus on the definition of oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV that is the focus of this PEA.

1.7 Drilling and Sampling

Nearly 52,000 m of drilling has been carried out on the Property. Drill programs have been carried out by Minera Aguilar, Piuquenes, Gold Fields and again by Piuquenes, after the termination of the Gold Fields JV. Most of the drilling has been diamond core drilling; however, Piuquenes drilled 28 reverse-circulation holes (3,524 m) testing oxide gold-silver mineralization during the 2015-2016 and 2016-2017 field seasons.

Samples from the Minera Aguilar campaigns were prepared and analyzed at an in-house laboratory in Mendoza with limited intra-laboratory check assays at Mina Aguilar and the El Indio Mine in Chile. Beginning during the 2007-2008 field season, Piuquenes began to formalize chain of custody and assay QA/QC procedures and have samples prepared and analyzed at the internationally accredited Alex Stewart lab in Mendoza.

Gold Fields had check-samples of historic drilling, and original samples from its drill program prepared at ALS Chemex in Mendoza, then assayed by 50 g fire assay and ICP AES and ICP MS at the ALS Chemex lab in Lima. The Gold Fields assaying, and re-assaying used a rigorous QA/QC program to control gold and silver assaying.

Following the Gold Fields program, sampling and re-sampling programs conducted by Piuquenes from 2013 to 2018 were prepared and assayed by 50 g fire assay at Alex Stewart in Mendoza and used formal QA/QC protocols to control gold and silver assaying.

Two exploration drifts were driven by Aguilar in the 1980s and 1990s. The drifts were located at Cerro Campamento and at Cerro Taguas Norte and Cerro Taguas Sur. The exploration development was rehabilitated and re-sampled by Piuquenes in 2018, and assay data from this re-sampling program is included in the Mineral Resource estimate for the Taguas PEA.

Piuquenes submitted 33 drill core samples to Alex Stewart for wax-sealed, water immersion bulk density determination.

Since 2007, drilling, sampling, sample security, sample preparation and analysis have been of sufficient standard to allow for Mineral Resource estimation for the Taguas

Project. Re-surveying and re-sampling and assaying programs, including re-sampling of underground development at Cerro Taguas Norte and Cerro Taguas Sur executed by Piuquenes have been carried out to similar standard bringing confidence in the quality of data from legacy drilling and sampling programs to sufficient standard to support Mineral Resource estimation.

1.8 Data Verification

Dr. J. Kowalik has conducted seven site visits to review drilling and core logging since September 2015. In August 2017, Dr. Kowalik visited the site with Mr. R. Simpson to review drill core and logging with the Taguas Project team. From February 14th to February 16th, 2018, Dr. Kowalik, Mr. Simpson and Wood engineers Jimmy Trejo, Alvaro Murga and Jose Ale visited the site to inspect drill platforms, review drilling, sampling and logging protocols, review drill core, and scout potential locations for Project infrastructure.

The process of data verification indicates that the data collected by Minera Taguas, Piuquenes and previous operators adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits, and adequately support the geological interpretations for the purpose of Mineral Resource estimation. The QPs are of the opinion that the analytical and database quality are adequate for the purposes of the estimation of Mineral Resources and Inferred Mineral Resource confidence classification.

1.9 Metallurgical Testwork

In 2018 column and bottle roll testing was carried out at Plenge Laboratory in Lima, Peru. The column charges were generated from samples taken during the Piuquenes underground re-sampling program in early 2018. The composites for the metallurgical program had a head assay of 0.6 g/t Au and 39.9 g/t Ag.

The column tests consisted of irrigation of 55 kg of material crushed to 12.5 mm and 6.25 mm and irrigated in a 5 m column with cyanide solution for 23 days.

The column with feed crushed to nominally minus 12.5 mm achieved 87% gold extraction and 52% silver extraction with most of the extraction occurring in the first 10 days of irrigation. This column test was used to establish the estimate of gold and silver recovery for the PEA.

The Plenge metallurgical testwork program is appropriate to support preliminary estimates of gold and silver recovery from the oxide gold-silver mineralization at Cerro

Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV using the proposed crushed and agglomerated heap leach flowsheet for the Taguas PEA.

1.10 Mineral Resource Estimation

A Mineral Resource estimate of the oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV was carried out by R. Simpson in the first half of 2018. The estimate used samples from 71 diamond drill holes, 28 reverse circulation holes and 135 channel chip samples taken from underground exploration cross cuts. Bulk insitu density is estimated from a database of 33 wax-sealed water immersion density determinations.

The geological model consists of three-dimensional wireframes of nine high-grade structures modeled from underground exposures and drill hole intersections, inside a low-grade envelope constructed by indicator kriging a 0.2 g/t AuEq envelope. AuEq has been calculated using the differential of gold and silver metal prices and metallurgical recovery. A base-of-oxide surface was modelled from logs of drill core and RC chip logging.

Grades were interpolated separately for the high-grade domains and the low-grade envelope and combined into 5 m x 5 m x 5 m blocks using the tonnage of high- and low-grade domain in each block. Only blocks above the base of oxidation surface were estimated. Grades were interpolated using inverse-distance weighting to the third power (ID3) and validated using a nearest neighbour model.

Mineral Resources were assessed to be of the Inferred confidence category due to the spacing and quality of the information used to construct the geological models defining the high-grade domains, the low-grade envelope, the depth of oxidation and estimate the bulk insitu density and gold and silver grades of the mineralization.

The estimate was prepared using industry standard techniques and has been validated for bias and acceptable grade-tonnage characteristics. There are no other known factors or issues that materially affect the estimate other than normal risks faced by mining projects in Argentina in terms of environmental, permitting, taxation, socio economic, marketing and political factors. GeoSim is not aware of any legal or title issues that would materially affect the Mineral Resource estimate.

1.11 Mineral Resource Statement

The 2018 Taguas oxide gold-silver PEA Inferred Mineral Resource Estimate is presented in Table 1-1. At a cut-off grade of 0.25 g/t AuEq Mineral Resources total 38.6 Mt at an average grade of 0.40 g/t Au and 14.6 g/t Ag.

The QP has estimated and classified the Mineral Resources in a manner consistent with the 2014 CIM Definition Standards.

Table 1-1: 2018 Taguas Oxide Gold-Silver PEA Inferred Mineral Resource Estimate

COG g/t AuEq	Tonnes Mt	Au g/t	Ag g/t	AuEq g/t	Contained Metal	
					Au koz	Ag koz
0.20	49.6	0.35	12.7	0.45	556	20,237
0.25	**38.6**	**0.40**	**14.6**	**0.51**	**494**	**18,110**
0.30	30.0	0.45	16.5	0.58	435	15,894

Notes:

1. Mineral Resource estimate prepared by Mr. R. Simpson, P.Geo., of GeoSim Services Inc. with an effective date of May 14th, 2019. Mineral Resources are classified using the 2014 CIM Definition Standards.
2. Gold equivalent (AuEq g/t) calculations were based on assumed metal prices of US$1300/oz Au, and US$17/oz Ag, recoveries of 87% Au and 52% Ag. *AuEq = Au(g/t) + Ag(g/t) *0.0078*
3. An optimized pit shell was generated using the following assumptions: metal prices/recoveries in Note 2 above; a 45° pit slope; mining costs of US$2.00 per tonne, processing costs of US$5.20 per tonne, and general & administrative charges of US$1.50 per tonne. All amounts are expressed in US dollars.
4. Totals may not sum due to rounding.
5. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

1.12 Mineral Reserve Estimation

There are no Mineral Reserves for the Taguas Project.

1.13 Mining Methods

The mining method proposed for the Taguas Project is conventional truck and shovel open pit mining. Open pit mining was selected because of the near-surface nature of mineralization, the value of the mineralization and the anticipated mining selectivity of mineralized material during the operation.

Whittle software was used to optimize the final pit shell and select phases for the life of mine production plan. The PEA mine design criteria are:

- Approximately 9 Mt/a mining capacity with a plant capacity of 4.2 Mt/a or nominally 12 kt/d

- Metal prices of US$1,300/oz and US$17/oz
- Metallurgical recovery of 87% Au and 52% Ag

The PEA life of mine (LOM) is ten years during which 38.4 Mt of waste and 37.8 Mt of mineralized material with an average grade of 0.39 g/t Au and 14.5 g/t Ag will be mined.

Production will be achieved with an Atlas Copco ROC D55 drill, up to three Caterpillar 374F loaders and a fleet of up to 21 Volvo FMX 8x4 haul trucks. A fleet of secondary equipment including D6 and D8 dozers, graders and water trucks will be used to support mine production.

It is assumed that a local mining contractor will be used over the life of mine. Operating costs are estimated to vary between US$2.00/t for mineralized material and waste during periods with relatively short haulage distances and US$2.42/t at the end of the life of mine when haulage distances are longer.

The mining method selection, mine design and preliminary mine plans are based on an understanding of the Mineral Resource estimate, preliminary assessment of rock quality, first principal and factored cost estimates for mining equipment and operating cost developed to a level of detail suitable for PEA study.

1.14 Recovery Methods

The Taguas recovery process will be crushing and agglomeration of mineralized material at a rate of 12 kt/d, stacking in 6 m lifts on a permanent heap leach and gold and silver recovery from the heap leach pregnant solution in a carbon Adsorption-Desorption-Recovery (ADR) plant and electrowinning to produce doré gold bars.

Gold recovery of 87% and silver recovery of 52% are estimated for the Taguas Project.

The proposed flowsheet and gold and silver recovery estimates for the Taguas Project has been selected based on metallurgical sampling and testwork programs suitable for oxide gold-silver mineralization and PEA-level production scheduling.

1.15 Project Infrastructure

Major Project infrastructure components consist of the heap leach facility, mine waste dump, primary crusher, processing plant, mining camp.

The current site access road is 25 km long from the Veladero mine access road. The road leads north from Veladero to Taguas and comes onto the south end of the Property.

This road will be upgraded to 7 m width for construction and six culverts will be added for stream crossings.

A temporary stockpile, primary crusher and the processing plant will be constructed immediately north of the open pit at Cerro Taguas Norte. A lined valley-fill heap leach facility with 45 Mt of capacity will be constructed less than 1 km west of the processing plant. PLS and major event ponds will be constructed at the toe of the HLF. A 1.5 km haul road leads south west from the open pit to the waste dump which has been designed with a 44 Mt capacity. The camp will be located approximately 1 km north of the north edge of the pit.

For cost estimation purposes it is assumed that power will be supplied by medium voltage diesel power generators and distributed on site by overhead power lines.

The Taguas River has been identified as the main source of water for the operation.

The Project infrastructure has been designed at conceptual level and design criteria account for local conditions including seismic risk and climactic conditions.

1.16 Environmental, Permitting and Social Considerations

The environmental baseline studies for the exploration phase of the Property have been ongoing since 2015 and include hydrology, water quality, fauna, flora and archeology surveys and monitoring programs. Studies have been used to support application for permits for exploration activities, but a formal environmental impact assessment will be required for the mining operation at Taguas.

The portion of the Property to be covered by Project infrastructure has a biogeographic characterization including grass steppe, high-altitude wetlands and azonal communities, or meadows. Fauna identified in surveys conducted to date include identification and characterization of the abundance and structure of fauna communities including amphibians, reptiles, birds and mammals.

No sites or artifacts of archaeological value have been found in the sectors to be impacted by mining activities in the PEA site design.

Closure planning for the Taguas Project is guided by Argentinean provincial and federal legislation, International standards and guidelines (including industry best management practices), commitments made in the EIRs and associated Resolutions (as provided by the provincial Ministry of Mines) and corporate environmental policies and standards.

Upon closure of the purchase agreement Orvana's local operating entity will pursue the environmental permitting and social and community consultation programs required to carry out exploration activities on the Property. There is a pathway and local precedence to maintain these permits and social license as the Project advances through study, construction and operation.

1.17 Markets and Contracts

No market studies have specifically been conducted for the Taguas Project. The gold-silver doré bars to be produced can reasonably be expected to be marketable in international markets.

Preliminary Project economics were estimated on the basis on long-term metal prices of US$1,300/oz for gold and US$17.0/oz for silver which are aligned with the Wood internal long-term cash flow guidelines at US$1,270/oz for gold and US$18.0/oz for silver, as of October 1, 2018, derived from Wood's survey of industry consensus prices.

1.18 Capital Cost Estimates

The preliminary capital cost estimate for the Taguas Project was prepared based on:

- Material take-offs and unit costs and material take-offs from engineering drawings for bulk earthworks for the HLF, major ponds, waste dumps, processing platform and access roads preliminary equipment lists and budgetary quotations for major equipment,
- Factored estimates for labour and bulk materials including piping, electrical and instrumentation and indirect capital costs.

Initial capital costs for the Project are estimated to total US$92.8 M which is comprised of:

- US$42.7 M for process plant capital
- US$10.7 M for on-site infrastructure
- US$3.7 M for other direct capital including site preparation and off-site infrastructure
- US$14.9 M for indirect capital including studies and EPCM
- US$20.8 M for owners' cost (5% of direct capital) and contingency (25% of direct and indirect capital)

Additional capital costs over the life of the Project consist of US$8.7 M for sustaining capital and US$4.6 M for closure cost.

1.19 Operating Cost Estimates

The preliminary mine operating cost averages US$2.10/t of material moved over the life of mine. This mining cost assumes use of a mining contractor and includes an 8% cost of carrying capital and a 10% profit margin for the contractor.

Process operating cost averages US$5.55/t of mineralized material over the LOM. The process operating cost consists of:

- US$0.82/t for site services and labor,
- US$4.05/t for consumables and reagents including cyanide and lime
- US$0.17/t for maintenance
- US$0.52/t for energy

Site general and administrative (G&A) costs are estimated to be US$4.0 M/y based on benchmarks from similar operations.

1.20 Economic Analysis

The results of the preliminary economic analysis presented in this section represent forward-looking information that are subject to known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented here.

The preliminary economic analysis of the Taguas Project indicates the Project will generate an after-tax NPV of US$37.8 M at 8.0% discount rate, an IRR of 17.3% and have a payback period of three years.

The PEA financial results to not include the 2.5% royalty related to Orvana's acquisition of the Taguas Property.

1.21 Sensitivity Analysis

The preliminary Taguas Project economics are robust to -30% variances in silver grade, a -15% variance in gold grade, +30% variance in initial capital cost or a +20% increase in operating cost.

1.22 Risks and Opportunities

The main risks to the Project are:

- Uncertainty of the Inferred Mineral Resource related grade and tonnage above cut-off and depth of the oxidized zone
- Gold and silver recoveries based on variability of metallurgical response
- Permitting issues related to approval of the Project EIA

Opportunities include:

- Potential expansion of the Inferred Mineral Resource and improvement to confidence in estimates of tonnage and grade of the oxide gold silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV resulting from additional Mineral Resource expansion and infill drilling campaigns
- Exploration of oxide gold-silver mineralization at the Campamento and Leonor Veins
- Exploration of sulfide gold-silver mineralization below the oxide mineralization
- Capital optimization, and specifically, optimization of the process flow sheet

1.23 Interpretation and Conclusions

The Taguas PEA indicates that there is a potentially viable open pit heap leach oxide gold-silver project on the Taguas Property. Permits and licenses are in place to allow exploration and study of the Project and a pathway and local precedence exists for Orvana to develop and operate the Project.

The Taguas Project PEA is supported by Inferred Mineral Resources and preliminary mine design, mine planning, metallurgical testing and process plant and infrastructure design and preliminary capital and operating cost estimates.

1.24 Recommendations

A two-phase work program is recommended for the Taguas Project:

A first phase consisting of a drill program consisting of the following objectives:

- Resource expansion drilling in order to potentially expand the Mineral Resources at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV, and Cerro Campamento and Cerro Silla Sur in the vicinity of the currently identified oxide gold-silver mineralization, prioritizing those areas where there is the possibility of continuity the structures and enveloping lower grade mineralization

- Infill drilling to improve confidence in the continuity of mineralization and to support potential upgrade in Mineral Resource confidence category
- Geotechnical drilling to support pre-feasibility mine design.

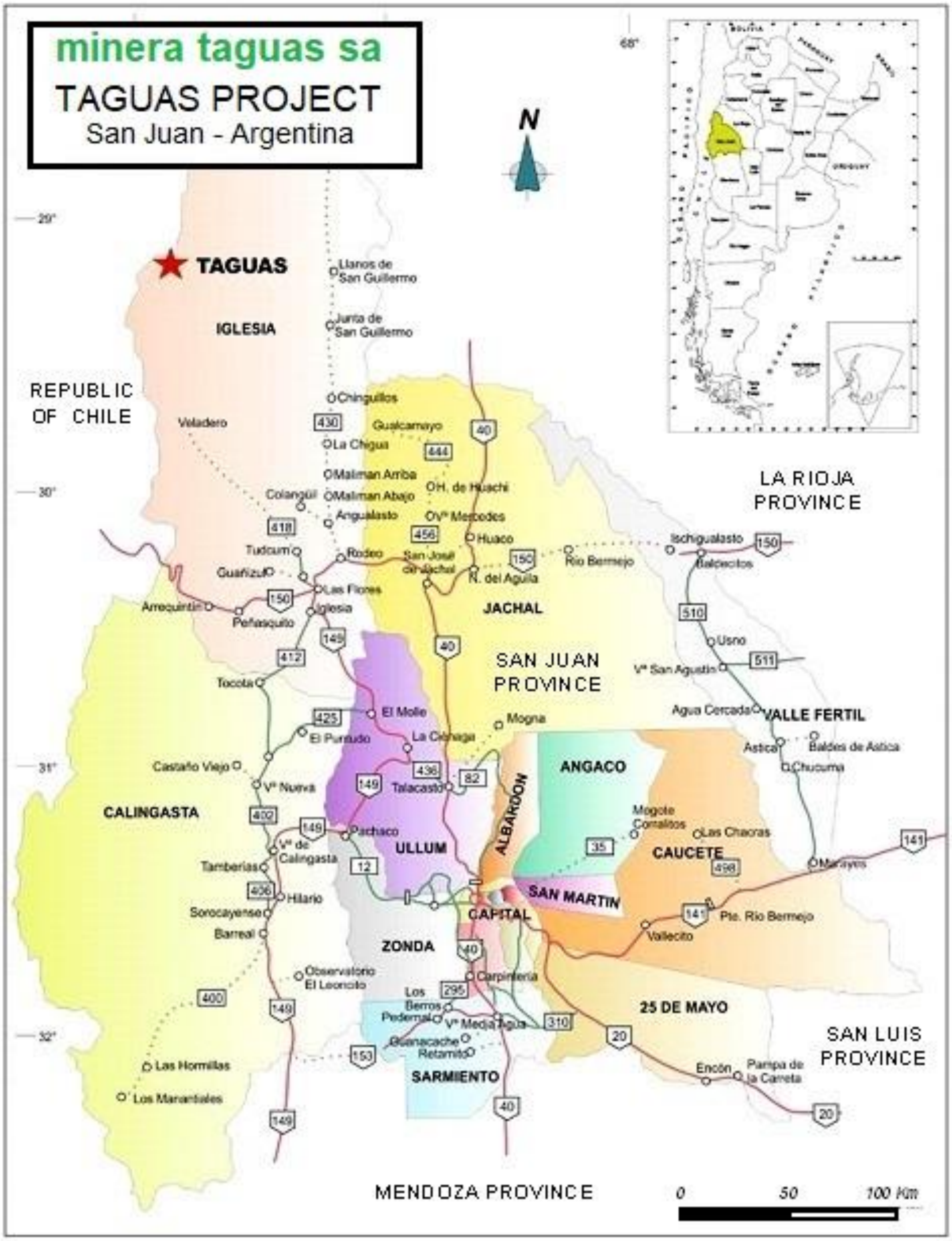
A second phase consisting of a pre-feasibility study (PFS) is recommended following completion of the first phase drill program. The PFS would consist of geotechnical field investigations for surface infrastructure, metallurgical testing and PFS study engineering.

The first-phase drill program could be executed in roughly five months and would have an estimated cost of US$ 6.7 M including drill contracting, platform and access construction, geology supervision, core logging, sampling, assaying, geological modeling and mineral resource estimation. The geotechnical field investigations component of the second-phase PFS would begin in parallel with the drill program but the study engineering would begin once the Mineral Resource estimate for the project was updated with the drilling completed in the first phase. The PFS study engineering could be expected to cost approximately US$ 1.3 M and be executed in six to nine months following completion of the Mineral Resource estimate.

2.0 Introduction

Orvana requested Wood to prepare an independent Technical Report (the Report) on a preliminary economic assessment (PEA) completed for the proposed Taguas Project in San Juan Province, Argentina (Figure 2-1).

Figure 2-1: Location Map



2.1 Terms of Reference

In 2018 Orvana began to evaluate a transaction to acquire the Taguas Property from Minera Taguas. As part of Orvana´s due diligence of the Taguas Property, Orvana retained Wood to conduct a preliminary economic assessment (PEA) to assess a mining and processing project to treat oxide gold-silver mineralization on the Taguas Property. On May 14th, 2019, Orvana entered into a definitive asset purchase agreement to acquire the Taguas Property in exchange for a 2.5% royalty. The closing of acquisition of the Taguas Property by Orvana remains subject to Orvana's satisfaction of its due diligence review.

This report was prepared to assist Orvana in determining the technical merit of acquiring the Taguas Property and a preliminary range of estimated net present value for the Taguas Project and does not include assessment of the transfer of title to Orvana or any royalties or costs associated with such an acquisition.

Units of measure in this report are metric, time is expressed in years (y) and days (d) and currency is expressed in United States Dollars unless otherwise indicated. 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 43-101 F1:

- Antonio Peralta Romero, P.Eng., Principal Mining Engineer, Wood Canada Ltd., Vancouver
- Joseph J. Kowalik PhD, QP MMSA Senior Consulting Geologist
- Ronald G. Simpson, P.Geo., Mineral Resource Consultant, Geosim Services Inc
- William Colquhoun, Pr Eng, FSAIMM, Principal Process Manager, Amec Foster Wheeler Peru S.A.

2.3 Site Visits and Scope of Personal Inspection

Qualified Persons and other professionals involved in the preparation of the Taguas Project PEA and this technical report conducted the following site visits:

- Dr. Joseph Kowalik: Dr Kowalik visited the Taguas Property six times since September 2015. During a Visit from September 12th to September 13th 2015 Dr. Kowalik reviewed Project drill core with Taguas staff in Mendoza. From March 7th to March 9th 2016 Dr. Kowalik visited the site to inspect outcrops and mineralization on the property. From September 6th to September 10th, 2016, Dr. Kowalik inspected 2,900 m of drill core. In February 11th to February 17th,2017 Dr. Kowalik visited site at the beginning of the RC drill program and oversee the location of drill holes. Dr. Kowalik also participated in a site visit from August 21st to August 25th,2017 to review drill core and discuss geology with R. Simpson. Dr. Kowalik visited the site from February 12th to February 17th, 2018 to discuss geology and resources, and to review drilling, sampling, and core logging with Mr. Simpson and Wood project engineers Jimmy Trejo, Alvaro Murga and Jose Ale.

- Ronald Simpson: From August 21th to August 25th, 2017 R. Simpson of Geosim Services Inc. visited the Taguas project site to review drill core and discuss project geology with Dr. Kowalik. From February 12th to February 17th, 2018 Mr. Simpson visited the Taguas site to participate in discussions about geology and resources and review drilling, sampling and core logging with the project staff, Dr. Kowalik and Wood project engineers.

2.4 Effective Dates

The effective date of this Technical Report is May 14th, 2019 which is the date of the letter of intent for the purchase agreement between Orvana and Minera Taguas.

2.5 Information Sources and References

Information used to support the PEA was derived from a geology report from GeoSim and a site visit and study engineering carried out by Wood's Lima office.

The site visit was carried out by:

- Jimmy Trejo: Wood Senior Resource Geologist Jimmy Trejo Visited the Taguas project site between February 14th to February 16th, 2018. Mr. Trejo inspected drill platforms, the drill core logging and sampling facility, drill core from the oxide mineralization on the Property and discussed project geology, drilling and sampling procedures with project staff.
- Alvaro Murga: Wood Mining engineer Alvaro Murga visited the Taguas site between February 14th and February 16th, 2018. During the site visit Mr. Murga was able to scope out the open pit area, access roads and potential locations for waste dumps. Mr. Murga was also able inspect road cut exposures to assess rock quality and slope

stability for conceptual mine design. Mr. Murga also participated in discussions about the project geology and Mineral Resources to be used in the PEA.

- Jose Ale: Wood Lima Geotechnical Manager Jose Ale visited the Taguas site between February 14th and February 16th, 2018. During the visit Mr. Ale inspected the Project site for potential locations for the heap leach facility and waste dumps and inspected roadcuts for rock quality used to inform project design.

The environmental, social and community information provided by Armando J. Sanchez was reviewed by Fernanda Palomino, a project manager for the Earth and Infrastructure division of Wood in Lima, Peru.

Other supplemental sources of information are cited in the text of this report and listed in Section 27 of this Report.

2.6 Previous Technical Reports

No previous Technical Reports have been filed for the Taguas Property.

3.0 Reliance on Other Experts

3.1 Legal Information on Land Tenure

Legal information on the Taguas Project, including a summary description of the mineral title, royalties and other encumbrances, has been provided in a letter from Novoa & Vargas Echegaray, a law firm in San Juan, Argentina dated September 25th, 2018 (Novoa, 2018).

This information was relied on by the QPs to complete Sections 1.2, 1.3, 1.4, 1.5, 1,10, 1.11, 1.22, 1.23, 1.24, 2.1, 3.0, 4.0, 14.0, 20.2, 20.4, and 25.1.

3.2 Environmental, Social and Community Impacts

Information on potential environmental, social and community impacts were provided to Fernanda Palomino, Wood Environmental and Infrastructure Project Manager, by Armando J. Sanchez of San Juan, Argentina for incorporation into this report.

This information was exclusively relied on by the QPs to complete Sections 1.11, 1.22, 1.23, 1.24, 3.2, 4.8, 4.9, 4.10, 4.11, 5.0, 20.0, 22.3.9, and 25.8.

3.3 Taxation

The Wood QPs have not independently reviewed the taxation information used in financial analysis for this report. Wood have fully relied upon and disclaim responsibility for tax information presented by Manuel Novoa of MGN Advisors (MGN, 2018).

This tax information was used in the financial analysis for the study and the preparation of Sections 1.20, 1.21, 1.23, 1.24, 22.0 and 25.12.

4.0 Property Description and Location

The Taguas Property is in the Frontal Cordillera of Argentina near 29º 11′ 27.79″ south latitude and 69º 52′ 35.98″ west longitude in western San Juan Province, Iglesia Department, Argentina (Figure 4-1). It is approximately 3 km from the Chilean border.

Aerial photography and global positioning were used to locate the Property in the field; the coordinates of the corners of the Property are established in the government documents granting the mining rights (Novoa, 2018).

4.1 Property and Title in Argentina

Mineral rights in Argentina are separate from surface ownership and are owned and administered by the provincial governments. The following summarizes some of the relevant provisions of the Federal Argentina Mining Code (AMC) and Argentina mining law terminology to aid in understanding the land holdings in Argentina.

The provinces are the owners of the natural resources located within their territories and each province retains the power to administer and regulate mineral rights according to the AMC and supplemental provincial laws and regulations.

Surface rights are separate from mineral rights and they are treated separately under Argentina law. The AMC establishes that mining is in the public interest and therefore surface owners cannot prevent the granting of mining rights or commencement and continuity of mining activities on their property, but surface owners have a right to collect an indemnity because of the use of the land by the miner and the damages derived from mining activities. Land over which a mining concession has been granted is legally subject to different types of easements provided that an indemnity is paid to the owner of the land.

Mineral rights are considered forms of real property and can be sold, leased or assigned to third parties on a commercial basis. *Cateos* (exploration permits) and *minas* (mining concessions) can be forfeited if minimum work requirements are not performed or if annual payments are not made.

Grants of mining rights, including water rights, are subject to the rights of prior users. Furthermore, the mining code contains environmental and safety provisions administered by the provinces.

Prior to conducting operations, applicants must submit an environmental impact report (IIA) to the provincial mining authority describing the proposed operation and the methods to be used to prevent undue environmental damage. When the provincial mining authority approves the IIA it issues a permit in the form of an official declaration (DIA).

The IIA must be updated every two years, with a report on the results of the protection measures taken. If protection measures are deemed inadequate, additional environmental protection may be required. Mine operators are liable for environmental damage. Violations of environmental standards may cause exploration or mining operations to be shut down but without prejudice to mining title.

Exploration permits do not allow commercial mining but give the owner a preferential right to obtain a mining concession for the property. Exploration permits have finite terms depending on their area and the permit holder is required to reduce its holding as time progresses. During exploration land can be converted to one or more *Manifestaciones de Descubrimiento* (MD). Time extensions may be granted to allow for bad weather and difficult or seasonally restricted access.

A fee of AR$400 per unit must be paid upon application for the exploration permit. This is paid only once. In addition, the tax act for the province of San Juan requires a fee to be paid upon application for a cateo. The actual value is AR$1,600 for each unit of 500 ha. This fee is only paid one time.

To convert an exploration, permit to a mining concession, some or all the area of a cateo must be declared as MD and then converted to a mining concession which permit mining on a commercial basis. Once granted, minas have an indefinite term assuming exploration development or mining is in progress and investment conditions according to the AMC are met. An annual canon fee of AR$ 3,200 per tenement is payable to the province.

4.2 Project Ownership

The Taguas Property is owned by Minera Taguas. Minera Taguas controls 3,273.87 ha of mining rights covering the Taguas Project site. Following completion of its due diligence, and closure of the purchase agreement between Orvana and Minera Taguas, Orvana intends to have the mining rights transferred to a local operating entity in Argentina.

4.3 Mineral Tenure

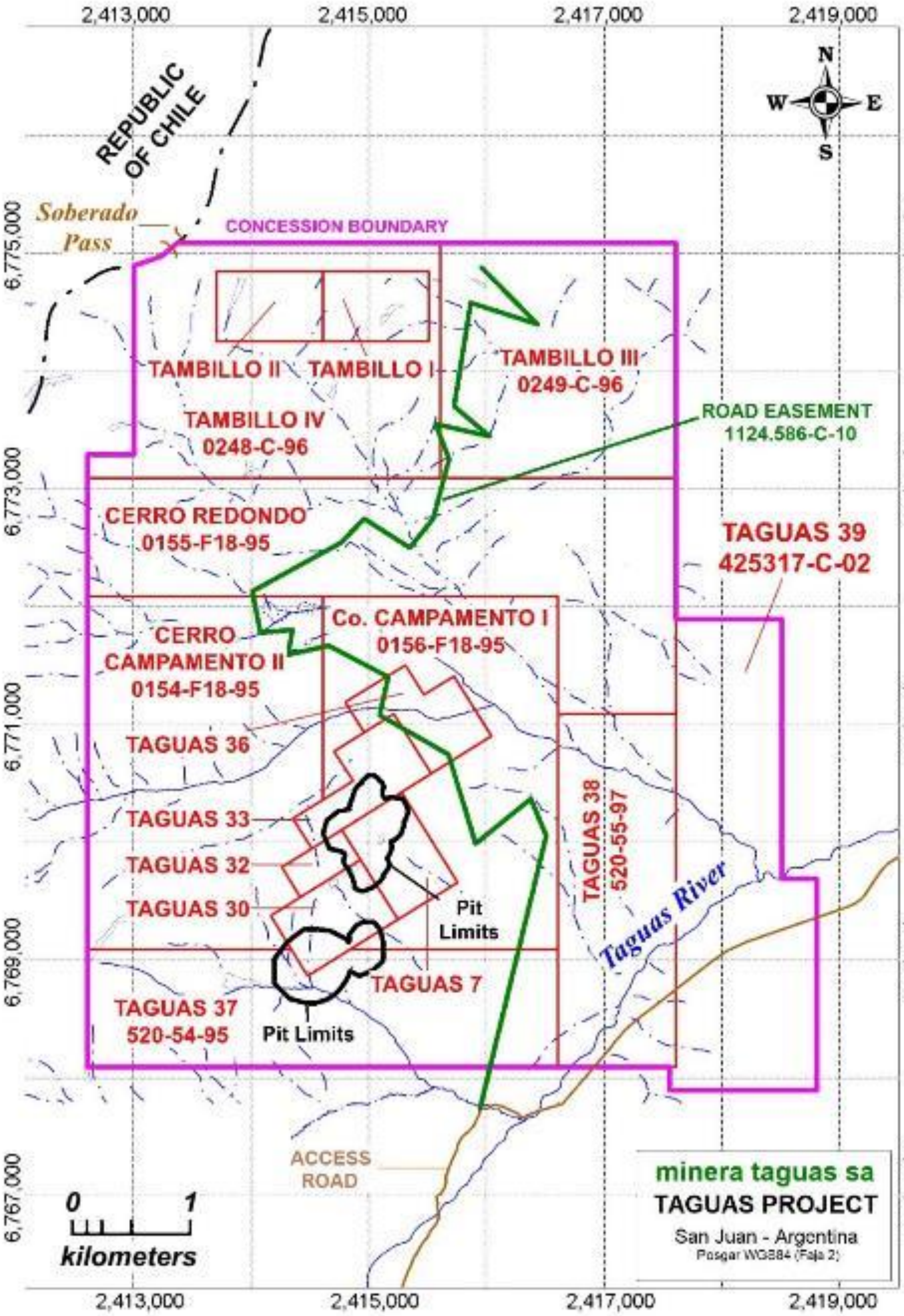
The Taguas Property is comprised of 15 mining concessions and one road easement for access to the Project site (Table 4-1, Figure 4-1).

Table 4-1: Land Tenure Details

Name	Registration Code	Area (ha)
Taguas 7	258.295-C-84	54
Taguas 30	258.295-C-85	54
Taguas 32	270.020-C-86	18.09
Taguas 33	270.021-C-86	54
Taguas 36	270.024-C-86	54
Taguas 37	520-0054-C-97	371.7
Taguas 38	520-0055-C-97	300
Taguas 39	425.317-C-02	381.7
Tambillos	194.209-C-82	54
Tambillos II	194.210-C-82	54
Tambillos III	0249-F28-C-96	380.25
Tambillos IV	0248-F28-C-96	400
Cerro Redondo	0155-F18-C-95	587.1
Cerro Campamento I	0156-F18-C-95	416.09
Cerro Campamento II	0154-F18-C-95	566.73

The 15 mining concessions have been validly registered under Minera Taguas' name. They are in good standing and are subject to no liens or encumbrances which are registered in the Mining Registry of San Juan Province (Novoa, 2018). They can be of perpetual duration, subject to the owner's compliance with the Argentine Mining Code provisions. The road easement (1124.586-C-10) has been requested by Compañía Minera Taguas S.A. It is duly registered in their names or in the process of registration in its name and it is subject to no liens or encumbrances which are registered in the Mining Registry of San Juan Province (Novoa, 2018).

Figure 4-1: Mining Concessions and Road Easement



4.4 Surface Rights

According to the local government land registry (RGI, 2017) the surface land owners of the Taguas Property are:

- Barrick Argentina S.A. (90%), Villanueva Carmelo Julio (5%) and Villanueva Oscar Rogelio (5%): as co-owners of a Property called Campo Las Taguas, registered under Number 54, Folio 54, T 17 of Iglesia Department, year 2003, General Real Estate Registry of Jáchal.
- Sociedad Anónima de Explotación y Comercio Minero Colanguil Limitada: owner of a Property registered under Number 115, Folio 147, T 1 of Iglesia Department, year 1946, General Real Estate Registry of Jáchal.

4.5 Water Rights

Under file N° 506.1982-C-07, which is processed before the Hydraulic Department of San Juan province, water permits have been requested and granted for specifics uses at the Taguas Project, during years 2016; 2017 and 2018. These permits are ruled under articles 21 to 29 of the Water Act of San Juan Province.

Water rights for mining operations have not yet been requested or granted for the Taguas Project. The water concession process is ruled under articles 30 to 50 of the Water Act of San Juan Province.

4.6 Royalties

The Taguas Property is subject to a three percent royalty charged by the Province of San Juan based on the value of the contained metal minus all costs associated with the extraction of the metals as far as the pit rim and not including crushing, processing or any administration costs (MGN, 2018).

Wood has not considered any other potential royalty in the Taguas PEA.

4.7 Property Agreements

Piuquenes had the exclusive right to explore the Taguas Property and operate the Taguas Project in accordance with the Argentine Mining Code and in accordance with the provisions of the Mining Exploration Agreement (MEA) originally executed with Compañía Minera Taguas S.A. on September 2009 and subsequently amended by Addenda N° 1, Addenda N° 2, Addenda N°3 and Addenda N° 4. All these data have been registered before the Mining Directorate, under Number 6, F 06 of the Registry called: Registro de Contratos - Año 2009 (Agreements Registry – Year 2009). The term of this agreement expired on April 30th, 2019.

On May 14th, 2019, Orvana entered into an asset purchase agreement to acquire the Taguas Property. Orvana has agreed to purchase the Taguas Property from Minera Taguas for a 2.5% net smelter royalty payable to Minera Taguas. The closing of the acquisition of the Taguas Property by Orvana remains subject to completion of due diligence by Orvana and will be subject to approval by securities regulators in Canada and the TSX stock exchange. During the interim period between the date of the Asset Purchase Agreement and the closing of the acquisition of the Taguas Property, Minera Taguas remains the legal owner of the Taguas Property. Once the acquisition is completed, Orvana intends to hold legal title to the Taguas Property and conduct work programs, under an Argentinian subsidiary owned by Orvana.

4.8 Permitting Considerations

There are five main legal requirements that impact the project during the different stages of development:

- Environmental regulation
- Mining regulation
- Hazardous waste regulation
- Health and safety regulation
- Mining Investment Law

These requirements are discussed in further detail in Section 20.

4.9 Environmental Considerations

The existing environmental liabilities in the Taguas Project are a result of past exploration work and consist of:

- Waste rock dumps made up of material excavated from the underground workings
- Main access road to the project site and access roads on site to drill pads
- Exploration camp facilities
- Sampling and screening-level acid base accounting (ABA) to characterize the material in the waste dumps is planned for 2019.

Environmental studies are discussed further in Section 20.

4.10 Social License Considerations

During exploration activities on the Property and the pre-feasibility of the Taguas Project progresses, all necessary actions and tasks must be carried out to obtain the project's social license. Social license is discussed further in Section 20.

4.11 Comments on Section 4

Information from legal experts supports that the mineral concessions held by Minera Taguas are valid and are sufficient to support estimation of Mineral Resources. Mineral concessions have no expiry date, providing the AMC provisions are complied with. A royalty is payable to the Province of San Juan and a further royalty of 2.5% will be payable to Minera Taguas on completion of the Taguas Property acquisition by Orvana. Permits, environmental studies and public consultation will be required for any future Project development. To the extent known, following completion of the Property acquisition transaction and registration of a local operating entity by Orvana, there are no other significant factors and risks that may affect access, title, or right or ability to perform work on the Property.

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

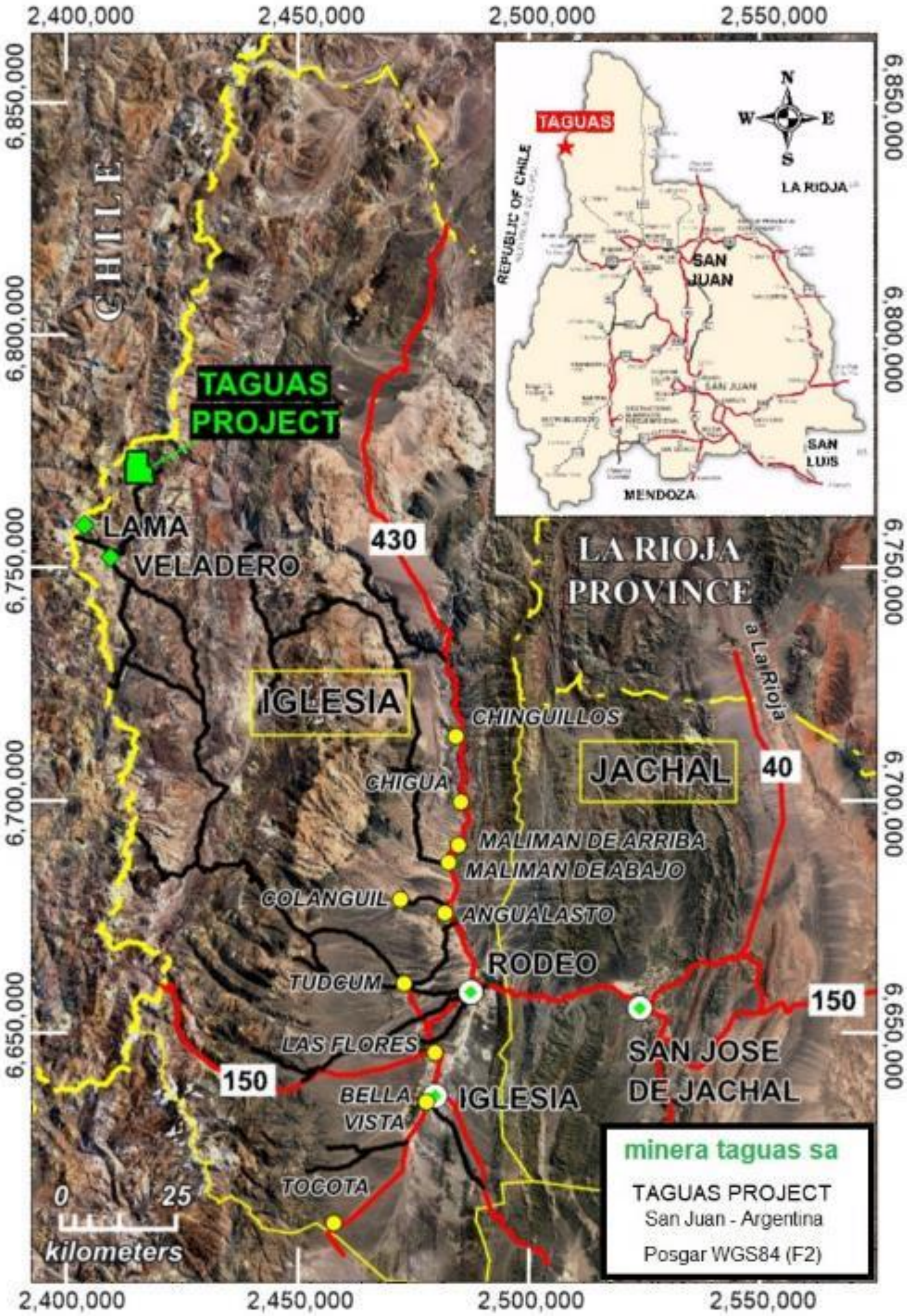
5.1 Accessibility

Access to the site is from the town of Tudcum which is located 200 km from the city of San Juan, the capital of the Province of San Juan (Figure 5-1). The route to site uses the 148 km long mining road that links Tudcum with the Veladero Mine owned by Barrick Gold and Shandong Gold Group.

From the Veladero mine the Taguas access road continues northward for 25 km along the Las Taguas river valley, which provides access to the Los Amarillos, La Ortiga and Evelina exploration projects as well as the Taguas Project camp site.

From the Taguas Project camp access to Cerro Taguas, Cerro III, Cerro IV, Cerro Campamento, Cuchilla Norte, Cerro Redondo, Cerro Silla Sur and Cerro Silla Norte is by internal roads covered by the road easement referred to in Section 4.2.

Figure 5-1: Project Access



5.2 Climate

The Taguas Property is situated in a high mountain tundra climate (SB) at over 4,000 masl (Köeppen, 1931). The tundra climate is characterized by low temperatures throughout the year due to the Project altitude. During summer (December to March) temperatures rarely exceed 10ºC, whereas in winter, temperatures can be as low as -30ºC.

The average annual wind speed is around 6.8 m/s, with gusts reaching 70 m/s. The predominant direction is WNW.

In general, precipitation in the area occurs predominantly in the form of snow and the amount of rainfall in the hydrological balance is negligible. Based on data recorded at the meteorological station of the El Indio Mine (Chile), for the period 1981-2003 the accumulated annual snow accumulation expressed in centimetres varies between a maximum of 817 cm in 1987 and a minimum of 52 mm in 1996.

The annual evaporation rate is about 1,009 mm/year. The highest evaporation occurs during the month of January with 140.5 mm, while the lowest evaporation rate occurs in the winter months - July with 34.2 mm.

Exploration activities are typically conducted from December to April. In some years, however, drilling has continued through mid-May, and depending upon the winter snowpack conditions, it is possible in some years to access the site as early as October.

Future mining activities are projected to be year-round and have been scoped and designed to take into account the climate at the Taguas site.

5.3 Local Resources and Infrastructure

The project is in a remote area with little infrastructure. The nearest settlement is 27 km away at the Veladero Mine with a population of approximately 1,500 people, and the nearest town and permanent settlement is Tudcum, which is 200 km away, and has a population of 725 according to the National Population and Housing Census (2010).

Minera Taguas has a exploration camp facility on the Property consisting of accommodation and office installations capable of hosting up to 20 people.

The San Juan Province has a long mining history, and skilled personnel would be available to support Project development and operation. Training of local personnel in the Project area of influence may be required to develop the Project.

Additional information on local resources and infrastructure is provided in Section 18.

5.4 Physiography

The project area has abrupt relief with elevations ranging from 3,500 masl on the banks of the Las Taguas River to 4,300 masl in Cerro Redondo and Cerro Silla Norte.

Vegetation consists of grasses in valley bottoms and on mountain slopes, or of high-altitude wetlands (*vegas*).

The Project area is located in the multi-use zone of the San Guillermo Biosphere Reserve. In this part of the Reserve established mining projects are legally allowed to continue to work according to established laws and regulations for mining projects (www.reservasanguillermo.com).

5.5 Seismicity

According to the Seismic Zoning Map of the National Institute of Seismic Prevention, the Province of San Juan where the project is located has a high seismic threat because it is located in Zone 4. Further information about seismicity is provided in Section 18.4.2 and Section 18.4.3.

5.6 Comments on Section 5

The accessibility, climate, physiography and seismic situation of the Taguas Project site are sufficiently well understood to allow for preliminary study engineering and project design.

The current Property and surface rights agreements cover the gold-silver mineralization at Taguas and projected locations project infrastructure. The surface rights and tenure required to access the Property and accommodate planned infrastructure will be acquired and maintained by Orvana to allow the project to advance through further study, construction and operation.

6.0 History

6.1 Exploration History

Historic exploration work at Taguas has been carried out in four phases:

- Minera Aguilar S.A. (Minera Aguilar) explored the area between the late 1970's and the late 1980's. Aguilar carried out regional exploration, recognizing the potential for high-sulfidation gold mineralization and eventually discovering gold-silver mineralization at Cerro Taguas Sur, Cerro Campamento and the Leonor vein at Cerro Silla Sur. Minera Aguilar's interest in Taguas was passed to Minera Taguas which in turn signed an operating agreement with Piuquenes beginning in 2009.
- Compañía de Minas Buenaventura S.A.A. (Buenaventura) executed an evaluation of the Property in 2010, focussing mainly on higher grade sulfide gold mineralization in veins at Cerro Campamento and Cerro Silla Sur.
- Gold Fields explored the Property from 2011 to 2013. The company explored mainly sulfide mineralization at Cerro Silla Norte, Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV and Cerro Campamento.
- Piuquenes continued exploration on the Property beginning again in 2013 and then focussed on the definition of oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV that is the focus of this PEA.

6.1.1 Minera Aguilar

The first systematic exploration carried out on the Taguas Property took place towards the end of the 1970s comprising grass-roots investigations by Minera Aguilar, an Argentine company which was a subsidiary of St. Joe Minerals Corporation.

Minera Aguilar carried out research campaigns in the central Argentine strip of the Andes in the province of San Juan, from the volcano Tórtolas to the south until the foot of Cerro Toro to the north. The objective was to find evidence for repeating the successful gold discovery of its Chilean subsidiary Minera San José at El Indio.

During a reconnaissance flight in March 1976, M. Bernstein and D. Thomson (St Joe's geologists) noticed the presence of several hydrothermal alteration centers between Paso de Guanaco Zonzo and Cerros Chollay, the characteristics of which were similar to those observed in the El Indio area in Chile.

In 1985-1986 the first six diamond drill holes (DDH) were drilled by Minera Aguilar totaling 1,004 meters oriented to cut vein No.2 at Cerro Taguas Sur. The drill holes were placed on the locations where samples from small pits returned anomalous gold and silver values.

Minera S.A. acquired Minera Aguilar in 1987 and restarted exploration at Taguas. Eleven DDH holes totaling 981 meters were drilled. Based on the drilling results, it was decided to dig an adit on the southeast flank of Cerro Taguas Sur targeting the Progressive Vein No. 84. This vein was investigated along 41 meters in the North drift. The sampling in this drift returned grades that averaged 9.8 g/t Au and 78 g/t Ag. In the South drift 15 meters were investigated. Sampling in the South drift returned grades that averaged 3.6 g/t Au and 75 g/t Ag. Geophysical surveys were also carried out including induced polarization (IP), TURAM and magnetometry.

In 1993 Minera Aguilar signed a joint venture (JV) agreement with HEMCO (USA) to explore the discovered sulfide vein mineralization at Cerro Campamento. Nine diamond drill holes were drilled (642 m) and a second adit was dug towards the main vein; however, the JV was terminated, and work was suspended.

In 2001-2002 drilling by Minera Aguilar was restarted mainly at Taguas Cerro IV with eight DDH holes (2,568 meters) testing the continuity of brecciated mineralization at depth. Some DDH holes intersected only veinlets and structures. In 2002-2003 the continuity of the HEMA Vein and Progressive Vein No. 84 were explored. The possibility of additional veins below Soberado stream moraine deposits was studied without encouraging results. Considering the positive results at Cerro Campamento a drilling program was carried out in the 2003-2004 season.

In 2006 the exploration program was restarted to cover areas which had not been previously tested. A total of 23 DDH holes were drilled (3,776 m). During the 2007–2008 season, the depth potential of mineralization was identified, including some newly-discovered sulfide veins. Cerro Silla Sur was also drilled. For follow up, 16 DDH holes (7,859 m) were drilled into the Leonor vein at Cerro Silla Sur.

Piuquenes, assumed operation of the Project by virtue of an agreement executed in 2009. The 2009 field program was focused on the Leonor vein discovered at Cerro Silla Sur. This work confirmed the structural continuity of the Leonor vein for 400 m along strike and up to 150 m in depth. In the 2010-2011 season, field work was aimed to continue structural exploration of the Leonor vein. A second priority was to explore the possibility of a structural system oblique to the Cerro Campamento vein system; however, no such system was found.

6.1.2 Buenaventura

In 2010-2011 Buenaventura carried out a re-logging and re-assaying project focussing on sulfide mineralization at Cerro Silla Norte, Cerro Silla Sur and Cerro Campamento. The program consisted of re-logging of drill core from previous campaigns by Minera Aguilar and Piuquenes.

Geologist Richard Sillitoe visited the project at the beginning of 2011. After reviewing available information and examining drill core he wrote a report that provided recommendations for further exploration (Sillitoe, 2011).

6.1.3 Gold Fields JV

Gold Fields entered a joint venture agreement with Minera Taguas in November 2011 and in that field season drilled 17 DDH holes totaling 8,726 m. Gold Fields also re-logged old drill holes, collected surface samples and mapped parts of the project area. Gold Fields drilling focused on what they called the breccia-hosted targets in the south at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV and porphyry targets in the north at Cerro Silla Norte. They also carried out a helicopter magnetic/radiometric survey at 50 m line spacing over the Project area and conducted ground gradient array and pole-dipole IP and resistivity surveys.

Gold Fields also validated the core drilling and quality assurance/quality control (QA/QC) procedures for drilling at Cerro Campamento and the Leonor vein. In 2012–2013 Gold Fields drilled an additional 12 DDH holes totaling 5,119 m. Gold Fields withdrew from the JV, and the Project returned to be operated by Piuquenes in 2013.

6.1.4 Piuquenes

In 2013 R. Simpson of Geosim, Vancouver carried out geological modeling to establish exploration targets for the Cerro Campamento veins and the Leonor vein at Cerro Silla Sur. Following this work, J. Kowalik recommended investigating the possibility of a heap-leachable gold and silver mineralization at Cerros Taguas by RC drilling in the upper, oxidized parts of Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV, as suggested by earlier drill holes on these deposits.

During the 2015-2016 season the first campaign of RC drilling was completed totaling 530 m. This verified mineralized intersections of gold and silver grades in oxidized rock.

In the 2016-2017 season, based on the program recommended by Kowalik and reviewed by the Mining Research Institute of the University of San Juan, an additional 23 reverse circulation drill holes totaling 3,003 m and 3 HQ diameter core drill holes totaling 450 m were completed. The HQ diameter core holes were primarily for metallurgical testing carried out at the Plenge laboratory in Lima, Peru.

6.2 Production

There has been no production from the Taguas Property.

7.0 Geological Setting and Mineralization

7.1 Regional Geology

The following description of the regional geology of the Taguas Project is after Jones et al. (1999).

Taguas is located at the northern end of the Tertiary-age Valle del Cura volcanic belt in Argentina (Figure 7-1) and on the eastern flank of the El Indio metallogenic belt (Siddeley and Araneda, 1990). The physical continuity of the volcanism and stratigraphy on the Chilean side with the Valle del Cura volcanic belt have been confirmed by various regional works (Ramos 1995, 1998 and Godeas et al., 1993). The Valle Del Cura belt has a similar basement, comparable volcanism ages and alteration as the volcanism on the Chilean side (Davidson and Mpodozis, 1991) and constitutes an extension of the El Indio belt into Argentina.

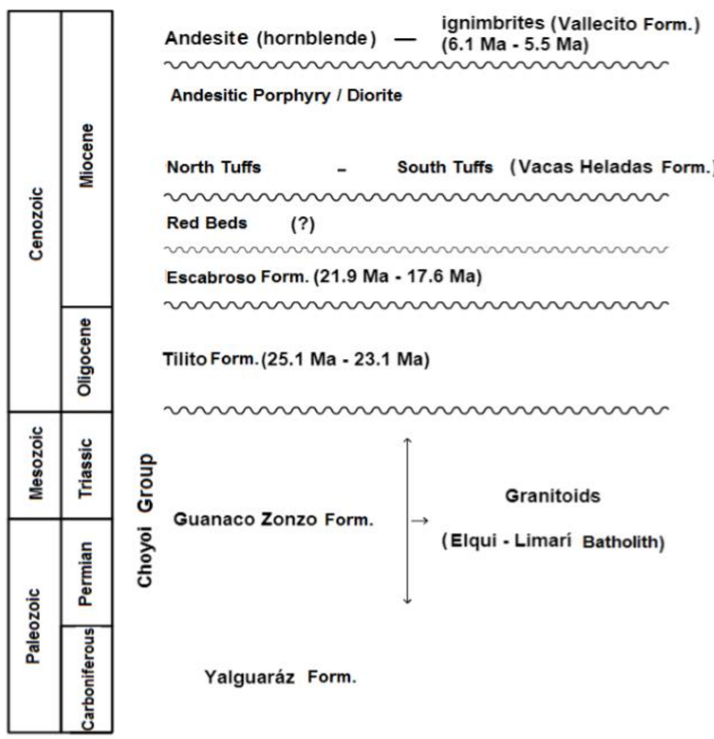
Figure 7-1: Regional geology of the Taguas Project

Note: Mineral deposits other than Taguas are not part of Taguas Property.

