

MEDIA RELEASE Austral Gold Limited 11 July 2017

### Austral Gold Files Technical Report Supporting Robust Pre-Feasibility Study Results for Combined Guanaco Mine and Amancaya Project, Chile.

Austral Gold Limited ("Austral" or the "Company") (ASX: AGD; TSX-V: AGLD) is pleased to announce the filing on SEDAR and the ASX of a Technical Report, prepared in accordance with National Instrument 43-101 and JORC Code, on the Guanaco and Amancaya Gold Project, Region II, Chile, dated 16 June, 2017, with an effective date of 31<sup>st</sup> December 2016 (the "**Technical Report**"). The Technical Report supports the Company's pre-feasibility study, disclosed in the Company's announcement dated 9 June 2017.

### Highlights of the Technical Report;

- After-Tax Net Present Value (NPV): \$US71.3m at a 5.0% discount rate\*
- Mine life of 5 years, based on Ore Reserves
- Metal prices: based on a ramp-up from current prices to reserve prices of \$US1,300/oz gold and \$US20/oz silver, based on consensus of independent forecasts
- All-In Sustaining Cost ("AISC") of \$US892/oz gold
- Combined average annual production of approximately **53,000 ozs gold, 370,000** ozs silver.
- Metallurgical recovery estimated to average 92% for gold, 80% for silver for the new processing plant
- Average operating cost over the mine life is **\$US111** per tonne milled.

- Life of Mine ("LOM") sustaining capital costs total **\$US66.4 million**, including reclamation and closure.
- No additional CAPEX requirements for operation are envisaged, as all infrastructure plant and equipment has been fully funded as of end of December, 2016.

\*Due to an adjustment to the capital cost estimate, economic results differ slightly from the Company's previous News Release on June 9, 2017.

Stabro Kasaneva, CEO of Austral Gold stated: "This is a significant step for Austral Gold in executing on its focus on high-margin production growth. Once the new processing plant enters operation the Company plans to transport the high grade Amancaya production, currently being stockpiled at Amancaya, to the new plant. We hope to see the efficiencies of the new plant positively impact our cash flow, with gold recoveries expected to improve by at least 25%. We hope to complete final commissioning of the new plant shortly and commence combined operations thereafter."

### SUMMARY OF RESERVE AND RESOURCE ESTIMATES

 Table 1: Amancaya and Guanaco Ore Reserves – as at December 31, 2016

 Austral Gold Ltd. – Guanaco and Amancaya Gold Project

			Tonnage	Grades (g/t)		Grades (g/t) Contained Meta (koz)			unces
	Area	Category	(kt)	Au	Ag	AuEq	Au	Ag	AuEq
	Underground	Proven & Probable	693	6.48	42.5	7.05	144.4	946.7	157.1
Amancaya	Open Pit	Probable	255	7.56	119.5	9.16	61.9	978.1	75.0
	All	Proven & Probable	948	6.77	63.2	7.61	206.3	1,924.7	232.1
Guanaco	Underground	Proven & Probable	490	2.99	3.6	3.04	47.1	57.3	47.9
Combined	All		1,438	5.48	42.9	6.05	253.4	1,982.1	280.0

#### Notes: Amancaya Ore Reserves

- 1. Ore Reserves followed the Canadian Institute of Mining, Metallurgy and Petroleum ("**CIM**") Definitions, 2014 and are compliant with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("**JORC**") Code, 2012.
- 2. Underground Ore Reserves are estimated at a break-even cut-off grade of 2.5 g/t AuEq for stopes and an incremental cut-off grade of 1.5 g/t AuEq for drifts. Open Pit Ore Reserves are estimated at a cut-off grade of 1.53 g/t AuEq.
- 3. Ore Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.

- 4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a Au and Ag price of \$1,300/oz and \$20/oz and recoveries of Au and Ag of 92% and 80%, respectively.
- 5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.
- 6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).
- 7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).
- 8. Bulk density is 2.5 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

#### Notes: Guanaco Ore Reserves

1. Ore Reserves followed CIM definitions, 2014 and are compliant with the JORC Code.

- Ore Reserves are estimated at a break-even cut-off grade of 2.0 g/t AuEq for stopes and an incremental cut-off grade of 1.0 g/t AuEq for drifts.
- 3. Ore Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.
- 4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a Au and Ag price of \$1,300/oz and \$20/oz and recoveries of Au and Ag of 92% and 80%, respectively.
- 5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.
- 6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).
- 7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).
- 8. Bulk density is 2.5 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

Location	Area	Category	Tonnes	G	rades (g/	/t)	0	Ounces (koz)	
			(kt)	Au	Ag	AuEq	Au	Ag	AuEq
	Open Pit	Indicated	171.5	11.24	177.5	13.6	62.0	978.9	75.1
		Inferred	59.7	7.57	110.0	9.0	15.0	210.0	20.0
Amancaya	Underground	Indicated	633.2	9.21	54.5	9.9	187.4	1,109.5	202.3
, include ye	onderground	Inferred	900	6.7	31.4	7.2	195	910	210
	Total	Indicated	804.7	9.64	80.7	10.7	249.4	2,088.4	277.4
		Inferred	960	6.8	36	7.3	210	1,110	220
	Underground	Measured	641.0	3.02	12.9	3.2	62.0	266.0	65.8
Guanaco		Indicated	1552.0	2.86	13.0	3.0	143.0	650.0	151.0
		Inferred	1200	2.6	13	2.8		500	110
		Measured	641.0	3.02	12.9	3.2	62.0	266.0	65.8
Combined	All	Indicated	2,356.7	5.17	36.1	5.7	392.4	2,738.4	428.4
Combined		Total M+I	2,997.7	4.71	31.2	5.1	454.4	3,004.4	494.2
		Inferred	2,150	4.5	23	4.7	310	1,600	330

# Table 2: Amancaya and Guanaco Mineral Resources –as at December 31, 2016 Austral Gold Ltd. – Guanaco and Amancaya Gold Project

#### Notes: Amancaya Resource

1. Mineral Resources followed CIM definitions, 2014 and are compliant with the JORC Code.

2. Mineral Resources are reported inclusive of Ore Reserves.

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

- 4. Open pit Mineral Resources are reported at a cut-off grade of 1.5 g/t AuEq. Pit optimization shells were used to constrain the resources. Underground Mineral Resources are estimated at a cut-off grade of 2.5 g/t AuEq beneath the open pit shells.
- 5. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, and a silver price of US\$20 per ounce.
- 6. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80%, respectively.
- 7. Minimum width for the open pit resource is 1.0 m and 1.5 m for the underground resource.
- 8. Bulk density is 2.50 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

#### Notes: Guanaco Resource

- 1. Mineral Resources followed CIM definitions, 2014 and are compliant with the JORC Code.
- 2. Mineral Resources are reported inclusive of Ore Reserves and do not include dilution.
- 3. Mineral Resources that are not Ore Reserves do not have demonstrated economic viability.
- 4. Mineral Resources are reported at a 1.5 g/t AuEq cut-off grade where AuEq = Au + (0.0134 \* Ag).
- 5. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, and a silver price of US\$20 per ounce.
- 6. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a Au and Ag price of \$1,300/oz and \$20/oz and recoveries of Au and Ag of 92% and 80%, respectively.
- 7. A minimum mining width of 1.5 m was not used for the estimation of the Mineral Resource.
- 8. Bulk density is 2.50 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

The conversion of the Indicated Resources into Ore Reserves for Amancaya is approximately 84%, reflecting the high-grade nature of the deposit. Inferred Resources are not included in the Ore Reserves estimate or the economic analysis.

### BACKGROUND

The Guanaco Gold Project is currently held by Austral Gold through its wholly-owned subsidiary Guanaco Mining Company Ltd (GMC). GMC has a 99.99% interest in Guanaco Compañía Minera SpA (GCM), the subsidiary entity in Chile that owns and currently operates the Guanaco Mine. The Guanaco Gold Project has produced approximately 50,000 oz of gold per year for the last four years and is projected to continue at this rate for the next five years, as described in the LOM plan. Following purchase of the Amancaya project from Yamana Gold in 2014 and an infill drilling program in 2016 the Company has been assessing the possibility to run both Guanaco and Amancaya as a combined operation, with all production treated at a new processing plant built at Guanaco. RPA was commissioned to undertake the Technical Report used by the Company to undertake a Pre-Feasibility Study.

### MINING METHODOLOGY

The mining methodology used at Guanaco consists of sub-level open stoping (SLOS) and mining is carried out by following the veins with drifts on two levels, separated by 16 m (20 m floor to floor). The main production at Guanaco comes from the Cachinalito West vein, with additional production coming from the Dumbo and Perseverancia veins.

Stopes are designed at a minimum mining thickness of 1.5 m with planned dilution of 0.5 m on either side resulting in final stope widths of 2.5 m. Drifts are designed at 3.5 m with 0.25 m of dilution on either side resulting in a final width of 4 m. Sill pillars of four metres in height are left every 40 m (vertical) and ten metre wide rib pillars are left every 70 m (horizontal).

The Amancaya deposit consists of mainly northwest and southeast veins, with dip direction of 70° to 85°. The country rock comprises highly competent dacite-andesite.

The open pit mine at Amancaya will be carried out as a conventional operation using 30 t trucks and a combination of excavators and front-end loaders. Waste and ore will be blasted and mined separately using a "trenching" method to reduce the amount of dilution.

The SLOS mining methods planned at Amancaya are similar to those used at the Guanaco Mine. The Amancaya orebody is generally thinner than Guanaco resulting in the use of splitblasting to minimize dilution during drift development. Split blasting involves the separate blasting of ore and waste in the drift face.

Vertical crater retreat (VCR) mining will be used to connect the upper and lower drifts and create an open face for longhole blasting.

Ore from Amancaya will be hauled by contractor via a 75 km road to the new mill located at the Guanaco mining complex.

The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tpd and 800 tpd, respectively. The open pit at Amancaya is expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018.

### **MINERAL PROCESSING**

The Company restarted leach pad stacking in September 2010 and the first gold bar was poured in December 2010. With the acquisition and start of mining at Amancaya, commissioning of a 1,500 tpd agitated leach milling circuit commenced in March 2017, and is expected to be fully operational by July 2017. The capacity of the mill was selected to allow for potential increases in production. The new plant is integrated into the existing operation in order

to minimize construction and capital costs as much as possible. The existing crushing operation will be utilized to prepare feed for the milling circuit. The existing Merrill-Crowe circuit was refurbished to accommodate ore with higher silver concentrations from Amancaya and the zinc precipitate that is produced in the Merrill-Crowe circuit will be processed in the existing refinery.

The Company plans to direct all ore to the milling circuit and stop heap leaching as soon as the plant is operational. Ore that is already stacked on the leach pad will continue leaching as long as it is economic to do so. At the end of leaching, the ore will be rinsed with water to remove residual cyanide that is entrained in the leach pad.

The processing circuits include:

- Three stage crushing circuit
- Reversing conveyor to feed either the heap leach operation or the milling circuit
- Covered stockpile
- Single stage ball milling circuit operated in closed circuit with hydro-cyclones
- Pre-leach thickener
- Three-stage agitated leach circuit
- Three-stage counter-current-decantation (CCD) wash circuit
- Filter feed tank and plate and frame pressure filters to recover solution and produce filtered tailings
- Loading of the tailings with a front end loader and truck haulage to dry tailings deposit
- Dry tailings deposit
- Refurbished Merrill-Crowe circuit for precious metal recovery including:
  - Clarifying filters
  - De-aeration tower
  - Zinc cementation (i.e., precipitation)
  - Precipitate filters

From the covered stockpile, two vibrating feeders are used to remove ore from the bottom of the stockpile and feed it to a series of conveyors that are used to feed the ball mill.

### ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

Environmental Impact Statements ("DIAs") have been approved for the Guanaco and Amancaya Projects, including:

• The Guanaco operation that was permitted by Amax

- Reopening of the Guanaco operation by Austral Gold
- Opening of the Amancaya Mine
- Installing the 33 kV Electrical Transmission Line

In addition to the DIAs, environmental studies and numerous environmental permits have been issued to support mining at Guanaco and Amancaya, as outlined in Section 20 of the Technical Report.

Due to the remote location, Guanaco and Amancaya do not have a large impact on local residents, which are generally supportive of mining operations. Environmental studies and environmental permits have been issued to support mining at Guanaco and Amancaya.

### **CAPITAL AND OPERATING COST ESTIMATES**

The estimated sustaining capital costs for Amancaya and Guanaco from December 31, 2016 forward are summarized in Table 3. Since the capital costs for the new mill were incurred in 2016, all costs from 2017 forward are treated as sustaining capital costs. The Company expects to be able fund these from operations. This, however, remains uncertain and the Company will assess any funding needs on a needs basis.

Sustaining Capital Cost	Unit	Value
Amancaya Mine Development	US\$ '000	20,869
Guanaco Mine Development	US\$ '000	3,029
General Sustaining UG Capex	US\$ '000	4,020
Equipment Lease Payments	US\$ '000	18,999
Processing	US\$ '000	2,081
Exploration	US\$ '000	9,000
Other	US\$ '000	552
Reclamation and closure	US\$ '000	7,876
Total Capital Cost	US\$ '000	66,426

# TABLE 3: SUMMARY OF CAPITAL COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Unit operating costs for the LOM plan are shown in Table 4. The average operating cost over the life of mine is estimated at US\$111 per tonne milled.

Area	Unit	Value
Mining (Amancaya Open Pit)	US\$/t moved	4.10
Mining (Amancaya Open Pit)	US\$/t milled	58.35
Mining (Amancaya Underground)	US\$/t mined	40.30
Mining (Guanaco Underground)	US\$/t mined	47.56
Processing (Mill)	US\$/t milled	35.14
Processing (Heap Leach)	US\$/t milled	20.00
Area	Unit	Value
Mining (Average)	US\$/t milled	44.99
Haul (Amancaya to Guanaco)	US\$/t milled	8.60
Processing (Average)	US\$/t milled	31.66
G&A	US\$/t milled	25.77
Total Unit Operating Cost	US\$/t milled	111.01

# TABLE 4: SUMMARY OF LOM UNIT OPERATING COSTS Austral Gold Limited – Guanaco and Amancaya Mines

The total operating cost over the life of mine is estimated at US\$160 million.

### CASH FLOW ANALYSIS

Considering Guanaco and Amancaya on a stand-alone basis, the undiscounted pre-tax cash flow totals \$93 million over the current mine life.

After-Tax Net Present Values (NPV) at various discount rates are:

- 5% discount rate is \$71.3 million.
- 7.5% discount rate is \$66.1 million.
- 10% discount rate is \$61.4 million.

### **COMPETENT PERSONS**

The Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile was prepared in accordance with CIM definitions 2014 in National Instrument 43-101 and JORC Code, 2012. The Technical Report has been filed under the company's profile on SEDAR and the ASX. The RPA Competent Persons (CPs) for the Guanaco and Amancaya Technical Report include:

- Kathleen Ann Altman, P.E., Ph.D. (Metallurgy)
- Jason J. Cox, P.Eng. (Ore Reserves)
- Ian Weir, P.Eng. (Ore Reserves)

• Chester M. Moore, P.Eng., (Mineral Resources)

This press release has been reviewed and approved by the RPA Competent Persons.

Information in this announcement is extracted from the following reports, which are available for viewing on the Company's website, and ASX:

• The Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile

The Company reported these results on the 8<sup>th</sup> and 9<sup>th</sup> of June on the ASX. The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements listed above and, in the case of estimates of Mineral Resources or Ore Reserves that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

### About Austral Gold

Austral Gold Limited is a growing precious metals mining, development and exploration company building a portfolio of quality assets in Chile and Argentina. The Company's flagship Guanaco project in Chile is a low-cost gold and silver producing mine with further exploration upside. Austral commenced open-pit mining operations at Amancaya in 2017. Amancaya is 75km from the Guanaco processing plant, where the Company intends to transport production. A PFS completed in mid-2017 showed robust financial performance is expected from operating both operations as a combined operation, with five years of mine life from reserves. The Company also owns 70% and is operator of the underground silver-gold Casposo mine in San Juan, Argentina. With an experienced local technical team and highly regarded major shareholder, Austral's goal is to continue to strengthen its asset base through acquisition and discovery. Austral Gold Limited is listed on the TSX Venture Exchange (TSX-V:AGLD), and the Australian Securities Exchange (ASX: AGD). For more information, please consult the company's website: <u>www.australgold.com</u>

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#### **Forward Looking Statements**

Statements in this news release that are not historical facts are forward-looking statements. Forwardlooking statements are statements that are not historical, and consist primarily of projections - statements regarding future plans, expectations and developments. Words such as "expects", "intends", "plans", "may", "could", "potential", "should", "anticipates", "likely", "believes" and words of similar import tend to identify forward-looking statements. Forward-looking statements in this news release include the Company's plan to transport the high grade Amancaya production currently being stockpiled at Amancaya to its new plant; its expectation that the new plant will be operational shortly and its plans to direct all ore to the milling circuit and stop heap leaching as soon as the plant is in operation; the expectation that efficiencies of the new plant will positively impact cash flows and improve gold recoveries; and those concerning cost and performance projections, including the LOM plan production. All of these forward-looking statements are subject to a variety of known and unknown risks, uncertainties and other factors that could cause actual events or results to differ from those expressed or implied, including, without limitation, business integration risks; uncertainty of production, development plans and cost estimates, metallurgical recoveries, commodity price fluctuations; political or economic instability and regulatory changes; currency fluctuations, the state of the capital markets, uncertainty in the measurement of Ore Reserves and resource estimates, Austral's ability to attract and retain gualified personnel and management, potential labour unrest, reclamation and closure requirements for mineral properties; unpredictable risks and hazards related to the development and operation of a mine or mineral property that are beyond the Company's control, the availability of capital to fund all of the Company's projects and other risks and uncertainties identified under the heading "Risk Factors" in the Company's continuous disclosure documents filed on SEDAR. You are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been used. Austral cannot assure you that actual events, performance or results will be consistent with these forward-looking statements, and management's assumptions may prove to be incorrect. Austral's forward-looking statements reflect current expectations regarding future events and operating performance and speak only as of the date hereof and Austral does not assume any obligation to update forward-looking statements if circumstances or management's beliefs, expectations or opinions should change other than as required by applicable law. For the reasons set forth above, you should not place undue reliance on forward-looking statements.

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## **AUSTRAL GOLD LIMITED**

# TECHNICAL REPORT ON THE GUANACO AND AMANCAYA GOLD PROJECT, ANTOFAGASTA REGION (II), CHILE

NI 43-101 Report

Qualified Persons: Kathleen Ann Altman, Ph.D., P.E. Jason J. Cox, P.Eng. Chester M. Moore, P.Eng. Ian Weir, P.Eng.

June 16, 2017

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### FORWARD-LOOKING INFORMATION

This report contains forward-looking statements. All statements, other than statements of historical fact regarding Austral Gold Limited or the Guanaco and Amancaya project, are forwardlooking statements. The words "believe", "expect", "anticipate", "contemplate", "target", "plan", "intend", "project", "continue", "budget", "estimate", "potential", "may", "will", "can", "could" and similar expressions identify forward-looking statements. In particular, this report contains forward-looking statements with respect to cash flow forecasts, projected capital, operating and exploration expenditure, targeted cost reductions, mine life and production rates, potential mineralization and metal or mineral recoveries, and information pertaining to potential improvements to financial and operating performance and mine life at the Guanaco and Amancaya projects that may result from mining and continued development of the project. All forward-looking statements in this report are necessarily based on opinions and estimates made as of the date such statements are made and are subject to important risk factors and uncertainties, many of which cannot be controlled or predicted. Material assumptions regarding forward-looking statements are discussed in this report, where applicable. In addition to such assumptions, the forward-looking statements are inherently subject to significant business, economic and competitive uncertainties and contingencies. Known and unknown factors could cause actual results to differ materially from those projected in the forward-looking statements. Such factors include, but are not limited to: fluctuations in the spot and forward price of commodities (including gold, silver, diesel fuel, and electricity); the speculative nature of mineral exploration and development; changes in mineral production performance, exploitation and exploration successes; risks associated with the fact that the Amancaya project is still in the early stages of development; diminishing quantities or grades of reserves; increased costs, delays, suspensions, and technical challenges associated with the construction of capital projects; operating or technical difficulties in connection with mining or development activities, including disruptions in the maintenance or provision of required infrastructure and information technology systems; damage to Austral Gold Limited's or the Guanaco and/or Amancaya project's reputation due to the actual or perceived occurrence of any number of events, including negative publicity with respect to the handling of environmental matters or dealings with community groups, whether true or not; risk of loss due to acts of war, terrorism, sabotage and civil disturbances; uncertainty whether the Guanaco and/or Amancaya project will meet Austral Gold Limited's capital allocation objectives; the impact of global liquidity and credit availability on the timing of cash flows and the values of assets and liabilities based on projected future cash flows; the impact of inflation; fluctuations in the currency markets; changes in interest rates; changes in national and local government legislation, taxation, controls or regulations and/or changes in the administration of laws, policies and practices, expropriation or nationalization of property and political or economic developments in Chile; failure to comply with environmental and health and safety laws and regulations; timing of receipt of, or failure to comply with, necessary permits and approvals; litigation; contests over title to properties or over access to water, power and other required infrastructure; increased costs and physical risks including extreme weather events and resource shortages, related to climate change; and availability and increased costs associated with mining inputs and labour. In addition, there are risks and hazards associated with the business of mineral exploration, development and mining, including environmental hazards, industrial accidents, unusual or unexpected formations, pressures, cave-ins, flooding and gold bullion losses (and the risk of inadequate insurance, or inability to obtain insurance, to cover these risks).



Many of these uncertainties and contingencies can affect Austral Gold Limited's actual results and could cause actual results to differ materially from those expressed or implied in any forwardlooking statements made by, or on behalf of, Austral Gold Limited. All of the forward-looking statements made in this report are qualified by these cautionary statements. Austral Gold Limited and RPA and the Qualified Persons who authored this report undertake no obligation to update publicly or otherwise revise any forward-looking statements whether as a result of new information or future events or otherwise, except as may be required by law.



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Table 30-1	Guanaco Concessions



### **1 SUMMARY**

### **EXECUTIVE SUMMARY**

Roscoe Postle Associates Inc. (RPA) was retained by Austral Gold Limited (Austral Gold) to prepare an independent Technical Report on the Guanaco and Amancaya mines, collectively called the Guanaco Gold Project, located in northern Chile. RPA audited Mineral Resource and Mineral Reserve estimates prepared by Austral Gold. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. Most recently, RPA visited the properties from February 27 to March 2, 2017.

Austral Gold is a growing precious metals mining and exploration company building a portfolio of assets in South America, including the Guanaco gold and silver mine in northern Chile, the Casposo gold and silver mine in Argentina, as well as several exploration projects in Argentina. Austral Gold is based in Sydney, Australia and is listed on the Australian Securities Exchange (ASX: AGD) and the Toronto Venture Exchange (TSXV:AGLD).

The Guanaco Gold Project is currently held by Austral Gold through its wholly-owned subsidiary Guanaco Mining Company Ltd (GMC). GMC has a 99.99% interest in Guanaco Compañía (Cía.) Minera SpA (GCM), the subsidiary entity in Chile that owns and currently operates the Guanaco Mine. The Guanaco Gold Project has produced approximately 50,000 oz of gold per year for the last four years and is projected to continue at this rate for the next five years, as described in the life of mine (LOM) plan.

The operation consists of the underground mining at Guanaco and both open pit and underground mining at the Amancaya deposit. The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tonnes per day (tpd) and 800 tpd, respectively. Open pit operations, which have recently started at Amancaya, are expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018. Ore from Amancaya will be hauled by contractor via a 75 km road to the new mill located at the Guanaco mining complex. The new mill is designed to process up to 1,500 tpd using crushing, grinding, cyanide leaching, and Merrill-Crowe to produce a doré. The capacity of the mill was selected



to allow for potential increases in production. Commissioning commenced in March 2017, and the mill is expected to be fully operational by July.

Table 1-1 summarizes the Guanaco and Amancaya Mineral Resources, as of December 31, 2016.

	Tonnes		Grade			Ounces	
	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (koz)	Ag (koz)	AuEq (koz)
			Gu	Janaco			
Underground							
Measured	641	3.02	12.9	3.19	62	266	66
Indicated	1,552	2.86	13.0	3.03	143	650	151
M+I	2,193	2.90	13.0	3.08	205	916	217
Inferred	1,200	2.6	13	2.8	100	500	110
			Am	ancaya			
Open Pit							
Indicated	172	11.24	177.5	13.61	62	979	75
Inferred	60	7.60	110	9.00	15	210	20
Underground							
Indicated	633	9.21	54.5	9.94	187	1,110	202
Inferred	900	6.70	31	7.20	195	910	210
Sub-total Indicated	805	9.64	80.7	10.72	249	2,088	277
Sub-total Inferred	960	6.8	36	7.3	210	1,110	220
Total M+I	2,998	4.71	31.2	5.13	454	3,004	494
Total Inferred	2,150	4.5	23	4.8	310	1,600	330

# TABLE 1-1 MINERAL RESOURCES – DECEMBER 31, 2016 Austral Gold Ltd. – Guanaco and Amancaya Mines

Notes:

1. Mineral Resources followed CIM definitions and are compliant with the JORC Code.

2. Mineral Resources are reported inclusive of Mineral Reserves.

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

4. For Guanaco, Mineral Resources are reported at a 1.5 g/t AuEq cut-off grade.

5. For Amancaya, open pit Mineral Resources are reported at a cut-off grade of 1.5 g/t AuEq. Pit optimization shells were used to constrain the resources. Underground Mineral Resources are estimated at a cut-off grade of 2.5 g/t AuEq beneath the open pit shells.

6. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce.

7. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80% respectively.

8. A minimum mining width of 1.0 m was used for the open pit resource at Amancaya, and 1.5 m for the underground resource at Guanaco and Amancaya.

9. Bulk density is 2.50 t/m<sup>3</sup>.

10. Numbers may not add due to rounding.



Tables 1-2 and 1-3, respectively, summarize the Guanaco and Amancaya Mineral Reserves, as of December 31, 2016.

				Grades		Contair	ned Metal	Ounces
Category	Area	Tonnes	Au	Ag	AuEq	Au	Ag	AuEq
		(kt)	(g/t)	(g/t)	(g/t)	(koz)	(koz)	(koz)
Underground								
Proven	Cachinalito West	172	3.47	2.86	3.51	19	16	19
Probable	Cachinalito West	282	2.77	3.01	2.81	25	27	26
Total	Cachinalito West	454	3.04	2.96	3.08	44	43	45
Proven	Dumbo	11	3.38	4.72	3.44	1	2	1
Probable	Dumbo	14	2.29	7.52	2.39	1	3	1
Total	Dumbo	25	2.77	6.29	2.85	2	5	2
Proven	Perseverancia	6	1.67	37.75	2.18	0.3	7	0.5
Probable	Perseverancia	4	1.43	14.39	1.63	0.2	2	0.2
Total	Perseverancia	10	1.58	28.67	1.96	0.5	89	0.6
Total Proven	All	190	3.41	4.07	3.46	21	225	21
Total Probable	All	300	2.73	3.37	2.78	26	33	26
Total Reserves	All	490	2.99	3.64	3.04	47	57	48

## TABLE 1-2 GUANACO MINERAL RESERVES – DECEMBER 31, 2016 Austral Gold Ltd. – Guanaco and Amancaya Mines

Notes:

- 1. Mineral Reserves followed CIM definitions and are compliant with the JORC Code.
- 2. Mineral Reserves are estimated at a break-even cut-off grade of 2.0 g/t AuEq for stopes and an incremental cut-off grade of 1.0 g/t AuEq for drifts.
- 3. Mineral Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.
- 4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on prices of \$1,300/oz Au and \$20/oz Ag and recoveries of Au and Ag of 92% and 80%, respectively.
- 5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.
- 6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).
- 7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).
- 8. Bulk density is 2.5 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.



## TABLE 1-3 AMANCAYA MINERAL RESERVES – DECEMBER 31, 2016 Austral Gold Ltd. – Guanaco and Amancaya Mines

				Grades		Contained Metal Ounces				
Category	Area	Tonnage	Au	Ag	AuEq	Au	Ag	AuEq		
		(kt)	(g/t)	(g/t)	(g/t)	(koz)	(koz)	(koz)		
Underground										
Probable	Veta Central Norte	418	6.96	47.93	7.61	94	644	102		
Probable	Veta Central Sur	275	5.74	34.16	6.19	51	302	55		
Total Underground		693	6.48	42.46	7.05	144	947	157		
Open Pit										
Probable	Open Pit	255	7.56	119.49	9.16	62	978	75		
Total	All	948	6.77	63.15	7.61	206	1,925	232		

Notes:

- 1. Mineral Reserves followed CIM definitions and are compliant with the JORC Code.
- 2. Underground Mineral Reserves are estimated at a break-even cut-off grade of 2.5 g/t AuEq for stopes and an incremental cut-off grade of 1.5 g/t AuEq for drifts. Open Pit Mineral Reserves are estimated at a cut-off grade of 1.53 g/t AuEq.
- 3. Mineral Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.
- 4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on prices of \$1,300/oz Au and \$20/oz Ag and recoveries of Au and Ag of 92% and 80%, respectively.
- 5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.
- 6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).
- 7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).
- 8. Bulk density is 2.5 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource and Mineral Reserve estimate.

### CONCLUSIONS

RPA offers the following conclusions by area:

#### **GEOLOGY AND MINERAL RESOURCES**

#### Guanaco

• The Guanaco deposits are considered examples of high-sulphidation epithermal systems. Native gold forming lamellae and coarse and fine grains is the most important economic mineral, although it is rarely visible. Disseminated pyrite is the most common mineral in the non-weathered mineralized material; enargite, luzonite, and minor chalcopyrite are present in the deeper horizons. Chalcocite and covellite, together with Cu carbonates, silicates, and a number of rare Cu arsenates



(chenevixite, ceruleite) have been found in secondary-enrichment zones. Pervasive silicification commonly replaces all the primary rocks, whereas vuggy silica resulting from extreme acid leaching is a preferred host of the gold mineralization.

- Deposits at Guanaco include Quillota (200 m long by 500 m wide), Defensa (300 m by 600 m), Perseverancia (300 m by 600 m), Dumbo (250 m by 500 m), Cachinalito (a single, 1,100 m long, east–west-oriented system), and Natalia (200 m by 450 m).
- Sampling and assaying are adequately completed and have been generally carried out using industry standard quality assurance/quality control (QA/QC) practices. The sample preparation, analysis, and security procedures at Guanaco are adequate for use in the estimation of Mineral Resources.
- In general, the practices and procedures used to generate the Guanaco database are acceptable to support Mineral Resource and Mineral Reserve estimation.
- The assumptions, parameters, and methodology used for the Guanaco Mineral Resource estimates are appropriate for the style of mineralization and mining methods.
- A number of near-mine gold prospects have been outlined that are considered to warrant detailed exploration.

### Amancaya

- The Amancaya deposit is a low sulphidation, epithermal gold and silver deposit, hosted in steeply dipping structurally controlled quartz veins. Mineralization comprises disseminations of native gold and silver, electrum, silver sulphosalts, and accessory sphalerite, galena, chalcopyrite, and pyrite occurring with quartz, adularia, carbonates, clay minerals, limonite, and manganese oxides. These minerals were deposited from boiling of dilute saline fluids circulating in a hydrothermal system driven by the Eocene to Paleocene magmatism.
- The main mineralization at Amancaya is hosted in the Central Vein, a steeply dipping quartz vein extending over a length of 1,550 m, of which half is under alluvial cover. The vein comes to surface on a small hill composed of a brecciated dacite-andesite dome. Its main strike is N15°E and dips vary between 59° and 90° to the east. There is an abrupt change in strike to S30°E towards the south part of the vein. The vein has an average thickness of 1.5 m and is currently known to have 300 m of vertical extent. Potentially economic mineralization is also hosted in the subsidiary Cerro Amarillo and Julia veins. Several other veins occur on the property, however, these veins have no economic interest at the current time.
- Sampling and assaying are adequately completed and have been generally carried out using industry standard QA/QC practices. The sample preparation, analysis, and security procedures at Amancaya are adequate for use in the estimation of Mineral Resources.
- The Mineral Resource estimate is appropriate for the style of mineralization and that the resource models are reasonable and acceptable to support the Mineral Resource estimates.



• Exploration potential exists at depth below the Central Vein. Other veins that could be expanded by further drilling include Cerro Amarillo and Julia in the south and Veta Janita in the north part of the property.

### MINING AND MINERAL RESERVES

- The underground Mineral Reserves for Guanaco are estimated to be 490 kt at 2.99 g/t Au and 3.6 g/t Ag containing 47 koz of gold and 57 koz of silver.
- Recent operations at Guanaco include significant production not included in the Mineral Reserves, from mineralization discovered through ongoing development. No allowance for this additional production is included in the LOM plan projections described in this Technical Report.
- The Mineral Reserves for Amancaya are estimated to be 948 kt at 6.77 g/t Au and 63.2 g/t Ag containing 206 koz of gold and 1,925 koz of silver. The conversion rate of AuEq ounces from resources to reserves is approximately 84% reflecting the high-grade nature of the deposit.
- Dilution studies have been carried out at Guanaco and dilution is well understood. The same dilution assumptions will be applied at Amancaya.
- Amancaya is a thinner deposit than Guanaco and therefore higher dilution (on a percentage basis) is expected. GCM plans to reduce dilution by using split blasting in the underground operation and excavator trenching in the open pit operation.
- The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tpd and 800 tpd, respectively. The open pit at Amancaya is expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018. The mine life based on current Mineral Reserves extends to 2021.
- In RPA's opinion, further optimization of the split between open pit and underground mining at Amancaya is possible. A smaller pit and larger underground may result in similar Mineral Reserves, at lower cost.

### METALLURGY AND MINERAL PROCESSING

- The metallurgy at Guanaco is well known and understood because Guanaco is a mature operation that has been operating as a heap leach operation for a number of years.
- Limited testwork has been conducted for Guanaco to evaluate how the ore will respond in the milling circuit, however, the ore responds well to cyanide leaching so the process should be effective.
- Limited testwork has been conducted for the Amancaya deposit due to the lack of material available for testing.
- In 2015 and 2016 Amancaya bottle-roll testwork was conducted at the site metallurgical laboratory.



• In 2017, two samples from Amancaya underwent bottle-roll testing at SGS Minerals S.A. The two high-grade samples were composited from drill holes into the main Amancaya vein (i.e., Veta Central).

### ENVIRONMENTAL CONSIDERATIONS

• All required permits for operation have been granted, or applied for, with reasonable expectation of being granted in due course.

### RECOMMENDATIONS

RPA offers the following recommendations.

#### GEOLOGY AND MINERAL RESOURCES

#### Guanaco

- Conduct a check assay program to validate the 2014 to 2015 assays. This program should include adequate proportions of control samples.
- Accompany future drill programs with a coherent QC program, including a higher proportion of gold and silver standard reference materials (SRM), covering a broader range of values, more representative of the value ranges present at the deposit.
- Increase the numbers of density samples collected in order to more appropriately determine average bulk densities for ore and for waste/wall rock units.

### Amancaya

- Develop and implement a protocol for measuring density in each of the different lithologies, alteration types, and mineralization zones on the property.
- In future drill programs, submit two half core samples, concurrently, to the principal laboratory for analysis, at a rate of one field duplicate for every 20 samples. Review results on an ongoing basis until the natural sample variability of the Amancaya mineralization is understood.
- In future drill programs, develop a protocol for submitting one check assay for every 50 samples submitted to the principal laboratory, modified to ensure that the total number of pulp duplicate samples submitted to an independent laboratory is greater than 25.
- Complete a digital geological model for Amancaya including an oxidation model and investigate the relationship between weathering and metal grades.

### MINING AND MINERAL RESERVES

- Re-run the pit optimizations with final reserve parameters to verify that the optimum pit shell is used as the basis for the next estimate, since the pit optimization parameters have been updated during the process of pit design and reserve estimation.
- Carry out further trade-off studies between open pit and underground mining at Amancaya, to ensure optimal economics are achieved.



• GCM is currently estimating rib and sill pillars quantities by factoring full height stopes. Solids should be constructed for sill and rib pillars to ensure a more accurate representation of the material that will be excluded from the Mineral Reserves.

#### METALLURGY AND PROCESSING

- Due to the limited amount of testwork that has been done, especially for Amancaya, the metallurgical response should continue to be evaluated as operating data and more sample material become available.
- The estimated metal recoveries and reagent consumptions should be continually evaluated and updated as new operating data becomes available.

### **ENVIRONMENTAL CONSIDERATIONS**

• Open pit mining results in significant dust being produced. Although Amancaya is not located near a populated area, the dust produced is a concern for the safe operation both from a health and a visibility standpoint. GCM should investigate dust suppression measures to reduce the quantities of dust produced.

### ECONOMIC ANALYSIS

An after-tax Cash Flow Projection has been generated from the LOM production schedule and capital and operating cost estimates, and is summarized in Table 1-4. A summary of the key criteria is provided below.

### PHYSICALS

- LOM Plan prepared by Austral, based on Mineral Reserves.
- Approximately 1,000 tonnes per day (tpd) mining from Guanaco underground, in 2017 and 2018, and a combined 1,000 tpd from open pit and underground at Amancaya.
- The mine life is five years.
- Metallurgical recovery was estimated to average 92% for gold, 80% for silver for the new mill.
- Average annual production of 53,000 ozs Au, 370,000 ozs Ag.

### REVENUE

- Gold and silver at refining at 99.9% and 99.0% payable, respectively.
- All revenues and costs are expressed in US\$.
- Metal prices: based on a ramp-up from current prices to reserve prices of \$1,300/oz gold and \$20/oz silver, based on consensus of independent forecasts.
- Net Revenue includes doré refining, transport, and insurance costs.
- Revenue is recognized at the time of production.



• LOM ore value averages \$239 per tonne.

### COSTS

- Average operating cost over the mine life is \$111 per tonne milled.
- LOM sustaining capital costs total \$66.4 million, including reclamation and closure.
- All-In Sustaining Cost (AISC): \$892/oz Au.

### TAXES AND ROYALTIES

- Income taxes are 25% in 2017, 25.5% in 2018, and 27% for the remaining years in the LOM plan.
- A royalty of 3% for Guanaco and 2.25% for Amancaya is applied to the net smelter return.



### TABLE 1-4 AFTER-TAX CASH FLOW SUMMARY Austral Gold Limited - Guanaco and Amancaya Mines

Date:		INPUTS	UNITS		TOTAL		2017 Year 1		2018 Year 2		2019 Year 3		2020 Year 4		2021 Year 5
MINING Amancaya	Open Pit														
	Operating Days Tonnes milled per day Tonnes moved per day	350	days tonnes / day tonnes / day		730 349 4,961		350 225 5,227		350 427 4,804		30 879 3,691				
	Production Au Ag Waste		'000 tonnes g/t g/t '000 tonnes		255 7.56 119.5 3,367		79 7.40 150.3 1,751		149 7.51 106.9 1,532		26 8.36 98.4 84		-		-
Amancava	Total Moved Stripping Ratio Underground		'000 tonnes w:o		3,621 13.23		1,829 22.19		1,681 10.26		111 3.20		-		-
Amancaya	Operating Days Tonnes milled per day	350	days tonnes / day		940 738				60 748		350 782		350 757		180 610
	Production Au Ag Waste Total Moved		'000 tonnes g/t g/t '000 tonnes '000 tonnes		693 6.48 42.5 - 693		- - -		45 7.05 80.8 - 45		274 6.88 35.7 - 274		265 6.15 46.8 - 265		110 6.04 33.0 - 110
Guanaco U	<b>Inderground</b> Operating Days Tonnes milled per day	350	days tonnes / day		470 1,042		350 1,030		120 1,075						
	Production Au Ag		'000 tonnes g/t g/t		490 2.99 3.6		361 2.98 3.9		129 3.04 3.0		-		-		-
	Waste Total Moved		'000 tonnes '000 tonnes		- 490		- 361		- 129		-				-
PROCESSI	NG Mill Feed Au Ag Contained Au Contained Ag		'000 tonnes g/t g/t oz oz		1,337 5.61 43.8 241,164 1,884,016		338 3.77 30.2 41,038 328,230		323 5.66 61.8 58,823 642,352		300 7.01 41.2 67,616 397,852		265 6.15 46.8 52,362 399,019		110 6.04 33.0 21,325 116,564
	Heap Leach Feed Au Ag		'000 tonnes g/t g/t		101 0.95 30.2		101 3.77 30.2		-		-		-		-
	Contained Au Contained Ag		oz oz		12,258 98,043		12,258 98,043				-		-		-
	Recovery Mill Au Ag Recovery Heap Leach	92% 80%	% %		92% 80%		92% 80%		92% 80%		92% 80%		92% 80%		92% 80%
	Au Ag Net Recovery Au	77% 63%	% %		77% 63% 91%		77% 63% 89%		77% 63% 92%		77% 63% 92%		77% 63% 92%		77% 63% 92%
	Ag Recovery Mill Au		% oz		79%		76% 37,755		80%		80% 62,207		80% 48,173		80%
	Ag Recovery Heap Leach Au		oz oz	1	1,507,213 9,439		262,584 9,439		513,881		318,281		48,173 319,215 -		93,251
	Ag Total Recovered Au Ag		oz oz oz	1	61,767 231,310 1,568,980		61,767 <b>47,194</b> <b>324,351</b>		- 54,117 513,881		- 62,207 318,281		- 48,173 319,215		- 19,619 93,251
REVENUE	-														
	<b>Metal Prices</b> Au Ag	US\$1295 /oz Au US\$19 /oz Ag	Input Units US\$/oz Au US\$/oz Ag	\$ \$	1,294.90 18.99	\$ \$	1,275 17.50	\$ \$	1,300 18.50	\$ \$	1,300 20.00	\$ \$	1,300 20.00	\$ \$	1,300 20.00
	Au Payable Percentage Ag Payable Percentage	99.9% 99.0%	US\$ '000 US\$ '000	¢	100% 99%	¢	100% 99%		100% 99%		100% 99%	¢	100% 99%		100% 99%
	Au Gross Revenue Ag Gross Revenue Total Gross Revenue		US\$ '000 US\$ '000 <b>US\$ '000</b>	\$ \$ <b>\$</b>	299,223 29,500 <b>328,723</b>	\$ \$	60,112 5,619 <b>65,731</b>	\$	70,282 9,412 <b>79,694</b>	\$	80,788 6,302 <b>87,090</b>	\$	62,562 6,320 <b>68,883</b>	\$	25,479 1,846 <b>27,325</b>
	Transport Au & Ag		US\$ '000 US\$ '000	\$ \$	1,138 -	\$ \$	230	\$ \$	266 -	\$ \$	231 -	\$ \$	229	\$ \$	182 -
	Refining cost Au Ag	US\$0.40 /oz Au US\$0.40 /oz Ag	US\$ '000 US\$ '000	\$ \$	93 628	\$ \$	19 130	\$ \$	22 206		25 127	\$ \$	19 128	\$ \$	8 37
	Total Charges		US\$ '000	\$	1,858	\$	378	\$	493	\$	384	\$	376	\$	227
	Net Smelter Return		US\$ '000	\$	326,865	\$	65,353	\$	79,201	\$	86,706	\$	68,507	\$	27,098
	Royalty NSR (Guanaco) Royalty NSR (Amancaya) Total Royalty	3.00% 2.25%	US\$ '000 US\$ '000 US\$ '000	\$ \$ \$	2,557 5,437 7,994	\$ \$ \$	1,609 264 1,873	\$ \$ \$	949 1,071 2,019	\$ \$ \$	- 1,951 1,951		- 1,541 1,541		- 610 610
	Net Revenue Unit NSR		US\$ '000 US\$/t milled	\$ \$	318,871 239	\$ \$	63,481 188		77,181 239		84,755 282		66,965 253		26,488 241

Austral Gold Limited – Guanaco and Amancaya Mines, Project 2712 Technical Report NI 43-101 - June 16, 2017



Date:	INPUTS	UNITS	TOTAL	2017 Year 1	2018 Year 2	2019 2 Year 3	2020 8 Year 4	2021 Vear 5
OPERATING COST								
Mining (Amancaya Open Pit)		US\$/t moved	\$ 4.10	\$ 4.10	\$ 4.10	\$ 4.10	\$ 4.10	\$ 4.10
Mining (Amancaya Underground)		US\$/t mined	\$ 40.30	\$ -	\$ 85.27			
Mining (Guanaco Underground)	\$ 38.10	US\$/t mined	\$ 47.56	\$ 50.95	\$ 38.10		\$ -	\$ -
Processing (Mill)	φ 00.10	US\$/t milled	\$ 35.14	\$ 35.14				Ψ
Processing (Heap Leach)		US\$/t milled	\$ 20.00	\$ 20.00				
Mining (Total)		US\$/t milled	\$ 44.99	\$ 58.88				
Haul (Amancaya to Guanaco)	\$ 8.60	US\$/t milled	\$ 8.60	\$ 8.60				
Processing (Total)		US\$/t milled	\$ 31.66	\$ 31.66				
G&A		US\$/t milled	\$ 25.77	\$ 19.10		\$ 27.96	\$ 31.68	
Total Unit Operating Cost		US\$/t milled	\$ 111.01	\$ 118.23	\$ 114.60	\$ 106.57	\$ 106.79	\$ 100.54
Mining (Amancaya Open Pit)		US\$ '000	\$ 14,854	\$ 7,503	\$ 6,896	\$ 454	\$-	\$-
Mining (Amancaya Underground)		US\$ '000	\$ 27,943	\$ -	\$ 3,827			\$ 3,825
Mining (Guanaco Underground)		US\$ '000	\$ 23,287	\$ 18,371	\$ 4,917		\$ -	\$ -
Processing (Mill)		US\$ '000	\$ 46,964	\$ 11,890	\$ 11,359			
		US\$ '000	\$ 2,022	\$ 2,022		\$ 10,540	\$ -	\$ 3,000
Processing (Heap Leach)		05\$ 000	\$ 2,022	\$ 2,022	ъ -	ۍ د ۲	<b>р</b> -	<b>Ъ</b> -
Mining (Total)		US\$ '000	\$ 66,084	\$ 25,874				
Haul (Amancaya to Guanaco)		US\$ '000	\$ 8,153	\$ 678	\$ 1,670	\$ 2,581		
Processing		US\$ '000	\$ 48,985	\$ 13,911	\$ 11,359	\$ 10,546	\$ 9,309	\$ 3,860
G&A		US\$ '000	\$ 36,369	\$ 8,393	\$ 8,393	\$ 8,393	\$ 8,393	\$ 2,798
Total Operating Cost		US\$ '000	\$ 159,591	\$ 48,857				
Operating Cashflow		US\$ '000	\$ 159,280	\$ 14,624	\$ 40,120	\$ 51,725	\$ 37,749	\$ 15,062
CAPITAL COST								
Sustaining Capital Cost								
Amancaya Mine Development		US\$ '000	\$ 20,869	\$-	\$ 9,727	\$ 8,282	\$ 2,860	\$-
Guanaco Mine Development		US\$ '000	\$ 3,029	\$ 2.875	\$ 154	s -	\$ -	\$-
General Sustaining UG Capex		US\$ '000	\$ 4,020	\$ 1,230			\$ 420	\$ 300
Leasing		US\$ '000	\$ 18,999	\$ 6,998				
Processing		US\$ '000	\$ 2,081	\$ 881	\$ 300			
Exploration		US\$ '000	\$ 9,000	\$ 1,000				
Other		US\$ '000	\$ 552	\$ 152	\$ 100	\$ 100	\$ 100	
Reclamation and closure		US\$ '000	\$ 7,876					\$ 7,876
Total Capital Cost		US\$ '000	\$ 66,426	\$ 13,135	\$ 20,200	\$ 16,576	\$ 5,938	\$ 10,576
CASH FLOW								
Net Pre-Tax Cashflow		US\$ '000	\$ 92,854	\$ 1,488				
Cumulative Pre-Tax Cashflow		US\$ '000		\$ 1,488	\$ 21,408	\$ 56,557	\$ 88,368	\$ 92,854
Taxes (from Proforma)	25% to 27%	US\$ '000	\$ 9,459	\$-	\$ 3,681	\$ 4,642	\$ 1,137	\$-
After-Tax Cashflow		US\$ '000	\$ 83,395	\$ 1,488	\$ 16,239	\$ 30,507	\$ 30,675	\$ 4.486
Cumulative After-Tax Cashflow		US\$ '000	φ 00,080	\$ 1,488				
Cumulative Arter-Tax Casimow		039 000		φ 1,400	φ 17,727	φ 40,234	φ 78,909	φ 03,395
All-In Sustaining Cost		US\$/oz	\$ 892	\$ 1,242	\$ 931	\$ 734	\$ 638	\$ 1,070
PROJECT ECONOMICS			•					
Pre-tax NPV at 5.0% discounting	5.0%	US\$ '000	\$79,534					
Pre-tax NPV at 7.5% discounting	7.5%	US\$ '000	\$73,860					
Pre-tax NPV at 10.0% discounting	10.0%	US\$ '000	\$68,736					
	5.0%	US\$ '000	\$71.251					
After-Tax NPV at 5.0% discounting								
After-Tax NPV at 5.0% discounting After-Tax NPV at 7.5% discounting After-tax NPV at 10.0% discounting	7.5% 10.0%	US\$ '000 US\$ '000	\$66,088 \$61,431					



### CASH FLOW ANALYSIS

Considering the Mine on a stand-alone basis, the undiscounted pre-tax cash flow totals \$93 million over the current mine life.

After-Tax Net Present Values (NPV) at various discount rates are:

- 5% discount rate is \$71.3 million.
- 7.5% discount rate is \$66.1 million.
- 10% discount rate is \$61.4 million.

### SENSITIVITY ANALYSIS

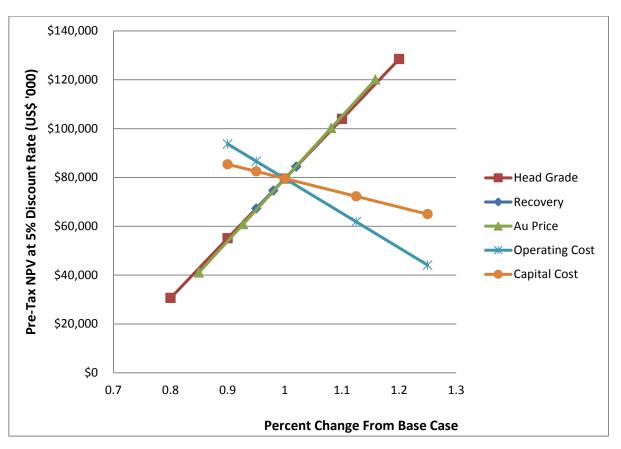
Risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Gold price
- Head grade
- Recovery
- Operating costs
- Capital costs

Pre-tax NPV@5% sensitivity over the base case has been calculated for reasonable variations for each input. The sensitivities are shown in Figure 1-1 and Table 1-5.

The cash flow is most sensitive to metal prices, head grades, and recoveries. There is low sensitivity to capital costs due to the limited capital required over the LOM.





### FIGURE 1-1 SENSITIVITY ANALYSIS

# TABLE 1-5 SENSITIVITY ANALYSES Austral Gold Limited – Guanaco and Amancaya Mines

Units	Lowest	Lower	Base	Higher	Highest
US\$/oz	1,100	1,200	1,295	1,400	1,500
% Au	87%	89%	91%	93%	-
g/t Au	4.49	5.05	5.61	6.17	6.73
\$ millions	144	152	160	180	200
\$ millions	60	63	66	75	83
Units	Lowest	Lower	Base	Higher	Highest
\$ millions	41	62	80	100	120
\$ millions	67	75	80	84	-
\$ millions	31	55	80	104	128
\$ millions	94	87	80	62	44
\$ millions	85	82	80	72	65
	US\$/oz % Au g/t Au \$ millions \$ millions \$ millions \$ millions \$ millions \$ millions	US\$/oz         1,100           % Au         87%           g/t Au         4.49           \$ millions         144           \$ millions         60           Units         Lowest           \$ millions         41           \$ millions         67           \$ millions         31           \$ millions         94	US\$/oz         1,100         1,200           % Au         87%         89%           g/t Au         4.49         5.05           \$ millions         144         152           \$ millions         60         63           Units         Lowest         Lower           \$ millions         41         62           \$ millions         67         75           \$ millions         31         55           \$ millions         94         87	US\$/oz         1,100         1,200         1,295           % Au         87%         89%         91%           g/t Au         4.49         5.05         5.61           \$ millions         144         152         160           \$ millions         60         63         66           Units         Lowest         Lower         Base           \$ millions         67         75         80           \$ millions         31         55         80           \$ millions         94         87         80	US\$/oz         1,100         1,200         1,295         1,400           % Au         87%         89%         91%         93%           g/t Au         4.49         5.05         5.61         6.17           \$ millions         144         152         160         180           \$ millions         60         63         66         75           Units         Lowest         Lower         Base         Higher           \$ millions         41         62         80         100           \$ millions         67         75         80         84           \$ millions         31         55         80         104           \$ millions         94         87         80         62



### **TECHNICAL SUMMARY**

### PROPERTY DESCRIPTION, LOCATION AND LAND TENURE

### GUANACO

The Guanaco Mine is located 220 km southeast of Antofagasta. The coordinates of the centre of the site are N 7,223,000 and E 445,000 (UTM PSAD-56). The Guanaco property, including regional concessions, comprises 343 concessions totalling 41,951 ha. The Mineral Resources and Mineral Reserves for the Guanaco Mine discussed in this report are hosted within the tenure holdings. There are claims held by third parties within the Guanaco Mine area that are excisions from the GCM tenure holding, and are not included in the Guanaco Gold Project.

There are numerous overlaps in the claim boundaries, and some claims within the Guanaco area are held by third parties. A second layer of mining rights has been established over existing rights to enhance protection and the area is being monitored on a permanent basis to prevent conflict with third-party rights.

### AMANCA YA

The Amancaya property is located at coordinates 7,172,000 North and 418,500 East in the Agua Verde district, in Antofagasta Province (Region II) of Chile, 70 km to the east of the city of Taltal and 75 km by road from Guanaco Mine. The property consists of eight individual exploitation mining concessions covering a total area of 1,755 ha. As is common in Chile, a secondary layer of concessions has been placed over the original concessions for security of ownership. These concessions cover 1,090 ha. An additional two exploitation mining concessions are currently in application. The property is 100% owned by GCM, and the Amancaya deposit is located within the property boundaries. GCM is a 99.9% owned subsidiary of GMC, which is 100% owned by Austral Gold.

In February 2016, GCM completed an option and sale agreement with Revelo Resources Corporation (Revelo) whereby Austral Gold will have the sole and exclusive option and right to acquire a 100% undivided interest in Revelo's San Guillermo project. The San Guillermo property surrounds the Amancaya property.

The surface rights are controlled by the federal government and access is normally granted as required.





RPA is not aware of any environmental liabilities on the property. GCM has all required permits to conduct the proposed work on the property. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.

#### **EXISTING INFRASTRUCTURE**

#### GUANACO

Guanaco is an operating mine that has the required infrastructure and surface rights. On-site infrastructure includes a crushing plant, heap leach infrastructure with a carbon-in-column (CIC) gold recovery plant, administration building, laboratory, warehouse, maintenance facilities, diesel power generating units, water pipeline and tanks, fuel tanks, and an accommodation complex. There is also a fleet of mobile equipment. All of the heap leach facilities and equipment, except the Merrill-Crowe plant, were reconditioned between September 2009 and March 2010. In 2016 and 2017, an agitated leach plant designed to process 1,500 tpd was constructed and the Merrill-Crowe plant was reconditioned.

In addition to the milling circuit, a dry stack tailings area was constructed to store the tailings from the milling circuit and a 33 kV electrical transmission line was constructed to provide electricity that will replace the diesel generators that formerly provided power.

#### AMANCA YA

An administration building, explosives storage facility, and mine offices had been erected at the Amancaya property at the time of the 2017 site visit with plans to construct a truck shop and other facilities. A north-south, high voltage power line was recently constructed across the eastern side of the property. Food, water, and fuel are available at Agua Verde on the main highway.

#### HISTORY

#### GUANACO

Gold mineralization was discovered at Guanaco in 1878 by miners from the nearby Cachinal silver mines. From 1887 until 1890, more than 200 underground mines were developed, and approximately 200,000 oz of gold were produced from high-grade veins. The richest veins apparently averaged 160 g/t Au to 180 g/t Au. Extensive gold production continued until 1928, when low gold prices forced the closure of the mines.



In 1930, the Chatal Company acquired most of the claims in the district, and continued moderate-scale exploration and mining until 1960. In 1971, the Chilean state organizations Empresa Nacional de Mineria (Enami) and Corporación de Fomento de la Producción (Corfo) acquired the former Chatal holdings. Total gold production prior to 1986 has been estimated at approximately 1 Moz.

During 1987, Guanaco Properties, at that stage controlled by the Eulogio Gordo Company, became operators of the Guanaco Mine by undertaking underground production at a minimum rate of 500 tpd within six months. The Eulogio Gordo Company produced an estimated 75,000 oz gold to the end of 1991.

Amax Gold Inc. (Amax) entered into a purchase-option agreement with the Eulogio Gordo Company effective April 1, 1991, and subsequently commenced mapping, geochemical sampling, and reverse circulation (RC) drilling. A pre-feasibility study was completed the same year. In 1992, Amax leased additional properties from Enami. In April 1992, Amax acquired a 90% interest in the Guanaco Mine for US\$35 million through a wholly owned subsidiary.

Open pit mining commenced in early 1993, with gold recovered from heap leach pads and a Merrill-Crowe recovery plant. From 1993 to 1996, in addition to mining operations, work completed included mineral resource and mineral reserve estimation, airborne and ground geophysical surveys, rock chip and grab sampling, geological mapping, and RC and core drilling. In 1997, the operation was placed on care and maintenance due to a combination of low gold prices and poor metallurgical recoveries due to the presence of copper. Production during the Amax period is estimated at 346,000 oz.

In 1999, Kinross Gold Corporation (Kinross) acquired Amax, and operations were conducted by Kinross' indirect subsidiary Kinam Guanaco. During 1999 and 2000, Kinross conducted exploration core and RC drilling, data reviews, geological mapping and chip sampling, preparation and description of petrographic samples, and ground geophysical surveys.

In 2002, Golden Rose International Limited (GRIL), a former subsidiary of Austral Gold, entered into a purchase-option agreement with Kinross, which was executed in March 2003. From 2003 to 2012, GRIL/Austral Gold undertook data reviews, core and RC drilling, mineral resource and mineral reserve estimation, hydrological, geotechnical and metallurgical



studies, reviews of social and environmental conditions, and assessments of existing infrastructure and equipment, and commissioned a feasibility study during 2009–2010.

The existing infrastructure on site was refurbished and upgraded between September 2009 and March 2010. GCM restarted stacking operations in September 2010, and the first doré bar was poured in December 2010. A total of approximately 230,000 oz of gold and 342,000 oz of silver were produced between 2010 and December 2016.

#### AMANCAYA

The following exploration and development activities have been undertaken on the Amancaya Project:

- Small scale exploration and mining of copper and gold in the Rosario del Llano and Janita veins during the 1950s.
- Mapping, rock sampling, trenching, and 20 RC drill holes were completed in 2003 by Placer Dome Inc. The best intersections returned by drilling were 2.0 m grading 2.84 g/t Au and 16.7 g/t Ag and 4.0 m grading 0.25 g/t Au and 23.4 g/t Ag in the north of the area.
- Geophysical surveys, surface, and trench sampling, geological mapping, radiometric dating, and fluid inclusion analysis were completed by Meridian Gold Inc./Yamana Gold Inc. (Yamana) from 2004 to 2008.
- Yamana completed a total of 202 RC drill holes for 54,782 m and sixteen trenches totalling 486.1 m. A total of 40 drill holes and four surface trenches were used in the subsequent resource estimate.
- In 2009, Grupo Minero Las Cenizas S.A. (Cenizas) carried out a drill campaign totalling 5,054 m in 23 holes to confirm the thickness of the Veta Central, the distribution of gold and silver grades within the vein and host rocks, and the density of the mineralization.