The volcanics on the Chilean side of the border host a large number of high-sulfidation pyrite-enargite hosted gold deposits (Figure 7-1) the largest of which is the El Indio deposit (Jannas, R.R. et al., 1999). On the Argentina side of the Chile-Argentina border, the same volcanic units host similar high-sulfidation gold deposits such as Veladero and Pascua Lama.

The Valle Del Cura Tertiary volcanism at Taguas (Tilito Formation, Escabroso Formation, etc.) is superimposed on a basement largely composed of Carboniferous sediments (Yalguaráz Formation) and Permian volcanic rocks (Guanaco Zonzo Formation) that are intruded by Permian-Triassic granitoids (Figure 7-2, Figure 7-3).

Figure 7-2: Stratigraphy at Taguas (from Angeles, 2008)

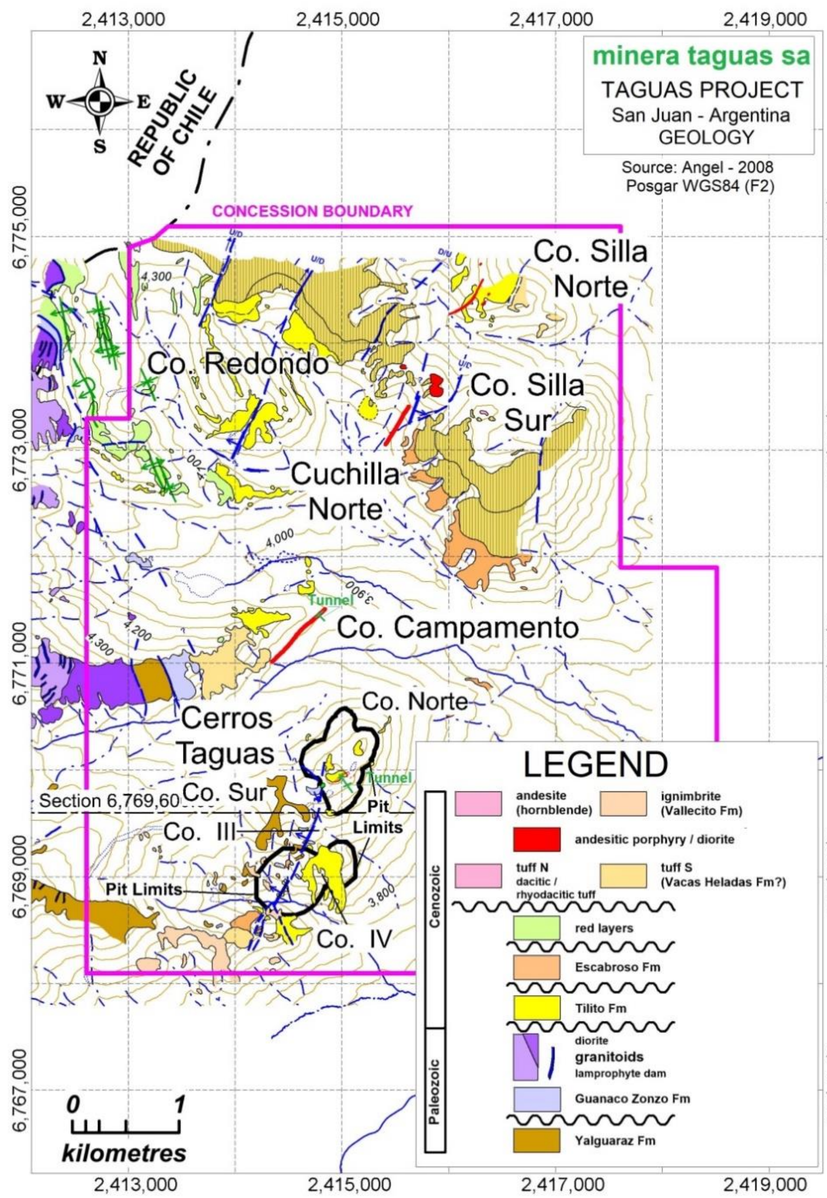


7.1.1 Basement Rocks

Yalguaráz Formation (Carboniferous - Lower Permian)

The Yalguaráz Formation (Figure 7-2, Figure 7-3) is the lowermost and oldest formation exposed at Taguas and consists predominantly of greywackes with interbedded argillite and sandstone, transformed to hornfels and quartzite respectively. Their base is not exposed but their minimum thickness is estimated to be more than 1,000 m. Based on the fossil content found by several authors, Ramos (1996) assigns an age from middle to Upper Carboniferous up to lower Permian for the Yalguaráz Formation.

Figure 7-3: Geology and major structures at Taguas (after Angeles, 2008)



Guanaco Zonzo Formation (Permian - Lower Triassic)

The Guanaco Zonzo Formation consists of finely banded rhyolites, frequently with quartz phenocrysts, and welded tuffs with fiammes and quartz eyes. The Guanaco Zonzo

Formation forms the upper part of the Choyoi Group (Figure 7-2). Ramos (1996) assigns an upper Permian to lower Triassic age for the Guanaco Zonzo Formation.

Granitoids (Permian - Lower Jurassic)

Granitic rocks outcrop along the entire western margin of Taguas (Figure 7-3). The most common facies are medium to coarse grained, leucocratic, gray colored granites. The granites are distinctive in that they are intruded by a large number of dark-colored dikes, described as lamprophyres by Lencinas (2002).

7.1.2 Cenozoic Cover Volcanics

Tilito Formation (Upper Oligocene)

According to Angeles (2008) rocks attributed to the Tilito Formation are predominantly welded felsic volcanics (tuffs and breccias) with high variable quartz contents from less than 1% to up to 20% at Cerro Redondo (Figure 7-11). The base of this unit is not exposed at Taguas, but deep drill holes indicate a minimum thickness over 600 m (La Riva, 2007). Tilito volcanic rocks tend to have a light grey color where they are not strongly altered as at Cerro Redondo. According to Angeles (2008) and Dr. Kowalik's observations, the Tilito volcanics are usually altered to some degree. Where the volcanics are strongly altered they take on a whitish color due to large additions of kaolinite and alunite.

Escabroso Formation (Lower Miocene)

The Escabroso Formation is composed of andesitic tuffs and lava flows. The tuffs are slightly welded and very rich in andesite lapilli, as well as bombs and blocks of andesite to the extent that some of the Escabroso are volcanic agglomerates. Escabroso Formation is in erosional unconformity and possibly angular unconformity over the Tilito Formation. The Escabroso Formation is unaltered and unmineralized whereas the Tilito Formation is almost always altered and hosts all of the gold mineralization at Taguas.

7.2 Project Geology

The Tilito Formation is most relevant to the mineralization at Taguas whereas the Escabroso Formation and rocks above it are all post-mineral. The description of the project geology at Taguas that follows is based mainly on observations of drill core and field visits by Dr. Kowalik.

7.2.1 Lithology

The geology at Taguas is relatively simple, consisting of felsic volcanics of the Tilito Formation disconformably overlain by andesitic volcanics of the Escabroso Formation. Locally the Tilito and Escabroso Formations are overlain by unaltered post-mineral tuffs. The only intrusive rocks in the project area appear to be some andesite porphyry dikes at Cerro Silla Norte (Hedenquist, 2012). Apart from these minor dikes, intrusive rocks have not been unambiguously recognized at Taguas (Williams, 2008; Stewart, 2008; Sillitoe, 2011). In valleys and low-lying areas, the bedrock is extensively covered by moraine deposits and on mountain slopes it is covered by talus.

The Tilito Formation consists primarily of rhyolitic to dacitic ash-flow tuffs and volcanic breccias (Figure 7-4), particularly at Taguas Cerro Norte, Cerro Sur, Cerro III and Cerro IV. The coarse nature of the volcanic breccias is significant because it means that the breccias at Cerros Taguas are particularly permeable and therefore more easily leached, altered and mineralized. All of the oxide gold mineralization at Cerros Taguas is hosted by oxidized Tilito Formation tuffs and volcanic breccias (Figure 7-5).

Figure 7-4: Fresh Volcanic Breccia

Figure 7-5: Strongly Oxidized Volcanic Breccia

Note: Width of drill core specimens is approximately 5 cm.

Additional evidence for the porous and permeable nature of the volcanics at Cerros Taguas is the ubiquitous presence of Liesegang banding to depths of 80 m or more (Figure 7-6). Liesegang banding is universally accepted as secondary iron-oxide deposition by ground water in the supergene environment. The ground water would have oxidized whatever sulfides were in the rocks thereby increasing the acidity of the water which in turn made it conducive for producing alunite.

Figure 7-6: Liesegang Banding

Note: Width of drill core specimen is approximately 5 cm.

7.2.2 Alteration

The four main types or forms of alteration at Taguas are:

- Vuggy silica (Figure 7-7)
- Alunite infilling open spaces in tuffs and volcanic breccias (Figure 7-8)
- Deposition of Fe-oxides by supergene weathering (Figure 7-6)
- Alunite-kaolinite (± dickite) bordering quartz-pyrite-enargite veins (Figure 7-9)

Figure 7-7: Vuggy Silica on Cerros Taguas

Note: Lens cap is 4 cm wide

Figure 7-8: Alunite Infilling Volcanic Breccia

Note: drill core specimen is approx. 5 cm wide

Figure 7-9: Campamento Vein Bordered by Alunite

Note: Field of view of the drift back is approximately 4 m.

Most of the tuffs at Cerros Taguas are not strongly welded which means they are permeably and readily altered and leached. What were originally unwelded lapilli tuffs have had all their lapilli (pumice fragments) leached out leaving behind only silica in what is known in high-sulfidation epithermal (HSE) gold deposits as vuggy silica (Figure 7-8).

Sillitoe (2011) reported that the predominantly quartz-alunite alteration at Cerros Taguas is transitional outwards to lower-temperature quartz-kaolinite alteration which hosts outlying quartz-pyrite-enargite veins such as Campamento (Figure 7-7) and Leonor, and that Cerros Taguas is a true lithocap. Recently acquired ASTER alteration images of Taguas confirm Sillitoe’s observation. ASTER anomalies of alunite, silica, Fe-oxides and total alteration (Figures 7-10 to 7-13) show that the alteration at Taguas is most intense and definitely centered on Cerros Taguas.

Figure 7-10: ASTER Alunite Alteration at Taguas

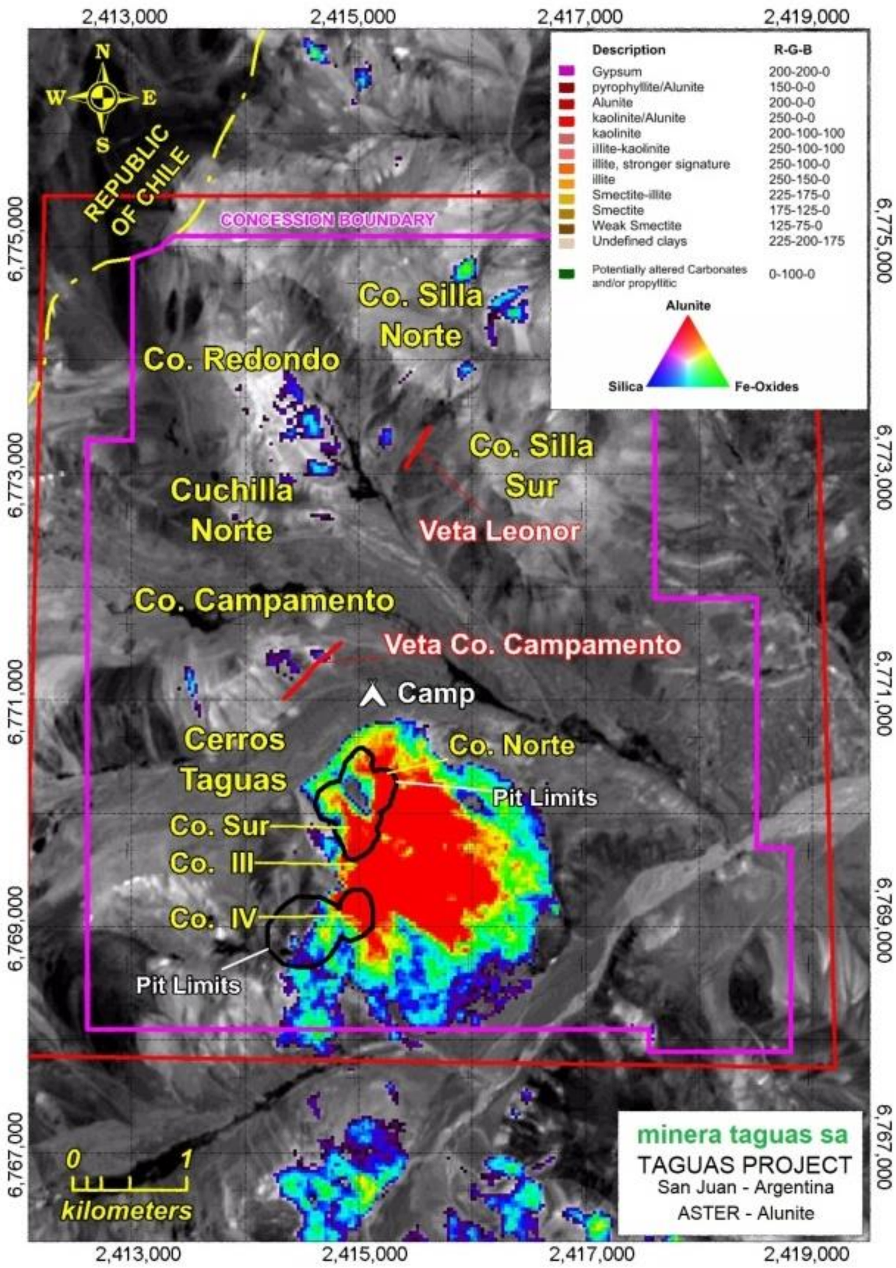


Figure 7-11: ASTER Silica Alteration at Taguas

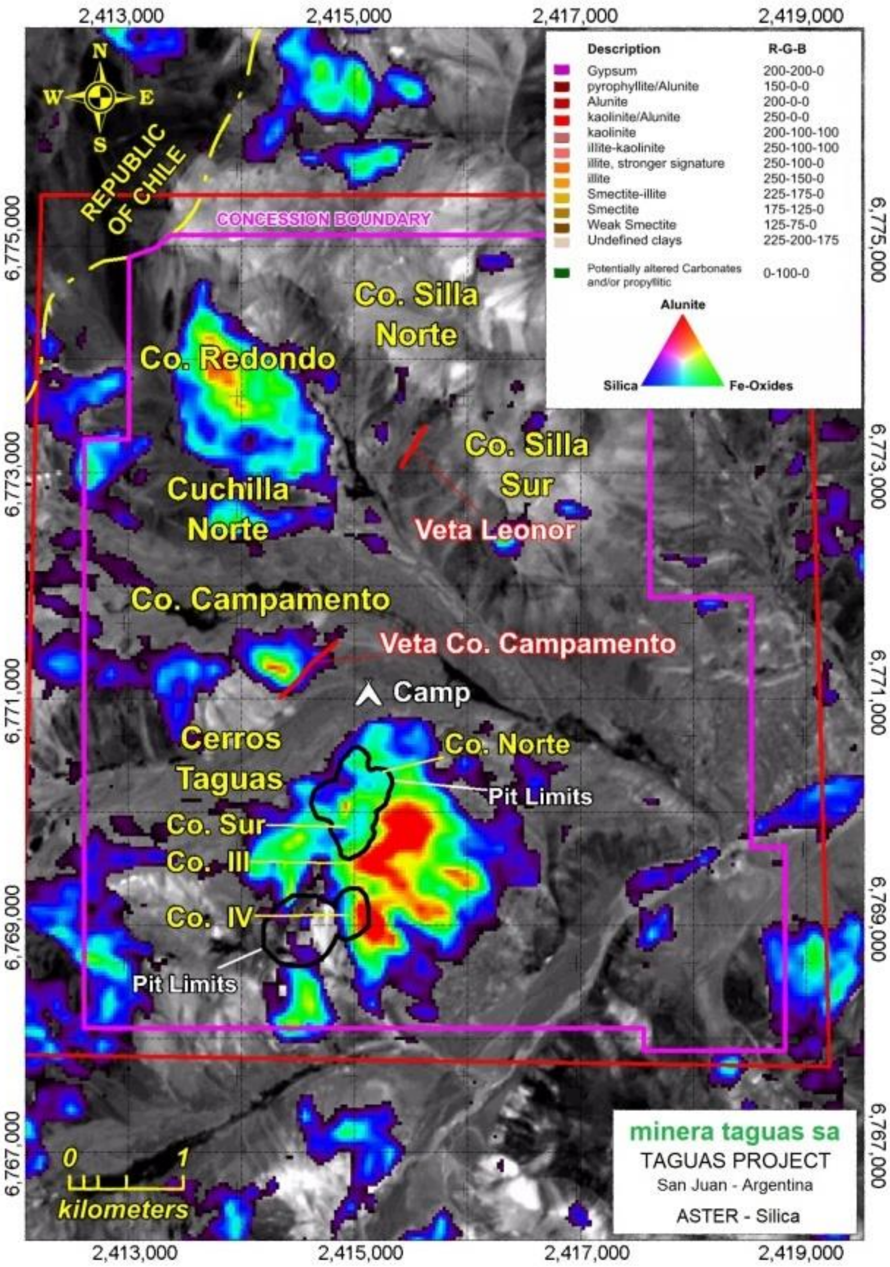


Figure 7-12: ASTER Fe-oxide Alteration at Taguas

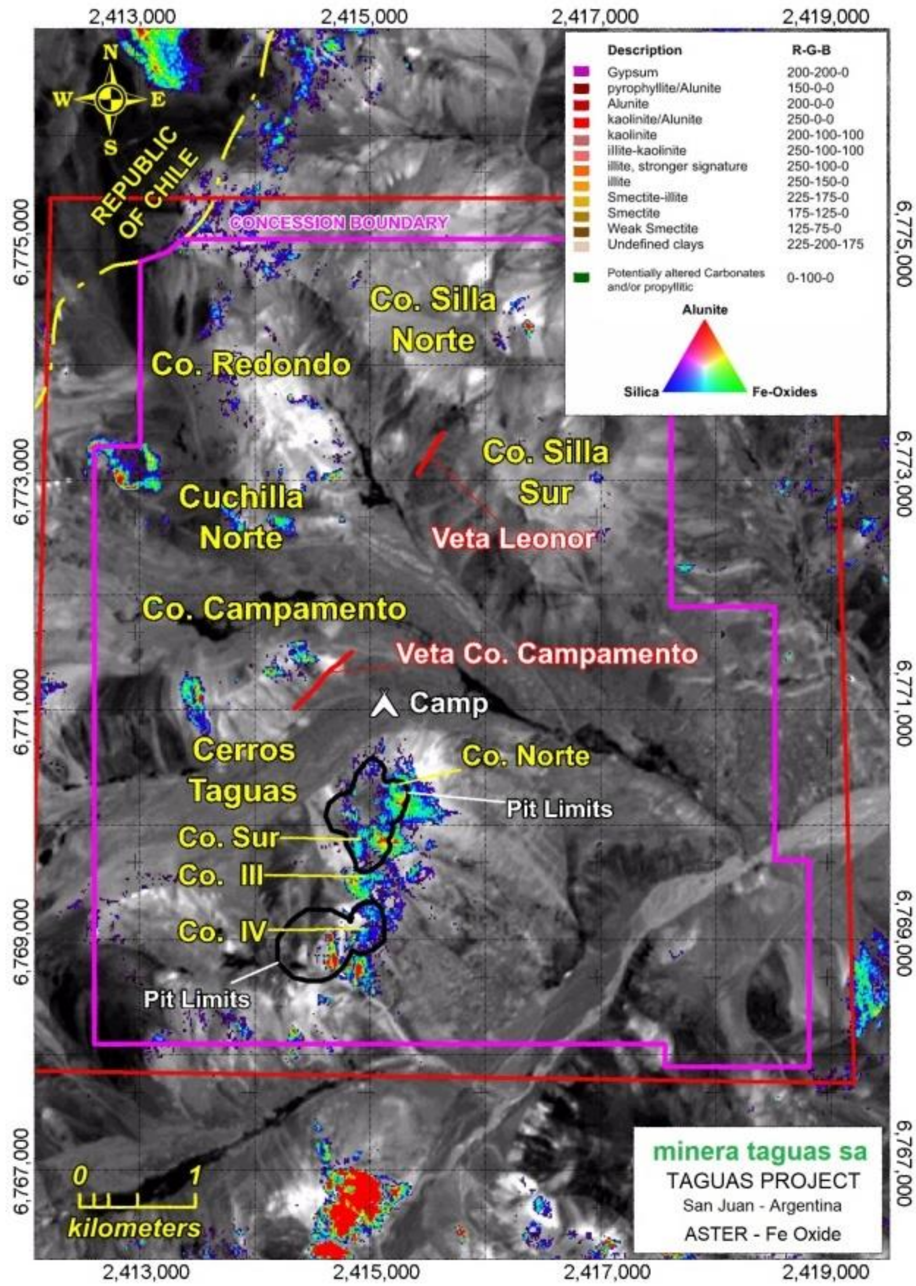
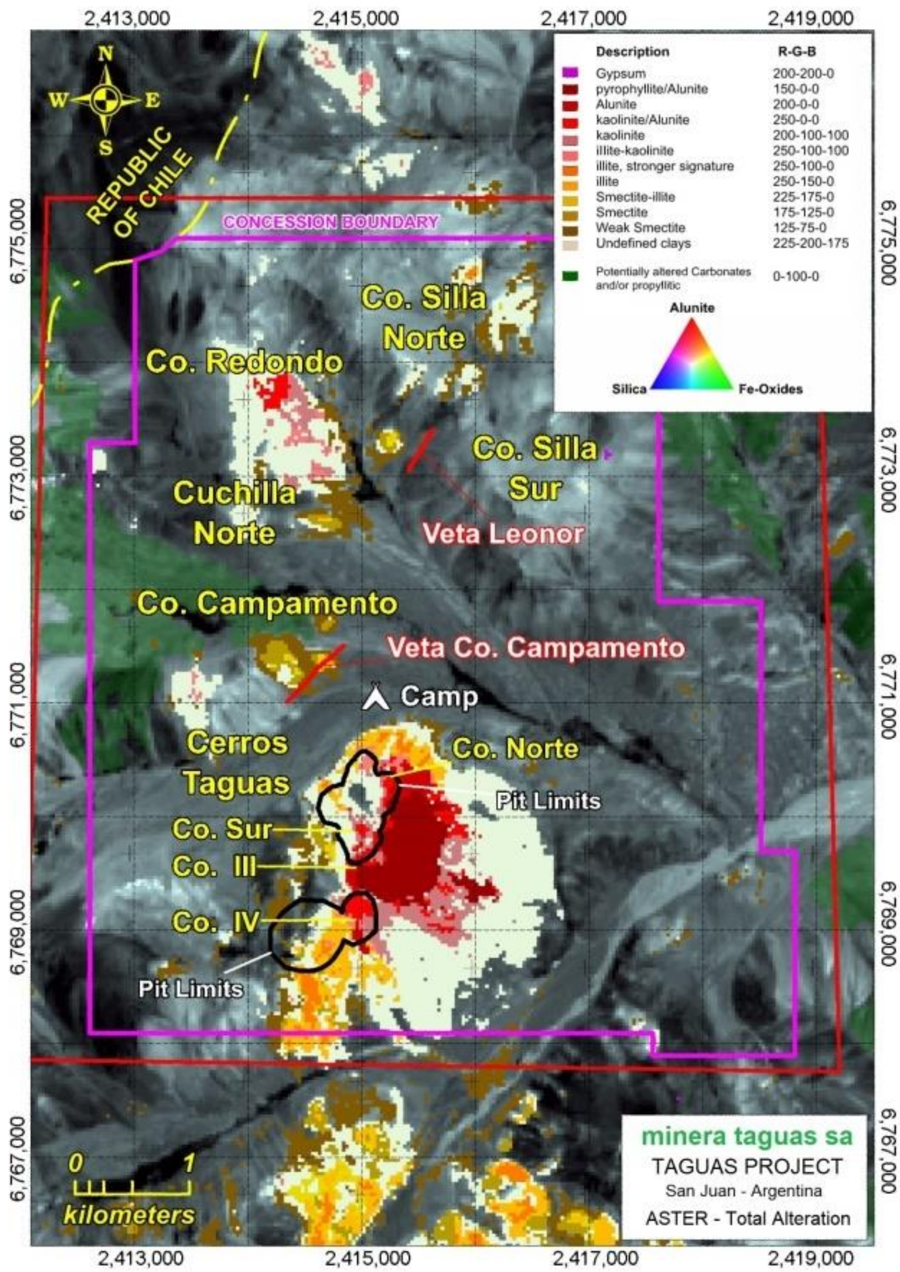


Figure 7-13: ASTER Total Alteration at Taguas

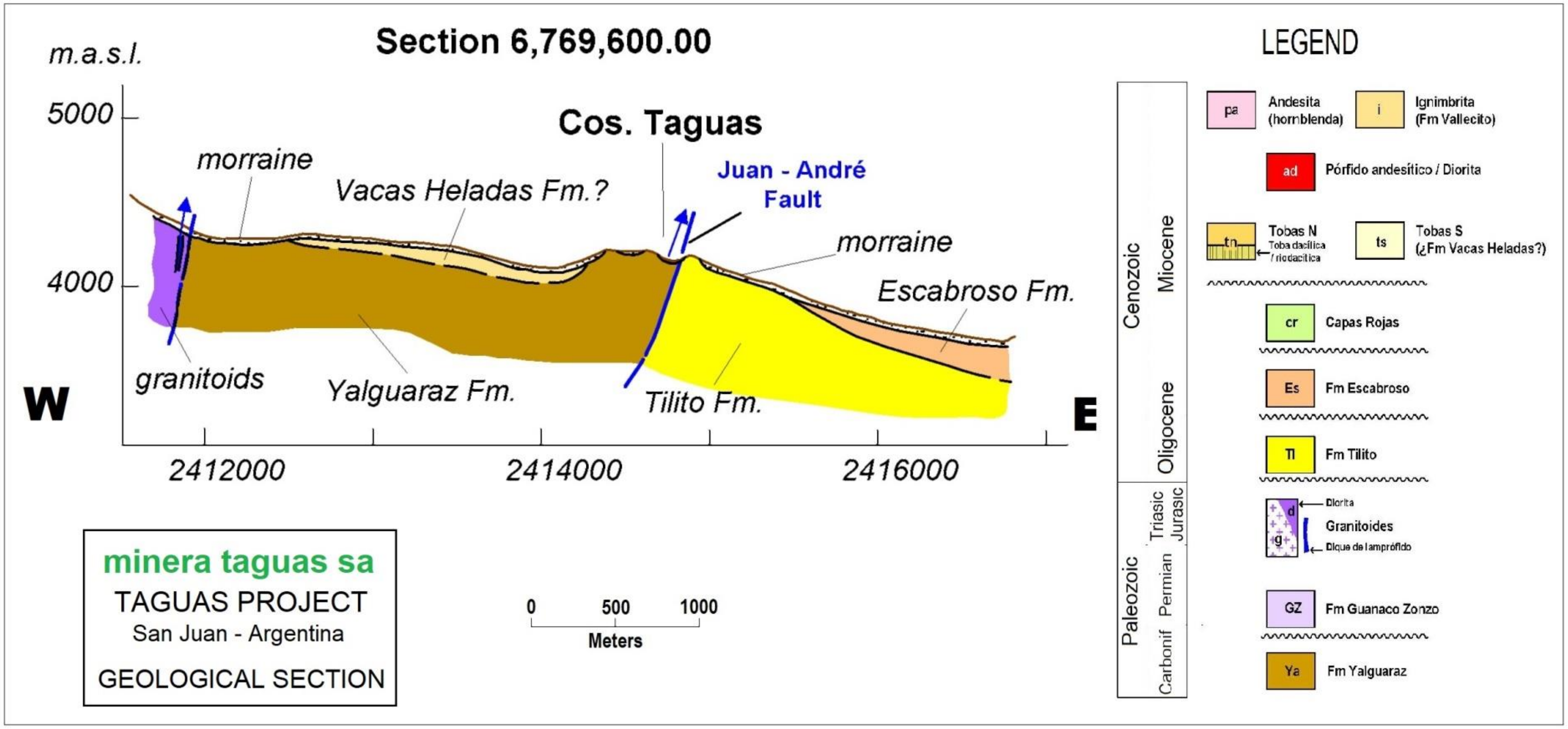


The origin of the alunite alteration remains debatable. Alunite bordering the upper parts of the Campamento vein (Figure 7-7) and Leonor vein may reflect the effects of acid generated from oxidizing sulfides (pyrite and enargite) in the supergene environment (Stewart, 2008), rather than hypogene advanced argillic alteration. The quartz-alunite alteration at Cerros Taguas can persist to depths of 300 m (Sillitoe, 2011), but generally gets less intense below 100 m to 150 m and is also probably supergene.

7.2.3 Structural Geology

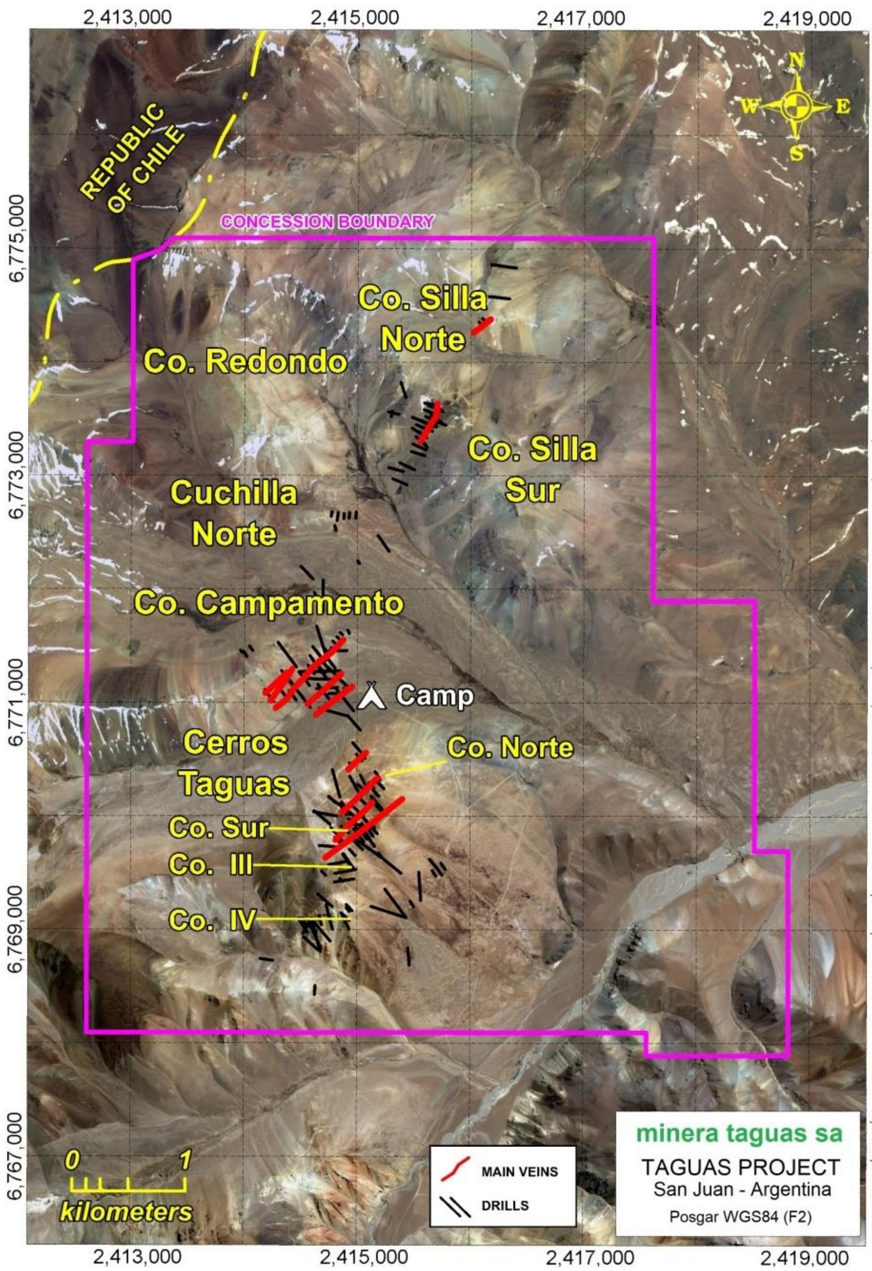
The first order structures at Taguas are regional north to northwest trending normal faults (Figure 7-3) that down drop the Paleozoic basement to form a north to northwest trending graben that is infilled by Tertiary volcanics starting with the Tilito Formation (Figure 7-14).

Figure 7-14: E-W cross section through Cerros Taguas (after Angeles, 2008)



The regional north-northwest normal faults have also caused lateral movement which produced numerous northeast-southwest trending faults or tension gashes that are present throughout Taguas, marked as red lines on Figure 7-15.

Figure 7-15: Faulting Associated with Mineralization at Taguas



7.3 Mineralization

Taguas consists of three gold-silver deposits (Figure 7-3):

- Leonor Vein at Cerro Silla Sur
- Campamento Vein at Cerro Campamento
- The oxide gold-silver mineralization at Cerros Taguas that is the focus of this PEA report.

Cerro Silla Sur contains a northeast trending and steeply dipping (to the northwest) quartz-pyrite-enargite vein called Leonor. The central portion of the Leonor vein has returned grades of 7 to 42 g/t gold, up to 330 g/t silver and 0.1 to 5 % copper over drill intersections of less than 1 m to 7 m (Hedenquist, 2012). The mineralogical characteristics of the Leonor Vein are consistent with it being of the intermediate-sulfidation type as evidenced by increasing amounts of chalcopyrite relative to enargite. Such intermediate-sulfidation veins typify the peripheral portions of high-sulfidation systems, and the elevated zinc and lead contents of Leonor lend support for cooler conditions of formation (Sillitoe, 2011).

The mineralogical characteristics of the Campamento Vein are more consistent with it being of the high-sulfidation type as evidenced by the predominance of enargite over chalcopyrite. The Campamento vein has returned drill intersections 1-3m wide with 5-35 g/t gold over a vertical interval of at least 100m (Hedenquist, 2012). The uppermost 100 meters of the Campamento vein usually contain only a few percent pyrite and enargite but often contain bonanza grade gold. Sillitoe (2011) proposed that the sulfide deficiency is a hypogene feature, and not the result of supergene oxidation. However, other geologists (e.g. Stewart, 2008; Kowalik, 2015 and 2017) believe that the sulfide and thereby copper deficiency but gold enrichment in the upper parts of the Campamento vein are due to supergene oxidation effects, depleting mobile copper and enriching less mobile gold. If so, the supergene zone should be transitional downwards into veins of massive sulfides, predominantly enargite with lesser pyrite. According to Hedenquist (2012), the amount of enargite in the Campamento vein does increase markedly with depth.

The mineralization in the upper 100 m to 200 m at Cerros Taguas, however, is markedly different from the mineralization at Campamento and Leonor. The mineralization at Cerros Taguas is not a single large vein like is mostly Leonor and Campamento but the product of very numerous small veins. Hedenquist (2012) proposed that Cerros Taguas may be a hydrothermal breccia bordering a felsic flow-dome intrusive. However, the purported intrusive flow dome contains rounded quartz eyes which may be more indicative of a tuff.

7.4 Deposit Descriptions

Descriptions of the oxide gold-silver mineralization at Cerros Taguas are presented in Section 7.2.4, in representative drill intersections presented in Section 10.11 and in a description of the high-grade domains and low-grade envelope in Section 14.2.

Descriptions of the sulfide (pyrite-enargite) gold-silver mineralization at Cerro Campamento (Campamento vein) and Cerro Silla Sur (Leonor vein) are presented in Section 14.2.

7.5 Comments on Section 7

The regional and deposit-scale geology and controls on mineralization of the Taguas oxide gold-silver deposit are sufficiently well understood to permit the construction of geological models and estimation of Mineral Resources.

The 2018 re-logging program focussed on improving definition of the base-of-oxide surface at Cerros Taguas improved confidence in the definition of oxide mineralization for the Taguas PEA. Further mineralization characterization, including gold leaching tests will be required to improve definition of the base-of-oxide boundary and improving confidence in the definition of oxide mineralization during future stages of project engineering.

8.0 Deposit Types

8.1 Deposit Model

The mineralization at the Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV deposits is interpreted to be typical of high-sulfidation epithermal gold mineralization that has undergone supergene oxidation during acid sulfate alteration.

Epithermal gold deposits are most well preserved in Cenozoic aged, magmatic arc environments at elevated crustal settings, typically less than 1-2 kilometers from surface. These deposits are further subdivided into high and low-sulfidation derived from two varying fluid types and characterized by different metallic, sulfide and gangue mineral assemblages (Corbett, 2002). The mineralization style of high-sulfidation deposits varies from disseminations or replacements to veins, stockworks and hydrothermal breccia bodies (Hedenquist, 2000).

Examples of this type of deposit in South America include the Pierina and Yanacocha deposits in Peru the Fruta del Norte deposit in Ecuador, El Indio in Chile, and the nearby Veladero deposit in San Juan, Argentina.

Mineralization in high-sulfidation epithermal gold deposits primarily occurs in the following three ways (Sillitoe, 1999):

- High-grade gold-silver mineralization in late stage veins or hydrothermal breccias in the shallow parts of the system
- Mineralization in the shallow part of the system that has been subjected to supergene oxidation
- Disseminated precious and base metal mineralization in the deep porphyry-hosted portion of the system

Mineralization at Taguas has the following characteristics that are consistent with the supergene-oxidized high-sulfidation deposit model:

- Near surface emplacement, hosted within Cenozoic aged volcanic units;
- Strong advanced argillic quartz-alunite alteration and saline fluid inclusions with high homogenization temperatures which indicates an acidic, magmatic fluid source (Townley, 2001)

- Gold-silver mineralization in quartz-sulfide veins hosted in volcanic rocks and volcanic breccias
- The presence of jasperoids and clearly visible Fe-oxides at surface identify the supergene oxide zone

8.2 Comments on Section 8

The QP considers that a high-sulfidation deposit model is an appropriate model for exploration vectoring.

The supergene oxide high-sulfidation gold-silver mineralization at the Taguas Cerro Norte, Cerro Sur, Cerro III and Cerro IV deposits is the focus of the PEA and shares many characteristics with the nearby Veladero deposit, and other supergene oxide high-sulfidation gold-silver deposits in South America such as El Indio (Chile) and Yanacocha (Peru).

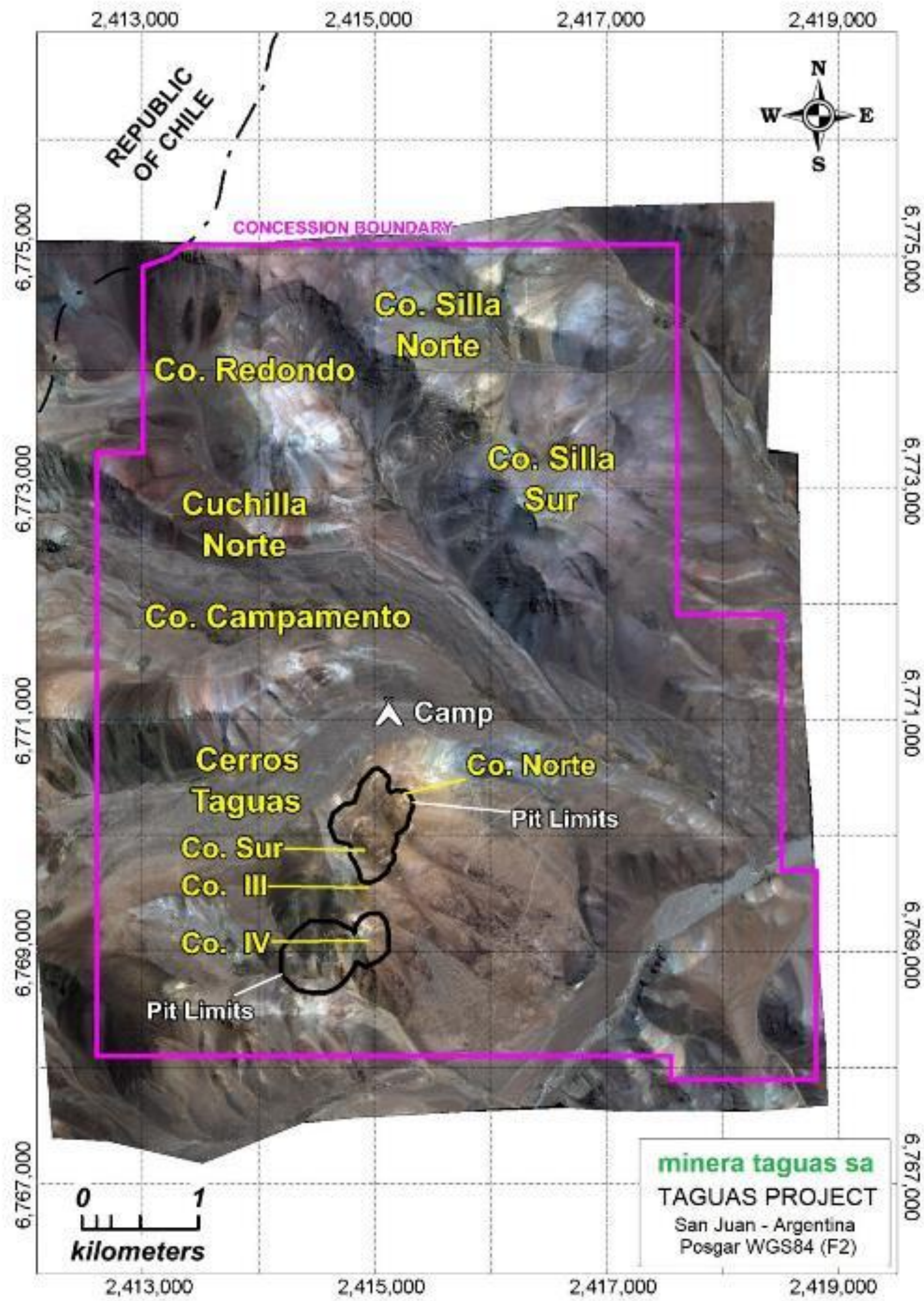
Exploration focussed on expanding the oxide resource should be a priority as the project advances. Other high-sulfidation mineralization styles related to the oxide gold-silver mineralization also present interesting targets at Taguas. These targets include sulfide gold-silver mineralization and deeper precious metal and base metal porphyry mineralization.

9.0 Exploration

9.1 Grids and Surveys

In June 2010, surveyor Gabriela Alvarez Parma from GPAC SRL (San Juan), carried out a digital photogrammetric restitution survey to an approximately scale of 1 : 5,000 over the project area. The objective of the survey was to generate topographic data to support exploration and Mineral Resource estimation activities. The defined work area for this activity is shown in Figure 9-1. It covers a surface area of approximately 40 km^2.

Figure 9-1: Ikonos 2 Image of the Taguas Project Site



Note: Pit outlines are the conceptual PEA pit outlines.

9.2 Topographic Surveys of Historical Drill Holes

In March and April 2012, during the Gold Fields JV, a drill hole collar survey program was carried out by Datum S.A, company from Mendoza. 138 drill holes were identified and surveyed (Martinez, 2012). This program focussed mainly on holes drilled at Cerro Silla Norte, Cerro Taguas and Cerro Campamento.

In March 2018, collar surveys were carried at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV focussing on drill holes underpinning the oxide gold-silver resource. The 2018 survey program was completed under the supervision of José Hurtado, of GEO Reference, Mendoza. A total of 76 drill holes were surveyed using a dual frequency Trimble R6-RTK geodetic global positioning system (GPS) system with real time positioning by ultra-high frequency (UHF) correction transmission. Survey data were post-processed in Trimble Geomatic Office and Trimble Business Center.

Of the 77 drill holes included in database for estimation of Mineral Resources, there are six collars that could not be verified by the 2012 or 2013 survey programs. However, the locations of the drill platforms were checked during a topographical survey performed by Buenaventura as part of their 2010 due diligence investigation.

9.3 Geological Mapping

9.3.1 Regional Geology

A preliminary map of the region between Volcan Tórtolas and Taguas was undertaken in 1977 by the geologists Jorge Bengochea and Mario Tonel using photointerpretation and field surveys. The map was updated by Andres Lencinas in 2006.

9.3.2 Detailed Geology

Project geology maps were created as new targets were discovered. In 2013, the geologist Darío Zapana compiled the available information and prepared an unpublished internal report.

9.4 Geochemical Sampling

Several geochemical sampling campaigns were carried out to identify and define high-sulphidation hydrothermal systems. A total of 915 surface samples were taken and assayed for gold and silver and selectively analyzed by multi-element ICP. Their geographical distribution and sample types are shown in Figure 9-2.

In the geochemical surveys, values that exceed 0.50 Au g/t or 30 Ag g/t are considered anomalous. A coincident gold-silver anomaly occurs over the north-east extension of Cerro Taguas Norte and along strike south-west of Cerro Taguas Sur and Cerro III and Cerro IV. These anomalies are shown with the current resource limits (red) and PEA conceptual pit limits in Figure 9-3 and Figure 9-4. These anomalies present targets for expansion of the known oxide gold-silver mineralization at Taguas.

The anomalies detected in the eastern flank of Cerro Silla Sur, where outcrops appear, remain to be reviewed in detail and represent a potential sulfide target on the northern half of the Property.

Figure 9-2: Map of Geochemical Sampling at Taguas

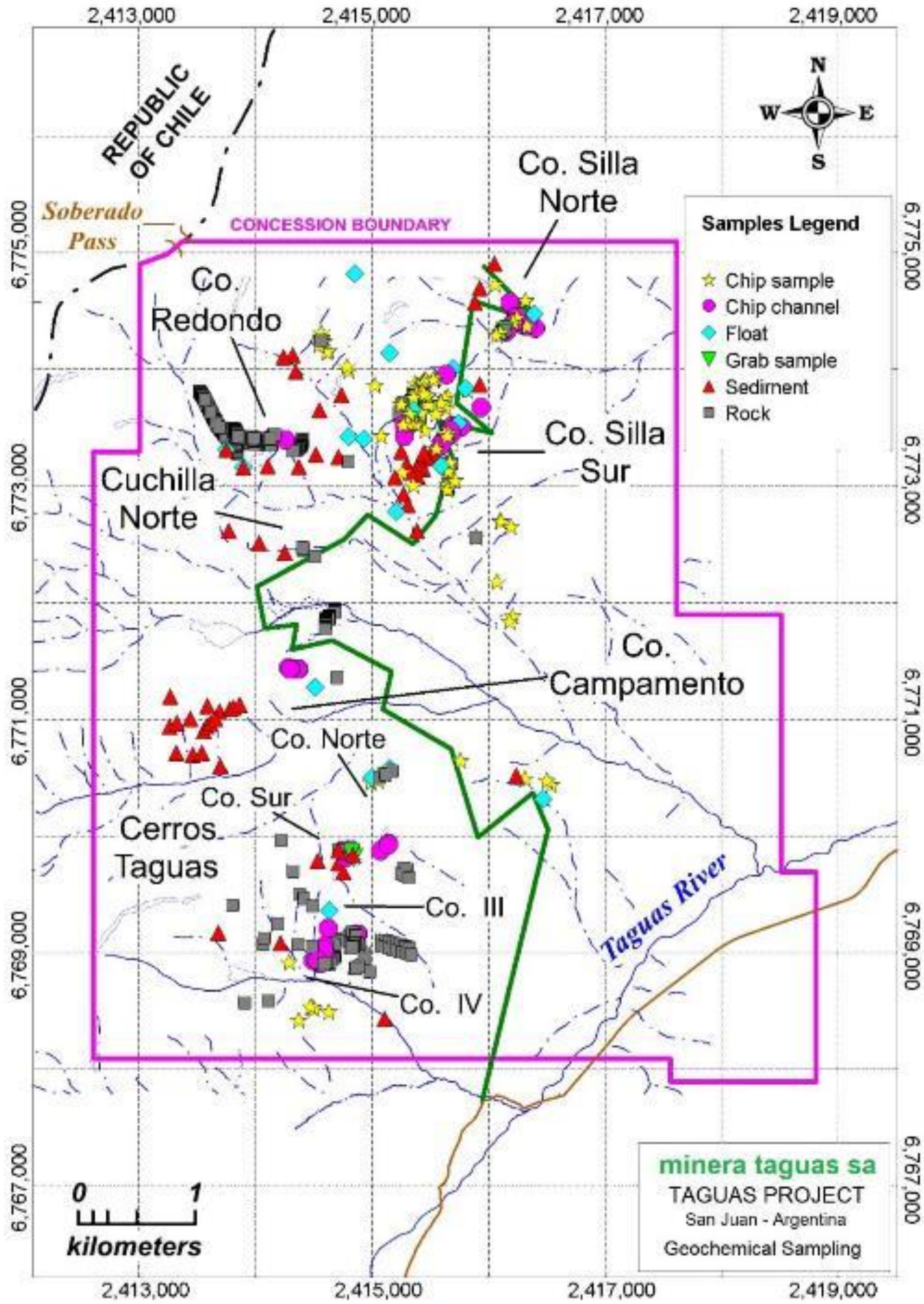


Figure 9-3: Map of Gold Geochemistry Anomalies at Cerro Taguas

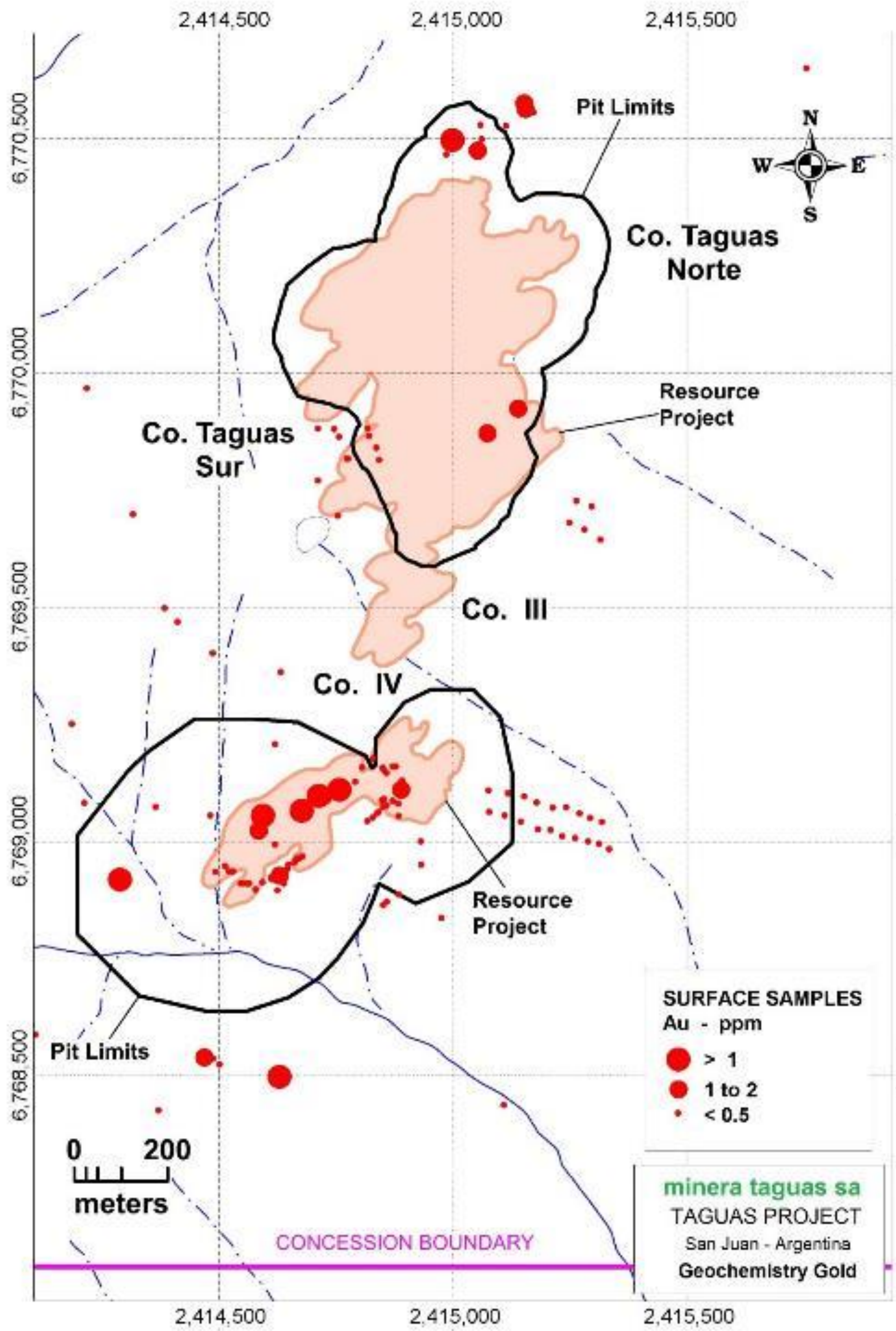
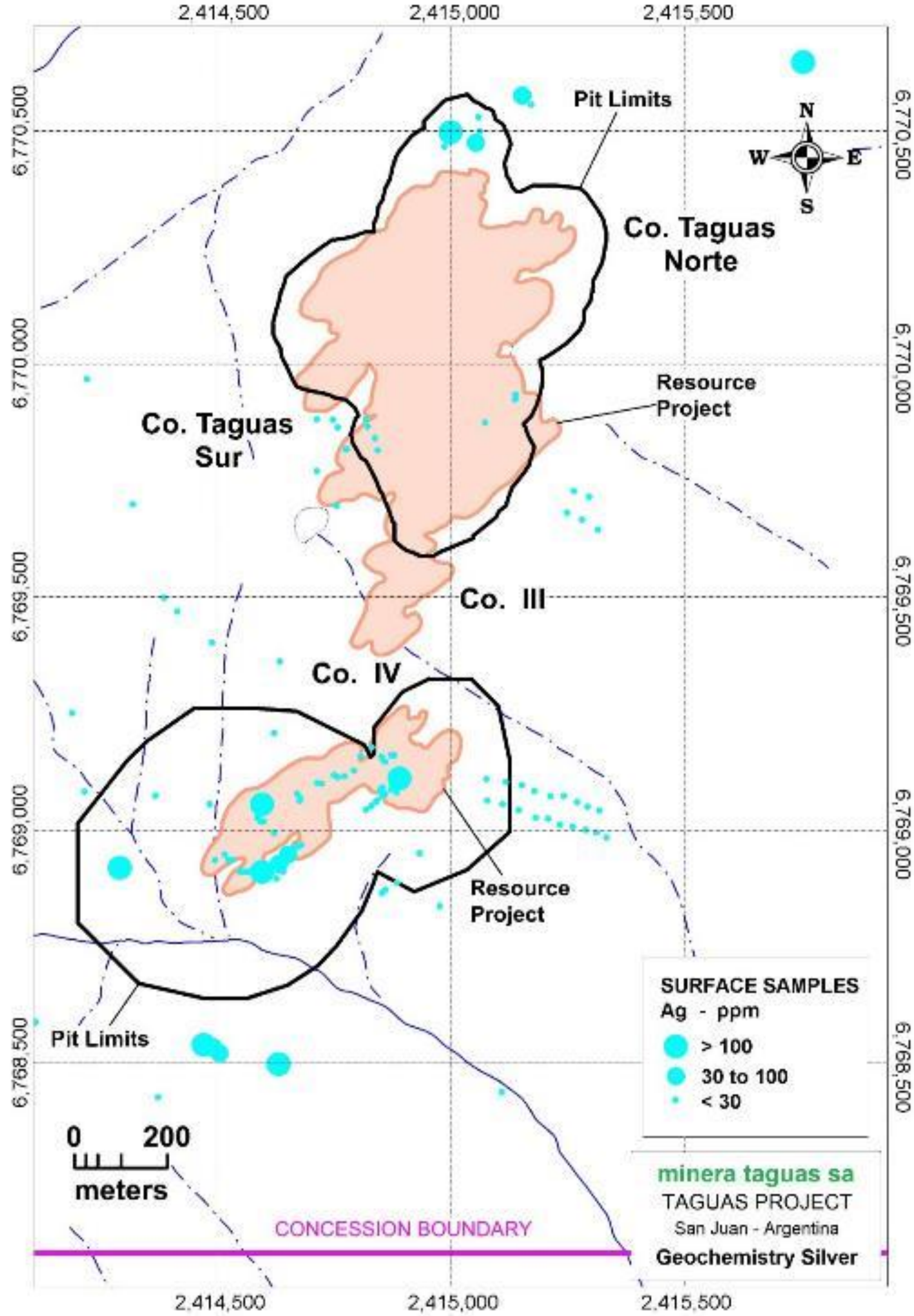


Figure 9-4: Map of Silver Geochemical Anomalies at Cerro Taguas



9.5 Geophysics

9.5.1 IP Survey

Gold Fields contracted Ridgeback Geofísica Argentina S.A to carry out gradient array and pole-dipole induced polarization (IP) and resistivity surveys at the Taguas Project area between February 10th and April 8th, 2012.

The Taguas IP survey consisted of 20.875 line-km gradient array IP survey over 21 lines, with a line separation of 50 m and 19.3 line-km of pole-dipole data over six north-south lines with a variable separation from 100 m to 200 m and one east west line.

9.5.2 Aerial Magnetometry

A high sensitivity helicopter magnetic and gamma-ray spectrometric airborne survey was carried out by New-Sense Geophysics between March 8th and March 20th, 2012. A total of 923-line kilometers of field magnetic and radiometric data were flown, collected, processed and plotted. The objective of the survey was to provide high-resolution total field magnetic and radiometric maps suitable for anomaly delineation, detailed structural evaluation, and identification of lithologic trends.

Features labeled P1 to P4 (Figure 9-5) may be caused by quartz-magnetite veining associated with potassic alteration zones and represent targets for porphyry-style mineralization. The mineralized sequence at P1 to P3 is covered by overburden. Anomaly P2 (Figure 9-6) is considered to be particularly interesting due to associated chargeability and resistivity anomalies.

Figure 9-5: Aerial Magnetometry and Geophysical Anomalies at Cerro Taguas

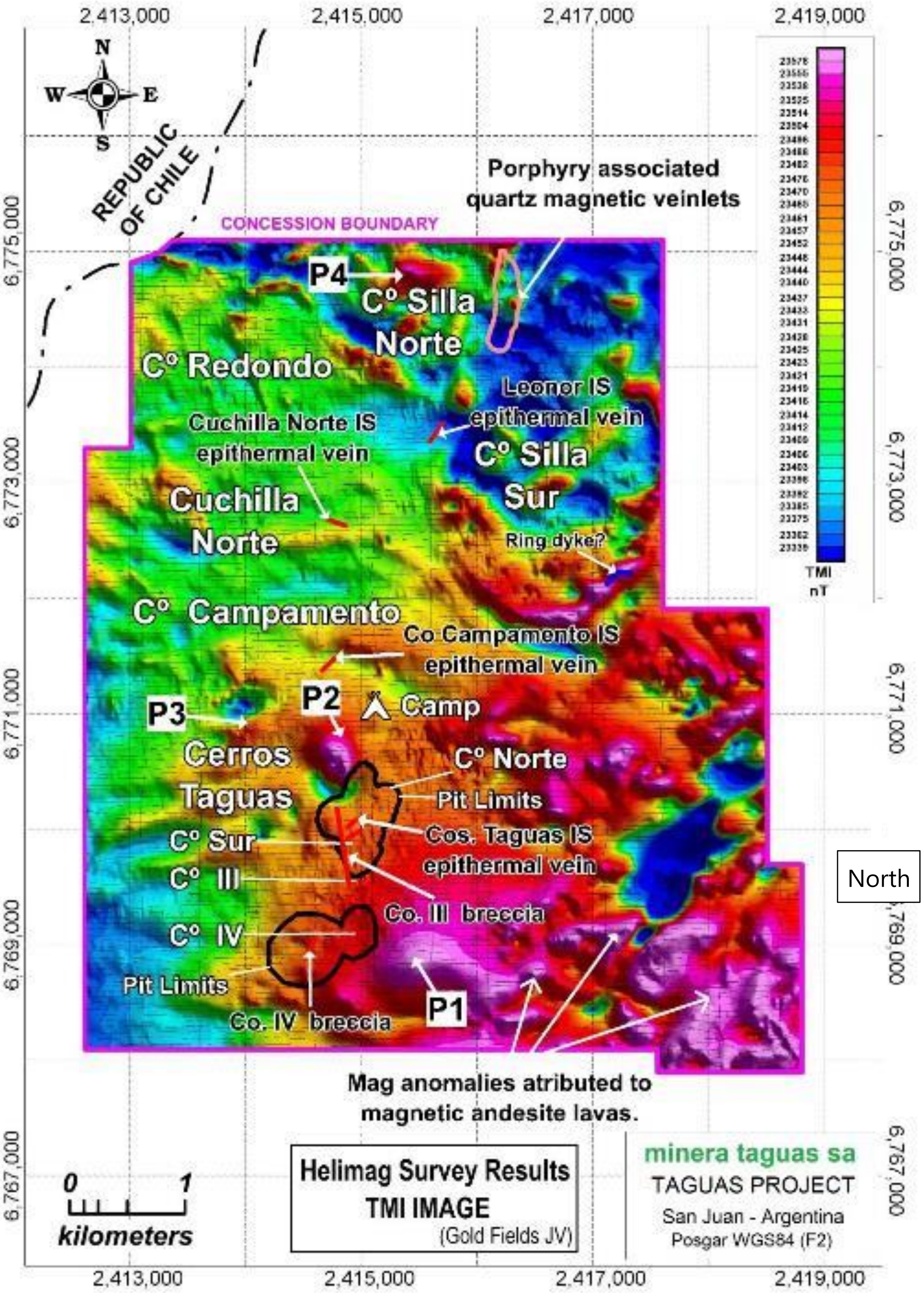
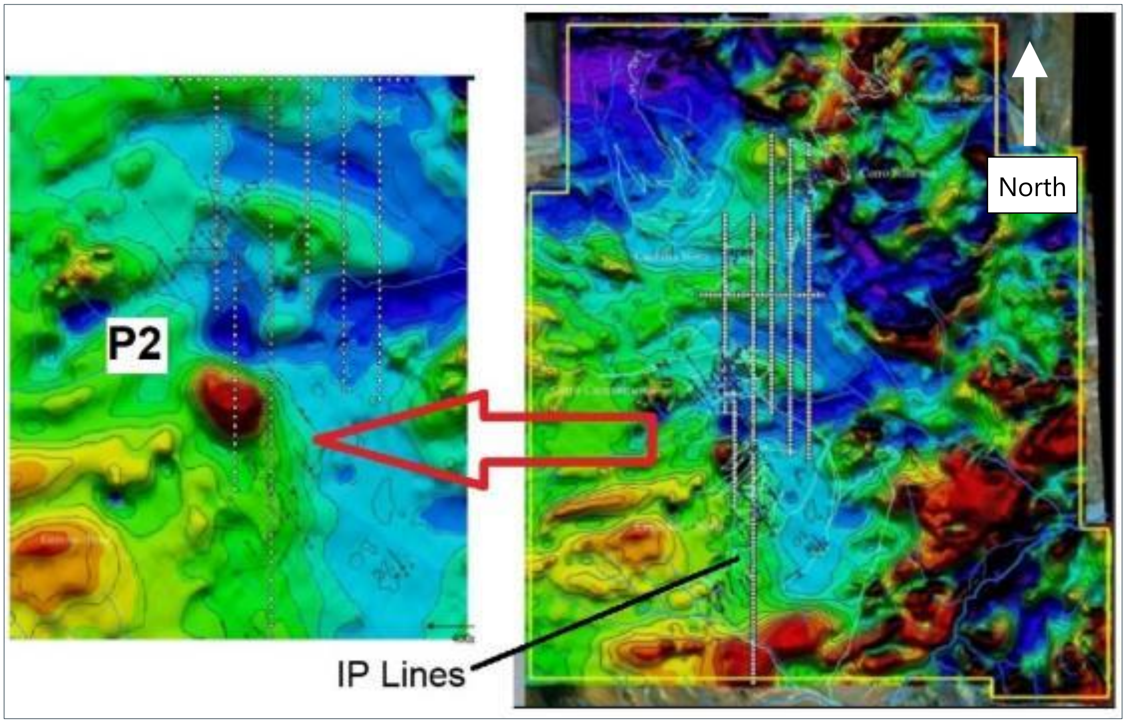


Figure 9-6: Geophysical Anomaly P2



9.6 Underground Exploration Development

Two underground exploration adits were excavated with the objective of studying the most important mineralized structures on the Property. An adit at Cerro Taguas Sur provides exposures of the oxide gold-silver resource that is the focus of the Taguas PEA. A second adit was driven to explore the sulfide vein mineralization at Cerro Campamento (**Error! Reference source not found.**).

The exploration adit on the south east slope of Cerro Taguas Sur consists of a cross cut of 200 m and another 200 m of drifts following the most notable mineralized structures at about 80 m to 100 m below the surface. As part of the work program for the Taguas PEA, and exploration of the oxide gold-silver resource on the Property, in the 2018 season the portal to the Cerro Taguas Sur was rehabilitated and the entire length of the cross cut was re-sampled every two meters in a channel sample along one of the walls of the drift. In addition, transversal samples were taken of mineralized structures and host rock were taken from the drift's back. The new sampling allowed validation of the historical information to be considered in the geological modeling of the veins. Samples were also taken to prepare composites for metallurgical test work.

The second exploration adit was originally driven in 1994 and is located on the south east slope of Cerro Campamento, with about 30 m of cross cut and drift following the main vein for 40 m.

9.7 Petrology, Mineralogy, and Research Studies

Semi-quantitative mineralogical analyses and measurements of native gold grain size were carried out on samples of the Cerro Campamento vein by MAM Ltda. Laboratory in Santiago de Chile. Analysis of polished sections indicate densely disseminated pyrite with up to 20% of granular subhedral texture and discrete anisotropy indicating that it is arsenic-bearing pyrite but is not arsenopyrite. Study of thin sections reveal a series of subparallel veinlets with subhedral quartz grains, some veinlets having pyrite located in the central part of the veinlet (Barbagelata, 2001; Holmgrem, 2001) . The wall rock to the veinlets is described as rhyolite having porphyric texture with phenocrysts of subangular quartz.

A fluid inclusion study was performed at the University of Chile (Townley, 2001). Findings showed evidence of boiling and development of a residual hyper-saline brine during vapor phase segregation during hydrothermal alteration and mineralization. High homogenization temperatures and consistency of salinity of inclusions in veinlets suggests a magmatic origin for the hydrothermal fluids. The presence of a chalcopyrite daughter crystal found in one of the inclusions may further support the presence of a copper bearing hydrothermal system likely associated with porphyry style copper-gold porphyry mineralization at depth.

9.8 Geotechnical and Hydrological Studies

No detailed geotechnical studies have been carried out on the Property.

The Project area is located in the middle-lower section of the Las Taguas River hydrological basin which covers an inflow area of 1,425 Km^2 up to the confluence of the Las Taguas and the Valle del Cura River forming the La Palca River.

The flow of the Las Taguas River flow upstream of the confluence with Los Amarillos River is approximately 850 l/s and shows seasonal and diurnal variation. Low temperatures at dawn may reduce flows up to 60 percent during spring season, while diurnal flow variation is reduced up to 20 percent during the period from December to March (BEASA, 2006).

Around the Project the Las Taguas River flows south-south west and is fed by Las Yaretas stream, Soberado stream and Tambillos stream.

Field campaigns were carried out by the Hydraulic Research Institute of the Universidad de San Juan under the leadership of Dr. Hugo W. Fernandez. The objective of the study was to provide information about water quality in surface runoff by sampling and field measurements.

Sampling and preservation procedures were according to Standard Methods, 18th. Edition, 1060 A, B and C from the U.S. Environmental Protection Agency, and in accordance with the provisions of section 15 of Provincial Decree No 1.426 / 96. Samples were collected for analysis by Grupo Induser SRL laboratory, the City of San Juan.

9.9 Metallurgical Studies

A 2018 test work campaign was carried out at the C.H. Plenge & Cia. S.A. (Plenge) laboratory in Lima, Perú to develop estimates of gold and silver recovery by heap leaching for the oxide gold-silver mineralization at Cero Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV. The Plenge laboratory is an independent private laboratory that specializes in metallurgical testing and analysis.

Preliminary samples for bottle-roll tests were collected from drill core samples of drill holes drilled at Cerro Taguas Sur and Cerro Taguas Norte.

A larger-scale program, using 5 m columns and feed sized to 12.5 mm and 6.25 mm, was carried out on samples were taken from the exploration development on the south west slope of Cerro Taguas Sur. Two composites of 50 kg were generated for the 5 m column test program.

Results from these programs are presented in Section 13.

9.10 Exploration Potential

Four exploration targets have been identified on the Taguas Property:

9.10.1 Oxide Gold-Silver Exploration at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV

Oxide gold-silver step-out exploration at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV along strike of drilling used for Mineral Resource Estimation and with potential to increase Mineral Resources by 30% to 40% indicated by surface geochemistry, geophysics and geological interpretation to the northeast and southwest of the Inferred Mineral Resource (Figure 9-3, Figure 9-4).

9.10.2 Oxide Gold-Silver Exploration at Cerro Campamento and Cerro Silla Sur

Oxide gold-silver mineralization potential in the Campamento Vein at Cerro Campamento and the Leonor Vein at Cerro Silla Sur is supported by drilling in the sulfide gold-silver mineralization and projected upwards, above the interpreted base of oxidation surface. Preliminary geological modeling was carried out to understand the oxide gold-silver exploration potential.

The Leonor Vein at Cerro Silla Sur is estimated to contain approximately 0.2 Mt to 0.3 Mt of oxide gold-silver mineralization with an average grade of 5 g/t to 7 g/t Au and 30 g/t to 40 g/t Ag. The estimated exploration potential of the Leonor Vein is based on 24 drill intercepts of over widths of 0.4 m to 6.0 m and an assumed bulk density of 2.5 g/cm^3. The mainly sulfide intercepts were constrained to a three-dimensional geological model, capped, composited to 1.5 m and interpolated using inverse distance weighting to the third power to estimate potential tonnage and grade of gold-silver mineralization above an interpreted base-of-oxidization surface.

The Campamento Vein at Cerro Campamento is estimated to contain 0.2 Mt to 0.3 Mt of oxide gold-silver mineralization with an average grade of 6 g/t to 7 g/t Au and 60 g/t to 70 g/t Ag. The exploration potential of the Cerro Campamento vein is estimated based on drill hole 38 intercepts ranging between 0.1 m and 5.0 m wide and an assumed bulk density of 2.5 Mt. The grade and tonnage potential of the Campamento Vein was estimated with a similar procedure to the potential for the Leonor vein.

The potential tonnage and grade of the oxide gold-silver mineralization in the Leonor and Campamento veins is conceptual in nature. There has not been sufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the target being delineated as a Mineral Resource. Additional drilling in the oxide zone portion of the veins will be required and the depth of weathering will need to be established with better precision to estimate a Mineral Resource for the oxide mineralization at Cerro Campamento and Cerro Silla Sur.

9.10.3 Sulfide Gold-silver Exploration

Sulfide gold-silver mineralization at the Campamento vein at Cerro Campamento and Leonor vein at Cerro Silla Sur. This is supported by surface geochemistry, exploration drilling, geophysics and underground development at Cerro Campamento.

9.10.4 Porphyry Mineralization

Porphyry copper-gold mineralization at depth below Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV and Cerro Silla Sur, is supported by geophysical survey and fluid inclusion analysis.

9.11 Comments on Section 9

Exploration diamond drill core, reverse circulation drilling, and underground exploration development, provide a suitable basis for the estimation of Mineral Resources at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV.

Interpretation of the exploration data including airborne and ground geophysics, ASTER imagery, drilling, and underground exploration development data, is sufficiently detailed to support the definition of high-sulfidation and porphyry copper targets on the Property.

10.0 Drilling

Drilling at Taguas has been carried out by Minera Aguilar, Minera Piuquenes and Gold Fields in 14 campaigns during which a quantity of 221 exploration holes totaling 51,895.95 meters were drilled since the 1985-1986 field season. Table 10-1 presents the drilling. A description of the drill programs follows.

Table 10-1: Exploration Drilling

Campaign	Date	Drill Type	Quantity	Total meters	Target Area
Minera Aguilar Holes: 72 13,190.10 m	1985-86	DD	6	1,004.95	5
	1988-89		11	981.15	1, 5, 6, 7
	1989-90		9	641.45	1
	2001-02		7	2,442.85	7
	2003-04		39	8,119.70	1, 4, 5
Minera Piuquenes Holes: 89 20,890.55 m	2006-07	DD	23	3,766.65	1, 2, 3, 4, 5, 7
	2007-08		16	7,859.75	1, 2, 5, 7
	2009-10		27	4,597.05	4, 5
	2010-11		23	4,667.10	1, 2, 5
Gold Fields Holes: 29 13,841.30 m	2011-12	DD	17	8,726.00	2, 5, 6, 7
	2012-13		12	5,115.30	4, 5, 6, 7
Minera Piuquenes Holes: 31 3,974.00 m	2015-16	RC	5	530.00	5
	2016-17	DD	3	450.00	4, 5
		RC	23	2.994.00	4, 5, 6, 7
Total			**221**	**51,895.95**	

Note: Drill types are diamond drilling (DD) and reverse circulation (RC). Target areas are Cerro Campamento (1), Cerro Silla Note and Cerro Silla Sur (2), Cerro Cuchilla (3), Cerro Taguas Norte (4), Cerro Taguas Sur (5), Cerro III (6) and Cerro IV (7).

Orvana has not conducted any drilling on the Taguas Property.

10.1 Drill Methods

Since the beginning of the exploration drilling in 1985 until the 2015 season, diamond drilling was used exclusively. Drill core diameter varied from EX (22.2 mm) in the first drill holes to HQ (63.5 mm) in later holes.

In the 2016 and 2017 season, the first RC drill program was carried out.

In total, 193 diamond drill holes totaling 48,371.95 m and 28 reverse circulation holes totaling 3,524 m have been carried out at Taguas.

10.2 Logging Procedures

In the campaigns carried out by Minera Aguilar drill core was preliminarily logged in the field, with the project geologist marking the mineralized zones of interest to be subsequently sampled and analyzed chemically in the Minera Aguilar laboratory located in Mendoza. Detailed logs were completed at the end of the season. Original paper copies of logs are preserved and have been digitized.

The Minera Piuquenes protocol included the continued sampling of the completed drill holes. Drill core was handled and collected at the drill site by the drilling company. The core was removed from the core barrel by the driller or helper after each run and placed into wood core boxes that were labeled with the beginning and ending meters. A preliminary log was produced at the drill site by the geologist supervising drilling, and then the core boxes were closed with a cover and transported to a core facility located at the camp. Upon arrival, the core boxes were arranged by increasing depths on a core table. The geologist completed a detailed log registering lithology, alteration, mineralization, structural information and any other significant information. The geologist also marked the length and recovery of each sample. Samples were photographed, and core trays sent to a cutting module existing at the Taguas camp site.

The Gold Fields drilling and logging procedures include use of a standard log form with hole number, collar coordinates in the WGS84 coordinate system, elevation, azimuth, dip, planned depth, drill type, budget number and name of the area within the project. During the Gold Fields campaigns, the core logging geologist performed a detailed core log, marked the sample intervals and the core sample split lines. The line had to be perpendicular to the lamination in the drill core.

The second series of diamond drill campaigns executed by Piuquenes, after the Gold Fields drilling, followed the protocols from the earlier Piuquenes campaigns.

During the RC drilling campaigns, samples were collected every two meters. Drill cuttings were divided into three streams through the cyclone splitter: one collected and split twice using a riffle splitter beside the drill obtaining about 10 kg of sample material, and the other two streams were stored as rejects. Each sample was collected in a double plastic bag at the drill-rig site and the bag was stapled shut and identified with permanent marker with the depth. Samples were later transported to the camp where the geologist extracted representative cuttings which are stored in plastic trays. The geologist also completed a detailed log registering lithology, mineralization, alteration and any other pertinent information.

10.3 Core Recovery

In diamond drill holes, the recovery of the cores has generally been of acceptable quality, near an average of 90%. The measurement and registration of core recovery has been made in most cases when the detailed log of each drill-hole is made. Table 10-2 presents the average drill core recovery by campaign where recovery data was recorded.

Table 10-2: Core Recovery Averages for Diamond Drill Holes

Campaign	Meters Drilled	Drill Hole #	% Recovery Average
1985-86	1,004.95	DDH 01 to DDH 06	87.3
1989-90	981.15	DDH 07 to DDH 17	91.3
1990-91	641.45	DDH 18 to DDH 26	94.2
2001-02	2,442.85	DDH 27 to DDH 33	n/d
2003-04	8,119.70	DDH 34 to DDH 72	n/d
2006-07	3,766.65	DDH 73 to DDH 92A	93.1
2007-08	7,859.75	DDH 93 to DDH 108	94.7
2009-10	4,597.05	DDH 109 to DDH 135	89.7
2010-11	4,667.10	DDH 136 to DDH 156	n/d
2011-12	8,726.00	TADD 157 to TADD 172	n/d
2012-13	5,115.30	TADD 173 to TADD 185	n/d
2015-16	530.00	TARC 186 to TARC 190	-
2016-17	450.00	TADD 191 to TADD 193	97.3
	2,994.00	TARC 186 to TARC 190	-

10.4 Drill Hole Location Surveys

Drill hole location surveys were located in the field by theodolite and compass using a local coordinate system until 1994. After 1994 drill holes were located by triangulation methods with a theodolite. After 2000, drill holes were located with hand-held GPS instruments and compass.

Two survey programs were executed to pick-up historic drill collars and are discussed, with the survey methods for the Piuquenes campaigns, in Section 9.1.

10.5 Downhole Surveys

All drill holes from the Gold Fields campaigns have at least one down hole survey measurement per hole. During April 2012, Goldfields tried to re-enter and check 13 holes, but most holes were collapsed, and the azimuth and dip of the hole could only be established for the first meters.

10.6 Geotechnical and Hydrological Drilling

To date, no drill-holes have been drilled exclusively for geotechnical or hydrological purposes. They will be scheduled for the next stages of evaluation.

10.7 Metallurgical Drilling

Three diamond drill core holes were drilled in the 2016-17 campaign to obtain samples that were used for metallurgical testing at the Plenge laboratory, Lima.

10.8 Grade Control

There are no holes drilled for grade control as the Property is not yet in production.

10.9 Sample Length/True Thickness

Drill hole intersections are generally at a high angle to mineralized structures. Examples of estimated true-widths and figures of drill hole intersections with mineralized structures are presented in Section 14.2 and Section 14.7.

The information presented in this chapter refers to down-hole length, except when indication that calculations of true width have been made.

10.10 Selected Drill holes Intersections

In Table 10-3 a representative selection of mineralized oxide gold-silver intersections is presented from diamond drill and reverse circulation drill holes at Cerro Taguas Norte, Cerro Taguas Sur, Cerro Taguas III and Cerro Taguas IV. The selection of intersections is intended to provide an indication of the ranges of grades and down-hole widths of oxide gold silver mineralization in those areas. Holes are drilled in a range of directions but are generally drilled to either the south east or north west, perpendicular to the strike of mineralized structures. Drill hole dips are generally from -45° to -60° to intersect the sub-vertical structures; however, some holes are drilled more steeply to provide deeper intersections, targeting sulfide mineralization below the oxide resource. Intersections range from 1.5 m to 55 m long at depths from surface to approximately 200 m down-hole. With a few exceptions, grades of drill hole intersections in the oxide gold-silver mineralization tend to range from 0.2 g/t Au to 4.0 g/t Au with 10 g/t Ag to over 50 g/t Ag.

Table 10-4 presents selected mineralized drill hole intersections from the sulfide mineralization at Cerro Silla Norte Cerro Silla Sur, Cerro Cuchilla and Cerro Campamento. The sulfide intersections tend to target specific veins and be shorter, but in some cases higher grade than the oxide intersections in Table 10-3.

Table 10-3: Mineralized Intersections from Cerro Taguas Norte, Sur, III and IV

Hole	Az	Dip	Depth	Relevant intersections
Cerro Taguas Norte (DH)				
DDH05	320.0	-50.0	200.10	1.75m (from 39.55m) @ 18.00 Au g/t & 24.0 Ag g/t
DDH41	139.7	-47.2	230.75	2.50m (from 22.00m) @ 1.09 Au g/t & 9.1 Ag g/t
				4.00m (from 44.80m) @ 3.87 Au g/t & 4.0 Ag g/t
				5.10m (from 159.70m) @ 1.54 Au g/t & 29.4 Ag g/t
DDH42	143.0	-47.7	106.40	21.90m (from 33.00m) @ 1.64 Au g/t & 7.8 Ag g/t
DDH68	140.0	-58.0	78.25	10.00m (from 48.70m) @ 1.60 Au g/t & 22.0 Ag g/t
TADD181	150.9	-59.8	350.00	58.45m (from 0.00m) @ 0.40 Au g/t & 9.0 Ag g/t
				6.00m (from 119.40m) @ 4.02 Au g/t & 33.9 Ag g/t
TADD193	135.0	-60.0	150.00	4.00m (from 26.00m) @ 7.88 Au g/t & 20.2 Ag g/t
				12.00m (from 72.00m) @ 1.57 Au g/t & 7.2 Ag g/t
Cerro Taguas Norte (RC)				
TARC199	135	-60	150.00	38.00m (from 0.00m) @ 0.19 Au g/t & 11.7 Ag g/t
TARC203	315	-60	150.00	14.00m (from 12.00m) @ 0.21 Au g/t & 15.5 Ag g/t
				12.00m (from 112.00m) @ 0.55 Au g/t & 16.00 Ag g/t
TARC206	135	-60	150.00	16.00m (from 32.00m) @ 0.56 Au g/t & 17.0 Ag g/t
				8.00m (from 130.00m) @ 0.94 Au g/t & 98.7 Ag g/t
Cerro Taguas Sur (DH)				
DDH01	342	-60	164.25	5.55m (from 11.60m) @ 2.05 Au g/t & 199.9 Ag g/t
DDH02	320	-45	213.50	2.00m (from 57.35m) @ 11.87 Au g/t & 80.2 Ag g/t
				2.10m (from 106.55m) @ 1.28 Au g/t & 54.9 Ag g/t
				16.80m (from 149.90m) @ 0.85 Au g/t & 12.6 Ag g/t
DDH04	315	-45	136.50	8.30m (from 3.90m) @ 0.59 Au g/t & 16.0 Ag g/t
				2.35m (from 126.25m) @ 1.32 Au g/t & 31.8 Ag g/t
DDH35	336.5	-47.4	213.15	18.30m (from 129.10m) @ 1.37 Au g/t & 13.8 Ag g/t
TADD166	126.4	-62.1	699.00	48.10m (from 57.00m) @ 0.97 Au g/t & 18.7 Ag g/t
				2.00m (from 171.10m) @ 42.10 Au g/t & 2.8 Ag g/t
TADD179	344.5	-61.6	528.00	32.00m (from 7.00m) @ 1.27 Au g/t & 9.9 Ag g/t
TADD192	135	-60	150.00	60.00m (from 36.00m) @ 4.76 Au g/t & 12.6 Ag g/t
Cerro Taguas Sur (RC)				
TARC188	0	-90	110.00	96.00m (from 12.00m) @ 1.38 Au g/t & 49.5 Ag g/t
TARC190	0	-90	110.00	56.00m (from 4.00m) @ 0.57 Au g/t & 19.2 Ag g/t
TARC196	315	-60	150.00	22.00m (from 28.00m) @ 0.51 Au g/t & 17.7 Ag g/t
TARC201	315	-60	90.00	16.00m (from 54.00m) @ 0.59 Au g/t & 38.6 Ag g/t
TARC208	315	-60	150.00	24.00m (from 6.00m) @ 0.48 Au g/t & 25.2 Ag g/t
				16.00m (from 132.00m) @ 0.52 Au g/t & 16.9 Ag g/t

Hole	Az	Dip	Depth	Relevant intersections
TARC213	316	-60	150.00	74.00m (from, 0.00m) @ 0.45 Au g/t & 9.6 Ag g/t
				18.00m (from 130.00m) @ 0.82 Au g/t & 8.2 Ag g/t
TARC216	135	-60	150.00	18.00m (from 84.00m) @ 0.51 Au g/t & 13.1 Ag g/t
Cerro III (DH)				
TADD158	78.9	-70.0	564.00	55.50m (from 297.50m) @ 1.73 Au g/t & 23.4 Ag g/t
TADD163	78.6	-60.8	319.30	3.00m (from 204.00m) @ 2.23 Au g/t & 58.3 Ag g/t
				2.00m (from 214.00m) @ 1.11 Au g/t & 12.8 Ag g/t
TADD169	80.0	-70.0	509.00	3.25m (from 20.75m) @ 0.46 Au g/t & 53.6 Ag g/t
				6.00m (from 115.00m) @ 0.52 Au g/t & 18.9 Ag g/t
Cerro IV (DH)				
DDH27	165.0	-40.0	392.00	54.00m (from 100.70m) @ 1.35 Au g/t & 25.7 Ag g/t
DDH29	165.0	-70.0	251.30	6.00m (from 244.50m) @ 1.71 Au g/t & 31.8 Ag g/t
DDH30	165.0	-85.0	350.00	4.00m (from 126.70m) @ 1.16 Au g/t & 19.0 Ag g/t
Cerro IV (RC)				
TARC214	316.0	-60.0	150.00	16.00m (from 22.00m) @ 0.80 Au g/t & 17.1 Ag g/t
TARC215	315.0	-60.0	150.00	2.00m (from 10.00m) @ 4.20 Au g/t & 21.1 Ag g/t
				12.00m (from 138.00m) @ 1.11 Au g/t & 16.4 Ag g/t

Table 10-4: Mineralized Intersections from Cerro Silla Norte, Silla Sur, Cuchilla and Campamento

Hole	Az	Dip	Depth	Relevant intersections
Cerro Silla Norte				
DDH125	140.0	-45.0	78.10	13.95m (from 37.90m) @ 0.56 Au g/t & 80.0 Ag g/t
DDH126	140.0	-75.0	104.25	7.15m (from 77.90m) @ 0.32 Au g/t & 41.2 Ag g/t
TADD159	96.4	-70.7	549.90	12.90m (from 36.00m) @ 0.57 Au g/t & 0.6 Ag g/t
				11.95m (from 223.75m) @ 0.44 Au g/t & 6.1 Ag g/t
Cerro Silla Sur				
DDH88	345.0	-45.0	101.45	12.00m (from 89.45m) @ 1.49 Au g/t & 23.1 Ag g/t
DDH106	150.0	-60.0	178.75	9.15m (from 64.90m) @ 28.43 Au g/t & 19.1 Ag g/t
DDH109	114.0	-45.0	126.50	9.85m (from 63.65m) @ 2.03 Au g/t & 54.7 Ag g/t
DDH111	114.0	-45.0	130.50	3.70m (from 7.50m) @ 6.37 Au g/t & 104.6 Ag g/t
				20.30m (from 52.10m) @ 3.16 Au g/t & 35.8 Ag g/t
DDH113	114.0	-45.0	93.50	42.50m (from 19.50) @ 3.56 Au g/t & 32.6 Ag g/t
DDH114	114.0	-78.0	167.20	71.05m (from 34.20m) @ 3.63 Au g/t & 61.3 Ag g/t
DDH129	114.0	-45.0	170.30	13.09m (from 129.56m @ 9.94 Au g/t & 100.2 Ag g/t
DDH132	114.0	-45.0	182.70	2.35m (from 126.80m) @ 34.51 Au g/t & 25.9 Ag g/t

Hole	Az	Dip	Depth	Relevant intersections
Cerro Cuchilla				
DDH73	186.0	-45.0	103.15	2.27m (from 53.68m) @ 1.26 au g/t & 75.4 Ag g/t
DDH81	186.0	-45.0	73.00	3.35m (from 62.50m) @ 1.39 Au g/t & 351.3 Ag g/t
Cerro Campamento				
DDH17	134.0	-60.0	53.90	4.45m (from 38.50m) @ 51.24 Au g/t & 18.6 Ag g/t
DDH18	322.0	-45.0	42.95	4.90m (from 30.50m) @ 54.14 Au g/t @ 81.7 Ag g/t
DDH19	322.0	-62.0	88.60	0.65m (from 74.70m) @ 15.20 Au g/t & 7.0 Ag g/t
DDH24	321.0	-45.0	47.40	7.80m (from 35.30m) @ 27.07 Au g/t & 46.0 Ag g/t
DDH49	314.2	-52.0	243.45	11.50m (from 197.00m) @ 10.45 Au g/t & 94.9 Ag g/t
DDH58	142.0	-82.0	300.60	2.10m (from 50.20m) @ 9.65 Au g/t & 237.1 Ag g/t
DDH66	142.0	-80.0	290.60	6.70m (from 60.30m) @ 9.28 Au g/t & 4.8 Ag g/t
DDH72	142.0	-80.0	323.00	1.50m (from 160.90m) @ 10.96 Au g/t & 4.7 Ag g/t
DDH87	0.0	-90.0	531.30	1.20m (from 501.70m) @ 43.23 Au g/t & 42.6 Ag g/t
				1.09m (from 513.12m) @ 62.98 Au g/t & 21.4 Ag g/t
DDH94	0.0	-90.0	662.45	5.20m (from 602.00m) @ 11.91 Au g/t & 58.3 Ag g/t
DDH97	90.0	-70.0	699.80	6.00m (from 517.30m) @ 13.86 Au g/t & 9.4 Ag g/t
DDH144	143.0	-48.4	150.00	1.80m (from 72.20m) @ 7.28 Au g/t & 28.6 Ag g/t

10.11 Comments on Section 10

Drilling methods and drill hole design are suitable for construction of a Mineral Resource model for the Taguas PEA. A study supporting the representativity of RC drilling, by comparing RC holes grades with nearby diamond drill holes and/or twinned diamond drill holes, is recommended to support the use of the RC drilling and sampling for estimation of Indicated Mineral Resources as the project advances. The RC drilling samples should be shown to be sufficiently free of issues such as down-hole smearing of grades due to issues in drilling and sample recovery.

11.0 Sample Preparation, Analyses, and Security

11.1 Minera Aguilar

11.1.1 Drill Core Sampling and Analysis

Although there is no documentation regarding the methods Minera Aguilar employed for sample handling, preparation and security, it is known that the company had its own preparation and assay laboratory near its office in Mendoza, Argentina. The preparation laboratory worked in a closed environment with a dust extraction system where the sealed core trays were received from the field. Geologists marked the samples on the boxes and core was split in half using a hydraulic splitter. Half core samples were identified with a unique sequential sample number taken from a sample tag book. The sample tag books contained one tear-off tag labeled with the sample number. The tag was stapled at the top of the plastic sample bag and sealed. The sample description was registered in the remaining sample card book. The other half core remained in the core tray. For sample preparation the laboratory used primary crushing to nominally minus 2 mm size, then a secondary crushing to nominally minus 1 mm size. Company personal homogenized and split the coarse-crushed sample using a riffle splitter. A 200 g sub-sample was taken and pulverized in a disc mill to obtain a minus 80 µm pulp sample. The pulp was sent to Minera Aguilar's own analytical laboratory and pulp rejects were stored in the storage facilities.

All of the original hand-written laboratory certificates from this campaign are available in Mendoza. Sample depths and core recovery values are also included on the certificates. Samples were analyzed for gold with a 0.03 g/t lower detection limit, silver with a 0.5 g/t lower detection limit and copper with a 10 ppm lower detection limit. Some drill holes were also analyzed for lead and zinc. Samples were digested in hydrochloric acid and read with atomic adsorption (AA) for all elements. The Minera Aguilar laboratory performed intra-laboratory checks with the Mina Aguilar laboratory in Argentina, and the El Indio Mine laboratory in Chile in order to control its performance; however, the check certificates are not available. During the period from February 2001 to April 2001 Minera Aguilar sent samples for analysis to Bondar Clegg Laboratory in La Serena, Chile (now ALS Chemex), which is ISO 9001:2000 certified. ALS analyzed Au by fire assay with an AA finish from a 30 g aliquot, plus six elements (Ag, Cu, Pb, Zn, Sb and As) by aqua regia digestion and an AA finish. Only mineralized core intersections were analyzed at ALS, and the remaining core samples were retained at Minera Aguilar's storage facilities in Mendoza.

During the 2007–2008 summer season campaign, the sample transportation from the camp to the laboratory was completed by Alex Stewart International (Alex Stewart) personnel following a chain of custody protocol agreed with Piuquenes. The Alex Stewart laboratory is located in Mendoza, Argentina. This laboratory is certified under ISO 9001:2008, accredited to and meets ISO 17025:2005 for assaying and chemical analysis and works under the ISO 14001 certification Fifty to sixty samples were transported by Alex Stewart staff from the camp to the laboratory every two or three days in order to have continuity in the sample preparation/assay processes and achieving assay return times of 10 to 15 days.

During the 2009–2011 drilling campaigns, the samples were transported in sealed core trays from the camp to the Piuquenes core cutting facilities in Mendoza, Argentina. The core samples were cut at the company core cutting facilities following the same sampling protocol described before and samples were transported to the laboratory by Piuquenes personnel.

During campaigns carried out from 2006 to 2011, core samples were prepared and analyzed by Alex Stewart. Samples were dried, crushed to 80% minus 2 mm and a 1 kg sub-sample was riffle-split and pulverized to 85% minus 106 µm. Samples were assayed by fire assay on 50 g aliquots with atomic absorption finish with over-limit samples re-assayed using gravimetric finish. Samples were also analyzed for 39 elements using ICP optical emission spectroscopy (OES) from an aqua regia dilution. Coarse and pulp rejects were returned and are stored in the Piuquenes storage facilities.

Gold Fields carried out a detailed sample validation that included Minera Aguilar drill core samples (Section 12.1). In 2017, Piuquenes sent intervals not included in the Gold Fields re-sampling campaign to Alex Stewart for re-assay.

11.1.2 Underground Exploration Sampling and Analysis

In 1985 Minera Aguilar completed a detailed sampling of exploration drifts and vein cross cuts. The drift sampling included three samples every meter following the mineralized structures on the drift back and perpendicular to the drift direction. The samples were confined to the mineralization and/or barren rock and in some cases the sample was collected over a length of a few centimeters. Some sampling profiles did not cover the totality of the roof width. The vein cross-cut sampling was done on the walls in a continuous line and every two meters. These samples were prepared and analyzed in Minera Aguilar's laboratories in Mendoza with the same procedures as the drill core samples described in Section 11.1.1. The assay grades as well as the sample position were drawn on a detailed map which is still in good condition and can be georeferenced if required. Although original laboratory certificates are available, the map does not include the sample numbers so no comparison has been made between the assay certificates and map data.

11.2 Buenaventura Re-logging and Re-Sampling

In 2010 Buenaventura re-logged 21,729 m of diamond core from the Taguas Project and sent 654 core samples from the main mineralized structures for re-analysis. Quarter core samples from Piuquenes, drilled in the campaigns from 2007–2010 were sent to ALS Chemex laboratory in Mendoza, Argentina. Even though there is no description of the sampling process in Buenaventura's report, it is understood that the samples were taken by sawing intervals in quarters in the Piuquenes core cutting facilities by its own staff and placed samples in plastic bags with unique and consecutive numbers to be transported to the ALS Chemex laboratory in Mendoza, Argentina. ALS laboratories meet all requirements of ISO 17025:2005 and ISO 9001:2015. The sampling was done following re-logging registered in logs and digital assay files. The preparation method is not specified in Buenaventura's report and ALS Chemex analytical reports are not available. The samples were analyzed fire assay with ICP-atomic emission spectroscopy (AES) finish from a 30 g aliquot having a 0.001 g/t Au lower detection limit. Samples were also analyzed for 48 elements by multi-element ICP AES and ICP mass spectrometry (MS) with four-acid digestion.

11.3 Gold Fields

Gold Fields sampled 5,630 drill core intervals from 17 drill holes during the 2011-2012 summer field season. Gold Fields report and protocols are available at Minera Piuquenes' office.

The core sampling was performed following a protocol designed for the project. Company personal were not allowed to carry any metallic rings when sampling the core. The sampling intervals did not cross defined lithological/alteration limits and the samples varied between 0.5 m to 2.0 m in length. The geologist performed detailed core logging, marked the sample intervals and the core sample cut lines. The cut line had to be perpendicular to lamination on the surface of the core. A sampling form was completed with the sample number and sample length intervals. Half core samples were identified with a unique sequential sample number taken from a sample tag book and tickets remaining in the book were completed with hole number depth from, depth to, sample length. The samples were placed in plastic bags with four identical tags stapled at the top of the bag and sealed. The same number was written on the side of the bag with a permanent marker. QA/QC samples were inserted and batches of 73 samples were prepared for shipment. The geologist was responsible for supervising the sample loading and completed two identical shipment forms. One form was given to the truck driver and the other form was approved by the chief of the project and stored in a safe area. Upon arrival at the laboratory, the one responsible for the sample reception signed the shipment form (in agreement) and it was sent back to the project. The geologist sent the sample numbers and length intervals to the database administrator who filled in the laboratory preparation and assay forms. The core samples were prepared in the ALS Chemex Laboratory in Mendoza, Argentina. Samples were crushed to 70% minus 2 mm, a 250 g sub sample was riffle-split and pulverized to 85% minus 75µm. Samples were assayed at ALS Chemex in La Serena, Chile, by fire assay on a 50 g aliquot with atomic absorption finish. Samples were also analyzed for 48 elements at ALS Chemex in Lima, Peru using ICP AES and ICP MS from a four-acid digestion.

During the 2012-2013 summer field season, Gold Fields executed a diamond drill campaign. A total of 5,119.3 m was drilled and 3,361 core samples were sent for analysis. The company used the same laboratories and preparation/analytical protocols as during the 2011-2012 summer field season described previously.

11.4 Piuquenes

11.4.1 Diamond Drill Core Sampling and Analysis

During campaigns carried out from 2006 to 2011, and 2016 to 2017, and resampling campaigns on legacy Minera Aguilar, core samples were prepared and analyzed by Alex Stewart International Argentina SA Laboratory in Mendoza. This laboratory is ISO 9001; ISO 17025, and ISO 14001 certified. Samples were prepared following the P-5 laboratory preparation code: the samples were dried, crushed to passing 10 mesh (>80%), riffle split of 1kg sample and pulverized to 106 microns (>95%). The assays included 50 g Au by fire assay (FA), AA finish and 39 element package with aqua regia dilution and ICP OES finish. Over limits for Au and Ag were run in 50 g sample by FA and gravimetric method finish. Coarse and pulp rejects were returned and are stored in the Piuquenes storage facilities.

During 2015-2016, samples were sent to the ALS Chemex in Mendoza. Preparation included crushing to <2mm (> 70% passing sample), riffle split to get 1kg sample and pulverization to <75 μm (>85% passing sample). Gold was assayed by Au30 g FA, with an AA finish and 48 elements by four acid digestion and ICP-MS finish by ALS Chemex in Lima, Peru. Coarse and pulp rejects are stored in the Piuquenes storage facilities.

In 2017 Piuquenes sent 1,346 core samples that were not assayed by Minera Aguilar for analysis. The core was cut by Piuquenes staff and sent for preparation and analysis to Alex Stewart.

11.4.2 Reverse Circulation Sampling and Analysis

RC samples were collected in double plastic bags every two meters from a cyclone splitter located on a Tamrock D40K drill rig. Drill cuttings were divided into three streams through the cyclone splitter: one collected and split twice using a riffle splitter at the site obtaining about 10kg material for sampling, and the other two streams were stored as rejects. Each sample was stapled and identified with permanent marker with their depth at the drill-rig site. Samples were later transported to the camp where the geologist extracted representative cuttings which are stored in plastic trays. The geologist also completed a detailed log registering lithology, mineralization, alteration and any other pertinent information. Unique sequential tag numbers were stapled at the top of each plastic sample bags and sealed. The cutting samples were later transported to the Minera Piuquenes facilities in Mendoza in bigger bags which contained three samples each and were also sealed. Company personnel transported the samples to the laboratory.

11.4.3 Underground Exploration Development Sampling and Analysis

In order to validate the historic sampling carried out in underground exploration development carried out in the Minera Aguilar field campaigns, in April 2018 Piuquenes completed a resampling program of the drift and vein cross cuts at Cerro Taguas Sur. Although the adits were decades old, they were in good condition with no rockfall zones that affected the sampling of the drifts and cross-cuts.

The re-sampling program began with re-establishment of the portal and main drive which was done manually and with the aid of a backhoe in the main section.

The re-sampling was performed in the original sampling areas in the same cross cuts and drifts. Mineralized structures and barren host rock were sampled across the back, perpendicular to the drift length and to the total width of the drift at 5 m intervals down the drifts. The cross cuts were sampled every two meters from a channel at a height of

1m where samples of 8 kg to 15 kg were collected. The sample collection was done using two large hammers, one small hammer, two grinders and a strong plastic tarp which was placed on the floor to collect the sample material. Brushes were used to clean the tarp between samples. The samples included fine particles and chips to 12 cm in size.

Samples were prepared and analyzed by Alex Stewart International Argentina SA Laboratory in Mendoza. Samples were dried, crushed to 80% minus 2 mm, a 1 kg sub-sample was riffle split and pulverized to 95% minus 106 µm. Sample pulps were assayed by fire assay of 50 g aliquots and finished by atomic adsorption. Samples with grades over the upper detection limits for Au and Ag were re-assayed with gravimetric finish. Samples were also analyzed for 39 elements by ICP OES from an aqua regia digestion. Coarse and pulp rejects were returned and are stored in the Minera Piuquenes storage facilities.

11.5 Assay Quality Assurance and Quality Control

11.5.1 Minera Aguilar

There are no records of QA/QC programs from the Aguilar sampling campaigns prior to 2007; however, re-sampling programs conducted by Gold Fields and Piuquenes did include quality assurance protocols that are described in Section 11.5.3 and 11.5.4.

For the 2007, 2008 and 2010 drilling campaigns, only inter-laboratory pulp checks for low, medium, and high-grade samples, were performed to control the laboratory assay quality.

11.5.2 Buenaventura

There are no records of QA/QC protocols from the Buenaventura re-sampling program.

11.5.3 Gold Fields

The re-sampling and drilling and sampling work carried out during the Goldfields JV campaign included rigorous QA/QC procedures. Gold Fields included 14 different certified reference materials (CRMs) purchased from CDN Resource Laboratories (4), Geostats Pty. Ltd. (3) and Rock Labs Ltd (7). White crystalline quartz barren of any mineralization from a quarry located in San Juan Province, Argentina, was used as blank material. A total of 20% of control samples were included to monitor the sampling and laboratory performance. The control samples included 4.4% blank material, 3.5% CRM, 4% field duplicate samples, 4.5% inter laboratory pulp checks and 4.2% coarse checks. When calculating the MPD for gold values for the pair of coarse reject duplicates, 90%

of the samples are within +/-20%. For the inter-laboratory pulp sample checks 54% of the mean percentage difference (MPD) values are within +/- 20%. Most of the values with higher MPD are close to the detection limit. MPD values obtained for pulp samples reflect the lower detection limit difference as only 31% of the pair samples are within +/-10%, 52% of the samples have values within ten times the lower detection limit.

The control materials included for QA/QC in the Gold Fields programs show generally good performance. From a total of 196 CRM samples, 7% assayed within +/-2 standard deviations (SD) and +/-3SD and 4% below/over 3SD. No bias or drift is detected. The CRM data are not complete in the available digital information and for this reason it is not viable to do a more detailed study. Graphics included in Gold Field's report show four samples totally out of range and may represent a sample mix-up. Blank material samples had a very good performance with all the values below the accepted limits.

11.5.4 Piuquenes

QA/QC for the 2015–2016 exploration campaign by Piuquenes was executed on batches of approximately 50 samples. Each batch contained three blank samples, three coarse duplicates and three commercially-prepared CRMs. A total of 265 RC samples and 49 control samples were submitted to the ALS Chemex Laboratory in Mendoza, Argentina. The QA/QC samples included 16 coarse blanks, 19 coarse duplicates and 14 CRMs.

For sampling during the 2016–2017 exploration campaign the QA/QC protocol included insertion of field duplicates for RC samples and a quarter core field duplicates for core drill samples, coarse duplicates split after laboratory crushing, pulp duplicates split after laboratory pulverization, coarse analytical blank samples and CRMs inserted in batches of roughly 90 samples. A total of 1,813 samples with 363 control samples were submitted to the Alex Stewart in Mendoza, Argentina.

In 2017–2018, 306 (22%) control samples were included in the 1,345 samples sent for re-assay from Minera Aguilar core drilling campaigns. Control materials consisted of blank samples, CRMs, coarse duplicates, and pulp duplicates. These samples were also sent for analysis to Alex Stewart.

11.6 Sample Security

There are no formal records of formal sample security protocols prior to 2007.

Since 2007 a chain of custody protocol was established for the Aguilar exploration campaigns. During 2007-2008 a protocol for the sample shipping custody was agreed between the company and Alex Stewart Mendoza Laboratory. Alex Stewart personnel took the samples from the field to the laboratory in Mendoza, Argentina. A Chain of Custody form was filled in with the shipping sample list, total quantity of samples, name of the person responsible at the camp and date. A laboratory form was also attached with the preparation method, assays and pulp sample requested. Upon the sample arrival, laboratory personnel checked the Chain of Custody form and signed it registering any sample inconsistencies.

Campaigns completed after 2007 used the same Chain of Custody Form but samples were transported from the camp to the Piuquenes facilities in Mendoza by the company staff. Piuquenes personnel checked and approved the shipment at their arrival. Later on, the control samples were included and transported by a company person to the laboratories in Mendoza with the preparation and assay request form.

Samples were labeled using unique, sequential sample numbers taken from a sample tag book. The sample tag books contained two tear-off tags labeled with the sample number. One of the tags was stapled at the top of the plastic sample bag and sealed. For core samples the sample interval was recorded in the sample tag book and on the core logging sheets by the logging geologist. The extra tag was stapled in the core box on the side of the correspondent sample. For RC samples each 2m interval was recorded in the sample tag book. The extra tag was stapled at the top of the reject sample bag.

11.7 Density Determinations

Specific gravity measurements were performed on 33 drill core samples at Alex Stewart Laboratory in Mendoza during the Piuquenes campaigns. All samples were coated with paraffin prior to using the water immersion method to measure specific gravity. Results of the density determinations are presented in Section 14.5.

11.8 Databases

Project exploration data has been compiled in spreadsheets that are organized under a main directory and subfolders on the Piuquenes computer network in Argentina. All digital laboratory certificates are available as well as the old hardcopy information.

11.9 Comments on Section 11

Sampling, sample preparation, analytical methods, data quality assurance and sample security protocols used on early exploration programs at Taguas are not up to current industry standards. However, beginning with work done by Gold Fields, and in subsequent work carried out during the Piuquenes campaigns, including exhaustive re-sampling of historic drill core and exploration development, modern practices have been employed, addressing gaps in legacy procedures.

These industry standard practices have included:

- Use of standard operating procedures for drilling, sampling, and logging
- Use of internationally accredited, external assay laboratories using industry-standard sample preparation, assay and density determination procedures
- Formal chain-of-custody of samples from the drill platform to the assay laboratory
- Assay data quality control protocols including the use of blanks, certified reference materials and duplicate samples to control the quality of gold and silver assaying

Even though there are some missing reports and information, the data obtained by Gold Fields and the good QA/QC monitoring that the Gold Fields performed, lead the author to think that this Gold Field's assays are good quality and are suitable for use in Mineral Resource estimation.

Work carried out by Piuquenes including re-sampling programs in 2016-2017 and 2018 also meet international standards and can be considered of acceptable quality and integrity to support Mineral Resource estimation.

12.0 Data Verification

12.1 Data Validation by Gold Fields

In 2012 Gold Fields performed a validation on the historical drilling data of the Taguas project. The description of this validation is registered in Gold Fields Company's reports. The validation included down hole survey, collar positions, excel digital data validation against hard copy assay certificates, and pulp and reject reanalysis. Collar validation included 11 drill holes in the Cerro Campamento area and confirmed the historical data. Gold Fields also checked all the drill-hole positions using Geodesic GPS in RTK mode. Six holes were not measured as they were not found in the field.

In 2012 Gold Fields performed a validation on the historical drilling data. The sample selection for reanalysis included 560 pulp samples and 527 coarse rejects with low, medium and high-grade gold mineralization. Out of the selection, 503 pulps and 459 rejects were found at the Minera Piuquenes' facilities. The missing samples were due to Minera Piuquenes due diligences and checks performed earlier. Samples were sent to ALS Chemex in Mendoza in batches of 75 samples. Preparation and assays of coarse reject samples is unknown Piuquenes does not have original laboratory certificates. Sample rejects were returned to Piuquenes.

Assays included gold by fire assay on a 50 g aliquot, with atomic absorption finish with gravimetric finish for gold over 10 g/t. Gold Fields' QA/QC measures consisted of including two sets of three certified standards and two coarse and fine blank pairs with each 70-sample batch. Two coarse sample duplicates were per batch were sent to a second laboratory for preparation and analysis. The original laboratory certificates for pulp samples are available at the Piuquenes office. The MPD calculated for gold assays for the pairs of pulp duplicates shows 84% of pairs within +/-20% MPD, the values outside this percentage are mostly closer to the gold lower detection limit. Taking out samples with three times the lower detection limit from this calculation, 82% of the samples are within MPDs of +/-10%.

When comparing Minera Aguilar values versus the new gold values obtained by Gold Fields, the data were considered to have good repeatability for pulp duplicate samples.