The following exploration activities have been undertaken on the surrounding Revelo property:

 From 2004 to 2011, Minera Fuego Ltd. focused on exploration in the sectors Amancaya Central, Amancaya Oeste, Cerro la Peineta, and Morros Blancos. Geological mapping, surface sampling, trenches, soil sampling, and geophysics (magnetics, very low frequency (VLF), and induced polarization (IP) gradient) and a total of 151 drill holes (145 RC and six diamond drill holes, totalling 46,478 m) were completed. The best results were from the continuation the Austral Amancaya vein system in South Amancaya (2.0 m grading 5.38 g/t Au) and northward at Rosario del Llano (10 m grading 0.8 g/t Au).



#### **GEOLOGY AND MINERALIZATION**

#### GUANACO

The Guanaco district is located in a large geological province resulting from the eastward migration of the volcanic arc from late Cretaceous to Eocene. Volcanic and sub-volcanic rocks of this age interval outcrop in the Intermediate Depression and the Domeyko Cordillera, forming a north–northeast to south–southwest oriented belt, 20 km to 60 km wide and several hundred kilometres long.

All mines within the Guanaco gold district, including Mina Inesperada, are located within rocks which configure a Palaeocene, north-south trending graben. Alteration and mineralization in the district are hosted by volcanic flows, tuffs and breccias, with andesitic, dacitic and rhyolitic composition, which range from Palaeocene to mid-Eocene in age. The north-south striking Soledad fault system, along the eastern side of the Palaeocene graben, divides the gold district into an eastern and a western domain.

The most important structural features related to gold mineralization at Guanaco follow eastwest and east-northeast to west-southwest trends. Gold-bearing structures are all steeply inclined ledges composed of massive vuggy and cryptocrystalline quartz of replacement origin. Individual ledges are up to five metres wide, however, more commonly they seem to comprise several impersistent siliceous strands separated by altered, but barren, wall rock. The ledge structures extend for at least four kilometres along strike, although gold concentrations are confined to relatively restricted shoots. The ledges, formerly mined underground, and afterward in the Dumbo, Defensa, and Perseverancia open pits, contain the largest mineralized shoots, which reportedly extended for as much as 300 m vertically. Further west the mineralized shoots defined to date appear to be more restricted, both laterally and vertically. For example, individual shoots discovered at Cachinalito West range vertically from 50 m to 150 m and occur at slightly different elevations along closely spaced, parallel structures rather than within a single continuous ledge.

The gold-bearing shoots in the Guanaco ledges appear to be closely associated with ledge segments that underwent fracturing, brecciation, and introduction of late-stage quartz and barite (barium sulphate). The shoots have different sizes, but tend to be both horizontally and vertically more restricted in the northwestern part of the district.

The Guanaco deposits are considered examples of high-sulphidation epithermal systems.



#### **AMANCAYA**

Amancaya is located on the western edge of the Central Depression, in a Palaeocene-Eocene volcanic basin. The basin is structurally bounded on the west by a series of northsouth faults and lineaments which divide it from the Coastal Mountains. The eastern boundary is also a structural feature which divides the basin from the porphyry copper belt hosting deposits such as La Escondida, Zaldívar, and Chuquicamata.

The Palaeocene-Eocene volcanic event gave rise to mineralization with ages ranging from 64 to 43 Ma. This includes mainly low to intermediate sulphidation epithermal systems, rich in precious metals (EI Peñón, Cachinal de la Sierra), and to a lesser extent small coppermolybdenum bearing porphyries and high sulphidation systems (Guanaco), hosted in northsouth, northwest-southeast, and northeast-southwest structures.

The Amancaya deposit is a low sulphidation, epithermal gold deposit, hosted in a steeply dipping structurally controlled quartz vein. Mineralization comprises disseminations of native gold and silver, electrum, silver sulphosalts, and accessory sphalerite, galena, chalcopyrite, and pyrite occurring with quartz, adularia, carbonates, clay minerals, limonite, and manganese oxides. These minerals were deposited from boiling of dilute saline fluids circulating in a hydrothermal system driven by the Eocene to Paleocene magmatism.

The critical features that define the mineralization at Amancaya include lithological and structural control. The mineralization and alteration are focused along high-angle structures in a dacite-andesite volcanic dome. The structural system provided a pathway for rising hydrothermal fluids. The Central Vein exhibits banded textures, with bands of grey chalcedonic quartz, clear crystalline quartz, amethyst, and dark bands containing sphalerite, silver, and lead sulphosalts. Other textures include coloform texture, sinuous alternating bands of chalcedonic quartz and amethyst, and crustiform quartz. Interstices are filled with clays, limonite, manganese oxide, and carbonates (ankerite).

The main mineralization at Amancaya is hosted in the Central Vein, a steeply dipping quartz vein of which half is under alluvial cover. The vein comes to surface on a small hill composed of a brecciated dacite-andesite dome. Its main strike is N15°E and dips vary between 59° and 90° to the east. There is an abrupt change in strike to S30°E towards the south part of the vein. Potentially economic mineralization is also hosted in the subsidiary



Cerro Amarillo and Julia veins. Several other veins occur on the property, however, these veins have no economic interest at the current time.

#### MINERAL RESOURCES

#### GUANACO

RPA has reviewed and revised as required the Mineral Resource estimates for the Guanaco Mine as received from Austral Gold. The Mineral Resource estimates were performed for five deposits (sectors) within the Guanaco Mine. The Cachinalito Central, Cachinalito West, and Natalia sectors are currently being mined by underground operations, and the remaining Mineral Resources in these deposits are planned to be extracted by same mining method, which is sub-level stoping. The Defensa and Perseverancia open-pit Mineral Resources have been completely exploited to date, however, mineralization that remains in the deposits under the open pits could be extracted by underground mining methods.

RPA is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the Mineral Resource estimate.

A summary of the Mineral Resources for Amancaya as of December 31, 2016, is shown in Table 1-1. Cut-off grades for the Mineral Resources were established using a gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce.

RPA confirms that the Mineral Resources listed in Table 1-1 comply with all disclosure requirements for Mineral Resources set out in NI 43-101 and are compliant with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code).

#### AMANCAYA

RPA has reviewed and revised, as required, the Mineral Resource estimates for the Amancaya Mine as received from Austral Gold. RPA is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the Mineral Resource estimate.



A summary of the Mineral Resources for Amancaya as of December 31, 2016, is shown in Table 1-1. Cut-off grades for the Mineral Resources were established using a gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce.

RPA confirms that the Mineral Resources listed in Table 1-1 comply with all disclosure requirements for Mineral Resources set out in NI 43-101 and are compliant with the JORC Code.

#### MINERAL RESERVES

The Guanaco Mine underground Mineral Reserves were estimated based on stope designs applied against the Mineral Resource block models for each of the deposits. Planned and unplanned dilution are included in the stope shapes, which have been designed for a sublevel stoping mining method.

The Mineral Reserves for Guanaco are estimated to be 490 kt grading 2.99 g/t Au and 3.6 g/t Ag containing 47 koz of gold and 57 koz of silver and are presented in Table 1-2.

The Amancaya Mine underground Mineral Reserves were estimated based on stope designs applied against the Mineral Resource block models for the Central Vein deposit. Planned and unplanned dilution are included in the stope shapes which have been designed for a sub-level stoping mining method. Mineral Reserves for the open pit area were reported using the final pit design against the Mineral Resource block models for the Central Vein deposit. Additional dilution of 50% was applied to the reported material to account for the relatively thin nature of the deposit.

The Mineral Reserves for Amancaya are estimated to be 948 kt grading 6.77 g/t Au and 63.2 g/t Ag containing 206 koz of gold and 1,925 koz of silver and are presented in Table 1-3.

#### MINING METHOD

The mining methodology used at Guanaco consists of sub-level open stoping (SLOS) and mining is carried out by following the veins with drifts on two levels, separated by 16 m (20 m floor to floor). The main production at Guanaco comes from the Cachinalito West vein, with additional production coming from the Dumbo and Perseverancia veins.



Stopes are designed at a minimum mining thickness of 1.5 m with planned dilution of 0.5 m on either side resulting in final stope widths of 2.5 m. Drifts are designed at 3.5 m with 0.25 m of dilution on either side resulting in a final width of 4 m. Sill pillars of four metres in height are left every 40 m (vertical) and ten metre wide rib pillars are left every 70 m (horizontal).

The Amancaya deposit consists of mainly northwest and southeast veins, with dip direction of 70° to 85°. The country rock comprises highly competent dacite-andesite.

The SLOS mining methods planned at Amancaya are similar to those used at the Guanaco Mine. The Amancaya orebody is generally thinner than Guanaco resulting in the use of splitblasting to minimize dilution during drift development. Split blasting involves the separate blasting of ore and waste in the drift face.

Vertical crater retreat (VCR) mining will be used to connect the upper and lower drifts and create an open face for longhole blasting.

The open pit mine at Amancaya will be carried out as a conventional operation using 30 t trucks and a combination of excavators and front-end loaders. Waste and ore will be blasted and mined separately using a "trenching" method to reduce the amount of dilution.

Ore from Amancaya will be hauled by contractor via a 75 km road to the new mill located at the Guanaco mining complex.

#### LIFE OF MINE PLAN

The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tpd and 800 tpd, respectively. The open pit at Amancaya is expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018.

The LOM plan is presented in Table 1-6.



#### TABLE 1-6 GUANACO AND AMANCAYA LIFE OF MINE PLAN SUMMARY Austral Gold Limited. – Guanaco and Amancaya Mines

	Units	Total	2017	2018	2019	2020	2021
Mill Feed	'000 tonnes	1,328	330	323	300	265	110
Au	g/t	5.62	3.77	5.66	7.01	6.15	6.04
Ag	g/t	44	30	62	41	47	33
Contained Au	oz	240,098	39,972	58,823	67,616	52,362	21,325
Contained Ag	oz	1,875,491	319,704	642,352	397,852	399,019	116,564
Heap Leach Feed	'000 tonnes	110	110	-	-	-	-
Au	g/t	0.94	3.77	-	-	-	-
Ag	g/t	30	30	-	-	-	-
Contained Au	oz	13,324	13,324	-	-	-	-
Contained Ag	oz	106,568	106,568	-	-	-	-
Recovery Mill							
Au	%	92%	92%	92%	92%	92%	92%
Ag	%	80%	80%	80%	80%	80%	80%
Recovery Heap Leach							
Au	%	77%	77%	77%	77%	77%	77%
Ag	%	63%	63%	63%	63%	63%	63%
Net Recovery							
Au	%	91%	88%	92%	92%	92%	92%
Ag	%	79%	76%	80%	80%	80%	80%
Total Average Recovery	%	80%	77%	81%	82%	81%	82%
Recovery Mill							
Au	oz	220,890	36,774	54,117	62,207	48,173	19,619
Ag	oz	1,500,393	255,764	513,881	318,281	319,215	93,251
Recovery Heap Leach							
Au	oz	10,260	10,260	-	-	-	-
Ag	oz	67,138	67,138	-	-	-	-
Total Recovered							
Au	oz	231,150	47,034	54,117	62,207	48,173	19,619
Ag	oz	1,567,531	322,901	513,881	318,281	319,215	93,251

#### MINERAL PROCESSING

Between September 2009 and March 2010, the infrastructure, including the processing facility at Guanaco, was refurbished and upgraded by Austral Gold. GCM restarted leach pad stacking in September 2010 and the first gold bar was poured in December 2010. With the acquisition and start of mining at Amancaya, commissioning of a 1,500 tpd agitated leach



milling circuit commenced in March 2017, expected to be fully operational by July 2017. The capacity of the mill was selected to allow for potential increases in production. The new plant is integrated into the existing operation in order to minimize construction and capital costs as much as possible. The existing crushing operation will be utilized to prepare feed for the milling circuit. The existing Merrill-Crowe circuit was refurbished to accommodate ore with higher silver concentrations from Amancaya and the zinc precipitate that is produced in the Merrill-Crowe circuit will be processed in the existing refinery.

GCM plans to direct all ore to the milling circuit and stop heap leaching as soon as the plant is operational. Ore that is already stacked on the leach pad will continue leaching as long as it is economic to do so. At the end of leaching, the ore will be rinsed with water to remove residual cyanide that is entrained in the leach pad.

Initially, in the heap leach operation, the ore was crushed to 80% passing ( $P_{80}$ ) 9.5 mm and the gold recovery was estimated to be 61.3% for open pit ore and 63.6% for underground ore. The gold recovery increases as the crush size decreases so the size was reduced to  $P_{80}$  5.3 mm. The estimated gold and silver recoveries for the heap leach pad are 77% for Cachinalito, 66% for Dumbo, and 60% for other deposits. The silver recovery is estimated to be 50% for all deposits.

In order to design the milling circuit, mineralogy, comminution, settling, filtration, column leach, and bottle roll tests (BRTs) were completed on samples from Guanaco starting in 2006. Data from the BRTs are relevant to estimate the quantities of metals that will be extracted from the Guanaco ore in the milling circuit. The optimum grind size selected was  $P_{80}$  150 µm and the gold extraction ranged from 87% to over 99% and silver extraction ranged between 65% and 94%.

Tests were also conducted on samples taken from Amancaya. Based on preliminary metallurgical testwork, the Mineral Resources, Mineral Reserves, and LOM plan utilized 92% gold recovery and 80% silver recovery. Data received after the RPA site visit showed lower silver recovery and higher gold recovery for Amancaya, which did not result in a material change in the financial results. Therefore, the decision was made to leave the earlier work as is.

The processing circuits include:



- Three stage crushing circuit
- Reversing conveyor to feed either the heap leach operation or the milling circuit
- Covered stockpile
- Single stage ball milling circuit operated in closed circuit with hydro-cyclones
- Pre-leach thickener
- Three-stage agitated leach circuit
- Three-stage counter-current-decantation (CCD) wash circuit
- Filter feed tank and plate and frame pressure filters to recover solution and produce filtered tailings
- Loading of the tailings with a front end loader and truck haulage to dry tailings deposit
- Dry tailings deposit
- Refurbished Merrill-Crowe circuit for precious metal recovery including:
  - o Clarifying filters
  - o De-aeration tower
  - Zinc cementation (i.e., precipitation)
  - o Precipitate filters

From the covered stockpile, two vibrating feeders are used to remove ore from the bottom of the stockpile and feed it to a series of conveyors that are used to feed the ball mill.

The grinding circuit includes a single-stage ball mill that operates in closed circuit with hydrocyclones. The crushed ore is conveyed to the ball mill feed bin where it is mixed with water for grinding. The slurry discharges from the mill through a trommel screen and flows by gravity into a pump feed box. From the box, the slurry is pumped to the cyclone cluster. The cyclone underflow is returned to the ball mill for further grinding. The cyclone overflow is the final product from the grinding circuit. The target grind size is  $P_{80}$  150 µm.

Slurry from the cyclone overflow feeds the pre-leach thickener. Underflow from the thickener, which is designed to produce a slurry density of 50% solids by weight, is pumped to the agitated leaching circuit. Overflow from the thickener is returned to the grinding process water tank. The grinding solution contains cyanide so dissolution of the gold and silver begins in the grinding circuit. The leach circuit consists of three leach tanks that are designed to provide 48 hr of residence time. Slurry discharges from the last (i.e., third) leach tank to the CCD washing circuit.



In the CCD circuit, the leach residue is advanced from CCD number one to CCD number two and to CCD number three. Barren solution from the Merrill-Crowe circuit is used as wash water in the CCD circuit. The solution flows counter current to the slurry flow. It is pumped to the feed well of CCD number three. Overflow from CCD three goes to CCD number two, overflow from CCD number two is pumped to CCD number one, and the overflow from CCD number one feeds the pregnant solution tank. The pregnant solution feeds the Merrill-Crowe plant.

Underflow from CCD number three is washed tailings. The slurry flows to the filter feed tank. Two plate and frame pressure filters are used to wash and dewater the tailings to produce a filter cake that contains less than 20% moisture by weight. Fresh water is used as wash water. It is the primary fresh water addition to the plant. The remainder of the process water is recycled from various circuits in the mill.

The Merrill-Crowe plant is an existing plant that was refurbished for use in the new milling circuit. Since ore from Amancaya contains higher concentrations of silver than the ore from Guanaco, Merrill-Crowe is preferred over activated carbon as the precious metal recovery process. Pregnant solution is pumped through clarifying filters where suspended solids are removed from the solution and on to the de-aeration tower. The de-aeration tower is a packed column that is operated under vacuum to remove oxygen from the solution in order to enhance the zinc cementation (commonly called precipitation) process. Zinc dust is added to the clarified, de-aerated solution where the gold and silver ions are reduced to form solid metal "precipitate". The solids are removed from the solution with plate and frame filter presses. The filter presses will be cleaned manually on a batch basis. The dewatered precipitate will then be dried, mixed with fluxes, and smelted in the existing refinery. Barren solution from the Merrill-Crowe circuit is re-used as wash water in the CCD circuit.

Washed, dewatered tailings from the pressure filters drop by gravity into a concrete lined containment area. From the containment area, a front end loader places the tailings into haul trucks that will transport them to the dry tailings deposition area. The tailings contain residual cyanide that will go through a natural degradation process due to UV from the sun and the dry, windy climate. The tailings will be spread and plowed to help the cyanide degradation process.



#### ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

Different criteria are outlined in the regulations for assessment of mining projects under the Environmental Impact Assessment Evaluation System (Sistema de Evaluación de Impacto Ambiental, or SEIA). The SEIA is administered and coordinated at the regional and the national level by the Environmental Assessment Agency (Servicio de Evaluacion Ambiental, SEA). The initial application is generally made to the region where the property is located (i.e., Antofagasta). A number of other governmental authorities are also involved in the review process.

There are two types of environmental reviews: Environmental Impact Statement (Declaración de Impacto Ambiental, or DIA) and Environmental Impact Study (Estudio de Impacto Ambiental, or EIA). The DIA is required when no environmental impacts are expected, and the EIA is required when the project has the potential to produce environmental impacts. A number of DIAs have been approved for the Guanaco and Amancaya Projects, including:

- The GCM operation that was permitted by Amax
- Reopening of the GCM operation by Austral Gold
- Opening of the Amancaya Mine
- Installing the 33 kV Electrical Transmission Line

In addition to the DIAs, environmental studies and numerous environmental permits have been issued to support mining at Guanaco and Amancaya, as outlined in Section 20 of this report.

Due to the remote location, Guanaco and Amancaya do not have a large impact on local residents, which are generally supportive of mining operations.

#### CAPITAL AND OPERATING COST ESTIMATES

The estimated sustaining capital costs for Amancaya and Guanaco from December 31, 2016 forward are summarized in Table 1-7. Since the capital costs for the new mill were incurred in 2016, all costs from 2017 forward are treated as sustaining capital costs.



TABLE 1-7	SUMMARY OF CAPITAL COSTS
Austral Gold Li	mited – Guanaco and Amancaya Mines

Sustaining Capital Cost	Unit	Value
Amancaya Mine Development	US\$ '000	20,869
Guanaco Mine Development	US\$ '000	3,029
General Sustaining UG Capex	US\$ '000	4,020
Equipment Lease Payments	US\$ '000	18,999
Processing	US\$ '000	2,081
Exploration	US\$ '000	9,000
Other	US\$ '000	552
Reclamation and closure	US\$ '000	7,876
Total Capital Cost	US\$ '000	66,426

Unit operating costs for the LOM plan are shown in Table 1-8. The average operating cost over the life of mine is estimated at US\$111 per tonne milled.

Area	Unit	Value
Mining (Amancaya Open Pit)	US\$/t moved	4.10
Mining (Amancaya Open Pit)	US\$/t milled	58.35
Mining (Amancaya Underground)	US\$/t mined	40.30
Mining (Guanaco Underground)	US\$/t mined	47.56
Processing (Mill)	US\$/t milled	35.14
Processing (Heap Leach)	US\$/t milled	20.00
Area	Unit	Value
Mining (Average)	US\$/t milled	44.99
Haul (Amancaya to Guanaco)	US\$/t milled	8.60
Processing (Average)	US\$/t milled	31.66
G&A	US\$/t milled	25.77
Total Unit Operating Cost	US\$/t milled	111.01

## TABLE 1-8 SUMMARY OF LOM UNIT OPERATING COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Total operating costs for the LOM plan are shown in Table 1-9. The total operating cost over the life of mine is estimated at US\$160 million.



## TABLE 1-9 SUMMARY OF LOM TOTAL OPERATING COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Area	Unit	Value
Mining (Amancaya Open Pit)	US\$ '000	14,854
Mining (Amancaya Underground)	US\$ '000	27,943
Mining (Guanaco Underground)	US\$ '000	23,287
Processing (Mill)	US\$ '000	46,964
Processing (Heap Leach)	US\$ '000	2,022
Area	Unit	Value
Mining (Total)	US\$ '000	66,084
Haul (Amancaya to Guanaco)	US\$ '000	8,153
Processing	US\$ '000	48,964
G&A	US\$ '000	36,369
Total Operating Cost	US\$ '000	159,591



## **2 INTRODUCTION**

Roscoe Postle Associates Inc. (RPA) was retained by Austral Gold Limited (Austral Gold) to prepare an independent Technical Report on the Guanaco and Amancaya mines, collectively called the Guanaco Gold Project, located in northern Chile. RPA audited Mineral Resource and Mineral Reserve estimates prepared by Austral Gold. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. Most recently, RPA visited the properties from February 27 to March 2, 2017.

Austral Gold is a growing precious metals mining and exploration company building a portfolio of assets in South America, including the Guanaco gold and silver mine in northern Chile, the Casposo gold and silver mine in Argentina, as well as several exploration projects in Argentina. Austral Gold is based in Sydney, Australia and is listed on the Australian Securities Exchange (ASX: AGD) and the Toronto Venture Exchange (TSXV:AGLD).

The Guanaco Gold Project is currently held by Austral Gold through its wholly-owned subsidiary Guanaco Mining Company Ltd (GMC). GMC has a 99.99% interest in Guanaco Compañía (Cía.) Minera SpA (GCM), the subsidiary entity in Chile that owns and currently operates the Guanaco Mine. The Guanaco Gold Project has produced approximately 50,000 oz of gold per year for the last four years and is projected to continue at this rate for the next five years, as described in the life of mine (LOM) plan.

The operation consists of the underground mining at Guanaco and both open pit and underground mining at the Amancaya deposit. The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tonnes per day (tpd) and 800 tpd, respectively. Open pit operations, which have recently started at Amancaya, are expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018. Ore from Amancaya will be hauled by contractor via a 75 km road to the new mill located at the Guanaco mining complex. The new mill is designed to process up to 1,500 tpd using crushing, grinding, cyanide leaching, and Merrill-Crowe to produce a doré. The capacity of the mill was selected to allow for potential increases in production. Commissioning commenced in March 2017, and the mill is expected to be fully operational by July.



#### SOURCES OF INFORMATION

Site visits were carried out by Chester Moore, P. Eng., RPA Principal Geologist, on October 25 to 27, 2016 and previously from August 5 to 8, 2015, and on August 27 and 28, 2007. Jason Cox, P.Eng., RPA Principal Mining Engineer, Ian Weir, P.Eng., RPA Senior Mining Engineer, and Kathleen Altman, Ph.D., P.E., RPA Principal Metallurgist, visited the site from February 27 to March 2, 2017.

Discussions were held with personnel from Austral Gold:

- Mr. Stabro Kasaneva, CEO
- Mr. José Bordogna, CFO
- Mr. Christian Cubelli, General Manager
- Mr. Claudio Campos, Manager, Technical Services
- Mr. Antonio Pereira, Chief Engineer
- Mr. Jaime Bahmondes, Amancaya Planning Engineer
- Mr. Constantino Mendiz, Chief Geologist
- Mr. Francisco Pavez, Plant Manager
- Mr. Iván Caceres, Project Development Manager
- Mr. Roberto Sepulveda, Safety and Environment Manager
- Mr. Carlos Helms, Mine Manager
- Mr. Jorge Osorio, Planning and Geology Manager
- Mr. J. Federico Heit, Chief Exploration Geologist
- Mr. Ruben Saavedra, Laboratory Manager
- Mr. Ariel Obreque, Budget Engineer
- Mr. Eduardo Rio, Amancaya Shift Engineer
- Mr. Damir Rojas, Guanaco Shift Engineer

Mr. Cox, Mr. Moore, Mr. Weir, and Dr. Altman are Qualified Persons for this report.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References.



#### LIST OF ABBREVIATIONS

Units of measurement used in this report conform to the metric system. All currency in this report is US dollars (US\$) unless otherwise noted.

а	annum	kWh	kilowatt-hour
A	ampere	L	litre
bbl	barrels	lb	pound
btu	British thermal units	L/s	litres per second
°C	degree Celsius	m	metre
C\$	Canadian dollars	M	mega (million); molar
cal	calorie	m <sup>2</sup>	square metre
cfm	cubic feet per minute	m <sup>3</sup>	cubic metre
cm	centimetre	μ	micron
cm <sup>2</sup>	square centimetre	MASL	metres above sea level
d	day	μg	microgram
dia	diameter	m <sup>3</sup> /h	cubic metres per hour
dmt	dry metric tonne	mi	mile
dwt	dead-weight ton	min	minute
°F	degree Fahrenheit	μm	micrometre
ft	foot	mm	millimetre
ft <sup>2</sup>	square foot	mph	miles per hour
ft <sup>3</sup>	cubic foot	MVA	megavolt-amperes
ft/s	feet per second	MW	megawatt
g	gram	MWh	megawatt-hour
Ğ	giga (billion)	oz	Troy ounce (31.1035g)
Gal	Imperial gallon	oz/st, opt	ounces per short ton
g/L	grams per litre	ppb	parts per billion
Ğpm	Imperial gallons per minute	ppm	parts per million
g/t	grams per tonne	psia	pounds per square inch absolute
gr/ft <sup>3</sup>	grains per cubic foot	psig	pounds per square inch gauge
gr/m³	grains per cubic metre	RL	relative elevation
ha	hectare	S	second
hp	horsepower	st	short ton
hr	hour	stpa	short tons per year
Hz	hertz	stpd	short tons per day
in.	inch	t	metric tonne
in <sup>2</sup>	square inch	tpa	metric tonnes per year
J	joule	tpd	metric tonnes per day
k .	kilo (thousand)	US\$	United States dollar
kcal	kilocalorie	USg	United States gallon
kg	kilogram	USgpm	US gallons per minute
km	kilometre	V	volt
km²	square kilometre	W	watt
km/h	kilometres per hour	wmt	wet metric tonne
kPa	kilopascal	wt%	weight percent
kVA	kilovolt-amperes	yd <sup>3</sup>	cubic yard
kW	kilowatt	yr	year



## **3 RELIANCE ON OTHER EXPERTS**

This report has been prepared by RPA for Austral Gold. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by Austral Gold and other third party sources.

For the purpose of this report, RPA has relied on ownership information provided by Austral Gold. The client has relied on an opinion by the legal firm Baker & McKenzie dated June 8, 2015 entitled Guanaco – Due Diligence 2015, and this opinion is relied on in Section 4 and the Summary of this report. RPA has not researched property title or mineral rights for the Guanaco Gold Project and expresses no opinion as to the ownership status of the property.

RPA has relied on Austral Gold for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Amancaya.

Except for the purposes legislated under provincial securities laws, any use of this report by any third party is at that party's sole risk.



## **4 PROPERTY DESCRIPTION AND LOCATION**

The property description and location section is mostly taken from the 2016 Technical Report (Amec Foster Wheeler and RPA, 2016).

The Guanaco Mine is located 220 km southeast of Antofagasta. The coordinates of the centre of the site are N 7,223,000 and E 445,000 (UTM PSAD-56). The Guanaco property, including regional concessions, comprises 343 concessions totalling 41,951 ha. The Mineral Resources and Mineral Reserves for the Guanaco Mine discussed in Sections 14 and 15 of this report are hosted within the tenure holdings. There are claims held by third parties within the Guanaco Mine area that are excisions from the GCM tenure holding and are not included in the Guanaco property.

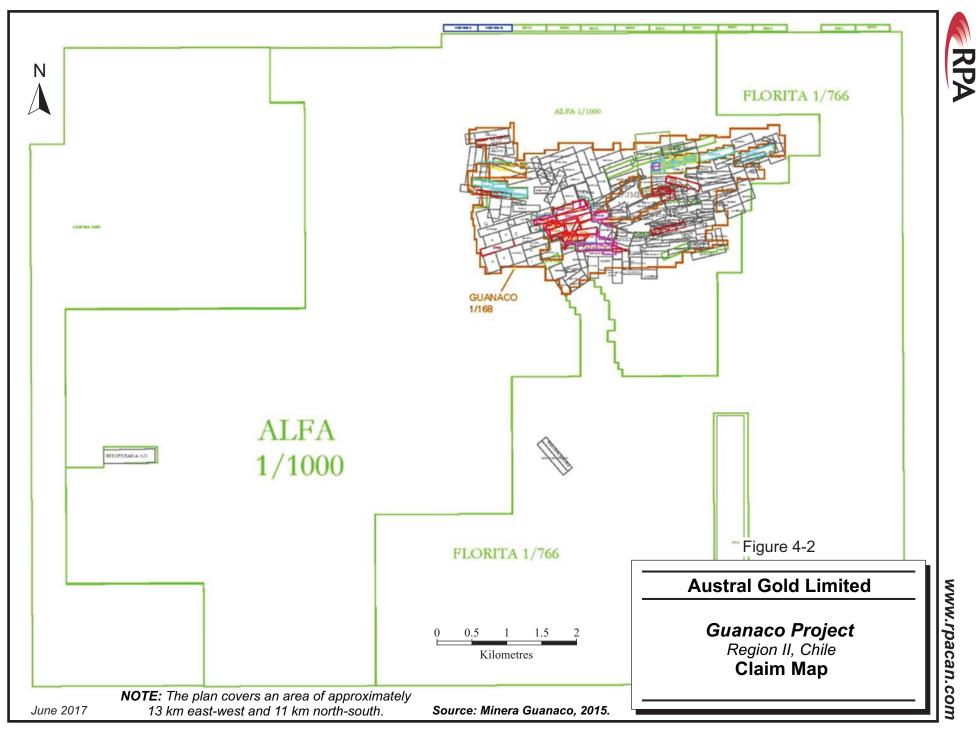
The Amancaya Project is located at coordinates 7,172,000 North and 418,500 East (UTM PSAD-56) in the Taltal Commune, in Antofagasta Province (Region II) of Chile, 70 km to the east of the city of Taltal. The property is 100% owned by GCM, and the Amancaya deposit is located within the property boundaries. GCM is a 99.9% owned subsidiary of GMC, which is 100% owned by Austral Gold.

In February 2016, GCM completed an option and sale agreement with Revelo Resources Corporation (Revelo) whereby Austral Gold will have the sole and exclusive option and right to acquire a 100% undivided interest in Revelo's San Guillermo project by paying Revelo a total of US\$2.65 million over three years (out of which US\$2 million is the optional payment in year three to fully acquire the project) plus spending US\$3 million on exploration over the same time frame of three years. The San Guillermo property surrounds the Amancaya Project.

The location map for the properties is provided in Figure 4-1. The claim map showing the exploration claims and mining concessions for Guanaco is provided in Figure 4-2 and the claim map for Amancaya is provided in Figure 4-3.



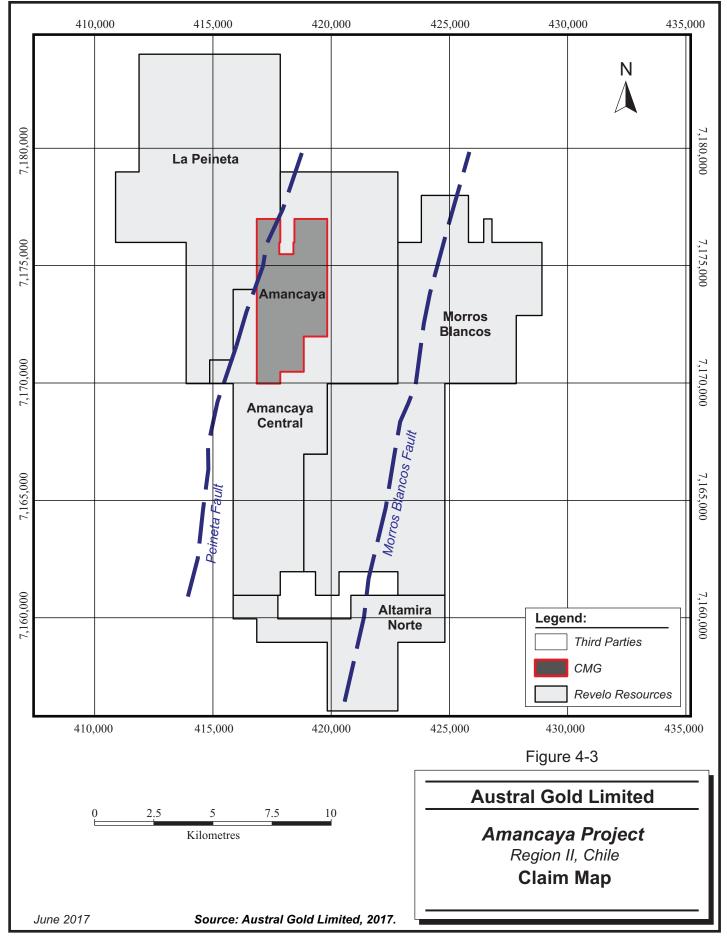




4-3



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#### MINERAL RIGHTS IN CHILE

Mineral rights in Chile are reserved to the federal government and governed by the Chilean Mining Code, or Codigo Minero. The mining law is administered by the Servicio Nacional de Geología y Minerería (SERNAGEOMIN), a federal agency. Concessions are defined by UTM coordinates representing the centre-point of the concession and dimensions (in metres) in north-south and east-west directions.

Mineral exploration rights are acquired through acquisition of an exploration concession, or pedimento, which is oriented north-south, has a minimum width of 1,000 m (either north-south or east-west) and maximum area of 5,000 ha. Exploration concessions may overlap, however, only the titleholder with the earliest dated exploration concession over the area can exercise these rights. Exploration concessions are valid for two years and can be extended an additional two years provided the owner relinquishes at least 50% of the original land area.

Mining rights are acquired through acquisition of an exploitation mining concession, or mensura. The mining concession can have a minimum length of 100 m, either north-south or east-west (in multiples of 100 m) to a maximum size of 10 ha. A group of mining concessions cannot exceed 1,000 ha. As with the pedimentos, the mining concessions may overlap, however, only the titleholder with the earliest dated mining concession over the area can exercise these rights. The location of concession boundaries are marked in the field with survey monuments placed by a registered engineer or minerals landman (perito minero) at the vertices of each claim group.

Exploration concessions may be converted directly to exploitation mining concessions. An exploitation mining concession is a permanent property right, with no expiration date. As long as the annual fees (patentes) are paid in a timely manner, clear title and ownership of the mineral rights are assured in perpetuity.

The registered owner(s) of an exploration or exploitation mining concession has the legal right to complete whatever construction or facilities may be required. They have the right to prospect and excavate within the borders of the mineral tenure regardless of the surface rights ownership (with the exception of orchards or vineyards).



Mining development, including prospecting, exploration, processing plants, and tailings management or disposal, is considered to be an activity that may cause an environmental impact, and may therefore be subject to the environmental impact assessment system, requiring an Environmental Impact Study.

#### SURFACE RIGHTS

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

#### LAND TENURE

#### GUANACO

The property consists of 343 concessions covering a total area of 41,951 ha. The area of detailed claim staking, known as the Guanaco 1–168 area, is presented in Figure 4-4. There are claims held by third parties within the Guanaco 1–168 area that are excluded from the property (shown in cyan and magenta in Figure 4-4). Details of the mining concessions held by GCM are provided in Appendix 1 and were current as at January 1, 2017.

Currently, GCM has the mining concessions registered in its name in the Property Register or Discovery Register of the Curator of Mines Department (Conservador de Minas) of Taltal. The Boa claims are held by GCM by way of an agreement pursuant to the exercise of an option agreement over the Boa A, B, C, D, E, F, G, H, J, and K exploitation concessions by Golden Rose, a GCM predecessor company, from Amax Gold de Chile Limitada.

Two claims, María Luisa and Chilena, remain in the name of Empresa Nacional de Mineria (Enami) according to the formal register (refer to Appendix A). The claims are extremely old, Maria Luisa being registered in 1893 and Chilena in 1908.

There are numerous overlaps in the claim boundaries, and some claims within the Guanaco area are held by third parties. A second layer of mining rights has been established over existing rights to enhance protection and the area is being monitored on a permanent basis to prevent conflict with third-party rights.



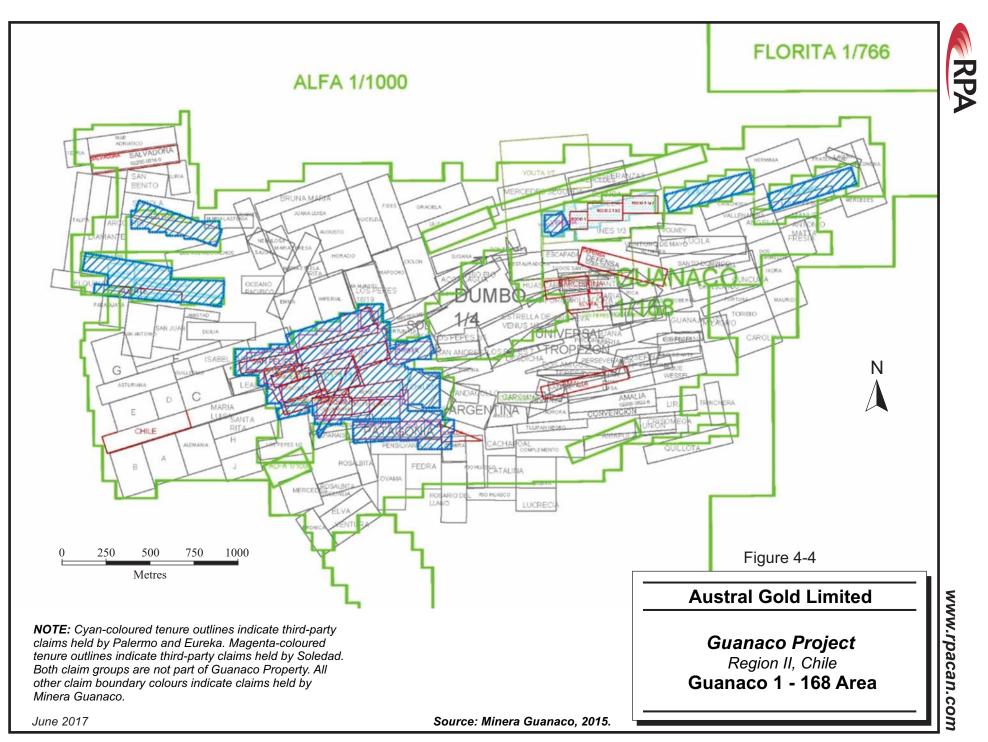
Figure 4-5 shows the concessions that are located to the north and east of the Guanaco mining area.

Table 4-1 shows a mineral tenure summary for the Guanaco Mine deposits with reported Mineral Resources and Mineral Reserves.

# TABLE 4-1MINERAL TENURE SUMMARY, GUANACO MINE DEPOSITS WITH<br/>REPORTED MINERAL RESOURCES AND MINERAL RESERVES ESTIMATES<br/>Austral Gold Limited – Guanaco Mine

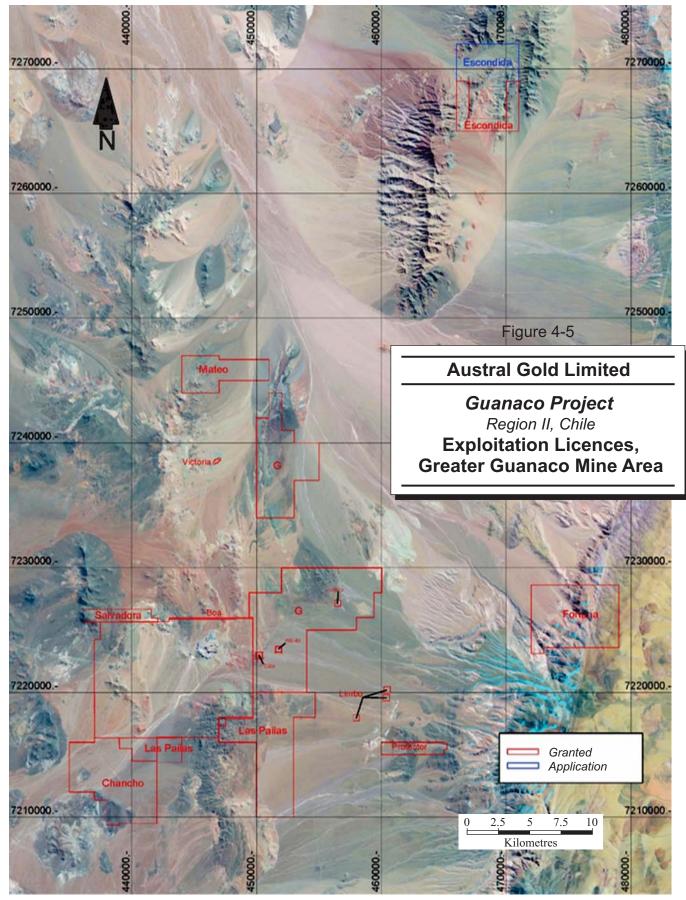
Perseverancia	Dumbo	Defensa	Cachinalito <sup>1</sup> /Natalia	Cachinalito West
Universal	Dumbo 1-4	Defensa	Buenos Muchachos	Talita
Desdicha	Huascar	Cupido	Sajonia	Diamante
Tropezon	California	Panchita	Nebulosa	Arco Iris
Progreso	Estrella de Venus 1-2	Brillante	Maria Teresa	Elquina
Juana Maria	Los Pepes 3-5	Los Pepes 14	Augusto	
Dos Amigos	Los Pepes 7	Barcelona	Maria Estela	
Perseverancia	San Andres	Todos Santos	Guicelda	
Josefina	Restauradora	Veintiuno de Mayo	Fides	
К	Jenoveva	Altamira	Juana Luisa	
Esperanza	Domitila	Lucila	Rita	
Teresa	Bio		Horacio	
Don Juan				
Amalia				
Emma Luisa				
Santa Clara				
Amparo				

Note: (1) Cachinalito Central deposits



4-8





June 2017

Source: Minera Guanaco, 2015.



A property of 10 ha, located in the area known as Agua Verde, community of Taltal, province and second Region of Antofagasta, is registered under the name of GCM, with the valuation role No. 509-2, on folio 128, number 126 in the Property Registry of the Real Estate Registrar of Taltal, for the year 2014. The property was acquired by GCM through public deed dated August 8, 2014, signed before the Notary of Santiago of Mrs. Antonieta Mendoza Escalas.

Concession owners do not necessarily have surface rights to the land. They have the right to explore or exploit the concession. GCM made an application to the state of Chile for 257.5 ha of surface rights (Judicial Rights) to cover proposed infrastructure sites in a submission dated April 26, 2010. The submission was approved on November 15, 2011. Areas covered under the approval are summarized in Table 4-2.

TABLE 4-2	INFRASTRUCTURE COVERED BY APPROVED SURFACE RIGHTS
	Austral Gold Limited – Guanaco Mine

Item No.	Area	Surface (ha)
1	Heap and Ponds	46.0
2	Tailings Area	34.0
3	Plant Area	13.0
4	Cachinalito Waste Area	10.0
5	Explosives Magazine	6.0
6	Camp	37.0
7	Airstrip	20.0
8	Defensa – Perseverance Waste Dump	21.5
9	Defensa – Dumbo Waste Dump	36.0
10	Defensa Waste Dump	34.0
	Total	257.5

#### AMANCAYA

The Amancaya property consists of eight individual exploitation mining concessions owned by Austral Gold. A summary is provided in Table 4-3. The concessions cover a total area of 1,755 ha. The boundaries have been surveyed. As is common in Chile, a secondary layer of concessions has been placed over the original concessions for security of ownership. These concessions cover 1,090 ha. An additional two exploitation mining concessions are currently in application.



TABLE 4-3	AMANCAYA EXPLOITATION MINING CONCESSIONS
	Austral Gold Limited – Amancaya Mine

Concession Name	National Roll	Area (ha)
Mining Concessions		
Amancaya 1A, 1 al 20	02202-4675-2	100
Amancaya 1B, 1 al 30	02202-4676-0	140
Amancaya 2, 1 al 55	02202-4677-9	265
Amancaya 3, 1 al 60	02202-4678-7	300
Amancaya 4, 1 al 60	02202-4679-5	300
Amancaya 5, 1 al 60	02202-4680-9	300
Amancaya 6, 1 al 40	02202-4681-7	200
Janita 1 al 15	02202-4112-2	150
Subtotal	8	1,755
Secondary Mining Concessions		
Sabina 1, 1 al 28	02202-5483-6	140
Sabina 4, 1 al 60	02202-5486-0	300
Sabina 5, 1 al 60	02202-5487-9	300
Sabina 6, 1 al 40	02202-5488-7	200
Sabina 7, 1 al 30	02202-5489-5	150
Subtotal	5	1,090
Mining Concessions In Application		
Sabina 3, 1 al 60	02202-5485-2	300
Sabina Dos, 1 al 48 (18)	02202-7138-2	18
Subtotal	2	318

The surrounding Revelo property consists of 37 individual exploitation mining concessions and 16 exploration concessions optioned by Austral Gold as shown in Table 4-4. The concessions cover a total area of 12,175 ha. The boundaries have been surveyed.

## TABLE 4-4 OPTIONED REVELO EXPLOITATION MINING CONCESSIONS Austral Gold Limited – Amancaya Mine

San Guillermo 2, 1 al 30       02202-4954-9       30         San Guillermo 3, 1 al 20       02202-4955-7       20	
San Guillermo 2, 1 al 3002202-4954-930San Guillermo 3, 1 al 2002202-4955-720	
San Guillermo 3, 1 al 20         02202-4955-7         20	00
	00
San Guillermo 4, 1 al 30 02202-4956-5 30	00
	00
San Guillermo 5, 1 al 30         02202-4957-3         30	00
San Guillermo 6, 1 al 30         02202-4958-1         30	00
San Guillermo 7, 1 al 30 02202-4959-K 30	00
San Guillermo 8, 1 al 30 02202-4960-3 30	00



Concession Name	National Roll	Area (ha)
San Guillermo 10, 1 al 30	02202-4961-1	300
San Guillermo 11, 1 al 30	02202-4962-K	300
San Guillermo 12, 1 al 30	02202-4963-8	300
San Guillermo 14, 1 al 20	02202-4964-6	200
San Guillermo 15, 1 al 6	02202-4936-0	50
San Guillermo 16, 1 al 20	02202-4937-9	200
San Guillermo 17, 1 al 20	02202-4965-4	200
San Guillermo 19, 1 al 30	02202-4966-2	300
San Guillermo 20, 1 al 30	02202-4967-0	300
San Guillermo 21, 1 al 30	02202-4938-7	300
San Guillermo 25, 1 al 10	02202-4970-0	100
San Guillermo 26, 1 al 20	02202-4971-9	200
San Guillermo 27, 1 al 10	02202-4939-5	100
San Guillermo 29, 1 al 30	02202-4972-7	300
San Guillermo 30, 1 al 30	02202-4973-5	300
San Guillermo 31, 1 al 10	02202-4974-3	100
Peineta 1, 1 al 30	02202-5502-6	300
Peineta 2, 1 al 30	02202-5503-4	300
Peineta 3, 1 al 30	02202-5504-2	300
Peineta 4, 1 al 10	02202-5505-0	100
Peineta 4B, 1 al 10	02202-6146-8	100
Colorada 4, 1 al 30	02202-5509-3	300
Colorada 5, 1 al 30	02202-5510-7	300
Colorada 6, 1 al 30	02202-5511-5	300
San Juan 7, 1 al 30	02202-4005-3	30
San Juan 8, 1 al 21	02202-4006-1	105
San Juan 10, 1 al 10	02202-4007-K	60
Piano 8, 1 al 30	02202-3261-1	300
Juanita 1 al 6	02202-4024-K	30
Subtotal	37	8,375
Mineral Exploration Concessions Cepillo Rojo 7 D	02202-P178-K	200
	00000 NIZOZ 4	400

Cepillo Rojo 7 D	02202-P178-K	200
Cepillo Rojo 8 E	02202-N767-1	100
Cepillo Rojo 11 D	02202-Q035-5	200
Cepillo Rojo A	02202-O177-6	100
Cepillo Rojo 1 D	02202-0194-6	300
Cepillo Rojo 2 D	02202-O178-4	300
Cepillo Rojo 3 D	02202-0179-2	300
Cepillo Rojo 4 D	02202-0180-6	300
Cepillo Rojo 5 D	02202-O181-4	300
Cepillo Rojo 6 D	02202-0182-2	300
Cepillo Rojo 9 D	02202-O183-0	200
Cepillo Rojo 10 D	02202-0184-9	200



Concession Name	National Roll	Area (ha)
Cepillo Rojo 12 D	02202-O185-7	200
Cabello 11 D	02202-0174-1	300
Cabello 12 D	02202-O175-K	300
Cabello 13 D	02202-O192-K	200
Subtotal	16	3,800

Exploration mining concessions in Chile do not have a fixed term and are valid as long as the annual taxes are paid. Depending on the exchange rate, the taxes for the Amancaya concessions amount to approximately US\$7.00 per hectare per year on each set of concessions and are paid at the discretion of Austral Gold. All concessions covering Amancaya are mining concessions. There are no exploration concessions on the property.

RPA reviewed a Due Diligence Report on the constituted mining properties of GCM, prepared for the client by Baker & McKenzie (2015). All concessions over the Amancaya property were found to be in good standing at that time.

The surface rights are controlled by the federal government and access is normally granted as required.

#### WATER RIGHTS

#### GUANACO

Water needed for the current mining operation is obtained from the following sources.

Surface water source is located 30 km east of the site where GCM has the rights to 4.84 L/s.

These rights date back to 2003 when a Public Document, dated March 14, 2003 prepared before María Gloria Acharán Toledo, Notary in Santiago, for a contract of purchase and sale between Compañía Minera Kinam Guanaco, Kinam de Chile Limitada, and Golden Rose International Chile Limitada was completed.

Under this contract of purchase and sale and assignment of claims Golden Rose International Chile Limitada bought from Compañía Minera Kinam Guanaco the rights to the exploitation of surface waters at Pastos Largos, Varitas, Vega Larga, Vega Quemada, Punta del Viento, Varas Norte, Varas Sur and Las Mulas.



A Public Document dated February 27, 2007, Purchase of Rights of Consuming Use of Underground Waters, in the name of Guanaco Compañía Minera Limitada was registered in the Register of Water Properties of Taltal (Conservador de Bienes Raíces) for Pastos Largos, Varitas, Vega Larga, Vega Quemada, Punta del Viento, Varas Norte, Varas Sur and Las Mulas, acquired by contract of purchase and sale from Compañía Minera Robolistic Limitada for a total of 4.84 L/s.

Groundwater usage for which the company has rights amounts to 12.35 L/s. In 2005 Compañía Minera Robolistic Limitada started procedures to obtain the rights to underground water from existing wells.

By resolutions of the Dirección General de Aguas (DGA -General Water Directorate), Region of Antofagasta, dated January 10, 2008, April 18, 2008 and September 25, 2008, Public Works Ministry (Ministerio de Obras Públicas) the rights of consuming use of underground waters was constituted in favour of Guanaco Compañía Minera Limitada, in the community of Taltal, Province of Antofagasta, according to Article 4 of Law No. 20.017/2005, for a total of 12.35 L/s.

These resolutions were summarized in a Public Document notarized by Hector Basualto Bustamante in Antofagasta, and registered in the Register of Water Properties (Registro de Propiedad de Aguas) by Hector Garcia Aguirre Taltal's Curator of Properties (Conservador de Bienes Raíces de Taltal).

An additional water right for 1.6 L/s on Agua Verde is registered under the name of Guanaco Compañía Minera SpA with Reg. 2, Nr. 2 of June 2014 of the Register of Water Properties of Tal-Tal, but a mortgage and a prohibition appear recorded.

The current water rights are summarized in Table 4-5. Total rights are for 18.79 L/s and current use is approximately 7.50 L/s.



TABLE 4-5	WATER RIGHTS SUMMARY
Austral G	old Limited – Guanaco Mine

Water Source	Legal Approval Date	Granted Flow (L/s)
Deep Wells		
PA-2	Res. N° 04 18/08/08	4.00
WE-26	Res. N° 11 18/04/08	2.00
WE-3	Res. N° 02 10/01/08	2.00
WE-4	Res. N° 06 10/01/08	1.00
WE-47	Res. N° 01 10/01/08	0.02
WE-6	Res. N° 07 10/01/08	0.07
WE-61	Res. N° 13 25/09/08	0.85
WE-7	Res. N° 03 10/01/08	0.17
WE-9	Res. N° 05 10/01/08	1.64
WE-5	Res N° 671 13/12/13	0.60
Agua Verde		1.60
Deep Wells Sub-total		13.95
Surface Waters		
Aguada Las Mulas	Res. N° 359 30/08/85	1.10
Aguada Varas Norte	Res. N° 359 30/08/85	0.80
Aguada Varas Sur	Res. N° 359 30/08/85	0.50
Quebrada Pastos Largos	Res. Nº 167 07/04/87	1.83
Quebrada Punta del Viento	Res. N° 532 26/12/86	0.20
Quebrada Varitas	Res. Nº 167 07/04/87	0.13
Quebrada Vega Larga	Res. N° 532 26/12/86	0.15
Quebrada Vega Quemada	Res. N° 532 26/12/86	0.13
Surface Waters Sub-total		4.84
Total		18.79

#### AMANCAYA

The current Amancaya water rights amount to 1.6 L/s of underground water, located in Agua Verde sector of Taltal County. The extraction well called "Zazzali" is located at 7,189,625.540 North and 400,453.353 East. The Amancaya Water Rights were registered in name of GCA in the Property Register of the Curator of Properties Department (Conservador de Bienes Raices) of Taltal, on August 22, 2014.

#### ROYALTIES

#### GUANACO

There is a 3% royalty payment associated with the Guanaco Mine, payable to Enami.



#### AMANCAYA

A royalty of 2.25% of the net smelter return (NSR) on all production from the Amancaya mining concessions is payable to Meridian Gold Inc. (Meridian)/Yamana Gold Inc. (Yamana).

Revelo will retain a 0.5% NSR royalty on all metals produced from their project concessions. In addition, the agreement provides for Austral Gold to take responsibility for the payment of underlying existing royalties to both Minera Fuego Limitada and Sociedad Quimica y Minera de Chile S.A. (SQM) on any and all future production from the Revelo project property.

#### ENVIRONMENTAL CONSIDERATIONS

The environmental permitting status, existing environmental liabilities and closure plan for the Guanaco Mine are discussed in Section 20.

RPA is not aware of any environmental liabilities on the Amancaya properties. GCM has all required permits to conduct the proposed work on the properties. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the properties.



## 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The accessibility, climate, local resources, infrastructure, and physiography description is taken from the 2016 Technical Report (Amec Foster Wheeler and RPA, 2016).

### ACCESSIBILITY

The Guanaco Mine is located 220 km southeast of Antofagasta and 42 km east of the Pan-American Highway (Ruta 5 Norte). The area is accessed by a 42 km long unpaved road turning off from the Pan-American Highway at km 1,198. Travel time by road from Antofagasta is approximately three hours.

The closest settlement is Taltal, approximately 170 km from the mine site. Taltal is located 306 km south of Antofagasta and 25 km from Route 5, with no local public transportation to Antofagasta.

A railroad track, currently not in service, is located 20 km to 30 km west of the Guanaco Mine area. The railroad operation stopped three decades ago, but the track is still maintained by the railroad company.

The closest airport is the Andrés Sabella Gálvez International Airport (formerly Cerro Moreno International Airport) at Antofagasta.

The Amancaya property is located in the municipal area of Sierra La Peineta, in the Agua Verde District, Antofagasta Province (Region II), and 70 km to the east of the city of Taltal. The property is accessed from Agua Verde on the Pan-American Highway (Route 5) by 30 km of basic dirt road that serviced previous exploration.



# CLIMATE

The property is located in the Atacama Desert, which is one of the driest areas in the world. Annual precipitation is listed as 1.7 mm. Rainfall is rare. A meteorological station has been operated by GCM at the site since August 2006. Occasionally, snow can be found on mountain peaks in the region during the winter season. There is no sharp contrast in temperature between seasons. The average temperature of the coldest month (July) is 11.8°C and the average temperature for the hottest month (January) is 19.2°C. The daily variation is significant, ranging from a maximum of +33.5°C to a minimum of +2.3°C at Guanaco and from +2°C at night to +20°C during the day in the winter, and from +10°C to +28°C during the day in the summer, with an annual average of 16.1°C at Amancaya.

Mining operations are conducted year round at the Guanaco Mine and will be conducted on a similar basis for Amancaya.

# LOCAL RESOURCES

Taltal is the closest town to the Guanaco Mine, and the town has a limited variety of supplies and services. Antofagasta is the closest city. Antofagasta, one of the most important Chilean-mining centers, can provide support for all required needs. It is linked to Santiago by road and daily flights. The city has excellent infrastructure, including power supply, port and airport facilities, health and banking services, modern communication facilities, hotel accommodation, and general stores.

Chile has experienced and skilled mining, process and support technicians and professionals. The labour force in the nearby towns of Taltal, Chañaral, and Diego de Almagro is experienced in mining; there are already several copper, iron and gold mines operating in the region.

# INFRASTRUCTURE

Guanaco is an operating mine and has the required infrastructure and surface rights. Site infrastructure in relation to the Guanaco Mine is discussed in Section 18.



An administration building, explosives storage facility, and mine offices had been erected at the Amancaya property at the time of the 2017 site visit with plans to construct a truck shop and other facilities. A north-south, high voltage power line was recently constructed across the eastern side of the property. Food, water, and fuel are available at Agua Verde on the main highway.

# PHYSIOGRAPHY

The Guanaco Mine area is located at an altitude that ranges between 2,400 MASL and 2,900 MASL, averaging 2,600 MASL. The topography in and around the site is generally gently rolling.

Amancaya is situated at an altitude of 1,900 MASL in the Atacama Desert in northern Chile. It is located on gently sloping terrain that rises to low hills at the edges of the property. The highest point in the area is Cerro La Peineta at an elevation of 2,245 MASL located to the northwest of the Guanaco Gold Project. Cerro Morros Blancos is located 5 km to the east of the property and has an elevation of 2,228 MASL.

No vegetation or significant wildlife is present in the area.

Hydrogeologically, the Guanaco area lies between the La Negra and Pan de Azúcar basins. The drainage systems are relatively mature, with poorly defined drainage channels. Within the area, the Guanaco stream emerges very close to the Sierra de Varas range, and eventually peters out in the vicinity of Catalina station (a distance of approximately 20 km). The average elevation of the ground water in the area is between 2,540 MASL and 2,530 MASL (180 m to 190 m depth from surface) based on drill hole intercepts.

There are no declared tourist or scenic sites in the area.