12.2 Data Verification by the QPs

12.2.1 Drill Hole Location

QP authors Mr. R. Simpson and Dr. J. Kowalik visited the site most recently from February 14th to February 16th, 2018. Although all core had been removed from the site, they visited drill sites and areas of historic exploration activity. Drill hole collars were clearly marked (Figure 12-1) and set in concrete with hole details imprinted on metal tags. Twenty drill hole collar locations were checked by hand-held GPS readings and found to be accurate.

Figure 12-1: Drill Hole Collar Marker

12.2.2 Drill Core Logging

Dr. Kowalik's first involvement with the Taguas Project was a two-day examination of Taguas drill core at the Mendoza office between September 12th and September 13th, 2015. The purpose of examining the core together with reviewing newly acquired ASTER alteration images was to make specific recommendations for the prospects on the Taguas Property.

Between September 6th and September 10th, 2016 Dr. Kowalik visited the office of Piuquenes in Mendoza, to examine core from all the historic diamond drilling campaigns at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV. The purpose of examining the core was to make sound recommendations for additional RC drilling that would give an indication of the resource potential for oxide gold mineralization. The drill hole intervals that were examined primarily for mineralization and alteration are listed in Table 12-1. Based on this examination of drill core and the proximity to encouraging gold mineralization in existing core and RC holes, recommendations for RC drilling were made for each of the four areas at Cerros Taguas.

Table 12-1: Drill hole intervals examined in 2016

Area	Section Line	Drill Hole	Interval (m)	Meters
Cerro IV	17	DDH-105	0-360	360
	16	DDH-30	0-250	250
	1	TADD-185	0-250	250
	2	DDH-13	0-64	64
Cerro III	3	TADD-169	0-220	220
	4	TADD-158	0-400	400
	6	TADD-184	0-200	200
Cerro Sur	9	DDH-45	0-204	204
	9	TADD-167	0-100	100
	10	DDH-35	0-200	200
	11	DDH-103	0-354	354
	12	DDH-4	0-136	136
Cerro Norte	15	TADD-181	0-200	200
Total Meters				2,938

During the third week of February 2017 Dr. Kowalik visited Taguas to evaluate the results of just-completed HQ diameter core drill holes and to give guidance on RC drilling which was in progress. The HQ core drilling, totaling 450 meters in three widely spaced drill holes was primarily for metallurgical studies. The RC drilling was designed primarily to increase the level of confidence in the potential for an oxide gold resource at Taguas.

The QPs also visited the offices and core storage facilities in Mendoza from Aug 23-26, 2017. Drill core was examined, and it was verified that:

- Drill logs compared reasonably well with core intervals, although previous operators commonly mis-interpret lithic tuffs as hydrothermal breccias
- Oxidation extended to deep levels in most core holes but was not recorded in the logs
- Core recoveries were generally high through the mineralized zones
- Previously unsampled core intervals were clearly marked and in good condition

Based on these results it was recommended at that time that unsampled intervals of core from Cerro Taguas be sampled and analyzed and that all the holes be logged for depth of oxidation. This was subsequently carried out and completed in early 2018.

12.2.3 Validation of Sampling and Core Storage Facilities

The QPs also visited the offices and core storage facilities in Mendoza from Aug 23-26, 2017.

12.2.4 Database Validation

Mr. Simpson independently audited the sample database for location accuracy, down hole survey errors, interval errors and missing sample intervals. The QP also reviewed the sample QA/QC results.

12.2.5 Data not Validated by QPs

The QP did not collect independent samples as they did not consider it necessary. The Property has been explored by several companies over a time span of nearly 30 years and current drill results are consistent with historic assay results.

12.3 Comments on Section 12

Based on the site visit observations, the QPs conclude that drilling, logging, and sampling of drill core during the exploration programs carried out by Piuquenes and previous operators have been conducted in a manner appropriate to the style of mineralization present on the Property.

The process of data verification indicates that the data collected by Piuquenes and previous operators adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits, and adequately support the geological interpretations for the purpose of Mineral Resource estimation. The QPs are of the opinion that the analytical and database quality are adequate for the purposes of the estimation of Mineral Resources and Inferred Resource Classification.

13.0 Mineral Processing and Metallurgical Testing

Two metallurgical testwork programs were carried out in 2018 at the Plenge Laboratory. A preliminary program consisting of bottle roll tests on a composite generated from samples of drill core crushed to nominally 25 mm. A second larger-scale program consisting of leaching of a composite generated from samples taken from exploration development at Cerro Taguas Norte and Cerro Taguas Sur, crushed to nominally minus 12.5 mm and minus 6.25 mm was leached in 5 m tall columns.

13.1 Metallurgical Sampling

The metallurgical sampling program for testwork executed at the Plenge Laboratory in 2018 was designed by Piuquenes.

The samples for the preliminary bottle roll program were taken from diamond drill core and the samples for the larger-scale follow-up program were taken from an existing adit at Cerro Taguas Sur.

The sampling methodology for the metallurgical samples used in the larger scale follow-up program is the same as for the re-sampling program described in Section 11.4.3.

Samples selected for the metallurgical composite were grouped into two lots considering their gold grades. Composites were sub-divided from the lots into charges for column leaching and bottle roll tests. Column charges were 55 kg and tests were done on heads with two different particle sizes. Remaining samples were collected in three groups and bottle-roll tests were conducted on heads with three different particle sizes.

The compositions of the composites are presented in Table 13-1, Table 13-2 and Table 13-3.

Table 13-1: Composite for ¼" Column Tests

Lot	Sample No.	Weight (kg)	Au Grade (g/t)	Total Weight (kg)	Au Grade (g/t)
Lot 1	66211	4.50	0.13	55.85	0.69
Lot 1	66217	3.95	0.51		
Lot 1	66226	4.20	0.59		
Lot 1	66213	4.60	0.30		
Lot 1	66225	5.15	0.30		
Lot 1	66215	3.50	0.31		
Lot 1	66223	3.50	0.87		
Lot 1	66209	5.35	1.57		
Lot 2	66227	2.60	0.43		
Lot 2	66236	3.05	0.47		
Lot 2	66315	3.40	0.19		
Lot 2	66231	3.20	0.93		
Lot 2	66241	2.75	0.97		
Lot 2	66311	3.75	0.54		
Lot 2	66309	2.35	3.06		

Table 13-2: Composite for Column 2 (12.5 mm) Test

Lot	Sample No.	Weight (kg)	Au Grade (g/t)	Total Weight (kg)	Au Grade (g/t)
Lot 1	66214	4.05	0.18	54.30	0.68
Lot 1	66222	5.10	0.28		
Lot 1	66208	5.20	0.43		
Lot 1	66206	3.20	0.53		
Lot 1	66216	2.40	0.22		
Lot 1	66201	1.45	0.35		
Lot 1	66202	3.05	1.04		
Lot 1	66204	3.20	1.16		
Lot 2	66229	2.50	0.45		
Lot 2	66312	2.90	0.30		
Lot 2	66235	3.65	0.40		
Lot 2	66238	3.70	0.70		
Lot 2	66230	3.60	0.86		
Lot 2	66242	3.90	1.02		
Lot 2	66233	3.20	1.30		
Lot 2	66239	3.20	1.77		

Table 13-3: Composite for Bottle Roll Tests

Lot	Nº Sample	Weight (kg)	Au Grade (g/t)	Composite Weight (kg)	Au Grade (g/t)
Lot 1	66205	4.10	0.80	7.70	0.72
Lot 2	66234	3.60	0.63		

13.2 Metallurgical Testwork

Results from the preliminary bottle roll tests on minus 25 mm material yielded poorer than expected recoveries so it was decided to execute subsequent testing at minus 12.5 mm and 6.25 mm crush sizes.

An objective of the follow-up testing program was to assess the potential to improve recoveries, particularly Ag, with finer crushed feed. Characterization and test work results from the follow-up column leaching program are presented below.

13.2.1 Sample Characterization

Samples were received at Plenge facilities in Lima, Peru, in June 2018. Head assays for the composites vary between 0.60 g/t Au and 0.64 g/t Au; these values were confirmed by Bureau Veritas Inspectorate, an independent laboratory in Lima. Head assays and ICP assays results are shown in Table 13-4 and Table 13-5.

Table 13-4: Taguas Head Assay

Element	Unit	Head Assay
Ag	g/t	39.9
Au 1	g/t	0.596
Au 2	g/t	0.637
Au 1 (Inspectorate)	g/t	0.623
Au 2 (Inspectorate)	g/t	0.596
Cu	%	0.03
Fe	%	1.49
S Total	%	5.16

Table 13-5: ICP Multi-Element Head Assay

Element	Unit	Concentration
Al	%	4.04
Ca	%	0.07
Cu	%	0.02
Fe	%	1.46
K	%	1.25
Mg	%	0.02
Mn	%	<0.01
Na	%	0.20
Pb	%	0.02
Ti	%	<0.01
Zn	%	<0.01
As	ppm	636
Ba	ppm	1180
Be	ppm	<1
Bi	ppm	13
Cd	ppm	2
Co	ppm	1
Cr	ppm	55
Mo	ppm	11
Ni	ppm	7
P	ppm	222
Sb	ppm	154
Sc	ppm	<1
Sn	ppm	2
Sr	ppm	399
V	ppm	27
W	ppm	<1
Y	ppm	<1
Zr	ppm	3

13.2.2 Metallurgical Testwork Results

Plenge conducted the larger scale column leach tests in five-meter columns and ran bottle roll tests in parallel in conventional bottle roll rigs at different particle sizes. The columns used for Taguas Project are shown in Figure 13-1.

Figure 13-1: Test Columns at Plenge Laboratory

The follow-up program for the was completed in July 2018. Results indicated metal recovery improvements when compared to the previous testing program. Metallurgical results are shown in Table 13-6 for two particle sizes using a sodium cyanide (NaCN) concentration of 500 ppm and a leaching time of 23 days.

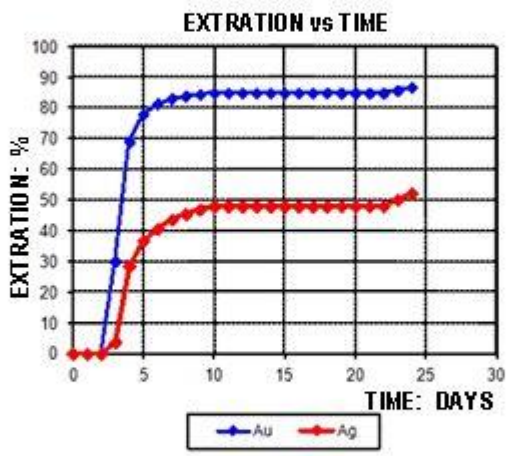
Table 13-6: Column Leaching Testwork Results for the Taguas Project

Sample Description	Head Grade (%)		Recovery Rate (%)		Reagent Consumption (kg/t)	
	Ag	Au	Ag	Au	NaCN	CaO
Column 1 (100% - 1/4")	22.9	0.71	49.6	84.5	0.64	4.33
Column 2 (100% - 1/2")	32.2	0.66	52.3	86.7	0.59	4.35

Gold and silver recoveries for 100% -¼" and 100% -½" are shown in recovery curves for column tests in Table 13-2 and Table 13-3 respectively.

Figure 13-2: Gold and Silver Recovery Curves – Column 1 (100% - 1/4")

Figure 13-3: Gold and Silver Recovery Curves – Column 2 (100% - 1/2")



The leaching results of Column 2 show slightly better recoveries on both gold and silver. This behavior indicates that additional crushing (secondary and tertiary stages) might not be necessary for the design of Taguas processing plant, which should be evaluated in future testing.

13.3 Recovery Estimates

Gold and silver recovery are estimated to be 87% and 52%, respectively, based on the performance of Column 2 on a feed sample crushed to nominally minus half-inch (12.5 mm).

13.4 Metallurgical Variability

Wood recommends considering a sampling program targeting an understanding of the impact of process feed variability on metallurgical performance, specifically targeting high- medium, and low-grade samples, to understand potential dependence of leaching performance on head grade in the next phase of metallurgical testing.

13.5 Deleterious Elements

Leach testing to date indicates the mineralized material responds well to conventional heap leaching with good recoveries by cyanidation. No significant deleterious elements like graphite or clay, that might be expected to interfere with the recovery process, have been noted in testing to date.

13.6 Comments on Section 13

The testwork conducted is suitable for preliminary process flowsheet selection and samples are representative of the study life of mine feed and suitable for generating recovery estimates for the PEA.

14.0 Mineral Resource Estimates

14.1 Key Assumptions and Basis of Estimate

The database for the Mineral Resource estimate contains analytical and lithology data from 71 core holes and 28 RC drill holes totaling 23,443 metres drilled during the Aquilar, Gold Fields and Piuquenes exploration campaigns, between 1985 and 2017. Legacy drilling undertaken during the Minera Aguilar campaigns, has been re-sampled and re-assayed following modern industry-standard practices in the Gold Fields and Piuquenes re-sampling programs.

In addition, there are analytical data from 135 channel chip samples collected from underground development at Cerro Taguas Norte and Cerro Taguas Sur in 2018 as part of the Piuquenes underground re-sampling program.

The Mineral Resource estimate is restricted to oxide mineralization amenable to heap leaching.

14.2 Geological Models

14.2.1 High-Grade Domains

The oxide gold-silver mineralization intersected to date is hosted by lithic tuffs with higher grade zones controlled by northeast-trending siliceous structures. Based on underground mapping and sampling on the 4200 level at Cerro Taguas Norte and Cerro Taguas Sur, and drill intercepts, six high-grade domains were modelled as solid vein wireframes (Figure 14-1). An additional three high-grade domains, located beyond the underground exploration development, were interpreted based on drill intercepts (Figure 14-2).

Figure 14-1: High-grade Domain Vein Models (Exploration Development)

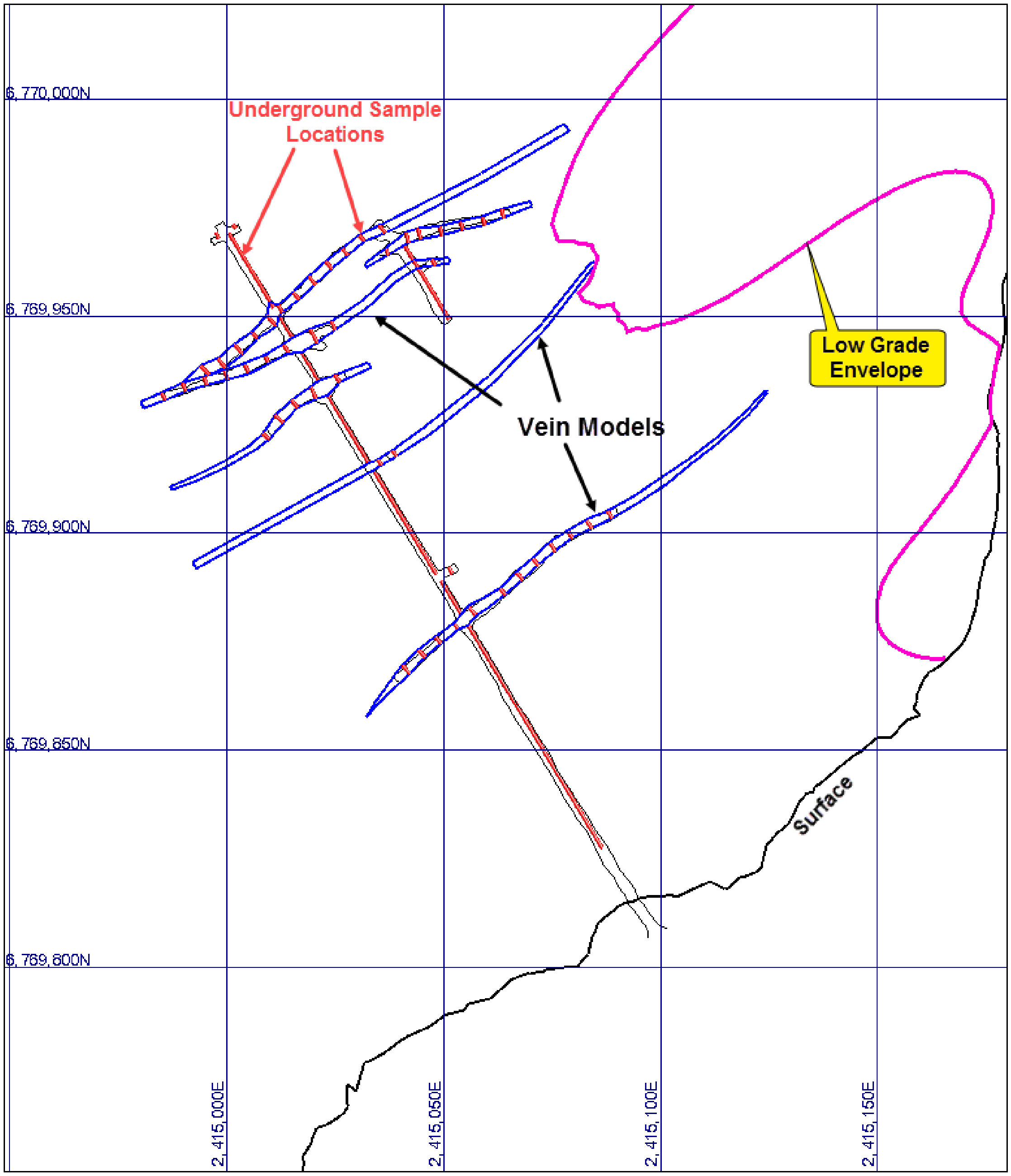
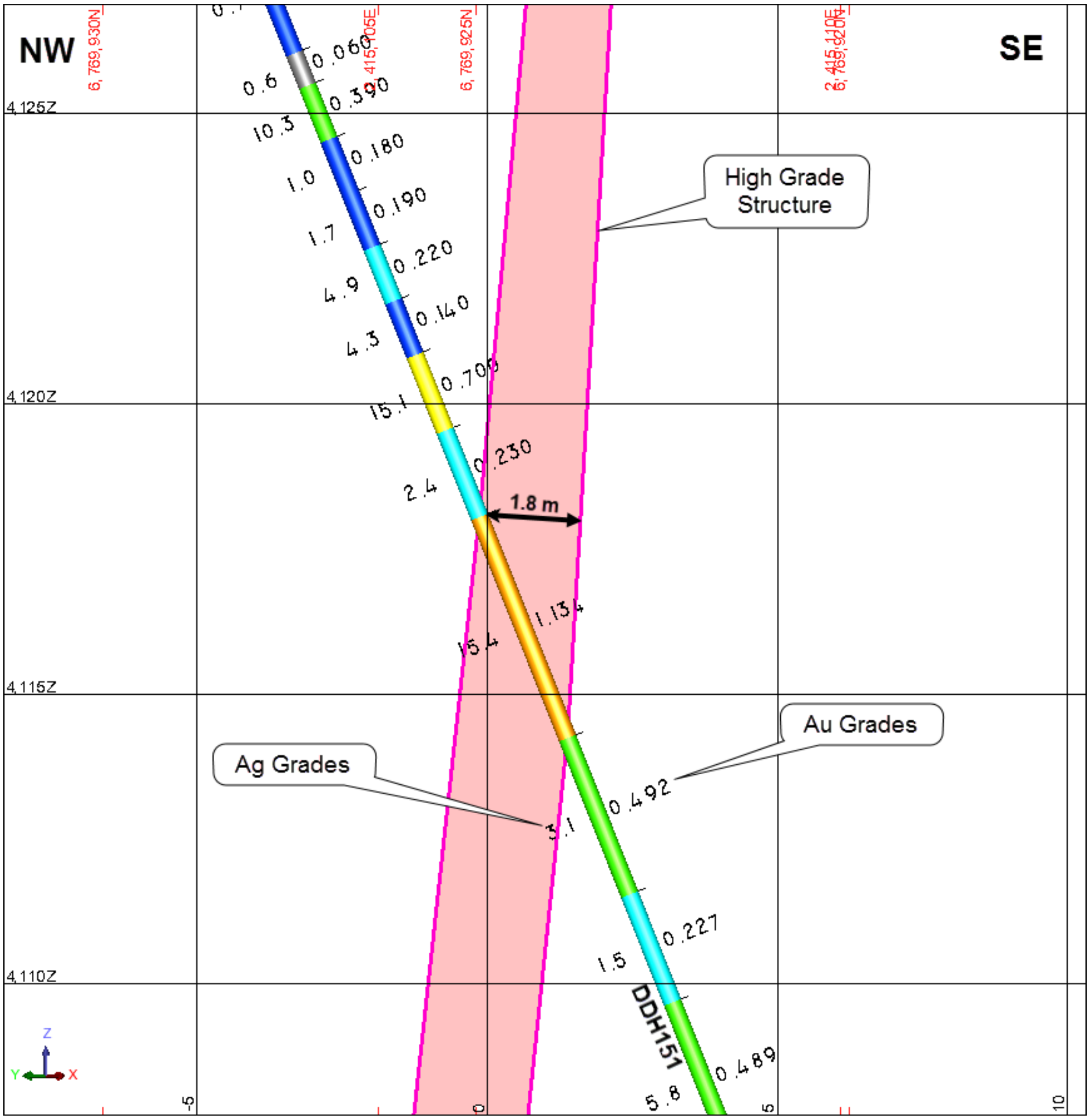


Figure 14-2: High-grade Domain Model (Drill Intersection)



The extents and orientations of the high-grade domain models are shown in Table 14-1. The high-grade domains are sub-vertical and strike 230° to 250°. The true width of the high-grade domain's ranges from 1.0 m to over 8.0 m and have lengths that range from 40 m to over 500 m and depths extending to 236 m below surface.

Table 14-1: High-grade Domain Model Parameters

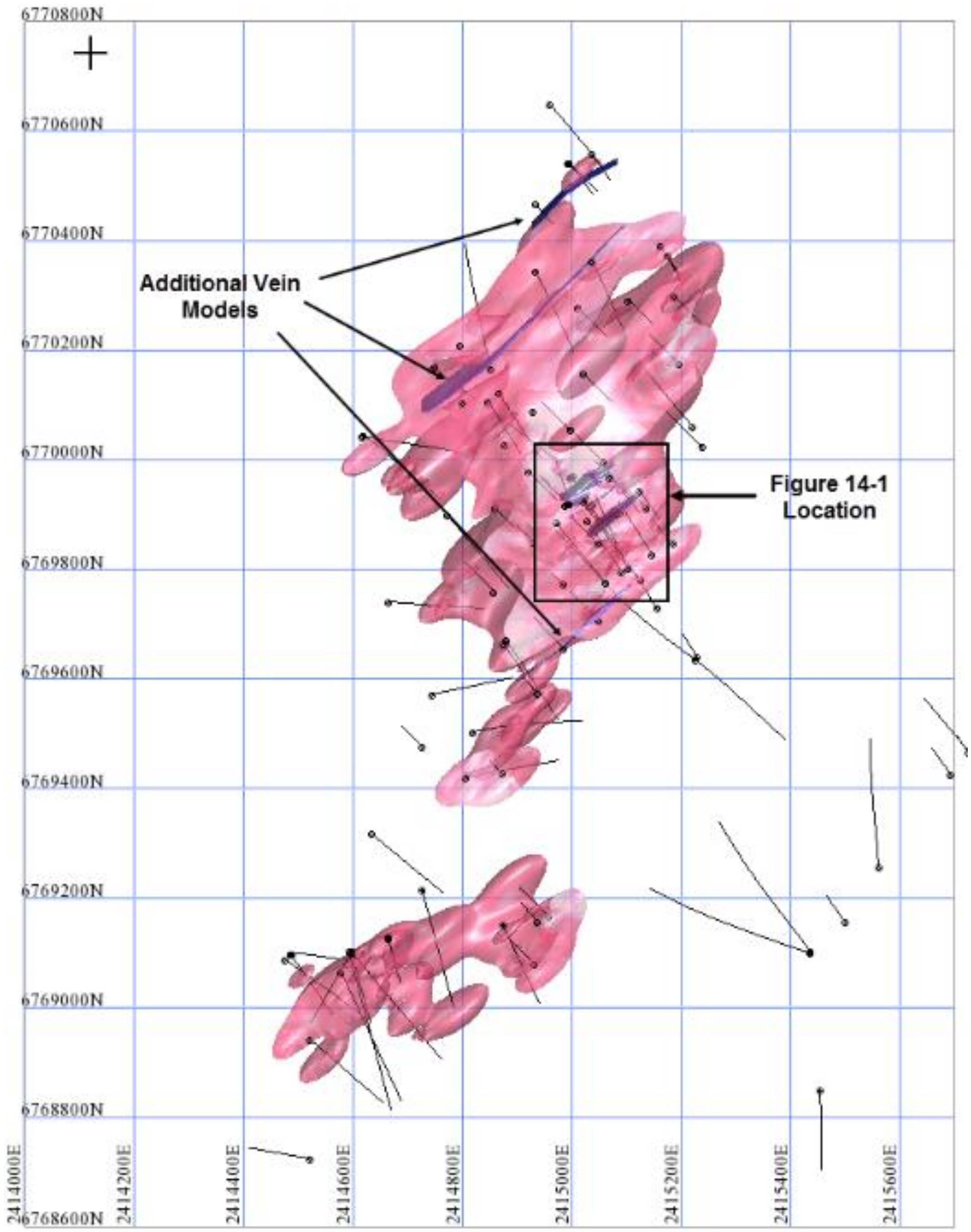
Domain ID	Length (m)	Depth (m)	Strike	Dip	True Width Avg (m)	True Width Range (m)
1	114-120	230-236	230	87	2.0	1-5
2	70-80	166-188	244	85	2.0	1.7-3.6
3	41-47	63-91	250	84	1.5	1-2
4	65-105	149-188	238	85	2.0	1.8-3.5
5	54-58	179-186	59	88	1.0	0.5-3.5
6	193-200	104-112	230	83	1.5	0.4-3.6
7	130-502	to 170	229	84	2.8	1.8-6.7
8	75-80	50-100	48	89.5	2.5	0.8-11
9	90-116	153-200	234	89.5	1.8	1.2-2.1

14.2.2 Low-Grade Domains

As no lithologic or alteration controls have been identified for the low-grade mineralization, a low-grade envelope (LGE) was generated to constrain the interpolation of gold and silver grades in the block model. The grade envelope used indicator kriging to model wireframe solids by using a threshold of 0.1 g/t gold equivalent (AuEq) based on assumed metal prices of US$1300/oz Au and US$17/oz Ag and recoveries of 87% for gold and 52% for silver (Figure 14-3). The data used for the generation of the low-grade envelope were 2m downhole composites from all drilling as well as historic channel sample data from underground workings. Twenty-two unsampled drill intervals were assigned grades of 0 g/t Au and 0 g/t Ag.

The high-grade domain models were clipped so that they did not extend beyond the LGE.

Figure 14-3: Low-grade Envelope (LGE) and Vein Models - Plan View



14.2.3 Depth of Oxidation

Core and RC cuttings were reviewed in 2017 to visually estimate the depth of oxidation in the drill holes. Based on the results, sectional profiles were created to construct a surface representing the depth of oxidation. Because some holes showed oxidation to much greater depths than adjacent holes this is only an approximation and additional drilling, logging and characterization of mineralized material will be required to improve definition of this surface. A view of the modeled surface is presented in Figure 14-4 and a cross sectional view is presented in Figure 14-5.

Figure 14-4: Base of Oxidation Surface

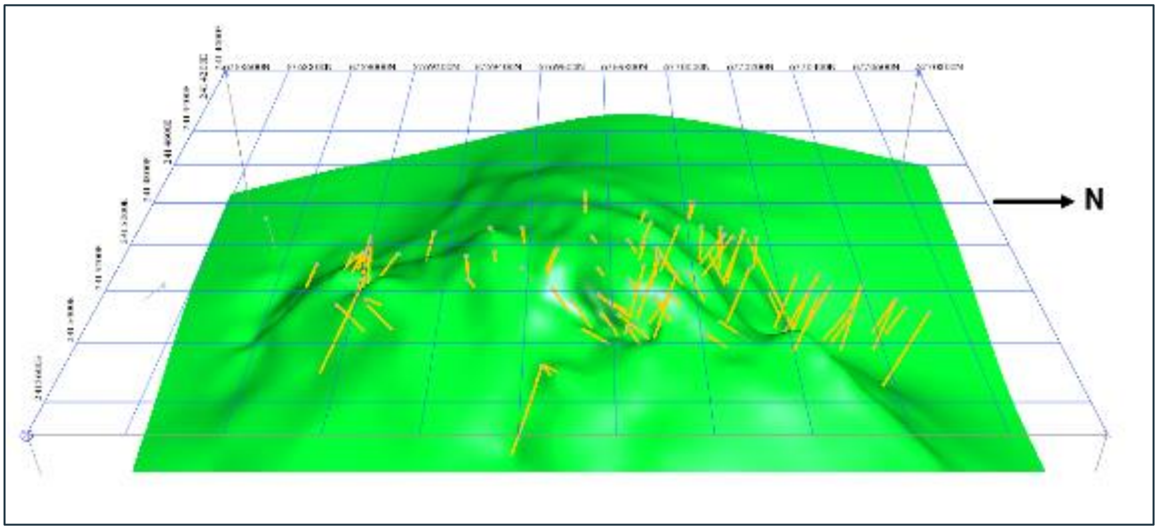
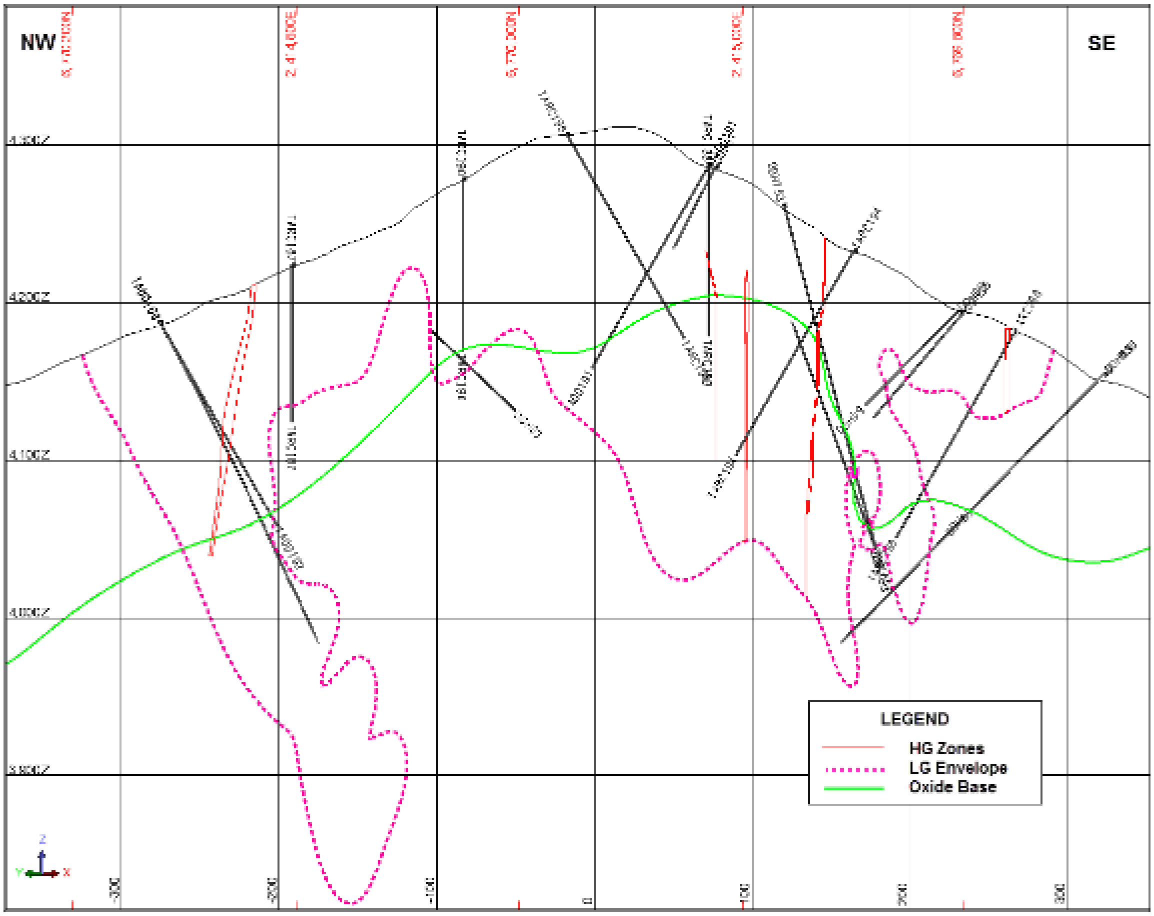


Figure 14-5: NW-SE Section showing base of oxidation

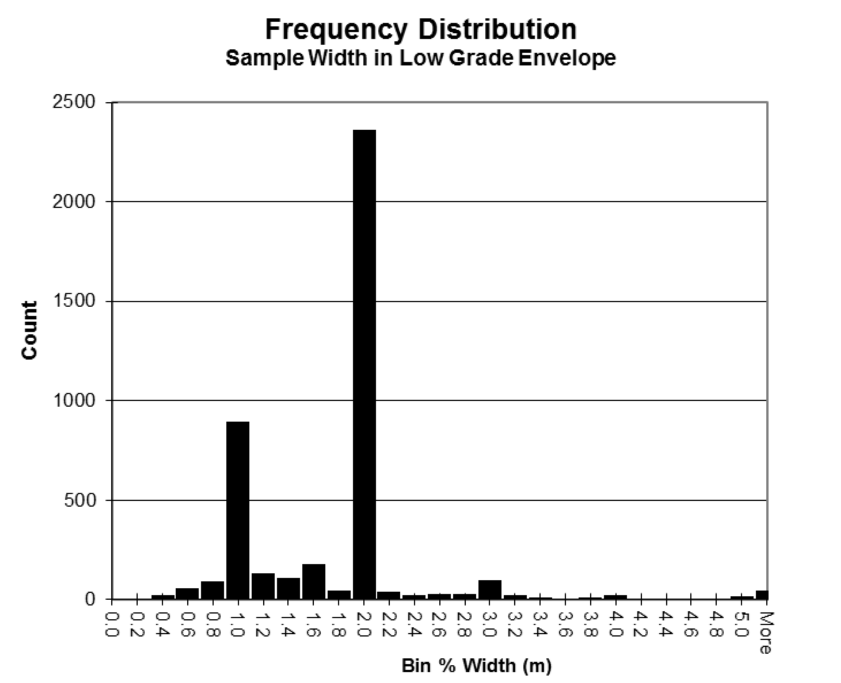


14.3 Exploratory Data Analysis

14.3.1 Low-Grade Envelope (LGE)

Sample widths for core drilling are variable, and widths for RC drilling were fixed at 2 m, so it was decided to regularize or composite all values to 2 m prior to statistical analysis. About 8% of the drill intervals exceeded 2m in width with the most common intervals being 1 m and 2 m (Figure 14-6).

Figure 14-6: Histogram of Sample Widths (LGE)



Composites were broken at the contacts between the low-grade and high-grade domains. Statistics for the composites within the low-grade envelope are presented in Table 14-2. Frequency distributions for Au and Ag are illustrated in Figure 14-7 and Figure 14-8.

The sample populations are all highly skewed approaching log-normal distribution with no significant bimodality evident. Au and Ag show no significant correlation (R^2 = -0.008) as illustrated in the scatterplot in Figure 14-9.

Table 14-2: Composite Statistics (LGE)

	Au g/t	Ag g/t
Count	4,090	4,090
Min	0.001	0.2
Max	30.824	5095.1
Mean	0.256	11.0
Median	0.145	4.2
Std Dev	0.717	94.9
Var	0.514	9011.6
COV	2.797	8.601

Figure 14-7: Frequency Distribution - Au in LGE

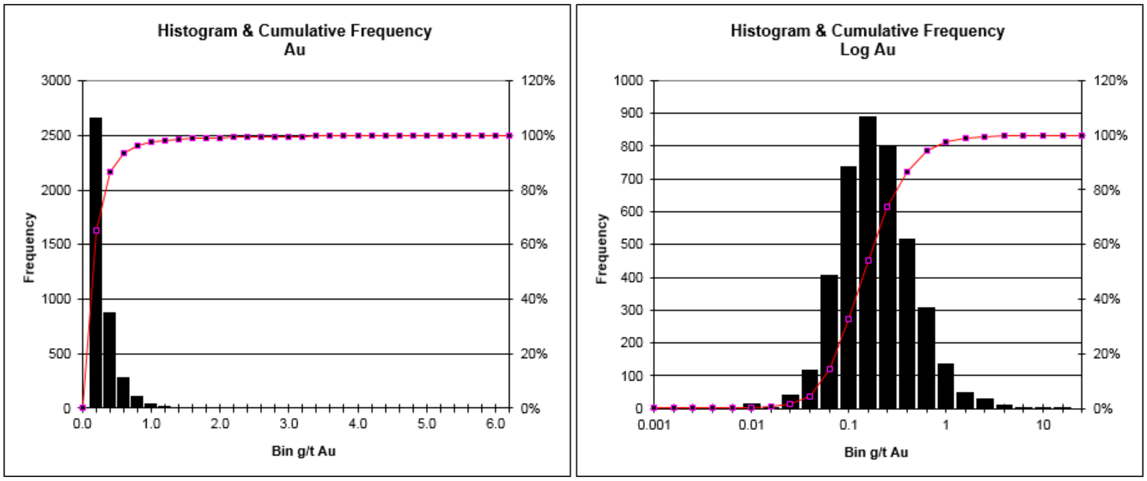


Figure 14-8: Frequency Distribution - Ag in LGE

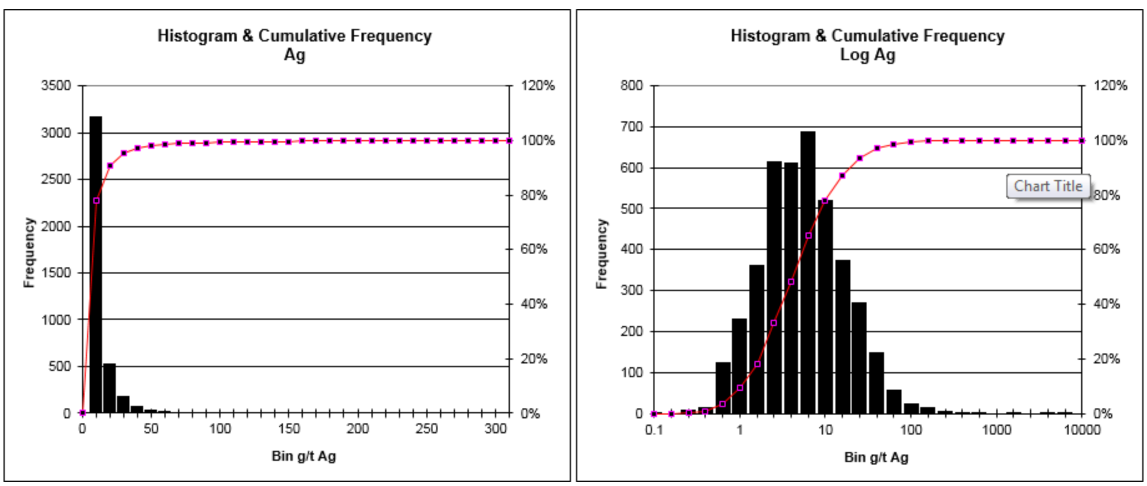
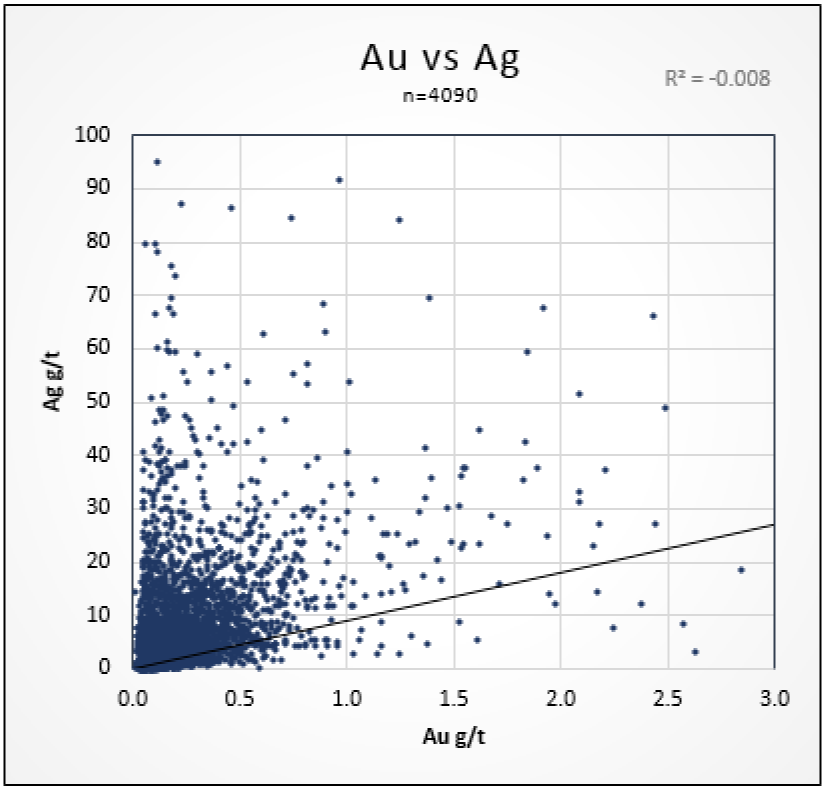


Figure 14-9: Scatterplot Au vs Ag (LGE)



14.3.2 High-Grade Domains

Data within the high-grade domains were a combination of underground channels and drill samples.

There was no correlation between Au and Ag values (R^2 = -0.008). The sample populations are highly skewed approaching log normal distribution with no significant bimodality. Statistics for the composites within the low-grade envelope are presented in Table 14-3.

Table 14-3: Composite Statistics - High-grade Domains

	Au g/t	Ag g/t
Count	151	151
Min	0.059	0.100
Max	74.844	6582.800
Mean	3.282	139.603
Median	0.953	37.000
Std Dev	9.243	572.864
Var	85.427	328174
COV	2.816	4.104

Approximately 89% of the composites (135) within the high-grade domains were above a threshold of 0.50 g/t AuEq while 14% of the composites (577) within the LG domains were above this level.

14.4 Grade Capping and Outlier Restriction

14.4.1 Low-Grade Envelope

Cumulative probability plots were used to select capping thresholds. A top cut of 3.2 g/t for Au and 80 g/t for Ag were selected as shown in Figure 14-10. Statistics for capped composites are presented in Table 14-4.

Figure 14-10: Cumulative Probability Plots - LGE

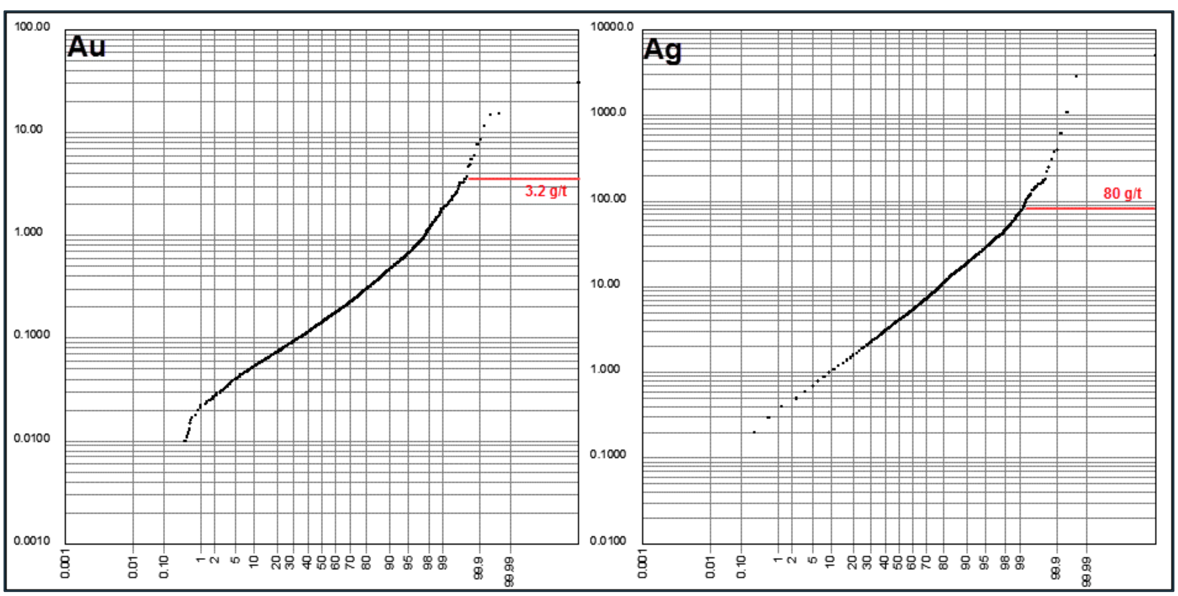


Table 14-4: Statistics of Capped Composites (LGE)

	Au g/t	Ag g/t
Count	2617	2617
Min	0.001	0.2
Max	3.200	80.0
Mean	0.218	9.1
Median	0.141	4.6
Std Dev	0.277	12.7
Var	0.077	161.4
COV	1.270	1.401

14.4.2 High-Grade Domains

Cumulative probability plots were used to select capping thresholds. A top cut of 20 g/t for Au and 300 g/t for Ag were selected as shown in Figure 14-11. Statistics for capped composites are presented in Table 14-5.

Figure 14-11: Cumulative Probability Plots - High-grade Domains

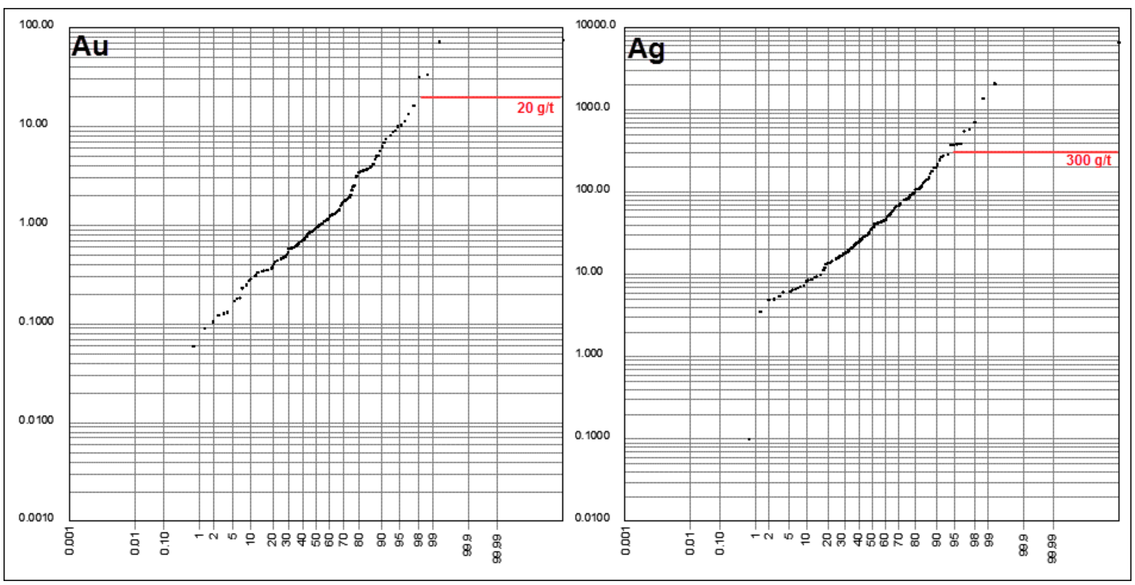


Table 14-5: Statistics of Capped Composites - High-grade Domains

	Au20	Ag300
Count	151	151
Min	0.059	0.100
Max	20.000	300.000
Mean	2.412	70.858
Median	0.953	37.000
Std Dev	3.938	84.906
Var	15.510	7209.083
COV	1.633	1.198

14.5 Density Assignment

Bulk densities in the model were estimated based on specific gravity measurements performed on 33 drill core samples. Statistics are presented in Table 14-6.

Table 14-6: Specific Gravity Statistics

	Oxide	Sulfide
n	30	3
Min	2.10	2.61
Max	2.67	2.68
Mean	2.45	2.65
Median	2.50	2.65
St Dev	0.12	0.04
Variance	0.02	0.00

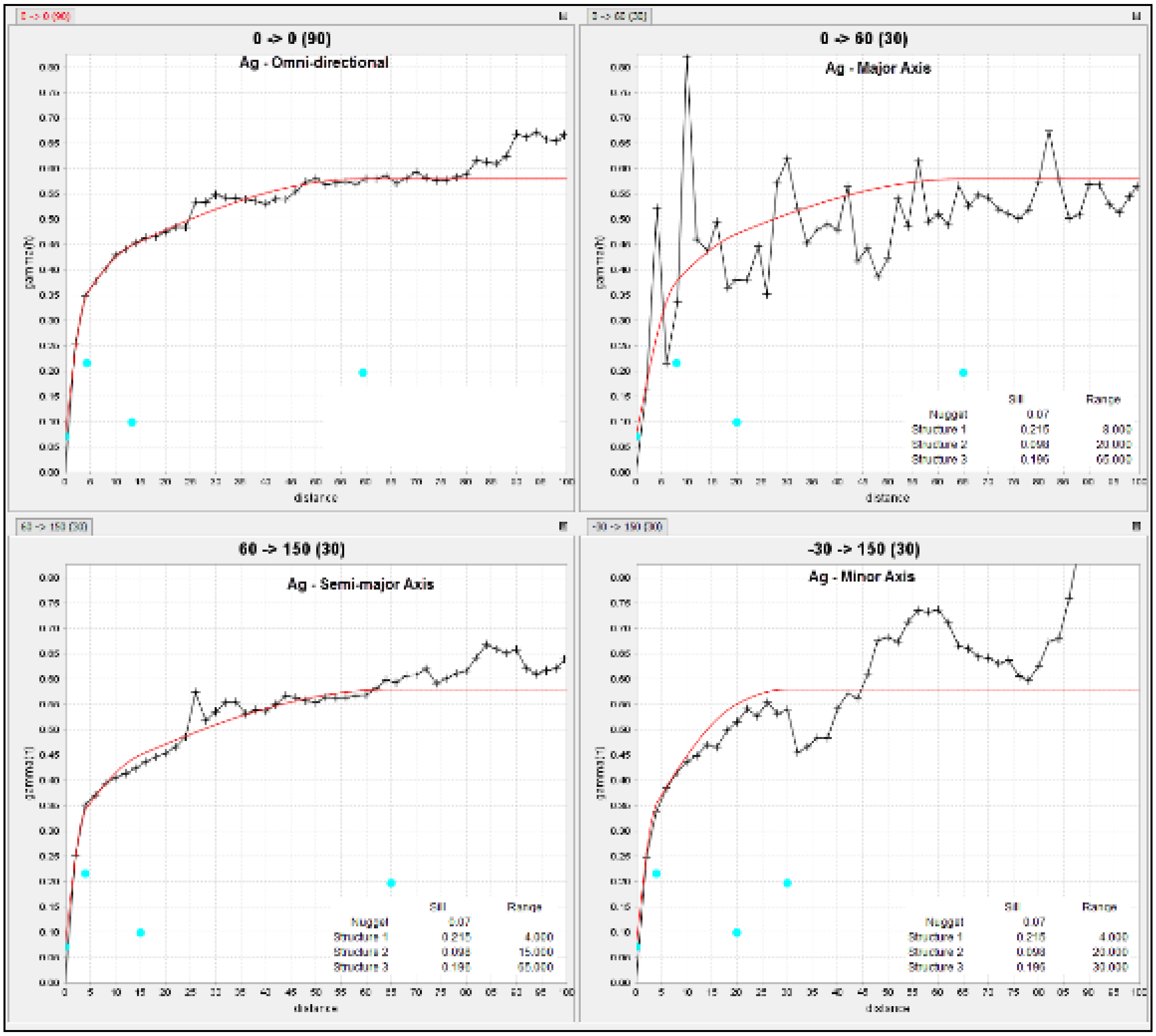
The 30 SG measurements taken from oxide drill core had a median value of 2.50. Only three measurements were available on un-oxidized core with a median and average value of 2.65. These values were used to assign density values to the oxide and sulfide zones in the block model. All blocks within the oxide zone were assigned a density of 2.5. All others were assigned the un-oxidized value of 2.65.

14.6 Variography

Directional pairwise relative variograms for Au and Ag were modeled for the LGE using the 2m composited assays. Nested spherical models were derived with a maximum range of 50 m for Au and 55 m for Ag. Sample distribution in the high-grade domains was too spatially restricted to model directional variograms. Variogram models are presented in Figure 14-12 and Figure 14-13.

Figure 14-12: Au Variograms - LGE

Figure 14-13: Ag Variograms - LGE



14.7 Estimation/Interpolation Methods

A block model with block dimensions of 5x5x5 m was created using Geovia-Surpac© software. Extents are shown in Table 14-7.

Table 14-7: Block Model Extents

	East	North	Elev.
Min	2,413,800	6,768,500	3,600
Max	2,416,100	6,770,900	4,350
Extent	2,300	2,400	750
Block Size	5	5	5

Inverse-distance cubed weighting to the third power (ID3) interpolation was carried out within the LGE domain in four passes with maximum search distances of 25 m, 50 m 100 m, and 200 m. A minimum of four and maximum of 16 composites were used for grade estimation and composites from at least two drill holes/channels were required to estimate a block (Table 14-8). An anisotropic search ellipsoid was used with the major axis trending 140° with a vertical dip. The major to minor search ratio was 3:1.

Table 14-8: Estimation Parameters for the Low-Grade Envelope (LGE) Model

Pass	Maximum Search Dist. (m)			Composites			Capping Grades	
	Major Axis	Semi-Major Axis	Minor Axis	Min	Max	Max/Hole	Au g/t	Ag g/t
1	25	25	8	4	16	3	3.2	80
2	50	50	17	4	16	3	3.2	80
3	100	100	33	4	16	3	3.2	80
4	200	200	67	4	16	3	3.2	80

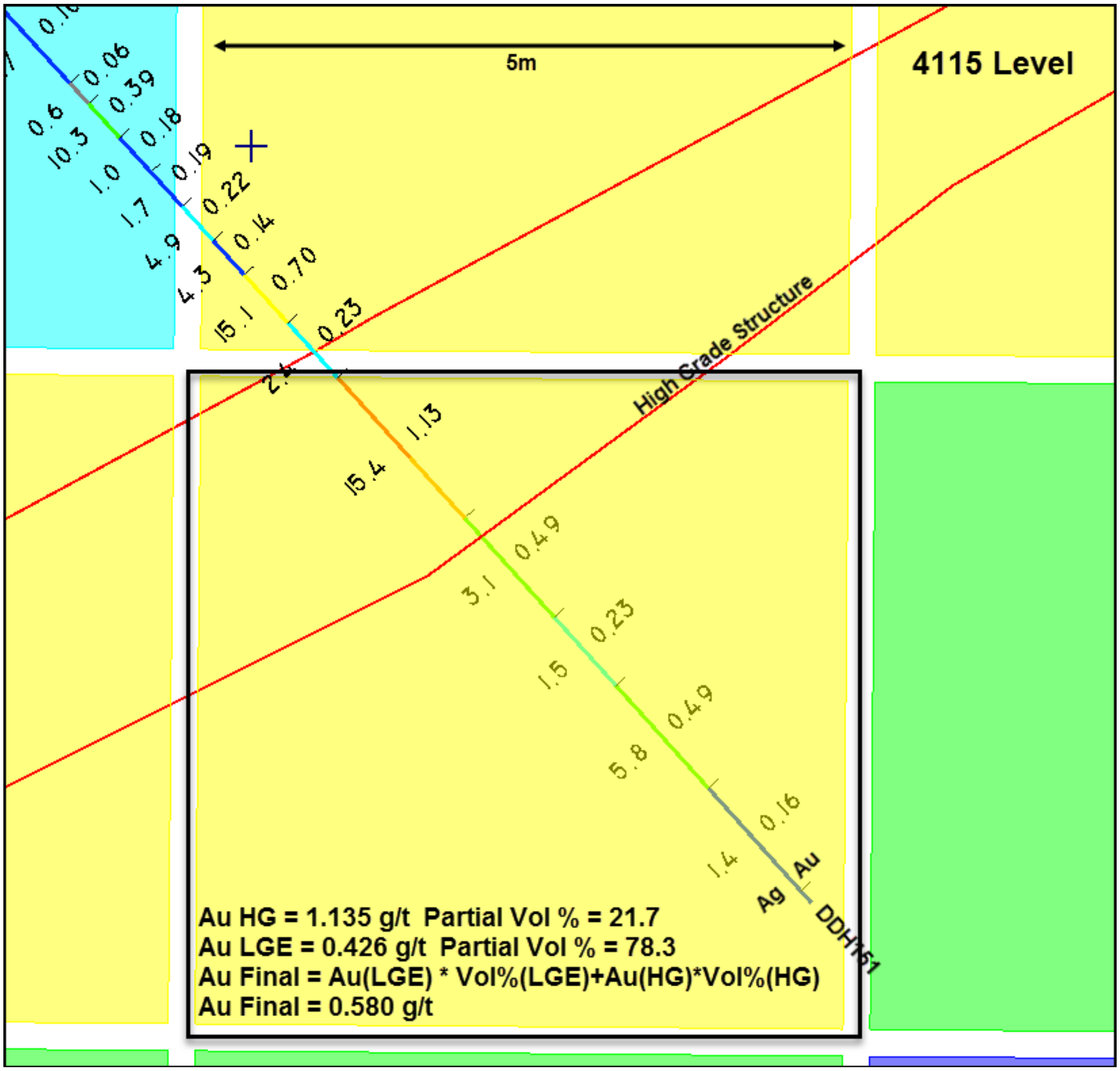
The high-grade domains were estimated individually by ID3 using only the sample data within them and these samples were excluded from the LGE interpolation. The minimum number of composites for four of the high-grade wireframes was reduced to two for five of the structures due to the limited number of samples (Table 14-9). The two-hole or two-channel restriction was also removed in order to estimate most of the blocks within the wireframes. The primary purpose of the high-grade domain estimates was to limit the influence of the higher grade Au and Ag values that were observed in the structures.

Table 14-9: Estimation Parameters for High-grade Structure Models

Structure ID	Search Ellipsoid		Maximum Search Dist. (m)			Composites		Capping Grades	
	Bearing	Plunge	Major Axis	Semi-Major Axis	Minor Axis	Min	Max	Au g/t	Ag g/t
1	320	-87	200	200	40	4	16	20	300
2	334	-85	200	200	40	4	16	20	300
3	340	-84	200	200	40	4	16	20	300
4	328	-85	200	200	40	4	16	20	300
5	149	-88	200	200	40	2	16	20	300
6	320	-83	200	200	40	2	16	20	300
7	319	-84	200	200	40	2	16	20	300
8	138	-89.5	200	200	40	2	16	20	300
9	324	-89.5	200	200	40	2	16	20	300

The percent of the high-grade domains within the grade envelope was calculated and the blocks containing the high-grade wireframes were assigned a weighted average of the estimated vein and shell grades as illustrated in Figure 14-14.

Figure 14-14: Example of final block grade assignment – Plan View



Block grade distribution for Au and Ag is illustrated in Figure 14-15 to Figure 14-20. Figure 14-21 shows a plan view comparison of block grades in HG Zone 1 compared to the LGE grades. Figure 14-22 illustrates a cross section comparison of block grades in HG Zone 8 compared to the LGE grades

Figure 14-15: Section 6769850N Block Grade Distribution - Au

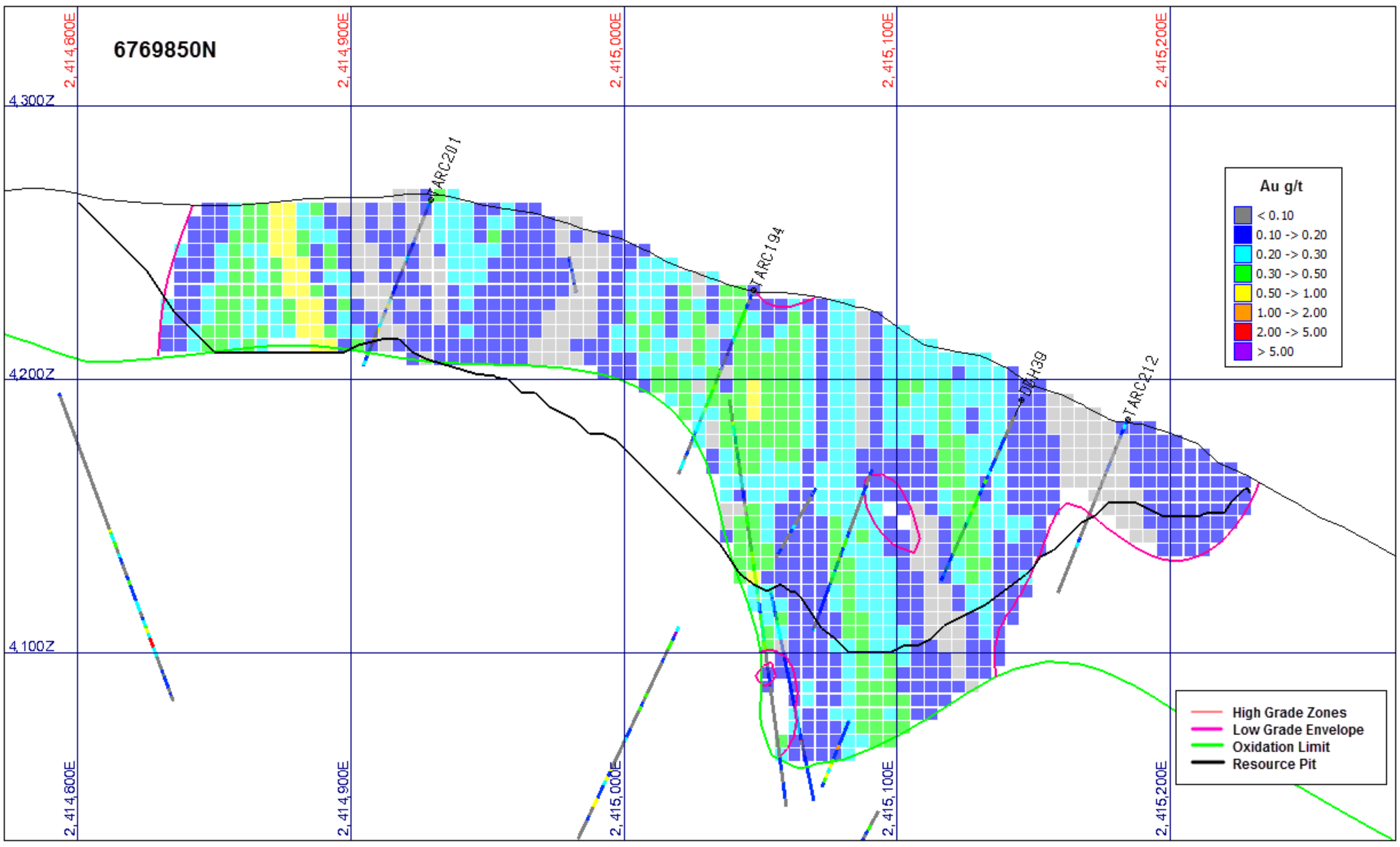


Figure 14-16: Section 6769850N Block Grade Distribution - Ag

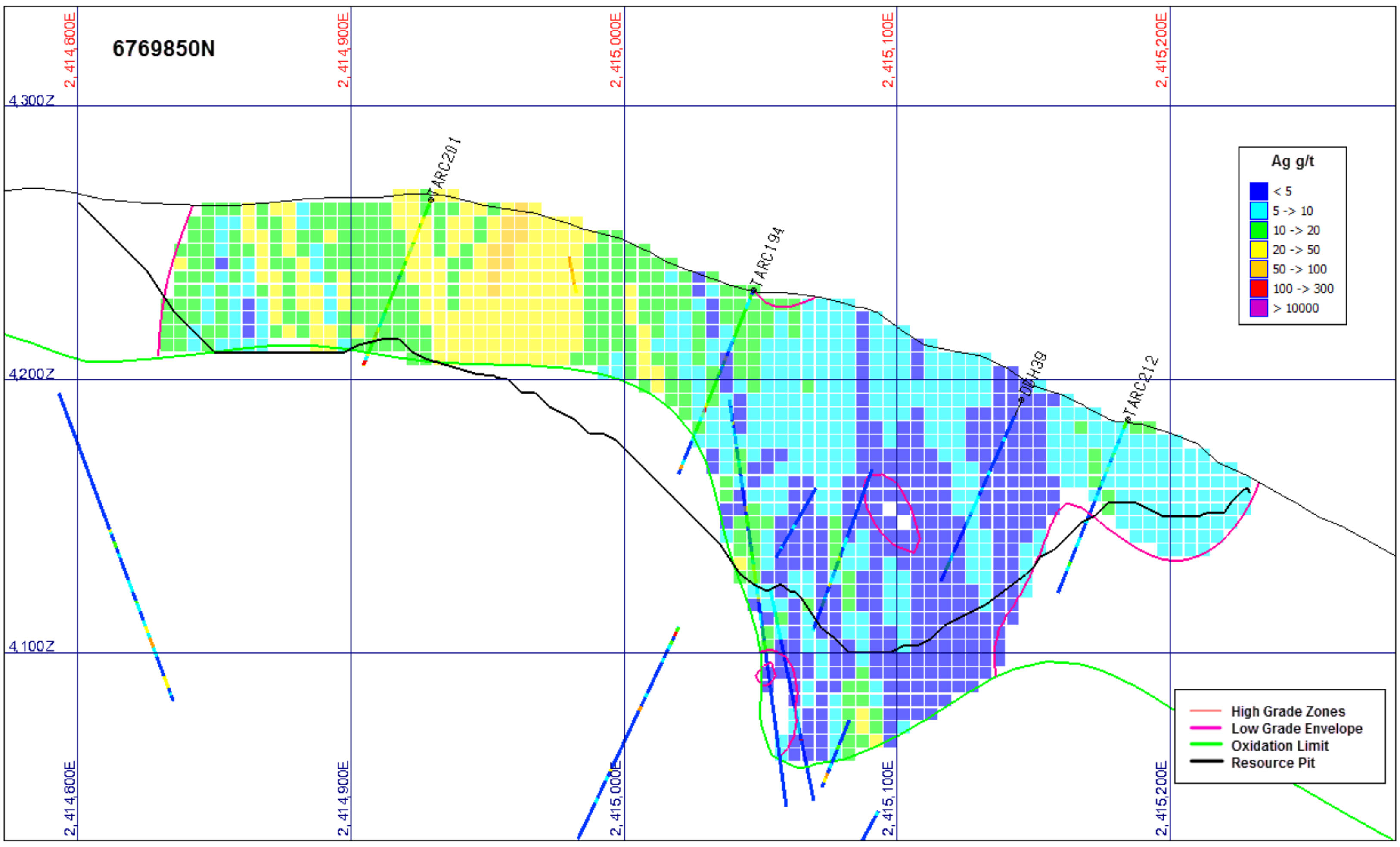


Figure 14-17: Section 6770100N Block Grade Distribution - Au

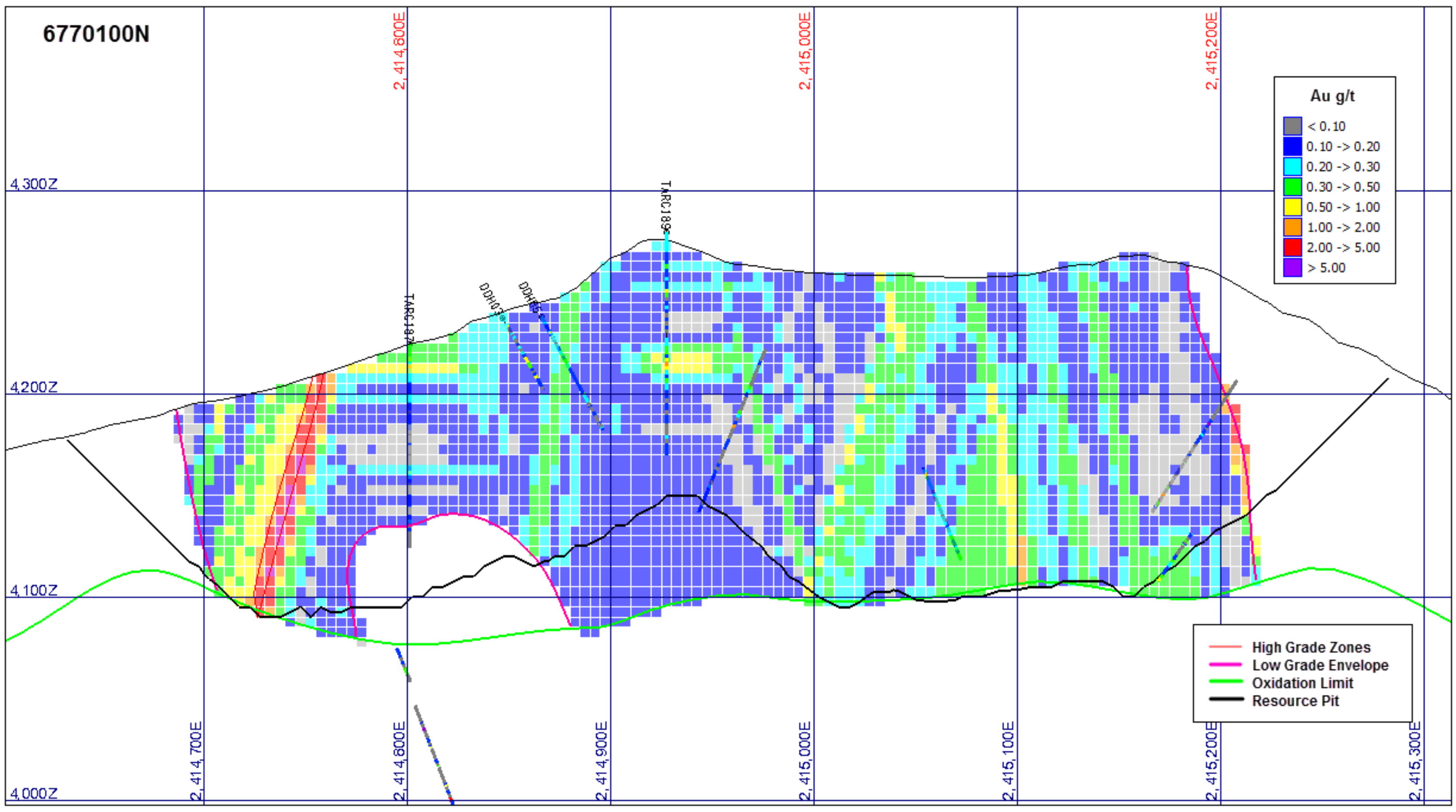


Figure 14-18: Section 6770100N Block Grade Distribution - Ag

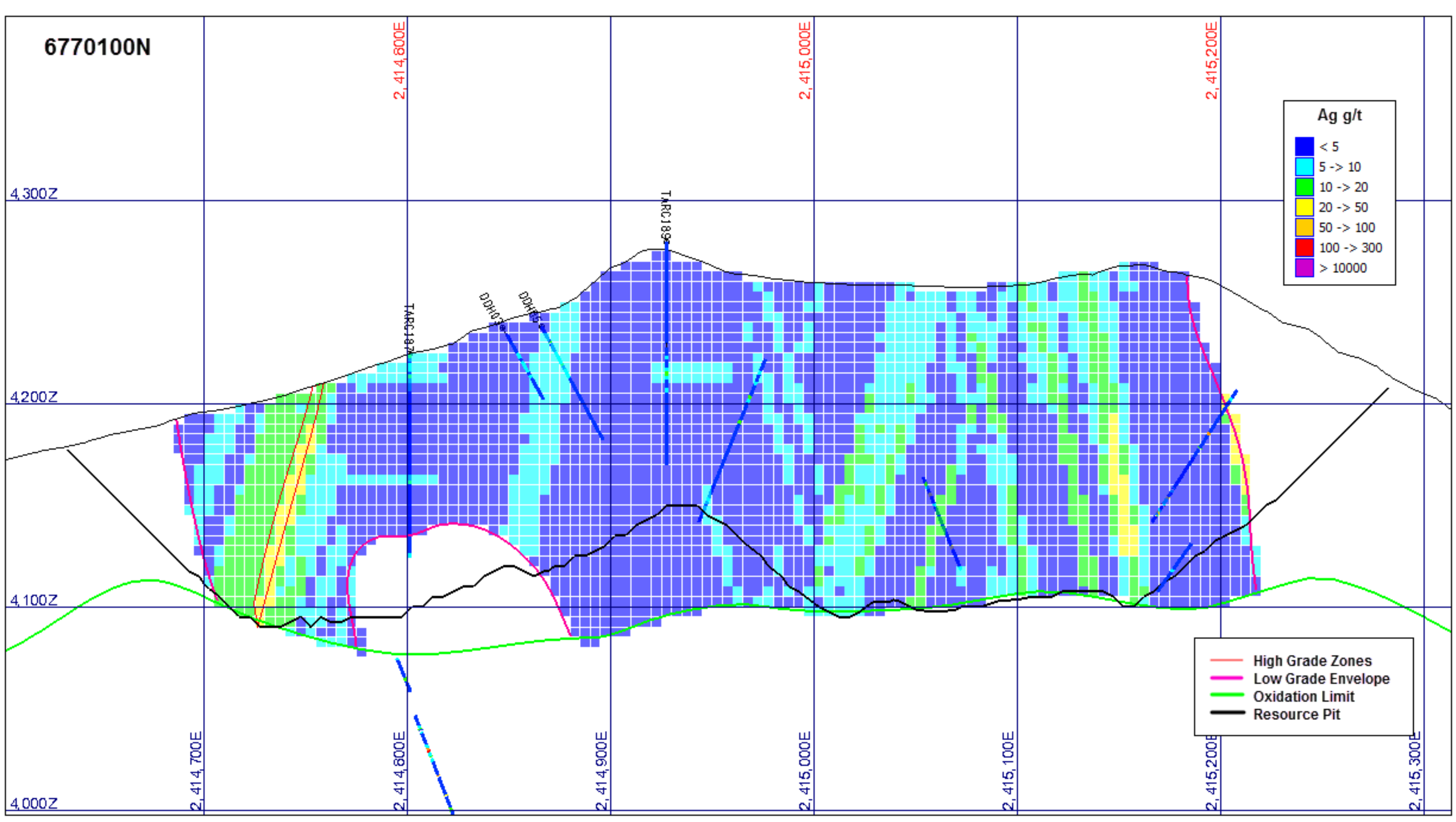


Figure 14-19: Section 2415000E Block Grade Distribution - Au

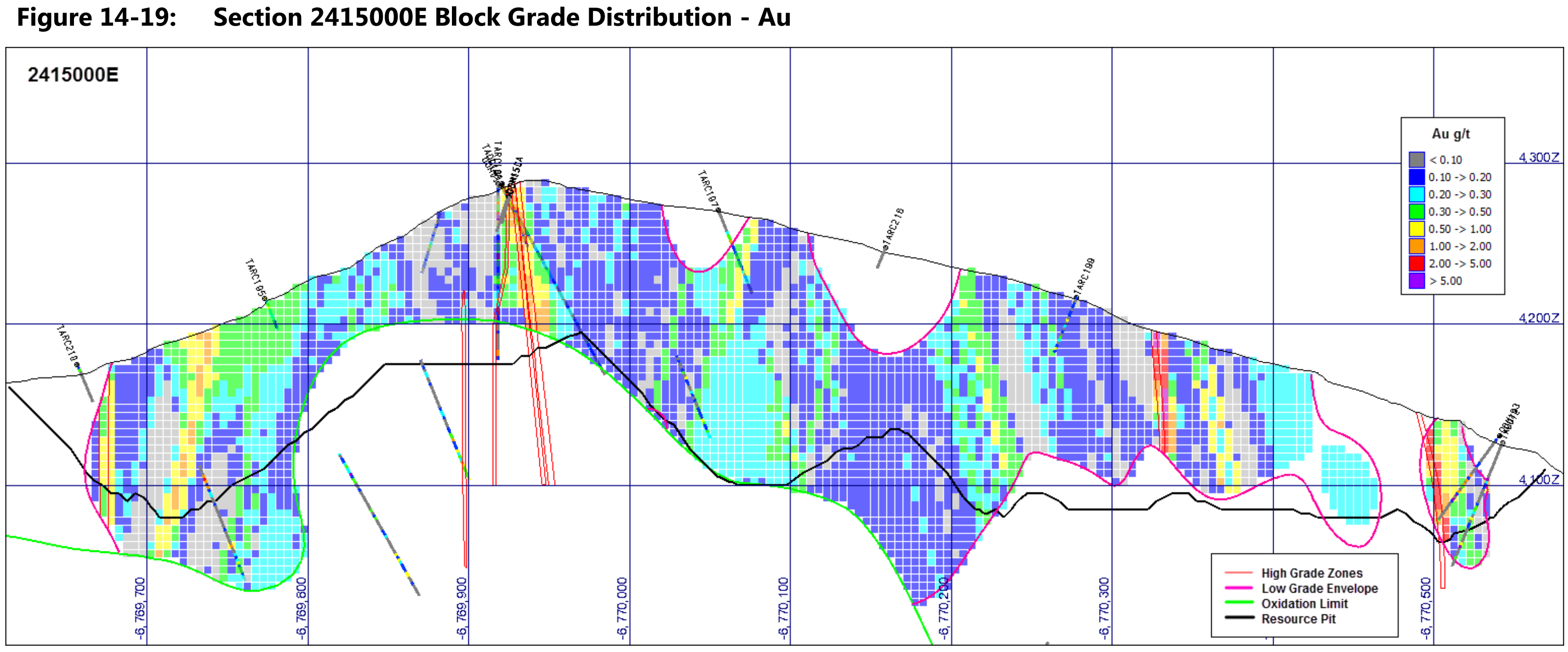


Figure 14-20: Section 2415000E Block Grade Distribution – Ag

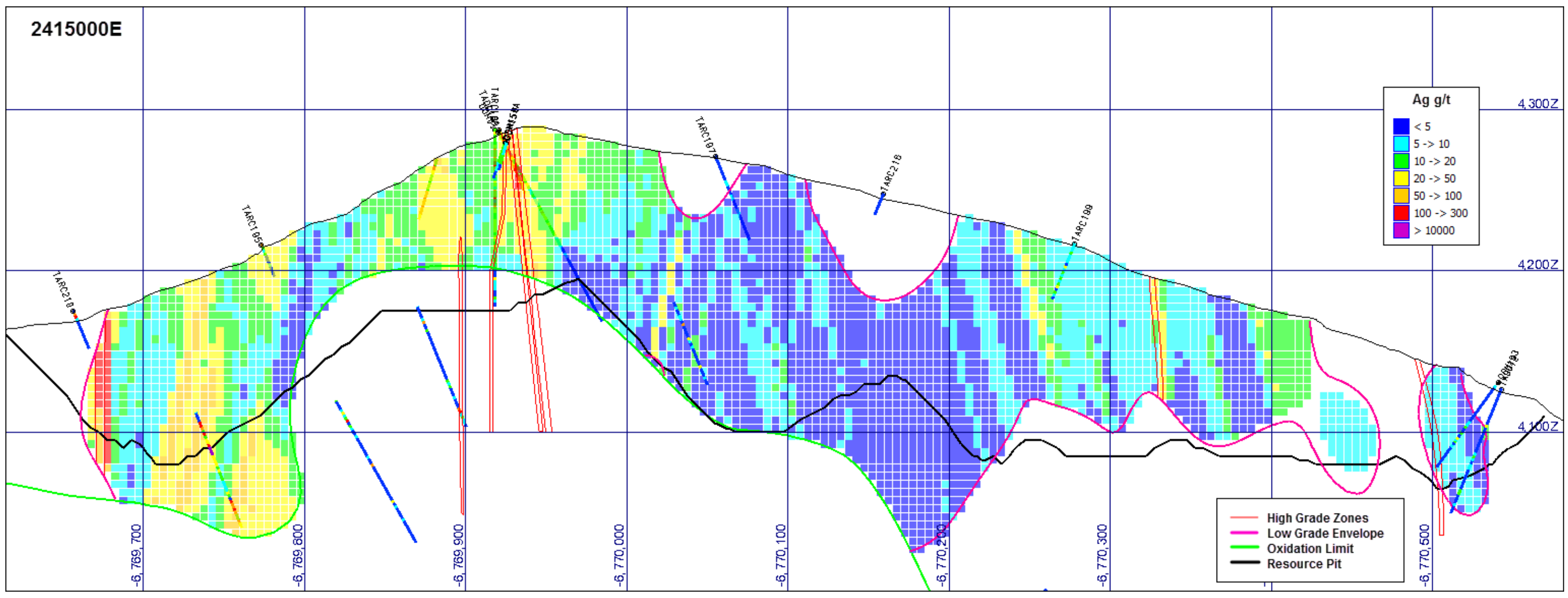


Figure 14-21: Comparison of block grades in HG Zone 1

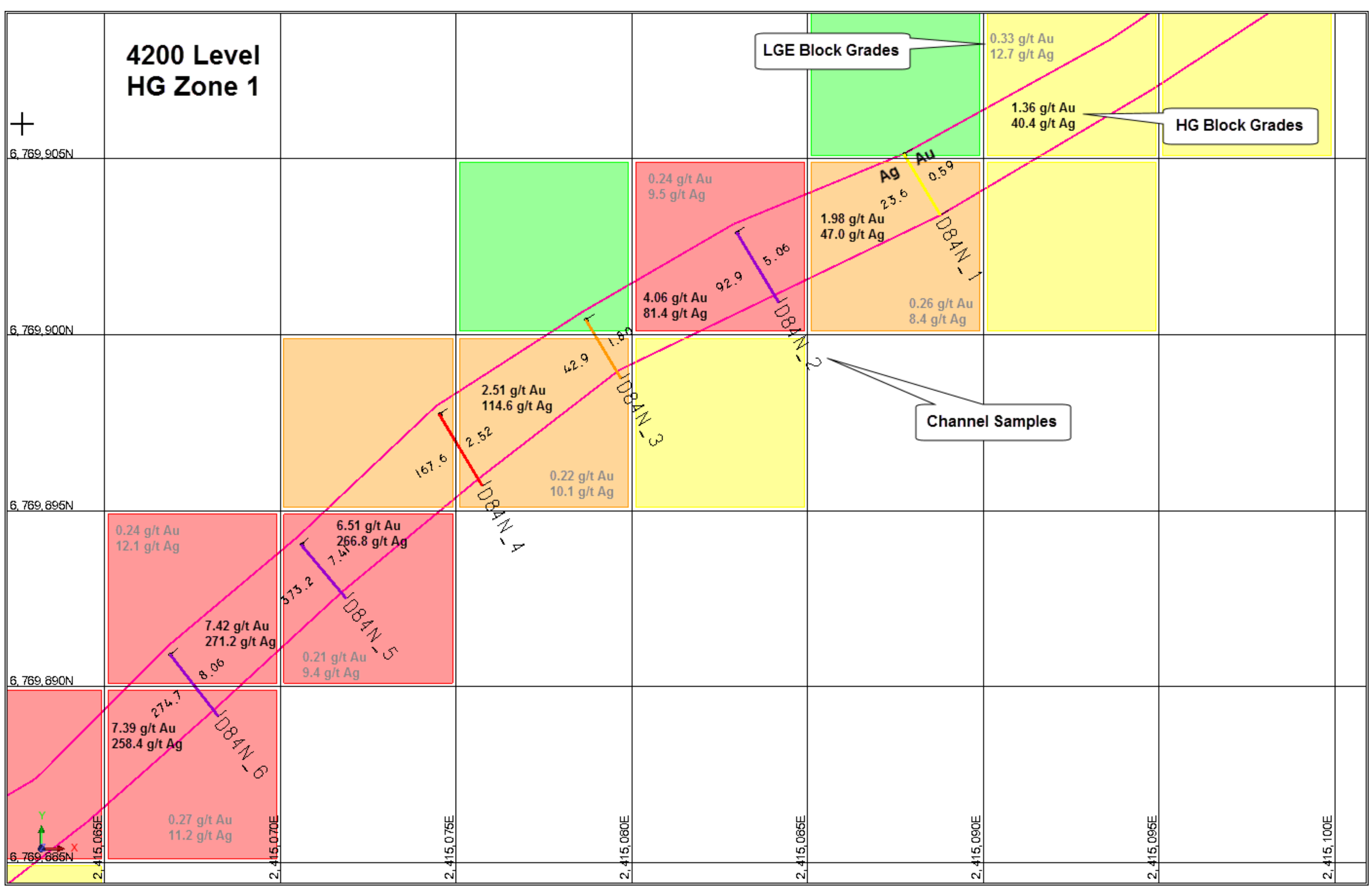
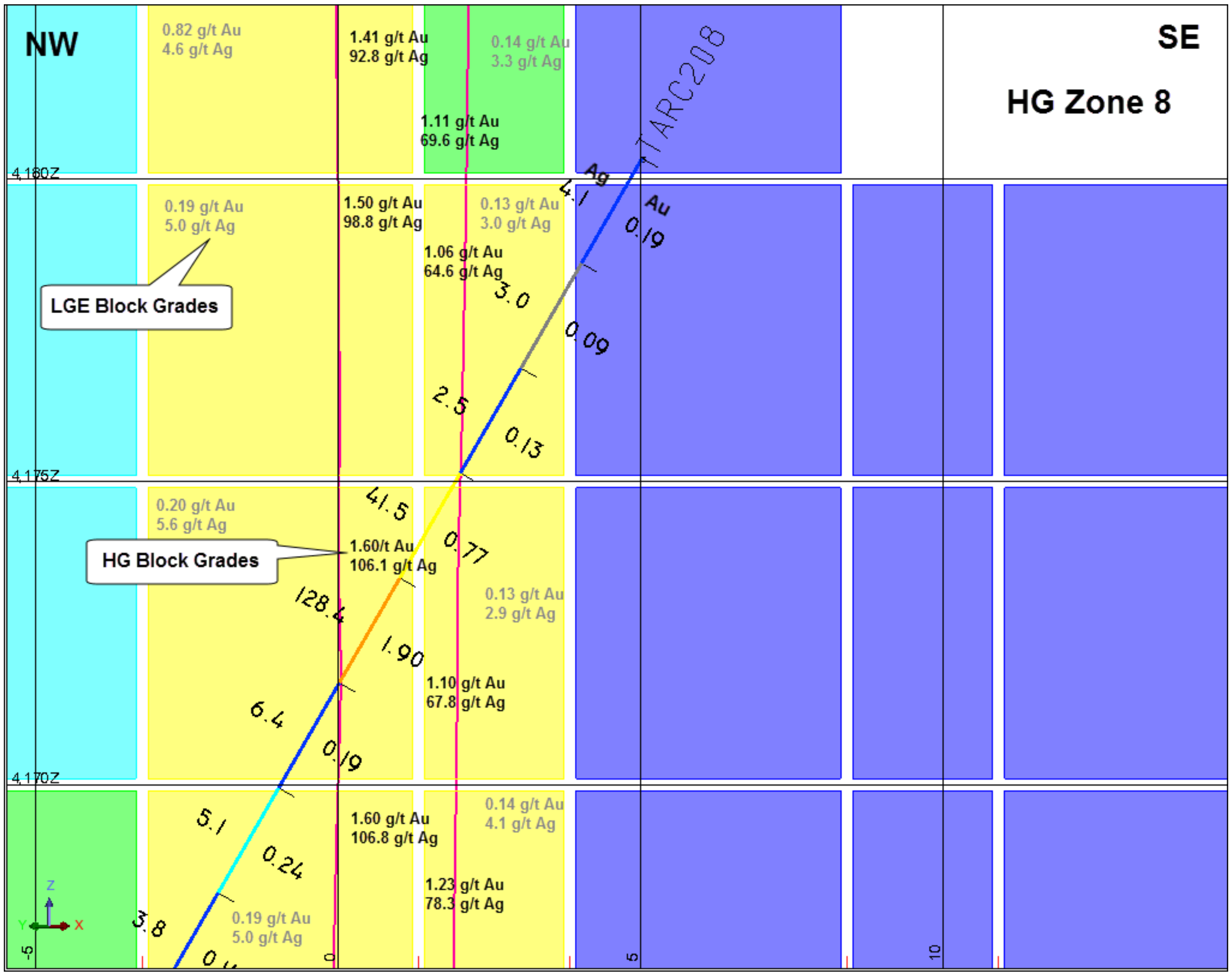


Figure 14-22: Comparison of block grades in HG Zone 8



14.8 Block Model Validation

14.8.1 Visual Inspection

Model verification was initially carried out by visual comparison of blocks and composite grades in plan and section views. The estimated block grades showed reasonable correlation with adjacent composite grades.

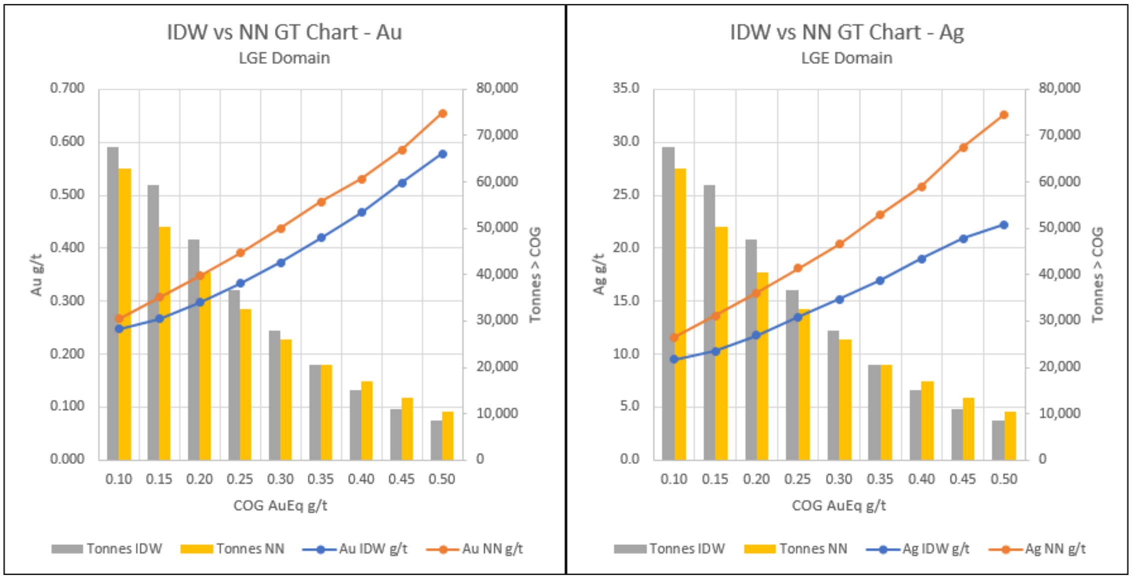
14.8.2 Global Bias Check

A comparison of global mean values between the various block estimates within the resource shows a reasonably close relationship with composites and block model values (Table 14-10). Grade-tonnage charges comparing nearest-neighbour (NN) and ID3 estimates in the LGE domains are presented in Figure 14-23.

Table 14-10: Global Mean Grade Comparison

Data	Au	Ag
Composites	0.256	11.0
Capped Composites	0.237	8.2
Composites Oxide	0.226	13.5
Capped Ox Comps	0.218	9.1
ID3 Block Estimate	0.253	7.9
NN Block Estimate	0.262	8.6
ID3 Oxide	0.233	8.8
NN Oxide	0.238	10.1

Figure 14-23: ID3 vs NN Grade and Tonnage Charts



14.8.3 Local Bias Check

Swath plots were generated to assess the model for local bias by comparing ID3, NN and ordinary kriged (OK) estimates on panels through the deposit. Results show a reasonable comparison between the methods, particularly in the main portions of the deposit indicated by the bar charts (Figure 14-24 to Figure 14-26).

Figure 14-24: Swath Plot (S-N) at 2414900-4925E

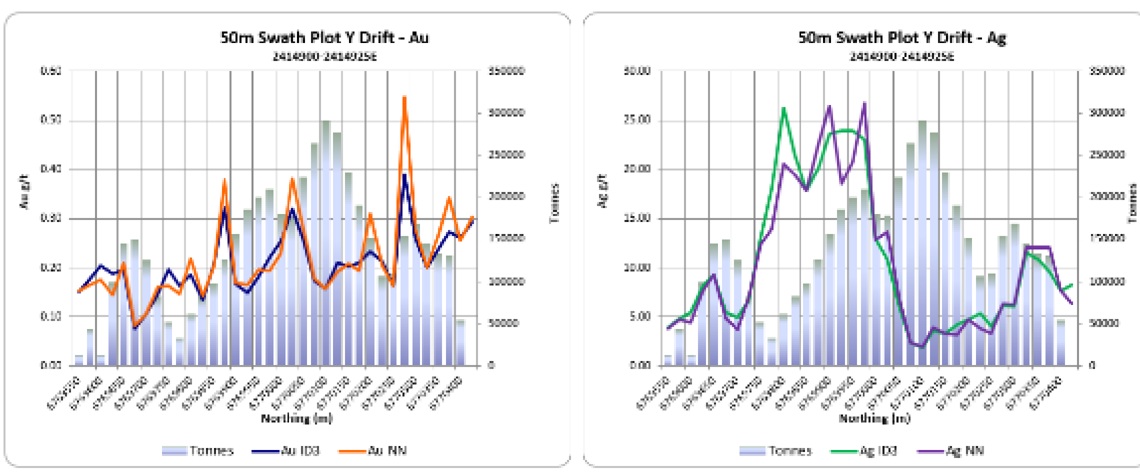


Figure 14-25: Swath Plot (S-N) at 2415100-5125E

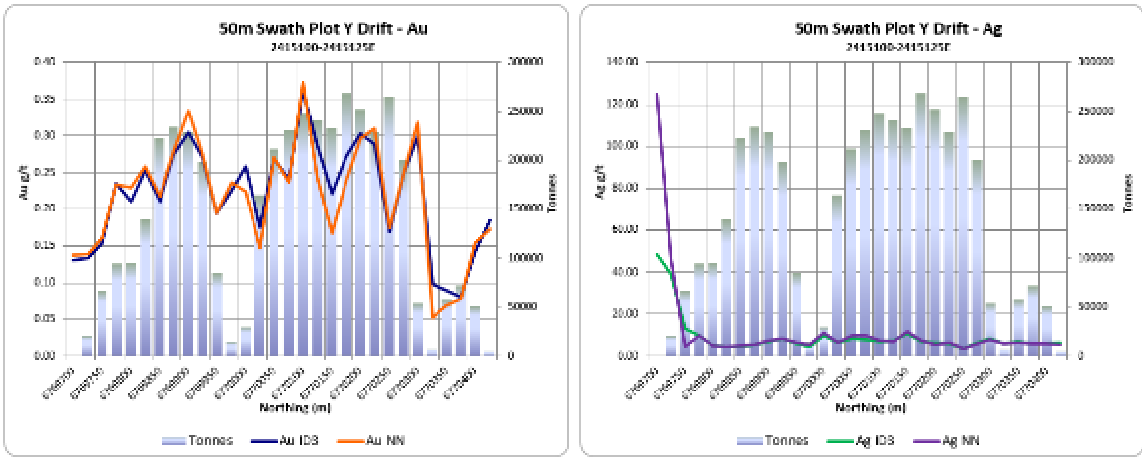
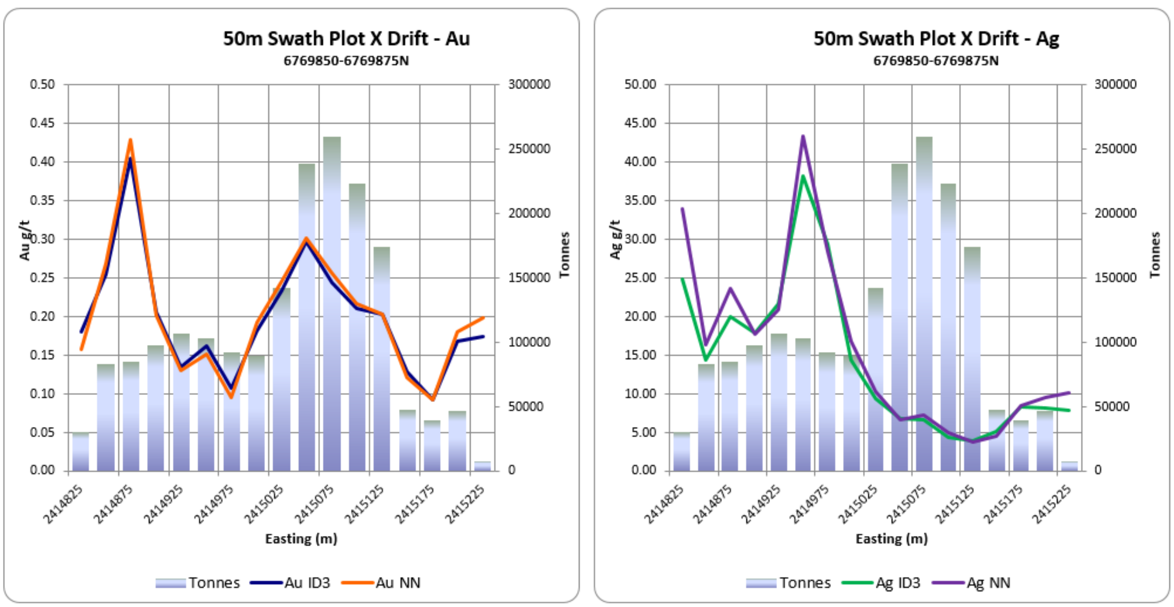


Figure 14-26: Swath Plot (E-W) at 679850-9875N



14.9 Classification of Mineral Resources

Resource classifications used in this study conform to the CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014).

Mineral Resources are classified as Inferred confidence category because they have been estimated based on relatively widely spaced drilling and sampling.

In order to be assigned to the Inferred category the following criteria has been met:

- Estimated blocks constrained by a grade envelope
- Within the oxide zone
- Within an optimized pit shell

No blocks were assigned a Measured or Indicated classification as the location, true width and grade of the high-grade domains have not been established with sufficient accuracy and the depth of oxidation is only approximate based on visual examination of drill core.

14.10 Reasonable Prospects of Economic Extraction

The Mineral Resource has reasonable prospects for eventual economic extraction and its location, quantity, grade and continuity are known, estimated or interpreted from the Taguas oxide gold-silver Mineral Resource database including diamond and reverse circulation drilling and underground development mapping and sampling. Mineral Resources were constrained by an optimized pit shell based on metal prices of US$1300/oz Au and US$17/oz Ag. Mining costs were assumed to be US$2.00/t, processing costs US$5.20/t and general and administrative (G&A) costs were US$1.50/t. Recoveries of 87% for Au and 52% for Ag were used in the optimization. The pit slope was set at 45˚. Only oxide mineralization was included in the definition of the Mineral Resource pit shell.

14.11 Mineral Resource Statement

Table 14-11 presents the Inferred Mineral Resource estimate for the Taguas oxide gold-silver deposit at a base case cut-off grade of 0.25 g/t AuEq.

Table 14-11: 2018 Taguas Oxide Gold-Silver PEA Inferred Mineral Resource Estimate

COG g/t AuEq	Tonnes Mt	Au g/t	Ag g/t	AuEq g/t	Contained Metal	
					Au koz	Ag koz
0.20	49.6	0.35	12.7	0.45	556	20,237
0.25	**38.6**	**0.40**	**14.6**	**0.51**	**494**	**18,110**
0.30	30.0	0.45	16.5	0.58	435	15,894

Notes:

1. Mineral resource estimate prepared by Mr. R. Simpson, P.Geo., of GeoSim Services Inc. with an effective date of May 14th, 2019. Mineral Resources are classified using the 2014 CIM Definition Standards.
2. Gold equivalent (AuEq g/t) calculations were based on assumed metal prices of US$1300/oz Au, and US$17/oz Ag, recoveries of 87% Au and 52% Ag. AuEq = Au(g/t) + Ag(g/t) *0.0078
3. An optimized pit shell was generated using the following assumptions: metal prices/recoveries in Note 2 above; a 45° pit slope; mining costs of US$2.00 per tonne, processing costs of US$5.20 per tonne, and general & administrative charges of US$1.50 per tonne. All amounts are expressed in US dollars.
4. Totals may not sum due to rounding.
5. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

Approximately 20% of the contained oz Au and 10% of the contained oz Ag at the base case cut-off were within the high-grade domains and the majority of mineralization is within the low-grade envelope, outside the high-grade domains.

14.12 Factors That May Affect the Mineral Resource Estimate

The resource estimate is based on limited information and sampling gathered through appropriate techniques from RC and diamond drill core holes and from underground channel sampling. The estimate was prepared using industry standard techniques and has been validated for bias and acceptable grade-tonnage characteristics.

Areas of uncertainty that may materially impact the Mineral Resource estimate include:

- The positions and extents of high-grade structures are not well defined
- Estimated global bulk tonnage is based on a limited number of density determinations.
- Low-grade mineralization appears to extend beyond the limits of drilling, but has been confined within a low-grade envelope for the present estimate
- The topographic base is of low resolution
- The depth of oxidation is approximate and based on visual estimates of drill samples
- Commodity price assumptions

- Pit slope angles
- Metal recovery assumptions
- Mining and Process cost assumptions

There are no other known factors or issues that materially affect the estimate other than normal risks faced by mining projects in Argentina in terms of environmental, permitting, taxation, socio economic, marketing and political factors. GeoSim is not aware of any legal or title issues that would materially affect the Mineral Resource estimate.

14.13 Comment on Section 14

The QP has estimated and classified the Mineral Resources in a manner consistent with the 2014 CIM Definition Standards. The risks of the Inferred Mineral Resource are presented in Section 14.12.

15.0 Mineral Reserves Statement

This section is not relevant to this Report as no Mineral Reserves have been estimated.

16.0 Mining Methods

The PEA mine plan is 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 PEA based on these Mineral Resources will be realized.

16.1 Method Selection

The Taguas deposit will be mined by conventional open pit hard rock mining. The following characteristics were considered in the selection of the mining method:

- The deposit contains near-surface mineralization in the southern and northern parts of the deposit. Open pit mining would allow a rapid extraction.
- The mineralized structures are oriented northeast-southwest with widths between 10 m to 50 m and an erratic distribution of grades so flexibility in the location of equipment and sequencing is required to allow equipment to move to different areas or mining fronts in the pit.
- The physical and geomechanical characteristics of the material according to the observed in the area and nearby roads, indicate that it is competent rock
- Average grades of mineralized zones are not high, so a low-cost mining method is required. The estimated economic value of the mineralization is less than the cost of most selective underground mining methods

16.2 Assumptions for Mine Design and Mine Planning

The mining assumptions used for the Taguas PEA are:

- Mine capacity of approximately 9 Mt/a of process feed and waste
- Plant capacity of 4.2 Mt/a (nominally 12,000 t/d).
- Mining recovery of 100% and mining dilution of 0%.
- Metal prices of US$1,300/oz for gold and US$17/oz for silver for financial evaluation
- Metallurgical recoveries of 87% for gold and 52% for silver according to test work

Pit shells generated from pit optimizations were used for the selection of phases and final pit limits plant capacity, final slope angles, mining and processing costs and maximization of Mineral Resources.

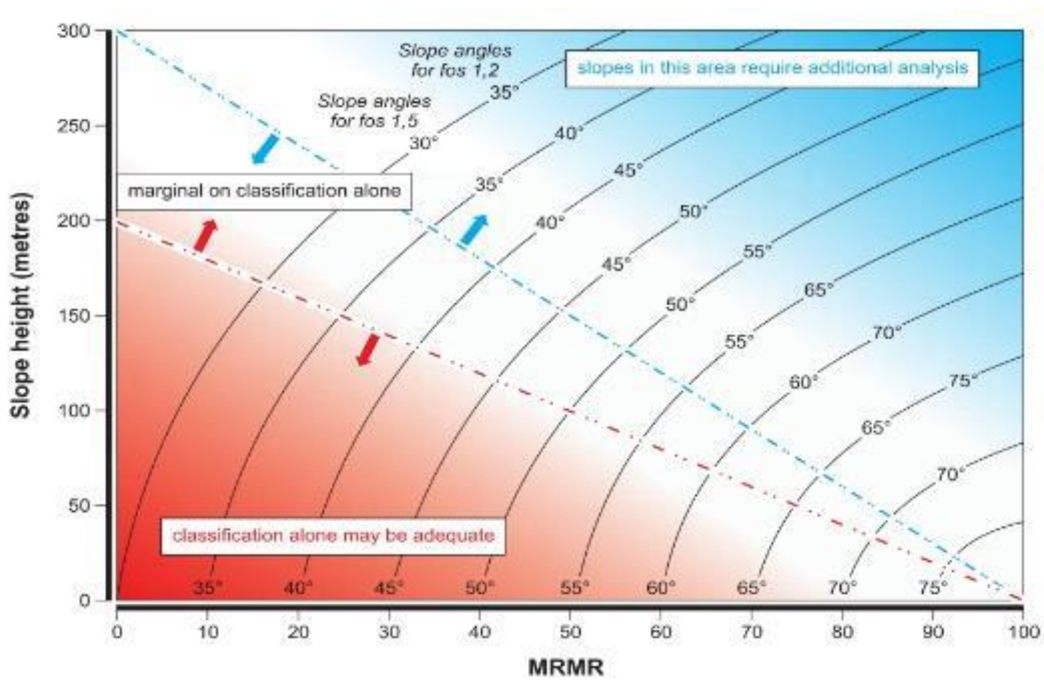
16.2.1 Geotechnical Considerations

The geotechnical parameters used for pit optimization were developed by Wood based on information obtained during the field visit to the Project, and Wood´s experience with similar projects.

A preliminary estimated rock mass rating (RMR) of 50 corresponds to fair rock mass quality. This assessment of the rockmass quality was based on an evaluation of existing road cut slopes on the Property. With a slope height of 150 m, and the empirical design chart of Haines & Terbrugge (Figure 16-1) an approximated inter-ramp slope angle of 45° is assumed for the Project.

Using the inter-ramp angle of 45° and considering the use of ramps for access, an estimated an overall slope angle of 42.6° was used for the pit optimization process.

Figure 16-1: Haines & Terbrugge Empirical Design Chart



16.2.2 Selective Mining Unit

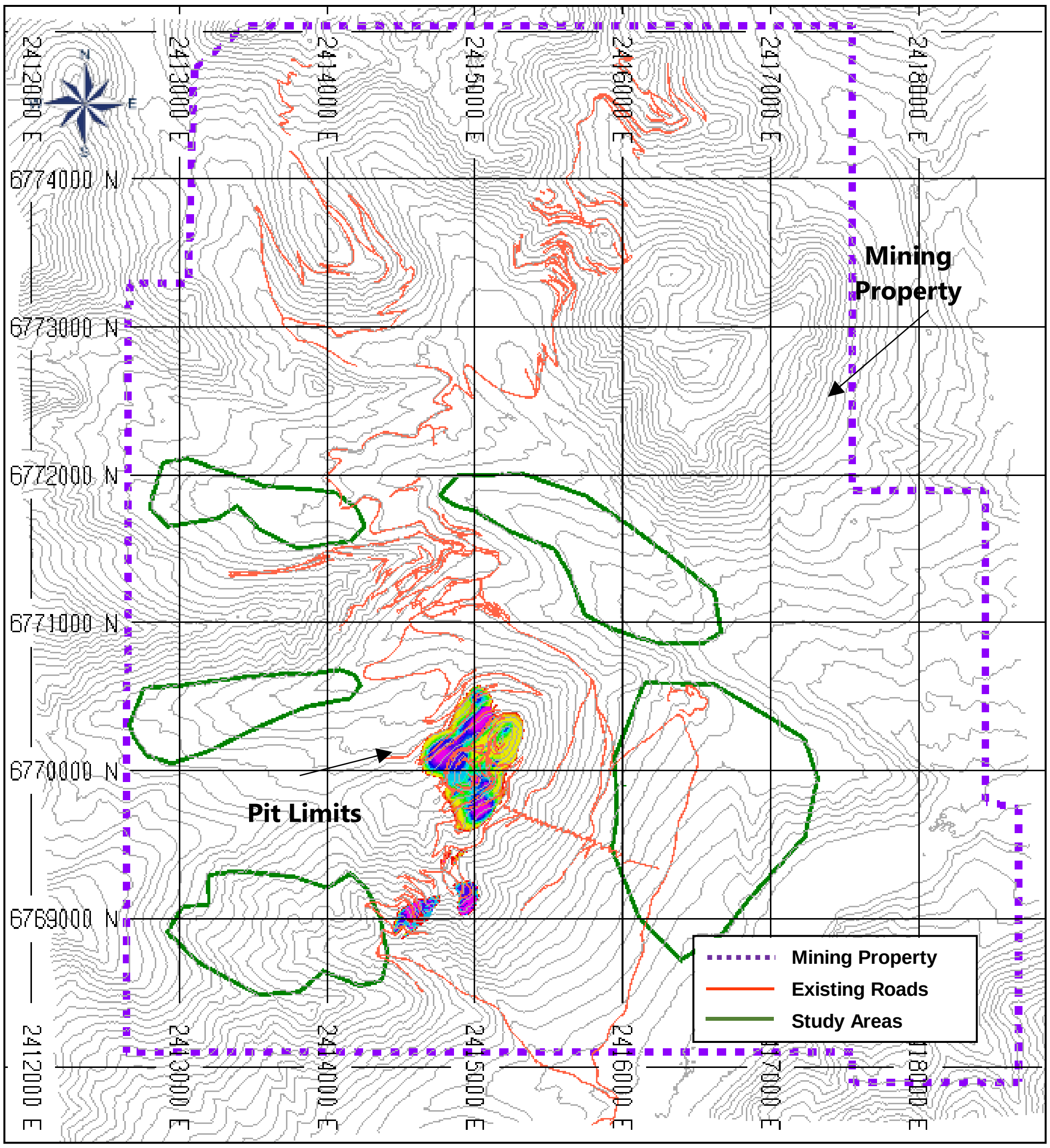
The block model has a block size of 5 m x 5 m x 5 m (L x W x H), which is equal to the selective mining unit (SMU). The SMU is suitable for the conventional mining method selected with an excavator and trucks, as well as for a selectivity of mineralized material.