The Guanaco site is located between the Taltal and Cordillera de Domeyko deserts and the area has low flora and fauna diversity. The vegetation in the area mainly consists of formations of patches of annual grass and dispersed bushes. There are small wetlands on the slope close to the Guanaco stream where some vegetation diversity exists. Studies confirmed that the area has abundant birds of prey and cameloid family (guanacos) are present.



# **6 HISTORY**

The history section is mostly taken from the 2016 Technical Report (Amec Foster Wheeler and RPA, 2016).

# PRIOR OWNERSHIP

#### GUANACO

Gold mineralization was discovered at Guanaco in 1878 by miners from the nearby Cachinal silver mines. There was only small-scale production until 1886. From 1887 until 1890, more than 200 underground mines were developed, and approximately 200,000 oz of gold were produced from high-grade veins. The richest veins apparently averaged 160 g/t Au to 180 g/t Au. At that time, the minimum grade that could be exploited was 50 g/t Au to 60 g/t Au (Egaña, 1978).

Extensive gold production continued until 1928, when low gold prices forced the closure of the mines. Relatively high copper prices led to the development of copper deposits from 1928 to 1930, but low copper prices during the 1930s depression forced the closure of these mines.

In 1930, the Chatal Company acquired most of the claims in the district, and continued moderate-scale exploration and mining until 1960. In 1971, the Chilean state organizations Enami and Corporación de Fomento de la Producción (Corfo) acquired the former Chatal holdings. Total gold production prior to 1986 has been estimated at approximately 1 Moz. The amount of copper produced is unknown.

In the early 1980s, BHC completed a reverse circulation (RC) drilling campaign. No other details about work conducted by this company have been recorded.

During 1987, Guanaco Properties, at that stage controlled by the Eulogio Gordo Company, became operators of the Guanaco Mine by undertaking an underground production at a minimum rate of 500 tpd within six months. By the end of 1990, 179 exploration holes had been drilled and a 1,800 t/d open-pit/heap-leach operation was developed. The Eulogio Gordo Company produced an estimated 75,000 oz gold to the end of 1991.



Amax entered into a purchase-option agreement with the Eulogio Gordo Company effective April 1, 1991, and subsequently commenced mapping, geochemical sampling, and RC drilling. A pre-feasibility study was completed the same year. In 1992, Amax Gold leased additional properties from Enami. In April 1992, Amax acquired a 90% interest in the Guanaco Mine for US\$35 million through a wholly owned subsidiary.

Open-pit mining commenced in early 1993, with gold recovered from heap leach pads and a Merrill Crowe recovery plant. From 1993 to 1996, in addition to mining operations, work completed included mineral resource and mineral reserve estimation, airborne and ground geophysical surveys, rock chip and grab sampling, geological mapping, and RC and core drilling. In 1997, the operation was placed on care and maintenance due to a combination of low gold prices and poor metallurgical recoveries due to the presence of copper. Production during the Amax period is included as Table 6-1, and was compiled by GCM based on internal records.

In 1999, Kinross Gold Corporation (Kinross) acquired Amax, and operations were conducted by Kinross' indirect subsidiary Kinam Guanaco. During 1999 and 2000, Kinross conducted exploration core and RC drilling, data reviews, geological mapping and chip sampling, preparation and description of petrographic samples, and ground geophysical surveys.

In early 2000, Cominco Chile Exploraciones Limitada (Cominco) evaluated the Kinross-held project over a three-month period, during which time a ground geophysical survey was conducted.

In 2002, Golden Rose International Limited (GRIL), a subsidiary of Austral Gold, entered into a purchase-option agreement with Kinross, which was executed in March 2003. From 2003 to 2012, GRIL/Austral Gold undertook data reviews, core and RC drilling, mineral resource and mineral reserve estimation, hydrological, geotechnical and metallurgical studies, reviews of social and environmental conditions, and assessments of existing infrastructure and equipment, and commissioned a feasibility study during 2009–2010.

The existing infrastructure on site was refurbished and upgraded between September 2009 and March 2010. GCM restarted stacking operations in September 2010, and the first doré bar was poured in December 2010.



#### AMANCAYA

Small scale exploration and mining of copper and gold within the Rosario del Llano and Janita veins at Amancaya took place during the 1950s. Exploration, in the form of soil and rock geochemical surveys and RC drill holes took place in, and proximal to, the Amancaya Mine area by Recursos Mineros Andinos and Rio Tinto. In 2003, Placer Dome Inc. acquired the property and completed 20 RC drill holes, collected 515 rock samples, and excavated several trenches. The property was purchased by Minera Meridian Limitada (Meridian) in 2004, and Meridian was, in turn, purchased by Yamana Gold Inc. (Yamana) in 2007. Grupo Minero Las Cenizas S.A. (Cenizas) conducted a drilling campaign on the property in 2009 as part of a data verification exercise within an option agreement held with Yamana. On June 13th, 2014, an Asset Transfer Agreement was signed between Meridian and GCM, with Austral Gold acting as the warrantor of the transaction.

# **EXPLORATION AND DEVELOPMENT HISTORY**

#### GUANACO

Modern exploration commenced on the property in the 1970s and has been nearly continuous since that date. Exploration has been undertaken by GCM, its precursor companies (e.g. initial gold exploration by Amax), or by contractors (e.g. airborne geophysical surveys, hydrological surveys and geotechnical studies). For the purposes of the exploration, drilling and sampling discussions, data collected prior to GCM's interest in the property are referred to as "legacy data."

#### AMANCAYA

The following exploration and development activities have been undertaken on the Amancaya Project:

- Small scale exploration and mining of copper and gold in the Rosario del Llano and Janita veins during the 1950s.
- Copper porphyry exploration (on the adjacent Cerro Morros Blancos property) with soil and rock geochemistry over a 32 km<sup>2</sup> area and 30 RC drill holes by Recursos Mineros Andinos and Rio Tinto during the 1990s. The work identified a series of mineralized quartz veins with a best intersection of 2.0 m grading 3.16 g/t Au.
- Mapping, rock sampling, trenching and 20 RC drill holes were completed in 2003 by Placer Dome Inc. The drilling returned best intersections of 2.0 m grading 2.84



g/t Au and 16.7 g/t Ag and 4.0 m grading 0.25 g/t Au and 23.4 g/t Ag in the north of the area.

- Geophysical surveys, surface and trench sampling, geological mapping, radiometric dating, and fluid inclusion analysis were completed by Meridian/Yamana from 2004 to 2008.
  - The very low frequency (VLF) information was used to identify lineaments and conductors such as brecciated structures and argillitized zones. The aeromagnetic data were used to derive more detail in the bedrock geology under the alluvial/colluvial cover.
  - A total of 930 surface samples were collected and analyzed for gold and for multi-elements using an ICP package. The purpose of this work was to discover areas of economic interest and determine geochemical indicators that could outline areas containing blind mineralization.
  - U/Pb dating returned an age of 63.4±1.1 Ma for the dacite-andesite dome, locating it in the Lower Paleocene. An Ar/Ar age of 60.1±0.3 Ma was determined for the Central Vein showing a difference of age of 2 Ma to 3 Ma for the dome and the mineralization.
  - Two different fields were determined in the fluid inclusion tests. The temperature of homogenization and salinity for the fluids in quartz crystals in Group 1 were within the ranks defined for low sulphidation epithermal systems. Group 2 temperatures corresponded to a transitional epithermalmesothermal environment.
- Yamana completed a total of 202 RC drill holes for 54,782 m and 16 trenches totalling 486.1 m. A total of 40 drill holes and four surface trenches are used in the subsequent resource estimate.
- Resampling of trenches and some resampling of historic drill core was performed by Cenizas in 2009. This work confirmed the presence of gold-silver mineralization on the property.
- In 2009, Cenizas carried out a drill campaign totaling 5,054 m in 23 holes to confirm the thickness of the Veta Central, the distribution of gold and silver grades within the vein and host rocks, and the density of the mineralization.

The following exploration activities have been undertaken on the surrounding Revelo property:

 From 2004 to 2011, Minera Fuego Ltd. focused on exploration in the sectors Amancaya Central, Amancaya Oeste, Cerro la Peineta, and Morros Blancos. Geological mapping, surface sampling, trenches, soil sampling, and geophysics (magnetics, VLF, and induced polarization (IP) gradient) and a total of 151 drill holes (145 RC and 6 diamond drill holes, totalling 46,478 m) were completed. The best results were from the continuation the Austral Amancaya vein system in South Amancaya (2.0 m grading 5.38 g/t Au) and northward at Rosario del Llano (10 m grading 0.8 g/t Au).



#### HISTORICAL MINERAL RESERVE AND MINERAL RESOURCE ESTIMATES

#### AMANCAYA

A previous Inferred Mineral Resource estimate was completed on the property by Yamana, which was adopted by Scott Wilson RPA in 2008 (Scott Wilson RPA, 2008).

Cenizas produced resource estimates in 2009 using Surfer and Gemcom software. These estimates totaled 550,000 tonnes grading 10.5 g/t Au and 110 g/t Ag and 548,000 tonnes grading 10.9 g/t Au and 100 g/t Ag, respectively, at a cut-off grade of 4.0 g/t Au. RPA notes that the Cenizas estimates are considered historical in nature and should not be relied upon. A qualified person has not completed sufficient work to classify the historical estimates as current Mineral Resources and Austral Gold is not treating the historical estimates as current Mineral Resources.

#### PAST PRODUCTION

#### GUANACO

The Amax production history is summarized in Table 6-1 and the GCM Production history from 2010 through 2016 is provided in Table 6-2.

TABLE 6-1         AMAX PRODUCTION HISTORY, 1993–1997						
Austral Gold Limited – Guanaco Mine						

	1993	1994	1995	1996	1997
Tonnage (t)	2,370,289	1,971,072	1,842,373	2,249,520	2,615,783
Au (g/t)	1.28	1.71	2.16	2.40	2.01
Recovered Gold (000 oz)	29	58	71	96	92

# TABLE 6-2 GCM PRODUCTION HISTORY, 2010–2016 Austral Gold Limited – Guanaco Mine

Year	2010	2011	2012	2013	2014	2015	2016
Tonnage (t)	118,450	1,101,282	808,945	634,731	398,014	441,732	552,862
Au (g/t)	1.15	0.97	1.68	3.26	5.08	3.82	3.84
Ag (g/t)	2.36	7.88	10.07	5.63	4.17	6.42	9.07
Shipped							
Gold (oz)	332	12,432	28,907	50,226	50,374	46,253	49,413
Silver (oz)	431	37,502	74,828	74,031	46,458	43,710	64,702



#### AMANCAYA

With the exception of small scale mining of copper and gold in the Rosario del Llano and Janita veins during the 1950s, no production has taken place at Amancaya.



# 7 GEOLOGICAL SETTING AND MINERALIZATION

The geological section is mostly taken from the 2016 Technical Report (Amec Foster Wheeler and RPA, 2016).

# **REGIONAL GEOLOGY**

#### GUANACO

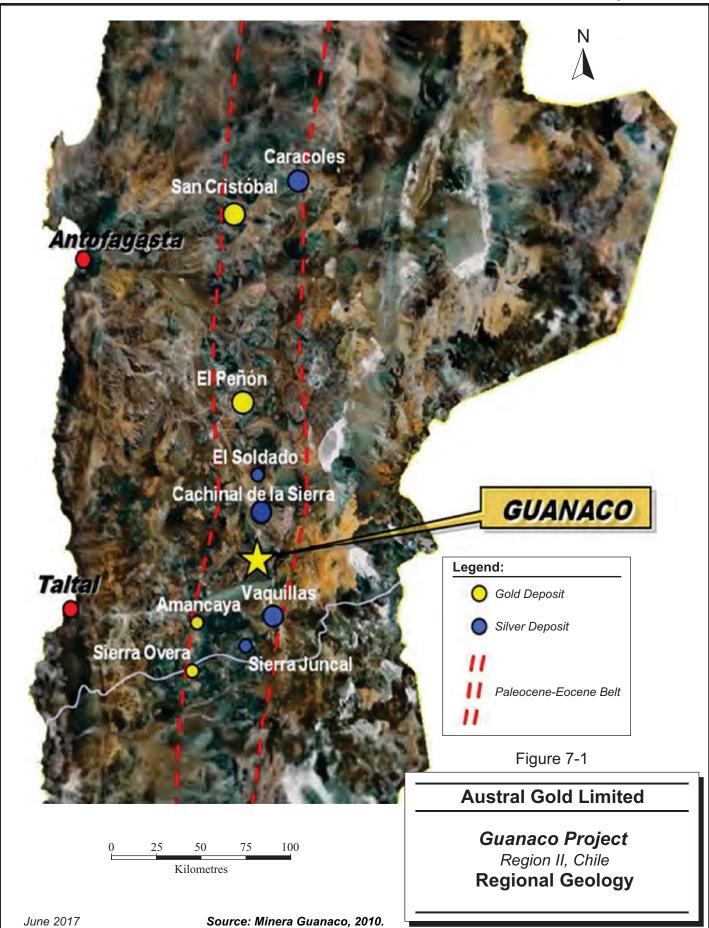
The Guanaco district is located in a large geological province resulting from the eastward migration of the volcanic arc from late Cretaceous to Eocene. Volcanic and sub-volcanic rocks of this age interval outcrop in the Intermediate Depression and the Domeyko Cordillera, forming a north–northeast–south–southwest-oriented belt, 20 km to 60 km wide and several hundred kilometres long (Figure 7-1).

The late Cretaceous-Eocene sub-alkaline volcanic complex consists of alternating lava flows, tuff beds, breccias, and agglomerates, commonly massive or loosely stratified, mainly andesitic and dacitic in composition, with minor basaltic and rhyolitic constituents. These rocks are intruded by small sub-volcanic bodies formed of gabbros to rhyolites, and by rhyolitic and dacitic domes (Boric et al., 1990).

A number of lithostratigraphic units have been described in the region, including the Icanche, Cerro Cinchado, Augusta Victoria and Chile–Alemania Formations, the Estanque Beds, and the Azabache and Cerro Islote Formations. To the west, these units overlie unconformably other volcanic and sedimentary units belonging to the Jurassic–Early Cretaceous Arc. They are covered to the east, also unconformably, by Oligocene–Early Miocene sedimentary rocks. Late Miocene to Recent clastic unconsolidated sediments, mainly gravels and sands, conceal much of the older formations.

The volcanic rocks are sub-horizontal or gently dipping in the Intermediate Depression, but they form wide, north–south or northeast–southwest-striking folds in the Domeyko Cordillera. The volcanic sequence reaches 3,900 m thickness in the Domeyko Cordillera.







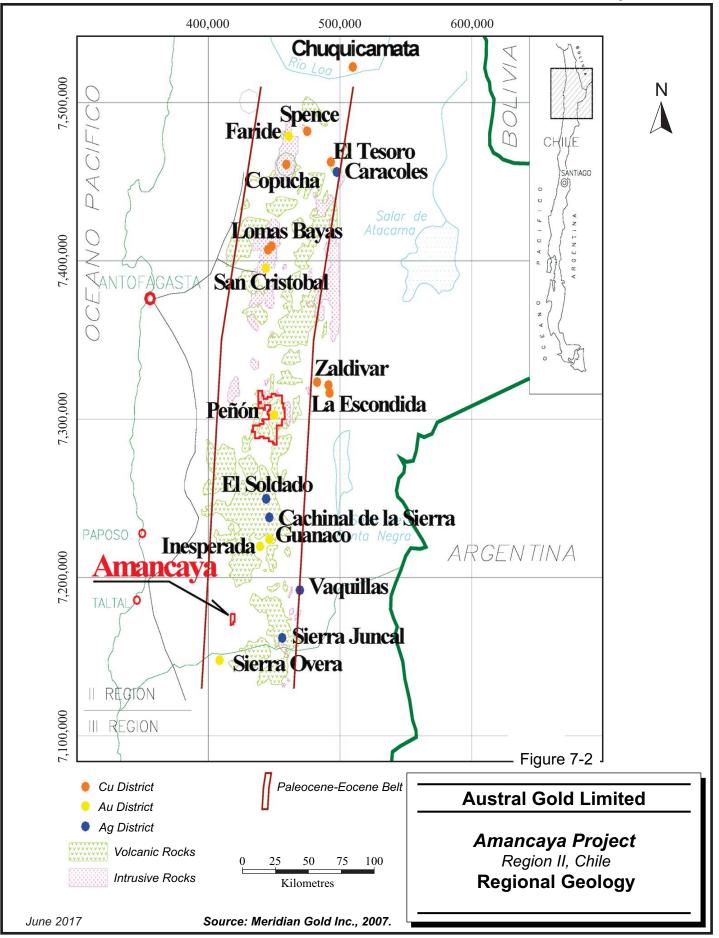
Hydrothermal alteration of varying intensities has affected wide zones in the region, and gold and silver epithermal deposits, such as Guanaco and El Peñón; minor copper, lead, and zinc-bearing veins are related to the hydrothermal activity.

#### AMANCAYA

Amancaya is located on the western edge of the Central Depression, in a Palaeocene-Eocene volcanic basin. The basin is structurally bounded on the west by a series of northsouth faults and lineaments which divide it from the Coastal Mountains. The eastern boundary is also a structural feature which divides the basin from the porphyry copper belt hosting deposits such as La Escondida, Zaldívar, and Chuquicamata (Figure 7-2).

The Palaeocene-Eocene volcanic event gave rise to mineralization with ages ranging from 64 to 43 Ma. This includes mainly low to intermediate sulphidation epithermal systems, rich in precious metals (El Peñón, Cachinal de la Sierra), and to a lesser extent small coppermolybdenum bearing porphyries and high sulphidation systems (Guanaco), hosted in northsouth, northwest-southeast, and northeast-southwest structures.







# LOCAL GEOLOGY

#### AMANCAYA

The Amancaya region consists of two main north-south oriented geologic domains, the Western Block and the Central Basin (Figure 7-3). In this region, the domains are separated by the Peineta Fault that marks the limits of the Paleozoic to Mesozoic plinth to the west and the Upper Cretaceous - Eocene volcanic arc within the Central Depression.

#### THE WESTERN BLOCK

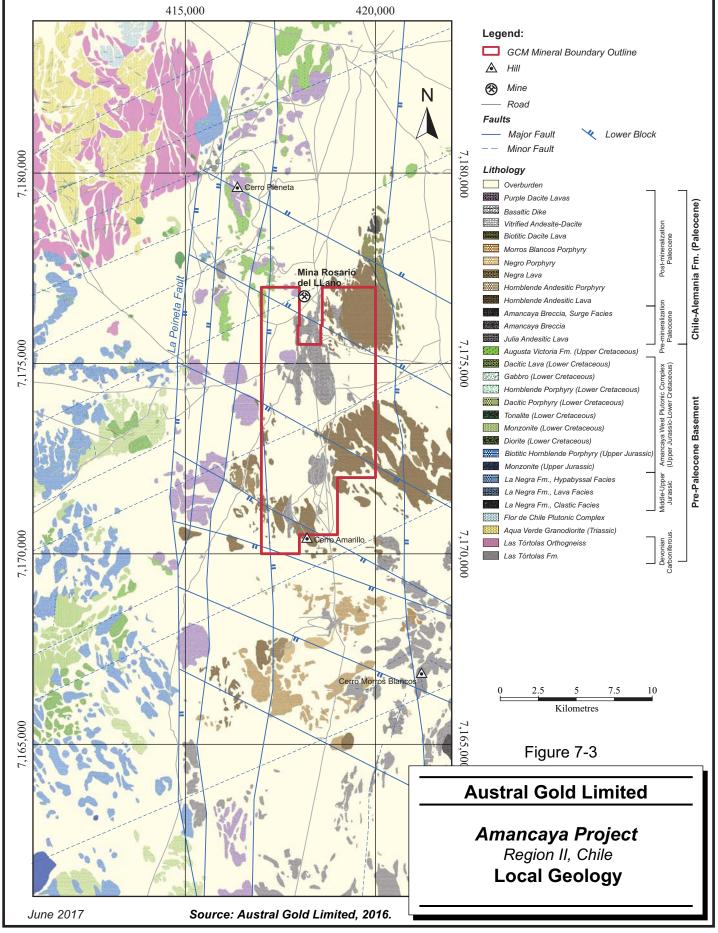
The oldest units in the area are metasedimentary units that lie in the west part of the block and form the basement of the Coastal Mountain Range. An early Paleozoic age (Ordovician-Devonian) is postulated for this formation (Las Tórtolas). The units are a clastic sequence affected by low-grade metamorphism with sandstones and interstratified shales, and minor laminations of limestone, chert, and basic volcanics. Deformation has produced micaceous quartzites, slates, phyllites, and schists. The local intrusive rocks are Triassic and Jurassic in age and are related to the intense magmatic activity corresponding to the formation of the Coastal Mountains. These rocks consist of monzonites, granodiorites, and tonalites with phaneritic textures that intrude the earlier metasediments. The extensive volcanic and volcano-sedimentary units in the block (La Negra formation) are assigned a Cretaceous age. Intrusive bodies of Triassic, Jurassic and, more commonly, lower Cretaceous age are present. Minor rhyolite domes and dacitic lavas are noted. As well, some upper Cretaceous porphyritic bodies are associated with lineaments at the contact between blocks (Augusta Victoria formation).

#### THE CENTRAL DEPRESSION BLOCK

The volcanic units, mainly intermediate lava flows with subordinate amounts of pyroclastic rocks, on the eastern edge of the basin have been assigned an upper Cretaceous age and have been correlated with the Chile-Alemania Formation.



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#### INTRUSIVE ROCKS

Intrusions in the area vary in composition from diorite-monzodiorite complexes, granites, and granodiorites, with ages estimated from the Triassic to the lower Cretaceous. Smaller bodies of upper Cretaceous age also exist. Ages range between 103 Ma to 190 Ma, with the youngest age of 60 Ma to 66 Ma. The most extensive outcrops of these rocks appear in the Agua Verde sector (ten kilometres east-west).

Jurassic intrusives include granitoid bodies in the Western Block and are identified to the west of Cerro de la Peineta where small batholitic bodies are observed. These upper Triassic to lower Jurassic granites are dated at 190 Ma.

Lower Cretaceous intrusives have been emplaced in the basement metasediments and in the Triassic-Jurassic granitoids as small (one square kilometre to two square kilometre) bodies which, in some cases, preferentially exhibit a N40W direction following the predominant structural controls in the immediate area. These intrusives vary from monzodiorites (111 Ma to 119 Ma) to andesitic pyroxene porphyries (123 Ma).

Upper Cretaceous age intrusives are also found in the area. To the south of Cerro de la Peineta and near the edge of the Western Block, a small propylitized rhyolitic porphyry, rich in crystals and consisting of bipyramidal and biotitic quartz, is associated with the contacts of the volcanic rocks of the La Negra Formation. Other small bodies of possible upper Cretaceous age are located throughout the Central Depression and Western Block and preferentially intrude into the La Negra Formation.

A variety of Paleocene domes and subvolcanic bodies are found in the Central Depression. Their ages range between 57 Ma to 63 Ma and include dacite-andesite domes, dacite domes, dacite porphyries, and andesite porphyries. Examples of these rocks are located at Cerro Morros Blancos to the east of Amancaya. Subvolcanic domes and their corresponding emissions of "block and ash" dominate the stratigraphy for a distance of 50 km from Cerro Morros Blanco to Cerro Guanaco. These domes range in size up to 10 km<sup>2</sup>. Cerro Morros Blancos has been explored for porphyry copper mineralization because it presents a zonation typical of high sulphidation systems with a siliceous cap of quartz-alunite. Dacite porphyries with totally argillitized feldspar megacrystals are also found there.



The Amancaya property contains a small (0.15 km<sup>2</sup>) dacite-andesite dome. It exhibits a brecciated texture and contains veins of economic interest, principally the Central Vein. It is dated at 63.4±1.1 Ma. Other similar, but smaller bodies are observed to the southeast of Amancaya, where a volcanic complex made up of basalts and andesitic porphyries has been mapped intruding older units. These rocks have developed strong lineaments in the north-northwest direction which have controlled emplacement of carbonate veinlets.

#### STRATIFIED ROCKS

These rock units are characterized by the presence of large sequences of tuffaceous rocks (fine tuffs to volcanic breccias) and andesitic-dacitic flows. Ages range from the Jurassic to the upper Cretaceous. Considering the ages and correlations, these units have been assigned to the Altamira Nappe.

Jurassic volcanic rocks cover most of the Western Block. The volcanics are characterized by reddish brown lava flows with a variety of porphyritic, breccia, and aphanitic textures. In some areas fine grained clastic units (arenites, arcosites) are intercalated with the andesitic lavas and breccias. The lavas exhibit a massive stratification and form flows up to 20 m in thickness. These volcanic rocks have been defined as the La Negra Formation. This unit is quite extensive, covering zones that stretch from north of the Amancaya property to Sierra Overa more than 50 km to the south.

Upper Cretaceous age volcanic rocks include ignimbrite and the Augusta Victoria Formation. The ignimbrites found within the Western Block have abundant quartz eyes, biotite, and sanidine. The ignimbrites are mainly found on the upper parts of Cerro La Peineta (Figure 7-3) and to the south where it is unconformably deposited on the La Negra Formation. On Cerro La Peineta, the thickness of the ignimbrite exceeds 100 m. An Ar/Ar dating of sanidine in these rocks indicates an age of 72.9±0.7 Ma.

All of the volcanic units in the Amancaya area are assigned to the Chile-Alemania Formation, including tuffaceous volcanic rocks, volcanic breccias, and andesite and dacite flows. They form a strip approximately 10 km wide and 40 km in length within the Central Depression. The flows are generally subhorizontal, however, local folds have been noted. At Amancaya the thickness is over 300 m and from bottom to top consists of porphyritic andesites, vitreous tuffs, and volcanoclastics, andesites, and dacites. The tuffs and volcanoclastics develop thicknesses of 250 m, while the flows reach 50 m in thickness. This unit carries various



quartz structures including the Rosario del Llano Vein, the Rosa veins, Janita I and II veins, the Nueva Vein, and the Julia Vein.

The veins show large alteration halos (20 m) with greenish smectite, illite, and zones of mixed clays. At present no veins of economic interest have been located in the stratified volcanic units. The veins appear to become thinner with depth and grades decline drastically. Radiometric ages do not exist for these units, however, they have been correlated with the Llanta Formation elsewhere. An age of 57 Ma to 63 Ma is proposed.

#### EOCENE VOLCANIC UNITS

An extensive basalt sequence is located east of Amancaya extending a distance of 40 km. It is estimated to have an age of 49 Ma to 54 Ma and is intruded by rhyolite and rhyodacite domes aged at 49 Ma to 52 Ma.

#### MIOCENE-HOLOCENE UNITS

Approximately 70% of the Amancaya area is covered by alluvial and colluvial deposits (gravel, sand, silt) that have accumulated in canyon bottoms, topographic lows, and piedmonts. The oldest deposits have been correlated with Atacama gravels and are made up of poorly sorted, consolidated, or uncemented polymictic sequences. These sediments have a discordant contact with the pre-existing volcanic and intrusive units. The Holocene deposits occur as filled river basins or fan deposits.

# PROPERTY GEOLOGY

#### GUANACO

All mines within the Guanaco gold district, including Mina Inesperada, are located within rocks which configure a Palaeocene, north-south-trending graben. Alteration and mineralization in the district are hosted by volcanic flows, tuffs and breccias, with andesitic, dacitic and rhyolitic composition, which range from Palaeocene to mid-Eocene in age. The north-south-striking Soledad fault system, along the eastern side of the Palaeocene graben, divides the gold district into an eastern and a western domain.



#### LITHOLOGY

The Mid-Palaeocene Volcanic Sequence, represented in the area by Palaeocene dacitic and andesitic tuffs and andesitic lava flows, is intruded by synchronous dacitic domes. The Guanaco deposits are hosted by these rocks.

Reddish-gray to greenish andesitic tuffs form the base of the sequences and reach at least 200 m in thickness. They are covered by a series of light coloured, fragmental pyroclastic rocks of dacitic composition. Calc-alkaline dikes or sills were observed to intrude the pyroclastic rocks.

Dark-reddish to gray andesitic flows crop out at the eastern ends of the Guanaco deposits, overlying the pyroclastic rocks. They have been usually assigned to the Paleocene Chile– Alemania Formation, but a younger age is suggested by Clark (1999), who mapped an unconformable contact with lower, altered volcanic rocks.

Quaternary to Recent alluvial deposits, from a few metres to tens of metres thick, cover most of the Guanaco Mine area. As a result, the volcanic units rarely crop out.

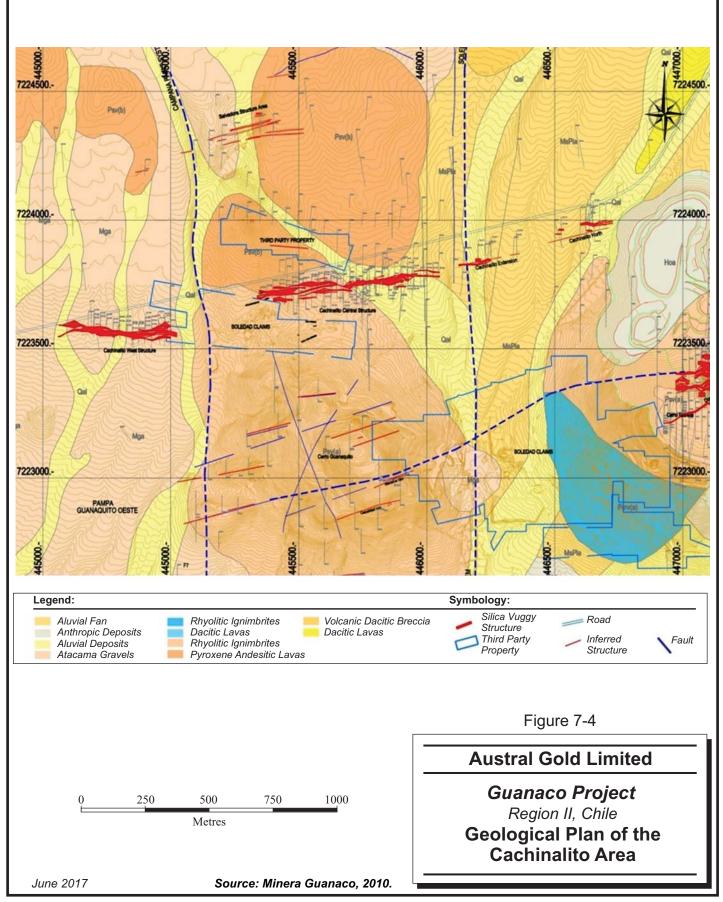
Figure 7-4 shows a geological plan of the area of the Cachinalito deposits. Figure 7-5 shows the area of the Dumbo–Perseverancia deposits farther east.

#### ALTERATION

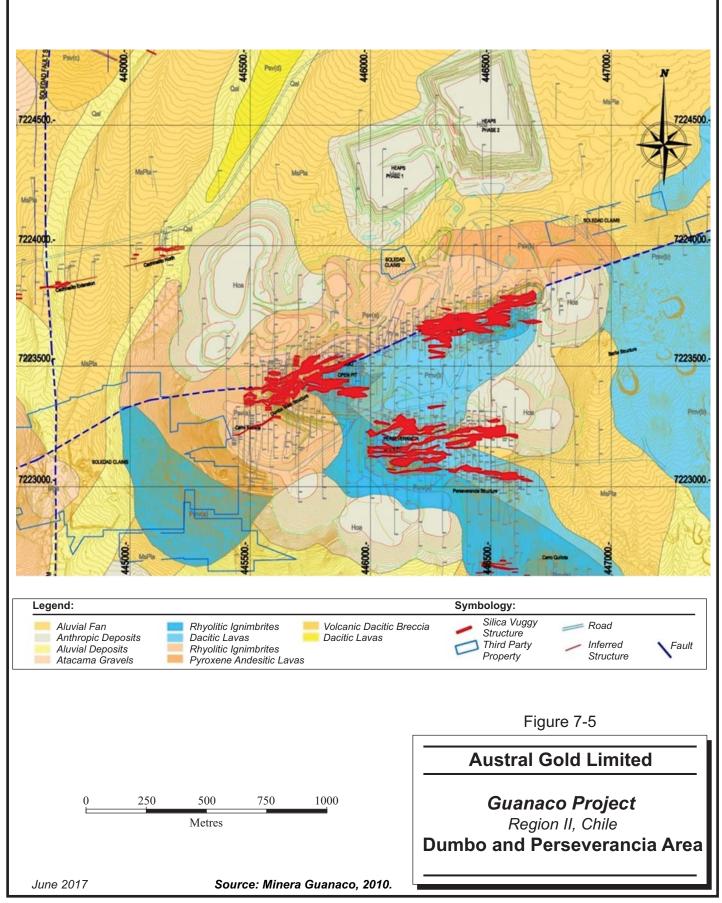
The earliest alteration event appears to be a pervasive silica–alunite replacement throughout much of the rhyolitic ash-flow sequence that typically caps Cerro Estrella (Figure 7-6).

The main alteration phase is characterized by an intense silicification associated with the gold mineralization. Alteration is best developed along two east–west and east-northeast/west-southwest-trending, sub-vertical zones. These structural systems are often accompanied by hydrothermal breccias. Three types of silicification have been differentiated. Two earlier stages contain variable amounts of gold. The third phase, rich in barite–silica, often contains high gold grades. These veins were the focus of historical underground production.

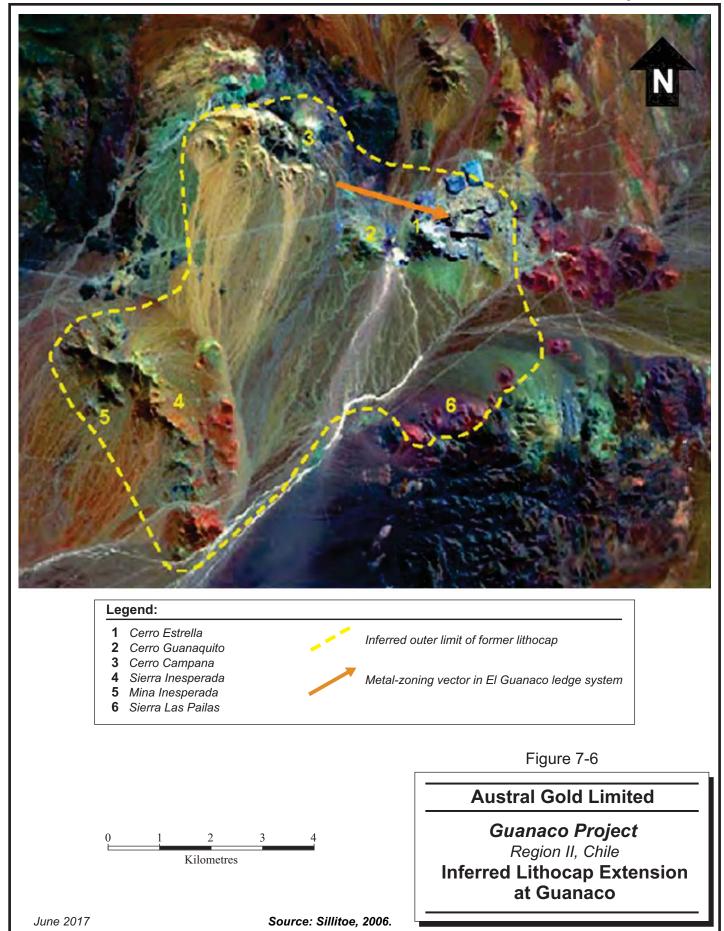














Silicification grades outward into advanced argillic alteration and to distal propylitic alteration. The alteration front is highly irregular. It is better developed along fractured- or brecciatedpermeable zones, lithological contacts or even favourable rocks, such as tuffs, which are the preferred hosts. Intermediate-argillic zones are gold-barren, but advanced-argillic zones are locally mineralized.

An alteration assemblage containing chlorite, gypsum, pyrite and hematite (derived from oxidation of ferromagnesian minerals) is broadly distributed in the andesite tuff and andesite/basalt units peripheral to argillic zones.

#### STRUCTURE

The most important structural features related to gold mineralization at Guanaco follow eastwest and east-northeast-west-southwest trends. In the Dumbo sector, these trends underwent appreciable dextral-oblique normal displacement. Movements along other goldbearing structures are far less constrained, but appear to have been substantially less than on the Dumbo structure.

Gold-bearing structures are all steeply inclined ledges composed of massive vuggy and cryptocrystalline quartz of replacement origin. Individual ledges are up to five metres wide, but more commonly they seem to comprise several impersistent siliceous strands separated by altered, but barren, wall rock. The ledge structures extend for at least four kilometres along strike, although gold concentrations are confined to relatively restricted shoots. The ledges, formerly mined underground, and afterward in the Dumbo, Defensa, and Perseverancia open pits, contain the largest mineralized shoots, which reportedly extended for as much as 300 m vertically. However, further west the mineralized shoots defined to date appear to be more restricted, both laterally and vertically. For example, individual shoots discovered at Cachinalito West range vertically from 50 m to 150 m and occur at slightly different elevations along closely-spaced, parallel structures rather than within a single continuous ledge.

The gold-bearing shoots in the Guanaco ledges appear to be closely associated with ledge segments that underwent fracturing, brecciation, and introduction of late-stage quartz and barite (barium sulphate). The shoots have different sizes, but tend to be both horizontally and vertically more restricted in the northwestern part of the district.



The structures are assigned to two distinct phases:

- East-west compression during mineralization emplacement which generated a sheardextral system along northeast-southwest regional fractures and east-west and east-northeast-west-southwest-trending veins and faults.
- Post-mineralization dextral transpressional along systems oriented north-south, northwest-southeast and north-northwest-south-southeast, which inverted the earlier structures. The latter two system orientations produced vein dislocations and reworking.

#### AMANCAYA

The Amancaya property is located in the west part of the Central Depression and is predominantly underlain by volcanic rocks of the Chile-Alemania Formation. These rocks consist of basal andesites, volcanic breccias, tuffs and volcanoclastics, and upper andesites.

As well, andesites and breccias of the La Negra Formation and ignimbrites are found in the northwest corner of the property (Figure 7-7).

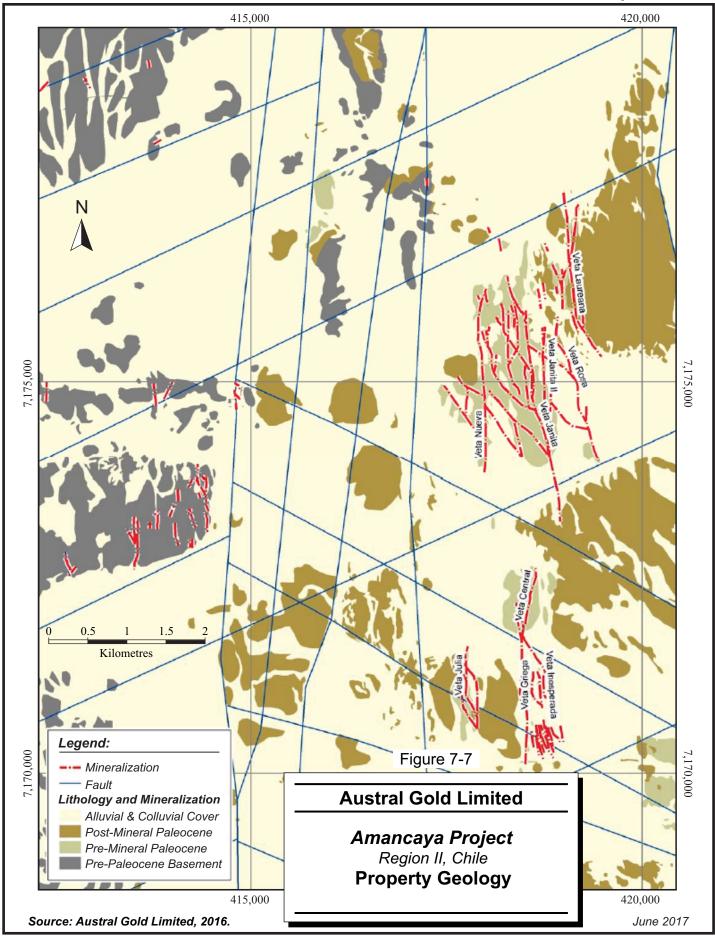
#### CHILE-ALEMANIA FORMATION VOLCANIC ROCKS

The basal andesites do not outcrop, however, they have been exposed in drill core in the north part of the property between the Rosario del Llano Vein and the Janita Vein. Thickness is uncertain as the base of this unit has not been intersected. Generally these rocks have an andesitic composition, are fine grained, dark green in colour, and are affected by various degrees of propylitic alteration (principally chlorite, epidote, fine calcite veins) and contain variable amounts of fresh pyrite. Textures vary from amygdaloidal or partly brecciated to coarsely phaneritic.

The volcanic breccias are best observed in the northern part of the property near the Janita and Rosario del Llano veins. At Rosario del Llano, past excavations for copper oxides reveal layers with coarse clastic textures averaging from four metres to five metres thick. Argillitization is the most common hydrothermal alteration due to the presence of abundant pumice material.



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Above the volcanic breccias, fine tuffs and volcanoclastics are characterized by a fine banding, a monolithic andesitic composition with the presence of hornblende, oxidized pyroxenes, and calcite. Commonly, these units are argillitized with variable contents of smectites and mixes of other clays. These rocks are exposed in small outcrops located northeast of the Central Vein as well as in the area of the Julia Vein. At the Central Vein, the intrusive dome is located in the upper levels of the unit, but fine tuff bands and intercalations of fine breccia develop gradationally at depth. At the Julia Vein, these units develop a volcanoclastic texture, with fine lithic fragments, abundant crystals of feldspars and ferromagnesians, and scoraceous volcanic material.

The tuff and volcanoclastic rocks are overlain by sequences of andesites and basaltic andesites with vitreous textures composed preferentially of clinopyroxenes and olivines. They lie in the south and northeast limits of the property, forming topographic highs with sequences that exceed 30 m in thickness. Intercalated dark basalt flows also are observed. These units are unaltered and occasionally contain veinlets of carbonate, however, they do not host quartz veins of economic importance.

#### LOWER PALEOCENE DOMES AND SUBVOLCANIC BODIES

A porphyritic body has been emplaced along a lineament with a N60W direction and it extends at least 1.7 km in the southwest part of the Amancaya property. It is present in oval-shaped forms where it is visible and continues as elongated bodies directly towards the Julia Vein. Microscopically, this porphyritic rock is andesitic in composition with feldspars, abundant pyroxene, and minor hornblende crystals. At the Julia Vein these porphyries are cut by the quartz structures, developing moderate to strong zones of veinlets. They are also observed as parallel dykes with fine textures due to the chilled reaction with the host volcanic units.

A dacite-andesite dome is partially exposed in the south central part of the property. Textures vary from breccia with sub-rounded autoclasts to phaneritic, and to porphyritic with a high proportion of phenocrysts. It shows irregular flow characteristics and degassing vug textures allowing an interpretation of an explosive dome. The dome is intruded by aphanitic dykes of basaltic-andesitic composition made up of pyroxene and olivine. The edges of the dome are characterized by glassy flows which come off the main bodies with a partly brecciated, heterogeneous texture that grade to "block and ash". This intrusive unit hosts the economically interesting mineralization on the property.



approximately 0.15 km<sup>2</sup> and the total extent is greater than 0.4 km<sup>2</sup>, including the portion under the alluvial cover. The vertical extent of the body has been tested to a depth of 350 m. Propylitic alteration is present as quartz-illite halos around the ferromagnesians and as abundant adularia in the margins of the mineralization. A U/Pb dating gave a result of 63.4±1.1 Ma, placing the mineralization within the Lower Paleocene and indicating a similar age to the andesitic porphyries in the far west of the property.

In the north part of the property, a series of discontinuous dyke-like bodies are arranged in a north-northwest direction and have a maximum length of 300 m. This direction is the same as the direction of the structures hosting the Rosario del Llano Vein and the Rosa veins. The dykes are basaltic-andesitic in composition with olivine and pyroxene crystals, with textures ranging from intergranular to densely porphyritic to aphanitic. The dykes also exist in the south part of the property where they have been mapped in surface trenches and logged in RC drill holes. They apparently run parallel to the quartz veins and do not intersect them.

Recent mapping and analyses have provided the following descriptions of the rock units on the property.

#### Julia Lavas (Pre-mineralization Unit)

This unit appears mainly in the southern sector of the Eastern Domain, representing the oldest volcanic facies within the Paleocene of the studied area. Outcrops make up rounded hills, where the unit is not covered in by the pyroclastic deposits of the Amancaya breccia. Lithographically it is defined as a basaltic andesite porphyry characterized by the presence of abundant phenocrysts of zoned plagioclase and pyroxenes, surrounded by a paste of grayish-green tones with an intergranular texture. The Julia lava is cut by a set of silicified faults filled with alunite. Age dating returned values of  $63.4 \pm 2$  Ma (Ar / Ar in plagioclase) and  $66 \pm 2$  Ma (K-Ar in total rock).

#### Amancaya Breccia (Pre-mineralization Unit)

These rocks constitute the main host unit of the known vetiform structures. In the central sector of the Eastern Domain, it forms a north-south corridor with a maximum width of two kilometres and a length of 12 km. It is a large package of poorly sorted pyroclastic breccias, which extend to 250 m in depth based on diamond drill results. Near the Central Vein, it is characterized by a very high content of sub-angular polymictic lithoclasts, represented by a variety of andesitic and dacitic lavas, varying in size from a few millimeters to more than one



meter in diameter. Clasts of the Augusta Victoria formation were also recognized in some outcrops. Crystalloblasts correspond to plagioclase, amphibole, and quartz. The matrix of the breccia is fine, grayish-green in color and of altered pyroclastic clay nature. In general, this unit appear in trenches to the south Cerro Amarillo and to the east of Cerro Morros Blancos, and in some of drill holes made by the company. An age of  $63.4 \pm 1.1$  Ma is proposed for this unit.

#### Lava Negra (Post-mineralization Unit)

This unit discordantly covers the previous units, occurring west of the Cerro Amarillo, where it emerges in a discontinuous manner forming a ring around two bodies of the Porphyry Negra. The unit clearly post-mineral, since it appears unaltered covering the argillic alteration at Cerro Morros Blancos and at Cerro Amarillo. It is composed of andesitic lavas with abundant small phenocrysts of plagioclase and pyroxene in a dark coloured aphanitic matrix. In areas, there is a banding with the oriented phenocrysts following a trachytic texture. In the trenches in the Cerro Amarillo and Cerro Morros Blancos sectors, abundant dikes of this unit cut the Lava Julia. These are bodies vary from 1.0 m to 5.0 m thick, intersected with a main course N60° and to a lesser extent N330°. A peculiarity of some of these dykes is the presence of small sub-rounded vesicles filled with quartz. Radiometric ages are not available for this unit.

#### Negra Porphyry (Post-mineralization Unit)

To the west of Cerro Morros Blancos, and in close association with the Lava Negra, two bodies of porphyry can be recognized, approximately 500 m in diameter and elongated in shape that intrude the Lava Julia, and radiate dikes from them. These bodies are zoned texturally, with a core composed of rocks Microgranites of dioritic composition, and edges formed by porphyritic rocks indistinguishable from the Lava Negra. Under the microscope, phenocrysts of plagioclase, pyroxene, and olivine with ophitic to a sub-ophitic texture are suspended in an intergranular to microgranular matrix. Radiometric ages are not available for this unit, but they are interpreted as the conduit facies for the Lava Negra lava flows.

#### Andesitic Lavas with Hornblende (Post-mineralization Unit)

This unit has a wide representation in the center of the Eastern Domain. It is located to the west and south of the vein zone, where it covers the Amancaya Breccia and the Lava Negra, leaning gently to the east at 5° to 15°. It is clearly a post-mineral unit since it sits unaltered, covering the epithermal veins located to the east of the Rosario del Llano Mine and south of



the Julia Vein. In the field, this unit is observed as a series of low of gray-violet hills comprised of a succession of several lava flows composed by porphyritic andesitic lavas. Phenocrysts of plagioclase, and abundant hornblende with dimensions of up to several centimeters are a diagnostic feature of these rocks. In the regional work, Matthews et al. (2010) determined three ages for these lavas, one Ar-Ar date (61.4  $\pm$  1 Ma in Plagioclase), and two K-Ar dates (63.1  $\pm$  0.4 Ma and 62.8  $\pm$  0.4 Ma in amphibole.

#### Andesitic Porphyry with Hornblende (Post-mineralization Unit)

This unit groups a series of intrusive bodies and dikes that appear in the south central sector of the Amancaya Mine area, forming reddish brown outcrops located west of the Julia Vein, and to the south of Cerro Amarillo. These bodies intrude the Hornblende Andesitic Lavas and the Lava Negra. The bodies have generally large dimensions, with diameters of up to 700 m and sub-circular geometries to slightly elongate in the north-south direction. Dykes are found in connection with the intrusive bodies following azimuths of 300° and 330°, and reaching up to 1.7 km in length and up to 20 m thick. They are composed of textured microdiorites, composed of plagioclase and abundant hornblende, where the crystals of amphibole can reach up to 1.0 cm in length. The mineralogical similarities, especially regarding the amphibole content, allows interpretation of these bodies as the intrusive equivalents of the Andesitic Lavas With Hornblende, which would have been intruded during the terminal stages of the evolution of this unit. These bodies were dated by Espinoza et al. (2011), who obtained an age K-Ar in amphibole of  $63 \pm 3$  Ma. However, considering the high margin of error of K-Ar dating and the field relations with the surrounding units, this unit is considered as post-mineralization.

#### **Biotitic Dacitic Lavas (Post-mineralization Unit)**

Immediately east of Mina Rosario del Llano and Veta Janita, there is a set of siliceous andesites to dacites that concordantly cover Hornblende Andesitic Lavas. This unit forms a landscape of low, dark hills composed by porphyritic textured andesites with phenocrysts of plagioclase, pyroxene, and biotite surrounded by a dark brown, aphanitic matrix. In areas, this unit is banded with clear devitrification patches. In addition, the presence of patches and discontinuous chalcedony are common. Radiometric ages are not available for this unit.

#### Vitrified Andesite-Dacite (Post-mineralization Unit)

This unit is not common within the area. It was observed as a set of thin lavas that cover the Biotitic Dacitic Lavas to the northeast of the Rosario del Llano Mine, and the Amancaya



breccia east of Cerro Morros Blancos. It is composed of massive layers of quartz andesite to textured porphyritic dacite, with phenocrysts of plagioclase and some oriented pyroxenes, surrounded by a dark coloured vitreous matrix and a banded appearance resulting from the presence of devitrification bands.

Associated with this unit, and located to the northeast of the Rosario del Llano Mine, a set of longitudinal dikes was mapped on an azimuth of 330°, with individual lengths of more than 700 m and thicknesses between five and 15 m. These dikes intersect the Biotitic Dacitic Lavas and are considered the feeder ducts for the lavas located immediately to the north. Radiometric ages are not available for this unit.

#### Purple Dacite Lavas (Post-mineralization Unit)

This unit are groups a series of domes and flows aligned in a north-south direction along the trajectory of the La Peineta Fault System suggesting strong structural control during the placement of this unit. It is the youngest unit within the Paleocene, and was observed discordantly covering most of the previous units. There are no radiometric ages for this unit.

It is composed of andesites to dacites that form low hills with red-brown to brown outcrops. A hand sample revealed aphanitic to slightly porphyritic texture, with a few phenocrysts of plagioclase and minor amounts of amphibole, often oriented, surrounded by an abundant banded matrix, which in places may present a vitreous appearance with textures of devitrification in the form of specks and devitrification bands.

Towards the edges of these bodies, strongly devitrified layers with development of abundant cavities up to 20 cm in diameter filled with chalcedony and quartz, often with concentric banding are found. On the surface, these layers define irregular fields of quartz float due to erosion, which in some cases may be confused with mineralized structures.

At the base of the domes, areas of autobreccias are frequently recognized which are composed of angular lava clasts cemented by the lava itself. Also towards the base, looselywelded pyroclastic deposits are observed, represented by small pumiceous ignimbrites that are interpreted as an explosive facies associated with the opening of the ducts that gave rise to the lava domes.



# STRUCTURAL GEOLOGY

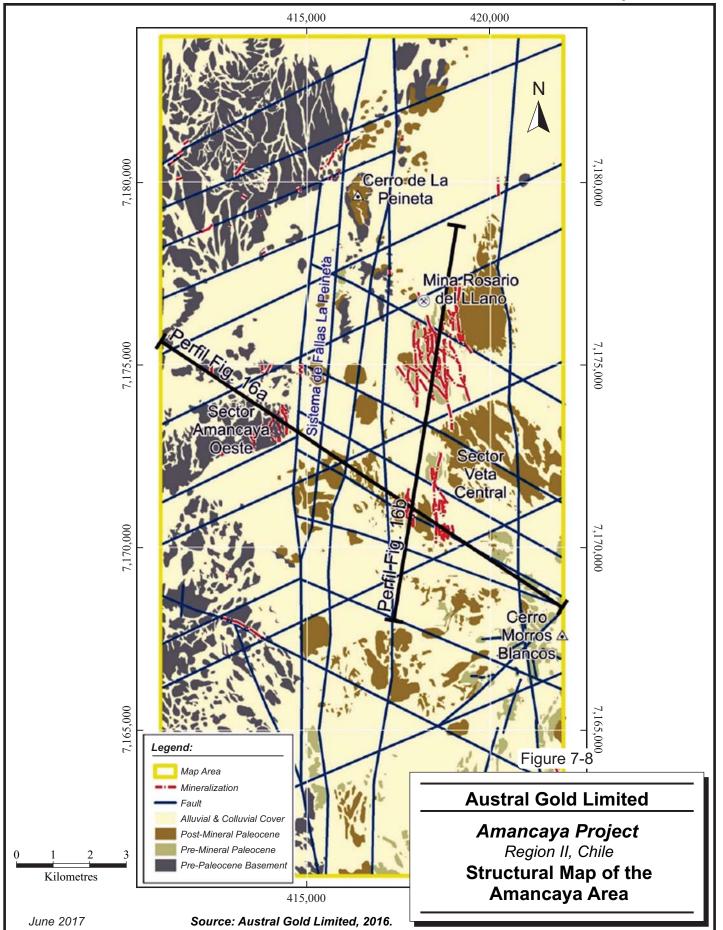
The paucity of outcrop makes it difficult to identify and map fault zones, therefore much of the proposed structure is based on the analysis of lineaments, combined with aerial magnetic information. On this basis, the relative movements of the blocks were interpreted using mainly Stratigraphic (lithological) and textural (mineralization) markers. Within the surveyed area it was possible to distinguish three major structural directions: north-south, northwest-southeast, and east northeast-west southwest (Figure 7-8).

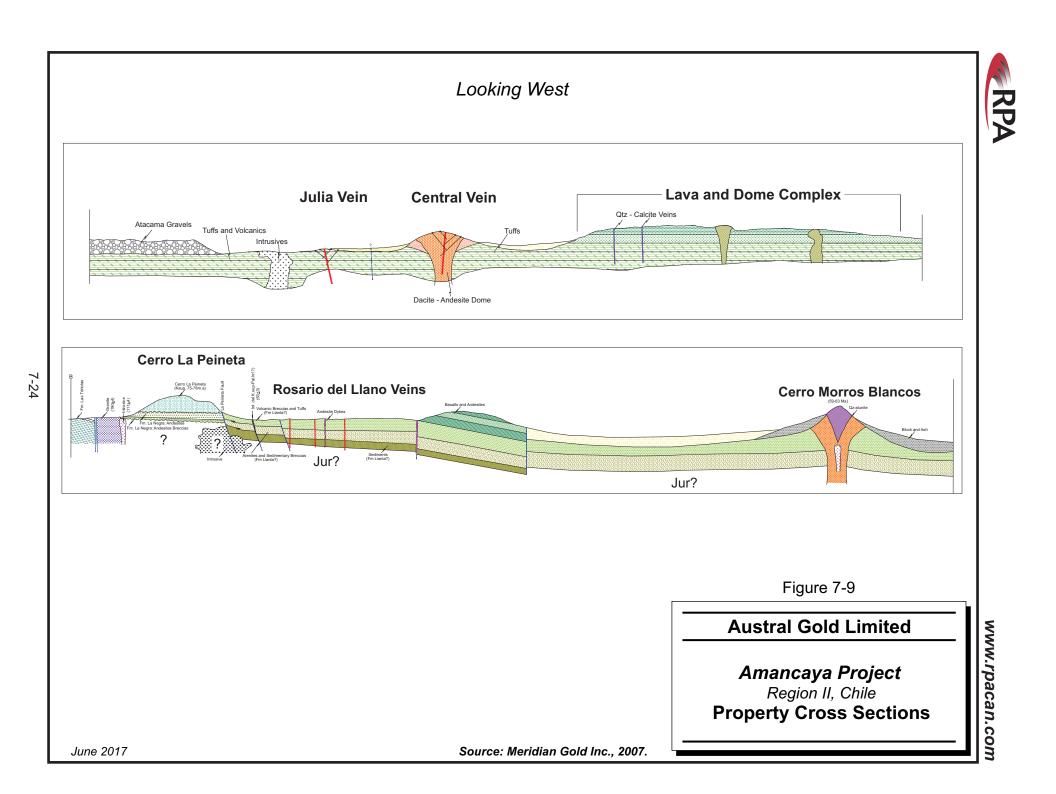
The main structural feature in the district is the Peineta Fault, which separates the Cretaceous-Upper Paleocene volcanic basin to the east from the Paleocene-Mesozoic plinth to the west, and affects the eastern margin of the Coastal Mountain Range. The Peineta Fault extends in an undulating manner in a north-south direction. In the south part of Region II, the fault is less obvious due to flatter topography and alluvial and colluvial cover.

For this structure, three main branches have been inferred at the northern end of the area, which limit the Cerro Peineta Cretaceous block. In this sector, the Peineta vein is recognized as the branch to the east of the fault. The Peineta Mine is located to the west of the hill and a quartz vein is hosted in transfer zones between two branches of the north-south fault. Immediately east of this mine, a second system of faults is located, named the Morros Blancos Fault (Figure 7-9a), which delimits a second tectonic step inside the outcrops of the Chile-Alemania formation where there are extensive sectors of advanced argillic type hydrothermal alteration.

To the west of the La Peineta Fault System, in the basement block, ENE-WSW bearing structures, many with evidence of associated mineralization, are the most significant structures in West Amancaya in close proximity to La Peineta Fault. These structures are more restricted to the east of the Fault, where in some cases they generate topographical highlights within the volcanic cover.









Within the Upper-Paleocene Cretaceous volcanic units, the prevailing north-south structures that control the location of the major epithermal mineralization of the area, are hosted in second-order faults with north-south orientation (e.g. Central Vein, Veta Griega, and Veta Janita). In addition, a number of northwest-southeast delimited blocks that show different depths within the hydrothermal system are characterized by different quartz textures suggesting a deepening of the epithermal system towards the central part of the vein field (Figure 7-9b). This system also controlled the location of dykes and small post-mineral intrusive bodies.

# HYDROTHERMAL ALTERATION

The mineral associations presented at Amancaya are indicative of reduced and pH neutral fluids affecting the host rocks and contacts of the quartz veins. The alteration shows greater intensity at the contacts, developing replacement by quartz-adularia plus hydrothermal brecciation. Distally, the alteration is quite weakly developed and is restricted to quartz veinlets, adularia, illite, chlorite, smectites, carbonates, and pyrite that replace the phenocrysts and matrix of the enclosing rocks. Siderite is common in veinlets up to two centimetres in size, as is crystalline calcite and rhodochrosite.

There are at least six types of alteration related to different mineralization and lithologies. Some alteration is visible macroscopically, however, other types require a more detailed examination. The intensity of alteration is variable and depends on geological conditions and rock composition. Hydrothermal alteration is more restricted in the dacite-andesite dome than in the tuffs and volcanic breccias.

The presence of silica and adularia is associated with the silicified zones, zones of quartz veinlets, and hydrothermal brecciation. The silica is typically fine grained and generally preserves the texture of the original rock. The adularia is present replacing feldspars and amphiboles, in fine and/or rhombic crystal form, or replacing the matrix in zones of quartz veinlets adjacent to the vein. The silicification is restricted to the margins of veins and decreases in intensity away from the vein, where it grades to a zone of quartz-illite alteration. Within the dacite-andesite dome, it is possible to observe abundant degasification vesicles occupied by fine rhomboid crystal aggregates of adularia intergrown with quartz and aluminous clays (illite and kaolinite), and traces of chlorite.



The quartz-illite alteration halo in the dacite-andesite dome is weakly developed and does not have considerable dimensions (less than 40 m). It replaces feldspars, amphiboles, pyroxenes, and the matrix of the rock. Plagioclase alteration consists of sericite, illite, and minor chlorite. It is developed with greater intensity in the flows of volcanic breccia and volcanoclastics, where alteration can reach lateral extensions greater than 50 m and grade towards a zone of mixed clays mainly affecting the abundant pumice content.

Mixed clay alteration appears very well defined in the halos of veins hosted in volcanic and volcanoclastic breccia rocks. It is characterized by a typical green bluish colour produced by the clayey mixture of smectite, illite, and chlorite, which appears as transition after the illitic development in the environs of the vein. The replacement appears in the phenocrysts, matrix, lithic fragments, and pumice of the host rock, but conserves the original textures.

The propylitized rocks are restricted to mainly the dacite-andesite domes, andesitic-basaltic lava flows, and andesitic porphyries. Locally, the alteration appears in the zones of mixed clays within the volcanoclastic tuffs and flows. It is characterized by the presence of abundant chlorite, disseminated pyrite, kaolinite, montmorillonite, and fine veinlets with carbonate crystals. Occasional development of epidote is observed. The propylitized rocks typically are in the external margins of the zones with quartz-illite alteration. Chlorite replaces hornblende, pyroxenes, feldspars, and the matrix of the rock with a typical greenish color. The clinopyroxenes and orthopyroxenes of the andesitic flows are replaced by chlorite with vermiculite.

Carbonate minerals occur in veins and fractures, and replace phenocrysts of feldspars and the matrix of the andesite, dacite, and tuff units. They include deposition of calcite in fractures (on a millimetre scale), millimetre sized veinlets of crystalline quartz-calcite and up to three centimetre thick calcite-siderite veinlets which are associated with the main veins. Other species include ankerite associated with limonites. At depth, rhodochrosite has been observed, characterized by its pink colour.

The more common mineral associations of argillic alteration are of the kaolinite-illite-type that replace feldspar minerals in the tuffs and volcanoclastic units. They generally develop colours that vary from white to green, depending on the abundance of each mineral species. Some textural differences are also noted. There are preferential associations with tuffaceous volcanic rocks, and their intensity increases near quartz veins, where commonly plastic clays



are observed adjacent to the zones of alteration quartz-illite. Within the dacite-andesite domes, this alteration is restricted to the zones with strong fracturing, where clays with variable contents of iron oxides are observed.

The supergene products at Amancaya are mainly represented by iron oxides and, in a smaller proportion, manganese oxides. Oxidation occurs to a depth of 250 m and the supergene minerals identified include hematite, goethite, jarosite, and pyrolusite. Copper oxides observed in hand samples include brochantite, atacamite, and malachite. Other supergene minerals include covellite and chalcocite.

### MINERALIZATION

#### GUANACO

Native gold forming lamellae and coarse and fine grains is the most important economic mineral, although it is rarely visible. Disseminated pyrite is the most common mineral in the non-weathered mineralized material; enargite, luzonite, and minor chalcopyrite are present in the deeper horizons. Chalcocite and covellite, together with Cu carbonates, silicates, and a number of rare Cu arsenates (chenevixite, ceruleite) have been found in secondary-enrichment zones.

Important gangue minerals are quartz, tabular barite, pink alunite, kaolinite (in substitution of feldspars in zones affected by advanced argillization), hematite, chlorite, and epidote. Pervasive silicification commonly replaces all the primary rocks, whereas vuggy silica resulting from extreme acid leaching is a preferred host of the gold mineralization.

In the Cachinalito vein system, the economic mineralization appears to form 50 m to 150 m long clusters, locally known as "bolsones". A narrow vertical range (less than 150 m) corresponding to relatively restricted paleo-depth conditions seems to have been relevant for economic gold deposition. The majority of the gold mineralization is concentrated between the 2,500 MASL and 2,650 MASL. High-grade shoots (up to 180 g/t Au), 0.5 m to 3.0 m wide, have been mined. Lower-grade halos, below 2 g/t Au, reach 20 m in width.

The oxidation zone extends down to 150 m, and is relatively free of Cu. Au grades in this zone are generally high, sometimes exceeding 50 g/t.



#### *DEPOSITS* Quillota

The Quillota deposit (Figure 7-10) consists of a vein system that has an area of approximately 200 m long (north–south) by 500 m wide (east–west). The deepest drill hole reached approximately 210 m depth. The main mineralization at Quillota was open pit mined to a depth of approximately 40 m.

#### Defensa

The Defensa vein system occupied an area of 300 m north–south by 600 m east–west. The deepest drill hole reached 160 m depth. Mineralization was exploited using open pit methods.

#### Perseverancia

The deepest drill hole reached 270 m at Perseverancia, with the vein system encountered to approximately 160 m vertical depth. Mineralization was defined over an area of 300 m (north–south) by 600 m (east–west). Mining was by open pit methods.

#### Dumbo

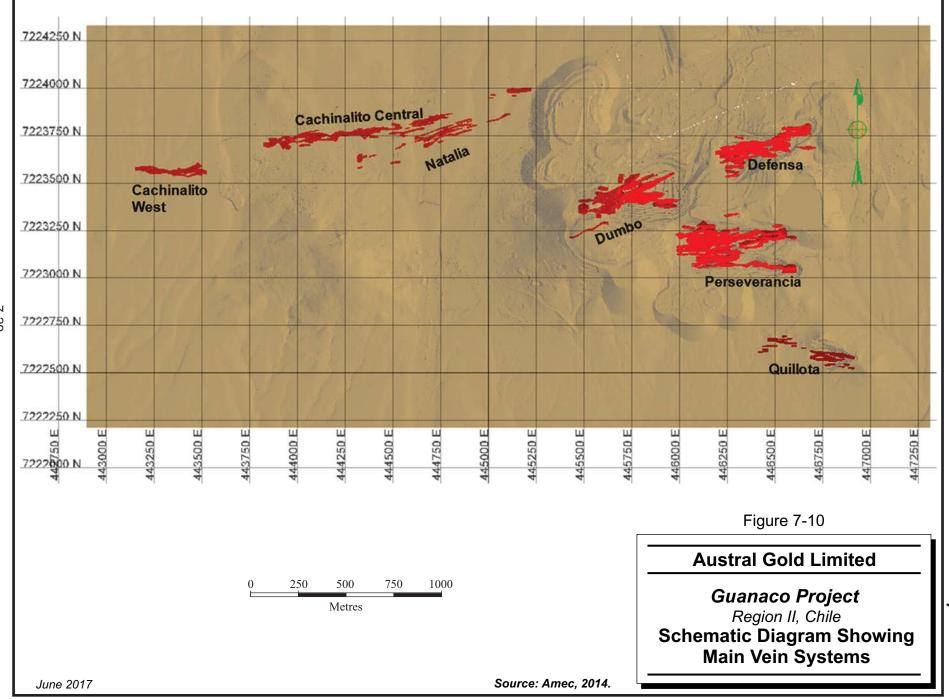
The Dumbo vein system occupies an area of approximately 250 m north–south by 500 m east–west. The deepest drill hole reached 300 m; the vein system reaches approximately 250 vertical metres depth. Dumbo has been mined by an open pit operation.

#### Cachinalito

As a result of the 2014-2015 drilling campaign, a clear continuity has been established between nearly all previously known sectors in Cachinalito, so that it is now recognized as a single, 1,100 m long, east–west-oriented system.

Cachinalito Central extends for approximately 150 vertical metres from surface, and the deepest drill hole is 300 m. The mineralization has been defined over an area of 100 m north–south by 700 m east-west. Cachinalito Central is currently being mined by underground methods. Aurora is a new vein, discovered during the 2014-2015 drilling campaign between Cachinalito Central and the Soledad property.





7-29



Cachinalito West covers an area of approximately 70 m north–south by 400 m east–west. Veins do not crop out at surface. Drilling encountered the veins from approximately 40 m to a maximum of 130 m vertically. The deepest drill hole is currently 340 m. Cachinalito West is planned to be mined by underground methods, and is included in the life-of-mine plan outlined in this Report.

#### Natalia

Natalia is a northwest-oriented vein system. The central part covers an area of 200 m north– south by 450 m east–west. This vein was discovered during the 2014-2015 drilling campaign.

## AMANCAYA

The most relevant mineralization from an exploratory point of view corresponds to the low sulphidation epithermal veins rich in gold and silver. These structures are distributed to the east of the La Peineta Fault System, along a north-south corridor of approximately two kilometres by eight kilometres (Central Veta Sector and Rosario del Llano Mine). They are mostly housed in the basal units of Paleocene (Chile-Alemania Formation, e.g., Amancaya Breccia).

In the Cerro Morros Blancos sector towards the southeast of the Central Vein, there is an area of advanced argillic type alteration that affects the basal units of the Paleocene. This sector is characterized by the presence of fault breccias with alunite and kaolinite, and subhorizontal silicified layers.

To the west of the Peineta Fault system there is mineralization of which the most important is the gold-copper veins of the Amancaya West sector. The veins strike north-south, 020° and 330° possibly associated with a porphyritic system of the Upper Cretaceous. In this sector, moreover, manifestations of IOCG mineralization linked to the Fm. La Negra, have been found.

Finally, thick quartz epithermal veins with iron and copper oxides are recognized in the sector Northwest sector, embedded in Devonian and Triassic units (Las Tórtolas formation and Agua Verde Granodiorite).



## EPITHERMAL GOLD-SILVER MINERALIZATION

All of the veins that occur at Amancaya can be subdivided into two groups according to host units.

- Veins hosted in dacite-andesite domes (Central, Griega, Inesperada, and Cerro Amarillo).
- Veins hosted by breccias, tuffs, and volcanoclastic rocks (Rosario del Llano, Janita, Rosa, Nueva, and Julia etc.).

The main veins have been grouped within the Southern Block (Veta Central, Veta Griega, Veta Julia), and North Block (Veta Janita, Veta Nueva, Veta Rosa, Veta Laureana, Rosario del Llano, etc.).

#### SOUTH BLOCK

**Central Vein**: This structure is located in the center-south segment of the property. The vein has a 1.5 km strike length in a 015° direction, dipping 59° and 90° to the east, with an average thickness varying from 1.5 m to 7.0 m. There is an abrupt change in strike to S30°E towards the south part of the vein. The Central Vein has been drilled up to approximately 300 m in depth. In outcrop, this vein is seen in the trenches as a major central structure surrounded by a halo of quartz veins (Figure 7-11a). Towards the south, the vein is covered by colluvium and is divided into an N-S branch (Cerro Amarillo veins, Veta Griega).

The Central Vein exhibits banded textures, with bands of grey chalcedonic quartz, clear crystalline quartz, amethyst, and dark bands containing sphalerite, silver, and lead sulphosalts (Figure 7-11b). Other textures include coloform texture, sinuous alternating bands of chalcedonic quartz and amethyst, and crustiform quartz. Interstices are filled with clays, limonite, manganese oxide, and carbonates (ankerite).

Chalcographic examinations describe pyrite, chalcopyrite, low-iron sphalerite, and galena, suggesting a primary paragenesis. Supergene minerals include limonites, manganese oxides, silver sulphosalts, native silver, and pyrargerite. The gold at Amancaya is commonly associated with sphalerite and as native grains within the quartz. Electrum is also found. Common grain sizes range from 20  $\mu$ m to 60  $\mu$ m, however, some wormy forms are noted between 100  $\mu$ m and 300  $\mu$ m. The more common forms of silver correspond to silver sulphosalts (pyrargerite, stromeyerite, freibergite, and chlorargyrite), native silver, and electrum in limonite zones. The grain size of the silver sulphosalts varies between 0.02 mm and 0.03 mm, with some crystals up to one millimetre. The sphalerite has a grey colour and



is a low-iron variety. It has fine inclusions of galena, chalcopyrite, and silver, and on the edges of the grains it has galena, silver sulphosalts, and incipient covellite. Galena appears as isolated grains, or is associated with chalcopyrite and sphalerite. Chalcopyrite can display fine borders of covellite and occasionally can be totally replaced by covellite. Pyrite is usually oxidized within limonite and can carry gold inclusions.

Studies of fluid inclusions in quartz returned temperatures of 200°C to 230°C. Finally, the mineralization was dated by Ar-Ar in adularia yielding an age of 60.1 Ma.

**Veta Griega/Cerro Amarillo**: This structure corresponds to the continuation of the Central Vein towards the South. The Cerro Amarillo veins have a strike length of 400 m in a north-south direction and extend up to 300 m in depth. On average, thickness ranges from 3.0 cm to 50 cm. The resource at Cerro Amarillo extends approximately 280 m in length and 100 m in depth, with thicknesses varying from 1.0 m to 3.0 m and inclination of 80° towards the west (Figure 7-11c). The veins have the same composition as the Central Vein and are hosted in the edge of the dacite-andesite dome which has dense fragmental and fluid vitreous texture. The veins exhibit banding of crustiform clear quartz, milky quartz, and bands containing crystalline calcite. Grey bands represent aggregates of native silver and silver sulphosalts. This set of structures continues to the south into the San Guillermo property.

The Griega Vein lies to the east of the Cerro Amarillo structure and is completely covered by alluvial material. It is made up of two structures, the main structure with economically interesting grades and a subsidiary structure with no grades of economic interest. The main vein has been tested over a 300 m strike length where it dips 54° to 78° to the west. The drill intersections have been completed by lengthening holes drilled on Cerro Amarillo Vein. The vein extends at least 250 m in depth and has a plunge of 45° to the south. Four of 17 drill intersections returned assays between 5 g/t Au and 13 g/t Au.

The Inesperada Vein has been intersected by seven drill holes drilled beyond Cerro Amarillo Vein. It strikes north-south, with a known strike length of 200 m. It could represent the southern extension of the Central Vein, however, it dips in the opposite direction. Three of the seven drill intercepts returned assays between 3.5 g/t Au and 5 g/t Au. More drilling is required.





FIGURE 7-11 VEIN TEXTURES – SOUTH BLOCK



**Veta Julia**: The Julia Vein is located in the southwestern part of the property where it is hosted by fragmental volcanic rocks in a vent proximal setting. The vein is exposed for 600 m and subcrops for another 300 m. A small pit, less than 10 m deep, has been excavated on the vein by artisanal miners in the past. Grab samples from the pit returned assay values up to 22 g/t Au. The current resource currently extends for over 400 m along strike, and over 160 m in depth, with thicknesses from 1.0 m to 4.0 m.

#### NORTH BLOCK

**Veta Janita:** This sector, located to the north of the Central Vein, corresponds to a structure composed of two main branches striking north northwest to south southeast (Janita) and north-south (Janita II), which have lengths of at least two kilometres each. The Janita segment has thicknesses of up to two metres and dip to the east, while the Janita II vein has a thickness of 50 cm, as recognized in trenches. Both structures are composed of massive quartz fillings to weakly saccharide quartz banding, frequently brecciated by a late pulse of ferruginous silica (Figure 7-12a and b). Of twenty drill holes completed on the vein in 2004 and 2005, only one returned values above 1 g/t Au.

The Janita Vein material shows a banded and brecciated texture with a typically red colour due to the presence of iron oxides. Mineralization consists of native silver, electrum, and gold grains associated with the abundant limonite. The results of inclusions showed values of 230°C with salinities of 2% NaCl equivalent. Ar-Ar data in adularia, yielded ages of 60  $\pm$  0.3 Ma, 60.5  $\pm$  0.5 Ma, 61.2  $\pm$  0.4 Ma for this structure.

To the north, the Janita Vein continues into the Amancaya Central property optioned from Revelo Resources. Here, the vein contains abundant copper oxides, strikes 010° and dips towards the east. Values up to 4 gr/t Au have been collected on surface.

**Veta Nueva**: This vein, which is located at the western end of the North Block, is 2.5 km in length. Based on its location, it could correspond to the northward continuation of the Julia Vein (Southern Block). Outcrops are scarce and its position is located by floats containing breccia textures of ferruginous silica, similar to those described for the rest of the Northern Block. The Veta Nueva has only been drilled to the south where it has not recorded anomalous values.





FIGURE 7-12 VEIN TEXTURES – NORTH BLOCK



Approximately 600 m south of Veta Nueva, a sample yielded 1.8 g/t Au, which supports the concept that this structure could represent the northern continuation of Veta Julia.

**Veta Rosa:** The Rosa veins (South Rosa, Central Rosa, and North Rosa) correspond to three structures striking north-northwest in the northeast part of the property. The veins occur as a sequence of an echelon veins with a segmented and slightly sinuous form over a strike length of 1,800 m. The structures are covered by post-mineral units to the north. Observed textures include to crustiform bands of saccharide quartz with pyrite boxwork, which are brecciated by a pulse of ferruginous silica. To the north, carbonate and adularia replacement textures are recorded (Figure 7-12c). The best surface grab samples returned assay values up to 5 g/t Au and 5 g/t Ag to 30 g/t Ag. Seven drill holes were completed and five intersected vein material and oxides, however, no economically interesting values were returned.

**Veta Laureana:** This structure, located towards the northeast of the Rosa vein, which has a segment of approximately 600 m in length, strikes at an azimuth of 330° and dips 010°. Overall length is1.6 km. The unit of Hornblende Andesitic Lavas partially covers the mineralization. In the northern part of the structure, there are saccharide quartz bands with carbonates and adularia (Figure 7-12d). Previous surface samples have yielded no anomalous results in this structure.

**Rosario del Llano:** The Rosario del Llano Vein System lies on strike to the north of the Janita Vein and consists of at least five veins with lengths between 200 m and 500 m. Two veins have been exploited for copper by artisanal miners in the past (Mina Rosario del Llano). The property is owned by Sociedad Química y Minera de Chile, S.A. (SQM) and is not part of the Amancaya claims. These structures strike at 010 ° with a subvertical dip, and at 330 ° with a dip of 70° to the west, both with thicknesses varying from one metres to two metres (Figure 7-12e). The veins are hosted by volcanic breccias with high pumice content. The main vein consists of crystalline quartz and is quite thin, reaching approximately five centimetres in width. Copper oxides (brochantite, malachite, atacamite) are commonly associated with the vein (Figure 7-12f). The chalcographic descriptions completed by Cornejo 31 (2006) describe quartz veins with crystalline quartz plus minor pyrite, chalcopyrite, and sphalerite. Isolated gold grains in quartz are accompanied by abundant iron oxide (hematite and limonite), chalcocite and covellite on chalcopyrite, and oxidized silver minerals. Towards the north, the main structure continues for approximately 300 m, where a



sample is recorded with a value of 1.6 gr/t Au on surface. This segment has been drilled without encouraging results.

#### **REVELO OPTION**

**Veta Peineta:** Located to the north, outside the Amancaya property, the veins are mainly covered by large alluvial fans descending from Cerro Peineta. However, at Cerro Peineta, a series of veins with values up to 2.8 g/t Au were collected in samples by Revelo Resources. The main outcrop of this structure has a strikes at an azimuth of 010° and consists of at least two subparallel branches, with a possible dip towards the west.

The veins are composed of colloform crustiform quartz-chalcedony and adularia (similar in texture to the Central Vein), and with textures of carbonate replacement. The vein shows pyrite scattered in the banding and copper oxides as impregnations. The banding is cut by a late pulse of ferruginous silica. Samples taken in the veins returned insignificant results. To the north, along the trace of the structure, one sample yielded 12 g/t Au and another a value 2.6 g/t Au.

**Calcite Veins:** At the southeastern end of the mapping area, a series of structures are housed in the Julia Lava unit. Blocks and floats are found along a distance of one kilometre. The veins have massive textures with bands of calcite and carbonates, together with crystalline and opal quartz. Three samples were collected but returned no anomalous values.

#### **Cerro Morros Blancos**

The large zone of advanced argillic hydrothermal alteration at Cerro Morros Blancos is located to the south and east of the epithermal vein corridor. This alteration affects the basal units of the Paleocene (Julia Lava and Amancaya Breccia), and features the obliteration of original textures, which are replaced by kaolinite. In addition, there are a number of subhorizontal silica replacement horizons, which represent a part of a silica-cap. Also identified are a series of fault breccias aligned in northwest-southeast and northeast-southwest directions, which are strongly silicified and contain finely grained alunite. These breccias are interpreted as belonging to the shallow levels of a steam-heated alteration blanket in a position close to the paleo-surface. A total of 21 samples were taken but none yielded anomalous values in precious metals.



#### Gold-Copper Quartz Veins

<u>Amancaya West:</u> This zone is partially included within the Revelo property and is exposed in an extensive series of east-west trenches along with some old workings carried out on a series of discontinuous structures striking north-south, 020° and 330°. These structures and veins can be traced on surface as a series of floats over a distance of one kilometre. The veins are hosted in pre-Paleocene units belonging to the Amancaya West Plutonic Complex and to a lesser extent in andesites of the La Negra formation.

The structures in the trenches reach between one metre and two metres in width, dipping steeply to the east. They are associated with fault zones and are composed mainly of coarse crystalline quartz, abundant hematite, and boxworks of coarse sulphides, which are accompanied by abundant copper oxides in places. The veins exhibit an intense hydrothermal alteration halo approximately 50 cm wide, which is contained in a large area of propylitic alteration. A total of five samples were taken, which yielded values of 2.5 g/t Au and 5.4% Cu in one of the 330° structures and 4.6 g/t Au and 3.9% Cu in a 020° structure.

This area was explored by Minera Fuego during 2004-2005, who performed 40 drill holes, targeted mainly at lead and copper anomalies. The drill holes did not cut the vetiform structures, possibly because of drilling in a non-favorable direction. Instead, the drilling identified the presence of a plutonic body with a hypogene mineralization comprised of quartz veinlets with chalcopyrite and bornite that yielded values generally in the range of 0.3% Cu. In places, these values can reach up to 2.0% Cu, as a result of local supergene enrichment.

Mina Peineta: The Peineta Mine is located on the western slope of Cerro Peineta and is associated with several minor workings containing vein-hosted, gold-copper mineralization as is also observed in the Amancaya West sector.

The veins are hosted in the Amancaya Breccia and present a 070° heading and an average thickness of one metre. To the north and south, the structure continues as a set of veins of 10 cm to 15 cm in width at a heading of 010°. The veins are observed to be composed of a first crystalline quartz pulse (P1) with abundant oxides and boxworks of sulphides, cut by a second pulse (P2) of barite with copper minerals (covellite-chalcocite) and a third pulse (P3) of ferruginous breccias. Of the three samples taken in this sector, one sample returned



values of 1.9% Cu. In this area, two drill holes yielded values of up to 3.0% Cu and 800 ppm Pb.

#### **Basement Veins (Quartz-Hematite)**

This group comprises a series of vetiform structures hosted in the pre-Paleocene basement, and located in the western sector of the mapping area. The structures are poorly exposed, discontinuous, and associated with fault zones, which are manifested as floats aligned in a northeast, north northeast, and north northwest directions.

The vein fillings are composed of massive quartz, sacaroid quartz with drusiform cavities, and crystalline quartz crystals accompanied by hematite, pyrite, and copper oxides. It is common that they are located in fault breccias with hematite and cataclastic textures. The best results obtained were 1.1 g/t Au.

To the north of the Peineta Mine, a continuous and sinuous structure was observed which is developed along one kilometre length with a northeast strike course. The structure contains bundled textures of quartz/chalcedony and carbonate replacement textures. Sampling did not yield significant values.

A very discontinuous structure was identified in the southwest of the mapping area which was called the Dakar Vein. On the surface, there are blocks aligned on a 300° azimuth, with padded fillings of sacaroid quartz and colloform bands of quartz with carbonate replacement textures. In addition, oxidized pyrite and scattered copper oxides are visible. Two samples were taken on this structure and returned a highest value of 0.5 g/t Au.

#### **IOCG Mineralization**

Evidence of IOCG type mineralization in the form of veinlets, disseminations, and vesicles with chlorite, epitope, pyrite, chalcopyrite, magnetite, and hematite were found in the mapping area. In these areas, the host rock has a greenish hydrothermal alteration with abundant chlorite-epidote. Samples taken did not contain anomalous precious metal.



# 8 DEPOSIT TYPES

This deposit type section is taken from the 2016 Technical Report (Amec Foster Wheeler and RPA, 2016).

## GUANACO

The Guanaco deposits are considered examples of high-sulphidation epithermal systems. Major global examples of such deposits include Summitville (Colorado, USA), Nansatsu (Japan), El Indio (Chile), Temora (New South Wales, Australia), Pueblo Viejo (Dominica), and Lepanto (Philippines).

The following description of epithermal and high-sulphidation epithermal deposits is taken from Hedenquist (2005).

Epithermal gold and silver deposits of both vein and bulk-tonnage styles are known by a variety of largely synonymous terms. They may be broadly grouped into high-sulphidation (HS), intermediate-sulphidation (IS) and low-sulphidation (LS) types, based on the sulphidation states of the primary sulphide assemblages (Hedenquist et al., 2000). Porphyry-related base-metal veins and HS epithermal deposits share many common features, and some deposits appear to have a close relationship.

In addition to the mineralogical differences, epithermal deposits also form in distinct tectonic settings (Sillitoe and Hedenquist, 2003). Most high-sulphidation deposits are generated in mildly extensional, neutral-calc-alkaline andesitic–dacitic arcs. Typically, these deposits are associated with subvolcanic to volcanic rocks in calderas, flow-dome complexes, and more rarely maars and other volcanic structures. Epithermal deposits are also often associated with subvolcanic stocks, dykes, and breccias. Host rocks can include volcanic pyroclastic and flow rocks, commonly sub-aerial andesite to dacite and rhyodacite, and their subvolcanic to intrusive equivalents; more rarely, sedimentary rocks host epithermal deposits.

Highly acidic hydrothermal fluids form advanced-argillic lithocaps over porphyry systems. The lithocaps may host subsequent high-sulphidation mineralization, which itself is due to higher-pH, moderate- to low-salinity fluids. Vuggy quartz is typical, but not a determining



characteristic, of HS epithermal deposits. Druzy cavities, banded veins, hydrothermal breccias, and massive wall rock replacements with fine-grained quartz are also typical of the deposits.

Zones of residual, vuggy quartz have halos of advanced-argillic quartz–alunite alteration, and roots of pyrophyllite and/or sericite. These zones typically contain disseminated pyrite and over 95% SiO<sub>2</sub>, and form bodies that flare out upwards and/or preferentially replace a lithological unit. In many cases, these bodies lack base and precious metals, and constitute a barren lithocap of advanced-argillic alteration (Sillitoe, 1995).

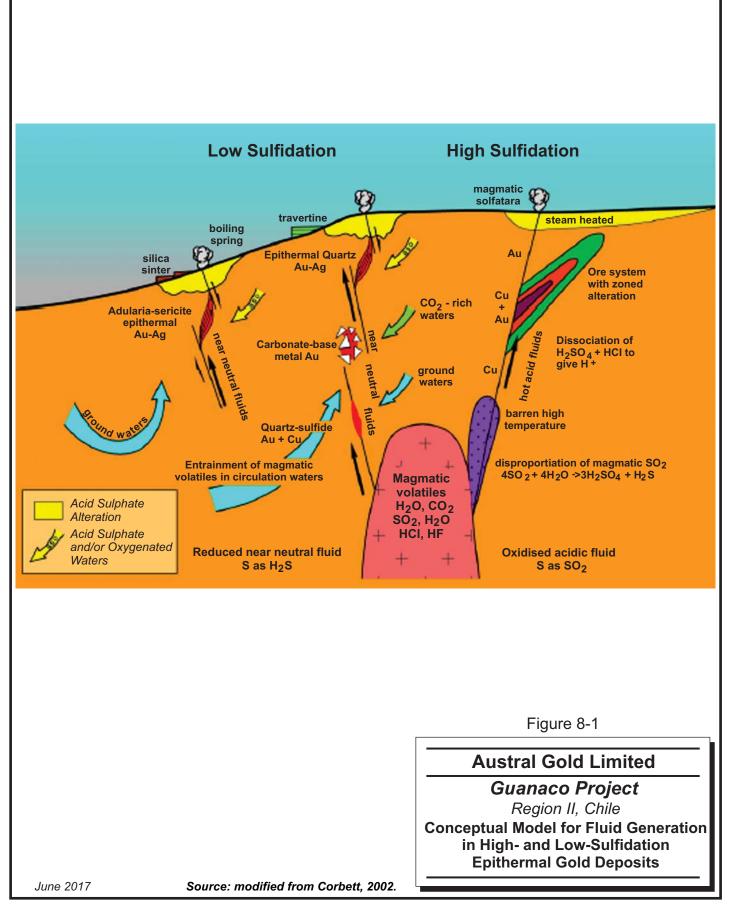
In other cases, after the leaching stage, copper and gold were introduced to form epithermal gold-(copper) deposits with abundant sulphide minerals as at the Lepanto high-sulphidation deposit, which overlies the Far Southeast porphyry deposit in Luzon, Philippines (Hedenquist et al., 1998).

The principal copper-bearing minerals in HS deposits are enargite, luzonite, and/or famatinite, indicating a high-sulphidation state. Two mineral types are generally developed: massive enargite–pyrite and/or quartz–alunite–gold. The principal minerals include pyrite, enargite/luzonite, chalcocite, covellite, bornite, gold, electrum, chalcopyrite, sphalerite, tetrahedrite/tennantite, galena, marcasite, arsenopyrite, silver sulphosalts, and tellurides. A typical sequence of mineral deposition is pyrite + enargite ± luzonite, followed by chalcopyrite ± tennantite ± sphalerite ± galena + pyrite. Also post-dating the enargite assemblage is the gold stage, which typically consists of electrum and gold tellurides, as at Lepanto, Goldfield (Nevada, USA), and El Indio (Chile). Oxidation of the primary mineralization is commonly necessary for desirable metallurgy; primary ores may be refractory and can render low-grade, sub- to non-economic mineralization. Gangue minerals include pyrite and quartz, with, more rarely, barite.

The form of high-sulphidation deposits varies from replacement or dissemination to vein, stockwork, and hydrothermal breccia. Irregular deposit shapes are frequently determined by host-rock permeability and the geometry of ore-controlling structures. Multiple crosscutting, composite veins are common.

Figure 8-1 shows a conceptual model proposed by Corbett (2002) for fluid generation in high- and low-sulphidation epithermal gold deposits.







## AMANCAYA

The deposit at Amancaya is an epithermal gold and silver deposit, hosted in a steeply dipping structurally controlled quartz vein. Gold mineralization comprises disseminations of native gold and silver, electrum, silver sulphosalts, and accessory sphalerite, galena, chalcopyrite, and pyrite occurring with quartz, adularia, carbonates, clay minerals, limonite, and manganese oxides. These minerals were deposited from boiling of dilute saline fluids circulating in a hydrothermal system driven by the Eocene to Paleocene magmatism. The hydrothermal vein systems are considered a low sulphidation type based on their metal content and the volcanotectonic setting.



# **9 EXPLORATION**

## GUANACO

Modern exploration commenced on the property in the 1970s and has been nearly continuous since that date. Exploration has been undertaken by GCM, its precursor companies (e.g. initial gold exploration by Amax), or by contractors (e.g. airborne geophysical surveys, hydrological surveys and geotechnical studies). For the purposes of the exploration, drilling and sampling discussions, data collected prior to GCM's interest in the property are referred to as "legacy data".

## **GRIDS AND SURVEYS**

Topographic measurements were referenced to nine HM (Hitos de Mensura) points previously surveyed with reference to the Chilean Instituto Geográfico Militar (IGM) national grid.

The original surface topography, before laying the plastic liner for leaching, was established by aero-photographic restitution. This work was done by Intrasearch from Denver in 1991. The scale of the plans was 1:2.500 and one metre contours were plotted. The final topography of the completed pads was not available; however, the differences should be very small with respect to the original surface.

The surface topography of the leach pads was measured using a Geodimeter Total Station Series 500. This work was done by Amax on a continuous basis as the heaps were loaded.

In 2009 Maptek Pty. Ltd. produced a high resolution topographic map by air surface scanning (I-SITE survey resolution less than 0.5 m). GCM has updated this plan by including new roads and other features as necessary.

## **GEOLOGICAL MAPPING**

## LEGACY DATA

In 1992 Thematic Mapper Spectral data (TMS) for the area surrounding the Guanaco Mine was purchased by Water Management Consultant (WMC) for water exploration. The data was reanalyzed and processed by Candee (1997). The regional scale (1:250,000) thermal



infrared image identified regional linear north-south trends. The majority of the zones of hydrothermal alteration were located within a 10 m wide by 30 km long belt centered along an east-west trend.

## MINERAL GUANACO PROGRAMS Mathews and Cornejo (2006)

Geological mapping was performed in 2006 by Mathews and Cornejo at a scale of 1:50,000. Results of the mapping programs were used as vectors for drill programs and exploration targeting.

## Guido and Jovic (September 2013)

In September 2013, Guanaco retained the services of Diego Guido and Sebastian Jovic to produce a geological–structural interpretation of the mineralized structures in the Guanaco Mine. Drill core, drill chips, trenches, field and database information were reviewed, with the following conclusions reached:

- Structural control is defined as the most relevant for the Guanaco high sulphidation epithermal mineralization.
- East-west and east-northeast-south-southwest strike directions appear to be the most favourable for mineralization. The northwest-southeast directions are post-mineralization, producing displacements and/or remobilization of mineralization.
- A sequence of four pulses was defined for the epithermal Guanaco mineralization. From older to younger they are as follows:
  - Extended typical volatile-rich alteration of the host rock (vuggy, silica alunite, advanced and intermediate argillic and propylitic)
  - o Deeper Cu-rich pulse with enargite, pyrite, quartz and barite
  - Silica-rich pulse with barite and/or pyrite
  - Late kaolinite, barite, alunite and Fe-Mn-Cu oxide minerals
- Gold is mainly precipitated in the Cu-rich and silica-rich pulses and remobilized during later events.
- Due to observations that higher gold grades are restricted to sub-horizontal levels between 2,600 m and 2,750 m elevation, and are not related to any specific lithology, mixing is inferred to be the mechanism of metal precipitation. It would have been more effective in ignimbrites, but it also exists at the intrusion contacts.
- The observed systems are considered to have a common deep intrusion source of metals. Considering the metal distribution at the Dumbo and Cachinalito long sections, this source can be located between these two deposits, where three major fault systems cross, and an IP geophysical anomaly is observed. The possible presence of a porphyry should be considered in this area. The silver-rich,



intermediate mineralization located around the area of high-sulphidation completes the hydrothermal system.

• Brownfield exploration should be concentrated in the east-north-easterly elongated (three kilometres by seven kilometres) high sulphidation deposit area, and in particular in Cerro Guanaquito, due to its location in the fracture that connects the Dumbo deposit (the best developed system) with the shallowest IP anomaly.

#### Guido and Jovic (December 2013b)

In December 2013 GCM contracted Diego Guido and Sebastian Jovic to evaluate the exploration potential of Cerro Guanaquito and Salvadora–Los Nanos sectors. Findings included:

- Cerro Guanaquito is formed by a group of parallel east-northeast-south-southwestoriented structures located along the same regional structure which hosts the Cerro Estrella mineralization. Both systems are very similar in host rock and mineralization style. These areas could represent the high sulphidation shoulders developed on sides of a possible intrusion (source of metals) at depth. There is potential for finding a gold-rich mineralized volume close to the surface in the southeast part of the hill, near to the Soledad mining properties.
- The Salvadora–Los Nanos structures are possibly related to a deeper source of metals, and can be compared with Cachinalito in terms of the host rock and the mineralization style. The east–northeast–south–southwest-oriented Salvadora and the east–west to west–northwest–east–southeast-trending Los Nanos systems are related to the primary high sulphidation mineralization, but the northwest–southeast-trending Olvidada system may be a later stage event that contains silver enrichment by remobilization. There is potential for finding high-grade zones at the intersections of the primary mineralization (normally close to east–west orientations) with the northwest–southeast-trending structures; but mainly on the extensions of these structures below the cover, where old miners could not detect the mineralization.
- Observation of these two areas confirmed previous identification of syn- and postmineralization structures, and absence of lithological control on ore precipitation. On this basis, the predictive model for the Guanaco deposit can be outlined by the following two phases:
  - Precipitation of gold and silver (copper increasing at depth) along eastnortheast to west-northwest structures, primarily within the elevation range of 2,600 m to 2,750 m
  - Later northwest-trending faults reactivated the system, precipitated Ag-rich mineralization (remobilized) in narrow and irregular zones mainly located at the intersections with the east-northeast to west-northwest-oriented structures.
  - A brownfield exploration program is recommended for the high sulphidation area at Guanaco. The program should consider a detailed ground magnetic survey that define the structural setting especially of covered areas, a detailed mapping and sampling, and an improvement of the geological database.

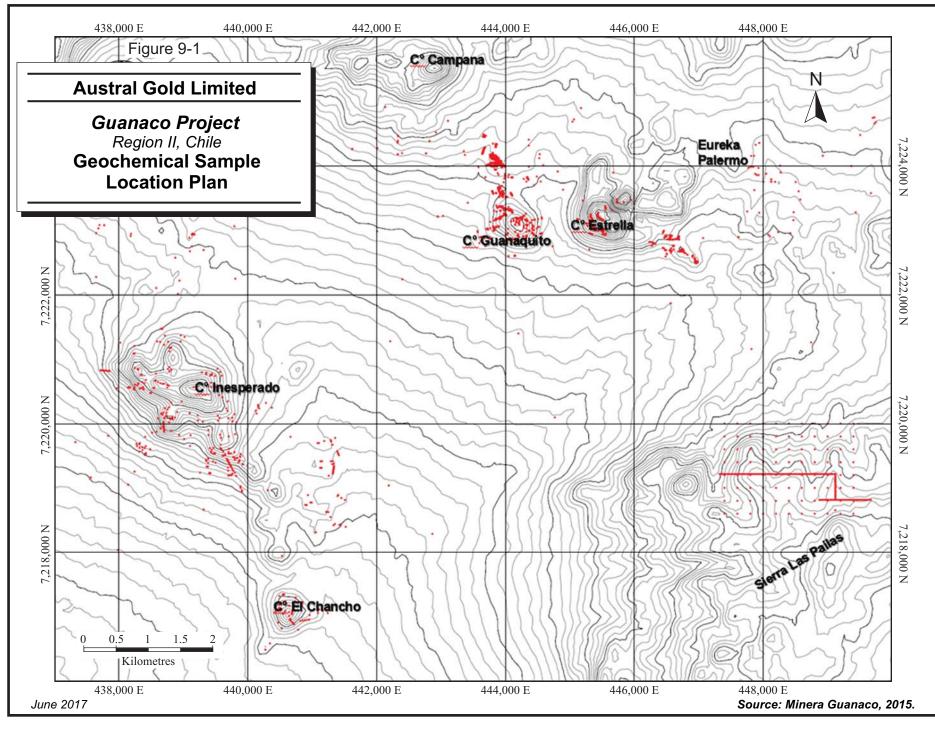
## GEOCHEMISTRY

#### LEGACY DATA

Transported cover in the area can be an impediment in geochemical sampling, as potential bedrock mineralization can be covered in tens of metres of barren cover, however, where possible, soil and rock sampling were used to evaluate mineralization potential and generate targets for diamond drilling. A total of 1,734 samples were taken. Figure 9-1 shows the sample locations.

Geochemical sampling during 1991 and 1992 suggested a N70°E mineral trend defined by the Guanaquito sector on the west and by the Palermo sector on the east. This trend showed anomalies for gold, silver, arsenide, antimony, and copper. The Cerro Inesperado sector showed gold, arsenide, lead, copper, and molybdenum anomalies. The Sierra Las Pailas and Cerro Campana areas were anomalous for antimony (Candee, 1997).

Recent geochemical sampling by GCM at Sierra Las Pailas was performed over a 200 m x 200 m sampling grid. Samples were collected over an area of approximately 25 cm x 25 cm x 25 cm and weighed three kilograms to five kilograms. Prior to samples being taken, the first 10 cm of surficial cover was removed to ensure that the samples were of insitu material.





## GCM PROGRAMS Sierra Las Pailas (2012)

GCM developed a surface-sampling program for the Sierra Las Pailas area, which is situated to the south of Guanaco to test a 1.0 km x 1.4 km colour anomaly (Figure 9-2) visible in satellite images. A 200 m x 200 m sampling grid was defined.

## Fortuna and Escondida (2012)

Surface sampling for gold, silver and copper has been undertaken in the Fortuna and Escondida localities, at approximately 29 km and 49 km to the east and north–northeast of Guanaco respectively (Figure 9-3). Approximately 100 samples were collected.

## GEOPHYSICS

#### LEGACY DATA

## Airborne Magnetic, Radiometric and Resistivity Surveys (1992)

Airborne magnetic, radiometric and resistivity surveys were commissioned by RTZ Mining and Exploration Ltd. (RTZ) in 1992, and the survey images were obtained by Amax. Data were collected at an elevation of 400 m mean-terrain-clearance along north–south flight lines. The flight lines were spaced 1,000 m apart in the western and central portions of the survey area and 500 m apart in the eastern portion of the survey area. Because of the high altitude and wide spacing of these flight lines, the resolution in the radiometric data was poor.

## Ground Transient Electromagnetic (1994)

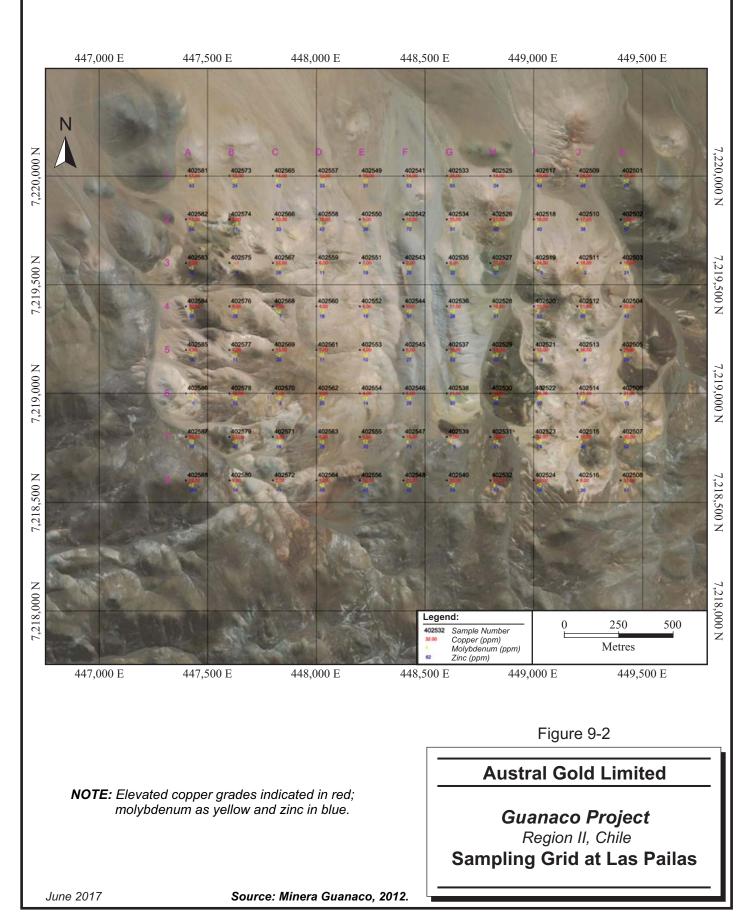
A total of 19,350 m of Ground Transient Electromagnetic (TEM) geophysical profiles were completed by Geodatos Ltda. (Geodatos) in 1994. Data from ten TEM lines were collected by Amax in the Guanaco Mine area prior to October 1996. These data were collected using 300 m x 50 m (east by north) transmitter loops, and 22 time channels.

#### Geoscan Spectral Data (1996)

Five flight lines totalling 119 km were completed in 1996. A total of 84 Geoscan anomalies were identified within the Guanaco concessions. All the anomalies were either coincident with known altered or mineralized zones or located within a 10 km wide by 30 km long, east–west-trending belt identified from the Geoscan data.

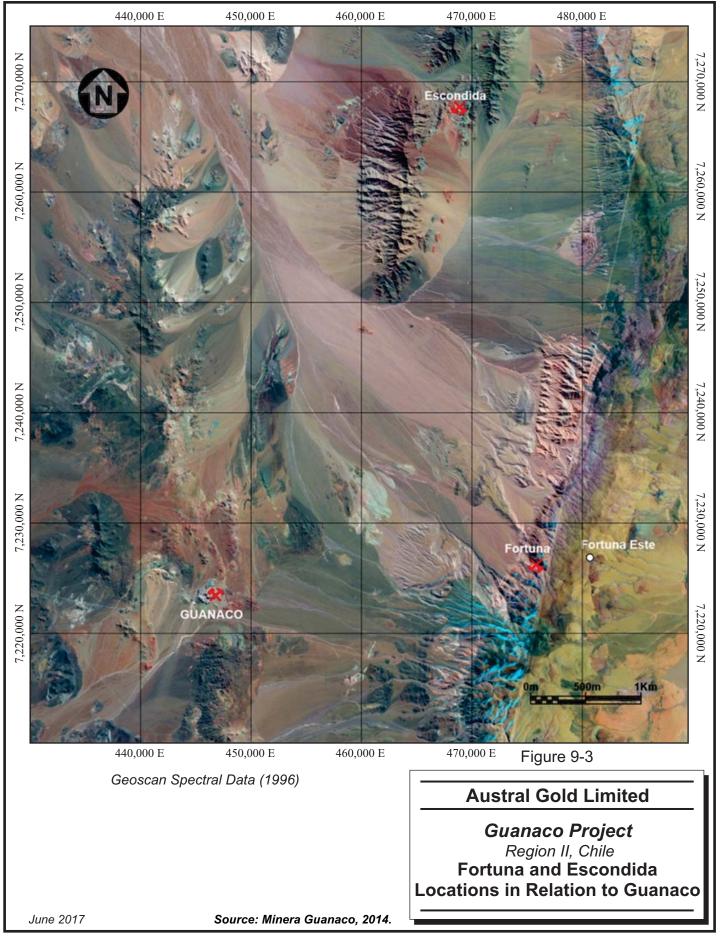








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## **Ground Magnetic Surveys (1996)**

Ground magnetic surveys along north–south trending lines, 50 m apart, were performed by Amax in 1996.

### Ground Induced Polarization and Resistivity (2000)

Ground IP and resistivity survey were conducted by Quantec Geofisica Limitada (Quantec) in 2000. Quantec completed a ground survey consisting of nine lines of frequency-domain data collection using the dipole-dipole array with 300 m spacing.

#### Ground Controlled Source Audio-Magneto-Telluric (2000)

A controlled-source audio magneto-tellurics (CSAMT) survey was performed by Kinam in 2000. No further information is available.

## GCM PROGRAM CSAMT Survey (2008)

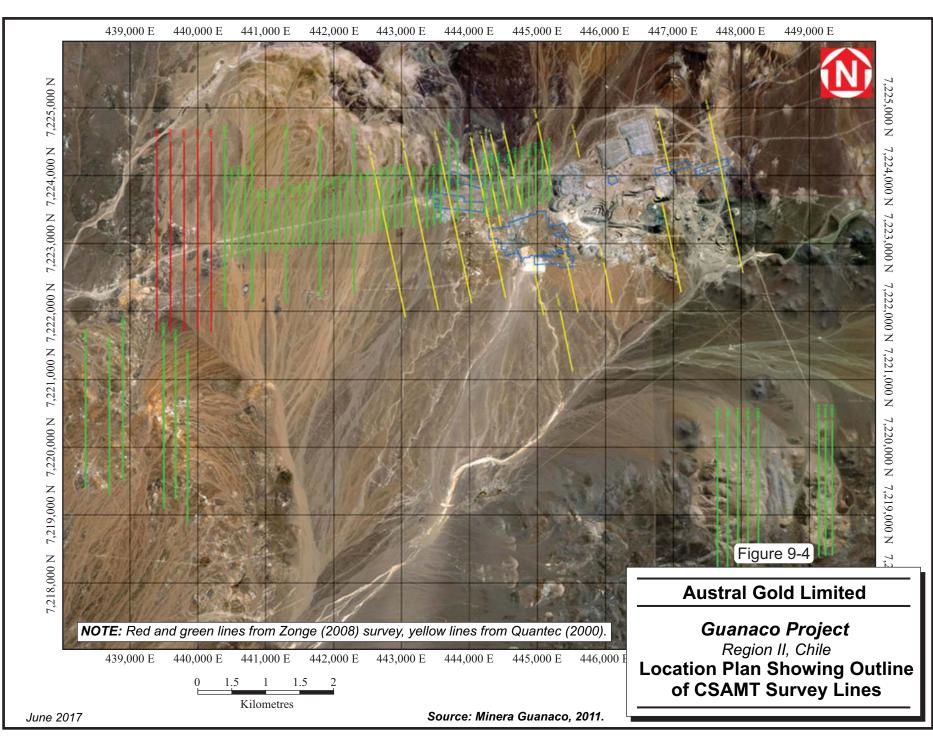
CSAMT surveys that collected 70 km (Zonge, March 2008) and 14 km (Zonge, June 2008) of data were conducted by Zonge Ingenieria y Geofisica (Chile) SA (Zonge) for GCM (Figure 9-4).

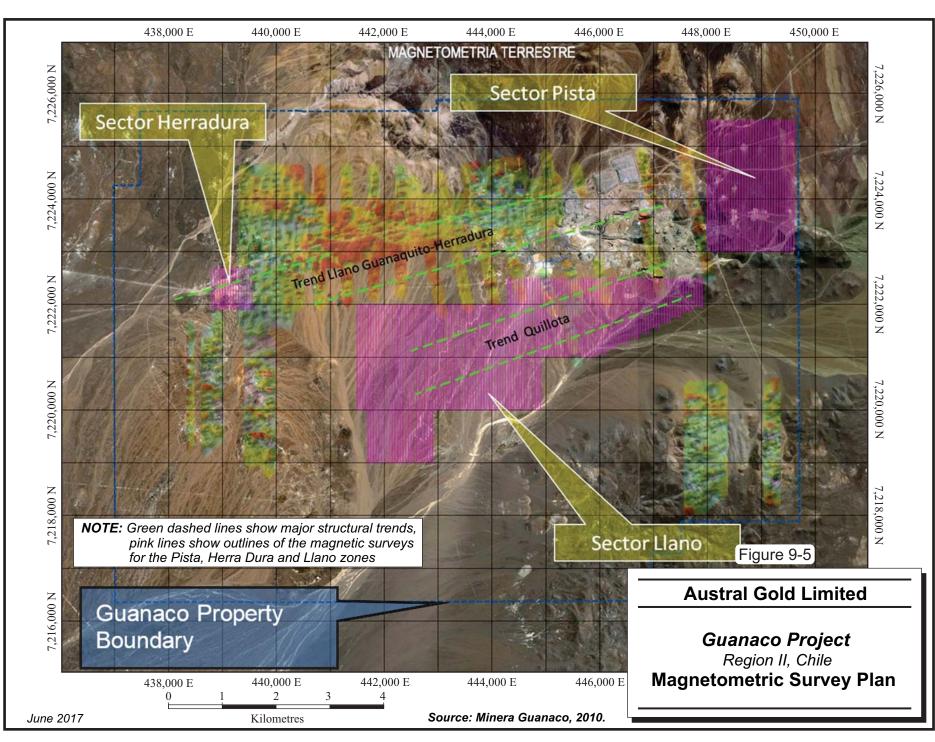
#### Magnetometer Surveys (2010)

Magnetometer surveys were performed by GCM in 2010 in three sectors, Herradura, Pista and Llano (Figure 9-5).

The geophysical data and models were integrated into an overall geophysical interpretation of the Guanaco Project area. Several alteration and mineralization signatures were identified in the vicinity of the Guanaco deposits. Both the dipole-dipole resistivity and TEM data were interpreted as silica zones (high resistivity) near the mine. Several other areas of interpreted silica zones were identified. An IP high and potassium low are coincident with the silicification near the mine. The high IP values were interpreted as the presence of sulphide mineralization.







RPA



Gold mineralization appears to occur at the margins of both potassium highs and lows (Beasley, 2000). Fritz (1996) and Ellis (1996) indicated that the magnetic structures, TEM, and VLF trends have similar configurations to those identified by mapping and photos. Fritz identified a magnetic anomaly related to a probable porphyry system that could be the source of alteration exposed at Cerro Inesperado, Chancho, and Guanaco.

#### Mount Isa Mine Distributed Acquisition System and Magnetotellurics Surveys (2012)

GCM commissioned Servicios y Recursos Geofísicos Chile Ltda. (GRS) to run 2D Mount Isa Mine Distributed Acquisition System (MIMDAS) and Magnetotellurics (MT) surveys at Guanaco.

Five MIMDAS lines with east–west, north–south and N344°E orientations (Figure 9-6) were acquired using a 50 m and 200 m dipole-pole array with nominal line lengths of 2.1 km and 2.5 km for the 50 m dipole lines; and 6.0 km and 13 km for the 200 m dipole lines. As is standard operating procedure for MIMDAS surveys, all potential dipoles were laid out and active for all transmitter sites along the line, resulting in readings taken synchronously on both sides of the transmitter site.

The MT data were acquired over the same potential dipole array as that used for the IP, with the addition of a single pair of orthogonal magnetometers into the distributed acquisition network.

As the result of the geophysical survey conducted by GRS, a set of pseudosections and models were provided to GCM, consisting of MT resistivity, resistivity, and chargeability 2D sections (Figures 9-7 and 9-8). No evident targets were generated by this survey, although some high chargeability–low resistivity areas could be identified in the models.

#### PITS AND TRENCHES

Pitting and trenching were used as first-pass delineation tools in the areas of the current open pits. The trenched and pitted areas have since been mined out.

Prior to 2012, pitting and trenching were used as first-pass delineation tools in the areas of the current open pits. The trenched and pitted areas have been since mined out.



#### SAMPLING IN SURFACE TRENCHES

During 2012–2013, approximately 1,500 m of 50 m to 150 m long individual trenches of up to two metres width were excavated in the Guanaco Este Sector to determine if mineralized structures could be recognized at surface. Chip samples were taken from the trench walls or alternatively from floors (using the excavator) along 15 cm x 20 cm x 5 cm channels across the structures. The sample intervals were defined by geological contacts (structures, haloes, mineralogy). Caution was taken to ensure that both fine and coarse fractions were sampled. No systematic QC procedures were used. Where elevated gold grades were reported, repeat samples were taken.

## PETROLOGY, MINERALOGY, AND RESEARCH STUDIES

#### PETROGRAPHY

Clark (1999) collected 250 samples and performed a petrographic study on 14 of the samples on behalf of Kinross. The study confirmed that the hydrothermal alteration associated with enargite–gold mineralization was of acid-sulphate type, characterized by the development of alunite, various clays, sericite, and enargite. Silicification was locally noted to be intense. Alteration effects, as well as gold and copper mineralization, were related to development of permeable zones resulting from faulting and/or development of tectonic breccias.

#### FLUID INCLUSIONS

A fluid inclusion study undertaken in 2000 (Townley, 2000) concluded that based on the temperature and salinity characteristics evident from the inclusions, mineralization in Guanaco took place at depths between 200 m and 500 m, confirming the epithermal nature of the deposit.

## CONSULTANT EVALUATIONS

GCM has contracted the services of Corbett Geological Services Pty. Ltd. (CGS) and GEMAT Asesorías (GEMAT) to perform specialist reviews.

During 2013, CGS evaluated the setting and mineralization of the recently-identified Despreciada vein and lower sections of three core drill holes (999, 1013 and 1016) completed during regional exploration. CGS concluded that:



- The Despreciada vein represents an interesting mining target and so continued mining along strike may provide additional information for the development of the geological model.
- There has been a change from the formation of the roughly east-west-trending El Guanaco high sulphidation epithermal gold veins in conditions of east-west orthogonal compression to extensional conditions favouring the development of the north-northwest-trending Despreciada vein within a conjugate fracture, although those structures trend northwest.
- At elevated crustal settings, low-temperature, high-sulphidation, epithermal gold fluids may undergo sufficient cooling and neutralisation by rock reaction to evolve into lower sulphidation style which in these instances commonly display higher gold grades and improved metallurgy.
- Elevated gold grades result from the mixing of rising lower sulphidation ore fluids with oxidising evolved waters such as bicarbonate waters, evidenced in oxide by oxide manganese derived from manganese carbonate, or mixing with collapsing steamheated waters, evidenced by hypogene kaolin.
- The several regional deep drill holes examined display alteration and mineralization consistent with the interpretation of El Guanaco as a high crustal level high sulphidation epithermal Au deposit developed well above the source intrusion.
- The drill holes contain some propylitic alteration mainly in competent andesite, typical of a distal relationship to the source intrusion, and permeable tuffs and faults host the sericite-pyrite-carbonate (phyllic) alteration also formed some distance from the source intrusion.
- Any porphyry mineralization that might occur in the vicinity of El Guanaco is expected to be older than the epithermal mineralization such that the porphyry must have undergone uplift and erosion prior to emplacement of the epithermal mineralization.

GEMAT (2013) visited the GCM-owned Mateo, Escondida and Fortuna sectors in order to evaluate potential for additional supply of mill feed material. GEMAT considered that the two properties, Mateo and Escondida, have exploration potential, and in particular, recommended that further studies be undertaken to assess the Mateo area.

Magri Consultores Ltda. (MCL) y Octal Ingeniería y Desarrollo Ltda. (OIDL) reviewed the sampling and QC procedures, as well as long- and short-term mineral resource estimation procedures (Magri and Octal, 2015), and issued recommendations, particularly on plant sampling.

## AMANCAYA

## EGC COMPILATION

In 2015, EGC Inc. was requested to compile and summarize the geophysical data collected by various contractors covering the San Guillermo Project owned by Revelo Resources Inc. and the Amancaya Project owned by Austral Gold. The compilation was done at the request of Revelo Resources Inc. with permission of Austral Gold for the Amancaya area. Also requested was an interpretation of major structural trends, a description of the geophysical response of known mineralized areas and trends, and definition and prioritization of target areas based on the geophysics.

## **MAGNETIC SURVEYS**

Four ground magnetic and one aeromagnetic and radiometric surveys were located in the original data archive.