In addition, the bench height of 5 m will allow greater efficiency during operation with excavators. Consequently, no additional dilution has been applied.

16.2.3 Surface Topography

A 5 m contour topographic survey was used for mine design. The surface topography, Property boundaries, and pit limits are shown in Figure 16-2.

Figure 16-2: Taguas Surface Topography



Note: Lines correspond to 10 meters elevation offset.

16.2.4 Parameters for Pit Optimization

Parameters for pit optimization were selected based on information generated during the study or assumptions based on standard industry practice and Wood's experience with similar projects. Table 16-1 presents the parameters used for pit optimization.

Table 16-1: Parameters for Pit Optimization

Design Criteria	Units	Value	Comments
Mining Cost			
Average Mining Cost	US$/t	2.00	
Base	US$/t	1.94	Reference Level 4160 masl
Additional cost/bench down	US$/t	0.008	Reference Level 4160 masl
Additional cost/bench up	US$/t	0.007	Reference Level 4160 masl
Mining Dilution	%	0%	
Mining Recovery	%	100%	
Process Cost			
Process Cost	US$/t	5.55	for a plant capacity of 12 kt/d
Sustaining Cost	US$/$t_{proc}$	0.59	
G&A Cost	US$/$t_{proc}$	1.81	
Sustaining Cost	MUS$	17.20	
Closure Cost	MUS$	5.10	
Metallurgical Recovery			
Au	%	87%	
Ag	%	52%	
Metal Price			
Au	US$/oz	1,300	
Ag	US$/oz	17	
Selling Cost			
Au	US$/oz	7.00	
Ag	US$/oz	0.90	
Payable Metal			
Au	%	99.5%	
Ag	%	98.0%	
Taxes			
Royalty	%	3.0%	

16.2.5 Whittle Optimization Results

The methodology used to determine the division between mineralized material and waste in Whittle® was to compare the net smelter return (NSR) of a block with the processing cost. This method establishes that a block goes to process if its NSR covers the processing cost, otherwise it will be sent to the waste dump.

The detail of the expressions used for the definition of mineralized material and waste is listed in Table 16-2.

Table 16-2: Mineralized Material and Waste Definition Criteria

Mathematical Expressions
UnitValueMetal = PriceMetal * RecoveryMetal * PayableMetal
EquivalentGradeAu = GradeAu + (GradeAg * (UnitValueAg / UnitValueAu))
NSROxide = EquivalentGradeAu * RecoveryAu * (PriceAu - SellingCostAu) * PayableAu *ConversionFactor
MaterialToPlant = (NSROxide >= ProcessingCost)
MaterialToWasteDump = (NSROxide < ProcessingCost)

Fifty-one nested pit shells were generated during pit optimization process for different revenue factors (RFs), which varied from 0.20 to 1.20 using intervals of 0.02. Pit 41 is the pit with revenue factor 1. Cross- and longitudinal sections of the pit shells are shown in Table 16-3 and Table 16-4.

Figure 16-3: Nested Pits (cross-section)

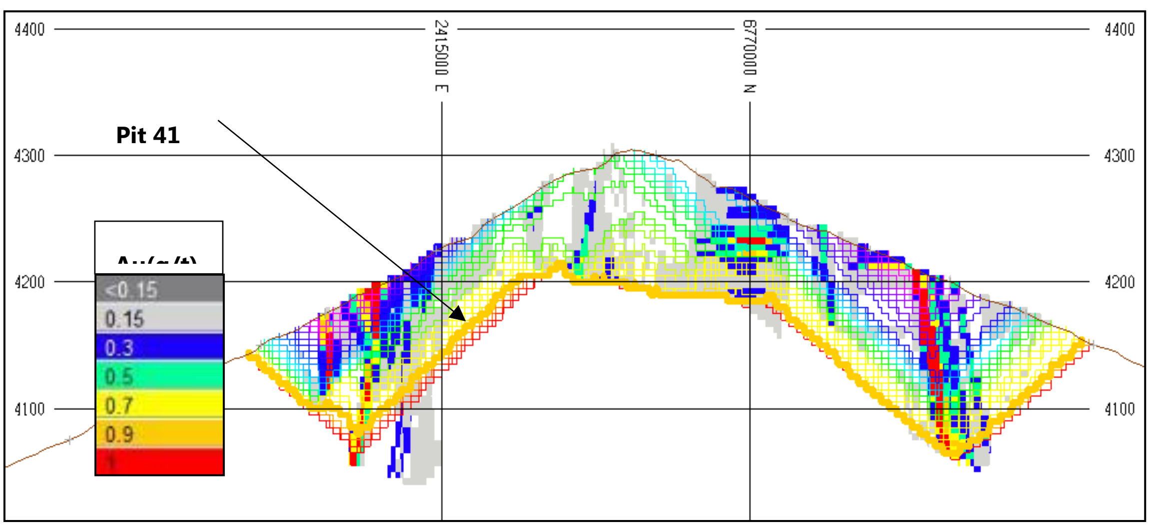
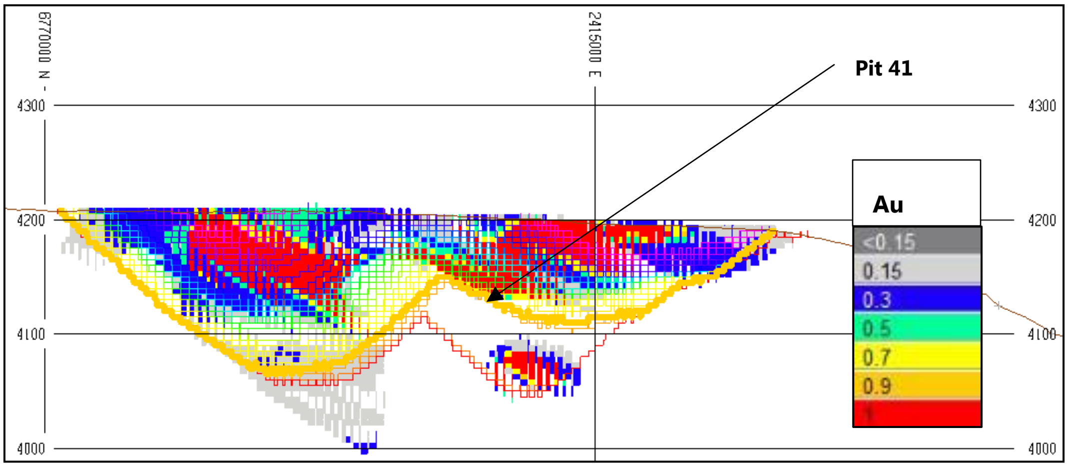


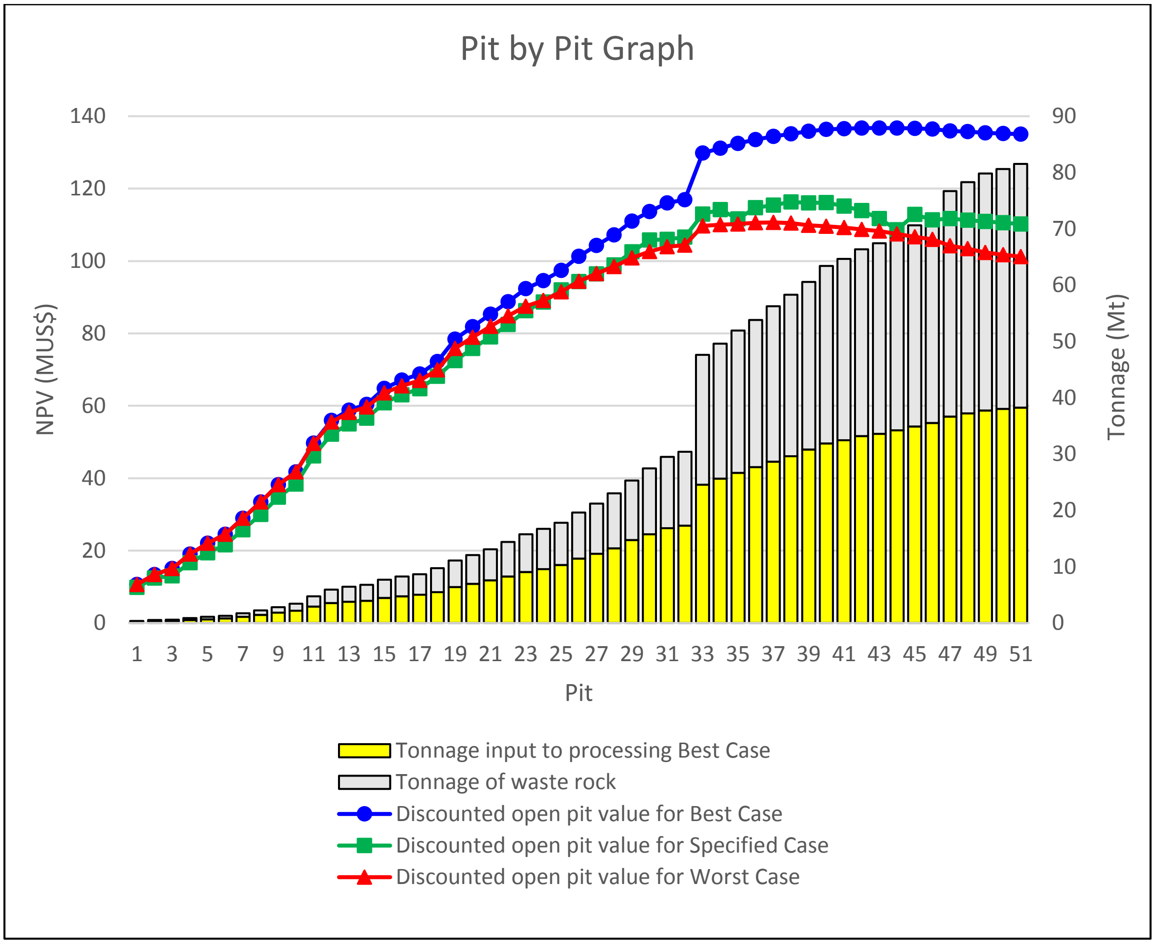
Figure 16-4: Nested Pits (longitudinal section)



16.2.6 Phase Selection

The selection of phases and final pit was made considering the pit by pit results of tonnage, mining widths, and processing capacity (Figure 16-5).

Figure 16-5: Pit by Pit Cash Flow and Tonnage Results



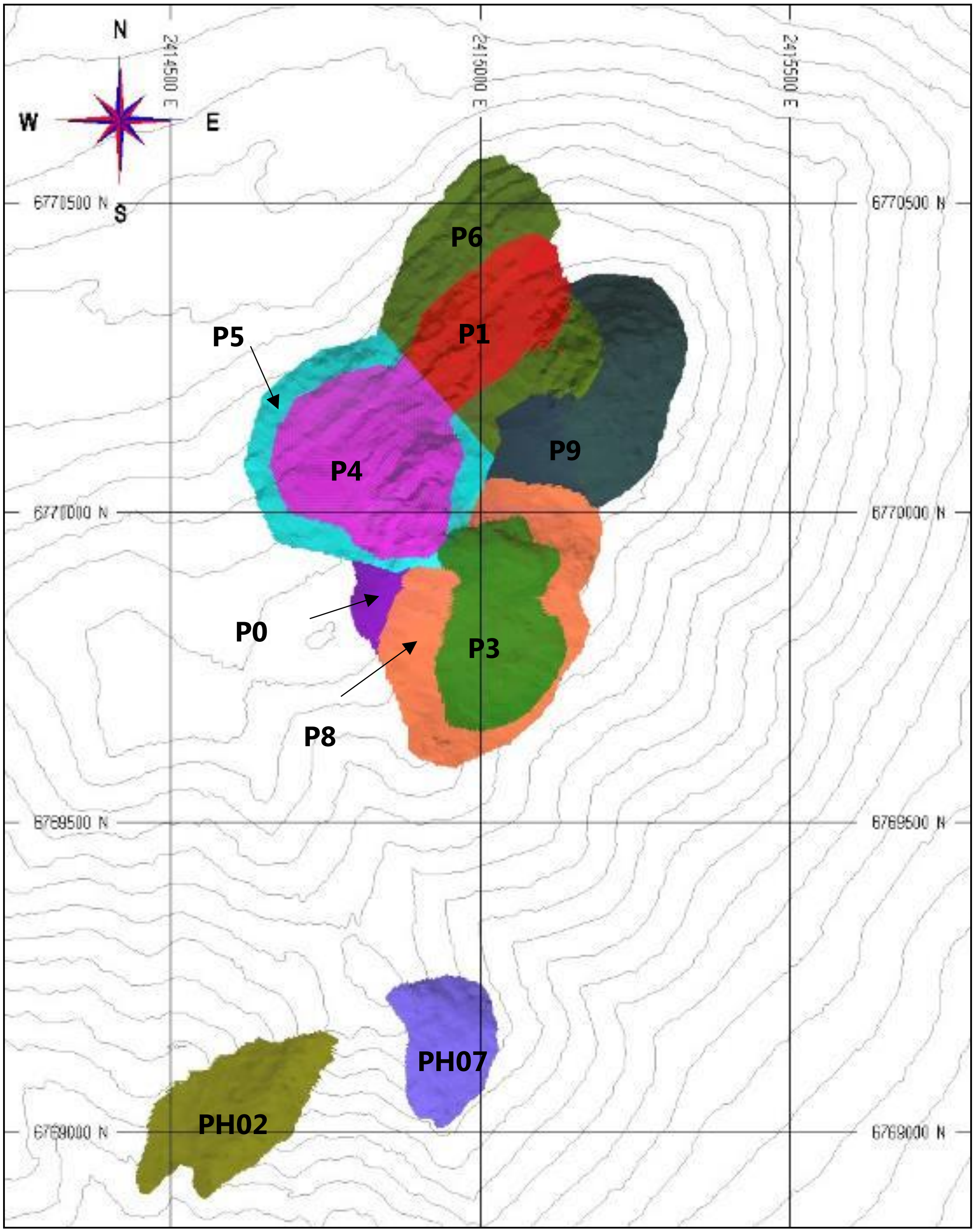
The design of the phases and final pit (toes and crests) was carried out assuming the overall slope angle selected in Section 16.2.1. The sequence of the phases was selected based on the NSR. The initial phases were those with the highest NSR values.

The ranking of the phases is shown in Table 16-3 and a plan view of all phases selected is shown in Figure 16-6.

Table 16-3: Pit by Pit Cash Flow and Tonnage Results

Phase	Total Material (Mt)	Mineralized Material (Mt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	NSR (US$/t)	Strip Ratio
Phase 1	2.59	0.90	0.91	11.10	0.99	33.18	1.86
Phase 2	3.21	1.6	0.61	11.48	0.68	22.94	0.96
Phase 3	3.05	2.4	0.39	33.12	0.60	20.26	0.26
Phase 4	7.11	4.3	0.53	10.77	0.60	20.23	0.70
Phase 5	10.52	3.5	0.45	12.17	0.52	17.66	2.00
Phase 6	8.87	3.8	0.38	10.01	0.45	15.11	1.33
Phase 7	1.76	0.74	0.41	4.33	0.43	14.63	1.36
Phase 8	19.53	8.8	0.36	11.46	0.43	14.44	1.23
Phase 9	10.97	6.4	0.29	19.24	0.41	13.91	0.71
Phase 10	8.65	5.4	0.27	15.67	0.37	12.44	0.59
Total	76.26	37.8	0.39	14.47	0.48	16.26	1.02

Figure 16-6: Plan View of Selected Phases



16.2.7 Final Pit Selection

Wood determined the final pit using the pit shell 41 from Whittle® runs.

The final pit is shown in Figure 16-7 with corresponding cross-sections shown in Figure 16-8 and Figure 16-9 for the gold and silver grade, respectively.

Figure 16-7: Taguas Final Pit

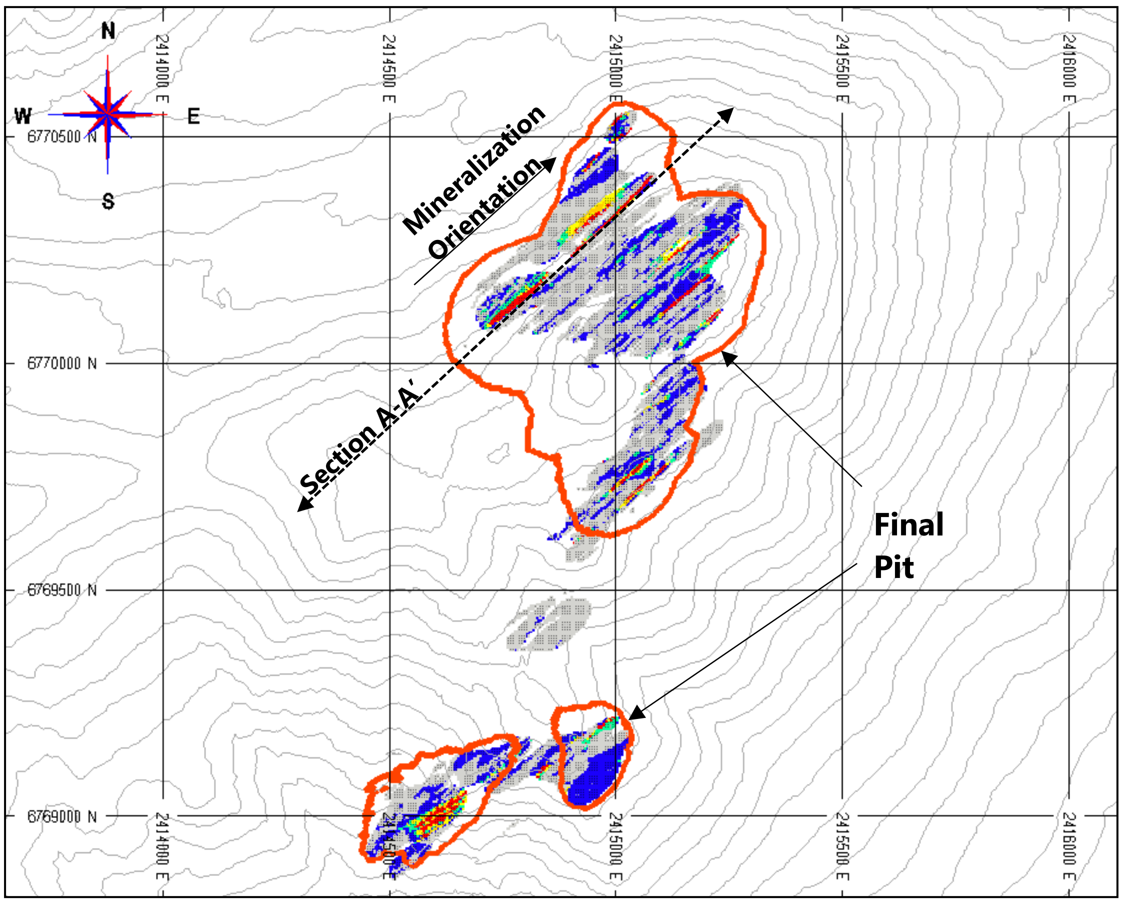


Figure 16-8: Gold Grade Distribution (Section A-A′)

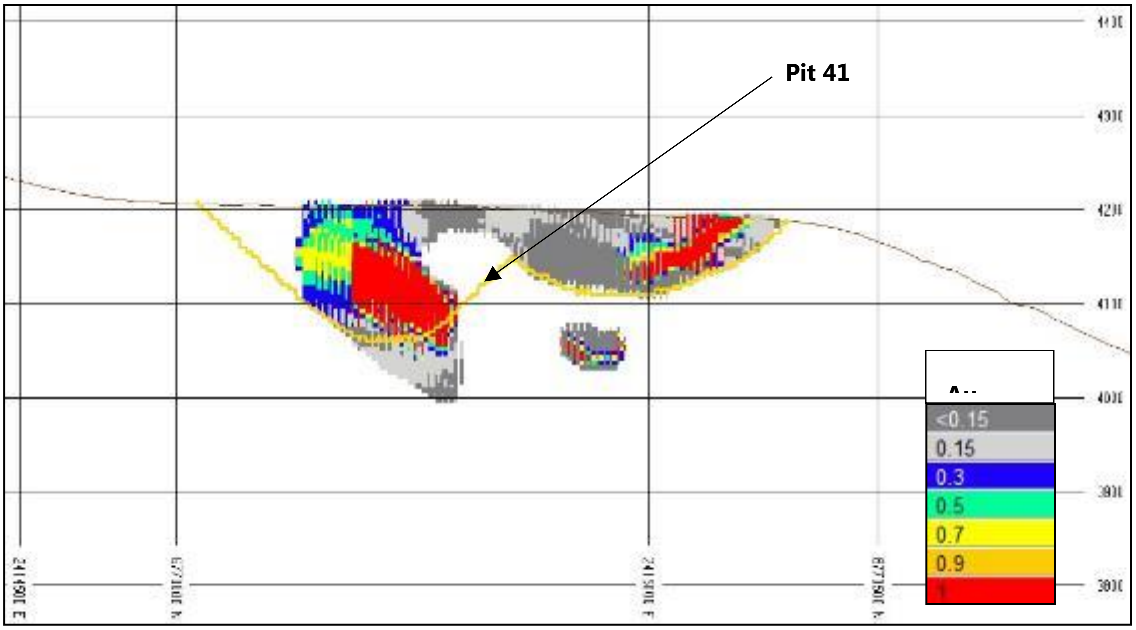
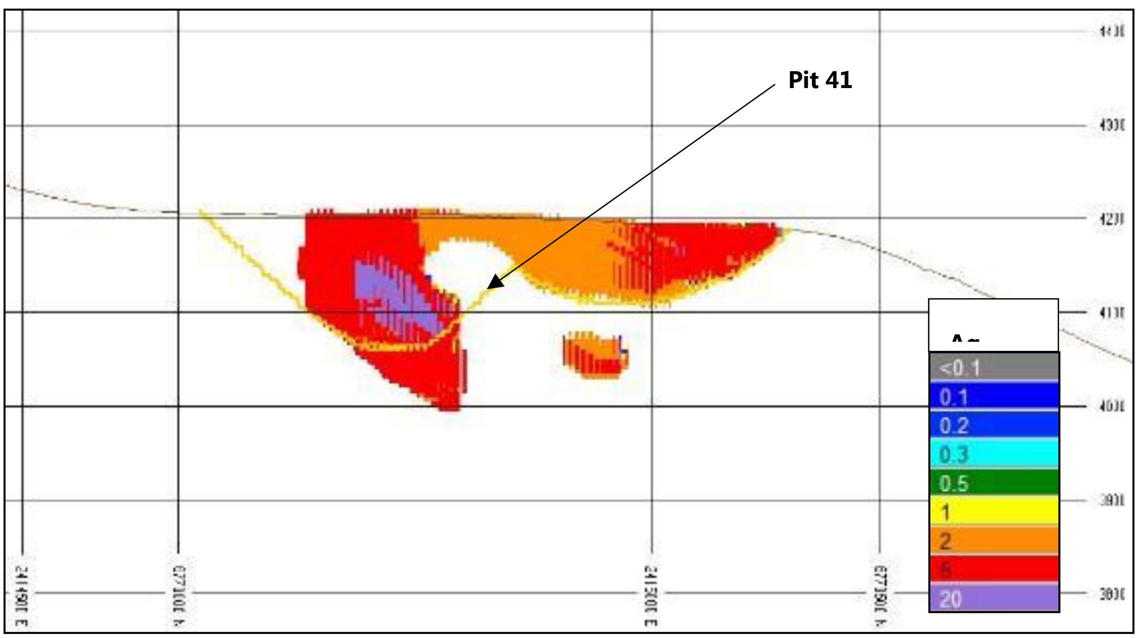


Figure 16-9: Silver Grade Distribution (Section A-A′)



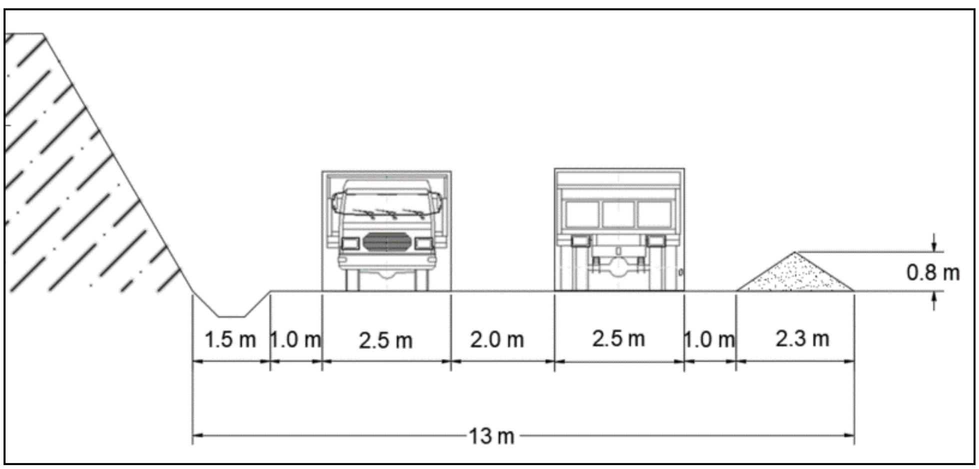
16.3 Mine Design Criteria

Haul roads were designed to accommodate Volvo FMX 8x4 haul trucks with a maximum grade of 10% and a ramp width of 13 m. General pit design criteria and ramp profile are shown in Table 16-4 and Figure 16-10, respectively.

Table 16-4: Open Pit Conceptual Design Criteria

Design Criteria	Units	Value PEA	Comments
Bench Height	m	5	
Minimum Mining Width	m	30	
Turn Radio	m	10	
Ramp Width	m	13	
Ramp Grade	%	10%	
Inter-ramp Angle (IRA)	°	45	Empirical method estimation
Inter-ramp Height	m	100	
Bench Face Angle	°	65	
Backbreak	m	2	
Catch Berm	m	3	
Overall Slope Angle (OSA)	°	42.6	

Figure 16-10: Ramp Width Profile – Volvo FMX 8x4



Heap leach facility and waste dump design criteria are presented in Section 18.

16.4 PEA Mine Plan

The PEA mine plan was produced considering a maximum sinking rate per phase of 15 benches per year and using the MineSight Schedule Optimizer (MSSO®) with the target of feeding the plant with an average of 4.38 Mt per year.

The conceptual mine schedule and material movement are shown in Table 16-5 and Figure 16-11 and the feed to plant information is shown in Figure 16-12 and Table 16-6.

Table 16-5: PEA Mine Schedule

Period	Total Material (Mt)	Waste (Mt)	Mineralized Material (Mt)	Mineralized Material Au (g/t)	Mineralized Material Ag (g/t)	Mineralized Material AuEq (g/t)
Year 1	5.4	2.8	2.6	0.53	18.75	0.65
Year 2	8.0	3.3	4.7	0.42	12.40	0.50
Year 3	8.4	4.2	4.2	0.49	18.50	0.61
Year 4	9.2	5.1	4.0	0.35	15.26	0.45
Year 5	8.8	5.0	3.8	0.36	18.20	0.47
Year 6	8.9	4.6	4.4	0.34	15.21	0.44
Year 7	9.2	4.4	4.8	0.39	11.42	0.46
Year 8	8.1	4.2	3.9	0.38	9.38	0.44
Year 9	8.3	4.0	4.2	0.32	12.38	0.40
Year 10	2.1	0.9	1.3	0.36	18.28	0.47
Total	76.3	38.4	37.8	0.39	14.47	0.48

Figure 16-11: Material Movement

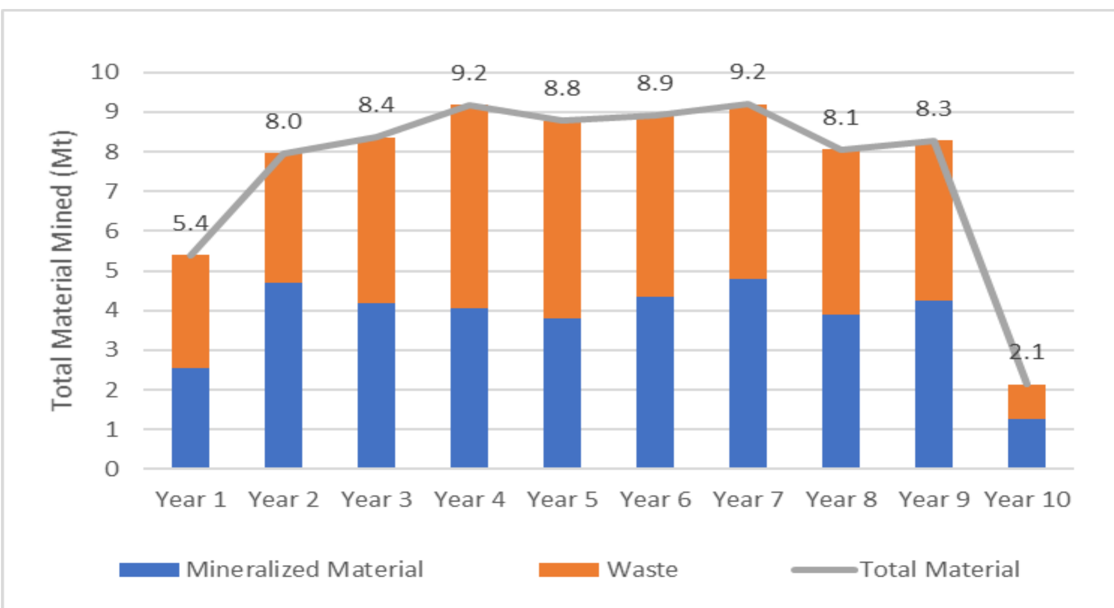
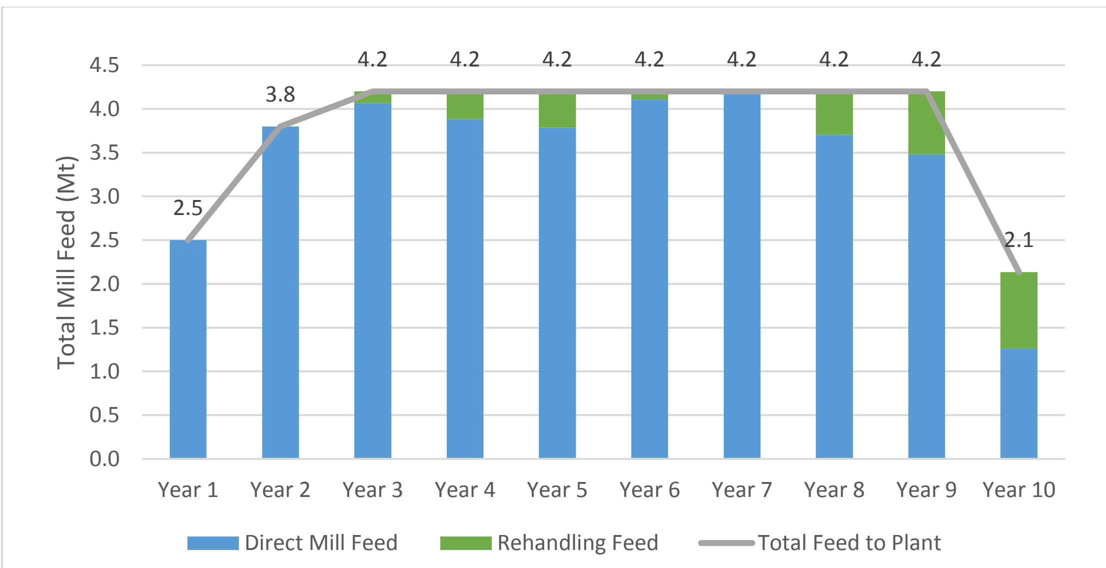


Table 16-6: Plant Feed Schedule

Period	Total Plant Feed (Mt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	NSR (US$/t)
Year 1	2.5	0.53	18.92	0.66	22.05
Year 2	3.8	0.47	14.01	0.56	18.73
Year 3	4.2	0.46	18.21	0.57	19.30
Year 4	4.2	0.38	14.77	0.48	16.00
Year 5	4.2	0.34	17.15	0.45	15.13
Year 6	4.2	0.35	15.23	0.45	15.00
Year 7	4.2	0.41	12.22	0.49	16.48
Year 8	4.2	0.37	9.04	0.43	14.50
Year 9	4.2	0.32	12.98	0.40	13.51
Year 10	2.1	0.29	13.44	0.38	12.79
Total	37.8	0.39	14.47	0.48	16.26

Figure 16-12: Plant Feed by Source



16.5 Mining Equipment

Wood was responsible for estimating the equipment fleet requirements, which were based on the annual requirements of material movement, equipment sizing and performance, and operational factors.

16.5.1 Principal Equipment

An Atlas Copco ROC D55 drill was selected for production drilling. For the movement of mineralized material and waste, a shovel-truck combination has been chosen between a Caterpillar 734F hydraulic shovel and a Volvo FMX 8x4 truck, respectively.

16.5.2 Support Equipment

Major support equipment for the project includes:

- Bull Dozers: Caterpillar D6 and D8 or equivalent dozers to support loading and dumping activities and road maintenance.
- Wheel Dozers: Caterpillar 814 RTD or equivalent dozer for berm, rock chasing, and drill pattern cleanup.
- Motor Graders: Caterpillar 12 or equivalent grader for road maintenance.
- Water Trucks: Mercedes 18,000 L or equivalent water truck for fire water, drill water, dust suppression, and road maintenance.

16.5.3 Equipment Fleet Dimension

For equipment estimates, the work schedule considered 350 days per year and two shifts per day of twelve hours each.

Table 16-7 and Table 16-8 show the mining equipment required per period.

Table 16-7: Principal Equipment Fleet

Equipment		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Atlas Copco ROC D55	Unit	1	1	1	1	1	1	1	1	1	1
Caterpillar 374F	Unit	2	2	3	3	3	3	3	3	3	1
Volvo FMX 8x4	Unit	11	15	19	21	21	20	20	20	20	7

Table 16-8: Secondary Equipment Fleet

Equipment		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Caterpillar D8 Dozer	Unit	1	1	1	2	2	2	2	2	2	1
Caterpillar D6 Dozer	Unit	1	1	1	1	1	1	1	1	1	1
Caterpillar 814 RTD	Unit	1	1	1	1	1	1	1	1	1	1
Caterpillar 12 Grader	Unit	1	2	2	3	3	3	3	3	3	2
Water Truck 18,000 L	Unit	2	2	2	3	3	3	3	3	3	1

16.6 Mining Cost Estimation

This study considers the use of a mining contractor for the Taguas Project so mining capital cost becomes part of the mine operating cost estimate. The unit operating costs under the contract mining scenario are presented below. Annual operating costs are presented in Section 21.

A typical approach for recovering mine capital is to charge depreciation and carrying costs for equipment as a unit cost in terms of US$/t. The carrying cost in this example is assumed at 8%.

The preliminary mine operating cost was estimated by Wood based on our experience with similar projects and considering a base owner cost. Over this base cost Wood calculated a contractor cost to carry the operating cost to a contractor scenario. For this estimation in order to limit risk, most mine contractors do not include the cost of diesel fuel, explosives, or lubrication, and mine owner supplies major consumables as part of the contract.

Areas that the contractor has risk exposure include:

- Overheads which include the cost of contractor administration, permits, mobilization, demobilization and wage adjustments and a 10% profit margin is applied.
- The contractor applies a utility margin of 10% of utility margin.

Preliminary operating costs average US$2.10/t, US$2.13/t mineralized material, and US$2.07/t waste material. During the 10 years the relatively short hauls (1 to 1.8 km). Table 16-9 and Table 16-10 present the estimated cost per period for mineral and waste, respectively. The total of these two tables is shown in Table 16-11.

Table 16-9: Preliminary Mine Operating Cost for Mineralized Material

Equipment		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Drilling	US$/t	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11
Blasting	US$/t	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Loading	US$/t	0.25	0.23	0.25	0.24	0.24	0.24	0.25	0.25	0.25	0.25
Hauling	US$/t	0.76	0.79	0.82	0.83	0.83	0.83	0.84	0.85	0.86	0.96
Support	US$/t	0.38	0.33	0.28	0.35	0.36	0.37	0.39	0.40	0.41	0.40
Supervision	US$/t	0.14	0.12	0.10	0.09	0.09	0.09	0.10	0.10	0.10	0.16
Pumping	US$/t	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Grade Control	US$/t	0.07	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.07
Auxiliaries	US$/t	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Contract Admin. Fee	US$/t	0.20	0.19	0.18	0.19	0.19	0.19	0.20	0.20	0.20	0.22
Total	US$/t	2.15	2.05	2.00	2.07	2.08	2.11	2.15	2.18	2.19	2.42

Table 16-10: Preliminary Mine Operating Cost for Waste

Equipment		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Drilling	US$/t	0.10	0.09	0.09	0.08	0.08	0.09	0.09	0.09	0.09	0.10
Blasting	US$/t	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Loading	US$/t	0.25	0.23	0.25	0.24	0.24	0.24	0.25	0.25	0.25	0.25
Hauling	US$/t	0.76	0.79	0.82	0.83	0.83	0.83	0.84	0.85	0.86	0.96
Support	US$/t	0.38	0.33	0.27	0.35	0.35	0.37	0.39	0.40	0.40	0.39
Supervision	US$/t	0.14	0.12	0.10	0.09	0.09	0.09	0.09	0.10	0.10	0.16
Pumping	US$/t	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Grade Control	US$/t	0.07	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.07
Auxiliaries	US$/t	0.06	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06
Contract Admin. Fee	US$/t	0.19	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.20	0.22
Total	US$/t	2.10	2.00	1.96	2.02	2.03	2.07	2.10	2.13	2.15	2.37

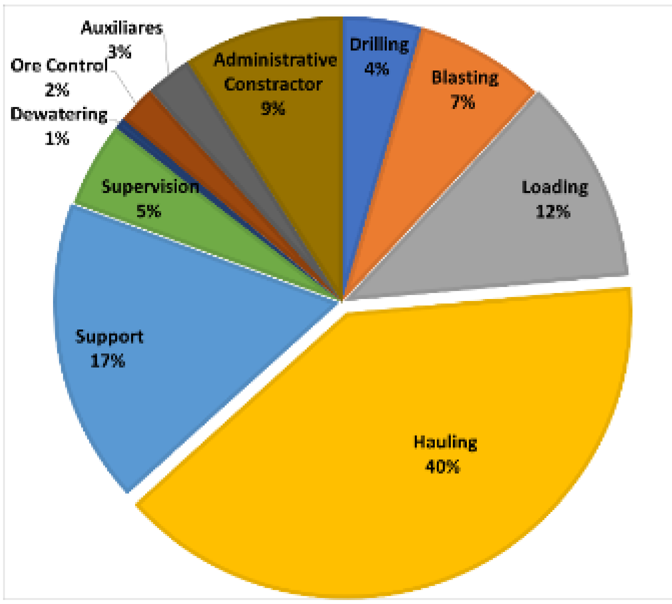
Abbreviation used: Administrative (Admin).

Table 16-11: Total Mine Operating Cost

Equipment		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Total	US$/t	2.12	2.02	1.98	2.04	2.06	2.09	2.12	2.15	2.17	2.41

The average cost of mining that was obtained was 2.10 US$/t which is very similar (+5%) to the cost used during the Whittle® optimization stage. On a cost-by-cost center basis, mine hauling accounts for half of the mine operating costs at 40%. Loading accounts for 12% of the mine costs, followed by support equipment at 17% (Figure 16-13).

Figure 16-13: Cost by Cost center basis



16.7 Comments on Section 16

A preliminary assessment of mining cost, potential mill feed material value, productivity, rock quality, and required mill feed-waste selectivity have been accounted for in mining method selection, open pit optimization and phase design. The PEA includes an evaluation of rock quality and site topography gathered during a visit to site. Estimates of costs and equipment productivities have been developed from Wood's experience with projects of similar type and scale in the region.

17.0 Recovery Methods

17.1 Process Flowsheet

The recovery process will be based on crushing and agglomeration at a rate of 12,000 t/d, stacking in 6 m lifts on a permanent heap leach. Followed by gold and silver recovery from the heap leach pregnant solution in a carbon adsorption–desorption– recovery (ADR) plant, and electrowinning, to produce doré gold bars. A general block diagram of the process is shown in Figure 17-1.

Figure 17-1: Process Block Diagram

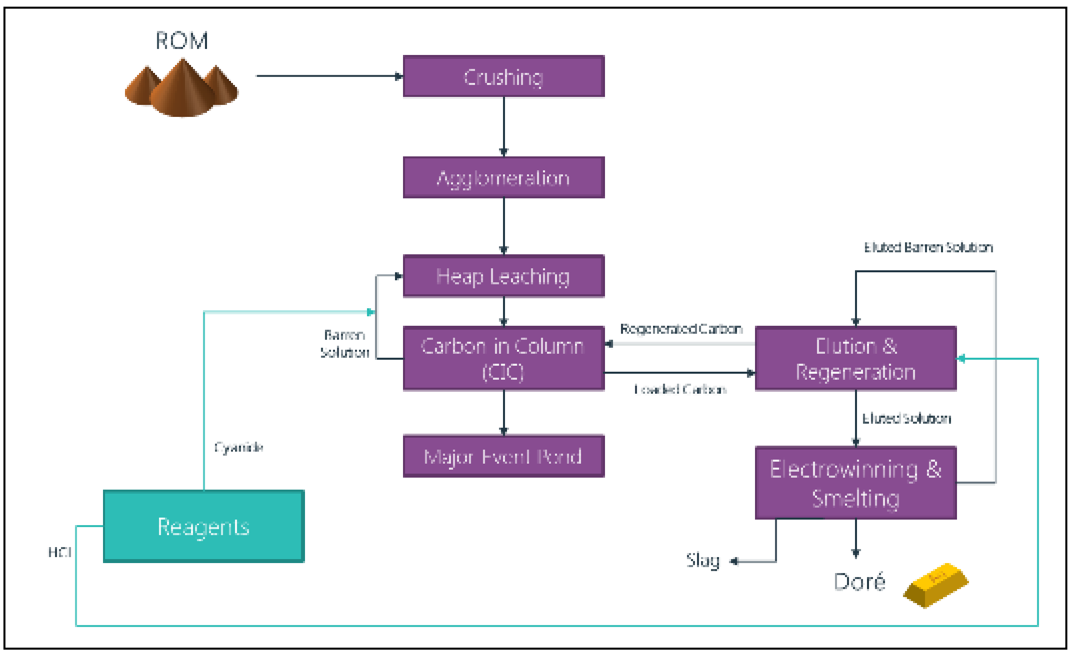
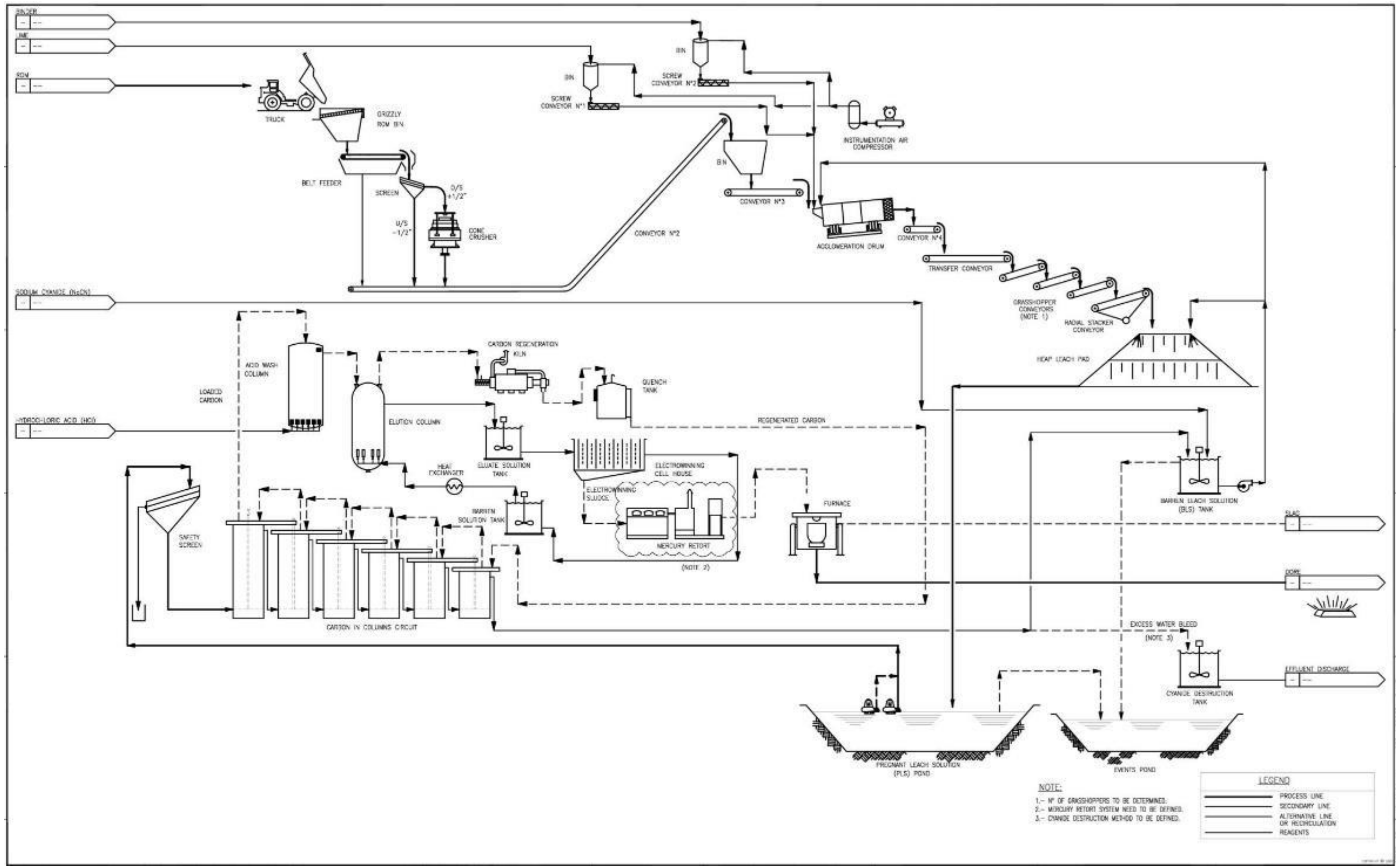


Figure 17-2 presents a proposed general process flow diagram for the metallurgical plant.

Figure 17-2: General Flow Diagram of Taguas Project



17.2 Plant Design

17.2.1 Process Plant Description

Mineralized material from the mine will be delivered by truck to a primary crusher feed hopper. This is discharged by a belt feeder delivering to a vibrating sizing screen that separates oversize mineralized material coarser than 50 mm to feed a cone crusher. The crusher discharge and undersize of the vibrating screen are combined on a collection conveyor belt delivering to a crushed mineralized material storage bin. The crushed mineralized material bin will be discharged by a belt feeder delivering to an agglomerating drum.

Lime and binder, dosed separately, will be added to the agglomerating drum with crushed mineralized material and barren leach solution (BLS). The agglomerated material will be transported on a series of horizontal and grasshopper conveyors and radial stacker system and stacked on a permanent heap pad in 6 m lifts. The heap leach will be irrigated by barren leach solution rich using drip emitters installed over the leaching pad for a period of 23 days. Rain covers will be installed to avoid water excess entering the leaching pad system, and to control the water balance.

Gold rich pregnant leach solution (PLS) will percolate through the leaching pad, be collected in a drainage layer at the base of the heap and conducted to a PLS pond. PLS solution will be pumped to the ADR (Adsorption-Desorption-Recovery) plant for gold and silver recovery. An event pond will provide storage for excess water during storm events and/or to serve as PLS pond.

In the ADR plant, gold and silver will be recovered in a carbon column circuit by adsorption onto carbon. Barren tailings solution will be stored in a solution tank and recycled to the heap leach to irrigate fresh mineralized material. Loaded carbon will be treated in a desorption plant consisting of acid wash and elution, carbon regeneration and electrowinning to produce doré bars.

17.2.2 Design Criteria

The process design criteria are based on preliminary metallurgical testing, and standard flow diagram for this type of process plant.

17.2.2.1 Crushing

Mineralized material preparation consists of open circuit cone crushing at a nominal feed rate of 750 t/h to -12.5 mm (quarter inch) to a run-of-min (ROM) bin with a live capacity of 200t. The circuit will have a utilization of 67%. Design criteria are presented in Table 17-1.

Table 17-1: Process Design Criteria for the Crushing Area

Parameter	Value	Units
Crushing configuration	Open circuit crushing	
Mineralized Material Reception		
Utilization	67	%
Feed reception	ROM Bin with grizzly	
ROM Bin live capacity	200	t
Feed rate (Nominal)	750	t/h
Crushing Circuit		
Utilization	67	%
Feed reception	Belt feeder discharging to a primary screen and oversize flows to crusher	
Primary Screening		
Feed rate to screen (Nominal)	750	t/h
No. of units	1	
Screen aperture size	12.5	mm
Split to undersize	24.7	%
Crusher		
Feed rate to crusher (Nominal)	565	t/h
F80 to crusher	47.3	mm
P80 from crusher	10.0	mm
Crusher type	Cone crusher	
No. of units	1	
Installed power draw	1000	kW
Final crushed product P100	12.5	mm

17.2.2.2 Agglomeration

Crushed mineralized material will be agglomerated with barren leach solution, cement and lime in a 10 m long, 3.6 m diameter drum to an agglomerate moisture of 13% to achieve a bulk density of 1.58 t/m^3 for heap leaching. Design criteria for agglomeration are presented in Table 17-2.

Table 17-2: Process Design Criteria for the Agglomeration Area

Parameter	Value	Units
Utilization	67	%
Feed reception	Bin discharging to conveyor that feeds agglomeration drum. Conveyor also receives addition of binder and lime	
Agglomeration method	Drum	
Feed rate to drum (Nominal)	750	t/h
No. of units	1	
Drum specifications		
Length	10.0	m
Diameter	3.6	m
Residence time	60	s
Agglomerate moisture	13	%
Agglomerate bulk density	1.58	t/m^3
Binder		
Assumed binder	Cement	
Binder addition	10.0	kg/t
Other components		
Lime addition	4.5	kg/t
Barren Leach Solution addition	As required to achieve moisture (no fresh water added)	

17.2.2.3 Heap Leach Facility

The Taguas HLF will be a permanent pad with soil liner, geomembrane and overliner with a total capacity of 37.8 Mt in 23 lifts with a height of 6 m and a leach cycle of 23 days (Table 17-3). Dripper irrigation will be at a rate of 12 L/m^2/h or a nominal rate of 349 m^3/h with a cyanide solution having a concentration of 500 ppm. Design criteria for the heap leach facility are presented in Table 17-3.

Table 17-3: Process Design Criteria for the Heap Leach Facility

Parameter	Value	Units
Facility type	Permanent Pad with interlift liner	
Inter-lift liner type	Soil liner / geomembrane / overliner	
Pad capacity	37.83	Mt
Agglomerate bulk density	1.58	t/m^3
Average lift height	6	m
Number of lifts	23	
Wet area utilization	95	%
Irrigation		
Nominal application rate	12.0	$L/m^2.h$
Solution application method	Drippers	
Nominal irrigation flowrate	349	m^3/h
Design irrigation flowrate (Nominal flowrate x 1.2)	419	m^3/h
Cyanide concentration	500	ppm
Solution pH	10-11	
Leach cycle	23	d
Cyanide consumption	0.59	kg/t
Water Balance		
Solution Losses		
Stacked mineralized material saturation moisture	13	%
Moisture loss of Mineralized Feed	8	%
Evaporation Rate	5	mm/d
Heap Leach irrigation solution evaporation	5	%
Precipitation Rate	152	mm/y
Make-Up Water Requirement	79.2	m^3/h

Geotechnical parameters for the heap leach pad are discussed in Section 18.3.

17.2.2.4 ADR Plant

The ADR plant is sized to nominally produce 50,000 oz/y or 4.7 kg gold per day using carbon in column to recovery gold from pregnant leach solution and acid wash at ambient temperature and AARL elution to strip gold from the carbon. Design criteria for the gold plant are presented in Table 17-4.

Table 17-4: Process Design Criteria for the ADR Plant

Parameter	Value	Units
ADR Plant Gold Production capacity	50,000	oz/y
Loaded carbon capacity	1	t C/d
Carbon bulk density	0.5	t/m^3
Carbon load (design)	5	kg Au/t C
Acid wash type	HCl	
Acid wash temperature	Ambient	
Elution type	AARL	
Elution temperature	125	°C
Carbon to Elution	30	t C/month
Au to Electrowinning	4.47	kg/d

17.3 Comments on Section 17

The recovery process will be based on conventional oxide gold-silver heap leach recovery methods. Mineralization is expected to respond reasonably to this flowsheet with gold and silver recoveries of about 87% and 52% respectively. The projected requirements for energy, water and reagents for the proposed flow sheet and scale of operation can be obtained locally.

No significant variability has been noted in the limited number of metallurgical samples to date, however a geometallurgical variability program should be conducted in future testing on a broader set of samples collected across the deposit in order to refine the process design criteria. Further definition of the lower boundary of oxidation will also de-risk projected gold and silver recoveries, process operating costs, and metal production.

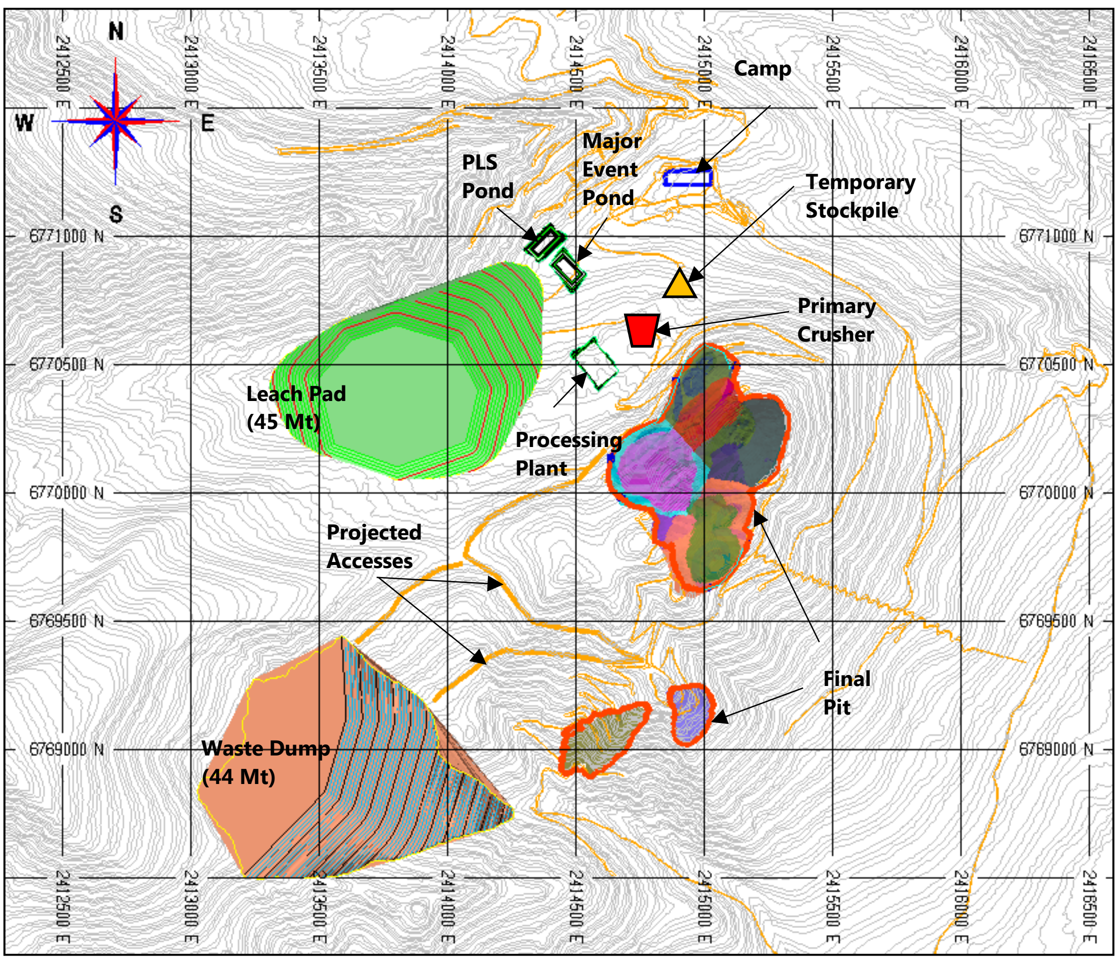
18.0 Project Infrastructure

The main project infrastructure components are the heap leach facility (HLF), mine waste dump, primary crusher, processing plant, and mining camp. The heap leach facility and mine waste dump have an approximate capacity of 45 Mt and 44 Mt, respectively.

Heap leach facility includes pond for pregnant leach solution (PLS) and for major event (safety).

A layout of the proposed major project infrastructure is shown in Figure 18-1. A view of the proposed heap location is presented in Figure 18-2.

Figure 18-1: Proposed Major Infrastructure Layout



18.1 Road and Logistics

The access road to the Project site will use the road to the Veladero operation and an additional 25 km of secondary road, from the Veladero road to the Taguas site will be upgraded to 7 m width. Six culverts will be installed for seasonal stream crossings.

18.2 Geotechnical Parameters for the Heap Leach Facility

The design criteria used for the conceptual geotechnical design of the HLF is presented in Table 18-1. These values have been used for the performance of slope stability analyses, on which the conceptual geotechnical design is based.

Table 18-1: Heap Leach Facility-Conceptual Geotechnical Design Criteria

Criteria	Value
Production	
Total tonnage capacity	38 Mt
Mineralized Material Properties	
Dry Density	2.0 ton/m^3
Product	Run-of-mine (ROM)
Maximum Size	50 cm
Internal Friction Angle (ϕ')	36°
Cohesion (c´)	0 kPa
Geometry	
Lift Height	6 m
Maximum Height over Grading	90 m
Interlift Slope	1.5H:1V
Bench Width	6 m
Global Slope	2.5H:1V
Slope Stability	
Static – Minimum Factor of Safety (FS)	1.5
Pseudo-Static – Minimum Factor of Safety (FS)	1.0
Deformation Analysis	No Applicable
Period of Seismic Return	475 years
Ground Seismic Acceleration	0,35g
Seismic Coefficient	0,175
Solution Ponds	
Pregnant Leached Solution Pond	15 000 m^3
Major Events Pond	15 000 m^3

18.2.1 Heap Leach Feed Material

The mineralized material that will be stacked on the HLF will come from the open pit as a ROM material (run of mine). Wood personnel during the site visit, evaluated the mineralized zone, and noticed that the mineralized material (oxides) has characteristics corresponding to a rock of good quality. Thus, the material placed on the HLF will have geotechnical properties similar to those of a coarse granular material (Figure 18-2).

Taking into account these considerations, a unit weight of 20 kN/m^3, a null cohesion and an internal friction angle of 36° have been assigned as geotechnical properties for the ROM material.

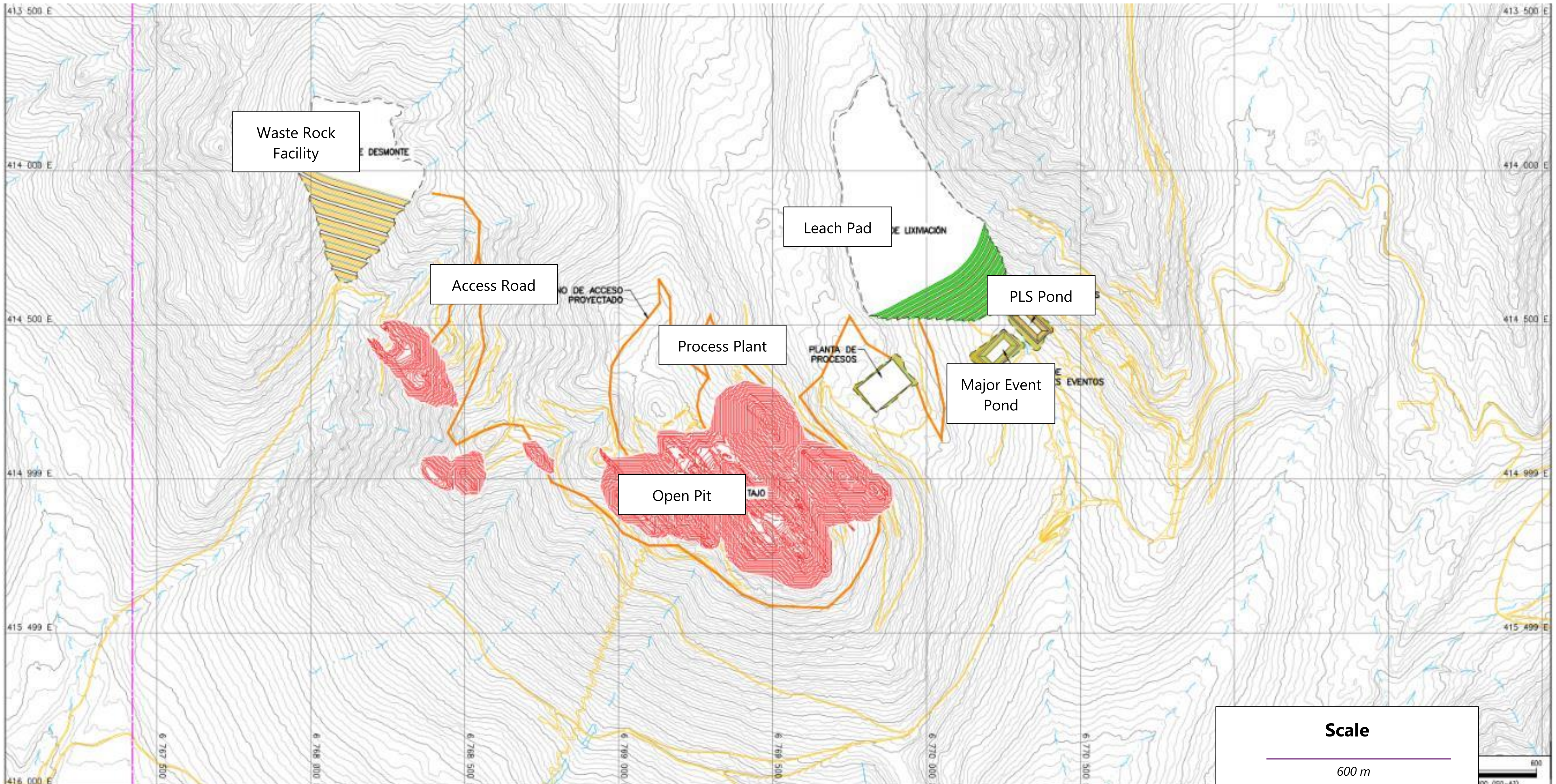
Figure 18-2: View of Proposed HLF Location

18.2.2 Foundation Material

In the area where the location of the HLF is projected, the foundation soil is composed of a moraine material. Figure 18-3 shows the proposed facility layout.

The geotechnical parameters assumed for the HLF foundation material are cohesion of 5 kPa, internal friction angle of 35° and a dry unit weight of 20 kN/m3. Geotechnical testwork will be required to support design refinements.

Figure 18-3: Plan View Conceptual Heap Leach Facility



18.2.3 Liner System

At the level of conceptual engineering, Wood proposes the placement of a liner system consisting of a 2 mm-geomembrane layer of single side textured high-density polyethylene (HDPE).

This geomembrane will be covered by an overliner material (gravelly) of 0.50 m thickness. Under the geomembrane a material of low permeability (clayey soil liner) will be placed and compacted. The soil liner thickness must be at least 0.3 m.

The interfaces of the geomembrane with these materials are a plane of potential failure surface. For purposes of the present conceptual design, a cohesion value of 8 kPa, internal friction angle of 16°, and dry unit weight of 16 kN/m^3 have been designated.

18.3 Waste Rock Facilities

The design criteria considered for the conceptual geotechnical design of the waste rock facilities are shown in Table 18-2. These values have been used in the geotechnical modeling of waste dumps.

Table 18-2: Waste Rock Facilities-Conceptual Design Criteria

Criteria	Value	Source
Production		
Total tonnage capacity	36.8 Mt	Wood
Waste Properties		
Dry Density	2.0 t/m^3	Wood
Internal Friction Angle (ϕ')	36°	Wood
Cohesion (c´)	0 kPa	Wood
Geometry		
Lift Height	20 m	Wood
Maximum Height over Grading	120 m	Wood
Interlift Slope	2.0H:1V	Wood
Bench Width	10 m	Wood
Global Slope	2.5H:1V	Wood
Slope Stability		
Static – Minimum Factor of Safety (FS)	1.5	Wood
Pseudo-Static – Minimum Factor of Safety (FS)	1.0	Wood
Deformation Analysis	Not Applicable	Wood
Period of Seismic Return	475 years	Wood
Ground Seismic Acceleration	0.35 g	Wood
Seismic Coefficient	0.175	Wood

18.3.1 Waste Dumps

The area where the mine waste material will be stacked is close to the open pit. Based on preliminary data, the mine waste material will have geotechnical characteristics similar to those of mineralized material.

18.3.2 Mine Waste Material

The mine waste material from the open pit will behave like a coarse granular material. The geotechnical parameters assigned to the waste material are null cohesion, internal friction angle of 36° and a dry unit weight of 20 kN/m^3 (Figure 18-4).

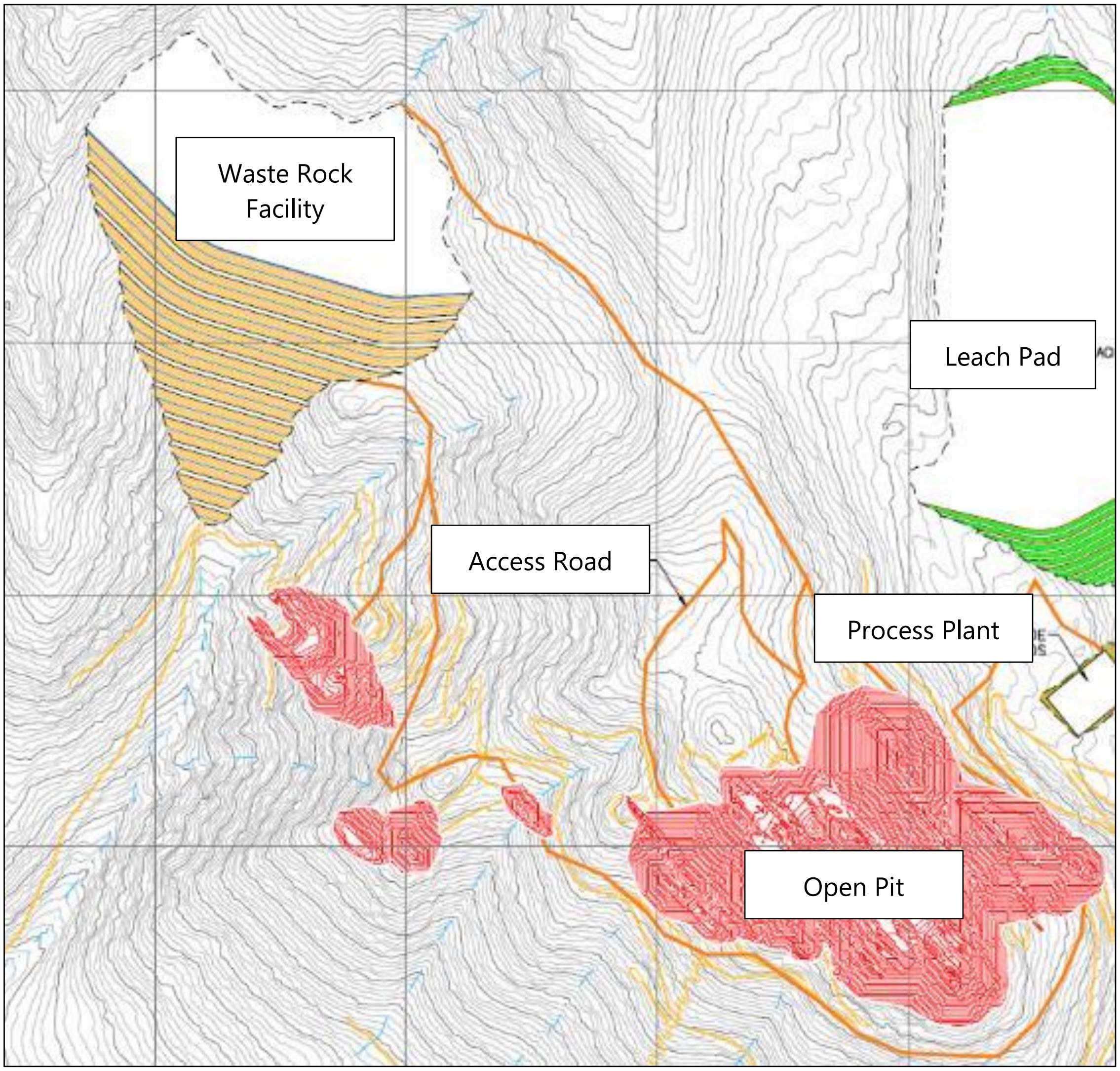
Figure 18-4: Panoramic View of Waste Rock Facility Location

Note: Photo looking north with a field of view is approximately 500 m.

18.3.3 Foundation Material

The foundation soil is composed of a moraine material. It has an assigned value of 5 kPa of cohesion, 35° of internal friction angle, and 20 kN/m^3 of dry unit weight Figure 18-5 shows the area where the waste dump will be placed.

Figure 18-5: Plan View of Waste Dump Design (Botadero de Desmonte)



18.4 Conceptual Geotechnical Analyses

The conceptual level geotechnical analyses carried out in the HLF consisted of a slope stability analyses in static and pseudostatic conditions,for circular and block sliding surfaces (through the limit equilibrium method). All these analyses have been conducted using the Slide software, version 6.018 (Rocsience, 2010).

In the case of the waste dumps (WD), slope stability analyses (in static and pseudostatic conditions) for circular sliding surfaces have also been carried out, using the same computational tool.

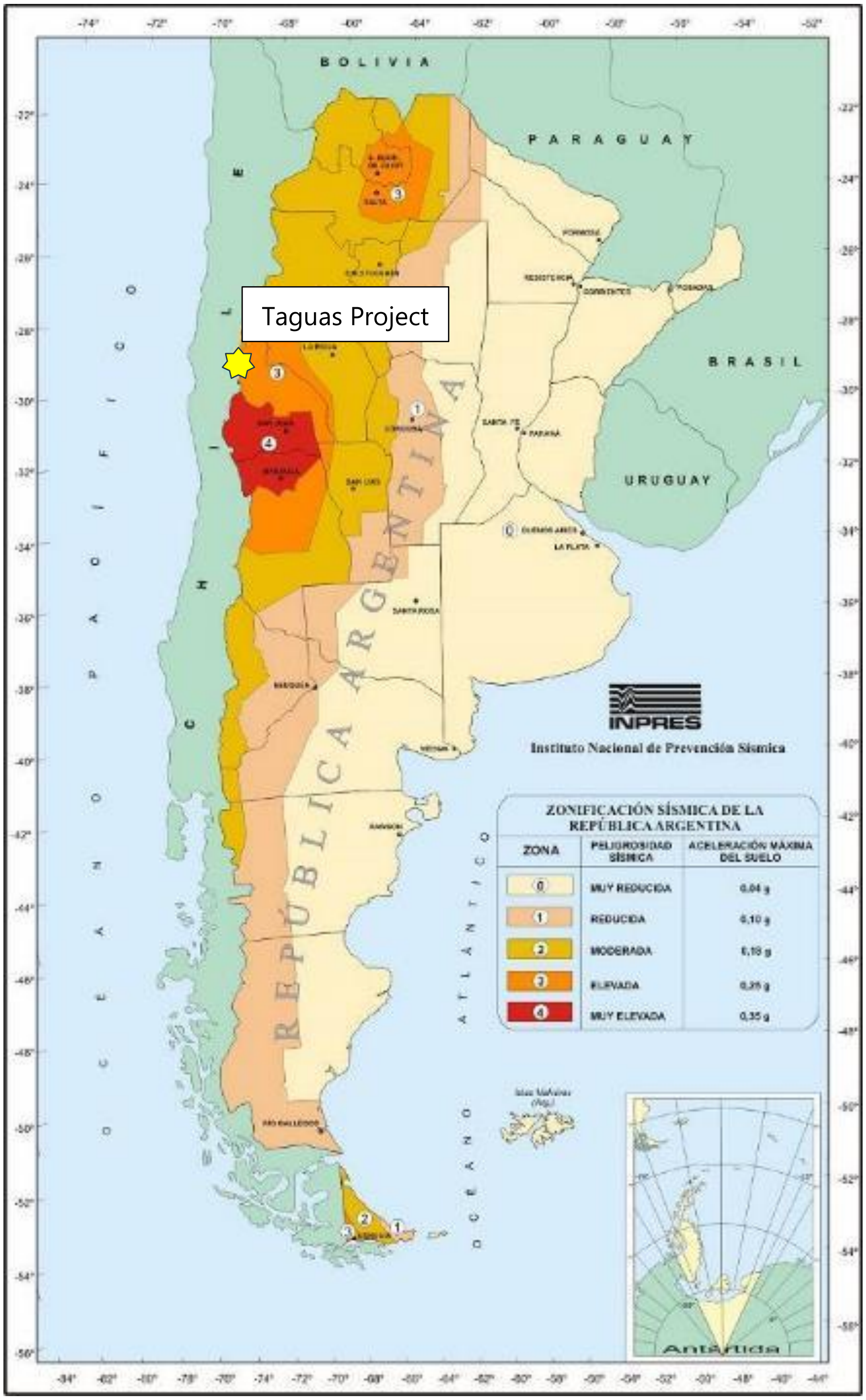
18.4.1 Slope Stability Analysis

It should be noted that, for all cases, slope stability analyses were performed under the limit equilibrium methodology (Spencer, 1967), which satisfies the condition of force and moment equilibrium. The software Slide performs the iteration through several fault surfaces to determine the surface with the minimum factor of safety, defined as the critical surface. The value of the minimum factors of safety required to satisfy the static and pseudo-static conditions used by Wood in this study.

18.4.2 Seismic Acceleration Design

A maximum ground acceleration (PGA) of 0.35 g with a return period of 475 years is recommended for infrastructure design.

Figure 18-6: Seismic Zones in Argentina



18.4.3 Seismic Coefficient

Based on the experience of different similar projects, it is recommended that the seismic coefficient considered in the analysis of the pseudo-static condition for slope design be obtained as a fraction that varies between 1/3 and 2/3 of the PGA.

This recommendation is consistent with the recommendations of the USACE (1984), which suggests the use of a seismic coefficient equal to 50% of the design peak acceleration. For stability analyses of slopes in the HLF and waste rock facility in pseudo-static conditions, a seismic coefficient of 0.125 has been considered.

18.4.4 Critical Sections for Analyses

For slope stability analysis, a critical section has been used for each component to be analyzed, which is usually the one that has the highest slope in topography and in stacking.

18.4.5 Geotechnical Properties of Materials

The strength parameters shown in Table 18-3 have been assigned.

Table 18-3: Geotechnical Properties

Material	Dry Unit Weight (kN/m^3)	Cohesion c' (kPa)	Internal Friction Angle ϕ' (º)
Mineralized Material	20,0	0	36
Mine Waste	20,0	0	36
Interface (liner system)	16,0	8	16
Foundation Material (moraine)	20,0	5	35

These assumptions should be supported by site and laboratory tests in future study stages.

18.4.6 Results of Slope Stability Analyses

The results of the static and pseudo-static stability analyses of all the components are summarized in Table 18-4.

Table 18-4: Geotechnical Properties

Facility	Factor of Safety	
	Static	Pseudo-Static (k=0,175)
Heap Leach Facility – Circular	1,8	1,2
Heap Leach Facility – Block	1,6	1,0
Waste Dump	2,1	1,3

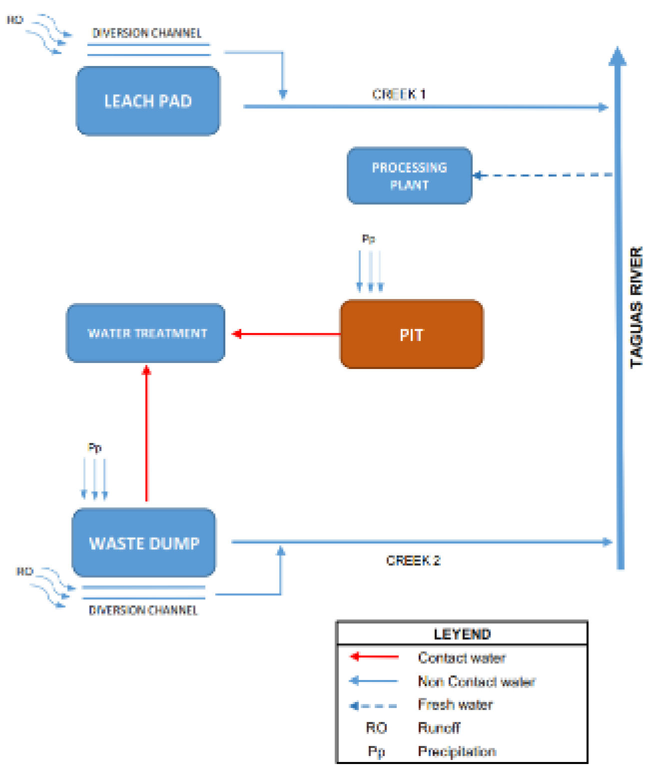
18.5 Water Management

A conceptual water balance has been developed based on the site layout.

18.5.1 Water Balance Components

The conceptual water balance components considered are the HLF pad, waste dump and process plant. Figure 18-7 presents a flow diagram of the Project water balance.

Figure 18-7: Conceptual Water Balance Flow Diagram



18.5.2 HLF

The HLF will have an area of 0.52 km^2, and a catchment area of 6.2 km^2. Precipitation that infiltrates the heap will be captured with the PLS. Water in the catchment area is considered as non-contact water. Precipitation falling on the leached pad will be used for processing. The conceptual water balance includes only non-contact water in the catchment area.

18.5.3 Waste Rock Facility

The waste dump will have an area of 0.45 km^2, and a catchment area of 1.21 km^2. Precipitation that infiltrates the dump is considered to be contact water, but water in the catchment area is considered as non-contact water.

18.5.4 Process Plant

The process plant water balance requirements are:

- Scenario 1: 75.9 m^3/h (equivalent to 0.021 m^3/s)
- Scenario 2: 33.5 m^3/h (equivalent to 0.009 m^3/s)

18.5.5 Pit

The pit will have an area of 0.44 km^2. The pit is located on the east side of the project, and management of non-contact water management will not be required. However, contact water will be generated by interaction of rainfall with the pit walls. The pit has an area of 0.44 km^2.

18.6 Camps and Accommodation

A 5,000 m^2 camp on site for 240 people is contemplated in the PEA. It has been assumed that the camp will be provided with administrative offices, medical center, laundry area, change rooms, kitchen and dining area, recreational area and treatment plants for potable and residual water.

18.7 Power and Electrical

The Project is remote from existing electrical infrastructure. The closest powerline is 150 km east of the Project area. As a result, power will be provided by on-site generators.

Power for the project will be supplied to the required areas (open pit area, crushing area, process plant, PLS pond, leach pad, camp) by medium voltage diesel power generators, which will be located in an electrical room closed to the process plant, and aerial transmission lines. The required areas will be provided with transformers for local power distribution at required voltages.

18.8 Water Supply

In February 2018, the Instituto de Investigaciones Hidráulicas (IDIH) , monitored water flow at six locations within the Project area. Two points were on the Taguas river, one upstream of the planned mine area (Taguas River 1, lat: 29°13’47.0”; long: 69°52’7”), and the other.

Downstream of the proposed operations area (Taguas River 2, lat: 29°12’16.7”; long: 69°50’22”). Flow measured at those station is the following:

- Taguas River 1: 1.67 m^3/s
- Taguas River 2: 2.2 m^3/s

Based on these flow measurements the Taguas River has been identified as the main source of fresh water for the operation.

18.9 Conceptual Water Balance Design Criteria

The criteria used for the conceptual water balance developed include:

- Two hydrological scenarios: scenario 1 being an average year, and scenario two being a drier-than-average climate year using the annual precipitation of 2002 as representative of the extreme year.
- Final life of mine extents and volumes for the open pit, HLF and waste rock facility.
- During operation, all non-contact water would be diverted through channels to natural creeks downstream of the planned operations;
- All excess contact water would be treated and discharged to a natural creek.

Table 18-5 presents the conceptual water balance results, based on the described criteria and the water flow diagram.

Table 18-5: Conceptual Water Balance Results

Component	Water Type	Units	Scenario 1	Scenario 2
Leach Pad	Non-Contact Water	m^3/hr	102.3	339.2
Waste Dump	Non-Contact Water	m^3/hr	19.8	65.8
	Contact Water	m^3/hr	1.5	4.9
Pit	Contact Water	m^3/hr	5.7	19.1
Processing Plant	Fresh Water Requirement	m^3/hr	**75.9**	**33.5**
Total Non-Contact Water		m^3/hr	**122.1**	**405.1**
Total Contact Water (To Treatment)		m^3/hr	**7.2**	**23.9**

Due to the relatively limited meteorological information at the Taguas project area to support the conceptual water balance, flow was calculated based on annual precipitation records over four years which were available from an Environmental Impact Report, prepared by Knight Piésold Consulting in 2006. Evapotranspiration was not considered in water balance due to the lack of vegetation in the Project area.

18.10 Comments on Section 18

The site access road, HLF, waste dumps, power, water management, and camp have all been designed at conceptual level. Design criteria account for local seismic risk and climactic conditions.

19.0 Market Studies and Contracts

19.1 Market Studies

No market studies have specifically been conducted for the Taguas project. The gold-silver doré bars to be produced can reasonably be expected to be marketable in international markets.

Pay factors as well as doré selling costs are based on general industry benchmarks. These are presented in Section 22 of this Report.

A marketing plan and sales terms for the doré are recommended to be determined during the next study phase.

19.2 Commodity Price Projections

For the purpose of this PEA, project economics were estimated on the basis on long-term metal prices of US$1,300/oz for gold and US$17.0/oz for silver, established by Piuquenes.

Metal pricing is reasonably aligned with the Wood internal long-term cash flow guidelines at US$1,270/oz for gold and US$18.0/oz for silver, as of October 1st, 2018, derived from Wood's survey of industry consensus prices.

19.3 Contracts

No contracts have been signed at the Report effective date.

At this stage of project development, it is expected that future sales contracts would be negotiated such that the sales contracts would be typical of, and consistent with, standard industry practice, and be similar to contracts for the supply of Au – Ag doré bars elsewhere in the world.

19.4 Comments on Section 19

As the project progresses into the next study stages, Wood recommends that refiners are contacted to obtain firm estimates for treatment charges.

20.0 Environmental Studies, Permitting, and Social or Community Impact

20.1 Baseline Studies

The environmental baseline studies for the exploration phase of the project have been ongoing since 2015 and include hydrology (water flow measurement), water quality, fauna, flora and archeology.

Baseline data have been collected during late spring, summer and early fall seasons due to the difficulty accessing the site due to snow in the late fall, winter and early spring.

The results of the baseline studies and subsequent biannual updates are documented in the Environmental Impact Report (EIR), (1997) and are updated in the 1st Biannual Environmental Impact Report Update (2010) and 2nd Biannual Environmental Impact Report Update (2015). The EIR updates are based on the compliance conditions identified in Resolutions No. 171-SEM-08; Resolution No. 350-MM-13 and Resolution No. 067-MM-18 as issued by the San Juan Ministry of Mines in support of the required biannual renewal of the Declaración de Impacto Ambiental (DIA) or Environmental Impact Declaration for Exploration Stage.

These studies are adequate for the current activities at the site but are not an environmental impact study for the proposed mining operations at Taguas, which will be carried out as project engineering and project definition advance with more detailed studies.

Multiple components of the baseline studies will require satisfying International Finance Corporation (IFC) and World Bank Requirements. Best practices indicate that if the assumption is made early in the project to meet the IFC standards it will save a significant amount of time and costs. Additionally, if a decision is made to pursue financing with an IFC credit facility or banks, this reduces the level of challenge that often is presented by lending institutions on baseline information.

Typical components whose compliance with IFC and World Bank Requirements is observed are biodiversity and ecosystems, environmental justice aspects, indigenous population concerns, socioeconomic valuations, migratory species, and wilderness and protected areas.

A summary of the baseline studies conducted to date follows.

20.1.1 Flora and Fauna

Flora and fauna baseline studies have been conducted since 2015, including the area delimited by the mining concessions that make up the Taguas Project.

In 2015, Dr. Hector J. Villavicencio prepared a report on the flora and fauna of the project based on bibliographical information and his knowledge of the mountain range in the Iglesia Department, identifying those species with some degree or status of conservation. In addition, Dr. Marcela Ontiveros, based on the processing and interpretation of satellite images (Landsat 8), carried out an inventory of the presence of high-altitude wetlands (*vegas* in Spanish) and determined the estimated area covered by this unit of vegetation.

In 2018 Dr. Hector J. Villavicencio and Dr. Juan C. Acosta conducted a detailed vegetation survey of the project, with particular emphasis on those sectors that will be impacted during the construction and operation stages of a mine.

The vegetation report included a biogeographic characterization of the area, delimitation of the different vegetation units including grass steppe and high-altitude wetlands as shown in Figure 20-1 and a characterization of the existing azonal communities, or meadows, in the sectors to be disturbed by mining operations.

Figure 20-1: Grass Steppe (left) and High-Altitude Wetlands (right)

The fauna report included an identification of sampling environments, data analysis, characterization of composition, abundance and structure of fauna communities (amphibians, reptiles, birds and mammals), biological parameters for each fauna group and description of impacts.

All reports on flora and fauna have been submitted to the Ministry of Mining and to the Secretary of State for the Environment and Sustainable Development of the Province of San Juan.

20.1.2 Hydrology

Surface flow measurements and surface water quality monitoring are performed by the Instituto de Investigaciones Hidráulicas, a research center of the Universidad Nacional de San Juan.

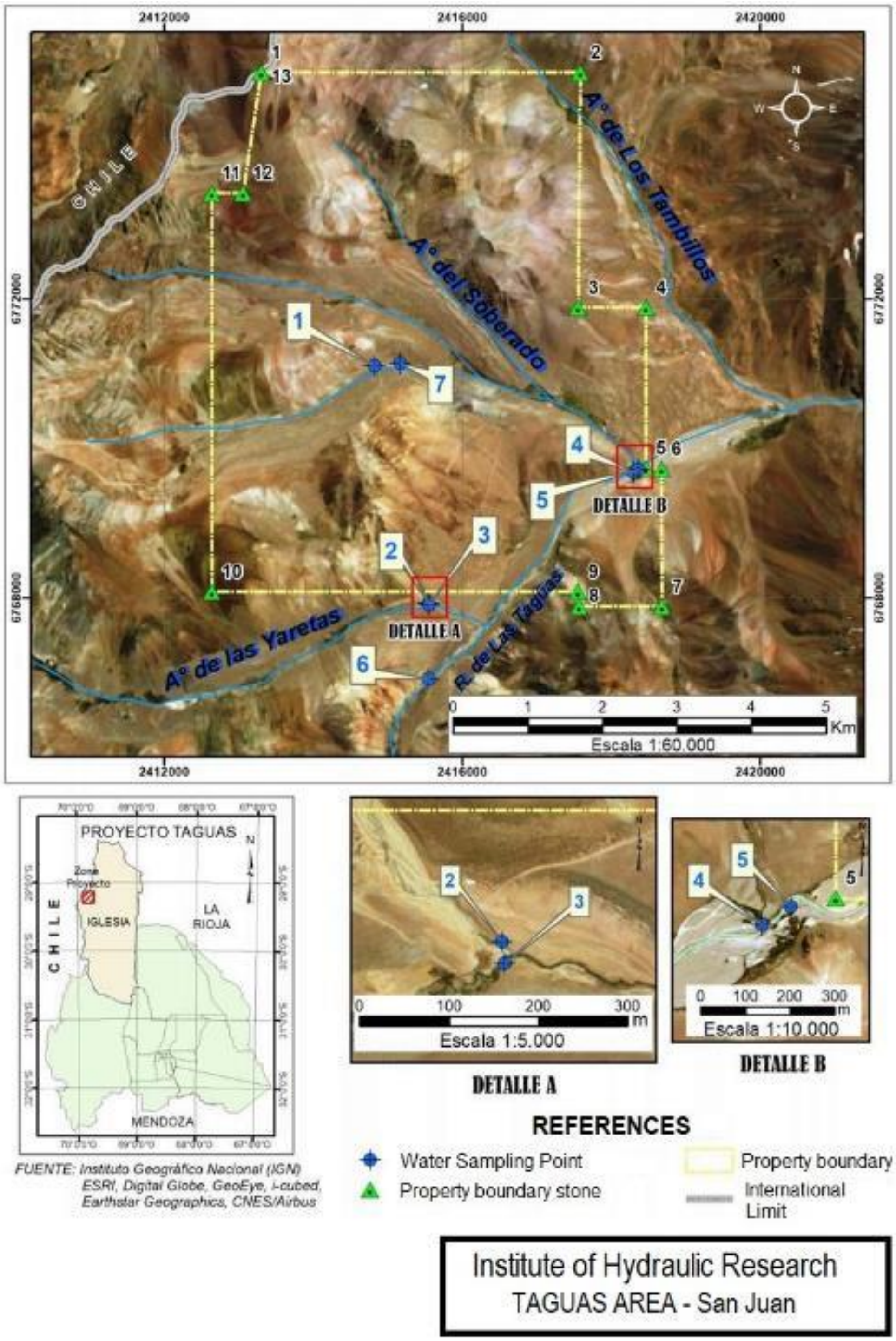
As part of the environmental monitoring, a meteorological station has been acquired that will be installed near the exploration camp and will provide data on the main climatic parameters (temperature, precipitation, atmospheric pressure, relative humidity, wind speed and direction).

The company plans to continue measuring surface flows, water quality, hydrogeological and geotechnical research, ARD assays, seismic risk studies, soil, flora, fauna, air quality, etc. in 2019.

The objective of these tasks is to have an environmental baseline that can be used in the preparation of the EIA for the operational phase.

In 2018, flow measurements were initiated at 6 points (Figure 20-2) corresponding to the main permanent watercourses of the project and its area of influence (Las Taguas River, Arroyo del Soberado and Arroyo de Las Yaretas). This task is carried out by the Institute of Hydraulic Research (Instituto de Investigaciones Hidráulicas in Spanish), which depends on the National University of San Juan. It is planned to continue these measurements over the next few seasons.

Figure 20-2: Flow Measurements and Water Quality Locations



Since 2017, surface water quality measurements have been made at 6 points corresponding to the main water bodies located in the project and its area of influence (rivers and streams). A series of parameters are determined in situ - temperature, pH, electrical conductivity and dissolved oxygen - and the samples are analyzed by all the parameters included in Table 1 of Annex IV to Law 24585, including other parameters of environmental significance such as Cyanide WAD, HTP, etc.

Flow measurement and water quality reports have been reported to the authorities.

20.1.3 Geomorphology and Glacier Studies

No glaciers occur on the Property; however, in 2009, Dr. Patricia Perucca of the consulting firm Chisñanco SRL conducted a preliminary geomorphological analysis of the area delimited by the mining concessions that make up the Taguas Project. From satellite images, different geoforms were identified, with particular emphasis on those with glacial and periglacial features. The report with its respective cartography and explanatory text was sent to the mining environmental authority.

20.1.4 Archeology

In 2017, Dr. Catalina T. Michieli of the National University of San Juan carried out an archaeological report of the project based on bibliographic data and local knowledge of the area.

In 2018, a detailed archaeological survey was carried over the exploration prospects, proposed infrastructure sites and the Project access road.

The tasks were carried out by Dr. Catalina T. Michieli and were authorized by the Cultural Heritage Department of the Ministry of Tourism and Culture of the Province of San Juan.

No sites and/or artifacts of archaeological value have been found in the sectors likely to be impacted by mining activities. The only site of archaeological interest is located near the confluence of the Arroyo del Soberado and the Las Taguas, River.

20.1.5 Future Environmental Work Plan

Environmental monitoring activities will focus on acquiring complete and robust data sets that capture the seasonal environmental variations of the site such that an environmental impact analysis and report (IIA in Spanish) can be prepared.

Additionally, the baseline will serve to establish a complete description of the site and social setting and economic activities in the area of influence before any project development activities are initiated.

Once project development is initiated, baseline component monitoring will be converted to compliance monitoring.

20.2 Environmental Considerations/Monitoring Programs

The environmental management and monitoring plans required to protect the biophysical and social environments are identified in the Environmental Impact Assessment (EIA) (1997), when required, in Resolutions No. 171-SEM-08; No. 350-MM-13 and No. 067-MM-18 issued by the provincial mining authority. It is anticipated that detailed environmental management plans may be required for future project planning and development. Protection measures are identified in the EIA for the following activities or facility/equipment operation:

- Development and operation of access roads, tracking and drill rigs
- Development and operation of camp facilities
- Vegetation and wildlife
- Water quality and use
- Protection of sites/areas of cultural and natural heritage
- Operation of machinery and equipment
- Disturbance of soil

20.3 Closure Plan

Planning for mine reclamation and closure of the associated facilities as early as possible in the planning and design stages of the Project is considered of prime importance in ensuring that environmental and social considerations of the Project are adequately addressed. The initial development of rehabilitation and closure strategies at a conceptual level is an integral component of overall Project planning and provides the basis for further development of appropriate rehabilitation and closure strategies as the Project proceeds through the various Project phases.

The Conceptual Closure and Rehabilitation Plan (CRP) addresses the physical stability, chemical stability and future land use following the completion of mining and processing activities. The CRP will be updated with each subsequent Project phase to validate the Conceptual CRP assumptions and update the Project information as it becomes available.

The Taguas Project has a current estimated life of mine (LOM) of ten years.

20.3.1 Conceptual CRP Objectives

The overall objective of Project closure and rehabilitation is to ensure public safety and environmental protection by minimizing the long-term physical, chemical and biological impacts of the Project (to the extent possible) through rehabilitation of the operational site according to the completion criteria that will be established in the overall Plan.

The specific objectives of closure and rehabilitation are:

- Compliance with or exceed regulatory requirements, international standards and Project commitments
- Protection of the environment, public health and safety, and property over the long term
- Conduct mine development and operations in a manner that allows progressive rehabilitation to minimize post-operational closure activities and related costs
- Achieve physical stability thereby reducing or eliminating long-term environmental impacts
- Minimize long-term requirements for active site care and maintenance during the post-closure period (e.g. water collection and treatment)
- Reclaim disturbed land surfaces to a stable condition, including the revegetation with

native species (where possible), that are compatible with the land uses prior to Project development

- Restore watercourses to a stable condition to achieve water quantity and quality objectives in the long term
- Encourage third party stewardship of the property to promote sustainable use by providing social and economic benefits to the local communities
- Development of closure plans to include information obtained from public consultations with the local communities and regulatory authorities; and
- Provide an acceptable end use plan

The principal goal of the overall process is to develop and implement the CRP to ensure that the potential environmental and social impacts associated with the decommissioned operation are identified at an early stage and minimized as a consequence of actions taken during the construction and operation phases of the Project.

20.3.2 Standards and Guidelines

Closure planning for the Taguas Project is guided by Argentinean provincial and federal legislation, International standards and guidelines (including industry best management practices), commitments made in the EIRs and associated Resolutions (as provided by the provincial Ministry of Mines) and any corporate environmental policies and standards. It should be noted that there is no formal closure or reclamation legislation that provides requirements and standards to achieve during closure and therefore no measure of compliance even though delivery and approval of a Closure Plan is mandated in the Mining Code and is defined as a required component of all Environmental Impact Reports (IIAs in Spanish).

20.3.3 Risk Management

A risk assessment for the closure of the facilities was not completed for the above-mentioned facilities based on the availability of information. The Conceptual CRP has been developed to include best industry practices for mine closure and rehabilitation in addition to provision of alternatives for decommissioning of the facilities identified above. It is anticipated that a risk assessment for closure of the Project will be conducted for each subsequent update of the CRP.

20.3.4 Closure and Rehabilitation Strategy

The following closure and rehabilitation strategy has been developed to a conceptual level. Final closure activities will commence in year 10 of LOM. Closure and rehabilitation will be conducted through three phases:

- Progressive Rehabilitation - Exploration and post-construction: including the grading and landscaping of areas no longer needed for operations, the grading of mined out areas to blend with the surrounding landscape, stabilization of the landforms (appropriate erosion and sediment control) and revegetation (including spreading of topsoil and other growing medium) to allow regeneration of vegetation to a natural state or other approved agronomic/horticultural uses.
- Active (Final) Closure and Rehabilitation Phase: Closure including active decommissioning and rehabilitation of Project facilities and infrastructure to steady state including implementation of appropriate sediment and erosion control measures.
- Post Closure Monitoring and Maintenance: Including transitional stage works during which continuous personnel will not be present and custodial care after the site is stabilized but where additional activities (maintenance activities) may be required.

20.4 Permitting

Argentine laws and regulations differentiate between prospecting, exploration and exploitation activities. It is understood that exploration activities include mapping, sampling (including bulk samples), geophysics, trenching, drilling and underground works. Prospecting activities include mapping, sampling and geophysics.

There are different sectorial permits that are required to conduct mining activities, but the most relevant ones are the ones associated with environmental permits. The provisions related with the environmental protection applicable to the mining activity was established in 1995 by the General Environmental Law 24585 and have been incorporated in Title Thirteen of the National Mining Code.

The federal government is empowered to issue minimum environmental protection standard laws (MEPSL) applicable in the whole country by the respective provincial authorities. The provinces can supplement and regulate the MEPSL with more stringent local or provincial environmental regulations.

There are five main legal requirements that impact the project during the different stages of development: environmental regulation, mining regulation, hazardous waste regulation, health and safety regulation and the Mining Investment Law.

Lack of compliance or other infringement of the environmental obligation may result in penalties ranging from fines to suspension of works or closure of the mine, but without effect upon title or ownership of the mining concession.

Other regulations affecting the project are related to hazardous waste regulations set forth in National Law 24051, adopted by the Province of San Juan. This law regulates the generation, handling, transportation, treatment and disposal of hazardous waste.

Health and safety regulations applicable to mining are represented by National Law 19587 and National Decree 249/2007. Companies must give priority to riskier occupational activities and employee training. Also, a mining company must hire an Occupational Hazard Insurer to identify and evaluate occupational hazards and to design preventive and emergency programs.

Mining Investment Law 24196 includes article 23, which relates to the preservation of the environment. To prevent and correct any impacts to the environment due to mining activities, companies may establish a special accounting prevision for that purpose. The annual amount shall be left to the discretion of the company but shall be considered deductible for income tax purposes up to a sum equivalent to 5% of the operational costs of material extraction.

Permits required for construction will include:

- Pre-construction permits such as favorable environmental qualification by the SEA, favorable report for construction, industrial health and safety certifications, mining closure plan, mining easement, authorization for storage of explosives, registration for regular use of explosives and authorization to handle explosives, handling of mineralized material and waste handling, and drilling, transportation of passengers, authorization for mine electrification, authorization of emergency systems, authorization for modification of water channels for the mine, waste rock facilities, TSF and other infrastructure.
- Construction permits for hazardous waste management, health and safety, interior electric installation, petroleum and liquid fuel storage, operation of mineral processing equipment, electrical service installation, storage of hazardous substances, potable water supply, sewage treatment, commissioning of electrical

installations, storage, handling and regular consumption of explosives,

- An updated closure plan for the mine site will be required.

20.5 Social and Community Impacts

While social licensing is not a concept that integrates Argentine legislation regulating mining activity, at the level of an individual mine or mining project - including advanced exploration projects such as Taguas - social licensing is rooted in the beliefs, perceptions and opinions held by local people and interest groups about the mine or project. From this perspective, the social license:

- It is granted by the community;
- It is intangible unless an effort is made to measure those same beliefs, opinions and perceptions;
- It is dynamic and impermanent because beliefs, opinions and perceptions are subject to change as new information is acquired.

The Ministry of Mining of the Province of San Juan, in its capacity as the authority for the application of National Law No. 24585/95 on Environmental Protection for Mining Activities, includes the concept of social license in its environmental impact assessments for all mining ventures - prospecting, exploration and exploitation. The need for a social license from the communities where mining projects are located is recognized by the Argentine Chamber of Mining Entrepreneurs - CAEM - (www.caem.com.ar).

Mining activity, particularly in the Province of San Juan, encourages communities to participate in environmental controls through the application of participatory social monitoring mechanisms.

Thirty per cent of the cultivated area of the department is devoted to forestry and is followed by pastures, seeds, fruit trees, cereals and aromatic plants. Livestock farming includes goat and sheep farming.

The Province of San Juan and the Iglesia Department in particular have a strong position in favor of mining. In the department is the Veladero mine (50% Barrick Gold – 50% Shandong Gold Group) which is in operation since 2005 and in its jurisdiction are located numerous projects in advanced exploration of Au and Au-Cu such as Filo del Sol (Lundin Mining), Del Carmen (Barrick Gold), Jaguelito (Mexplort Perforaciones Mineras S.A.), Chita (Minsud), etc.

The perception of the population of the Iglesia department continues to be favorable to mining activity, despite the media repercussions related to the environmental accidents that took place at the Veladero mine in 2015 and 2016.

To date, no studies or research of a social and/or community nature have been carried out with the objective of determining the perception of the communities regarding the development of the project.

20.6 Comments on Section 20

There is a pathway and local precedence for Orvana to acquire necessary permits and social license as the Project advances.

21.0 Capital and Operating Costs

21.1 Capital Cost Estimates

21.1.1 Basis of Estimate

The preliminary capital cost estimate for the Taguas PEA uses Wood's internal guidelines for estimate accuracy of ± 30% to ± 50%.

For the processing plant, Wood based the preliminary capital cost estimate on the major mechanical equipment list that was prepared as part of the study and used a combination of equipment and package budgetary quotations obtained for existing in-house data from other projects. Existing in-house data was updated and scaled to the required capacity as necessary.

The ratio or factored method was used in estimating the cost of process plant component or areas where the cost of the specialized process equipment made up a significant portion of the total component of area cost. Wood developed preliminary costs for process areas for which the costs of the direct labor and bulk materials used to construct the facilities could be correlated with the costs (or the design parameters) of the mayor equipment. Typically, this estimating methodology relies on the principle that a ratio or factor exist between the cost of an equipment item and costs for the associated non-equipment items (foundations, piping, electrical, etc.) needed to complete the installation. Preliminary civil, structural, architectural, piping, electrical and instrumentation costs for the processing plant were factored based on the major mechanical equipment costs.

Bulk earthworks quantities for the HLF, major ponds, waste rock facility, processing plant platform and new access roads were estimated from bulk earthwork drawings. Preliminary costs were estimated from these quantity take-offs and applying units cost factors.

The preliminary capital cost estimate was based on the following project information:

- Support (Documents & Information)
  - Preliminary WBS
  - General arrangement drawings (GA)
  - Overall process flow diagram

- Mechanical major equipment list
- Equipment cost data base
- Unit cost for massive earthworks from data base
- Geotechnical material take-off (MTO)
- Costs provided by owner
- Factors obtained from similar Argentinian projects

- Exclusions
  - Mining equipment - included in operating cost (mine contractor)

21.1.2 Labour Assumptions

Preliminary labour costs were included as part of installation factors for each discipline (civil, structural, architectural piping, electrical and instrumentation).

21.1.3 Material Costs

Preliminary material costs related to the processing plant such as concrete, structural steel, piping and fittings, electrical cable, etc. were included within the installation factors.

Material cost related to the leaching pad, major ponds, waste dump, processing plant platform and new access roads were determined by preliminary material-take off quantities from sketches/drawings and installation unit costs.

Table 21-1 shows the installation unit costs including labour, material, equipment construction (direct costs). An additional 30% was added to include contractor's G&A and profit (indirect cost).

Table 21-1: Installation Costs (Direct cost)

Material	Units	Cost (US$ M)
Bulk earthworks - Fill	m^3	12.0
Bulk earthworks - Cut	m^3	3.5
Geomembrane	m^2	9.0
Overliner (0.5 m)	m^3	16.0
Excess material discard (d=2.5 km)	m^3	3.0
Widening and compaction for access roads - Fill	m^3	12.0
Widening and compaction for access roads - Cut	m^3	3.5

21.1.4 Contingency

Contingency is the allocation of costs to cover the risk of potential but uncertain cost increases from within the defined scope of the project. Scope changes are specifically excluded from contingency.

The contingency has been estimated at US$18.0 M as 25% of the project base cost, consisting of the sum of the direct and indirect cost.

21.1.5 Mine Capital Costs

No mining costs have been included as capital costs since operation is planned to be carried out by a mining contractor. Mining infrastructure such as truck-shop, fuel station, etc. are assumed to be provided by the contractor. Both services are included in the mining operating costs.

21.1.6 Process Capital Costs

The preliminary process capital cost includes the total cost of materials, equipment and subcontracted work permanently incorporated into the final facility plus the direct labor employed in the installation of these materials and equipment items.

The following facilities were included as process capital costs:

- Mineralized material preparation (crushing and agglomeration)
- Mineralized material stockpile
- HLF
- Process ponds
- ADR plant
- Reagents and services

A major mechanical equipment list and cost estimation was produced by Wood based on the processing circuit. No quantities were developed for minor mechanical equipment; these costs were factored based on the major mechanical equipment costs. Civil, structural and architectural (CSA), pipeline, piping, electrical and instrumentation quantities related to installation costs were factored from the major mechanical equipment costs.

Bulk earthworks for the HLF, major ponds, waste rock facility, processing plant platform and new access roads were estimated by the CSA discipline team from bulk earthwork drawings. Preliminary costs were estimated from these quantity take-offs applying units cost factors.

21.1.7 Infrastructure Capital Costs

Major infrastructure considered for the project was:

- On-site infrastructure
  - Waste dump.
  - Permanent camp and other facilities (mining and process).
  - Power supply.
  - Water supply.
- Off-site infrastructure
  - Site access (considering road construction and maintenance)

Other costs considered included:

- Waste dump cost estimated based on preliminary earthwork drawings. Costs were estimated from these quantity take-offs and applying units cost factors.
- Power supply cost consists of three power generators (1,000 KVA) and associated Infrastructure were considered. An installation factor of 20% was added up to cover the overall cost for power supply requirements.
- Power distribution cost includes sub-stations and electrical rooms for the open pit, crushing, processing plant, leaching and ponds areas.
- Water supply cost assumes new water wells (two wells in the plant area, and one well in the camp area 100 m deep. A unit cost of US$2,500/m was considered as all-inclusive unit cost.
- Site access cost: the cost for site access road improvement was provided by Piuquenes assuming a 25 km road. Costs include equipment ownership, depreciation, insurance, fuel, lubricants, maintenance, service and repair.

Direct costs for main construction equipment are presented in Table 21-2. An additional 30 percent was added to include contractor’s G&A and profit (indirect cost).

Table 21-2: Construction Equipment Cost Rates (Direct Cost)

Construction Equipment	US$/h

Bulldozer	180
Loader	140
Motor grader	110
Snow plow truck	110
Dump truck	30

21.1.8 General and Administrative Capital Costs

Preliminary general and administrative capital costs are included as part of the contractor's unit cost and/or installation cost.

21.1.9 Owner (Corporate) Capital Costs

The preliminary Owner's cost was estimated at US$2.8M which is approximately 5% of the project direct cost. The 5% factor is based on Wood experience on similar projects. This cost is considered to include pre-operations personnel and training, owner's project team during project development and execution and insurance and permitting.

21.1.10 Sustaining Capital

Sustaining capital costs (US$8.7 M) for the projects are related to HLF and waste storage facility which represents US$3.7 M applied in Year 3, and US$5.0 M applied in Year 6. The closure cost is estimated at US$4.6 M which is 5% of the initial capital cost.

21.1.11 Capital Cost Summary

The preliminary estimated capital cost for the Taguas project is presented in Table 21-3. The capital cost considers the direct costs for project execution, as well as the indirect costs associated with the design, construction and commissioning.

The indirect capital cost includes engineering, procurement and construction management (EPCM) services, third party consultants, construction facilities and services, equipment freight, vendor support, first fill and spares. Percentage factors based on Wood experience on similar projects were used to determine indirect project costs.

The capital cost estimate is expressed in Q3-2018 USD, considering an exchange rate of US$1.00 = 38.74 ARS.

Table 21-3: Capital Cost Summary

Area / Description		
Direct Capital Cost		**US$ M**
0000	**Site Preparation**	**0.7**
0100	Platforms	0.5
0400	Internal Services Roads	0.3
1000	**Mine**	**0.0**
1100	Mining fleet	0.0
1200	Pioneer roads	0.0
1300	Mine infrastructure (workshop, explosive magazine, fuel station)	0.0
2000	**Process Plant**	**42.7**
2100	Mineralized material preparation	6.7
2200	Mineralized Material stockpile	4.9
2300	Leaching PAD	14.2
2400	Process ponds	1.4
2500	ADR plant	9.6
2600	Reagents and services	6.0
3000	**On-site infrastructure**	**10.7**
3100	Waste dumps	0.9
3200	Camp and other facilities	6.9
3300	Energy supply	2.1
3400	Water supply	0.8
4000	**Off-site infrastructure**	**2.9**
4100	Site access	2.9
Total Direct Capital Cost (DC)		**57.1**
7000	Indirect Capital Cost	14.9
7100	Pre-feasibility, feasibility, other studies (3% DC)	1.7
7200	EPCM (15% DC)	8.6
7300	Spare parts (5% Mechanical costs)	0.9
7400	First filling (1.5% DC)	0.9
7500	Freight and import fees (2% DC)	1.2
7600	Commissioning / Start-up (3% DC)	1.7
Total Indirect Capital Cost (IC)		**14.9**
8000	Owner's Cost	
8100	**Owner's cost (5% DC)**	**2.9**
9000	Contingency	
9100	**Contingency (25% DC+IC)**	**18.0**
Total Owner's Cost and Contingency		**20.8**
Total Capital Cost Estimate		**92.8**

21.2 Operating Cost Estimates

Process and geotechnical disciplines undertook a conceptual engineering study for cost estimation purposes. Electrical, piping, electrical and instrumentation disciplines provided minor inputs based on benchmarks for factoring in these areas.