#### GEODATOS 2004:

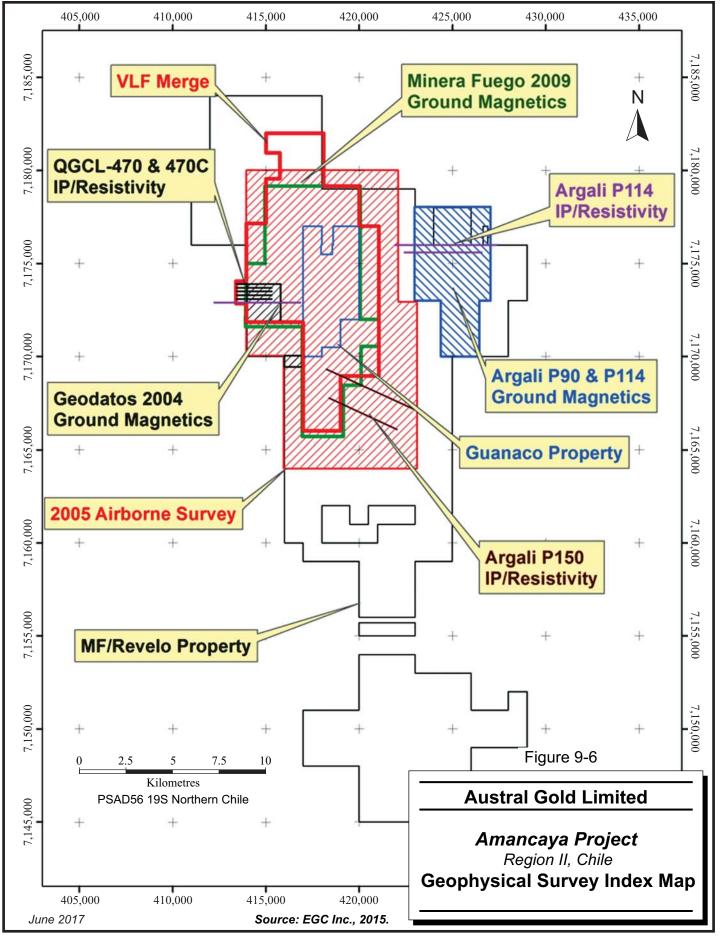
This survey consists of 23 lines run in an East-West direction (Figure 9-6). Twenty one of the lines were run in a single block and two lines were acquired to away from the main block. The survey is of limited value because it is covered by a more details 2005 airborne magnetic survey.

## ARGALI P114 & P90:

Between 2008 and 2009, two ground magnetic surveys with north-south lines at 50 m spacing (P90) and 100 m intervals (P114) were completed. The data quality is good and it is not covered by the 2005 airborne magnetic survey. A 3D MVI inversion model was done on the merged magnetic data.



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#### FUGRO 2005 AEROMAGNETIC & RADIOMETRIC SURVEY:

A helicopter platform aeromagnetic and radiometric survey was flown for Minera Meridian Ltd. in 2005 at 75 m line spacing in an east-west direction. The data quality is excellent and covers all but the Argali 2008 and 2009 ground magnetic surveys. A 3D MVI inversion model was done on the merged magnetic data (Figure 9-7).

A reduced to pole image of the 2005 aeromagnetic survey covering Amancaya and the northern part of the San Guillermo properties and the re-processed and merged Argali ground magnetic data are shown in Figure 9-7. Alternation trends, centers of alteration, and targets are identified on this image.

Radiometric data is of limited value since the depth of investigation of the method is approximately four centimetres and the response of deeper lithologies is masked by transported soils. However, it can be useful for mapping lithology and alteration in areas of outcrop, sub-crop, or areas where soil in not transported. An image of the ratio of potassium to thorium is shown in Figure 9-8 showing anomalies over exposed mineralized area caused by clays (adularia) associated with argillic alteration. Anomalies of this type where not drilled are targeted.

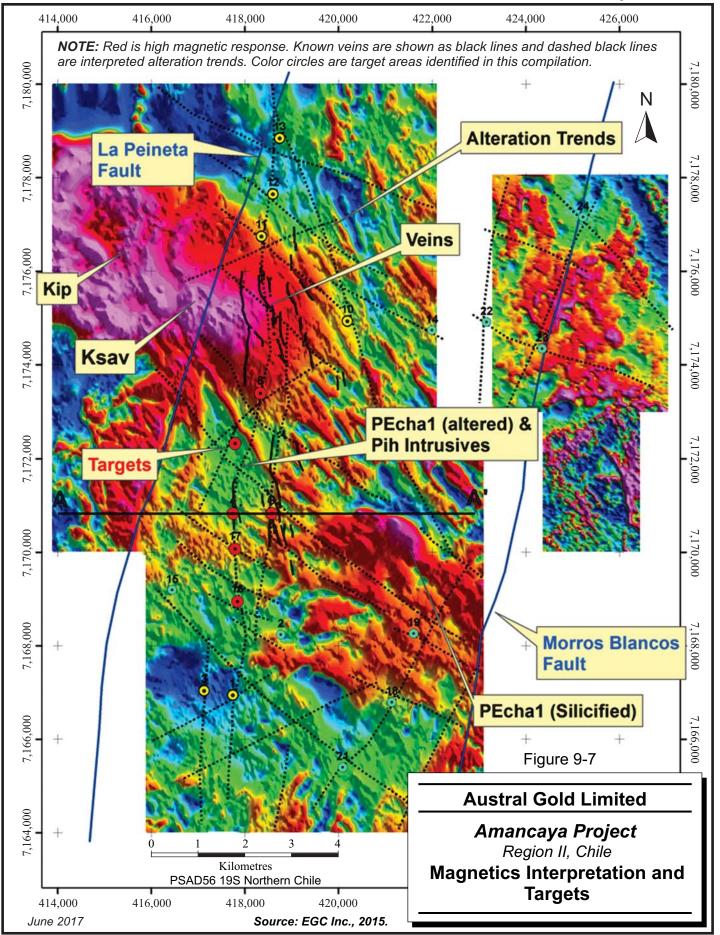
#### MINERA FUEGO 2009:

Only an image of the survey was located in the original data archive and digital data for the Amancaya claims. This survey is of limited value since it is covered by the 2005 airborne magnetic survey.

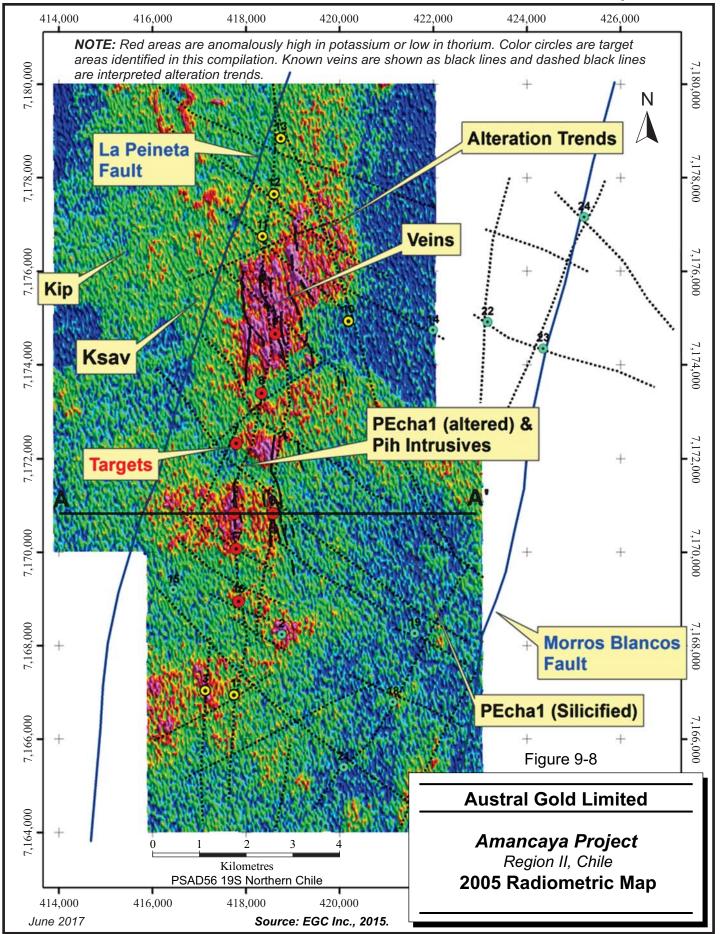
## **VLF SURVEYS**

Quantech Geofisica conducted all of the VLF surveys on the Minera Fuego property and Amancaya property for Minera Meridian Ltd. All survey lines were acquired in an east-west direction. The majority of the Minera Fuego surveys were acquired using a 200 m line spacing. The Minera Meridian survey was acquired using a 100 m line spacing. The different line spacing adversely affected the merge of the data so individual products for the separate surveys were also prepared.











## IP AND RESISTIVITY SURVEYS

IP and resistivity survey were collected only on Minera Fuego property by Quantech Geofisica Ltd. and by Argali Geofisica Ltd. The data were collected with the pole-dipole array using potential electrode spacing of 100 m and 200 m. 2D inversion modeling for all of the sections were located. Images of the sections were prepared and are located in the ARCGIS directory. In addition 3D "egb" image files were prepared for all IP and resistivity sections for working in Discover 3D. VLF data helps identify high resistivity contrasts that may be silicification (high resistivity) adjacent to argillic alteration (low resistivity).

## EGC CONCLUSIONS

The targets identified in the EGC compilation are based and prioritized by the intensity of the magnetic destructive alteration and if there was a VLF or radiometric anomaly (particularly potassium) identified in the 2005 evaluation of these data. A priority of one (red), two (yellow), and three (green) is used for the targets with one being the highest priority. The targets are shown in Figures 9-2 and 9-3.

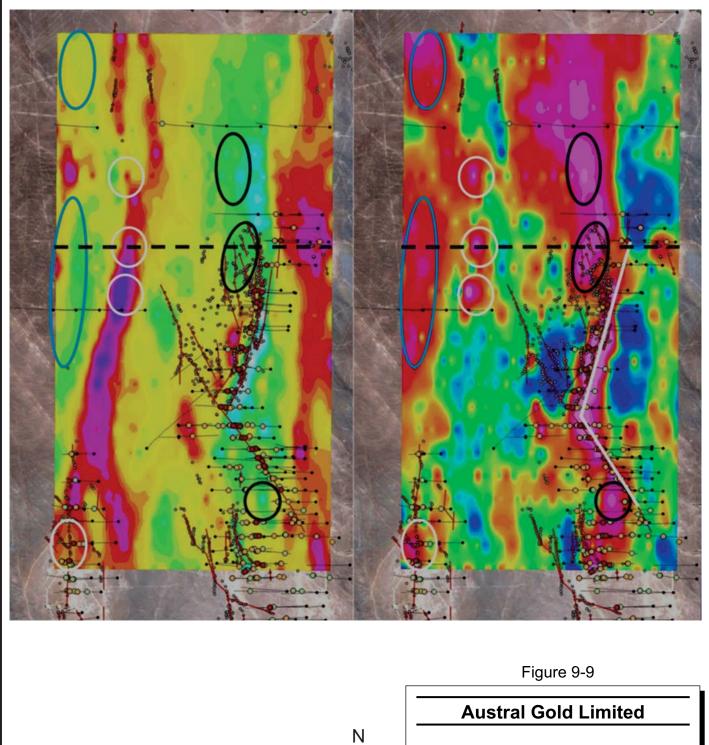
The main feature of interest on these properties is the north-south trend of low magnetic susceptibility identified in the 3D inversion model depth plans extending from the south to the north. This feature is likely the main structural zone controlling the emplacement of felsic domes and alteration. Known mineralized veins occur on or adjacent to this feature which extends off magnetic coverage to the north and south. If more mineralized veins, or better mineralized veins are to be found they are likely to be on or near this structural zone.

## QUANTEC GRADIENT IP SURVEY

Quantec Geoscience carried out a Gradient IP survey between August and September 2016 over the Amancaya Mine area. The gradient covered an area of 2.8 km<sup>2</sup> corresponding to the main zone at the property where mining operations are planned. The results indicate a good correlation with the veins known and interpreted in surface trenches and float mapping (Figure 9-9).



**NOTE:** Gradient Maps (left: resistivity, right: chargeability) with interpreted veins (red lines), mapped floats (white dots), and drill holes with values of gold equivalents (green > 0.5 ppm Au, yellow > 1 ppm Au, and red > 5 ppm Au). The white line marks the two sections of the Central Vein. Circles and ellipses represent targets.



Amancaya Project Region II, Chile IP Gradiant Survey

June 2017

Source: Austral Gold Limited, 2016.



The Central Vein which is a quartz vein with scattered sulphides well known from drill intersections, has an excellent correlation with the highest values of chargeability and resistivity, especially in its northern portion. In the south part of the vein, some geophysical anomalies are oriented north-south to north northeast, indicating that this portion of vein contains parallel structures and discontinuities arranged along and fragmented by possible sinistral shifts of northwest striking faults, instead of a single continuous structure.

In the eastern sector of the Griega Vein, there is good correlation with north-south structures both in resistivity and in conductivity, indicating a continuous nature with the mineralization of the Central Vein in its southern extent. This zone constitutes a target that could allow joining the high grade Griega Vein with the southern part of Central Vein.

To the north of Central Vein, and slightly displaced in a sinistral direction, a north-south zone approximately 700 m long and 150 m to 200 m wide was outlined with resistivity anomalies and chargeability similar to those determined in Central Vein. This area is completely covered and has been poorly explored, thus representing a target of interest that should be evaluated in the future.

Another important structure within the surveyed area is formed by the Julia Vein and its extension to the north. This train of structures is located approximately 600 m west of the Central Vein and presents a strong conductivity anomaly (low resistivity) coinciding with outcrops and floats located during the surface mapping. Medium to high chargeability anomalies occur along this structure, including one which coincides with the resource area of the Julia Vein. The proposed structure could correspond to a fault zone with irregular mineralized veins along its trace.

Two other possible structures of lesser importance are observed. The first is area of conductivity to the east of Central Vein, where smaller areas with medium to high chargeability are found coinciding with some surface values. The second structure is located to the west of the area, where anomalies of resistivity and medium to high loadings similar to Central Vein (high chargeability and resistivity) are present. This area is fully covered and only drilled by two fence drill holes that do not appear to have cut mineralization.



# TRENCHING

A trenching program was conducted between August and September 2016 at the Amancaya project. The objectives of the trenching were to verify the presence of structures suggested by floats, mapping, sampling, and to determine the thickness, continuity, and dip of identified structures.

The program consisted of 138 trenches completed in two stages (Figure 9-10). There was a total of 3,032 linear metres of trenches completed, including three trenches at the Peineta Norte target. The initial stage (44 trenches) was designed to test float zones with values greater than 5 ppm Au equivalent (Au = Ag/80). The success of this stage was 86%, with only two trenches that did not cut a structure and another four that resulted in post-mineral andesitic lavas. The second stage (94 trenches) was planned to give continuity to the defined structures and was successful as all the stage two trenches intercepted vein material.

# TRENCHING RESULTS

#### VETA NUEVA SUR

A continuous structure of up to 1.7 km in length was confirmed. It is a significant fault zone (up to 10 m wide) with oxidation and argillization that hosts variable percentages of veins and quartz streaks forming stockworks. In the south, the structure exhibits a west dip, with silicification and dense veinlets in the hangingwall. Towards the north, the quartz structures are better defined, including a quartz vein up to two metres wide, then culmination at the intersection with the Gabriela vein with a well-defined structure and silicified host rock.

# GABRIELA-YÉSICA

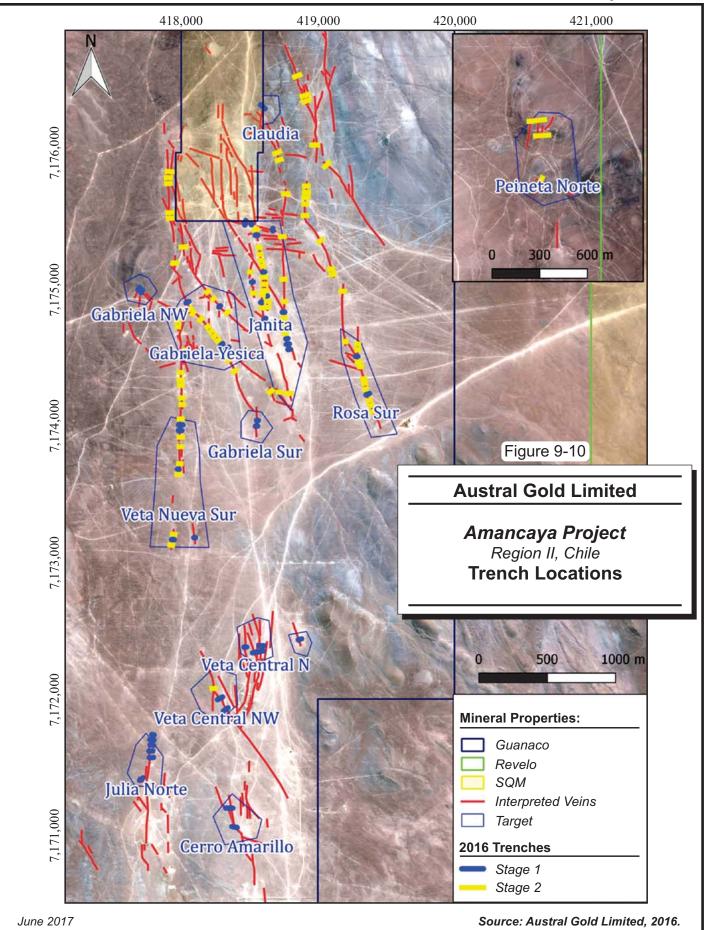
The structures do not show strong continuity. At Yésica, the average thickness is 0.5 m and the structure is characterized by the presence of ferruginous breccias with white quartz clasts. At Gabriela, 550 m of greenish chalcedony vein was mapped that reaches 1.5 m thick, with areas of stockwork and veinlets. Towards the south, two branches are present, one striking northwest and another striking north northwest. The second branch is up to one meter thick.

#### GABRIELA NORTHWEST

Two trenches discovered two parallel veins 0.7 m and 0.3 m in width narrowing towards the north, where they are covered with post-mineral lavas.



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#### GABRIELA SUR

Thin structure (0.15 m).

#### JANITA

This group includes Janita, Laura and others the structures striking east-west that cut the older structures towards the north. At Janita, narrow quartz veins and veinlets (<0.15 m) are observed that reach 0.25 m towards the north and have a higher content of iron oxides. At Laura, mapping located white quartz veins with ferruginous breccia matrices and thicknesses between 0.5 m and 0.8 m over a length of at least 300 m. There are four east-west veins (TAM-037 trench), and the largest reaches three metres wide and is composed of greenish chalcedony.

# CLAUDIA

It was not possible to uncover the continuity of this structure within the property.

# ROSA SUR

Vetiform structure up to 1.8 km long, with thicknesses between half and one metre was located. It consists of greenish quartz with sectors of crystalline quartz. In the north, the structure dips to the west (up to 45°), suggesting that some past drill holes would not have reached the structure.

# CENTRAL VEIN NORTH

The trenches (1.5 m average depth) performed to the north of the Central Vein revealed only andesitic lavas.

#### NORTHWEST CENTRAL VEIN

The three trenches completed (two directed at floats striking northwest and one to floats striking north-south) encountered two to three metres of alluvium with evidence towards the bottom of the trenches of the regolith of Amancaya Breccia with abundant caliche and interstitial sediment, as well as vein material float (greenish quartz with brown carbonate breccias), and banded textures in the same vertical flood position. This was interpreted to mean that the veins would be more than three metres deep.

#### JULIA NORTE

The continuity of the Julia structure to the north was determined in five trenches. The vein reaches 2.5 m in width, and to the north a greater proportion of faulting and oxidation was



observed. A trench made on a northwest branch of the structure, revealed post-mineral cover (andesites).

# VERONICA

A thin structure (0.15 m) was located on the vein extension.

#### CERRO AMARILLO

Quartz-carbonate veins are thin (<0.15 m) and continuous.

#### SAMPLING RESULTS

Most of the trenches were not sampled in 2016 due to the priority placed on the infill drill program. Sampling is planned in 2017.

# **EXPLORATION POTENTIAL**

# **GUANACO**

A number of near-mine gold prospects have been outlined that are considered to warrant detailed exploration. The prospects are described in Table 9-1, and a location plan provided in Figure 9-11.

# TABLE 9-1EXPLORATION TARGETS AND PROSPECTSAustral Gold Limited – Guanaco and Amancaya Mines

Prospect	Description
Los Nanos Sur	500 m long x 150 m wide area. Main structure is east-west-trending. Elevated grades returned in surface sampling and drill testing.
Cerro Guanaquito	Southwest continuation of the Dumbo–Defensa trend. Silica and silica-alunite veins oriented at N80°E hosted in porphyry.
Cachinalito Este	Favourable structural location, supported by drill hole intersections with elevated Au values.
Cachinalito Extensión Norte	A conceptual exploration target comprising a possible northern extension to Cachinalito Central Este, confirmed with drill hole intersections.
Blanca Estela	Based on a structure with minor high Au grades intersected in drilling; bounded by the Dumbo and Eureka areas.
Guanaco Este	6 km <sup>2</sup> zone to the east of the Defensa and Perseverancia open pits defined by artisanal workings in the ignimbrite lithology that hosts mineralization in the open pits.
Salvadora	Based on the occurrence of five east-west, 55° to 60° mineralized veins dipping north that contain brown to grey silica with moderate barite, hematite and jarosite. The veins have artisanal workings in the form of small shafts and shallow pits. Drilling indicates an approximate 2 km strike length of elevated Au and Ag grades.



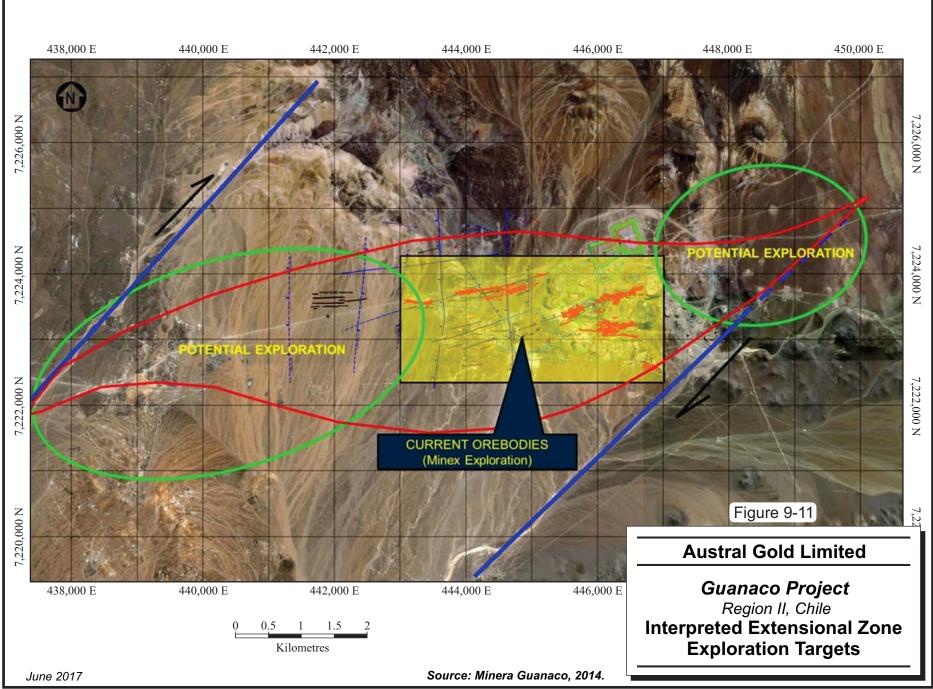
Exploration targets outside the Guanaco Mine area include the Cachinal de la Sierra, Mateo and Escondida areas (Figure 9-12).

# AMANCAYA

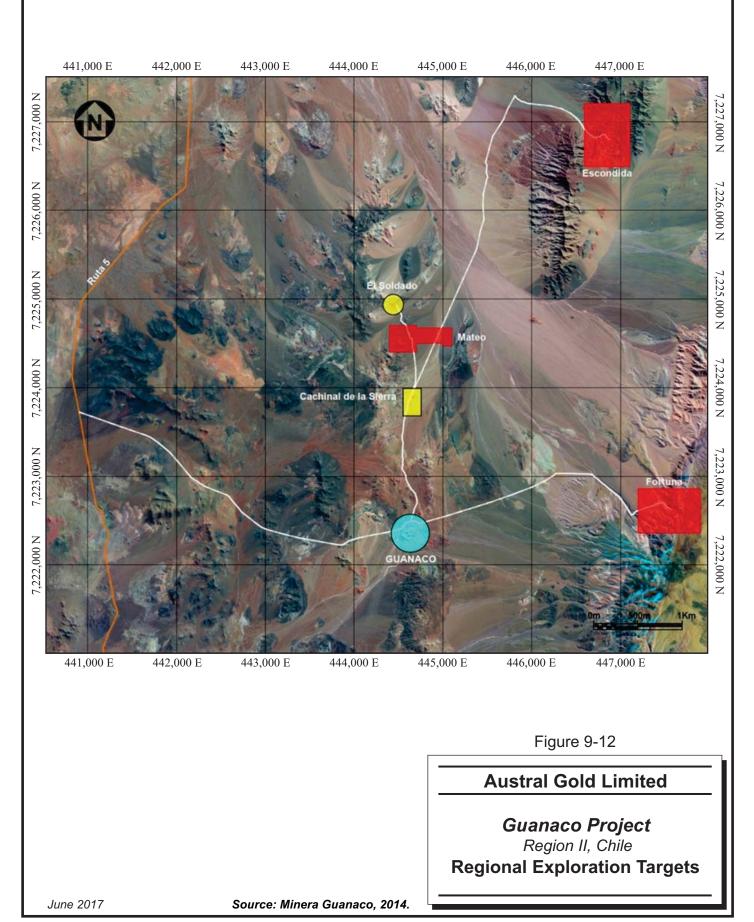
The main exploration potential exists at depth on the Central Vein which has been drilled to approximately 350 m below surface (Figure 9-13). High grade values have been intersected near the bottom of the known mineralization which remains open to depth.

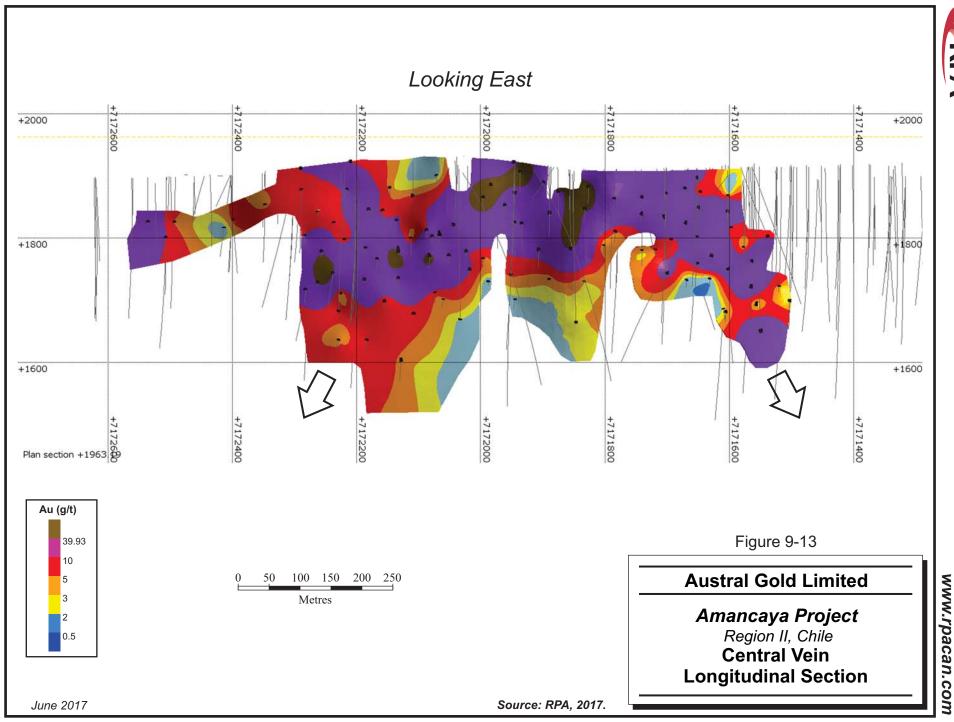
Other veins that could be expanded by further drilling include Cerro Amarillo, Griega, and Julia in the south and Janita in the north part of the property.











9-30

RPA



# **10 DRILLING**

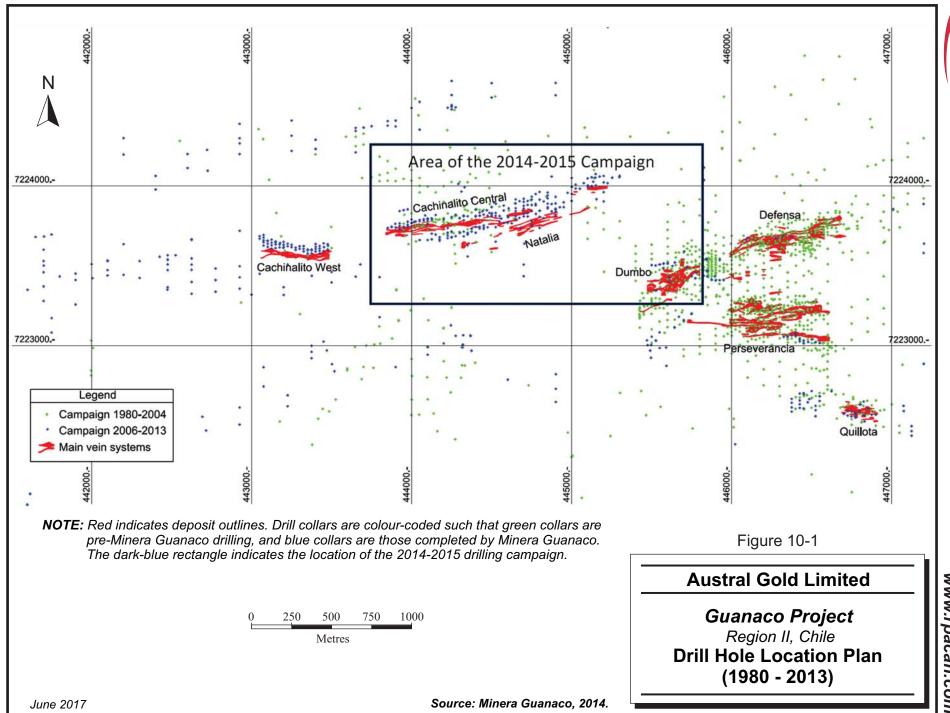
# GUANACO

A total of 304,218 m in 2,110 RC, core and mixed holes (RC and core) have been drilled on the Guanaco Gold Project from 1980 to March 30, 2015. Of these drill holes, the majority are RC (2,062 holes, totaling 293,025 m). Drilling is summarized in Table 10-1 by operator. Drill hole collar locations are shown in Figures 10-1 to 10-3.

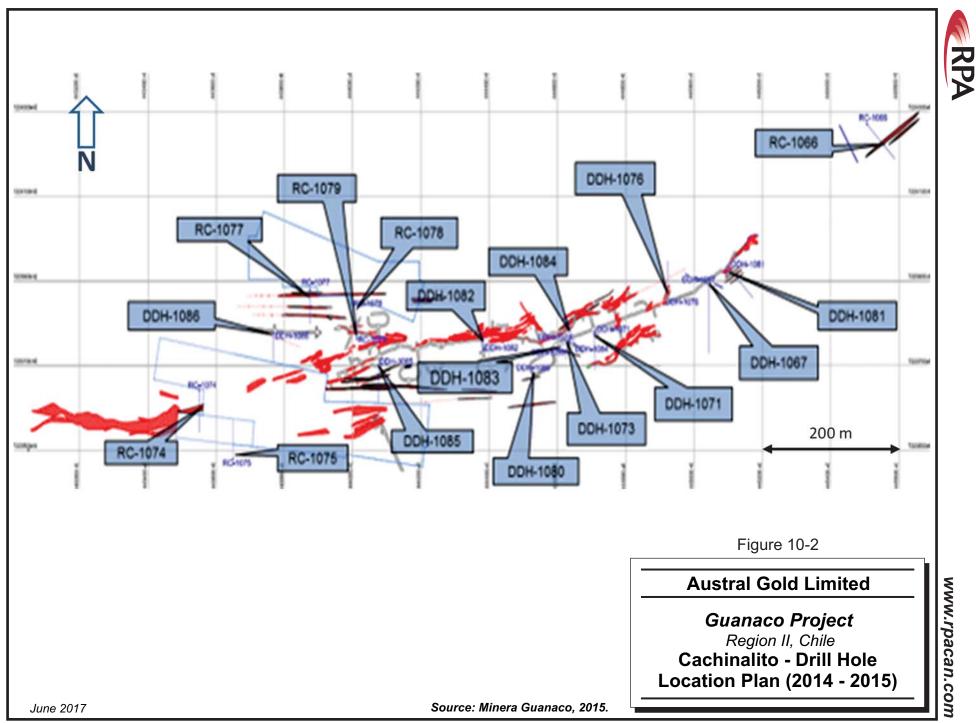
Company	Year	Hole ID Series	No.Core Holes	Core Length (m)	No. RC Holes	RC Length (m)	Mixed	Mixed Metreage
BHC	1980	SG			36	2,696		
SCMG	1990	SG			166	10,564		
	1991	I, SG			178	35,933		
	1992	AG	4	159				
		SG, WE			305	38,842		
Amax	1993	AD, RC, SG			119	14,212		
	1994	EG, P, RC			261	33,170		
	1995	EL, Q, RC, SH			95	10,592		
	1996-1997	RC			93	11,610		
	1999	RC			34	4,471		
		A to E			21	633		
Kinam/	0000	KGMC	3	573				
Cominco	2000	RC			104	21,174		
		RCGUA			34	7,597		
	2004	CA	19	3,374				
	2006	F			50	994		
		RC			188	27,511		
	2007	RC			101	19,904		
0014	2008	RC			37	9,981		
GCM/ Austral Gold	2009	RC			58	10,593		
Austral Golu	2010 *	RC			85	15,257		
	2011	RC			28	6,824		
	2012	RC			18	4,425	5	5,456
	2013	RC	6	509	41	4,607		
	2014-2015	RC/DDH	11	1,122	10	1,435		
Totals			43	5,737	2,062	293,025	5	5,456

# TABLE 10-1 EXPLORATION TARGETS AND PROSPECTS Austral Gold Limited – Guanaco and Amancaya Mines

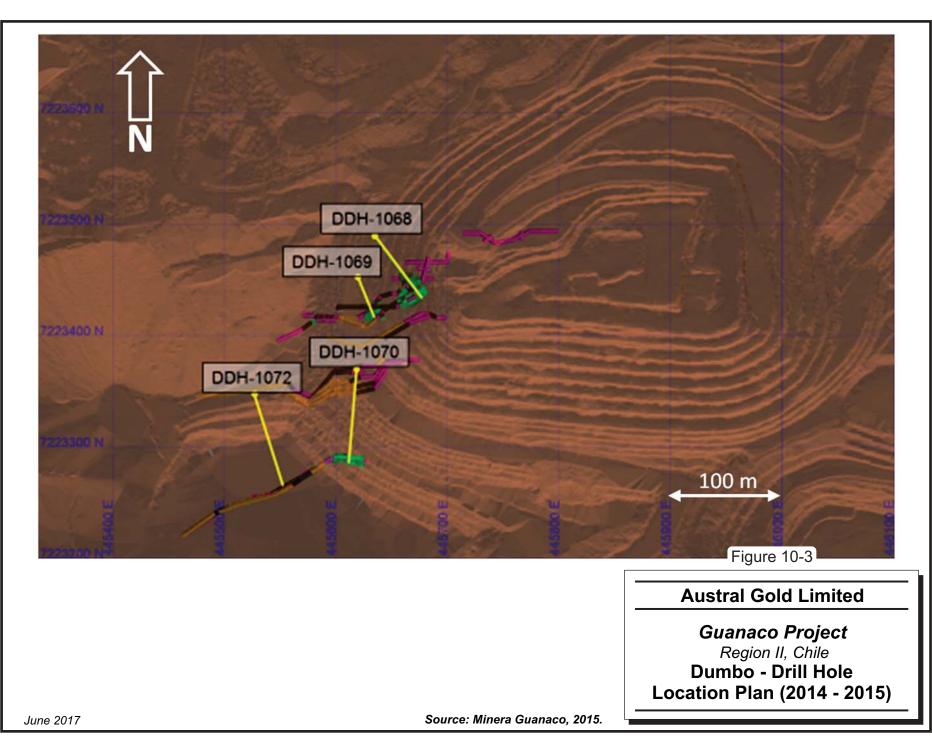
Note: 2010 RC total includes redrilling of six existing drill holes; 2011 RC includes redrilling of one existing drill hole. DDH: diamond-drilling hole. Drill information in the table was current as at 30 March 2015. No drilling has occurred since that date.



10-2









There are also 50 sonic drill holes (994 m) drilled in 2006 by GCM to test the material contained within the existing Phase I and Phase II leach pads. These drill holes are summarized in Table 10-2.

Item	No.	Min.	Max.	Total
Drill Holes	50	NA	NA	NA
Drill Hole Length (m)	50	14	20	994
Assay Length (m)	994	1	1	994
Au (ppm)	994	0.03	4.40	NA
Ag (ppm)	993	0.08	70.00	NA
Cu (%)	994	0.000	0.549	NA

# TABLE 10-2 SONIC DRILL HOLE SUMMARY Austral Gold Limited – Guanaco Mine

# LEGACY DRILL DATA

# ENAMI (1970S)

Drill holes completed by Enami during the 1970s are not included in the database due to the paucity of available information.

# BHC (1980)

In 1980 BHC drilled 50 RC drill holes (SG-1 to SG-50) using a Schramm open-hole rotary rig, totalling approximately 3,000 m. All holes were inclined (-16° to -75°). No information is available regarding hole diameters, recoveries, contractors, and methods used in sample collection. Data from these campaigns were not considered during the resource estimation. Holes were drilled in the areas that became the Huascar and Dumbo pit zones.

# SCMG (1987 - 1009)

Between 1987 and 1990 SCMG drilled 167 holes (SG-51 to SG-229) with a total metreage of approximately 10,564 m. All holes were RC and were executed in the Perseverancia, Huascar, and Defensa pit zones.

Drill holes SG-51 through SG-90 were drilled during the first SCMG evaluation phase. There is no information regarding the type of rig used, hole diameters, and sample collection techniques used, but it is assumed that all were equivalent to those used for holes SG-91 through SG-229. These later holes were drilled after SCMG started development and their own drill was used which employed conventional open-hole rotary and 5¼ inch pneumatic hammers. Most of the SCMG holes were drilled at either -60° or -90°. A small percentage



was drilled at other inclinations between -60° and -90°. Approximately half of the holes were between 35 m and 60 m in depth, with the deepest being 144 m.

# AMAX (1991 – 1997)

Amax drilled 1,005 holes totalling 142,674 m between 1991 and 1997. These holes were drilled using RC rotary drills and belong to the drill hole series EG (001 to 092), I, P, RC (001 to 351), SG (230 to 639), SH (002 to 031), and WE (001 to 090). Six holes from the AG drill hole series, totalling 405.25 m, were core holes. Holes comprised exploration, condemnation, and infill drill holes.

The first 175 rotary holes were drilled with 5¼ inch bits, except for the top three metres to six metres of each hole, which was drilled with seven inch bits to allow installation of the casing. The majority of drilling was accomplished using conventional pneumatic hammers, but 15% to 20% of the metreage was drilled with tricone bits. Approximately 1% to 2% of the drill holes were drilled with an open-face hammer bit.

Ausdrill Ltda. (Ausdrill) and Harris y Compañia. Ltda. (Harris) were the main drilling contractors. Rasco Inversiones Ltda. (Rasco) was the principal downhole surveyor. Rasco used both Eastman Multishot and Reflex Fotobor methods to measure the hole deviations. All of the Amax holes were drilled dry, with the exception of ten holes for which injected water was used to drill the last 15 m to 50 m.

# KINAM (19999 – 2000)

The Kinam drilling programs consisted of 138 RC drill holes totalling 25,645 m from the RC-352 to RC-489 drill hole series. The drill hole average length was 198 m. In addition, three diamond holes were completed during the Kinam exploration program totalling 572.65 m. An additional 34 RC drill holes were drilled during 2000, totalling 7,597 m. The program was oriented to explore new concealed targets in gravel-covered areas previously recognised by geological and geophysical surveys.

Ausdrill was the drilling contractor. The drilling equipment selected for this exploration stage was a Schramm ED-2 Rotary Drill mounted on a Ford L8000 diesel truck. Tricones with 5½" or 5¾" diameter were used so that each sample would weigh approximately 58 kg to 64 kg. A dust collection system was installed and the cyclone and the hoses were checked every day to avoid sample spillage.



Kinam had trained personnel at the rig on a permanent basis. Kinam employees were in charge of keeping sampling records, sample splitting, bagging, labelling, weighing, and loading the samples onto a truck for daily transportation to the laboratory. Kinam employees were also responsible for inserting sample blanks and field duplicates before sending the samples to preparation. Geological logging was performed by qualified geologists.

# GCM DRILL PROGRAMS

GCM drill programs were carried out between 2004 and 2015. The exploration and infill drill programs consisted of 616 RC (101,531 m), 36 core (5,005 m) and five mixed (5,456 m) drill holes. The drill hole lengths varied from seven metres to 1,000 m. Samples were taken at one metre or two metre intervals.

The purpose of the programs was to identify extensions of known mineralized areas and a new area away from Guanaco. The areas close to Guanaco included Cachinalito Oeste, Cachinalito Extension, Extension Norte, Despreciada, Chilena, Abundancia, Dumbo Oeste, Salvadora, Cerro Guanaquito, Guanaquito Oeste, Cerro Quillota, Quillota Oeste, Sierra El Inesperado, and Quebrada Guanaco.

During May and June 2006, 50 holes were drilled on the existing leach pads, 17 holes on the Phase I pad and 33 holes on the Phase II pad. A total of 994 m were drilled on both pads.

In 2009 58 RC holes were drilled. GCM completed a drill program in late September 2010, which was undertaken in order to refine the geological model, evaluate the continuity of mineralization, evaluate possible deposit extensions, test for continuity of regional structures that were considered to be of exploration interest, and confirm the mineralization defined by previous drilling campaigns. A total of 79 new drill holes were completed in 2010, and an additional seven holes were redrilled.

In 2011, holes were drilled in the Eureka–Palermo, Cerro–Llano Guanaquito and Herradura sectors. A total of 28 RC holes were drilled totalling 1,430 m on Eureka-Palermo, 4,798 m on Cerro–Llano Guanaquito and 596 m on Herradura. One drill hole (RC-647) was redrilled, adding 220 m on Cerro Guanaquito Sector. No significant results were found.

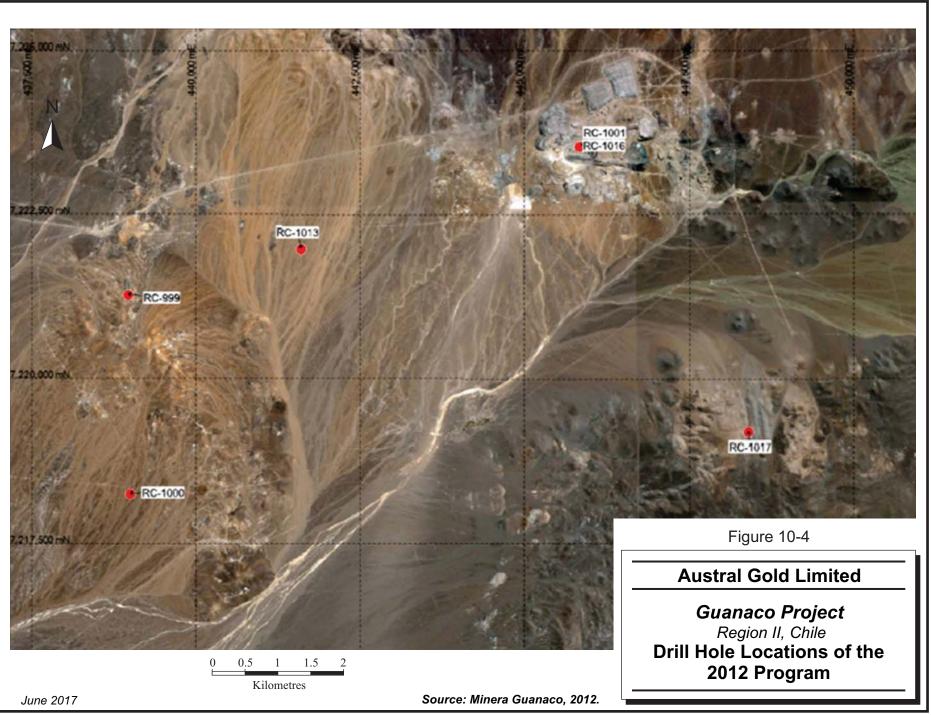
In 2011, 440 drill holes were used to estimate the open pit mineral resources, 439 of which were RC drill holes. The average length of the RC drill holes was approximately 116 m, the



longest being 270 m long. The core hole was approximately 11 m long. A total of 292 drill holes, 12 of which were core holes, were used to estimate the underground mineral resources. The average core hole length was approximately 183 m and the longest core hole is approximately 213 m long. The average RC hole length was approximately 201 m and the longest RC hole was approximately 351 m long. Drill holes were generally orientated perpendicular to the mineralization. Dips varied depending on the target and ranged from -60° to -90°. Spacing between them tightens up to approximately 25 m in the most densely drilled areas on the surface; drill holes were further apart at depth.

In 2012, 18 RC drill holes (4,425 m) were drilled for the gold–silver exploration program in the Guanaquito, Quillota, Eureka, Dumbo, Cachinalito, Inesperado Este, Llano and Herradura sectors. The average length was 245 m and the longest hole is 312 m long. No new resources were identified from this campaign. Also in 2012, five deep holes (5,456 m) were drilled (1,000 m each) with the objective of testing for the possible occurrence of a porphyry copper center below the high-sulphidation zone that crops out in the vicinity of the Guanaco Mine. This zone has been interpreted as remains of an extensive advance argillic lithocap. This lithocap had been mapped and largely identified as such in the Cerro Estrella and Cerro Guanaquito, but also in the surrounding Mina Inesperada, Sierra Las Pailas and Cerro Campana areas. Holes were sited at three kilometre spacings to test as wide an area as possible (Figure 10-4).

The drill holes were located in the Inesperada and Llano area, in the Las Pailas alteration zone and in the Dumbo pit. All holes were RC pre-collar drilled and finished with diamond drilling.



RPA

10-9

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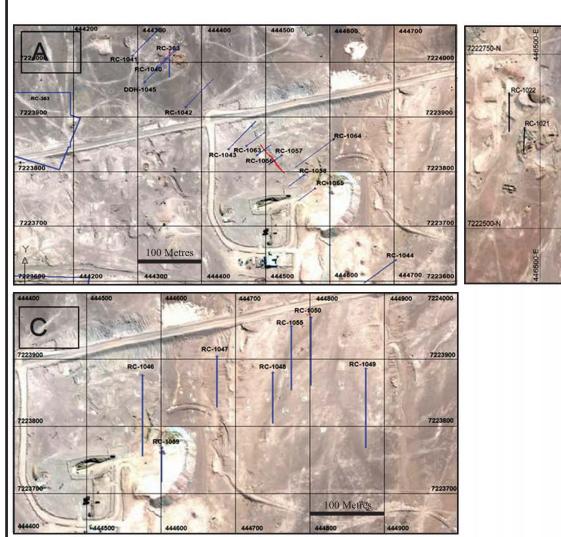
Results included:

- Holes located in the Inesperada area shows signs of alteration that may be related to a porphyry source (RC-999 shows dominant sericite-pyrite and variable amounts of quartz, and moderate phyllic alteration; RC-1000 shows evidences of green clay argillic (illite-smectite-chlorite) alteration).
- Hole RC-1013 shows no evidence of porphyry style alteration. This hole was collared approximately in the geographic center of the district, where the presence of a buried porphyry stock would have been more likely.
- Silver–lead–zinc mineralization found in three veins in drill hole RC-1013 could be interpreted as a low temperature event distal to Guanaco system, within a propylitic alteration zone and emplaced in fractures.
- The idea of a large lithocap does not seem to fit with the results of the drilling. Instead, the alteration pattern in the area is apparently related to the presence of regional structures which were favorable to act as more permeable zones where the hydrothermal fluids could be more easily conducted to surface.
- In the event of further deep drilling looking for porphyry style mineralization, the area with higher priority should be located to the north or northwest of hole RC-999.

Between July 31, 2013 and September 26, 2013, a drilling campaign was undertaken over the Despreciada, Quillota Oeste, Cachinalito Extension, Rajo Quillota and El Soldado areas (Figure 10-5). A total of 41 RC (4,607 m) and six core (509 m) drill holes were completed. The total drilled meterage was 5,116 m in 47 holes.

- Results from Despreciada did not allow confirm support of vein continuation both north and south of the shaft where the vein was initially discovered.
- In the Quillota pit, intersected intervals are narrow and Au values are low between 2,525 m and 2,650 m elevations. These results do not support consideration of the Quillota area for underground mining. At Quillota Oeste, intersections are narrow and grades are lower than in the Quillota pit.
- In Cachinalito Extensión, two east-west subparallel veins (Veta Norte and Veta Sur) were discovered. Veta Norte shows continuity above 2,630 m elevation and appears to retain reasonable thicknesses to the east and the west. Veta Sur is narrower than Veta Norte; however, there is potential for additional mineralization below 2,550 m elevation. Another secondary vein between the Veta Norte and Veta Sur veins was discovered during the drill program.

RPA



- 222750-N RC-1021 RC-1021 RC-1021 RC-1051 RC-1051 RC-1052 RC-1052 RC-1054 RC
  - A: Despreciada
  - B: Quillota y Quillota Oeste
  - C: Cachinalito Extensión

Figure 10-5

Austral Gold Limited *Guanaco Project Region II, Chile* 2013 Drilling at Despreciada, Quillota Oeste, Cachinalito Extensión and Rajo

10-11

June 2017

Source: Minera Guanaco, 2013.



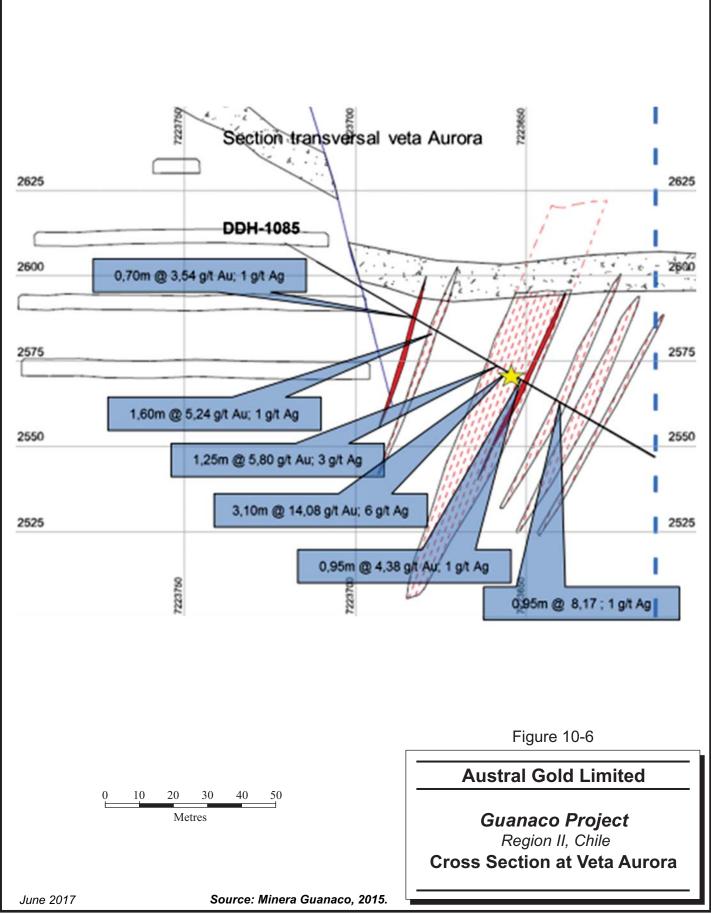
It is noted that that at the time of drilling, an option was held over the El Soldado prospect, however, at the effective date of this Report, GCM has withdrawn from the option and no longer has an interest in the tenure. No information is included on the El Soldado drilling as a result.

Between December 11, 2014 and March 30, 2015, another drilling campaign was conducted, this time focused on the Cachinalito and Dumbo areas. This campaign included 10 RC holes (1,435 m) and 11 diamond-drill, underground holes (1,122 m).

The purpose of the 2014 to 2015 campaign was to assess the lateral and vertical continuity of various structures developed during the previous year, as well as to explore several subparallel structures at Cachinalito. As a result of this campaign, a new vein was discovered (Aurora; Figure 10-6) and additional mineralized sections were added to Cachinalito Oeste, Cachinalito Extensión, Cachinalito Central Este and Cachinalito Norte.

A clear continuity has been established between nearly all previously known sectors in Cachinalito, so that it is now recognized as a single, large, east-west-oriented system.







# DRILL CONTRACTORS AND METHODS

# LEGACY DATA

There is no information on drill methods or drill contractors employed on the Guanaco Mine property collected prior to the involvement of GCM. GCM compiled the various legacy data files into a single Excel spreadsheet.

#### GCM

Diamond drill holes during 2004 were completed by Major Drilling Ltda. (Major), a local contractor. Major used UDR-650 and UDR-1000 rigs. No documentation on hole diameter was available. Major was also used during the 2008 drilling campaign.

During 2006, GCM contracted Boart Longyear to drill leach pad holes using the Sonic drilling method. This method provides highly representative, continuous core samples of overburden formations.

During 2006 to 2007 RC drilling was conducted by Harris. The drill used was a Schramm boring a 5.5" to 5.75" (14 cm to 14.6 cm) diameter hole with 5¼" rotary tricone drill bits. Dust collection systems were installed consisting of a cyclone, hoses, and a 2.5 m long vent over the cyclone for improved dust recovery. A riffle splitter was installed just below the cyclone opening to divide the whole sample.

During 2008 to 2011 the drilling contractor was Major Drilling Chile, who used UDR-1000 and Schramm 1050 rigs. The drilling diameters were 5 3/8", 5.5", 5 5/8" and 5 3/4" (136.53 mm, 139.70 mm, 142.88 mm and 146.05 mm) and the drilling runs were six metres long.

During 2012, RC and diamond drilling was carried out by Major Drilling Chile, using Scramm 1050, Schramm 1350, Major 50 and EDM 2000 rigs and a drilling diameter of 5 3/8", 5.5" and 5 5/8" (135.53 mm, 139.70 mm and 142.88 mm). Drilling runs were six metres long for RC holes, and 3.05 m long for core holes.

During 2013, RC and core drilling was executed by Major Drilling Chile. The drilling diameters were 5 7/16" and 5.5" (138.11 mm and 139.70 mm). Drilling runs were six metres long for RC holes, and 3.05 m long for core holes.



During the 2014 to 2015 campaign, Greencore (for RC drilling) and PFS Drilling (for diamond drilling) were hired as drilling contractors. RC diameter was 5 ¼", and diamond drilling was NQ (46.7 mm).

# **GEOLOGICAL LOGGING**

#### LEGACY DATA

There is no information on how drill data were collected prior to the involvement of GCM. GCM compiled the various legacy data files into a single Excel database.

#### GCM

Standardized logging forms and geological legends were developed by GCM for the deposits based on the mining operations and drilling completed. The geological legend is partly built on historical observations of the local geology.

Geological logging was performed digitally for all GCM programs. Data recorded lithology, structures (faults, fracturing, fault angle respect core axis), alteration (advanced argillic, argillic, siliceous, vuggy silica, propylitic, and fresh rock), ore minerals (oxide iron, oxide copper, sulphur, pyrite, and mineralization style). Mineral zones are not explicitly included but are generally marked by the loggers. Pre-defined legends and alphanumeric codes are used for logging. Unique features not accounted for in the legends are noted under written comments.

# RECOVERY

# LEGACY RECOVERIES

There is no information available on the recovery data for the legacy drilling.

# GCM

The minimum recovery from the 2006 to 2007 RC drilling program was 90%. Drill recovery for each sample interval was calculated by Amec Forster Wheeler by comparing the actual weight with the estimated weight. The estimated weight of a two metre sample was established at 52 kg. This information is not recorded in the database.

GCM recorded the recovered weight by drilling interval for the 2008 drilling campaign, but not the estimated recovery percentage. In 2014, AMEC International Ingeniería y Construcción Limitada for Guanaco Compañía Minera SpA estimated recovery using a theoretical sample



weight of 32.7 kg, assuming a 2.5 g/cm<sup>3</sup> density (AMEC, 2014). The resulting recoveries ranged from 21% to 147%, averaging 100%.

Recoveries were not measured for the sonic drill programs over the leach pads.

Recoveries for the 2012 to 2015 campaigns were recorded as 95% to 100% for diamond drilling and 80% to 100% for RC drilling. In some areas of structural complexity, the recovery average for core drilling could be approximately 80%.

# COLLAR SURVEYS

From 2008 all drill data have been surveyed using a global positioning system (GPS) instrument.

Guillermo Contreras, a local contractor, surveyed the GCM program drill collar locations using a Total Station Geodimeter 500 prior to drilling. The collar locations were re-surveyed after drilling was completed, and the inclination of the hole was also measured.

Leach program sonic drill hole collar locations were surveyed by Rodolfo Sánchez, a local contractor, using a Trimble GPS, model Pathfinder ProXRT with 30 cm precision. Mr. Sanchez also surveyed the 2012 to 2013 and the 2014 to 2015 drill hole collars.

Collar data are uploaded directly into the database.

# **DOWNHOLE SURVEYS**

From 2006 onwards, Comprobe Limitada (Comprobe) conducted the downhole surveying for the infill and exploration drill programs undertaken by GCM using the gyroscope method which determines the azimuth by magnetic reading and the inclination of the hole. Downhole surveys were completed for 627 drill holes using the gyroscope instrument.

Almost all drill holes are inclined with approximately -55° to -70° dips and 0° to 25° and 175° to 100° azimuths. Changes in azimuth and dip indicate a tendency of the holes to rotate clockwise and to become more vertical in orientation with depth. Trajectories of the surveyed holes diverge from the initial orientation as depth increases. This produces a difference



between the coordinates of the intervals calculated with the deviation and the coordinates of the same intervals calculated without deviation.

Measurements were collected at variable depths of 10 m, 20 m or 50 m intervals, and also at the end of some holes. The overall average azimuth and dip deviations were 1.81° per 100 m and -1.81° per 100 m, respectively.

Comprobe also conducted the downhole surveying for the leach pad sonic drilling. According to Magri Consultores (2007), results indicate that the maximum deviation from vertical is 1.15°. This maximum inclination would produce a deviation from vertical at the bottom of a 20 m drill hole of 4.07 cm, which is negligible.

In 2013 the surveyor changed to North Tracer Ltda. (North Tracer). Drill holes were downhole surveyed by North Tracer using a normal STP gyroscope with reading every 10 m and a continuous reading-STP gyroscope.

During the 2014 to 2015 campaign, down-survey measurements were conducted by Quality Survey Services, using a GT1-3402 gyroscope, with readings every five metres on seven RC holes. The other three holes could not be surveyed, due to serious obstructions near the collar. No measurements were conducted on diamond drilling, underground drill holes, since previous tests have established that little deviations are produced on this type of drilling in Guanaco.

# DRILL INTERCEPTS FROM 2015 EXPLORATION PROGRAM

GCM's 2015 exploration program added 2,557 m in 21 drill holes to the Guanaco Mine area. Ten drill holes were completed using RC whereas 11 drill holes were core holes. Most of the drill holes were located at the periphery of the vein systems and planned to test potential extensions of mineralization along strike and down dip.

# AMANCAYA

Drilling on the Amancaya Project has been conducted in phases by several companies from 2003 to 2016. A drilling summary is included in Table 10-3. A map of drill hole collars is



shown in Figures 10-7 and 10-8 and a typical cross section of the Central Vein is shown in Figure 10-9.

TABLE 10-3 DRILL HOLE DATABASE

TABLE 10-5 DRILL HOLL DATABASE					
Austral Gold Limited – Amancaya Project					
Operator	No. Holes	Metres			
Meridian/Yamana (2003-2008)	)				
RC	201	54,782			
Trenches	16	486			
Subtotal	217	55,268			
Cenizas (2009)					
RC/DDH	20	2,924			
DDH	5	2,130			
Subtotal	25	5,054			
Austral Gold (2015-2016)					
RC/DDH	100	12,207			
Subtotal	100	12,207			
Total	342	72,529			

# DRILLING AND LOGGING PROCEDURES

# MERIDIAN/YAMANA (2003 - 2008)

Drill hole collars were surveyed. Downhole gyro surveys were completed for all holes.

# CENIZAS (2009)

Minera Las Cenizas completed a total of 25 drill holes, including 5,054 m, from April 2009 to June 2009 on the property to confirm the 2008 Inferred Mineral Resource. All target depths were drilled using diamond drills with HQ diameter core, however, 20 of these holes were pre-collared using RC drills. A total of 2,924 m of RC chips and 2,130.25 m of diamond drill core were collected. Down hole Maxibor surveys were completed for all holes.

Lithology, structure, alteration, mineralization, weathering, recovery, and Rock Quality Designation (RQD) were recorded by geologists. Core was photographed, and split using an electro-hydraulic guillotine. Remaining core was then taken for storage at the Cenizas owned, Altamira Mine shack facility in Taltal coastal town in II Region Chile.



The Cenizas core has recently been moved to the GCM mine complex.

#### AUSTRAL GOLD (2015 - 2016)

Austral Gold completed seven oriented HQ3 (61.1 mm core diameter) diamond drill holes for geotechnical purposes during 2015 and 93 infill drill holes in 2016. The 2016 drilling was targeted on approximately 30 m centres and consisted of reverse circulation drilling for the collars and upper part of the hole and HQ core drilling through the mineralized portion of the holes. Drill collars were positioned using a differential GPS unit and downhole gyro surveys were completed in all holes. Final drill collar positions were surveyed using a total station instrument.

Lithology, structure, alteration, mineralization, oxidation, sulphides, recovery, fracture frequency, and RQD were recorded by geologists. The core was photographed and was split using an electro-hydraulic guillotine splitter. Remaining core was then stored at the GCM core shack facility inside the gated Guanaco Mine compound.

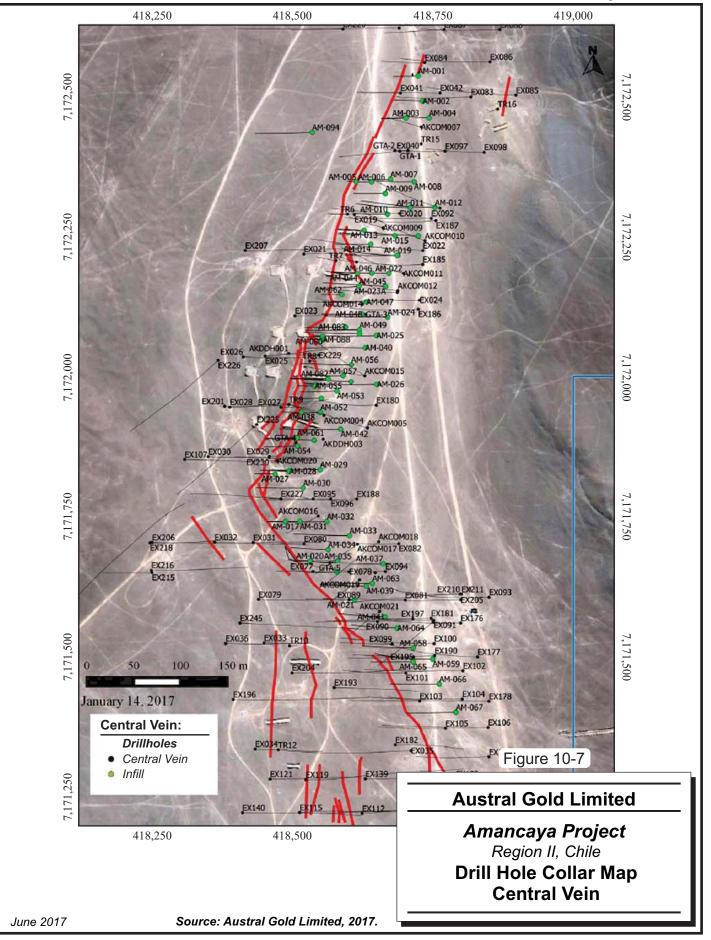
Core recovery was excellent, generally better than 95%.

The drill contractor was Spektra Drilling Chile SpA in 2015 and AK Drilling International S.A. from Antofagasta in 2016.

RPA has not identified any drilling, sampling, or core recovery issues that could materially affect the accuracy or reliability of the core samples.

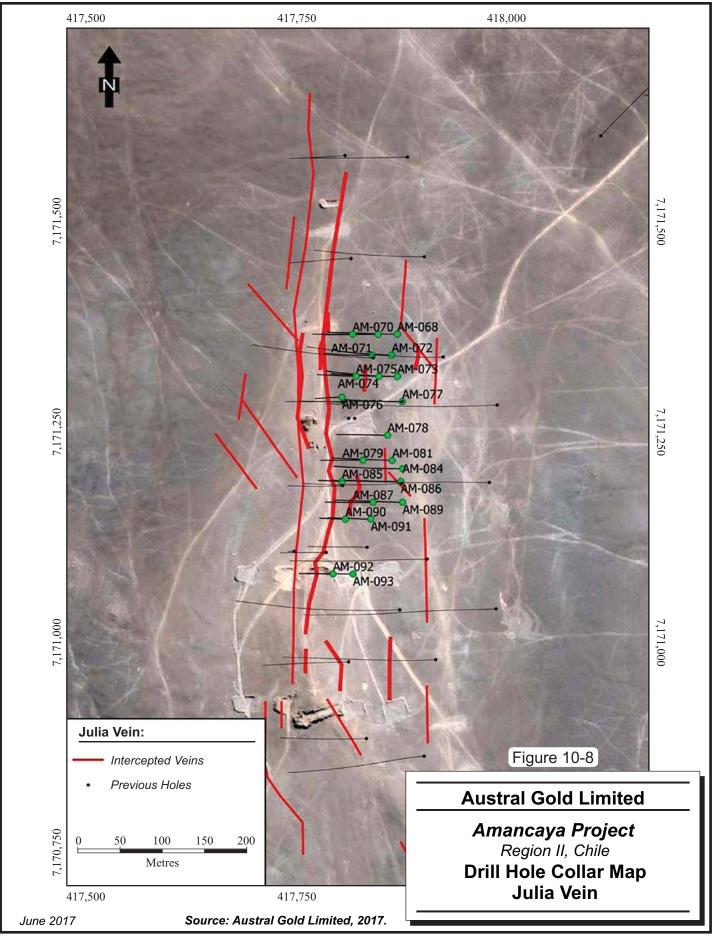


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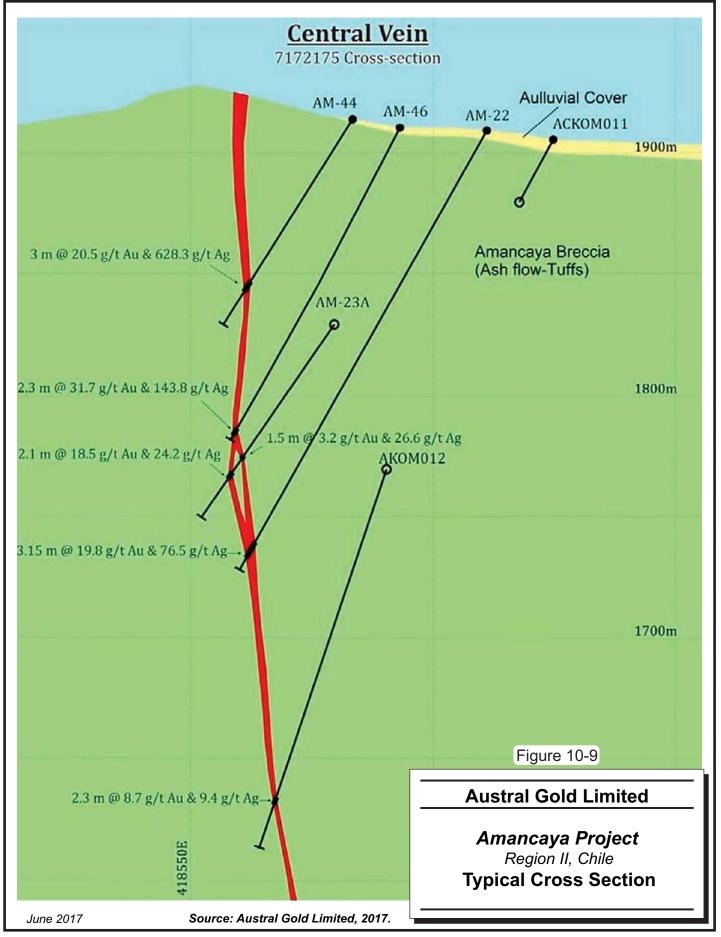




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# 11 SAMPLE PREPARATION, ANALYSES AND SECURITY

# GUANACO

From project inception to date staff employed by SCMG, Amax, Kinamand, and GCM were responsible for the following:

- Sample collection
- Core splitting
- Density determinations
- Sample storage
- Sample security

During some campaigns, personnel from the assigned laboratory for sample analysis performed sample preparation at the sample shed established on site (Geoanalitica in 2006 to 2007 and Acme Analytical Laboratories (Acme) in 2009 to 2010).

# SAMPLING METHODS

# GEOCHEMICAL SAMPLES

Geochemical samples that were collected during early exploration at Guanaco are superseded by drill data.

All samples were analyzed by Andes Analytical Assay Ltda for 17 elements (Ag, As, Bi, Cd, Co, Cu, Fe, Hg, Mn, Mo, Ni, Pb, S, Sb, Se, Te, Zn) using inductively-coupled plasma (ICP). One field duplicate and one coarse blank were inserted each 40 samples for quality control (QC) purposes. Three colour-coded blanks were used, derived from drill material that was considered to be non-mineralized.

# UNDERGROUND CHANNEL SAMPLING

As a matter of routine, every face advance in the underground workings (3.5 m average) is channel-sampled. Channels are properly referenced to the mine topography by using laser distance meters from underground landmarks. Once a correlative code is assigned to the channel, relevant boundaries are spray-marked along the gradient line that is defined by the mine surveyors on the wall. Relevant boundaries include contacts between wall rock and



vein, and contacts between different alteration or mineralization assemblages or occurrences.

The channel-sample length ranges from 0.4 m to 1.0 m in mineralized portions. No fixed lengths have been established for samples in barren zones. The intervals between marks are sampled by chipping the walls with a chisel and a hammer on a 20 cm to 30 cm belt along the gradient line. The chips are collected on a wooden tray that is attached to the wall rocks by the sampling operator. The sample weight is five kilograms to eight kilograms on average. Once a sample bag is completed, a label including channel code, azimuth, and distance to the mine landmark, and interval is inserted with the sampled material inside the bag. There are no twin samples.

# LEGACY SAMPLING

Legacy drill sampling data were collected as follows:

- BHC (1980): RC drill samples were collected at one metre intervals. No data are available on sample collection, transportation, or storage methods.
- SCMG (1987 to 1990): All holes were drilled dry and sampled at one metre intervals. The samples generated were first weighed to determine recoveries and then split with a Jones splitter. Depending on the recoveries, the samples were split two to three times to obtain approximately five kilograms of sample which was used to prepare composites for assay.
- Amax (1991 to 1997): RC drill samples were collected on one and a half metre intervals. The dry samples were first weighed and then split at the drill site using a Jones splitter. The number of splits taken and sample combinations was dependent on the recovery for each interval and the requirements for duplicate samples. The first objective was to provide the sample preparation laboratory with approximately ten kilograms of cuttings, or as much as possible if recovery was very low, and to have at least a minimal sample for logging. Other objectives were to provide Amax with a representative split of each sample and to collect duplicate samples from every tenth sample for checks on both the sample preparation and analytical work. Approximately two-thirds of the way through the program the criteria for collecting duplicates were changed to include the collection of duplicates from every fifth sample in strongly silicified zones. The samples generated when drilling wet were collected using a rotating wet splitter. Two equal volume samples were collected. One was sent to the sample preparation laboratory for drying and preparation and the other was stored at the mine.
- Kinam (1999 to 2000): RC drill samples were collected at two metre intervals. All the drilled material was put in thick (150 to 180 µm) polyethylene bags, usually 50 cm x 90 cm sample bags. The bags were immediately sealed in order to avoid sample spillage during transportation, handling, and storage. Three-part numbered labels, indicating the elements to be assayed, were used to identify the samples: one part of the label was inserted inside the inner bag with the sample material, the second part



was clipped to the bag, and the third part was retained as a sampling record. RC samples typically weighed 58 kg to 64 kg. Transportation of samples from the drilling site to the primary laboratory preparation facilities at the Guanaco camp was by a truck with high wooden sides. All the samples for each day were transported the same day to the on-site preparation facilities.

#### GCM RC AND CORE SAMPLING

RC samples were collected every 1.5 m in 2004, and every one metre or two metres in the 2006–2015 drilling campaigns.

A riffle splitter was installed just below the dust collector opening (cyclone) to divide the whole sample. The sample was split and collected in two metallic trays. One portion was selected for analysis and the second was retained for back up. A small portion of the sample was collected by a spoon and placed in a chip sample tray for geological logging.

Samples were weighed and bagged into pre-labelled plastic bags. The average estimated sample weights were 52 kg and 26 kg for two metre and one metre samples respectively. All samples were labelled using numbered tickets. One was clipped at the mouth of the bag; the second one was inserted in the bag.

Sonic drill samples were collected at one metre intervals.

Diamond drill sampling during the 2015 campaign consisted of splitting the core in half using a manual splitter, and following a line marked by the logging geologists.

# BULK DENSITY DETERMINATIONS

In 2006, 40 samples were assayed at the IDIEM laboratory at Universidad de Chile in Santiago using the wax-coated water-immersion technique. Twenty samples were taken from KGMC-1, KGMC-2, and KGMC-3 diamond drill holes in the Cachinalito area. Samples were typically 10 cm to 15 cm long and were mineralized samples with gold grades ranging from 2.38 g/t to 32.17 g/t. Bulk density values ranged from 2.21 g/cm<sup>3</sup> to 2.63 g/cm<sup>3</sup>, with an average of 2.50 g/cm<sup>3</sup>.

Another 20 chip samples were taken from mineralized areas at level 2662.5 m in the Dumbo pit. Samples from the Dumbo pit show two distinct populations, one with values above 2.8 g/cm<sup>3</sup> associated with barite at the bottom of the pit, and the other close to 2.42 g/cm<sup>3</sup> on



average. The density values ranged from 2.27 g/cm<sup>3</sup> to 3.38 g/cm<sup>3</sup>, with an average of 2.58 g/cm<sup>3</sup> (Table 11-1). No additional samples for bulk-density determination were collected during the 2014–2015 campaign.

In 2008, 72 core samples from the Cachinalito Central area were sampled and sent to the Dictec laboratory at University of Atacama in Copiapó for bulk density determination using the wax-coated water-immersion technique. Samples were typically 5 cm to 15 cm long, and were taken from mineralized and non-mineralized intervals including various rock types. Bulk density statistics are summarized in Table 11-2.

There are a limited number of density determinations for a property in operation. Amec Foster Wheeler recommends obtaining additional density data to explore differences between mineralization (oxide, mixed, and sulphide), alteration, ore/waste units, and/or lithological types, as well as spatial differences, in particular in the vertical direction. The accuracy of the density values impacts directly on the tonnage, hence if changes to the densities used result, then the Mineral Resource estimates may change.

# ANALYTICAL AND TEST LABORATORIES

# LEGACY DRILL CAMPAIGNS

The laboratories used in the legacy drilling campaigns were Cesmec, SGS Chile Ltda. (SGS), and Bondar Clegg (now ALS Chemex) as described below.

# BHC (1980)

RPA has no documented references for the laboratory used.

# SCMG (1987 – 1990)

Cesmec, an independent commercial laboratory in Antofagasta, acted as the primary laboratory for the first 41 holes (SG-51 to SG-90). The remaining drill holes were assayed by SCMG's on-site run-of-mine laboratory which was operated by SCMG personnel. It is not known what certifications were held by either Cesmec or the SCMG laboratory.



С	achinalito	0	Dumbo			
Sample	Bulk Density (g/cm <sup>3</sup> )	Sample	Bulk Density (g/cm <sup>3</sup> )			
59924	2.21	62510	2.83			
59925	2.47	62511	3.38			
59926	2.51	62512	2.93			
59927	2.61	62513	2.48			
59928	2.33	52661	2.51			
59929	2.56	52662	2.37			
59930	2.41	52663	2.44			
59931	2.56	52664	2.30			
59932	2.56	52665	2.37			
59933	2.63	52666	2.27			
59934	2.48	52667	2.52			
59935	2.54	52668	2.60			
59936	2.50	52669	2.50			
59937	2.54	52670	3.00			
59938	2.56	52671	2.46			
59939	2.49	52672	2.38			
59940	2.55	52673	3.07			
59941	2.53	52674	2.51			
59942	2.48	52675	2.30			
59943	2.52	52676	2.29			
Average	2.502	Average	2.576			
Min.	2.210	Min.	2.270			
Max.	2.630	Max.	3.380			

# TABLE 11-1 BULK DENSITY STATISTICS – 2006 Austral Gold Limited – Guanaco Mine



Rock-Alteration Type	Count	Average (g/cm³)	Max. (g/cm³)	Min. (g/cm³)
AND-ARG	1	2.46	2.46	2.46
BX-ARG	1	2.36	2.36	2.36
BX-FRE	1	2.15	2.15	2.15
BXH	2	2.30	2.40	2.20
BXH-SIL	3	2.45	2.50	2.37
BX-SAR	1	2.34	2.34	2.34
BX-SIL	4	2.36	2.51	2.20
PRD	1	2.32	2.32	2.32
TOC-ARG	7	2.33	2.44	2.10
TOC-FRE	5	2.36	2.52	2.09
TOC-PRO	2	2.46	2.54	2.38
TOC-SAR	9	2.39	2.59	2.20
TOC-SIL	8	2.46	2.63	2.32
TOP-ARG	4	2.33	2.52	2.20
TOP-SAR	6	2.36	2.44	2.27
TOP-SIL	13	2.41	2.65	1.79
VSZ-SIL	4	2.59	2.77	2.39

# TABLE 11-2 BULK DENSITY STATISTICS – 2008 Austral Gold Limited – Guanaco Mine

Rock Type Codes		Alteration	on Type Codes		
TOC	Crystal tuff	SIL	Silica		
TOP	Pumice tuff	ARG	Argillic		
BX	Volcanic breccia	SAR	Silicic-Argillic		
BXH	Hydrothermal breccia	FRE	Fresh		
VSZ	Vuggy silica	PRO	Propylitic		
PRD	Rhyodacitic porphyry				

### Amax (1991 – 1997)

SGS was used as the primary laboratory. SGS established a preparation facility on site. A portion of 250 g was shipped to SGS in Santiago for analysis. Bondar Clegg laboratory in Vancouver was used to reanalyze approximately 100 of the first 400 Amax samples. Both Bondar Clegg and SGS are independent laboratories. It is not known what certifications were held at the time of analysis. In addition, the Amax-operated Guanaco Mine laboratory on site analyzed samples from many of the silicified intervals using splits prepared from the unprocessed drill samples. The mine laboratory was not certified.



### Kinam (1999 – 2000)

Sample preparation facilities on site were used. Samples were submitted to Bondar Clegg laboratory in La Serena. Bondar Clegg held International Organization for Standardization (ISO) 9000 certification during the latter part of the drill program.

#### GCM DRILL CAMPAIGNS

GCM's 2004 drill samples were assayed at ALS Chemex, La Serena, as the primary laboratory. ALS Chemex held ISO 9000 accreditation at the time and is an independent laboratory.

During 2006 to 2007 samples were assayed at Geoanalítica Ltda. (Geoanalítica), Coquimbo. Actlabs Chile Ltda. (Actlabs) acted as the secondary laboratory. Both laboratories have ISO 9000 registration and are independent commercial laboratories.

During 2008 Vigalab, in Copiapó, was used as the primary laboratory and Geoanalítica acted as the secondary laboratory. Vigalab has ISO 9001:2000 certification and is an independent commercial laboratory.

The 2009, 2010, and 2011 drill programs were submitted to Acme Laboratories in Santiago (Acme Santiago), as the primary laboratory. The laboratory holds ISO 9001:2000 registration and is an independent commercial laboratory.

During 2012, samples from surface campaign in Las Pailas and RC samples were submitted to Acme Santiago, where they were prepared and assayed. Core samples from the deepdrilling project were prepared at Acme Laboratories in Copiapó (Acme Copiapó) and then assayed at Acme Santiago.

During 2013, samples from the drilling campaigns were prepared at Acme Copiapó and assayed in Acme Santiago.

A run-of-mine laboratory is used to assay chip samples from underground, chip samples from surface, and mineralized material stockpiled to confirm grades from chips/channels. The laboratory is not certified for analysis, but has applied for ISO 17025 certification for doré. Process samples (pulps from metallurgical cutters, process solutions, and activated charcoal) are routinely sent to Geoanalitica to be independently checked.



During the 2014–2015 campaign, RC samples were prepared and assayed at Geoanalítica, and core and channel samples were prepared and assayed at the mine laboratory.

### SAMPLE PREPARATION AND ANALYSIS

### LEGACY PROGRAMS

Sample preparation and analysis during the legacy programs, where known, are described below.

### BHC (1980)

RPA has no documented references for sample preparation.

### SCMG (1980)

RPA has no documented references for sample preparation. It is not known what analytical technique was used by Cesmec for Au, but it is assumed that it is the same as that used by the mine laboratory. This technique was conventional fire assay (FA) and gravimetric finish on a 60 g aliquot.

### Amax (1991 – 1997)

The entire drill core split was crushed to -10 mesh in roller mills. The -10 mesh material was passed through a Jones splitter and 1 kg was then reduced to -40 mesh in a disc pulverizer. After homogenization the -40 mesh material was then riffle split into two equal portions. One half was put into storage for possible later metallic sieve testing for coarse gold. The other half was dried in an oven and pulverized to -150 mesh using a ring and puck mill. The product was rolled, quartered, and split into two 250 g portions. One was stored on site and the other was shipped for analysis.

Sample preparation for RC samples comprised crushing to minus 2.0 mm (10 mesh) in roller mills, splitting to obtain a 1,000 g sub-sample using a Jones splitter, pulverizing to minus 0.422 mm (40 mesh) using disc pulverizer, splitting to obtain a 500 g sub-sample using a riffle splitter, pulverizing to minus 0.104 mm (150 mesh Tyler) using a ring and puck mill and finally homogenization and splitting to obtain two 250 g portions for storing and analysis.

SGS assayed for Au using FA and atomic absorption spectroscopy (AAS) finish on a 50 g sample. Prior to determination the FA bead was dissolved with aqua regia. For samples with Au grades greater than 1 g/t Au, a gravimetric finish was used instead. Silver was



determined by AAS on a 5 g aliquot digested by hydrofluoric acid and aqua regia. Copper analyses were assayed by AAS on a 1 g sample digested in a mixture of hydrofluoric acid and aqua regia.

Bondar Clegg assayed for Au using FA and AAS finish on a 30 g sample digested in aqua regia. Silver was assayed using AAS on a 1 g sample digested in aqua regia. Copper was determined by AAS on samples digested in a mixture of hydrofluoric acid and aqua regia. Samples with Cu grades greater than 10% were analyzed by a potentiometer titration method.

The GCM laboratory typically used fire assay and gravimetric methods on a 60 g aliquot to determine gold and silver. The method used for assaying for copper is not known.

### Kinam (1999 – 2000)

The on-site preparation procedure included drying at 100° to 105°C, crushing, 80% below 10 mesh, with a Rhino jaw crusher, and splitting with a Jones splitter in order to obtain a 1,000 g sample. The rejected material was kept in the original sample bag. A Bondar Clegg supervisor was present on a permanent basis at the sample preparation facility.

Once the samples arrived at the laboratory in La Serena, they were dried and ground to 95% under 150 mesh. Two bags were then prepared: 250 g for analysis and 750 g for back up. Gold was assayed by FA and AAS finish on 30 g aliquots with a lower detection limit of 5 ppb Au. Silver, copper, lead, and arsenic were assayed by AAS after digestion of a 0.5 g sample with HNO<sub>3</sub>–HCI digestion and HCI re-dissolution. The detection limits were 0.1 ppm for Ag, 1 ppm for Cu, 2 ppm for Pb, and 5 ppm for As.

### GCM PROGRAMS

### ALS Chemex (2004)

During the GCM 2004 drill programs, sample preparation at ALS Chemex was as follows:

- Weighing
- Drying at 60°C on stainless steel trays
- Crushing to 70% minus 1.68 mm (10 mesh Tyler) with a Rhino jaw crusher
- Homogenization and splitting to obtain approximately 500 g sub-sample
- Pulverizing the collected sub-sample to 85% minus 0.074 mm (200 mesh Tyler) in an LM-2 pulverizer



• Gold was assayed by FA and AAS finish. Samples with Au grades greater than 10 g/t were finished by gravimetry. The lower detection limit for gold was 0.005 g/t. Copper and silver were assayed by total digestion and AA finish.

### Geoanalitica (2006 – 2007)

In 2006–2007, sample preparation at Geoanalítica was as follows:

- Weighing
- Drying at 105°C on stainless steel trays;
- Crushing to 85% minus 2 mm with a jaw crusher with a 10 mesh vibrating screen
- Homogenization and splitting to obtain approximately a 1,000 g sub-sample
- Pulverizing of the collected sub-sample to 95% minus 0.105 mm in an LM-2 pulverizer.

Gold was assayed by FA and AAS finish in 50 g aliquots. The lower detection limit was 0.01 g/t. For Au grades greater than 3 g/t the assays were finished by gravimetric method.

Samples were also assayed at Geoanalítica in 2006–2007 for total copper (CuT) and Ag by AAS in approximately 1.0 g aliquots digested with aqua regia and acid dilution (HCl). For Ag grades greater than 50 ppm the assays were finished by gravimetry. The lower detection limits were 0.001% Cu and 1.0 g/t Ag.

Leach pad sonic drill samples were prepared by Geoanalítica as follows:

- Drying
- Splitting by rotary divider. One half for normal assays and the other half for metallurgical testwork to be done at a later stage.
- The half sample for assaying could follow one of two different procedures:
  - Normal assay:
    - Crushing to minus 10 mesh
    - Approximately 1.0 kg sample split by rotary divider for pulverizing (reject sent to GCM)
    - Pulverizing to minus 150 mesh
    - Envelope containing 250 g for Au, Ag, and Cu assays, the rest for GCM.
  - Screening and Assaying:
    - Samples were screened into five fractions: +¾", -¾" + ¾", -¾" + ¼", -¼" + 10#, and -10#
    - Each fraction was prepared and assayed as described above
    - Fraction weighted averages were calculated for each sample.



A total of 334 and 660 samples were obtained from the Phase I and II heaps respectively. Of these, 67 and 132 samples were split into size fractions, prepared, and assayed. The rest were submitted for normal sample preparation and assaying as per the core and RC sampling described above for Geoanalítica.

### Vigalab (2008)

In 2008 sample preparation at Vigalab was as follows:

- Weighing
- Drying at 105°C on stainless steel trays
- Crushing to 95% minus 2 mm with a jaw crusher with a 10 mesh vibrating screen
- Homogenization and splitting to obtain approximately a 250 g sub-sample
- Pulverizing of the collected sub-sample to 95% minus 0.106 mm in an LM-2 pulverizer

Gold was assayed by FA and AAS finish in 25 g aliquots. The lower detection limit was 0.01 g/t. Samples were also assayed at Vigalab in 2008 for Ag and CuT by AAS in approximately 2.5 g aliquots digested with aqua regia and acid dilution (HCl). The lower detection limits were 1.0 g/t for CuT and 1.0 g/t for Ag.

### Acme (2009 - 2013)

During the 2009–2013 GCM drill programs, sample preparation at Acme was as follows:

- Weighing
- Drying at 105°C on stainless steel trays;
- Crushing to 85% minus 2 mm with a jaw crusher with a 10 mesh vibrating screen
- Homogenization and splitting to obtain 3 sub-samples of 1 kg each one.
- Pulverizing of the collected sub-sample to 85% minus 0.106 mm in an LM-2 pulverizer.
- Homogenization and splitting to obtain approximately a 250 g sub-sample

Gold was assayed by FA and AAS finish in 25 g aliquots. The lower detection limit was 0.005 g/t.

No information was provided in regards to sample preparation for Ag or any other relevant elements.



### Geoanalitica (2014 – 2015)

During the 2014–2015 drilling programs, sample preparation at Geoanalítica was as follows:

- Drying at 105°C on stainless steel trays
- Crushing to 85% minus 2 mm with a jaw crusher with a 10 mesh vibrating screen
- Homogenization and splitting to obtain approximately a 1,000 g sub-sample
- Pulverizing of the collected sub-sample to 95% minus 0.105 mm in an LM-2 pulverizer

Gold was assayed by FA and AAS finish in 50 g aliquots. The detection limit was 0.01 g/t. For Au grades greater than 3 g/t the assays were finished by gravimetric method.

Samples were also assayed for Cu and Ag by AAS with aqua regia digestion. For Ag grades greater than 50 ppm the assays were finished by gravimetry. The detection limits were 0.001% Cu and 1.0 g/t Ag.

### Mine Laboratory (2014 – 2016)

Core and channel samples were prepared and assayed at the mine laboratory. Preparation consisted of the following:

- Drying at 105°C on stainless steel trays;
- Crushing to 85% minus 2 mm with a jaw crusher
- Homogenization and splitting to obtain approximately an 800 g sub-sample
- Pulverizing of the collected sub-sample to 85% minus 0.075 mm in an LM-2 pulverizer. The pulverized sample was split in two paper bags, one for analysis and one for backup.

Sieve checks were conducted on crushed and pulverized material every 20 samples (5%).

Gold was assayed by FA and AAS finish in 30 g aliquots. The detection limit was 0.01 g/t. For Au grades greater than 6.66 g/t, the assays were finished by gravimetric method. Ag and Cu were assayed using AAS with aqua regia digestion. The detection limits were 1 g/t Ag and 0.001% Cu.

Assay batches at the mine laboratory consist of 28 ordinary samples, plus one coarse duplicate, one pulp duplicate, one coarse blank (quartz) and two reference materials (with low and high gold grades) obtained from commercial producers. In addition, 20 samples are submitted to Geoanalítica every month for external checks. RPA visited the laboratory, and



found it well managed, and provided with modern analytical equipment. Reagents and utensils are acquired from reputed sources. The laboratory obtained ISO 17025 certification in 2014 for doré assays.

### QUALITY ASSURANCE AND QUALITY CONTROL

### LEGACY QA/QC PROGRAMS

Little to no documentation from drilling campaigns prior to 2000 is available. There is no information for the BHC and SCMG programs.

Amax implemented a quality control (QC) protocol which included the insertion of 10% to 15% of field duplicates from RC samples and some check samples. The field duplicate consisted of approximately a quarter of the original sample (5 kg sample); however, no details or results are available. No details of standard reference materials (SRMs) and blank samples are documented for the Amax drilling campaigns.

During the drilling program in 2000 Kinam implemented quality assurance and quality control (QA/QC) protocols consisting of the insertion of field duplicates, pulp duplicates, coarse blanks, and SRMs.

#### GCM QA/QC PROGRAM

GCM's QA/QC program comprised insertion of field duplicates, check samples, coarse blanks, and SRMs. The control samples for the 2004 drill program were inserted in the submission batches on site prior to submission to ALS Chemex.

GCM also submitted check samples (pulverized samples) to Actlabs at La Serena, (2.8% of the routine samples). GCM personnel inserted the control samples (field duplicates and coarse blanks) in the submission batches on site for the 2006–2007 drill programs, prior to submission to Geoanalítica. GCM also submitted check samples (pulverized samples) to Actlabs in La Serena during 2006 (at a rate of approximately 6.77% of the routine samples). The 2007 check samples (pulverized samples) were submitted to Actlabs in La Serena, in a proportion of approximately 2.1% of the routine samples.

In the 2008–2011 campaign GCM inserted 122 coarse duplicates and 293 coarse blanks in the submitted batches prior to submission to Vigalabs and Acme.



In 2012, during the deep-drilling project, 10 field duplicates and 14 coarse blanks of a total population of 895 samples were inserted prior submission to Acme, for an approximate insertion rate of 2.7%. For the RC exploration campaign 23 field duplicates and 27 coarse blanks of a total population of 1,965 samples were inserted prior submission to Acme.

During 2013 campaign, GCM inserted 61 field duplicates and 53 coarse blanks of a total population of 4,607 samples prior to submission to Acme.

During the 2014–2015 campaign, the geological QC program consisted of the insertion of coarse blanks and field duplicates (1.2% and 1.6%, respectively, of the total number of RC samples). No SRMs were inserted in the Geoanalitica submission batches. The core-sample batches submitted to the mine laboratory only included the insertion of one single SRM (3.5% of the samples submitted to the mine laboratory). No QC protocol is in place for channel sampling.

### DATABASES

The Guanaco Mine data are stored in a Vulcan software database. The database was first compiled from various Excel, MineSight, and Gems files into a single Vulcan database in 2006. While performing this first compilation, GCM compared the electronic entries with the original certificates, when available. Such certifications were only fully available from 2006 onwards.

All geological and geotechnical data collected during the GCM drill programs were entered electronically directly into the system. Assays were received electronically from the laboratories and imported directly into the database. Drill hole collar and downhole survey data were manually entered into the database.

Data are verified on entry to the database by means of built-in program triggers within the mining estimation software. Checks are performed on surveys, collar coordinates, lithology data, and assay data.

Paper records were kept for all assay and QC data, geological logging and bulk density information, downhole, and collar coordinate surveys from the GCM drill programs.



For data acquired prior to 2006 some paper records were missing. Overall, approximately 50% of the data within the mineralized grade shell have an original paper assay certificate, and approximately 43% have a paper copy of the assay certificate. Only approximately 7% of the data within the grade shell have no paper support.

### SAMPLE SECURITY

Sample security relied upon the fact that the samples were always attended or locked at the sample dispatch facility. Sample collection and transportation have always been undertaken by company or laboratory personnel using corporately-owned vehicles.

Chain of custody procedures consisted of filling out sample submittal forms that were sent to the laboratory with sample shipments to make certain that all samples were received by the laboratory.

### SAMPLE STORAGE

Core and representative one metre RC samples are numbered and ordered, and stored in a dry, clean, and well-maintained core shed.

In RPA's opinion, the sample preparation, analysis, and security procedures at Guanaco are adequate for use in the estimation of Mineral Resources.

### AMANCAYA

### SAMPLING METHOD AND APPROACH

The following information is taken from Scott Wilson RPA (2008), Cenizas (2009), and RPA's onsite review of procedures (2015/2016), and reflects procedures implemented by Yamana (2003 to 2008), Cenizas (2009), and Austral Gold (2015/2016).

### TRENCHING (YAMANA)

Trench samples were collected by channel sampling of freshly exposed bedrock in surface trenches. The channel samples were a standard one metre in length, however, they were occasionally shorter depending on geological boundaries. Standards, blanks, and duplicate chip samples were inserted into the sample stream.



### **REVERSE CIRCULATION DRILLING (YAMANA AND CENIZAS)**

Two chips samples were collected using a cyclone, one to be sent for analysis and one to be saved as a reject sample. Sample intervals were generally two metres, but occasionally one metre, and the size of collected sample ranged from eight kilograms to ten kilograms. A sample number was assigned to each sampled interval. Quality Assurance (QA) and Quality Control (QC) samples were inserted into the sampling stream for each vein intersection. Samples were collected at the drill site by a truck contracted by the assay laboratory.

In RPA's opinion, the sampled chips should provide an unbiased reflection of the mineralization in the Amancaya deposit.

### DIAMOND DRILLING (CENIZAS AND AUSTRAL GOLD 2015)

Half core samples over two metres were taken where mineralization or alteration was visible, respecting lithological contacts identified in the diamond drill core. Core was split using a hydraulic splitter. Minimum sample length within the mineralization veins was 0.20 m. Unaltered and unmineralized half core samples were taken at three metre intervals, with some compositing of samples up to nine metres performed after sample preparation. Quality Assurance (QA) and Quality Control (QC) samples were inserted into the sampling stream for each vein intersection. Samples were collected at the drill site by a truck contracted by the assay laboratory.

### DIAMOND DRILLING (AUSTRAL GOLD 2016)

Half core samples over 1.5 m were taken where mineralization or alteration was visible, respecting lithological contacts identified in the diamond drill core. Core was split using a hydraulic splitter. Minimum sample length within the mineralization veins was 0.30 m. Unaltered and unmineralized half core samples were also taken at 1.5 m intervals. Quality Assurance (QA) and Quality Control (QC) samples were inserted into the sampling stream for each vein intersection. Drill core was collected at the drill site by a company truck.

### **DENSITY ANALYSIS**

Density measurements collected by Cenizas during the 2008 drilling program were performed by CIMM Rock Mechanics laboratory on eleven samples, approximately 15 cm in length, selected from the hanging wall, footwall, and vein of the deposit. Density values ranged from 2.39 t/m<sup>3</sup> to 2.56 t/m<sup>3</sup> and averaged 2.48 t/m<sup>3</sup> within the vein.



No other details of density measurements taken during previous or subsequent drilling programs were available to review. RPA recommends that Austral Gold develop and implement a protocol for measuring density in each of the different lithologies, alteration types, and mineralization zones at the property.

### SAMPLE PREPARATION

### MERIDIAN/YAMANA (2003 - 2008)

Samples were prepared by ALS Chemex in La Serena, Chile, which is accredited with the ISO for quality management (ISO 9001:2000), for all the assays from the Amancaya drilling. Chip samples were delivered to the laboratory by a truck contracted and supervised by the lab.

At the laboratory, samples were oven dried, and crushed to better than 85% passing through a 10 mesh screen. Crushers were cleaned with compressed air between every sample and with quartz sand every 10th sample. A sieve test sample was taken every 30 samples. Samples distal to mineralization were composited to represent six metres of drill core and a riffle splitter was used to obtain a 1,000 g subsample from the composited and noncomposited crushed samples. The subsample was pulverized using a chrome-steel ring mill to better than 85% passing through the -200 mesh. Three, 250 g pulp splits were taken; two for storage at Yamana's El Peñón Mine and one for analysis.

#### **CENIZAS (2009)**

Samples were prepared by Acme Santiago, which holds accreditation with ISO for quality management (ISO 9001: 2000) and the International Electrotechnical Commission (IEC) for laboratory competence (ISO/IEC 17025: 2005). Samples were dried at 60°C for 24 hours and crushed to 70% passing through a 10 mesh screen. Crushed material was homogenized and a 500 g split was pulverized to 100% passing through a 200 mesh screen. A 50 g split of the pulp material was taken for chemical analysis.

### AUSTRAL GOLD (2015)

Samples are prepared at Austral Gold's Guanaco Mine onsite laboratory facility (GCM, 2013). Samples are ordered and compared to accompanying analysis request sheet, weighed, dried, and finally crushed to better than 85% passing a 2 mm screen (10 mesh) using a jaw crusher. The crushed sample is split using a riffle splitter from its original weight, which ranges from five kilograms to nine kilograms, to approximately one kilogram. The



sample split is then pulverized to better than 95% passing a 200 mesh, using a steel pulverizer. Following pulverization, a 30 g split is taken for analysis.

Crushers and pulverizers are cleaned using compressed air between samples. Remaining sample material is retained on site for a period of one month.

### AUSTRAL GOLD (2016)

Samples were prepared by Actlabs in Santiago, Chile, which holds accreditation with the International Electrotechnical Commission (IEC) for laboratory competence (ISO/IEC 17025). Samples were weighed, completely dried at 105°C, and crushed to pass 85% through a 10 mesh screen. Crushed material was homogenized and a 50 g split was pulverized to 95% passing through a 150 mesh screen to be taken for chemical analysis.

Crushers and pulverizers are cleaned using compressed air between samples and with quartz after each five samples. Remaining sample material is retained on site for a period of three months.

Some samples were prepared by ALS Global (ALS) in Antofagasta, Chile, which holds accreditation with for laboratory competence (ISO/IEC 17025). Samples were weighed, completely dried at 120°C, and crushed to pass 70% through a 10 mesh screen. Crushed material was homogenized and a 1,000 g split was pulverized to 85% passing through a 200 mesh screen to be taken for chemical analysis.

Crushers and pulverizers are cleaned using compressed air between samples. Remaining sample material is retained on site for a period of 45 days.

### SAMPLE ANALYSIS

### MERIDAN/YAMANA (2003 – 2008)

Samples were analyzed by ALS Chemex Laboratories in La Serena, Chile (ALS, ISO 9001: 2000 and ISO/IEC 17025: 2005) and Acme Santiago (Acme, ISO 9001: 2000 and ISO/IEC 17025: 2005). Standard fire assay methods using a 50 g pulp sample were utilized to determine total gold and silver content. All samples are analyzed for gold using FA with AAS finish, and for silver using aqua regia digestion and AA. Samples assaying greater than 5 g/t Au were rerun using FA with a gravimetric finish. Samples for which the preliminary assay is greater than 50 g/t Ag were rerun using a four-acid digestion and AA. Samples for which the



secondary assay is greater than 1,000 g/t Ag were rerun a second time using FA with a gravimetric finish.

Samples were also sent for multi-element geochemistry using a standard ICP-MS package to determine concentration of elements including arsenic, antimony, copper, lead, manganese, molybdenum, and zinc.

Pulps and coarse rejects were stored at Yamana's El Peñón Mine and are now being moved to the GCM operations site.

### CENIZAS (2009)

Samples were also analyzed by Acme. All samples are analyzed for gold and silver using aqua regia digestion with Atomic Absorption (AA) finish. Samples assaying greater than 10 g/t Au or 100 g/t Ag were rerun using a gravimetric finish. Samples returning values greater than 18 g/t Au were submitted for resizing analysis to determine the presence of coarse gold. Samples were also sent for multi-element geochemistry using a standard ICP-MS package to determine concentration of 32 elements for element association analysis.

Pulps and coarse rejects are stored at Cenizas' Altamira Mine shack facility in Taltal coastal town in II Region Chile.

### AUSTRAL GOLD (2015)

Samples are analyzed at Austral Gold's Guanaco Mine onsite laboratory facility following GCM's procedure PPG-LAQ-01 (GCM, 2011). Standard fire assay methods using a 30 g pulp sample were utilized to determine total gold and silver content. All samples are analyzed for gold using FA with an AAS finish, and for silver using aqua regia digestion and AA.

### AUSTRAL GOLD (2016)

Some of the samples were analyzed by Actlabs. Standard fire assay methods using a 30 g pulp sample were utilized to determine total gold and silver content. All samples are analyzed for gold using FA with an AAS finish, and for silver using aqua regia digestion and AAS finish. Samples assaying greater than 5 g/t Au were rerun using FA with a gravimetric finish. Samples for which the preliminary assay is greater than 50 g/t Ag were rerun using a



four-acid digestion and AAS finish. Samples for which the secondary assay is greater than 1,000 g/t Ag were rerun a second time using FA with a gravimetric finish.

Some of the samples were analyzed by ALS. Standard fire assay methods using a 30 g pulp sample were utilized to determine total gold and silver content. All samples are analyzed for gold using FA with AAS finish, and for silver using aqua regia digestion and AAS finish. Samples assaying greater than 10 g/t Au were rerun using FA with a gravimetric finish. Samples for which the preliminary assay is greater than 100 g/t Ag were rerun using a longer aqua regia digestion and AAS finish.

In RPA's opinion, the sample preparation, analysis, and security procedures at Amancaya are adequate for use in the estimation of Mineral Resources.

### QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance (QA) consists of evidence to demonstrate that the assay data has precision and accuracy within generally accepted limits for the sampling and analytical method(s) used in order to have confidence in a resource estimate. Quality control (QC) consists of procedures used to ensure that an adequate level of quality is maintained in the process of collecting, preparing, and assaying the exploration drilling samples. Generally, QA/QC programs are designed to prevent or detect contamination and allow assaying (analytical), precision (repeatability), and accuracy to be quantified. In addition, a QA/QC program can disclose the overall sampling-assaying variability of the sampling method itself.

### QA/QC PROTOCOLS

### YAMANA (2003-2008) AND AUSTRAL GOLD (2015-2016)

Yamana designed and implemented a QA/QC program with action items, including reassaying of entire batches, in the event that blank or Certified Reference Material (CRM) samples returned assay values outside predefined limits of acceptability. Austral Gold adopted the Yamana QA/QC protocols upon acquiring the property.

### CENIZAS (2009)

Most details of the QA/QC protocol implemented by Cenizas during their 2009 drill program were not available for review. Selected protocols and results of duplicate and blank samples included during this program were listed in Cenizas (2009).



### **CERTIFIED REFERENCE MATERIAL**

No information was available on the protocols or results of CRM samples submitted prior to 2015, however, Cenizas (2009) stated that 32 CRMs were included in assay submissions during the 2009 program.

A total of 17 samples, sourced from four distinct gold CRMs, and one silver and copper CRM, were submitted for analysis alongside 83 samples submitted during the 2015 Austral Gold drill samples, for an insertion rate of 20%. Results of these CRM samples are listed in Table 11-3. Failure criteria was set at two consecutive CRM values reporting more than two standard deviations (SD) from the expected value, or a single CRM reporting a value more than three SDs from the expected value.

Source	CRM	Element	Expected Value	No. Inserted	No. Failed	Failure Rate (%)
RockLabs	OxE101	Gold (g/t)	0.607	4	0	0%
RockLabs	OxG99	Gold (g/t)	0.932	3	2	66%
RockLabs	Oxl67	Gold (g/t)	1.817	3	0	0%
RockLabs	OxK94	Gold (g/t)	3.562	1	0	0%
WCM Minerals	PM1123	Silver (g/t)	31	6	0	0%
WCM Minerals	PM1123	Copper (%)	0.31	6	1	17%

# TABLE 11-32015 CRM RESULTSAustral Gold Limited – Guanaco and Amancaya Mines

Generally, the CRMs performed well, however, a positive bias was observed for each CRM. The low number of submitted samples for each CRM were not sufficient to assess the appropriateness of the failure criteria in the Guanaco Mine laboratory.

A total of 195 samples, sourced from two distinct gold CRMs, and two gold and silver CRMs, were submitted for analysis alongside 3,389 samples submitted during the 2016 Austral Gold drill samples, for an insertion rate of 5.8%. Results of the 2016 CRM samples are listed in Table 11-4.



Source	CRM	Element	Expected Value	No. Inserted	No. Failed	Failure Rate (%)
RockLabs	OxE101	Gold (g/t)	0.607	49	2	4%
RockLabs	OxG104	Gold (g/t)	0.925	28	0	0%
RockLabs	SL92	Gold (g/t)	5.031	38	0	0%
RockLabs	SL92	Silver (g/t)	30.3	38	4	10%
RockLabs	SN74	Gold (g/t)	8.981	21	0	0%
RockLabs	SN74	Silver (g/t)	30.3	21	1	5%

# TABLE 11-4 2016 CRM RESULTS Austral Gold Limited – Guanaco and Amancaya Mines

### BLANKS

A total of 20 coarse blank samples were assayed during the 2009 Cenizas drill program, inserted immediately following a potential high grade gold sample. Of these, only one sample reported above the acceptable limit of ten times the detection limit (0.005 g/t Au) (Cenizas, 2009).

A total of seven coarse blank samples were inserted during the 2015 Austral Gold drill program, for an insertion rate of 8%. All samples reported below, or at detection limit for gold, silver, and copper.

A total of 109 coarse blank samples were inserted during the 2016 Austral Gold drill program, for an insertion rate of 3%. A total of 13 samples returned values above the 0.05 g/t Au limit. Subsequent testing showed at least three of these locally derived samples contained some gold.

### DUPLICATES

A total of fourteen high grade samples (from 1.3 g/t Au to 24.8 g/t Au) were selected by Cenizas for re-assay to examine the repeatability of the reported gold value. Samples were re-assayed up to six times, however, they were re-assayed generally only once. Results were listed in tabular format in Cenizas (2009) and showed low dispersion of gold grades.

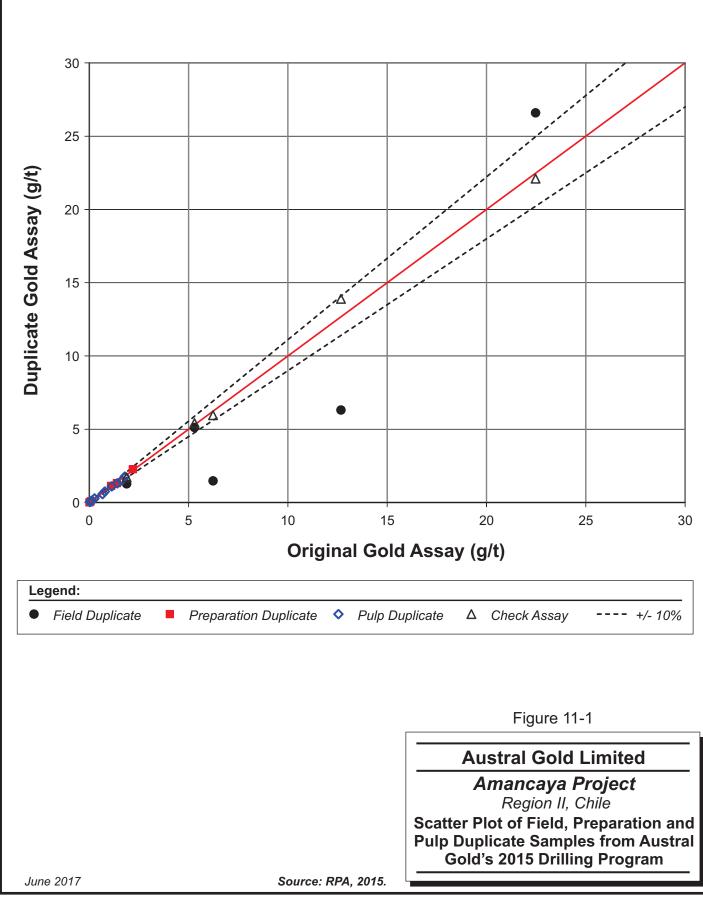
Austral Gold prepared scatter plots of four coarse preparation duplicate samples and 11 pulp duplicate (replicate) samples. Almost all coarse preparation and pulp duplicate pairs plotted within 10% limits and are shown in Figure 11-1.



Following the completion of the 2015 drilling program, Austral Gold submitted five quarter core field duplicates to Acme in Pudahuel, Chile (Acme Pudahuel), to compare against the original half core sample, assayed at Austral Gold's Guanaco Mine onsite laboratory facility. Results are shown in Figure 11-1. All but two of the duplicate samples returned values greater than 20% from the original sample. The duplicate, quarter core sample set reported a higher variance and coefficient of variation than the original samples, and a lower average value. These results may be due to the smaller sample size taken as a field duplicate, and/or bias resulting from the use of different sample preparation and analysis facilities.

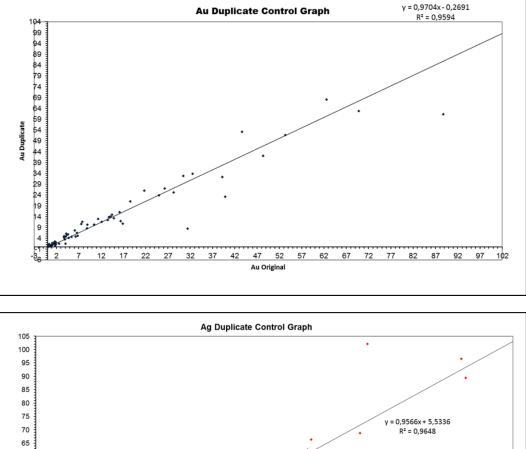
The results of this small field duplicate program point to the need for additional data to assess the natural variability of the core samples.



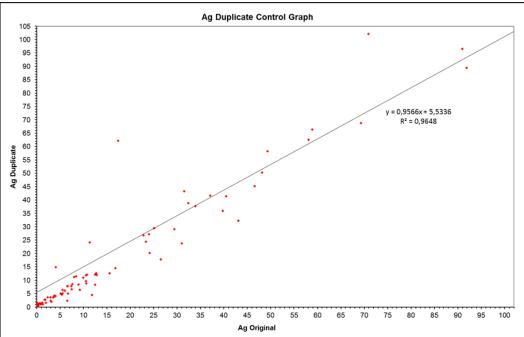




A total of 102 core duplicates were collected and analyzed during the 2016 drill program. For gold, the average grade for the original samples was 11.23 g/t Au, and the average grade for the core duplicate samples was 10.62 g/t Au. Figure 11-2 shows a correlation of 95.9%. For silver, the average grade for the original samples was 102.13 g/t Ag, and for the average grade for the core duplicate samples was 103.23 g/t Ag. Figure 11-2 shows a low dispersion of data and a correlation of 98.93% for the silver samples.



### FIGURE 11-2 CORE DUPLICATE CONTROL GRAPHS



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### **CONFIRMATION SAMPLING**

Austral Gold selected three samples from the 2009 Cenizas drill program for metallurgical testing. Assay results, which were duplicated from the Austral Gold program, were compared against the original Cenizas assay value. Table 11-5 lists the original Cenizas and duplicate Austral Gold results, which verify the presence of gold in the Cenizas drill program.

		Au (g/t)		Ag (g/t)		Cu (ppb)	
Drill hole	Sample ID	Cenizas	Austral	Cenizas	Austral	Cenizas	Austral
AKCOM021	418351-A	19.5	23.5	83	94.7	1,005	1,010.7
	418351-B		84.8	1,005	941.0		
AKDDH002	418352-A	0.4	1.5	10	13.1	1 002	822.0
AKDDH002	418352-B	2.1	1.4	12	16.5	1,083	870.6
	418353-A 4.0 42	13	15.6	402	467.7		
AKDDH003	418353-B	4.6	4.0	13	19.4	492	444.7

# TABLE 11-5 CONFIRMATION SAMPLING RESULTS Austral Gold Limited – Guanaco and Amancaya Mines

### CHECK ASSAYS

A total of five check assays, pulp replicate samples sent to an independent laboratory to assess bias at the principal laboratory, were submitted as part of the Austral Gold QA/QC program, alongside one blank and one CRM sample. The chosen laboratory, Acme Pudahuel, is accredited with the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) for quality management (ISO 9001: 2000) and laboratory competence (ISO/IEC 17025: 2005).

The results were compared using basic statistics and a scatter plot (Figure 11-1). A correlation coefficient of 0.997 and a percent difference between the mean value of each sample set of -1.1% indicate good correlation and negligible bias, however, the number of assays submitted as a check is not sufficient to draw meaningful conclusions.

### QA/QC CONCLUSIONS

In RPA's opinion, the QA/QC program as designed and implemented by Yamana and continued by Austral Gold is adequate and the assay results within the database are suitable to support a Mineral Resource estimate.



# **12 DATA VERIFICATION**

### GUANACO

A number of data verification programs and audits have been performed over the Guanaco Mine history, primarily in support of the compilation of mining-related studies at the mine.

### KINAM (2000)

The Kinam sampling programs were reviewed in 2000 (Simon, 2000) with the following results:

- The analysis of 289 field duplicates yielded four failures for Au (1.4%); silver and copper were not reviewed. The Au failure rate is considered acceptable for field duplicates.
- The analysis of 145 pulp duplicates yielded 14 failures for Au (9.7%); this result is considered border line but acceptable, it is just under the 10% failure rate that AMEC considered as unacceptable.
- AMEC analyzed 237 SRM samples from 19 SRMs. The samples represent a total of 3.4% of the samples included in submission batches. Most of the individual bias values were acceptable (below 5% absolute bias), with the exception of the Au132, Au192, Au61, Au67, Au69 and Au72. The overall bias for Au was -5.26%. The Kinam program did not include SRMs to monitor the Ag and Cu accuracy. On the basis of these results AMEC concluded that the Au accuracy at Bondar Clegg during the Kinam exploration was within acceptable ranges.
- AMEC reviewed the 357 assays from coarse blank materials inserted during the Kinam campaign. Given a threshold value of five times the lower detection limit (25 ppb Au), four blanks reported greater than the threshold for Au. AMEC concluded that no significant cross contamination occurred during preparation at Bondar Clegg.

### AMEC (2010)

AMEC reviewed cuttings from seven drill holes (0.9% of the drill holes included in the database) to verify lithological, mineralized units and contacts. The observations were compared with drill hole records in the database. The main lithological contacts, alteration features, and sample intervals were appropriately recorded in the database.

AMEC concluded that there was good agreement between the geological interpretations, log records, and digital information.



AMEC verified selected drill hole collar locations in the field using an E-TrexTM hand-held GPS. Eight drill holes (representing 1.03% of the drill hole database) were checked. Results, given the accuracy of the hand-held equipment, indicated no errors with the drill collar locations. AMEC compared drill collar elevations of the selected drill holes recorded in the database with the digital topography provided by GCM. No discrepancies were noted.

A review of the downhole survey data indicated no potential kinks or other indications of problems with the downhole surveys. The average deviations are considered reasonable because no significant departures from the trajectories are observed in plan.

AMEC investigated the possibility of RC downhole contamination for all RC drill holes. This used the in-house AMEC "decay-and-cyclicity" program to assess whether downhole contamination had occurred. The analysis indicated that no significant downhole contamination had occurred during RC drilling.

### ASSAY DATA

The drill hole database reviewed contained 1,254 drill hole records, with 107,221 assay records. AMEC reviewed 527 assay certificates, selected 484 Au and Ag records, and compared these data with the assay database. No discrepancies were found.

### DENSITY DATA REVIEW

Data collected from the 2006 density campaign show average values of 2.50 g/cm<sup>3</sup> for the Cachinalito area and 2.58 g/cm<sup>3</sup> for the Dumbo area. However, there is not sufficient information to establish whether these values are for mineralized or waste units. Density data collected from the 2008 campaign are linked to gold grades, lithology, and alteration codes, therefore an analysis based on the 72 samples could be performed. Histograms and statistics for lithology and alteration domains show that density average values are generally lower than 2.44 g/cm<sup>3</sup> as shown on Table 12-1.

Examination of densities against gold grades shows that the two main populations could be identified using a gold cut-off of 0.2 g/t Au. For both populations descriptive statistics show that for grades lower than 0.2 g/t the average density value is 2.30 g/cm<sup>3</sup> and for grades greater than 0.2 g/t the average density value is 2.44 g/cm<sup>3</sup> (see Table 12-1). Considering a cut-off grade of 1.0 g/t (the value which was used to model the grade-shells) descriptive



statistics show that average densities greater and less than 1.0 g/t are similar and close to 2.4 g/t (see Table 12-2).