21.2.1 Mine Operating Costs

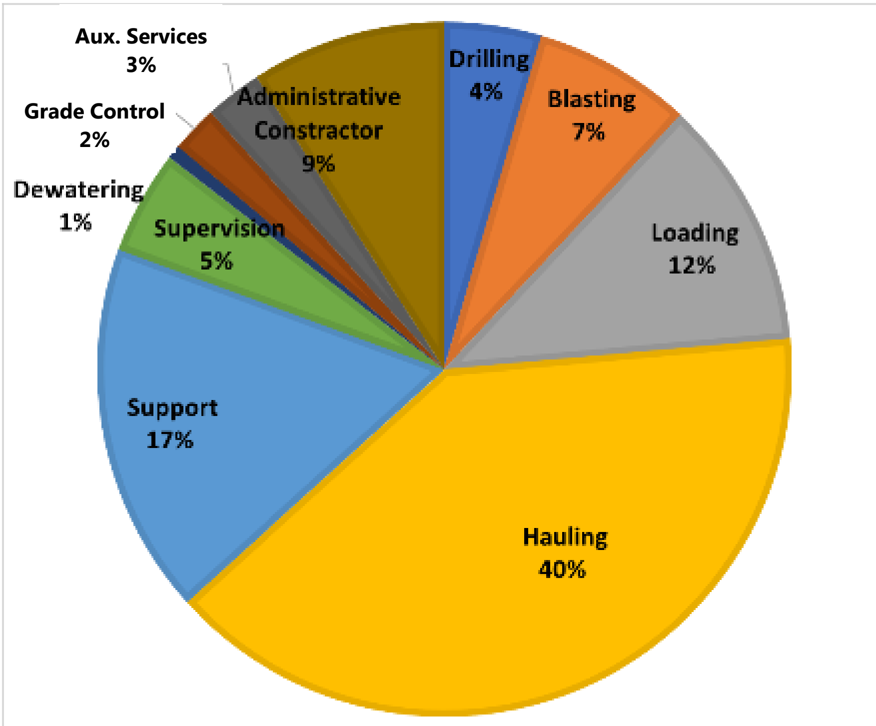
Wood estimated a preliminary base Owner's cost from which, a mining contractor cost was calculated. Since most mine contractors do not include the diesel fuel, explosives, or lubrication, cost and mine owner supplier with major consumables, the following additional factors were considered by Wood:

- 10% on overhead costs for contractor administration, permits, mobilization, demobilization and wage adjustment.
- 10% utility or profit margin.
- 8% for mobilization, demobilization and equipment depreciation.

Preliminary mine operating costs are estimated to average US$2.10/t (which corresponds to US$2.13/t mineralized material, and US$2.07/t waste material). During the 10-year LOM, the haulage distance ex- pit is relatively short (1 to 1.8 km).

On a cost-by-cost center basis, mine haulage accounts for half of the mine operating costs at 40%. Loading accounts for 12% of the mine costs, followed by support equipment at 17% (Table 21-1).

Figure 21-1: Mine Operating Cost by Item



21.2.2 Process Operating Costs

The preliminary operating cost estimate for the plant is based on an average feed rate of nominally 12,000 t/d and includes the cost of reagents and consumables, labor, energy, maintenance and services required to operate the following process areas:

- Crushing & agglomeration
- HLF
- CIC, acid wash, elution, electrowinning and refining.
- Cyanide destruction
- Reagent preparation and services.

Preliminary operating costs based on process design information developed at a conceptual level, based on the general assumptions are listed below:

- The unit energy cost is US$0.12/kWh
- Salary rates within the present estimate were estimated from a similar project from Wood's database.

- Services costs have been estimated at 2% of the capital cost of major mechanical equipment. The transportation and disposal costs for effluents have not been estimated or included within the present scope.
- Maintenance costs have been estimated at 5% of the capital cost of major mechanical equipment.
- Consumables and reagents costs, as well as the consumption rates of reagents and grinding media were determined by Wood according to the consumption estimates established in the laboratory testwork carried out for the present study, information provided by Orvana and budget quotations from different providers.

The summary of preliminary annual process operating costs and operating cost per tonne of material processed for the process plant is detailed by category in Table 21-4.

Table 21-4: Preliminary Process Operating Costs by Category

Category	Annual Operating Cost	
	US$	US$/t
Services	$0.3 M	0.07
Labor	$3.1 M	0.75
Consumables & Reagents	$17.0 M	4.05
Maintenance	$0.7 M	0.17
Energy	$2.2 M	0.52
Total Operating Cost	**$23.3 M**	**5.55**

21.2.3 Infrastructure Operating Costs

There is no off-site infrastructure considered for the project. Site infrastructure costs are included in G&A cost.

21.2.4 General and Administrative Operating Costs

General and administrative (G&A) costs were benchmarked from similar operations being typically US$4.0 M/y. Table 21-5 shows the G&A costs considered throughout the LOM.

Table 21-5: Annual General and Administrative costs (US$ M)

Year	G&A
2021	2.0
2022	3.5
2023	4.0
2024	4.0
2025	4.0
2026	4.0
2027	4.0
2028	4.0
2029	4.0
2030	2.0

21.2.5 Owner (Corporate) Operating Costs

Owner or corporate operating costs are included in G&A operating cost.

21.2.6 Operating Cost Summary

Table 21-6 summarizes the annual operating cost considered throughout the LOM.

Table 21-6: Annual operating costs (US$ M)

Year	Mining	Process	G&A	Total
2021	11.3	13.9	2.0	27.2
2022	14.3	21.1	3.5	38.9
2023	16.6	23.3	4.0	43.9
2024	19.1	23.3	4.0	46.4
2025	18.9	23.3	4.0	46.2
2026	18.3	23.3	4.0	45.6
2027	18.2	23.3	4.0	45.5
2028	18.0	23.3	4.0	45.3
2029	17.9	23.3	4.0	45.2
2030	7.2	11.8	2.0	21.1

21.3 Comments on Section 21

Preliminary project capital and operating costs have been estimated with a basis and level of effort suitable for a PEA. This effort included a site visit and preliminary scoping for surface infrastructure, geotechnical estimation, preparation of engineering drawings and estimate of material take-offs, preparation of preliminary equipment lists, use of budgetary quotations, factoring and scaling of benchmark costs. Some components of the capital and operating costs are sensitive to local inflation rates.

A contingency of 25% of direct and indirect capital was estimated based on the preliminary nature of study engineering completed for the project.

22.0 Economic Analysis

22.1 Cautionary Statement

The results of the economic analysis presented in this section represent forward-looking information that are subject to known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented here. Forward-looking information includes, but is not limited to:

- Mineral Resource estimates
- Proposed mine production plan
- Assumed commodity prices and smelter terms
- Projected metallurgical recovery rates
- Projected doré sales
- Selected sites for key infrastructure components
- Projected development schedules, including permitting time lines
- Estimated capital expenditures and sustaining costs
- Estimated timing and amount of future production, and production costs
- Closure requirements and associated costs

Additional risks that may impact on the conclusions of the economic evaluation can come from any requirements for additional capital, variations of geotechnical considerations, failure of equipment to operate as anticipated, accidents and labor disputes, environmental risks, changes in government regulations of mining operations, unanticipated reclamation expenses, title disputes or claims, limitations on insurance coverage, exchange rates fluctuations, among others.

For the purpose of the PEA, a preliminary mine schedule and operating and capital costs were estimated. Years presented in this section are for illustrative purposes only as no permits are in place to support mine development, and a production decision has not been made.

This economic analysis is 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 PEA based on these Mineral Resources will be realized.

22.2 Methodology Used

The preliminary financial analysis was carried out using a discounted cash flow (DCF) methodology. Net annual cash flows were estimated projecting yearly cash inflows (or revenues) and subtracting projected yearly cash outflows (such as capital and operating costs, royalties and taxes). These annual cash flows were discounted back to the date of first year of capital expenditure and totalled in order to determine the NPV of the project at selected discount rates. A discount rate of 8% was used as the base rate for discounting but results at 10% discount rate are also presented for reference.

In addition, the internal rate of return (IRR), expressed as the discount rate that yields an NPV of zero, and the payback period, expressed as the estimated time from the start of production until all initial capital expenditures have been recovered, were also estimated.

Sensitivities to variations in metal prices, metal grades, capital and operating costs were carried out to identify potential impacts on NPV.

All monetary amounts are presented in constant United State dollars (US$). For discounting purposes, cash flows are assumed to occur at the end of each period. Revenue is recognized at the time of production.

22.3 Financial Model Parameters

22.3.1 Mineral Resource and Mine Life

For the purposes of the PEA, it has been established that estimated Mineral Resources will be processed at an average rate of 4.2 Mt/y or nominally 12 kt/d over a planned operational mine life of approximately 10 years.

Table 22-1 presents the summary of the preliminary open pit mine schedule that forms the basis of the economic analysis; were Inferred Resources account for 100% of total mill feed.

Table 22-1: Preliminary Mine Schedule

Resource Classification	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Measured (kt)	-	-	-	-	-	-	-	-	-	-	**-**
Indicated (kt)	-	-	-	-	-	-	-	-	-	-	**-**
Inferred (kt)	2,500	3,800	4,200	4,200	4,200	4,200	4,200	4,200	4,200	2,133	**37,833**
Total Plant Feed	2,500	3,800	4,200	4,200	4,200	4,200	4,200	4,200	4,200	2,133	**37,833**
Au Grade (g/t)	0.53	0.47	0.46	0.38	0.34	0.35	0.41	0.37	0.32	0.29	**0.39**
Ag Grade (g/t)	18.92	14.01	18.21	14.77	17.15	15.23	12.22	9.04	12.98	13.44	**14.47**
Waste Mined	2,837	3,264	4,176	5,142	4,985	4,552	4,399	4,152	4,041	875	**38,424**
Total Material Mined	5,337	7,064	8,376	9,342	9,185	8,752	8,599	8,352	8,241	3,008	**76,257**

22.3.2 Metallurgical Recoveries

Metallurgical recoveries used for the financial analysis are 87% for gold recovery and 52% for silver recovery.

22.3.3 Smelting and Refining Terms

Doré smelting and refining terms applied in the financial model are presented in Table 22-2. These were established based on industry benchmarks. No penalties were considered.

Table 22-2: Smelting and Refining Terms

Smelter Term	Units	Value
Dore transport, marketing and insurance and gold refining charge	US$/oz of Au	7.00
Silver refining charge	US$/oz of Ag	0.90
Gold payable factor	%	99.5
Silver payable factor	%	98.0

Metal Prices

The PEA is based on consensus long-term metal prices of US$1,300/oz for gold and US$17.0/oz for silver.

22.3.4 Capital Costs

Preliminary capital costs are presented in Section 21. A pre-production period of two years was considered (Year -2 and Year -1) for the overall project implementation. Year 1 corresponds to the first year of production. The distribution of the estimated initial capital costs and sustaining capital costs for the project are presented in Table 22-3 and Table 22-4. Capital costs were applied in the financial model excluding value added tax.

Table 22-3: Initial Capital Costs Distribution

Item	Units	Year -2	Year -1	Total
Site preparation	US$ M	0.29	0.43	**0.72**
Mine haul roads (pioneer)	US$ M	-	-	**-**
Mining equipment and infrastructure	US$ M	-	-	**-**
Process plant	US$ M	17.09	25.64	**42.73**
On-site infrastructure	US$ M	4.27	6.41	**10.68**
Off-site infrastructure	US$ M	1.17	1.76	**2.93**
Indirect cost	US$ M	5.94	8.92	**14.86**
Owner's cost	US$ M	1.14	1.71	**2.85**
Contingency	US$ M	7.19	10.79	**17.98**
Total	**US$ M**	**37.11**	**55.66**	**92.76**

Table 22-4: Sustaining Capital Costs Distribution

Item	Units	Year 3	Year 6	Total
Heap leach and waste dump	US$ M	3.73	4.97	8.70
Total	US$ M	3.73	4.97	8.70

22.3.5 Operating Costs

Preliminary operating costs are presented in Section 21. Operating costs used in the financial analysis are averaged as presented in Table 22-5. It has been assumed that the mine will be run by a mining contractor. Operating costs were applied in the financial model excluding value added tax.

Table 22-5: Average Operating Costs

Item	Units	Cost
Mining	US$/t mined	2.10
Process	US$/t processed	5.55
G&A	US$M/year	4.00

22.3.6 Royalties

The royalties modeled within the financial analysis are based on the tax rates and taxation schemes both of which were validated by MGN Advisors a local tax accounting firm.

The following government royalties were applied:

- Mining canon (*Canon minero*) – Law 1919 (*Código Minería*), articles 213, 214, 215, 224: an annual payment of US$4,600 is applied based on a mining canon rate of

US$11.5/possession (320 ARS/possession) and 398 possessions.

- Mining royalty – *Ley de Inversiones Mineras* (LIM) 24.196, article 22; and San Juan simplified application method: applied as 3.0% of total payable metal value.
- New federal mining agreement – Infrastructure Fund: applied as 1.5% of total payable metal value.

The PEA financial analysis does not include the 2.5% royalty associated with Orvana's acquisition of the Taguas Property.

22.3.7 Working Capital

A preliminary working capital allocation was included in the cash flow model. The following payment terms were assumed:

- 60 days in accounts receivable – including net smelter return.
- 30 days in accounts payable – including 100% operating cost and sustaining capital.

The assumption is made that all of the working capital can be recovered at project completion. Thus, the sum of all working capital over mine life is zero.

22.3.8 Taxes

Wood does not provide expert advice on matters of taxation. The taxation and royalties modeled within the financial analysis are based on the tax rates and taxation schemes that were validated by MGN Advisors (2018). The following tax considerations have been applied:

- Income tax – Reforma Tributaria: a constant income tax rate of 25% is applied (excluding applicable tax on dividends).
- For taxation purposes only, the closure cost has been deducted from the start of the operations as 5.0% of the mining and process annual operating cost.
- Tax loss carried forward over a maximum of five consecutive years.
- Tax depreciation has been applied after tax loss carried forward.
- For three year accelerated and three-year straight-line depreciation applied carry-forward without limitations.
- Value added tax: a working capital provision was included assuming that the value added tax incurred at a rate of 21% on capital cost (initial and sustaining) and 70% of operating cost (assuming 30% of operating associated with personnel costs and

other not subject to value added tax) costs is recovered as value added tax is generated as sales progress.

The Project is subject to fiscal stability (no changes in the tax regime are applicable during the project life), according to LIM – article 8. Under the LIM the Project is exempt from the following government taxes or charges:

- Tax on minimum presumed income
- Taxes on debts and bank credit notes
- Imports

Other applicable government taxes or charges (such as *cargas sociales, impuesto automotor, impuesto a los sellos, exportaciones, tasas ambientales – fondo de fomento ambiental, seguro ambiental y fondo de restauración, canon sobre uso de agua e impuesto a los combustibles líquidos*) were assumed to be covered by the capital and operating costs estimates.

Tax depreciation is applied as follows:

- Three-year accelerated model: 60% in first year, 20% in second year and 20% in third year, for equipment, civil works and infrastructure.
- Three-year straight-line basis: 33.3%/year, for other assets not included in the accelerated depreciation model (machinery, vehicles and facilities).

Previous prospection/exploration spent capital for tax calculation purpose, at US$10.1 M (281,539,803 ARS, converted using 27.9 ARS/USD exchange rate), will be depreciated twice according to mineral processing (financial depreciation).

22.3.9 Closure Costs and Salvage Value

A provision for closure costs of US$4.64 M has been included in the model, assumed as 5.0% of the initial capital cost based on benchmark. This cost was applied in the year following the last year of production (Year 11).

No salvage value has been considered.

22.3.10 Financing

The economic analysis is based on 100% equity financing.

22.3.11 Inflation

No escalation or inflation has been applied. All amounts are in constant terms.

22.4 Economic Analysis

The project is forecasted to generate a pre-tax NPV of US$55.1 M at 8.0% discount rate, an IRR of 21.7% and a payback period of 3.0 years. The financial analysis results showed an after-tax NPV of US$37.8 M at 8.0% discount rate, an IRR of 17.3% and a payback period of three years. The PEA financial results to not include the 2.5% royalty related to Orvana's acquisition of the Taguas Property. Table 22-6 presents a summary of the financial analysis results.

Table 22-6: Summary of Financial Analysis Results

Description	Units	Value
Au payable	Koz	410
Ag payable	Koz	9,023
Total Au payable equivalent	koz	528
After-Tax Valuation Indicators		
Undiscounted cumulative cash flow	US$ M	104.7
NPV @ 7%	US$ M	43.9
NPV @ 8%	**US$ M**	**37.8**
NPV @ 10%	US$ M	27.1
Payback period (from start of operations)	years	3.0
IRR	%	17.3
Initial capital	US$ M	92.8
LOM capital	US$ M	106.1

Cash costs were consolidated per ounce of gold payable equivalent, net of silver credits. A LOM all-in sustaining cash cost (AISC) was also consolidated. These are presented in Table 22-7.

Table 22-7: LOM Cash Costs Summary

Cash Cost	LOM (US$ M)	US$/Au oz payable equivalent
Cash Costs		
Mining	159.8	302.7
Process	210.0	397.9
G&A	35.5	67.3
Dore transport, marketing and refining	11.0	20.8
Sub-Total	416.3	788.7
By-Product Credits		
Ag Premium	(153.4)	(290.6)
Net Direct Cash Cost (C1)	**262.9**	**498.1**
Sustaining Capital, Royalties and Closure	44.3	83.9
AISC	**307.2**	**518.9**

Figure 22-1 presents the main costs value drivers at 8% discount rate. Figure 22-2 and Figure 22-3 show the cumulative undiscounted and discounted cash flows forecasted for the project. Table 22-8 presents the cash flows summary on an annualized basis.

Figure 22-1: Main Costs and Value Drivers (Discounted at 8%)

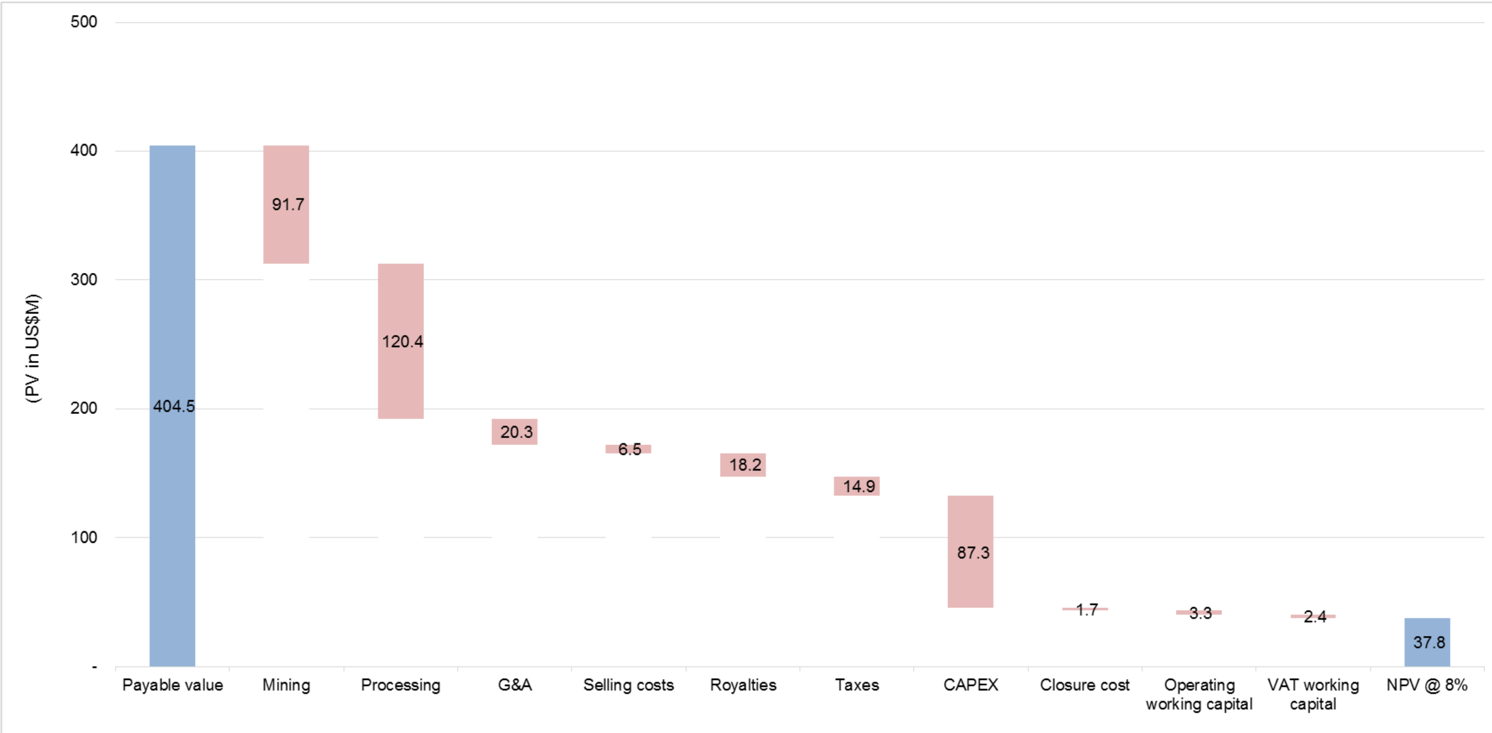


Figure 22-2: Cumulative Undiscounted Cash Flow

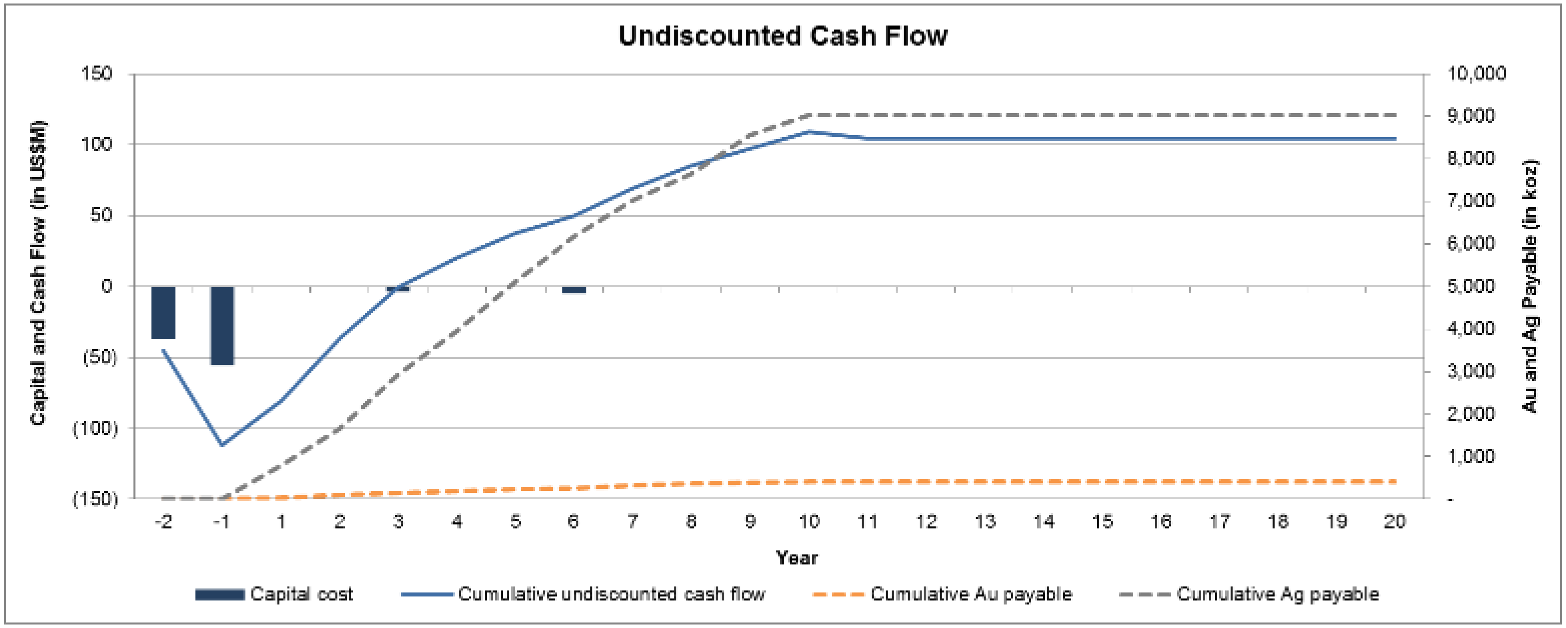


Figure 22-3: Cumulative Discounted Cash Flow

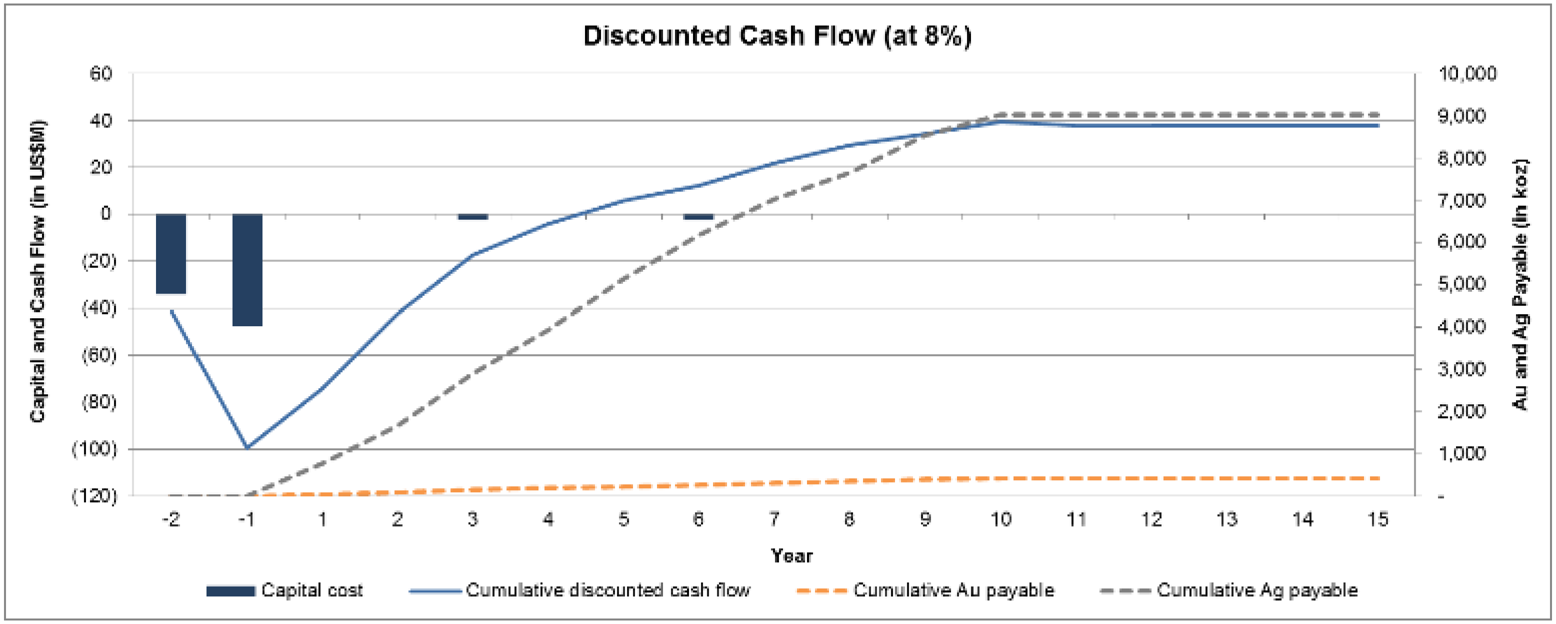


Table 22-8: Annualized Cash Flow Summary

	Units	LOM	Year -2	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Production															
Waste Mined	Kt	**38,424**	-	-	2,837	3,264	4,176	5,142	4,985	4,552	4,399	4,152	4,041	875	-
Material Processed	kt	**37,833**	-	-	2,500	3,800	4,200	4,200	4,200	4,200	4,200	4,200	4,200	2,133	-
Au Grade	g/mt	**0.39**	-	-	0.53	0.47	0.46	0.38	0.34	0.35	0.41	0.37	0.32	0.29	-
Ag Grade	g/mt	**14.47**	-	-	18.92	14.01	18.21	14.77	17.15	15.23	12.22	9.04	12.98	13.44	-
Recovered Metals															
Au Recovered	koz	**412**	-	-	37	49	53	45	40	41	48	44	37	17	-
Ag Recovered	koz	**9,207**	-	-	795	895	1,286	1,043	1,211	1,075	863	639	917	482	-
Payable Metals															
Au Payable	koz	**410**	-	-	37	49	53	44	40	41	48	43	37	17	-
Ag Payable	koz	**9,023**	-	-	779	877	1,260	1,022	1,187	1,054	845	626	899	472	-
Metal Value															
Au Payable Value	US$ 000	**532,761**	-	-	48,141	63,944	69,193	57,681	51,431	52,742	62,318	56,505	48,188	22,617	-
Ag Payable Value	US$ 000	**153,390**	-	-	13,251	14,917	21,423	17,377	20,182	17,917	14,372	10,642	15,276	8,032	-
Total Payable Value	US$ 000	**686,150**	-	-	61,392	78,861	90,617	75,058	71,613	70,659	76,690	67,147	63,463	30,650	-
Refining Charges															
Transport, Insurance and Au Refining	US$ 000	**(2,869)**	-	-	(259)	(344)	(373)	(311)	(277)	(284)	(336)	(304)	(259)	(122)	-
Ag Refining	US$ 000	**(8,121)**	-	-	(702)	(790)	(1,134)	(920)	(1,068)	(949)	(761)	(563)	(809)	(425)	-
Total Transport, Insurance and Refining	US$ 000	**(10,989)**	-	-	(961)	(1,134)	(1,507)	(1,231)	(1,345)	(1,233)	(1,096)	(868)	(1,068)	(547)	-
Net Smelter Return	**US$ 000**	**675,161**	**-**	**-**	**60,431**	**77,727**	**89,110**	**73,828**	**70,268**	**69,427**	**75,594**	**66,279**	**62,395**	**30,103**	**-**
Production Costs															
Mining	US$ 000	**(159,768)**	-	-	(11,335)	(14,301)	(16,586)	(19,060)	(18,884)	(18,279)	(18,232)	(17,969)	(17,888)	(7,235)	-
Process	US$ 000	**(210,012)**	-	-	(13,878)	(21,094)	(23,314)	(23,314)	(23,314)	(23,314)	(23,314)	(23,314)	(23,314)	(11,842)	-
G&A	US$ 000	**(35,500)**	-	-	(2,000)	(3,500)	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)	(4,000)	(2,000)	-
Total Production Costs	US$ 000	**(405,281)**	-	-	(27,212)	(38,895)	(43,900)	(46,374)	(46,198)	(45,593)	(45,546)	(45,284)	(45,202)	(21,077)	-
Royalties															
Royalties	US$ 000	**(30,932)**	(5)	(5)	(2,767)	(3,553)	(4,082)	(3,382)	(3,227)	(3,184)	(3,456)	(3,026)	(2,860)	(1,384)	-
Net Operating Earnings	**US$ 000**	**238,949**	**(5)**	**(5)**	**30,452**	**35,279**	**41,128**	**24,071**	**20,843**	**20,650**	**26,592**	**17,969**	**14,332**	**7,642**	**-**
Taxes															
Taxes	US$ 000	**(28,166)**	-	-	-	-	(402)	(5,271)	(4,464)	(3,857)	(5,839)	(3,684)	(3,023)	(1,626)	-
Capital Costs															
Initial Capital	US$ 000	**(92,765)**	(37,106)	(55,659)	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital	US$ 000	**(8,699)**	-	-	-	-	(3,728)	-	-	(4,971)	-	-	-	-	-
Closure Cost	US$ 000	**(4,638)**	-	-	-	-	-	-	-	-	-	-	-	-	(4,638)
Total Capital Costs	US$ 000	**(106,102)**	**(37,106)**	**(55,659)**	**-**	**-**	**(3,728)**	**-**	**-**	**(4,971)**	**-**	**-**	**-**	**-**	**(4,638)**
Working Capital															
Change in Working Capital	US$ 000	**-**	-	-	(7,697)	(1,883)	(1,153)	2,409	571	497	(1,426)	1,510	632	6,541	-
VAT Working Capital	US$ 000	**-**	(7,792)	(11,688)	8,690	10,605	185	-	-	-	-	-	-	-	-
Net Cash Flow															
Before Tax	**US$ 000**	**132,847**	(37,111)	(55,663)	22,755	33,396	36,246	26,480	21,414	16,176	25,166	19,479	14,964	14,183	(4,638)
After Tax	**US$ 000**	**104,681**	(44,903)	(67,352)	31,445	44,001	36,029	21,209	16,949	12,319	19,327	15,795	11,941	12,557	(4,638)

22.5 Sensitivity Analysis

A sensitivity analysis was performed considering variations in metal prices, head metal grades, capital and operating costs. The results of this analysis are presented in Figure 22-4 and Figure 22-5.

Figure 22-4: Sensitivity of After-Tax NPV Discounted at 8.0%

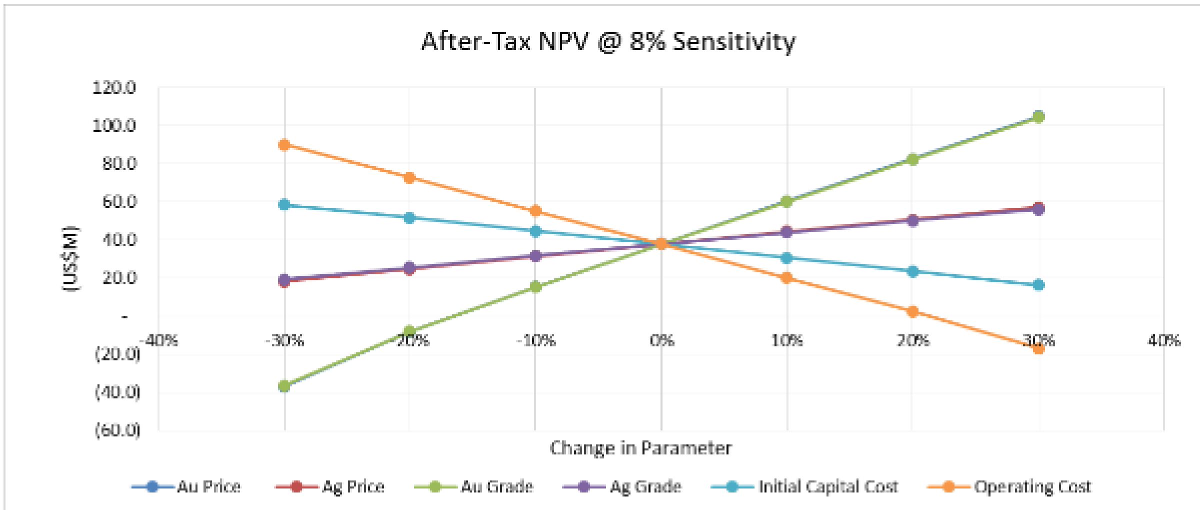


Figure 22-5: Sensitivity of After-Tax IRR

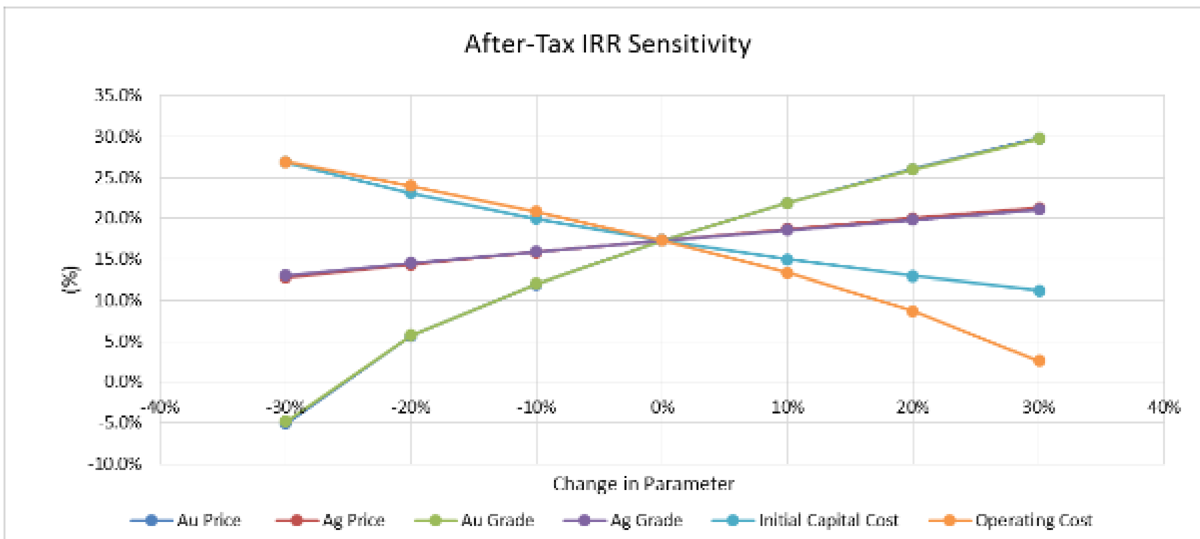


Table 22-9 presents the Project NPV at a range of discount rates from 5% to 15%. The Project has a positive after-tax NPV even at a 15% discount rate. The sensitivities of NPV and IRR to metal price are the same as their sensitivity to grade.

Table 22-9: Project NPV at Discount Rates of 5% to 15%

	After tax (US$M)
NPV 5%	57.6
NPV 8%	37.8
NPV 10%	27.1
NPV 12%	18.0
NPV 15%	6.9

22.6 Comments on Section 22

The project is forecast to generate a pre-tax NPV of US$55.1 M at 8.0% discount rate, an internal rate of return (IRR) of 21.7% and a payback period of three years. The financial analysis results showed an after-tax NPV of US$37.8 M at 8.0% discount rate, an IRR of 17.3% and a payback period of three years. The PEA financial results to not include the 2.5% royalty related to Orvana's acquisition of the Taguas Property.

The Project is most sensitive to changes in gold grade/gold price, less sensitive to changes in operating costs and capital costs, and least sensitive to changes in the silver grade/silver price.

23.0 Adjacent Properties

This section is not relevant to this report.

24.0 Other Relevant Data and Information

There are no other data or information relevant to the Project that have not been presented in this Report.

25.0 Interpretation and Conclusions

25.1 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

Pursuant to the purchase agreement dated May 14th, 2019, the transaction giving Orvana rights to the Taguas Property is expected to close upon the completion of due diligence by Orvana and will be subject to approval by securities regulators in Canada and the TSX stock exchange. A royalty is payable to the Province of San Juan, and additional royalties may be applicable as a result of any agreement giving Orvana ownership of the Property and the Project.

Orvana can establish a locally registered operating entity to assume the the necessary land tenure, surface rights and water rights to continue to explore and study the Project. Part of the continued exploration of the Property will include obtaining and maintaining permits and agreements in good standing and continuing to execute baseline study work which will allow for eventual preparation of an environmental impact assessment study (EIA) as the Project advances to construction.

25.2 Geology and Mineralization

The oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV is hosted in felsic volcanic tuffs and is typical of supergene-oxidized high-sulfidation epithermal gold-silver mineralization. The regional and deposit-scale geology and controls on mineralization are sufficiently well understood to permit the construction of geological models and estimation of Mineral Resources for the oxide mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV.

The Inferred Mineral Resource that is the basis for the PEA study consisting of oxide mineralization at Cero Taguas Norte, Cerro Tagus Sur, Cerro III and Cerro IV is open to the north-east and south-west and has potential for expansion.

Oxide and sulfide gold-silver mineralization at Veta Campamento and Cerro Silla Sur present additional exploration targets that could also be pursued. The potential for deeper porphyry-style mineralization also exists as an exploration target on the Taguas Property.

25.3 Metallurgical Testwork

The metallurgical testwork carried out in 2018 indicate that heap leach gold recovery of 87% and silver recovery of 52% are achievable by processing the oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV with a crushed and agglomerated heap-leach flow sheet. The 2018 testwork program was appropriate to produce preliminary gold and silver recovery estimates given the mineralization type and proposed process flow sheet. Further testwork is required to understand the impact of process feed variability on gold and silver recovery and flow-sheet trade-off study is required to further define the process flow sheet.

25.4 Mineral Resource Estimates

The Inferred Mineral Resource is estimated to total 38.6 Mt grading 0.40 g/t Au and 14.6 g/t Ag above a cut-off grade of 0.25 g/t AuEq. The gold equivalent cut-off grade considers the differential values and recovery of gold and silver.

Factors that may affect the Inferred Mineral Resource estimate are changes to tonnage and local and global gold and silver grades due to the relatively wide drill spacing used to build the resource model, variability in bulk density and oxide/sulfide boundary.

25.5 PEA Mine Plan

The PEA mine plan, based on Inferred Mineral Resources, is designed to deliver 4.2 Mt/a or nominally 12 kt/d of feed to the process plant and an overall production rate of approximately 9 Mt/a of mineralized material and waste. The PEA mine plan has a 10-year mine life.

Mining will be by conventional truck and shovel using a mining contractor.

25.6 Recovery Plan

LOM metal production for the Taguas PEA is 412 koz gold and 9,207 koz silver. Annual production peaks at 53 koz gold and 1,286 koz silver in year three of the operation and averages 41 koz gold and 902 koz silver over the life of mine.

The proposed crushed and agglomerated, valley fill heap leach and ADR gold recovery circuit is an industry standard flow sheet for processing oxide gold-silver mineralization.

Differences in plant feed grade and metallurgical recoveries in gold and silver related to geological characteristics and heap and plant performance may impact on the annual gold and silver production rates in the PEA production plan.

25.7 Infrastructure

The storage capacities of the heap leach facility and the waste rock facility meet or slightly exceed the volume requirements of the operation, with 38 Mt and 36.8 Mt, respectively. Geometrically, both the heap leach facility and the waste dump provide options to increase storage capacity if additional mineralization is found or if cut-off grades vary during the life of mine.

The Taguas Project is located in a zone of relatively high seismic risk. PEA infrastructure design assumes of a maximum ground acceleration of 0.35 g, and a return period of 475 years according to the seismic zoning of the Argentine Republic. The results of the stability analyses of the conceptual slopes of the heap leach facility and of the waste dump indicate that these structures would be stable under static and pseudo-static conditions.

Other infrastructure included in the PEA design include major ponds, process plant platforms, access roads, and a camp for 250 workers. Power supply for the operation is proposed to be by medium-voltage diesel generators. Water supply will be from the Taguas River.

Infrastructure design is sufficiently complete to allow for preliminary capital and operating cost estimates for the Project.

25.8 Environmental, Permitting and Social Considerations

There is a pathway and local precedence to acquire necessary permits and licenses to build and operate the project.

25.9 Markets and Contracts

It is assumed that the gold-silver doré produced by the Taguas Project will be readily marketable and subject to typical off-site treatment and refining charges.

As the project progresses into the next study stages, Wood recommends that ports, potential transport and shipping companies and smelters are contacted to obtain firm estimates for shipping and smelter treatment terms and refining charges.

25.10 Capital Cost Estimates

A preliminary initial capital cost of US$92.8 M has been estimated for the Taguas Project. This estimate includes US$42.7 M for process plant capital, US$10.7 M for on-site infrastructure, US$3.7 M for other direct capital including site preparation and off-site infrastructure, US$14.9 M for indirect capital including studies and EPCM, US$20.8 M for owners' cost and contingency. Additional capital costs consist of US$8.7 M for sustaining capital and US$4.6 M for closure.

It is assumed that a mining contractor will be used for mine operations so capital costs for mining equipment are carried in the contract mine operating cost.

The capital cost estimate is based on a preliminary equipment list and budgetary quotations for major process equipment, preliminary material take-off's and unit rates for bulk earth works and factored, scaled estimates for other areas including electrical, piping, Owner's costs and other indirect capital costs. This estimate basis is appropriate for a capital cost estimate supporting a PEA.

25.11 Operating Cost Estimates

Mine operating costs average US$2.10/t for mineralized material and waste over the life of mine including the cost of capital and a 10% profit margin for the contractor. Process operating costs total US$5.55/t of processed mineralization. Site G&A costs are estimated to be US$4M/y based on benchmarks from similar operations.

Operating cost estimates were developed from first principal estimates from mine physicals, scaled estimates for process consumables and benchmarked costs for other areas. This basis is suitable for development of operating cost estimates to be used in a PEA.

25.12 Economic Analysis

The Taguas Project is forecasted to generate an after-tax NPV of US$ 37.8 M at 8.0% discount rate, an IRR of 17.3% and have a payback period of three years. The PEA financial results to not include the 2.5% royalty related to Orvana's acquisition of the Taguas Property.

25.13 Risks and Opportunities

The project economics are reasonably robust to gold and silver grade, capital and operating costs; however, there is uncertainty and risk in the tonnage and grade estimates of the Inferred Mineral Resources used in the PEA production schedule, preliminary gold and silver recovery estimates, and in preliminary capital and operating cost estimates prepared for the PEA. These risks will be addressed in the scope of work for site investigation and study engineering as the project advances.

There is up-side potential to the Inferred Mineral Resource estimate of oxide gold-silver mineralization at Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV, states in this PEA. Opportunities may be realized with exploration for economic sulfide gold-silver mineralization below the Inferred Mineral Resource; exploration for oxides and sulfides at Cerro Silla Sur and Cerro Campamento; and additional drilling could extend the footprint of the present Inferred Mineral Resource. There are also potential opportunities to optimize the project capital and operating cost estimates as the level of project definition and study engineering increase as the project advances.

25.14 Recommendations

Two phases of work are recommended.

The first work phase would consist of a drill program with following objectives:

- Resource expansion drilling in order to potentially expand the amount of inferred resources within the Cerro Taguas Norte, Cerro Taguas Sur, Cerro III and Cerro IV, in the vicinity of the current oxide gold-silver mineralization, prioritizing those areas where there is the possibility of continuity the structures, or areas where there is no resource for the lack of previous drilling
- Infill drilling to support potential upgrade in Mineral Resource confidence categories
- Getoechnical drilling for PFS open pit mine design

The second phase of work would consist of a Preliminary Feasibility Study (PFS) once the first-phase drilling is complete. The second phase work program is partly contingent on the results of the recommended drill program.

25.15 Phase 1 Work Program - Drilling

The first objective of the proposed drill campaign consists of a resource expansion drill program concentrated around Cerro Taguas Norte where the continuity of the structures seems reasonably good and orientation is relatively well established. Several drill holes will also be drilled next to high-grade areas with the intention of giving extending the higher grade zones. The orientation of the resource expansion drill holes will be designed to be as perpendicular as possible to the mineralized structures.

Additional exploration drilling is proposed for the oxidized portion of the veins at Cerro Campamento and towards its possible extension to the south west. The depth of oxidation will need to be established with precision to model and define the tonnage and grade of oxide mineralization in this area.

The second objective of drilling is support estimation of Indicated Mineral Resources. Holes will be designed to define the true width and grade of the high-grade domains with at distances of 85 m to 100 m between drill holes and improve the model of the depth of the oxidized zone.

Geotechnical drilling is also proposed for to support pit design for pre-feasibility study. Where possible the geotechnical drill holes can be designed to be used in Mineral Resource estimation.

It is expected that the first phase program could begin in November once snow has melted and access to site can be re-established. The field work program could be completed in five to six months including re-establishment of camp, mobilization of a drill supervisor, execution of field work, assaying, geological modeling and Mineral Resource Estimation.

The estimated cost to complete the drill program is US$6.7 M including drill contracting, platform and access construction, geology supervision, core logging, sampling, assaying, geological modeling, mineral resource estimation, owner's cost and camp costs during the execution of the program.

25.16 Phase 2 Work Program – PFS Study

Once results from the Phase 1 drill program and resource model updates are available a pre-feasibility study is recommended for the Taguas Project. Scope for the PFS is expected to comprise geotechnical field investigation for Project facility location and infrastructure design, a metallurgical test work program including large column leaching and mineralization characterization, updated resource modelling, followed by PFS study engineering. Key trade-offs to be considered in the PFS include:

- Infrastructure site locations
- Process flow-sheet trade off study
- Throughput analysis

The geotechnical fieldwork component of the Phase 2 PFS Study program could be executed in parallel with the Phase 1 drill program during the spring and summer field season but the study engineering work would be executed once the Mineral Resource estimate was complete in late spring. The PFS study engineering could be expected to take from six to nine months to complete. A PFS study report would be the PFS study deliverable and NI 43-101 Technical Report would be produced to support disclosure of results of the PFS.

The estimated cost to complete the PFS Study work program is US$1.3 M including geotechnical field work supervision, metallurgical testing and study engineering.

26.0 References

Barbagelata, Franco (2001). Caracterizacion mineralógica de dos muestras de mineral aurífero de Minera Aguilar S.A. Unpublished mineralogy study of two samples from the Taguas Property.

Barrick Gold Corporation, (2014). NI 43-101 Technical Report on the Veladero Mine, San Juan Province, Argentina: prepared by RPA Inc., 144 pages.

Barrick Exploraciones Mineras Argentina S.A. (2006) Proyecto Pascua –Lama. Texto Ordenado del Informe de Impacto Ambiental Etapa de Explotación (Anexo III). Expediente No. 414-657-B-04.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2003: Estimation of Mineral Resources and Mineral Reserves, Best Practice Guidelines: Canadian Institute of Mining, Metallurgy and Petroleum, November 23, 2003, http://www.cim.org/committees/estimation2003.pdf.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2010: CIM Standards for Mineral Resources and Mineral Reserves, Definitions and Guidelines: Canadian Institute of Mining, Metallurgy and Petroleum, November 2010, http://www.cim.org/UserFiles/File/CIM_DEFINITON_STANDARDS_Nov_2010.pdf.

Canadian Institute of Mining, Metallurgy and Petroleum (CIM), 2014: CIM Standards for Mineral Resources and Mineral Reserves, Definitions and Guidelines: Canadian Institute of Mining, Metallurgy and Petroleum, May 2014

Corbett, G. (2002). Epithermal Gold for Explorationists. AIG Journal – Applied geoscientific practice and research in Australia. Paper 22-1. 26 p.

Davidson, J. and Mpodozis, C., (1991). Regional Geologic Setting of Epithermal Gold Deposits Chile: Economic Geology, Volume 86, pages 1174-1186.

Godeas, M., Pezzutti, N., Nullo, F., and Otamendi, J., (1993). Petrographic and Geochemical characterization of Tertiary Volcanism in Taguas River Area (Doña Ana and Cerro de las Tórtolas Formation), Mendoza. 12°: Argentine Congress of Geology Records, Volume 4, pages 216-224.

Hedenquist, J.W., Arribas, A.R. and Gonzales-Urien, E. (2000) Exploration for Epithermal Gold Deposits. SEG Reviews Vol. 13, p. 245-277.

Hedenquist, J.W., (2012). Observations on the Taguas district, San Juan, Argentina: Report prepared for Gold Fields Argentina, 22 pages.

Holmgrem, C., (2001). Estudio Mineralogico y petrográfico de tres muestras de sondajes del mineral aurífero de Minera Aguilar S.A.. Unpublished petrographic study on drill hole samples of gold bearing mineralization from Taguas.

Köeppen, W, (1931) Grundiss der Klimatkrude. Berlin und Leipzig. Walter de Gruyter Co.

Kowalik, J.J., (2015). Taguas Report: report prepared for Minera S.A., 23 pages.

Kowalik J.J., (2016). Cerro Taguas Core Review and RC Drilling Recommendations: report Prepared for Minera S.A., 19 pages.

Kowalik, J.J., (2018). Proposed 2018 DDH Drilling to Increase Resource: report prepared for Minera S.A., 13 pages.

La Riva, S.J., (2007). Taguas Project PowerPoint Presentation for Minera Piuquenes S.A.

Lencinas, A., (2002). Taguas 2002-2003 Work Programme and Conceptual Geology for Scheduling: report prepared for Compañía Minera Aguilar S.A., 23 pages. Unpublished.

Martínez, R. D., Grassi, J., and Hernández H.B., (1993). Structural Considerations of Hydrothermal Alterations in Valle del Cura, San Juan, their Implications in Metalliferous Exploration: Argentine Geological Congress and 2nd Congress of Hydrocarbon Exploration Records, Volume 2, pages 100-110.

MGN, (2018) Revisions to Tax Components for Taguas Project-PEA. Letter dated November 5, 2018 prepared by Manuel Novoa of MGN Advisors on behalf of Piuquenes.

Novoa, M.G. (2018). Title Opinion. Taguas Project. Unpublished legal opinion of the ownership of the Taguas Property by Novoa and Vargas Echegaray Abogados, San Juan Argentina, dated September 25, 2018. 4 p.

Pujadas C., E. Posleman, M.B. Vera, I. Rueda, J. Cerino & A.A. Cottonaro, (2013). Plan de Manejo de la Reserva de la Biosfera San Guillermo. Instituto de Desarrollo Sostenible FCEYE-Universidad Católica de Cuyo. 1ª ed. – San Juan: Universidad Católica de Cuyo.

Ramos, V. A., Kay, S.M., Page, R., and Munizaga F., (1989). Ignimbrite in Vacas Heladas and The Termination of Volcanism in Valle del Cura, Province of San Juan: Argentina Geology Association, Journal 54 (1-4), pages 336-352.

Ramos, V.A., (1995). Geology and Structure of Valle del Cura: Minera Argentina Gold S.A: 48 Pages. Unpublished.

Ramos, V.A., (1996). Geology of Aconcagua Region, Provinces of San Juan and Mendoza: National Bureau of Geological Survey, Mining Under Secretariat of Argentina, Annal No.24, 510 pages.

Ramos, V.A., (1998). Geochronologic Analysis of Veladero Norte Region (Valle del Cura): Minera Argentina Gold S.A.: 21 pages. Unpublished.

Siddeley, G. and Araneda, R., (1990). Gold-silver Occurrences of the El Indio Belt, Chile: Circum-Pacific Council Energy Mineral Resources, Volume 11, pages 273-284.

Sillitoe, R.H., (1999). Styles of High-Sulfidation Gold, Silver and Copper mineralization in Porphyry and Epithermal Environments. *In* Pacrim '99 Proceedings, Bali, Indonesia; The Australasian Institute of Mining and Metallurgy, Melbourne, p. 29-45.

Sillitoe, R.H., (2011). Geological Model and Potential of the Taguas Gold-Silver-Copper Prospect, San Juan, Argentina: Report prepared for Minera S.A., 10 pages.

Stewart, J.W., (2008). Review of the Rio Taguas Prospect, San Juan Province, Argentina: Report prepared for Orvana Minerals Corporation, 15 pages.

Townley, (2001) Estudio de Inclusiones Fluidas de la muestras 1-SD. Unpublished fluid inclusion study from the Geology Department of the University of Chile on samples from the Taguas Project.

Williams, B., (2008). Las Taguas Prospect: Report by and for Orvana Mineral Corp., 9 page.