# TABLE 12-1 2008 DENSITY DESCRIPTIVE STATISTICS FOR THE MOST POPULATED LITHOLOGY AND ALTERATION CODES Austral Gold Limited – Guanaco Mine

Density Descriptive	Lithology Co	odes		Alteration Cod	les
Statistics (g/cm <sup>3</sup> )	тос	TOP	ARG	SAR	SIL
Mean	2.39	2.38	2.34	2.38	2.44
Standard Error	0.02	0.04	0.03	0.03	0.03
Median	2.39	2.42	2.35	2.38	2.46
Standard Deviation	0.13	0.18	0.11	0.11	0.17
Sample Variance	0.02	0.03	0.01	0.01	0.03
Kurtosis	0.51	4.70	0.95	-0.54	5.49
Skewness	-0.60	-1.50	-0.75	0.20	-1.56
Range	0.54	0.86	0.42	0.40	0.98
Minimum	2.09	1.79	2.10	2.20	1.79
Maximum	2.63	2.65	2.52	2.59	2.77
Count	31	23	13	16	32
Lithology Codes		Alteration Codes			
ТОС	Crystal Tuff		SIL	Silica A	lteration
ТОР	Pumice Tuff		ARG	Argillic A	Alteration
			SAR	Silicic-Argil	lic Alteration

### TABLE 12-2 2008 DENSITY DESCRIPTIVE STATISTICS BY GOLD CUT-OFF GRADES

Density Descriptive Statistics (g/cm <sup>3</sup> )	Au <0.2 (g/t)	Au ≥ 0.2 (g/t)	Au <1.0 (g/t)	Au ≥ 1.0 (g/t)
Mean	2.30	2.44	2.38	2.41
Standard Error	0.03	0.02	0.02	0.02
Median	2.35	2.45	2.37	2.43
Standard Deviation	0.15	0.11	0.16	0.11
Sample Variance	0.02	0.01	0.02	0.01
Kurtosis	5.38	0.10	3.63	0.61
Skewness	-1.76	-0.28	-1.18	-0.47
Range	0.75	0.45	0.86	0.44
Minimum	1.79	2.20	1.79	2.20
Maximum	2.54	2.65	2.65	2.63
Count	24	38	42	20

### Austral Gold Limited – Guanaco Mine



### AMEC FOSTER WHEELER (2015)

During a 2015 site visit, Amec Foster Wheeler conducted various data verification procedures:

- <u>Review of drill hole folders</u>: GCM keeps folders for each drill hole in the mine office. Amec Foster Wheeler reviewed four folders, corresponding to 20% of the drill holes from the 2014-2015 campaign. At the time of the site visit the folders were still being organized, and some of them did not include yet original logs or copies of assay certificates.
- <u>Review of down hole survey and assay data</u>: Amec Foster Wheeler conducted spot checks of down hole survey data from original paper records with the digital records in the database and did not identify any errors. Amec Foster Wheler also compared 226 original assays, corresponding to 13% of the assays from the 2014-2015 campaign, with the values recorded in the database, and did not identify any differences. Amec Foster Wheeler included in this check all assays exceeding 15 g/t Au.
- <u>Interpretation of geology and mineralization</u>: Amec Foster Wheeler reviewed the interpreted geological cross-sections in order to assess the spatial continuity. During the review, Amec Foster Wheeler did not find significant discrepancies.
- Amec Foster Wheeler recognizes that the interpretation generally respects the data recorded in the logs and cross-sections, as well as the interpretation from adjoining sections, and is consistent with the known characteristics of this deposit type.
- <u>Core review</u>: Amec Foster Wheeler reviewed selected core sections of two drill holes (DDH-1076 and DDH-1082), and observed that the core was properly cut. The observed lithological contacts approximately matched the logged depths. Core recovery in the reviewed holes usually exceeded 80%.

### QUALITY CONTROL REVIEW

### 2004

Analysis of 93 field duplicates yielded 15 failures for Au (16.1%). An acceptable level of precision is achieved if the failure rate does not exceed 10%. Therefore, AMEC concluded that the sampling precision of GCM for Au during 2004 drilling campaign was poor.

In total 69 samples were sent for external control to the Actlabs laboratory. The samples were assayed for Au, Ag and Cu. The sample batches did not include control samples. Analysis indicated a good fit for Au between ALS Chemex and Actlabs. Copper and silver were not evaluated due to the low grades, most of which were below detection limits.

AMEC analyzed the results of 93 SRM samples from four SRMs representing a total of 3.9% of the samples included in submission batches. The overall bias for Au was 4.9%. On the



basis of these results AMEC concluded that the Au accuracy at ALS during the GCM exploration program in 2004 was within acceptable ranges.

AMEC reviewed the 81 assays from coarse blank materials inserted during the GCM 2004 drilling period; four blanks reported greater than threshold for Au. AMEC concluded that no significant cross contamination occurred during preparation at ALS during the drilling campaign.

### 2006

The analysis of 195 field duplicates yielded 16 failures for Au (8.21%), no failures for Ag, and four failures for Cu (2.05%). AMEC concluded that the sampling precision of GCM for Au, Ag, and Cu during the 2006 drilling campaign was satisfactory.

In total 1,537 samples were sent for external control to the Actlabs laboratory and were assayed for Au, Ag, and Cu. The sample batches did not include control samples. An RMA analysis indicated a good fit for Au, Ag, and Cu between Geoanalitica and Actlabs.

AMEC analyzed the results of 345 SRM samples from 11 SRMs, representing a total of 1.52% of the samples included in submission batches. The overall bias for Au was -1.10%. On the basis of these results, AMEC concluded that the Au accuracy at Geoanalitica during the GCM exploration in 2006 was within acceptable ranges.

AMEC reviewed the 357 assays from coarse blank materials inserted during the GCM drilling period. Ten blanks reported greater than threshold for Au. AMEC concluded that no significant cross contamination occurred during preparation at Geoanalitica.

### 2007

The analysis of 399 field duplicates yielded 18 failures for Au (4.5%). There were no data for Ag and Cu.

In total 387 samples were sent for external control to Actlabs laboratory. The samples were assayed for Au, Ag, and Cu. An RMA analysis indicated a good fit for Au, Ag, and Cu between Geoanalitica and Actlabs.



AMEC analyzed the results of 252 SRM samples from seven SRMs. The overall bias for Au was -1.10%. On the basis of these results AMEC concluded that the Au accuracy at Geoanalitica during the GCM exploration in 2007 was within acceptable ranges.

AMEC reviewed the 60 assays from coarse blank materials inserted during the GCM drilling period. No blanks were reported greater than the threshold for Au.

### 2008

The analysis of 366 coarse duplicate samples for Au yielded three failed pairs (0.8%) and the analysis of 353 coarse duplicate samples for Ag yielded one failed pair (0.3%).

AMEC reviewed 287 assays from coarse blank control samples inserted during the drilling period. The results indicate that six samples of Au (2%) and two samples of Ag (0.7%) exceed the permissible limit (which corresponds to five times the practical detection limit of each element).

### 2009 – 2011

The analysis of 122 coarse duplicate samples yielded five failed pairs (4.1%) for Au and two failed pairs (1.6%) for Ag.

AMEC reviewed 293 assays from coarse blank control samples inserted during the drilling period. The results indicate that 17 samples of Au (6%) and three samples of Ag (1%) exceed the permissible limit (which corresponds to five times the practical detection limit of each element).

#### 2013

The analysis of 61 field duplicates yielded no failed pairs for Au and two failed pairs (3.2%) for Ag, a result which is considered acceptable.

AMEC reviewed 52 assays from coarse blank control samples. The results indicate that no samples of Au and Ag exceed the permissible limit.

### 2014 – 2015

During the 2014–2015 campaign, the geological QC program consisted of the insertion of 17 coarse blanks and 23 field duplicates (1.2% and 1.6%, respectively, of the total number of RC samples). Amec Foster Wheeler reviewed these data, and did not identify any significant



contamination during preparation. The sampling precision was within acceptable limits. Nevertheless, no SRMs were inserted in the Geoanalitica submission batches, and analytical accuracy was not independently monitored.

The core-sample batches submitted to the mine laboratory only included the insertion of 12 samples of one single SRM (3.5% of the samples submitted to the mine laboratory). The SRM assays yielded a very high positive bias (19.4%) and a high coefficient of variation (11%) on gold assays, which is above acceptable ranges. In addition, the SRM used during this program was only certified for gold.

The QC program implemented during the 2014–2015 campaign was very limited, and the SRMs inserted yielded an unacceptable bias. Amec Foster Wheeler recommended that these assay data should not be used for the classification of Indicated or Measured Mineral Resources.

Amec Foster Wheeler recommended that a check assay program be conducted to validate the 2014–2015 assays. This program should include adequate proportions of control samples.

Amec Foster Wheeler also recommended that future programs be accompanied by a coherent QC program, including a higher proportion of gold and silver SRMs, covering a broader range of values, more representative of the value ranges present at the deposit.

RPA concurs with the conclusions and recommendations from Amec Foster Wheeler.

### AMANCAYA

### DATABASE

The database is maintained in Vulcan Isis format. Completed drill hole logs and assays are compiled in Microsoft Excel sheets prior to importing to Vulcan.

RPA reviewed the methods and practices used by Austral Gold to generate the resource database (including drilling, sampling, analysis, and data entry) and found the work to be appropriate for the geology and style of mineralization. RPA checked a select number of drill



holes to verify the described methods and application of practices. The following checks

were made by RPA:

- Used a handheld GPS unit to check the collar positions of GTA-1, GTA-2, GTA-4, • GTA-7, AKCOM-004, and ACKCOM-007 in 2015, as well as AM-01, AM-03, AM-06, AM-08, AM-09, AM-11, AM-12, and AM-13 in 2016. The collar positions were verified.
- Reviewed the drill hole traces in 3D, level plan, and vertical sections and found no unreasonable geometries.
- Queried the database for unique header, duplicate holes, and overlapping intervals. No issues were identified.
- Ensured that the total depth recorded in each drill hole database table was consistent. No issues were identified.
- Visited the core handling facility.
- Reviewed core for holes GTA-1, GTA-2, GTA-3, GTA-4, GTA-5, GTA-6, GTA-7, AKCOM-005, AKCOM-006, ACKOM-009, ACKOM-010, AKCOM-011, ACKOM-012, AKCOM-013, ACKOM-013 in 2015 as well as AM-01, AM-03, AM-05, AM-06, AM-08, AM-11, AM-12, and AM-13 in 2016.

### ASSAYS

During 2008, Scott Wilson RPA (now RPA) reviewed several drill hole logs for accuracy of assay transcription from the assay certificates. No significant errors were noted.

As part of the 2015 review, RPA compared 76 gold and silver assay results from drill holes spaced over the deposit to assay certificates, sourced from site personnel and taken from the Austral Gold drilling program. No significant errors were noted, however, details of the drill hole name were maintained on the assay certificate from the laboratory. RPA recommends withholding this information from the laboratory as a security precaution.

As part of the review of the data produced in 2016, RPA compared 87 gold and silver assay results within the resource wireframes to assay certificates. These values were sourced from site personnel and represent 38% of the total of 228 assay results. No significant errors were found.

No issues were identified with the database, and RPA is of the opinion that the practices and procedures used to generate the Austral Gold database are acceptable to support Mineral Resource estimation.



### INDEPENDENT SAMPLING

During the 2008 review by Scott Wilson RPA, three independent samples from surface trenches were collected for comparison with results from the trench program initiated by Yamana. Details of this data verification test are available in Scott Wilson RPA (2008). Generally, the independent samples confirmed the presence of gold at similar orders of magnitude as the Yamana results.



## 13 MINERAL PROCESSING AND METALLURGICAL TESTING

### METALLURGICAL SAMPLES AND TESTING

### **GUANACO HEAP LEACH**

Several phases of metallurgical testwork were completed for the Guanaco Mine prior to the time it was put into operation by Amax Gold in 1993 and then by GCM in 2011. GCM has routinely conducted metallurgical testwork on site since the mine has gone into operation. Details of the testwork work are reported in previous Technical Reports (Amec Foster Wheeler and RPA, 2016).

From 2011 to present, the gold and silver recovery estimates have changed several times as the crush size was decreased from the initial 80% passing ( $P_{80}$ ) 9.5 mm to the current  $P_{80}$  of 5.3 mm and as metallurgical test data became available for new sources of ore.

Initially, the ore was crushed to  $P_{80}$  9.5 mm and the gold recovery was estimated to be 61.3% for open pit ore and 63.6% for underground ore. The gold recovery estimates for the past three years using  $P_{80}$  5.3 mm are provided in Table 13-1. The data shows that the estimated gold recovery increased from 75% to 77% from 2014 to 2015 and gold recovery for Dumbo ore was determined to be 66%.

Area	2014	2015	2016	Days
Others			60	60
Open Pit	75	77		60
Underground	75	77		60
Dumbo			66	90
Chachinalito			77	60

# TABLE 13-1 GOLD RECOVERY ESTIMATES FOR 2014, 2015, AND 2016 Austral Gold Limited – Guanaco and Amancaya Mines

Silver recovery estimates increased from 48% to 50% for both open pit and underground ore when the crush size was reduced.



For operating mines, RPA is of the opinion that operational data is a better indicator of future performance than historical testwork unless new ore types are to be fed to the plant. Using historical data eliminates concerns about whether samples were representative or not. Figure 13-1 compares the cumulative gold heap leach performance since November 2011 when GCM began operating the mine through 2016.

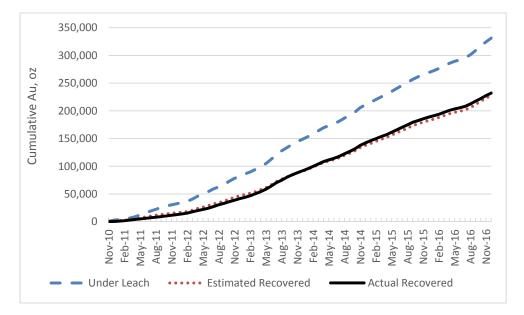


FIGURE 13-1 CUMULATIVE RECOVERED GOLD DATA FOR GUANACO

This data indicates that the calculated gold recovery using the historical estimates has proven to be very accurate.

Figure 13-2 shows the annual data for gold placed under leach, calculated recovered oz, and actual recovered oz.



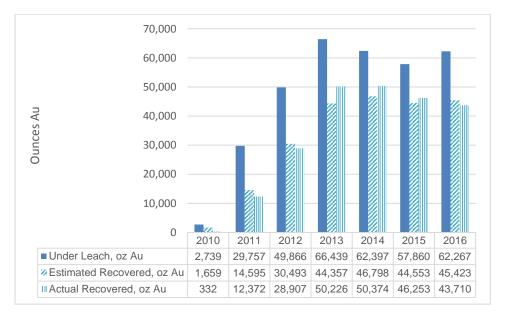
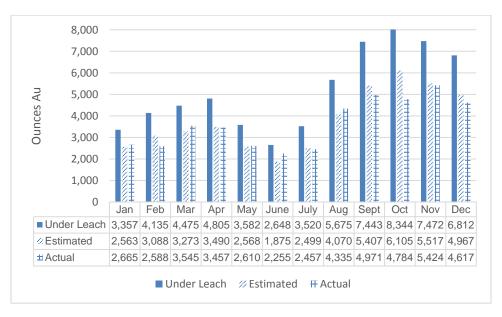


FIGURE 13-2 GOLD PRODUCTION DATA FOR GUANACO

The lower than estimated gold recovery for the first several years is reportedly due to several reasons. First, initially a portion of the ore was placed on the pad as ROM ore with no crushing. Then, it took some time before the targeted crush size was achieved. Finally, it takes time for a heap leach pad to become saturated with leach solution and to reach steady state with new areas being placed under leach and leached ore being taken off leach. From the data, RPA notes that the estimated recovered gold was higher than the actual recovered gold for 2013, 2014, and 2015, however, in 2016 the estimated gold recovered was lower than the actual gold recovered. Figure 13-3 shows the data for 2016.



FIGURE 13-3 2016 GOLD PRODUCTION DATA FOR GUANACO



This data shows that a large quantity of ore was placed under leach towards the end of the year so the gold recovery was most likely delayed until the ore has sufficient time to leach.

Figure 13-4 compares the cumulative silver heap leach performance over the life of the GCM operation.

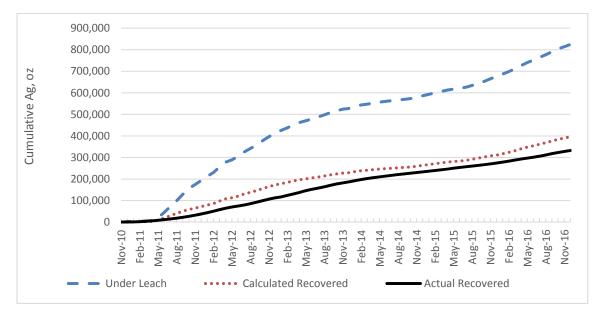


FIGURE 13-4 CUMULATIVE RECOVERED SILVER DATA FOR GUANACO

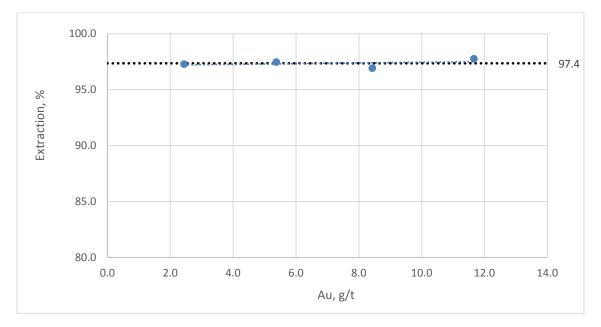


From this plot, it appears that the silver recovery has been consistently overestimated. The cumulative recovered ounces of silver is approximately 332 koz and the cumulative estimated ounces of silver is approximately 396 koz, which is a difference of approximately 19%. The total silver recovery to date is approximately 40%.

### **GUANACO MILLING**

Mineralogy, comminution, settling, filtration, column leach, and bottle roll tests (BRTs) were completed on samples from Guanaco starting in 2006. Data from the BRTs are relevant to estimate the quantities of metals that will be extracted from the Guanaco ore. Amec Foster Wheeler and RPA (2016) reported that the optimum grind size selected was  $P_{80}$  150 µm and the gold extraction ranged from 87% to over 99% and silver extraction ranged between 65% and 94%. It was further reported that cyanide consumption was 0.5 kg/t to 1.3 kg/t for samples that had "low copper contents". Changes in cyanide concentration, pH, and slurry density had little impact on the metal extractions.

GCM has subsequently completed additional BRTs on Guanaco ore at their on-site metallurgical laboratory. RPA was provided with data from tests run on samples from Cachinalito and Dumbo. Gold extraction as a function of head grade is plotted in Figure 13-5 for Cachinalito and Figure 13-6 for Dumbo.

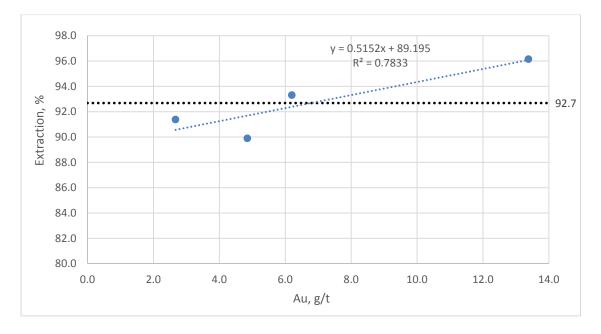


### FIGURE 13-5 GOLD EXTRACTION AS A FUNCTION OF HEAD GRADE FOR CACHINALITO

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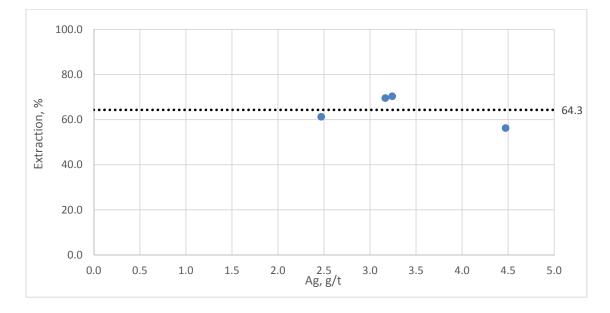


# FIGURE 13-6 GOLD EXTRACTION AS A FUNCTION OF HEAD GRADE FOR DUMBO



There does not seem to be any relationship between gold extraction and gold head grade for Cachinalito, however, there does appear to be a reasonable correlation for the Dumbo samples.

The same type of graphs are provided for silver in Figures 13-7 and 13-8.

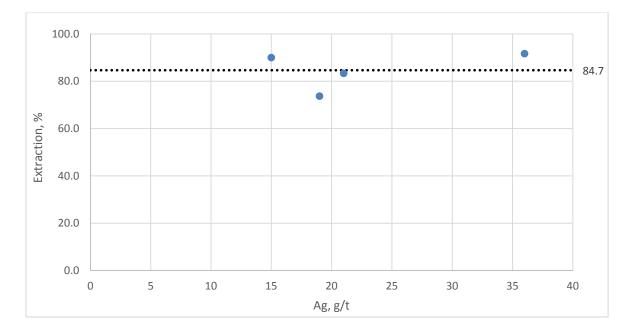


### FIGURE 13-7 SILVER EXTRACTION AS A FUNCTION OF HEAD GRADE FOR CACHINALITO

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# FIGURE 13-8 SILVER EXTRACTION AS A FUNCTION OF HEAD GRADE FOR DUMBO



There does not seem to be any correlation between silver extraction and silver head grade for either Cachinalito or Dumbo, however, the silver extraction for Dumbo averages 84.7% and it is only 64.3% for Cachinalito.

Copper extraction is of interest because cyanide soluble copper minerals contribute to high cyanide consumption and may contribute to reduced extraction of gold and silver, especially if insufficient cyanide is maintained in the leach solution. Figure 13-9 shows the copper extraction data for both Cachinalito and Dumbo.

#### 35.0 30.0 27.7 Extraction, % 25.0 20.0 ٠ 15.0 10.0 6.0 5.0 0.0 500 1000 1500 2000 2500 0 Cu, g/t Cachinalito ••••• Cachinalito Average Dumbo Dumbo Average

#### FIGURE 13-9 COPPER EXTRACTION AS A FUNCTION OF HEAD GRADE FOR CACHINALITO AND DUMBO

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There do not seem to be correlations between copper head grade and copper extraction for either Cachinalito or Dumbo, however, the copper grade of the samples from Dumbo and the associated copper extraction are much higher than they are for Cachinalito. This indicates that ore from Dumbo will consume more cyanide and it will be important to maintain higher cyanide concentrations in the leach circuit in order to ensure that the gold is fully leached.

## AMANCAYA MILLING

The metallurgical testwork that was used as the design basis for the new milling circuit at the Guanaco Mine Project has been conducted using samples from Amancaya as they have become available. Roscoe Postle Associates (2015) reported the results previously. RPA has also been provided with data from BRTs that were conducted at the site metallurgical laboratory in 2016. In 2017, two more samples were tested by SGS Mineral Services S.A. (2017).

Graphs of gold extraction as a function of head grade for the 2015, 2016, and 2017 data sets are provided in Figure 13-10. In 2016, two data sets were available. For one set of tests the samples were leached for 48 hours and for the second set they were leached for 72 hours. The 2017 tests were conducted for 72 hours.

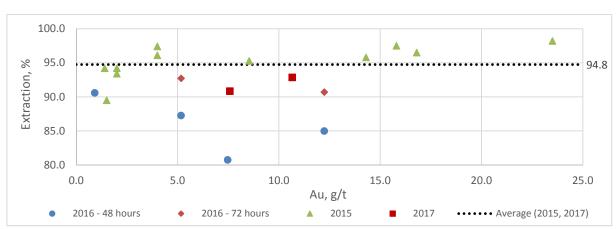


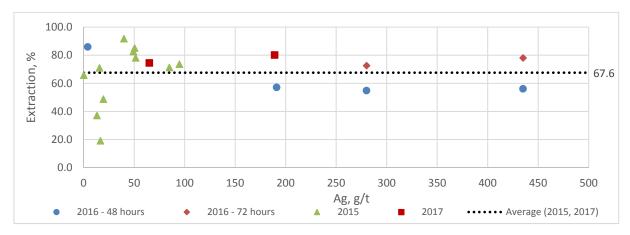
FIGURE 13-10 GOLD EXTRACTION AS A FUNCTION OF GOLD HEAD GRADE FOR AMANCAYA

The data from 2016 follows a trend that is the exact opposite of the expected trend (i.e., the gold extraction goes down as the head grade increases). A review of the detailed test results shows that the free cyanide concentration in the BRTs was at low levels during the various time intervals when samples were taken. A lack of cyanide may not have allowed the samples



to leach sufficiently. The 2015 data, which was also generated from in-house testing, shows results that are similar to what is normally expected and there appears to be a mild correlation between gold head grade and gold extraction. Since both data sets show a correlation between gold head grade and gold extraction, the average extraction shown on the graph is the average of the data from 2015 and 2017, which seems to be the best estimate of gold recovery given the available data.

A similar graph is provided for silver in Figure 13-11.



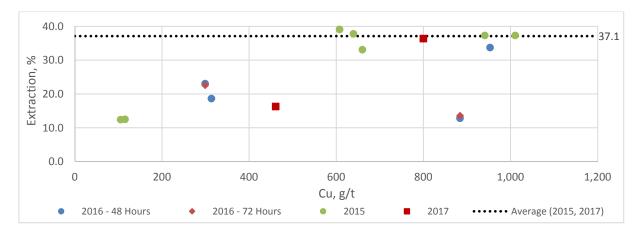
## FIGURE 13-11 SILVER EXTRACTION AS A FUNCTION OF SILVER HEAD GRADE FOR AMANCAYA

As with gold extraction, the silver extraction from the 2016 tests decreases as the head grade increases, which is the opposite of the anticipated trend. The test data from 2015 shows no correlation between silver head grade and silver extraction. The average silver extraction shown on the graph is again based on the 2015 and 2017 data, which again seems to be the best estimate of the silver extraction given the available data.

For comparison purposes, the relationships between copper head grade and copper extraction for Amancaya are provided in Figure 13-12. Copper extraction in ores is an important consideration in cyanide leaching plants because the extraction of silver and gold may be lower if the cyanide concentration in the leach solution is not maintained, however, maintaining a higher cyanide concentration may increase the cyanide consumption and, correspondingly, increase the operating costs.



#### FIGURE 13-12 COPPER EXTRACTION AS A FUNCTION OF COPPER HEAD GRADE FOR AMANCAYA



There does not seem to be a strong correlation between copper head grade and copper extraction. The average extraction shown on the graph is based on the 2015 and 2017 data.

## LIFE OF MINE PLAN

Table 13-2 summarizes the tonnes and grades of ore from each area of the mine that are included in the current LOM Plan.

## TABLE 13-2 SUMMARY OF THE LIFE OF MINE PLAN Austral Gold Limited – Guanaco & Amancaya Gold Project

	Units	Cachinalito	Dumbo	Perseverancia	Amancaya OP	Amancaya UG
Ore	tonnes	454,438	25,434	9,762	254,580	693,457
Au	g/t	3.04	2.77	1.58	7.56	6.48
Ag	g/t	2.96	6.29	28.67	119.50	42.46
Au	OZ	44,379	2,264	496	61,887	144,396
Ag	oz	43,178	5,141	8,998	978,062	946,681

### PLANT DESIGN CRITERIA

The relevant process design criteria are summarized in Table 13-3.



Parameter	Value	Average Tests
Design tonnage	1,500 tpd	
Ball mill work index (BWi)	18.5 kW-hr/t	
Design Feed Grades		
Au	6.3 g/t	
Ag	70 g/t	
Gold Recovery		
Cachinalito	95.0%	97.4%
Amancaya	89.5%	94.8%
Silver Recovery		
Cachinalito	63%	64.3%
Amancaya (2017 – 2018)	80%	67 60/
Amancaya (2019 – 2021)	40%	67.6%

# TABLE 13-3 GUANACO MILL PROCESS CRITERIA Austral Gold Limited – Guanaco and Amancaya Mines

Based on the metallurgical test data and LOM Plan that were reviewed by RPA, the plant design values appear reasonable. The data reported as the average of the tests is the gold extracted during leaching. RPA notes that, based on preliminary metallurgical data, GCM utilized 92% gold recovery and 80% silver recovery to estimate Mineral Resources and Mineral Reserves and in the LOM plan and financial analysis. The metallurgical test data reported here was not available until after the RPA 2017 site visit. Even though the silver recovery is lower than the 80% used in the early analysis, the gold recovery is higher. Inserting the new values in the financial model shows nearly identical results. Therefore, since updating the gold and silver recovery does not result in a material change, the decision was made to leave the earlier work as is.

RPA is not aware of any processing factors or deleterious elements that could have a significant effect on potential economic extraction at Guanaco or Amancaya although cyanide soluble copper has the potential to impact operating costs and potentially impact recovery of gold and silver if the cyanide concentration of the leach solution is not managed proactively.

#### METALLURGICAL SAMPLES

GMC routinely conducts BRTs and column leach tests on samples from the operating mining areas at Guanaco. RPA has not evaluated where the samples were taken from, however, in general, when they are taken from operating areas they are thought to be representative of the ore being processed.



The Amancaya samples that were used to conduct the 2017 test program were composite samples made up as intervals from several drill holes. Table 13-4 provides information about how the samples were composited for Composite 1 and Table 13-5 provides information about how the samples were composited for Composite 2.

Hole No.	From, m	To, m	No.	Sample No.	Au, g/t	Ag, g/t	Cu, g/t	Weight, kg
AM-028	72	73	1	428817	11.68	239	774	2.4
AM-027	30	32	2	428770	12.35	388	394	2.4
AM-031	87	88	1	429128	11.46	61.6	477	2.4
AM-061	23	24	1	431499	10.07	94.1	418	2.4
AM-061	21	22	1	424126	10.51	58.2	222	2.4
Assayed Grades					10.66	189	461	

# TABLE 13-4AMANCAYA COMPOSITE SAMPLE 1Austral Gold Limited – Guanaco and Amancaya Mines

# TABLE 13-5AMANCAYA COMPOSITE SAMPLE 2Austral Gold Limited – Guanaco and Amancaya Mines

Hole No.	From, m	To, m	No.	Sample No.	Au, g/t	Ag, g/t	Cu, g/t	Weight, kg
AM-035	106	108	2	429478	7.68	29.4	1300	3.0
AM-031	80	81	1	429121	6.46	61	514	3.0
AM-051	92	93	1	430787	8.67	81	709	3.0
AM-051	93	94	1	430788	7.7	70.8	625	3.0
Assayed Grades					7.58	65	800	

The locations of the drill holes are shown in Figure 13-13.

As reported previously by AMEC and RPA (2017), all of the testing has been conducted on composite samples. At this stage of a project, RPA expects that a larger number of variability samples would have been tested in order to assess the variability of the operation over the life of the mine and to develop appropriate recovery estimates based on head grade or other relevant metallurgical characteristics. So, while RPA believes the samples are suitable for making preliminary recovery and cost estimates, further work using operating samples and data is recommended to confirm the results.



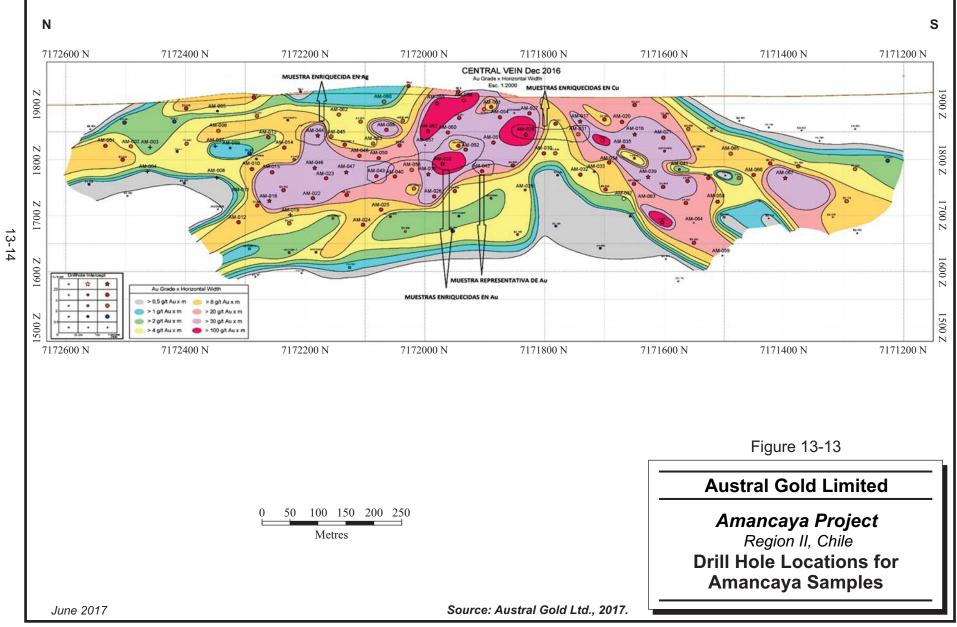
# TABLE 13-5AMANCAYA COMPOSITE SAMPLE 2Austral Gold Limited – Guanaco and Amancaya Mines

Hole No.	From, m	To, m	No.	Sample No.	Au, g/t	Ag, g/t	Cu, g/t	Weight, kg
AM-035	106	108	2	429478	7.68	29.4	1300	3.0
AM-031	80	81	1	429121	6.46	61	514	3.0
AM-051	92	93	1	430787	8.67	81	709	3.0
AM-051	93	94	1	430788	7.7	70.8	625	3.0

The locations of the drill holes are shown in Figure 13-13.

As reported previously by AMEC and RPA (2017), all of the testing has been conducted on composite samples. At this stage of a project, RPA expects that a larger number of variability samples would have been tested in order to assess the variability of the operation over the life of the mine and to develop appropriate recovery estimates based on head grade or other relevant metallurgical characteristics. So, while RPA believes the samples are representative and suitable for making preliminary recovery and cost estimates, further work is recommended to confirm the results.

RPA





## **14 MINERAL RESOURCE ESTIMATE**

## SUMMARY

For this report, RPA has reviewed and revised as required the Mineral Resource estimates for the Guanaco and Amancaya mines as received from Austral Gold.

A summary of the Mineral Resources for Amancaya as of December 31, 2016, is shown in Table 14-1. Cut-off grades for the Mineral Resources were established using a gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce.

RPA is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the Mineral Resource estimate.

RPA confirms that the Mineral Resources listed in Table 14-1 comply with all disclosure requirements for Mineral Resources set out in NI 43-101.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.



## TABLE 14-1 MINERAL RESOURCES – DECEMBER 31, 2016

#### Austral Gold Limited – Guanaco and Amancaya Mines

	Tonnes		Grade			Ounces	
	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (koz)	Ag (koz)	AuEq (koz)
			Guar	aco			
Underground							
Measured	641	3.02	12.91	3.19	62.2	266	65.8
Indicated	1,552	2.86	13.03	3.03	143	650	151
M+I	2,193	2.90	12.99	3.08	205	916	217
Inferred	1,200	2.6	13	2.8	100	500	110
			Amano	caya			
Open Pit				-			
Indicated	172	11.24	178	13.61	62.0	979	75.1
Inferred	60	7.6	110	9.0	15	210	20
Underground							
Indicated	633	9.21	54.5	9.94	187	1,110	202
Inferred	900	6.7	31	7.2	195	910	210
Sub-total Indicated	805	9.64	80.7	10.72	249	2,088	277
Sub-total Inferred	960	6.8	36	7.3	210	1,110	220
Total M+I	2,998	4.71	31.2	5.13	454	3,004	494
Total Inferred	2,150	4.5	23	4.8	310	1,600	330

Notes:

- 1. Mineral Resources followed CIM definitions and are compliant with the JORC Code.
- 2. Mineral Resources are reported inclusive of Mineral Reserves.
- 3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- 4. For Guanaco, Mineral Resources are reported at a 1.5 g/t AuEq cut-off grade.
- 5. For Amancaya, open pit Mineral Resources are reported at a cut-off grade of 1.5 g/t AuEq. Pit optimization shells were used to constrain the resources. Underground Mineral Resources are estimated at a cut-off grade of 2.5 g/t AuEq beneath the open pit shells.
- 6. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce.
- 7. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80% respectively.
- 8. A minimum mining width of 1.0 m was used for the open pit resource at Amancaya, and 1.5 m for the underground resource at Guanaco and Amancaya.
- 9. Bulk density is 2.50 t/m3.
- 10. Numbers may not add due to rounding.



## **GUANACO**

## SUMMARY

The Mineral Resource estimates were performed for five deposits (sectors) within the Guanaco Mine. The Cachinalito Central, Cachinalito West, and Natalia sectors are currently being mined by underground operations, and the remaining Mineral Resources in these deposits are planned to be extracted by same mining method which is sub-level stoping. The Defensa and Perseverancia open-pit Mineral Resources have been completely exploited to date; however, mineralization that remains in the deposits under the open pits could be extracted by underground mining methods.

## **RESOURCE DATABASE**

#### CACHINALITO CENTRAL, CACHINALITO WEST, AND DUMBO WEST

Data supporting the estimates was provided by GCM in the form of Excel files that contained the drill data from 296 drill holes as follows:

- Cachinalito Central: 147 drill holes; 24,626 m
- Cachinalito West: 40 drill holes; 6,581 m
- Dumbo West: 109 drill holes; 22,233 m
- Natalia: 197 drill holes; 37,593 m

#### DEFENSA AND PERSEVERANCIA

GCM carried out drilling campaigns from 2009 to 2014 which were not included in the resource estimation database, because the holes were drilled to test exploration targets in adjacent zones and did not return results that were considered to warrant additional followup. The 2015 drilling program was previously reviewed by Amec Foster Wheeler. Based on this review no material changes are expected to the current Mineral Resource.

#### NATALIA

A total of 37,593 m from 197 RC and diamond drill holes was available for the Mineral Resource estimate at Natalia sector. Drill hole length varies between 20.4 m and 425 m, with an average of 185 m. All drill holes were considered for the Mineral Resource estimate.

Drill holes were assayed regularly for gold, silver, and total copper. For the resource estimation there are 29,512 gold assays, 29,573 silver assays and 28,658 total copper



assays. Drilling was performed in fans at an approximate spacing of 25 m in the east-west direction.

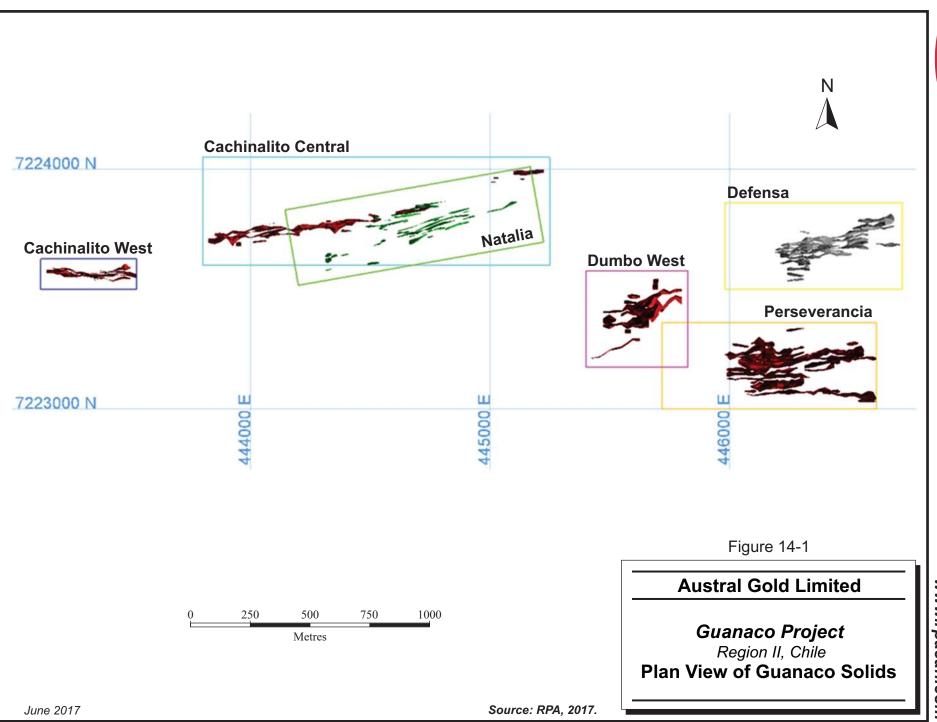
RPA conducted a limited number of checks on the resource database as discussed in Section 12 Data Verification. RPA is of the opinion that the database is appropriate to support Mineral Resource estimation.

#### GEOLOGICAL MODELLING

In 2006, GCM commissioned an independent consultant, Eduardo Magri, to prepare the Mineral Resource estimates for Cachinalito Central, Cachinalito West, and Dumbo West. For the purposes of this report, the geological models were not updated. Modifications were made to the models to account for production depletion, and for changes in cut-off grades. RPA performed checks in Vulcan software and found close agreement with the depletion and resources for Cachinalito West, Cachinalito Central, and Dumbo West.

#### MINERALIZATION MODELLING

Mineralization was typically confined within grade shells. Grade shells were applied because typically there were insufficient geological or other features identified in the drill hole logs to explicitly model the underlying controls on the distribution of the gold mineralization. An overview of the final mineralization block models is shown in Figure 14-1.



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#### Cachinalito Central, Cachinalito West, and Dumbo West

GCM constructed three-dimensional wireframe models of the vein systems in each of the Cachinalito and Dumbo West deposits. In every mineralized zone, a main vein was modelled together with several minor structures parallel to the main vein. The grade-shells were interpreted using a 1.0 g/t Au cut-off. The veins have an east–northeast sub-vertical orientation. Figures 14-2 and 14-3 and show examples of north–south vertical cross sections for the Cachinalito Central and Cachinalito West vein systems, respectively.

#### Defensa and Perseverancia

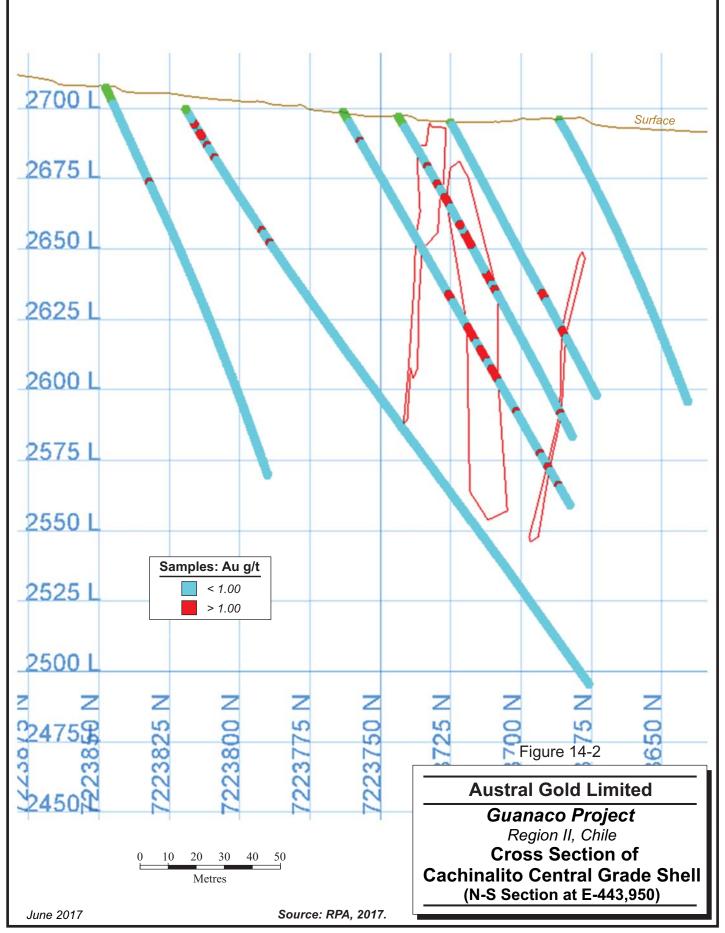
GCM provided triangulated surfaces representing grade shells to be used as constraints on the Mineral Resource estimate. The shells, as originally designed in 2006, assumed open-pit mining methods, and as a result, a 0.5 g/t Au cut-off was used.

The interpreted grade-shells have an east–northeast sub-vertical orientation which was considered to be compatible with structural trends observed at district scale (Figure 14-4).

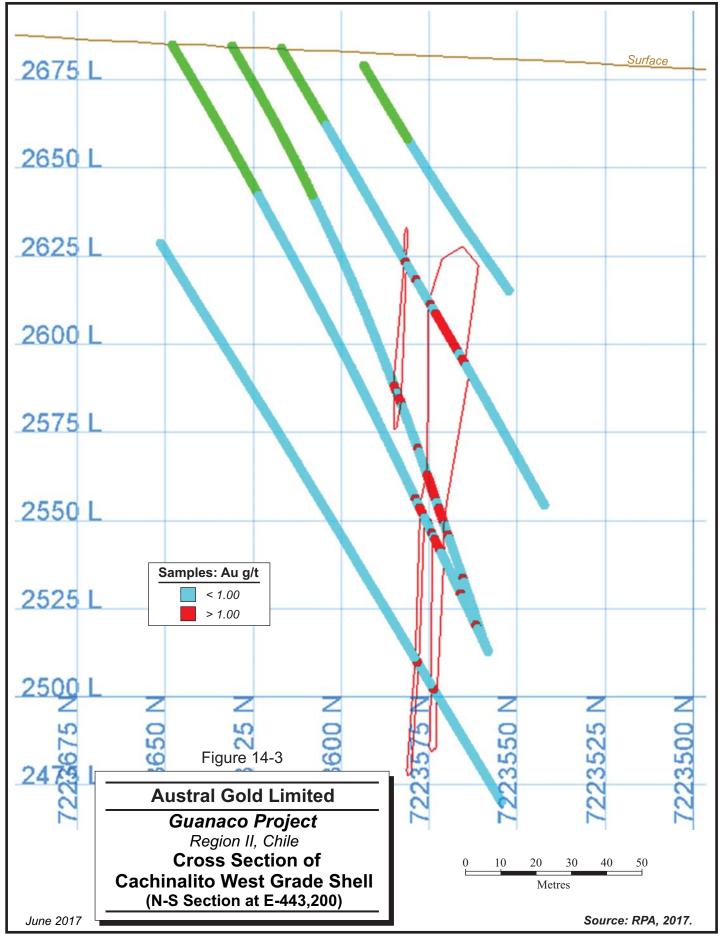
#### Natalia

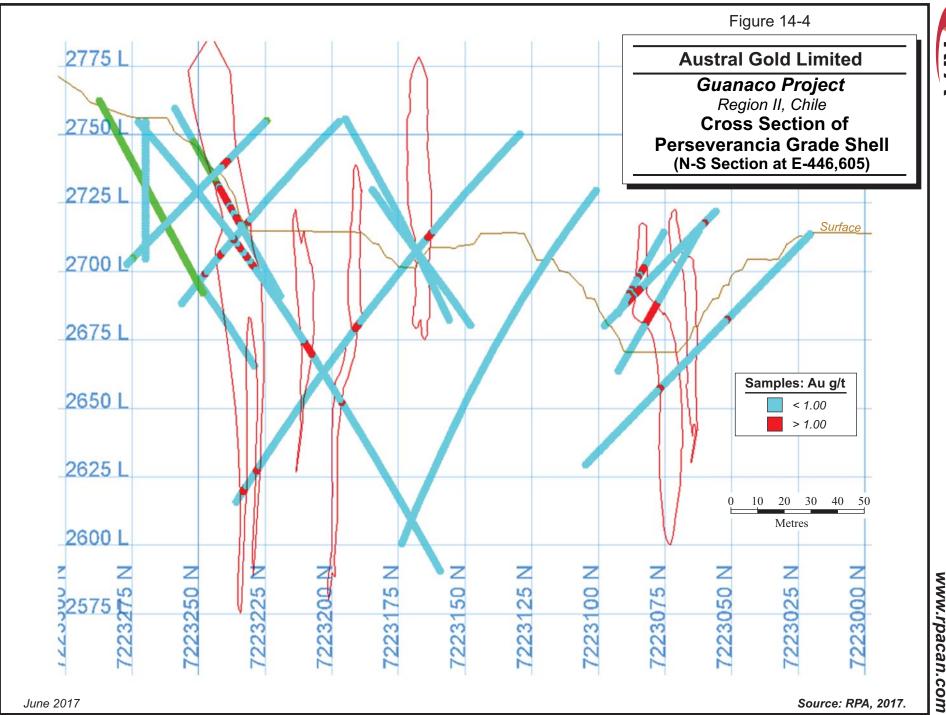
Guanaco provided wire-framed models of the veins represented by a grade shell interpreted at a 1.0 g/t Au cut-off grade. The vein system is 900 m in the east-west direction, 250 m in the north-south direction and 350 m down dip. The veins are relatively narrow structures, with an average thickness of approximately one metre. Figure 14-5 is a cross-section through the deposit.







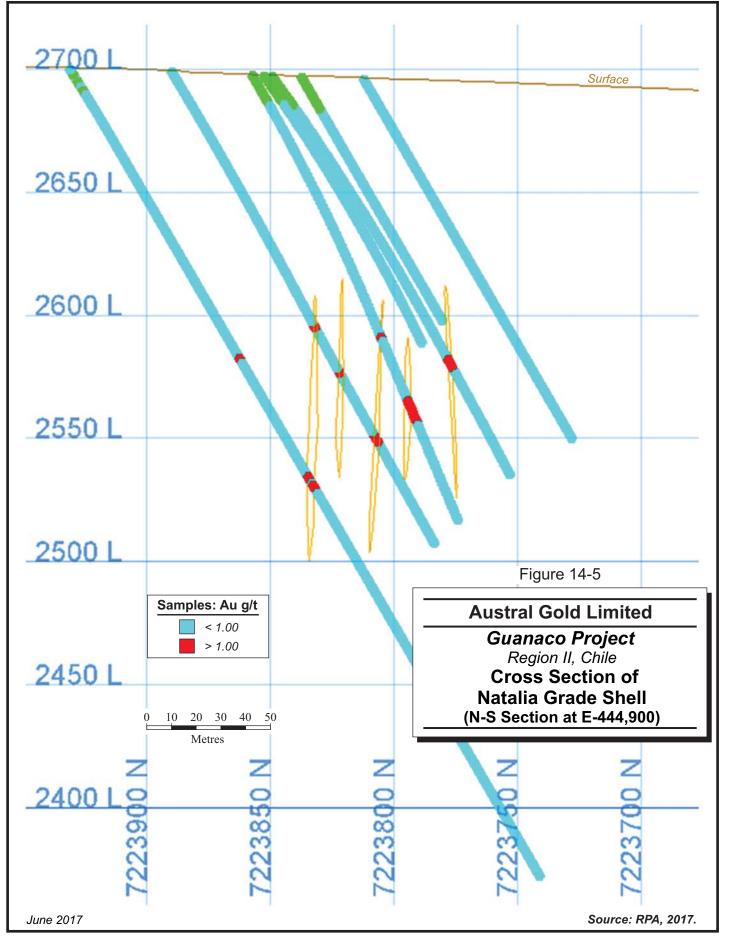




14-9

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## **DESCRIPTIVE STATISTICS**

The modelled mineralized wireframes were used to flag drill hole samples in the database. For each mineralized zone, resource assays, descriptive statistics, and histograms were investigated. Tables 14-2, Table 14-3, and 14-4 present the descriptive statistics for the raw assays in individual zones.

#### TABLE 14-2 DRILL HOLE STATISTICS, CACHINALITO CENTRAL, CACHINALITO WEST, AND DUMBO WEST Austral Gold Limited – Guanaco Mine

Sector	Grade Shell	No. of Data	Mean	Min	Max	CV	Std. Dev
Au (g/t)							
Cachinalito Central	Inside	1,299	6.05	0.00	277.7	2.78	16.71
Cachinalito West	Inside	646	3.40	0.01	96.54	1.71	5.83
Dumbo West	Inside	632	2.42	0.00	31.00	1.46	3.54
Ag (g/t)							
Cachinalito Central	Inside	1,299	3.92	0.00	106.00	2.06	7.97
Cachinalito West	Inside	646	3.27	0.10	38.00	1.13	3.67
Dumbo West	Inside	632	10.54	0.05	134.00	1.71	17.98
Cu (%)							
Cachinalito Central	Inside	1,299	0.014	0.000	1.170	3.52	0.05
Cachinalito West	Inside	641	0.010	0.001	0.199	1.34	0.01
Dumbo West	Inside	411	1.043	0.001	16.112	2.23	2.33

#### TABLE 14-3 DRILL HOLE STATISTICS, DEFENSA AND PERSEVERANCIA Austral Gold Limited – Guanaco Mine

Sector	Grade Shell	No. of Data	Mean	Min	Мах	CV	Std. Dev
Defensa	Au (g/t) Inside Ag (g/t)	583	1.630	0.0010	62.250	2.23	3.63
	Inside	583	14.942	0.0100	293.000	1.54	22.94
Perseverancia	Au (g/t) Inside Ag (g/t)	998	1.494	0.0010	41.100	1.89	2.82
	Inside	938	16.043	0.0100	153.500	1.24	19.95



	Adottal						
Grade Shell	No. of Data	Mean	Min	Max	с٧	Std. Dev	
Au (g/t)							
Inside	348	7.93	0.01	1044.30	7.16	56.82	
Ag (g/t)							
Inside	348	12.67	0.01	174.00	1.62	20.54	
Cu (%)							
Inside	347	0.138	0.0001	3.181	2.40	0.33	

# TABLE 14-4 DRILL HOLE STATISTICS, NATALIA Austral Gold Limited – Guanaco Mine

### **GRADE CAPPING AND OUTLIER RESTRICTION**

#### CACHINALITO CENTRAL, CACHINALITO WEST AND DUMBO WEST

The top cuts used for the resource estimates, and the pass at which the cap was implemented are shown in Table 14-5. Amec Foster Wheeler performed a top-cut analysis to determine whether top-cut of extreme values need to be applied. Amec Foster Wheeler's analysis of probability plots indicated that outliers occur in the upper portion of the grade distribution, with frequencies from 1 to 5%.

Grade Shell	Element	Estimation Pass			
Cachinalito Central	(g/t)	0	1–2	3	
Inside	Au	100	60	25	
Inside	Ag		40		
Outoido	Au		3		
Outside	Ag		25		
Grade Shell	Element	Estin	nation Pas	s	
Cachinalito West	(g/t)	0	1–3		
Incida	Au	16.8	14.5		
Inside	Ag	12			
Outside	Au	1.2			
Outside	Ag	11			
Grade Shell	Element	Estin	nation Pas	s	
Dumbo West	(g/t)	0–1	2–3		
Incido	Au g/t	17.2	13		
Inside	Ag g/t	78			
Outoido	Au g/t	1			
Outside	Ag g/t	30			

# TABLE 14-5 GOLD AND SILVER GRADE CAPS Austral Gold Limited – Guanaco Mine



Gold distribution inside the grade-shell in Cachinalito Central has a different behaviour for the higher grades. Grades above 10 g/t Au to 20 g/t Au, usually capped in the other deposits, showed spatial continuity. Thus, AMEC Foster Wheeler stated that applying a pure capping strategy would be too restrictive. An estimation pass was set up to allow for high grades below 100 g/t Au to estimate close blocks, prior to the first pass of the estimation process with a smaller search radius.

RPA performed its own capping analyses on raw gold and silver assays inside the 1.0 g/t grade shells. Capping was based on examination of basic statistics, histograms, probability plots, and decile analysis. RPA found broad accord with the original AMEC capping levels, but would prefer to cap raw isolated high values and flag clusters of high grade using a high yield restriction.

An example of capping analysis completed by RPA for Cachinalito Central is shown in Figure 14-6.

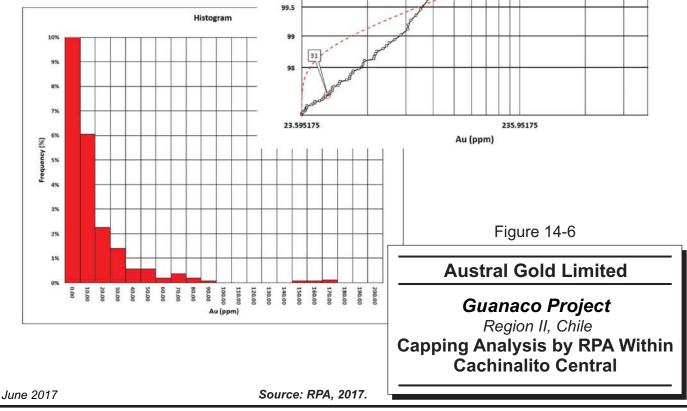


#### **Descriptive Statistics**

Statistic	Uncapped	Capped
Number of Samples	1210	1210
Minimum	0	0
Maximum	903	95
Mean	6.09	5.50
Stdev	23.79	11.37
Variance	565.94	129.33
CV	3.91	2.07
Metal Loss	0%	10%
Number of Caps	0	4

#### **Decile Analysis**

			Capping	Grade		
	Percentile	Uncapped	180	95	31	Log Probability Plot (Upper Tail)
Total Metal		7569	7135	6834	5777	
Percent Metal Loss		0%	6%	10%	24%	
Average Grade		6.09	5.74	5.50	4.65	
cv		3.91	2.41	2.07	1.50	
Capping Grade Percentile		1	1.000	0.997	0.965	
Number of Caps		0	1	4	40	
	0.9	2%	2%	2%	3%	
	0.91	3%	2%	2%	3%	
	0.92	3%	3%	3%	3%	
t	0.93	4%	3%	3%	4%	
nte	0.94	4%	4%	4%	4%	180
Metal Content	0.95	5%	5%	5%	6%	
e ta	0.96	6%	5%	5%	6%	
ž	0.97	8%	6%	7%	6%	
	0.98	12%	9%	9%	6%	95
	0.99	29%	20%	17%	7% -	
	0.9 - 1	62%	59%	57%	50%	





#### OUTLIER RESTRICTION: DEFENSA AND PERSEVERANCIA

Grade top cuts were applied to the gold, copper, and silver values at each sector. Grades were used at their full value up to a 1.5 m x 7.5 m x 7.5 m search radius. Inside the grade shell, grades were capped at the threshold values as shown in Table 14-6 for Defensa and Table 14-7 for Perseverancia.

# TABLE 14-6 OUTLIER RESTRICTION STRATEGY, DEFENSA Austral Gold Limited – Guanaco Mine

Estimation Domain	Ou	utlier Thresh	<b>Restricted Search</b>	
	Au (g/t)	Cu (%)	Ag (g/t)	Radius X, Y, Z (m)
Oxide	5.5	0.2	70.0	1.5 x 7.5 x 7.5
Sulphide	10.0	1.5	100.0	1.5 x 7.5 x 7.5

# TABLE 14-7 OUTLIER RESTRICTION STRATEGY, PERSEVERANCIA Austral Gold Limited – Guanaco Mine

	Οι	itlier Thresh	<b>Restricted Search</b>	
Estimation Domain	Au (g/t)	Cu (%)	Ag (g/t)	Radius X, Y, Z (m)
Oxide	5.5	0.2	100.0	1.5 x 7.5 x 7.5
Sulphide	10.0	1.5	100.0	1.5 x 7.5 x 7.5

#### CAPPING AND OUTLIER RESTRICTION: NATALIA

For Natalia, grade top cuts were applied to the gold, copper, and silver values at each sector. Inside the grade-shell, grades were used at their full value up to a 1.5 m x 7.5 m x 7.5 m search radius. A summary of the capping values and the spatial constraints are shown in Table 14-8.

# TABLE 14-8 TOP CUT VALUES AND OUTLIER RESTRICTIONS FOR NATALIA Austral Gold Limited – Guanaco Mine

			Restricted S	Search for J	Au High (	Grades		
Grade shell	Capping Value	High Grade	Rotat	ion (°)	Major	Semi-	Minor	
	(g/t)	Value (g/t)	Bearing	Plunge	(m)	major (m)	(m)	
Gold	65	20	75	0	12.5	1.5	12.5	
Silver	125	55	75	0	0	12.5	1.5	



### COMPOSITES

#### Cachinalito Central, Cachinalito West, and Dumbo West

The original sampling interval was one metre for the Cachinalito Central, Cachinalito West, and Dumbo West. Although the original sample length was one metre, smaller samples were generated at the solid limits; therefore, composites smaller than 0.1 m were discarded for resource estimation. RPA checked composite statistics for Cachinalito West, Central and Dumbo West at Guanaco and agreed with the results. Composite statistics are shown in Table 14-9.

Sector	Grade Shell	No. of Data	Mean	Min	Max	cv	Std. Dev
Au (g/t)							
Cachinalito Central	Inside	1,287	6.06	0.00	276.80	2.76	16.71
Cachinalito West	Inside	641	3.40	0.01	96.54	1.71	5.82
Dumbo West	Inside	632	2.42	0.00	31.00	1.46	3.54
Ag (g/t)							
Cachinalito Central	Inside	1,287	3.87	0.00	106.00	2.03	7.96
Cachinalito West	Inside	641	3.27	0.00	38.00	1.13	3.67
Dumbo West	Inside	632	10.54	0.05	134.00	1.71	17.98
Cu (%)							
Cachinalito Central	Inside	1,287	0.014	0.000	1.170	3.48	0.05
Cachinalito West	Inside	641	0.010	0.001	0.199	1.34	0.01
Dumbo West	Inside	411	1.043	0.001	16.112	2.23	2.33

#### TABLE 14-9 COMPOSITE STATISTICS, CACHINALITO CENTRAL, CACHINALITO WEST, AND DUMBO WEST Austral Gold Limited – Guanaco Mine

#### **Defensa and Perseverancia**

In general, the original sample length was 1.5 m, but there are smaller and larger samples. The samples were regularized by compositing them to 1.5 m. The composites were broken at the grade-shell contacts.

#### Natalia

Samples inside the grade shells were not regularized and were used at their original one metre length. Samples outside the grade shells were composited at a constant length of two metres. Composites were broken at the contact between grade shells and the wall rock and were flagged as inside the grade shell (code 10) or outside (code 20), according to the location of its centre relative to the grade shell wireframe boundary.



Table 14-10 presents the descriptive statistics for the composites in individual zones.

Column	Mine	Count	Min	Мах	Mean	StDev	CV
au (g/t)	Cachalinito West	710	0.00	96.54	2.91	5.51	1.89
	Cachalinito						
au (g/t)	Central	1461	0.00	903.00	4.81	21.06	4.38
au (g/t)	Dumbo	597	0.00	31.00	2.10	3.55	1.69
au (g/t)	Natalia	415	0.00	1044.30	7.08	54.68	7.73
au (g/t)	Defensa	965	0.00	120.00	1.62	4.96	3.06
au (g/t)	Perseverancia	1378	0.00	53.60	1.43	3.47	2.43
au (g/t)	All	5526	0.00	1044.30	2.84	17.29	6.09
ag (g/t)	Cachalinito West	710	0.00	38.00	2.82	3.58	1.27
	Cachalinito						
ag (g/t)	Central	1461	0.00	106.00	3.21	7.22	2.25
ag (g/t)	Dumbo	597	0.00	134.00	9.00	17.34	1.93
ag (g/t)	Natalia	415	0.01	174.00	11.13	19.83	1.78
ag (g/t)	Defensa	965	0.00	584.00	18.79	44.26	2.36
ag (g/t)	Perseverancia	1378	0.00	202.00	13.78	21.59	1.57
ag (g/t)	All	5526	0.00	584.00	10.38	24.99	2.41

## TABLE 14-10 DESCRIPTIVE STATISTICS OF COMPOSITE DATA Austral Gold Limited – Guanaco Mine

#### DENSITY ASSIGNMENT

The Eduardo Magri models used assigned densities of 2.5 g/cm<sup>3</sup> for blocks located inside the grade shells and 2.4 g/cm<sup>3</sup> for blocks located outside the grade shells.

There are 62 specific gravity measurements with a global specific gravity (SG) mean of 2.38 from the 2008 drill campaign. Comparative statistics of SG and gold grade indicated that samples with grade lower than 1.0 g/t Au had an average SG of 2.38; samples with grades over 1.0 g/t Au have an average SG of 2.41. This suggests a slight SG contrast between material that is outside of the grade shell, and the mineralized material within the grade shells. RPA is of the opinion that regular density samples should be taken during drilling campaigns to support the claimed density of 2.5 g/cm<sup>3</sup>. RPA acknowledges, however, that the mines have been successfully operating with a 2.5 density assigned to resource material for some time.



### VARIOGRAPHY

#### Cachinalito Central, Cachinalito West, and Dumbo West

Eduardo Magri previously calculated and modelled correlograms for gold, silver, and copper in the principal directions defined by the orientation of the grade shell using composites lying inside the grade-shell. Outside the grade shell, an inverse distance interpolation approach was used.

Amec Foster Wheeler found the parameters used for the experimental variogram calculation are appropriate and that the models adopted for the resource estimation are acceptable for all three deposits. RPA concurs with this opinion.

#### Defensa and Perseverancia

Down-the-hole and directional correlograms were calculated for gold by Amec Foster Wheeler using Sage2001 software. The variograms showed a very high nugget effect and absence of structure.

#### Natalia

Amec Foster Wheeler performed the variography using Sage2001 software. Directional and down-the-hole correlograms of gold and silver were calculated, inside and outside the grade shells, separately. The nugget effect values were obtained from the correlograms. Amec Foster Wheeler modelled the experimental correlograms considering the following:

- Nugget effect represents 10% of the total sill for gold, and 30% for silver and total copper.
- The model fitting incorporated two nested structures, in addition to the nugget effect.

Amec Foster Wheeler observed that the correlograms at short scale are poorly defined.

#### **BLOCK MODEL CONSTRUCTION**

Block model parameters are listed in Table 14-11.



#### TABLE 14-11 GEOMETRIC DEFINITION OF GUANACO BLOCK MODELS BY SECTOR Austral Gold Limited – Guanaco Mine

Sector	Block	Origin U	JTM Coordin	ates (m)	Number of Blocks			
Sector	size (m)	Easting	Northing	Elevation	Easting	Northing	Elevation	
Defensa	2.5	445,982.5	7,223,500.0	2,500.0	296	144	120	
Perseverancia	2.5	445,717.5	7,223,360.0	2,570.0	358	144	92	
Cachinalito Central	2	443,800.0	7,223,600.0	2,450.0	725	225	135	
Cachinalito West	2	443,125.0	7,223,500.0	2,450.0	200	63	125	
Dumbo West	2	445,400.0	7,223,175.0	2,400.0	213	200	225	
Natalia	2	444,200.0	7,223,515.0	2,330.0	520	160	210	

Note: All block models are regular, with no sub-cells, and are composed of cubic blocks. The Natalia block model X-axis is rotated 80 degrees from north to east.

## **GRADE INTERPOLATION**

### Cachinalito Central, Cachinalito West, and Dumbo West

Ordinary kriging (OK) was used to interpolate gold, silver, and copper grades inside the grade shell. Outside the grade-shell an inverse distance weighting to the second power (ID<sup>2</sup>) interpolation approach was used by Eduardo Magri.

The kriging plan developed for the Cachinalito West, Cachinalito Central, and Dumbo West deposits consisted of three estimation runs, each one with increasing decreasing search ranges. The estimation plan inside the grade shells is shown in Table 14-12 and the plan to estimate outside grade shell is presented in Table 14-13. The parameters for the ID<sup>2</sup> interpolation are included as Table 14-14.

# TABLE 14-12ESTIMATION PLAN FOR CACHINALITO CENTRAL,CACHINALITO WEST AND DUMBO WEST – INSIDE THE GRADE-SHELL<br/>Austral Gold Limited – Guanaco Mine

		Se	arch Elli	psoid			Тор			Nur	nber	Number
Pass	Ro	otatio	n (°)	Rar	nges	(m)	Grade	Element		of C	omp.	of Comp.
	Strike	Dip	Plunge	Х	Y	Ζ	(g/t - %)		motirou	Min.	Max.	per Hole
1	80	-80	-10	25	13	25	16.8	Au	OK	4	8	3
2	80	-80	-10	38	19	38	14.5	Au	OK	4	8	3
3	80	-80	-10	100	50	100		Au	OK	2	8	
1	80	-80	-10	25	13	25	16.8	Ag	OK	4	8	3
2	80	-80	-10	38	19	38	14.5	Ag	OK	4	8	3
3	80	-80	-10	100	50	100		Ag	OK	2	8	
	1 2 3 1 2	Strike           1         80           2         80           3         80           1         80           2         80	Pass         R           5trike         Dip           1         80         -80           2         80         -80           3         80         -80           1         80         -80           3         80         -80           1         80         -80           2         80         -80	Pass         Rotation (%)           Strike         Dip         Plunge           1         800         -800         -100           2         800         -800         -100           3         800         -800         -100           1         800         -800         -100           1         800         -800         -100           2         800         -800         -100           2         800         -800         -100	Pass         Rotation         Reference         Refe	Strike         Dip         Plunge         X         Y           1         80         -80         -10         25         13           2         80         -80         -10         38         19           3         80         -80         -10         100         50           1         80         -80         -10         25         13           2         80         -80         -10         25         13           2         80         -80         -10         25         13           2         80         -80         -10         25         13	Pass         R         Strike         Dip         Plunge         X         Y         Z           1         80         -80         -10         25         13         25           2         80         -80         -10         38         19         38           3         80         -80         -10         100         50         100           1         80         -80         -10         100         50         100           3         80         -80         -10         25         13         25           1         80         -80         -10         100         50         100           1         80         -80         -10         25         13         25           2         80         -80         -10         26         14         25	Pass         R         R         S         Grade           Strike         Dip         Plunge         X         Y         Z         (g/t - %)           1         80         -80         -10         25         13         25         16.8           2         80         -80         -10         38         19         38         14.5           3         80         -80         -10         100         50         100         -           1         80         -80         -10         100         50         100         -           2         80         -80         -10         25         13         25         16.8           3         80         -80         -10         20         50         100         -           1         80         -80         -100         25         13         25         16.8           2         80         -80         -100         38         19         38         14.5	Pass         R         S         Grade         Element           Strike         Dip         Plunge         X         Y         Z         (g/t - %)         Element           1         80         -80         -10         25         13         25         16.8         Au           2         80         -80         -10         38         19         38         14.5         Au           3         80         -80         -10         100         50         100         —         Au           1         80         -80         -10         25         13         25         16.8         Au           3         80         -80         -10         100         50         100         —         Au           1         80         -80         -10         25         13         25         16.8         Ag           2         80         -80         -10         25         13         25         16.8         Ag           2         80         -80         -10         38         19         38         14.5         Ag	PassRGradeElementEstim. MethodStrikeDipPlungeXYZ(g/t - %)ElementEstim. Method180-80-1025132516.8AuOK280-80-1038193814.5AuOK380-80-1010050100-AuOK180-80-1025132516.8AgOK280-80-1028193814.5AgOK	Pass $R$ </th <th>Pass         <math>R = V = V</math> <math>R = V</math></th>	Pass $R = V = V$ $R = V$



			Se	arch Elli	psoid			Тор			Nur	nber	Number
Deposit	Pass	Ro	otatio	ation (°)		nges	(m)	Grade	Element	Estim. Method	of C	omp.	of Comp.
		Strike	Dip	Plunge	Х	Y	Z	(g/t - %)		metrica	Min.	Max.	per Hole
Cachinalito	0	80	-80	-10	6.5	2	6.5	100.0	Au	OK	4	8	3
Central	1	80	-80	-10	25	13	25	100.0	Au	OK	4	8	3
	2	80	-80	-10	38	19	38	60.0	Au	OK	4	8	3
	3	80	-80	-10	100	50	100	25.0	Au	OK	2	8	
	0	80	-80	-10	6.5	2	6.5	40.0	Ag	OK	4	8	3
	1	80	-80	-10	25	13	25	40.0	Ag	OK	4	8	3
	2	80	-80	-10	38	19	38	40.0	Ag	OK	4	8	3
	3	80	-80	-10	100	50	100	40.0	Ag	OK	2	8	
Dumbo	1	80	-80	-10	25	13	25	17.2	Au	OK	4	8	3
West	2	80	-80	-10	38	19	38	17.2	Au	OK	4	8	3
	3	80	-80	-10	100	50	100	13.0	Au	OK	2	8	
	1	80	-80	-10	25	13	25	78.0	Ag	OK	4	8	3
	2	80	-80	-10	38	19	38	78.0	Ag	OK	4	8	3
	3	80	-80	-10	100	50	100	78.0	Ag	OK	2	8	
	1	80	-80	-10	25	13	25	3.6	Cu	OK	4	8	3
	2	80	-80	-10	38	19	38	3.6	Cu	OK	4	8	3
	3	80	-80	-10	100	50	100	3.6	Cu	OK	2	8	

#### TABLE 14-13 ESTIMATION PLAN FOR CACHINALITO CENTRAL, CACHINALITO WEST AND DUMBO WEST – OUTSIDE THE GRADE-SHELL Austral Gold Limited – Guanaco Mine

			S	earch El	lipsoid			Тор			Nur	nber	Number
Deposit	Pass	Ro	tatior	ו (°)	Rar	nges(	m)	Grade	Element	Estim. Method	of C	omp.	of Comp.
		Strike	Dip	Width	Х	Y	Z	(g/t or %)			Min.	Max.	per Hole
Cachinalito	1	80	-80	-10	100	50	100	1.27	Au	ID2	2	8	-
West	1	80	-80	-10	100	50	100	9.00	Ag	ID2	2	8	-
Cachinalito	1	80	-80	-10	100	50	100	1.54	Au	ID2	2	8	-
Central	1	80	-80	-10	100	50	100	10.50	Ag	ID2	2	8	-
Duraha	1	80	-80	-10	100	50	100	4.50	Au	ID2	2	8	-
Dumbo West	1	80	-80	-10	100	50	100	20.34	Ag	ID2	2	8	-
*****	1	80	-80	-10	100	50	100	2.64	Cu	ID2	2	8	-



# TABLE 14-14 NEAREST NEIGHBOR ESTIMATION PARAMETERS FOR CACHINALITO CENTRAL, CACHINALITO WEST AND DUMBO WEST Austral Gold Limited – Guanaco Mine

. ....

			Search E	llipsoid		
NN model	Ro	tation (°)		Ra	anges (m)	
	Strike	Dip	Plunge	Х	Y	Z
Cachinalito Central	80	80	0	200	200	200
Cachinalito West	80	0	0	300	300	300
Dumbo West	0	0	0	150	150	150
Defensa	90	-5	0	240	20	240
Perseverancia	0	0	0	150	150	150
Natalia	75	0	0	225	25	100

#### **Defensa and Perseverancia**

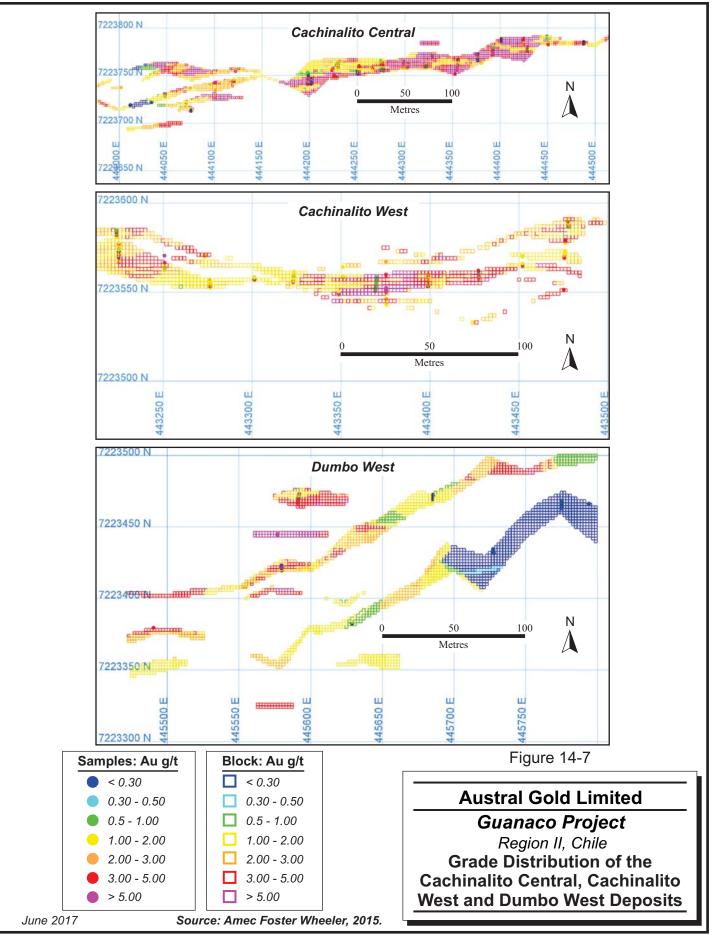
Gold, silver, and copper grades were estimated using ID<sup>2</sup>. The grade estimation was completed in four passes including a preliminary pass to restrict the influence of high grades. Samples were not shared across the estimation domains so as to model hard contacts.

A single search orientation was defined for all domains based upon geological trends. The search ellipsoid is anisotropic with equal radii in the Y- and Z-axes and a smaller radius along the X-axis.

The estimation plan applied to blocks outside the grade shell followed the same method used to estimate blocks inside the grade shell, but in this case no restricted search for high grades was implemented.

The estimation parameters are summarized in Table 14-15 (inside the grade shell) and Table 14-16 (outside the grade shell). Figure 14-7 shows the grade distribution in the Cachinalito West, Cachinalito Central, and Dumbo West deposits at the 2650 elevation.







# TABLE 14-15 ESTIMATION PARAMETERS FOR DEFENSA AND PERSEVERANCIA – INSIDE THE GRADE-SHELL GOLD Austral Gold Limited – Guanaco Mine

		:	Search E	llipsoi	d		Minimum	Maximum	Maximum Number		
Pass Rota		tatio	n (°)	Ranges (m)			Number	Number	of Composites per		
	Strike	Di p	Plunge	Х	Y	Z	Composites	Composites	Hole		
SR*	0	0	85	1.5	7.5	7.5	2	10	2		
1	0	0	85	6	30	30	2	10	2		
2	0	0	85	12	60	60	3	8	2		
3	0	0	85	120	600	600	4	8	2		

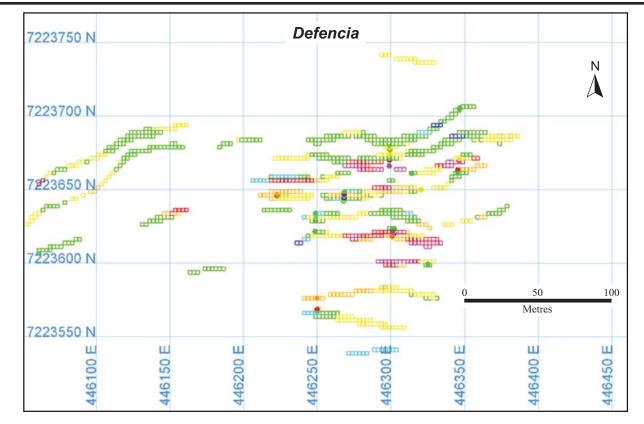
SR\* = High grade restricted search

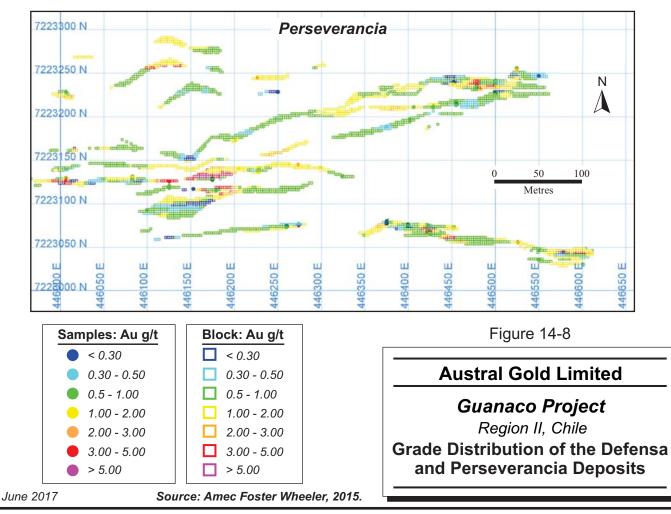
# TABLE 14-16 ESTIMATION PARAMETERS FOR DEFENSA AND PERSEVERANCIA – OUTSIDE THE GRADE-SHELL GOLD Austral Gold Limited – Guanaco Mine

		Se	arch Elli	psoid	I		Minimum	Maximum	Maximum Number		
Pass	Ro	tatio	on (°) Ra		nges	(m)	Number of	Number of	of Composites per		
_	Strike	Dip	Plunge	X	Υ	Ζ	Composites	Composites	Hole		
1	0	0	85	6	30	30	3	10	2		
2	0	0	85	12	60	60	4	12	2		
3	0	0	85	120	600	600	3	6	2		

Figure 14-8 shows the grade distribution in the Defensa and Perseverancia deposits at the 2650 elevation.









#### Natalia

Amec Foster Wheeler performed grade interpolation for Au and Ag using OK. Estimation plans were defined for each grade element inside and outside the grade-shell models, four estimation passes were completed, and grade interpolation was performed using hard boundaries across grade-shell model.

Estimation plans were set up as follows:

- Number of ordinary kriging runs: four, with increasing search distances.
- Minimum and maximum number of composites: seven and 12, respectively. The number of composites was limited to limit the amount of smoothing of the estimates.
- Minimum number of drill holes: three drill holes for runs 1 and 2, one drill hole for run 3 and no restriction for run 4.

Estimation parameters are summarized in Table 14-17 and Table 14-18.

#### TABLE 14-17 ESTIMATION PARAMETERS FOR GOLD USED IN NATALIA SECTOR Austral Gold Limited – Guanaco Mine

			S	earcl	h Ellips	е		Hig	jh Grac	de Sear	ch				
Grade Shell	Rotation (°) Pass Bearing Plunge Dip			Range (m) Semi- Major Major Minor			Grade Limits				Min. Max. Max. Capping No. No. Comp. Au (g/t) CompComp /Hole_				
Inside	1	75	0	0	112.5	12.5	50	20	12.5	1.5	12.5	65	7	12	3
	2	75	0	0	225	25	100	20	12.5	1.5	12.5	65	7	12	3
	3	75	0	0	225	25	100	20	12.5	1.5	12.5	65	7	12	-
	4	75	0	0	450	50	200	20	12.5	1.5	12.5	65	8	12	-
Outside	91	75	0	0	112.5	12.5	50	5	12.5	1.5	12.5	6	7	12	3
	2	75	0	0	225	25	100	5	12.5	1.5	12.5	6	7	12	3
	3	75	0	0	225	25	100	5	12.5	1.5	12.5	6	7	12	-
	4	75	0	0	450	50	200	5	12.5	1.5	12.5	6	8	12	-



## TABLE 14-18 ESTIMATION PARAMETERS FOR SILVER USED IN NATALIA SECTOR

Search Ellipse								Hig	gh Grae	de Sear	ch		Mim	Max	Мах
Grade	Pass	Rotation (°)			Range (m)			Grade				Capping	Min. No.		Max. Comp.
shell		Bearing	Plunge	Dip	Major	Semi- Major	Minor	Limits Ag (g/t)	Major	Semi- Major	Minor	Ag (g/t)	Comp	Comp	/Hole
Inside	1	75	0	0	112.5	12.5	50	55	12.5	1.5	12.5	125	7	12	3
	2	75	0	0	225	25	100	55	12.5	1.5	12.5	125	7	12	3
	3	75	0	0	225	25	100	55	12.5	1.5	12.5	125	7	12	-
	4	75	0	0	450	50	200	55	12.5	1.5	12.5	125	8	12	-
Outside	1	75	0	0	112.5	12.5	50	33	12.5	1.5	12.5	-	7	12	3
	2	75	0	0	225	25	100	33	12.5	1.5	12.5	-	7	12	3
	3	75	0	0	225	25	100	33	12.5	1.5	12.5	-	7	12	-
	4	75	0	0	450	50	200	33	12.5	1.5	12.5	-	8	12	-

Austral Gold Limited – Guanaco Mine

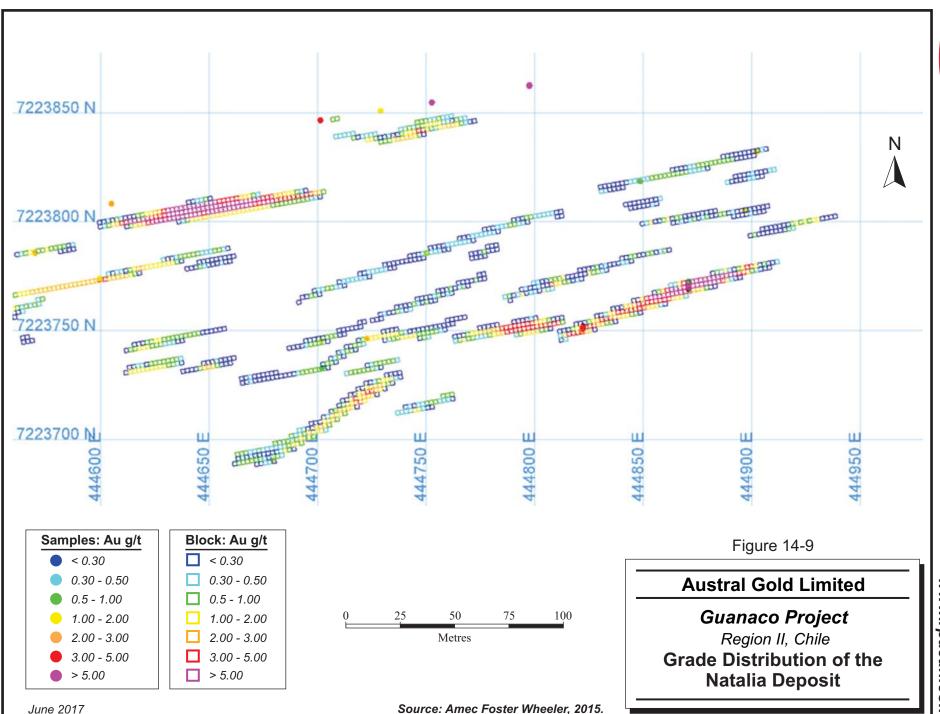
Figure 14-9 shows the grade distribution in the Natalia deposit at the 2650 elevation.

#### CLASSIFICATION OF MINERAL RESOURCES

#### Cachinalito Central, Cachinalito West, and Dumbo West

The initial resource classification was based on the kriging pass in which a block was estimated, and on the average distance of samples used to estimate the block. The rest of the estimated blocks in passes 2 or 3 were assigned to the Inferred Resource category. Categories assigned to each block were smoothed by hand in section to eliminate isolated blocks of one confidence category surrounded by blocks of a different confidence category.

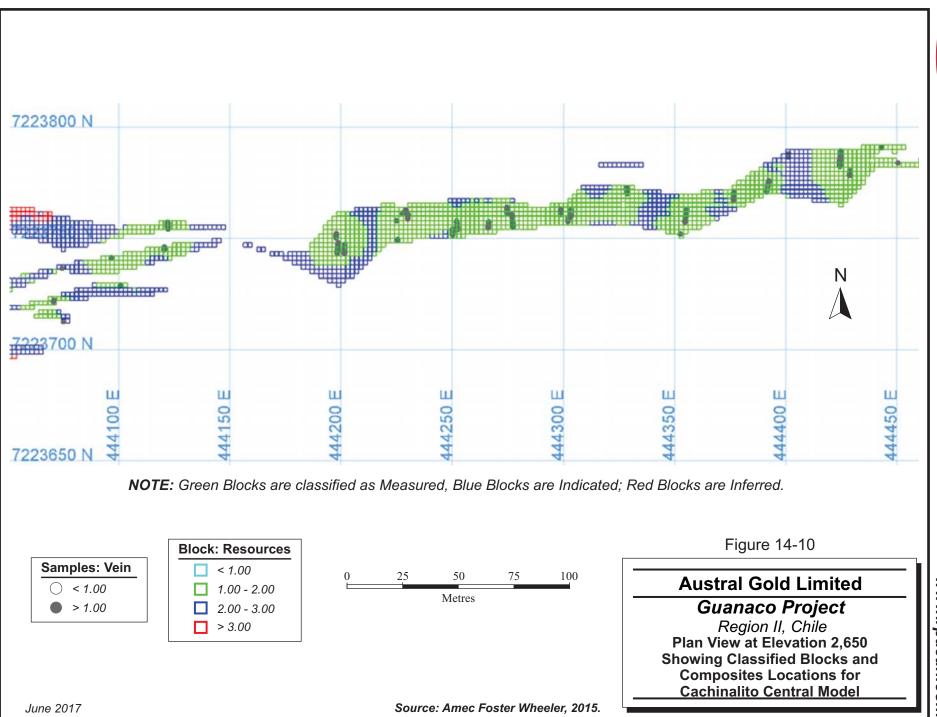
Classified blocks for Cachinalito Central, Cachinalito West and Dumbo West models are shown in plan views presented in Figures 14-10, 14-11, and 14-12. These exhibits show that grade continuity of Indicated Resource blocks can extend by more than 50 m along strike.

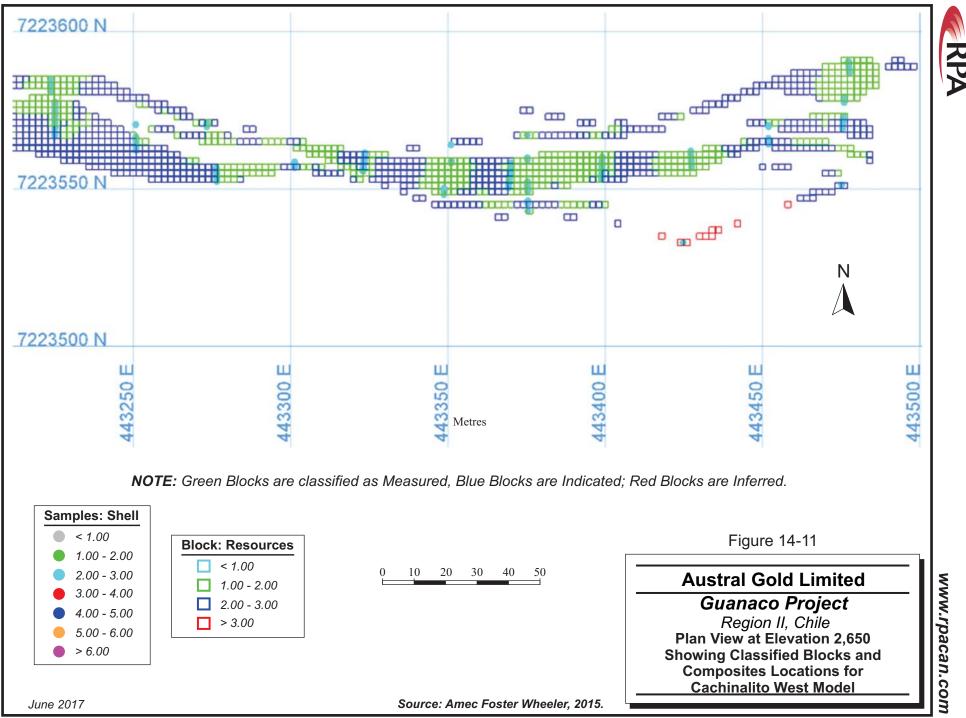


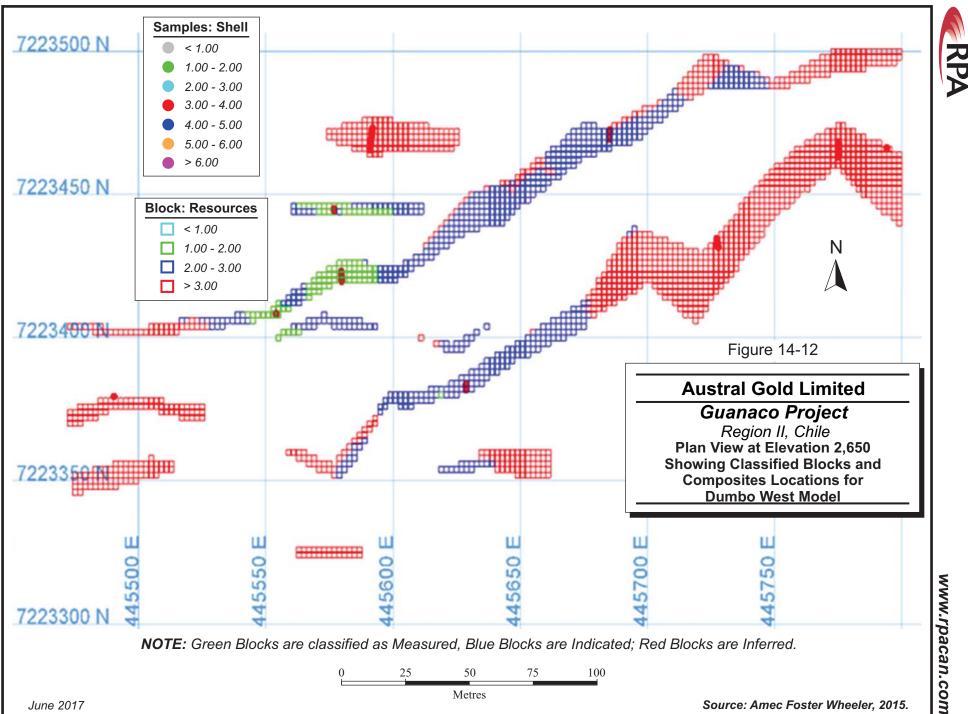
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#### Defensa and Perseverancia

Mineral Resources amenable to underground mining were classified as Measured Resource, Indicated Resource, or Inferred Resource according to the criteria outlined in Table 14-19, and if they fell within the 0.5 g/t Au grade shell. Categories assigned to each block were smoothed by hand in section to eliminate isolated blocks of one confidence category surrounded by blocks of a different confidence category. Figures 14-13 and 14-14 show plan views of the classified blocks for the models.

#### TABLE 14-19 CRITERIA USED TO CLASSIFY MINERAL RESOURCES AT PERSEVERANCIA AND DEFENSA Austral Gold Limited – Guanaco Mine

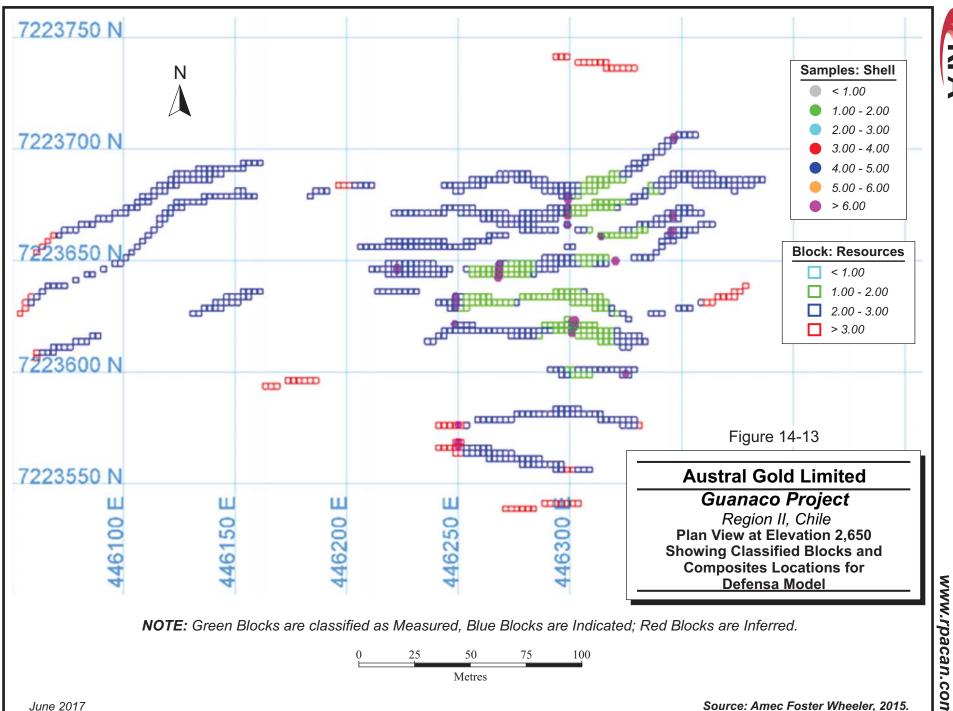
Category	Kriging Pass Number	Approximate Distance to Closest Sample (m)		
Measured	1	0 to 20		
Indicated	2	20 to 45		
Inferred	3	_		

#### Natalia

Mineral Resources amenable to underground mining were classified as Indicated or Inferred Resource according to the criteria listed in Table 14-20. Most of the Mineral Resources for Natalia are classified in the Inferred Resource category as shown in Figure 14-15. Grade continuity is assumed from a >50 m widely-spaced drilling grid.

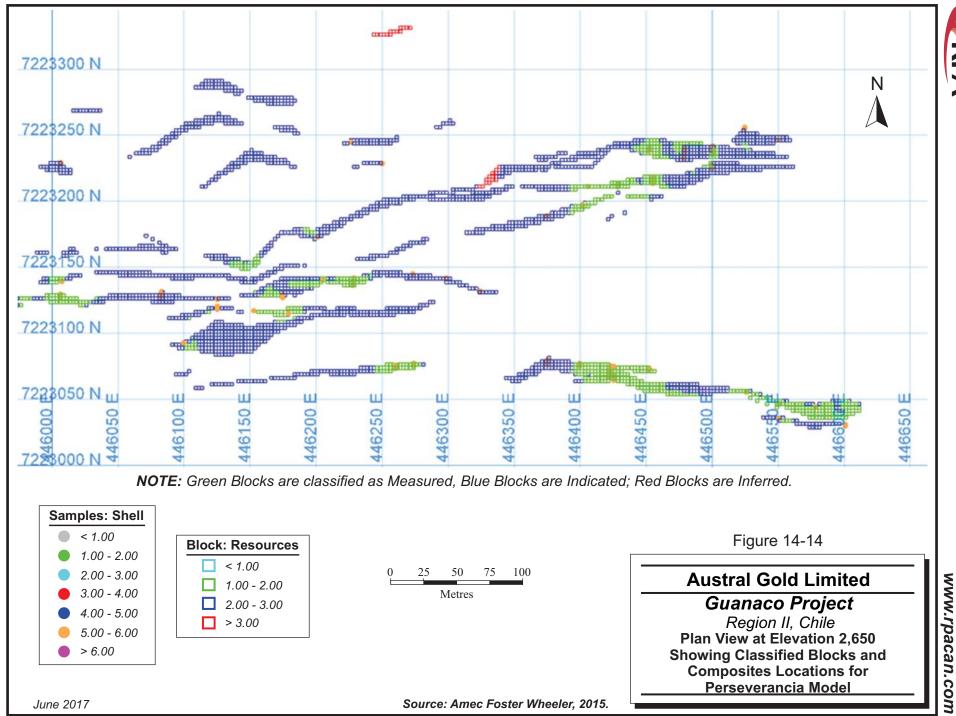
#### TABLE 14-20 CRITERIA USED TO CLASSIFY MINERAL RESOURCES AT NATALIA Austral Gold Limited – Guanaco Mine

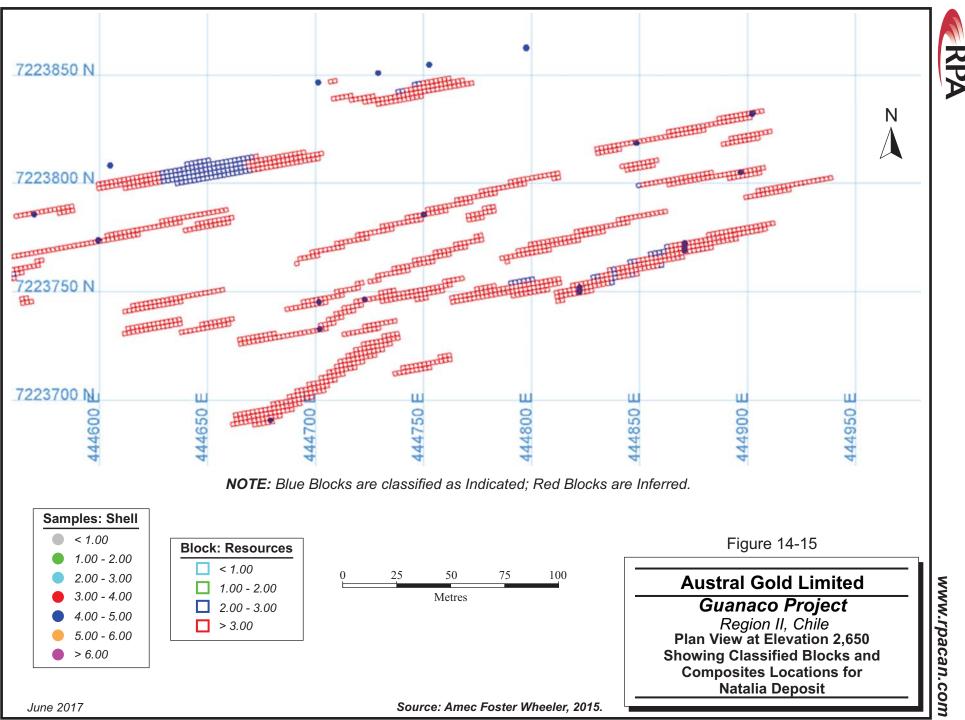
Category	Number of Drill Holes	Distance to Closest Sample (m)		
Indicated	3	30 to 60		
Inferred	1	—		



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#### CUT-OFF GRADE

For underground material, Guanaco used a 1.5 g/t AuEq cut-off grade in reporting of Mineral Resources. Underground material is reported from the original sub-blocked models and restricted to areas with geological support and grade continuity. Table 14-21 lists the parameters used to calculate the cut-off grade.

<b>TABLE 14-21</b>	CUT-OFF GRADE ASSUMPTIONS
Austral	Gold Limited – Guanaco Mine

Input Parameter	Units	Value
Gold Price	US\$/oz	1,300
Silver Price	US\$/oz	20
Recovery - Au	%	92.0
Recovery - Ag	%	80.0
Mining Cost	US\$/t moved	2.00
Process Cost	US\$/t	28.90
G&A Cost	US\$/t	8.00

#### MINERAL RESOURCE STATEMENT

A summary of the estimated Mineral Resources as of December 31, 2016 for Guanaco by extraction method and Sector is detailed in Table 14-22. A cut-off grade of 1.5 g/t AuEq was applied to the underground Mineral Resources based on a "reasonable expectation of eventual economic extraction".

In RPA's opinion, the assumptions, parameters, and methodology used for the Guanaco Mineral Resource estimates are appropriate for the style of mineralization and mining methods.

There are no known environmental, permitting, legal, title, taxation, socio-economic, political, or other relevant factors that could significantly affect the Mineral Resources at Guanaco.



#### TABLE 14-22 GUANACO MINERAL RESOURCES – DECEMBER 31, 2016

Austral Gold Limited – Guanaco Mine	
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	Tonnes		Grade			Ounces	5	
Deposit	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (koz)	Ag (koz)	Au Eq (koz)	
Measured								
Cachinalito Central	111.4	4.37	3.46	4.42	15.7	12.4	15.8	
Cachinalito West	164.0	3.03	3.48	3.07	16.0	18.3	16.2	
Defensa	81.9	2.52	25.7	2.86	6.6	67.5	7.5	
Dumbo West	102.9	3.43	9.64	3.56	11.3	31.9	11.8	
Perseverancia	180.8	2.17	23.4	2.49	12.6	136	14.5	
Natalia	0	-	-	-	-	-	-	
Total Measured	641	3.0	12.9	3.19	62	266	65.8	
			Indic	ated				
Cachinalito Central	235.4	3.98	3.89	4.03	30.1	29.4	30.5	
Cachinalito West	350.0	2.91	3.64	2.95	32.7	41.0	33.2	
Defensa	303.0	2.56	22.29	2.86	25.0	217	27.9	
Dumbo West	320.8	3.13	10.63	3.28	32.3	110	33.8	
Perseverancia	0	-	-	-	-	-	-	
Natalia	342.5	2.03	22.98	2.34	22.4	253	25.8	
Total Indicated	1,552	2.86	12.3	3.03	143	650	151	
			Infe	rred				
Cachinalito Central	197	3.9	4.7	3.9	25	29	25	
Cachinalito West	94	2.7	4.0	2.7	8	12	8	
Defensa	31	2.4	21	2.7	2	21	3	
Dumbo West	693	2.4	17	2.7	54	369	59	
Perseverancia	134	2.1	10	2.2	9	45	10	
Natalia	45	2.2	12	2.4	3	17	3	
Total Inferred	1,200	2.9	13	2.8	100	500	110	

Notes:

1. Mineral Resources followed CIM definitions and are compliant with the JORC Code.

2. Mineral Resources are reported inclusive of Mineral Reserves.

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

4. Mineral Resources are reported at a 1.5 g/t AuEq cut-off grade where AuEq = Au + (0.0134 \* Ag).

5. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, and a silver price of US\$20 per ounce.

6. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80% respectively.

7. A minimum mining width of 1.5 m was not used for the estimation of the Mineral Resource.

8. Bulk density is 2.50 t/m<sup>3</sup>.

9. Numbers may not add due to rounding.

#### **BLOCK MODEL VALIDATION**

#### Cachinalito Central, Cachinalito West, and Dumbo West

RPA validated the Cachinalito Central, Cachinalito West, and Dumbo West models using a series of checks including comparison of summary statistics for global estimation bias (Table

14-23), visual inspection of estimated grades against composites, and drift analysis to detect local biases. RPA concluded that estimates were acceptable.

Austral Gold Limited – Guanaco Mine							
Composites Blocks							
Sector	Count	Au g/t	Count	Au OK	Au NN	Kriged/NN	
Cachinalito Central	1,274	6.05	82,507	4.52	4.99	91%	
Cachinalito West	641	3.40	46,973	2.98	3.00	99%	
Dumbo West	632	2.42	129,480	2.08	2.04	102%	
Perseverancia	191	4.48	11,301	3.72	3.88	96%	
Defensa	583	1.63	46,550	1.46	1.52	96%	
Natalia	348	7.93	31,453	2.81	3.11	90%	

# TABLE 14-23 COMPARATIVE STATISTICS FOR AU GRADES (BLOCKS ESTIMATED BY OK, NN AND ORIGINAL COMPOSITES) Austral Gold Limited – Guanaco Mine

Estimated nearest-neighbor (NN) models for each deposit were set up using the parameters shown earlier. A single estimation pass was designed with search distances large enough to warrant that all blocks within a grade shell were estimated. Hard boundaries were used, i.e. a block within a particular grade shell code was estimated with a grade value from those composites tagged with exactly the same grade shell code.

#### Defensa and Perseverancia

Checks on the estimate performed by RPA involved comparison of summary statistics between the OK estimates and a NN estimate, visual inspection of estimated grades against composites, and swath plots to detect spatial bias. In general the estimates were acceptable.

#### Natalia

RPA validated the block model using a series of checks including comparison of summary statistics for global estimation bias, visual inspection of estimated grades against composites on plans and sections, and swath plots to detect spatial bias. RPA concludes that the estimates are acceptable.



#### AMANCAYA

#### SUMMARY

For this report, RPA has reviewed and revised as required the Mineral Resource estimates for the Amancaya Mine as received from Austral Gold. This section describes the validated models and estimates as found acceptable by RPA for the Cerro Amarillo, Julia, and Central veins on the Amancaya Project. Generally, RPA found that values and compilations of gold and silver grades were accurately recorded and estimated.

The methodology of estimating Mineral Resources by Austral Gold staff includes:

- Statistical analysis of gold values in the assay database.
- Mineralized envelope models at 0.5 g/t Au and 2.0 g/t Au cut-off grades for the Central, Cerro Amarillo, and Julia veins developed using Maptek's Vulcan software.
- Construction of a block model using Maptek's Vulcan software.
- Grade interpolation using Inverse Distance methods.

A summary of the Mineral Resources for Amancaya as of December 31, 2016, is shown in Table 14-1. Cut-off grades for the Mineral Resources were established using a gold price of US\$1,300 per ounce and a silver price of US\$20 per ounce. Indicated Mineral Resources increased relative to the previous estimate due to infill drilling conducted in 2016 which also allowed the conversion of Inferred Resources to higher classifications.

RPA is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the Mineral Resource estimate.

RPA confirms that the Mineral Resources listed in Table 14-24 comply with all disclosure requirements for Mineral Resources set out in NI 43-101.



#### TABLE 14-24 AMANCAYA MINERAL RESOURCES – DECEMBER 31, 2016

	Tonnes		Grade	•		Ounces	5
	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t)	Au (koz)	Ag (koz)	Au Eq (koz)
			Оре	en Pit			
Indicated	171.5	11.24	177.5	13.61	62.0	978.9	75.1
Inferred	60	7.6	108	9.0	14.5	207	20
			Under	rground			
Indicated	633.2	9.21	54.50	9.94	187.4	1,110	202.3
Inferred	900	6.7	31.4	7.2	195	910	210
Total Indicated	804.7	9.64	80.72	10.72	249.4	2,088	277.4
Total Inferred	960	6.8	36	7.3	210	1,110	220

Notes:

- 1. Mineral Resources followed CIM definitions and are compliant with the JORC Code.
- 2. Mineral Resources are reported inclusive of Mineral Reserves.
- 3. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- 4. Open pit Mineral Resources are reported at a cut-off grade of 1.5 g/t AuEq. Preliminary pit optimization shells were used to constrain the resources. Underground Mineral Resources are estimated at a cut-off grade of 2.5 g/t AuEq beneath the open pit shells.
- 5. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, and a silver price of US\$20 per ounce.
- 6. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80%, respectively.
- 7. Minimum width for the open pit resource is 1.0 m and 1.5 m for the underground resource.
- 8. Bulk density is 2.50 t/m<sup>3</sup>.
- 9. Numbers may not add due to rounding.

#### **RESOURCE DATABASE**

The final Mineral Resource database comprises surface RC and diamond drilling and trenches. For resource estimation, the drill hole data was limited to those assays located inside the mineralization wireframes. This included 777 gold and silver assays from 188 drill holes and seven trenches over 934 m.

RPA conducted a limited number of checks on the resource database as discussed in Section 12 Data Verification. Three drill hole collars were found to differ by more than three metres when compared to the topography. RPA is of the opinion that these discrepancies should be investigated. No other issues were identified. RPA is of the opinion that the database is appropriate to support Mineral Resource estimation.



#### GEOLOGICAL MODELLING

At present, Austral Gold has not completed a digital geological model for Amancaya. RPA recommends that a geological model be created. RPA also recommends Amancaya create an oxide surface and investigate the relationship between weathering and metal grades.

#### MINERALIZATION MODELLING

A total of eleven mineralization wireframes were completed using Vulcan software, and represent the three principal veins at the Amancaya Project, within four sectors:

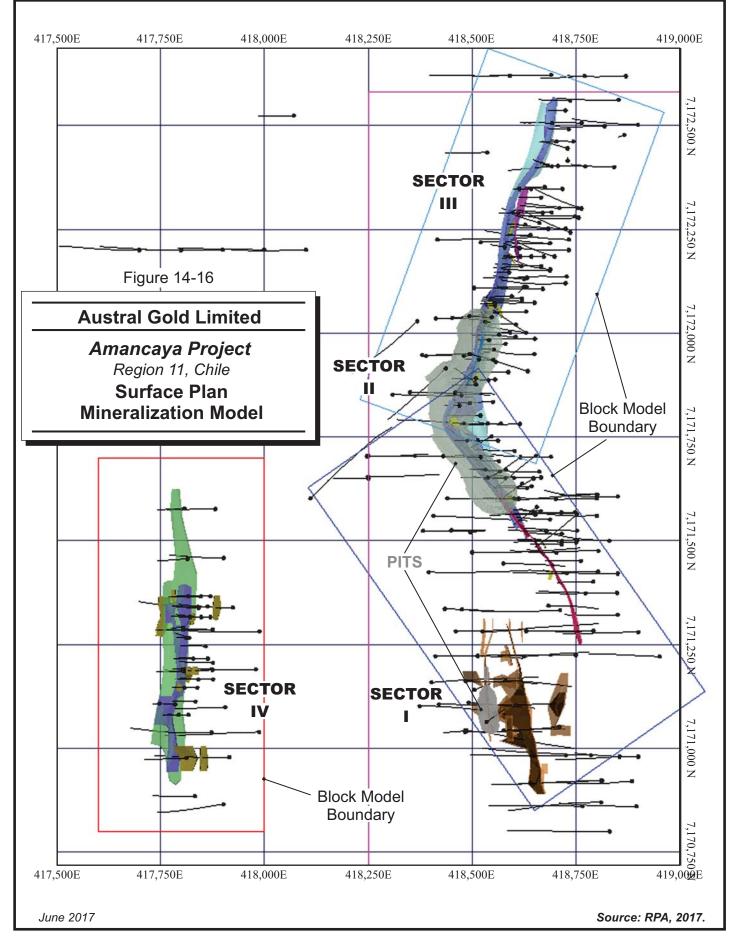
- Sector I: Cerro Amarillo, trending N10°
- Sector II: Central Vein S, trending N35°W
- Sector III: Central Vein N, trending N20°E
- Sector IV: Julia Vein, trending north-south

Mineralization wireframes and the subsequent Mineral Resource estimations were completed by Austral Gold in Sectors I, and by Austral Gold and amended by RPA in Sectors II, III and IV.

High and low grade zones were constructed, using cut-off grades of 0.5 g/t Au and 2.0 g/t Au, respectively, over the Central Vein, Cerro Amarillo, and the Julia vein. Within the Central Vein, three additional wireframes (22, 23 and 24), representing small, continuous zones of mineralization and another less continuous wireframe (30), were modelled at a gold cut-off grade of 2.0 g/t Au. Within the Julia vein, an additional wireframe (411) outlining a less continuous zone was modelled at a gold cut-off grade of 0.5 g/t Au. The zone contains some high grade samples that could not be delineated into a separate high grade domain.

An overview of the final mineralization models is shown in Figure 14-16.







#### **DESCRIPTIVE STATISTICS**

The modelled mineralized wireframes were used to flag drill hole samples in the database. For each mineralized zone, resource assays, descriptive statistics, and histograms were investigated. Figure 14-17 presents the descriptive statistics for the individual zones. Material outside of the modelled wireframes was not estimated.

#### **GRADE CAPPING AND COMPOSITING**

Gold and silver composites were capped for outliers based on examination of cumulative probability plots, quantile-quantile plots, basic statistics, and histograms by Austral Gold in Sector I. Capping levels were chosen based on the 96.5<sup>th</sup> percentile of the grade distribution for each sector. Raw gold and silver assays were capped by RPA in Sectors II, III and IV, based on examination of basic statistics, histograms, probability plots, and decile analysis.

Final caps applied within each Sector are shown in Table 14-25. An example of capping analysis completed by RPA within the high grade zone Sector II is shown in Figure 14-18.

		0.5 g/t Au grade shell		2.0 g/t Au	grade shell
	Sector	g/t Au	g/t Ag	g/t Au	g/t Ag
Ι	Cerro Amarillo <sup>1</sup>	1.91	26.40	30.60	168.00
П	Central Vein S <sup>2</sup>	2.00	50.00	35.00 <sup>3</sup>	350.00 <sup>3</sup>
				<b>15.00</b> ⁵	150.00 <sup>5</sup>
III	Central Vein N <sup>2</sup>	3.00	40.00	50.00 <sup>4</sup>	700.00 <sup>4</sup>
				<b>15.00</b> ⁵	150.00 <sup>5</sup>
IV	Julia Vein <sup>2</sup>	2.00	50.00	50.00 <sup>4</sup>	700.00 <sup>4</sup>

# TABLE 14-25 GOLD AND SILVER GRADE CAPS Austral Gold Limited – Amancaya Mine

Notes:

1. Capping applied subsequent to compositing by Austral Gold.

2. Capping applied prior to compositing by RPA.

3. Capping applied to both the high grade zone and tangential zones 22.

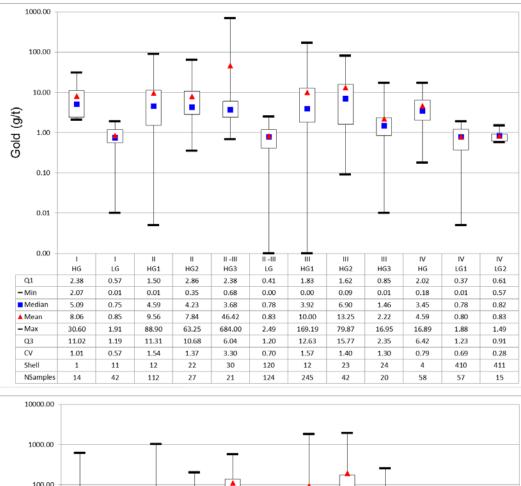
4. Capping applied to both the high grade zone and tangential zones 23 and 24.

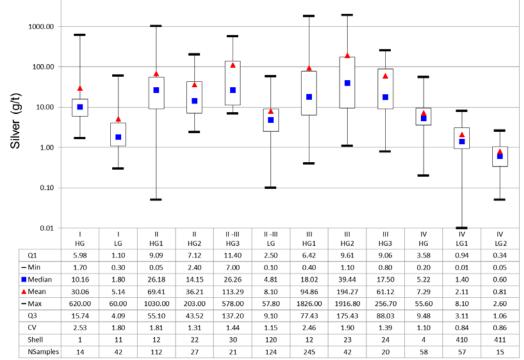
5. Capping applied to tangential zone 30.

In Sectors II, III and IV, one metre run-length composites were generated inside mineralization wireframes and flagged by zone domain. Composites smaller than 0.25 m were discarded for resource estimation. Figure 14-19 presents the descriptive statistics for the composites in individual zones.



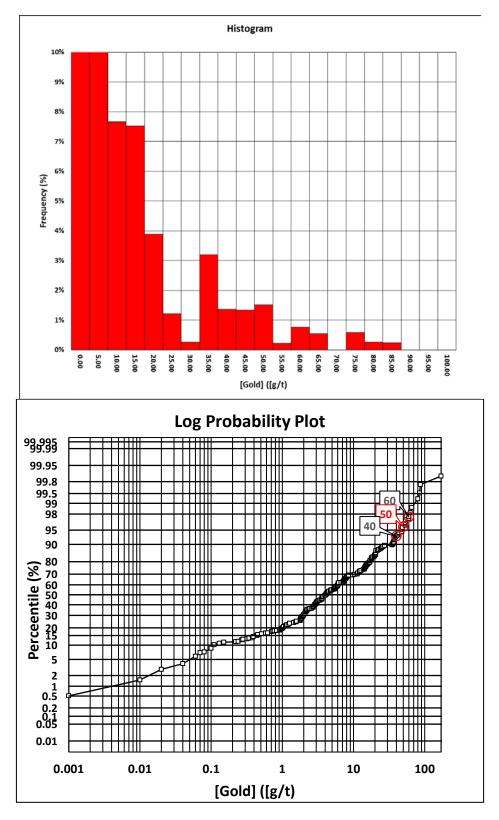
#### FIGURE 14-17 DESCRIPTIVE STATISTICS OF RAW ASSAY DATA





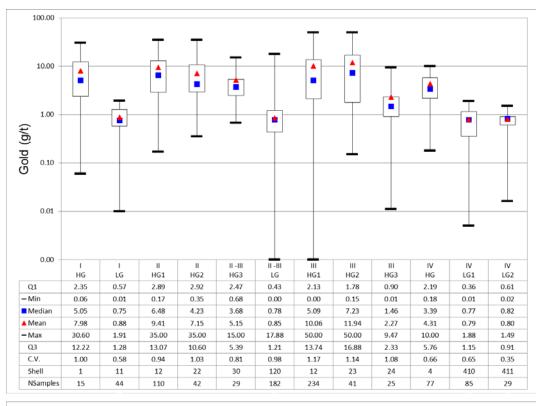


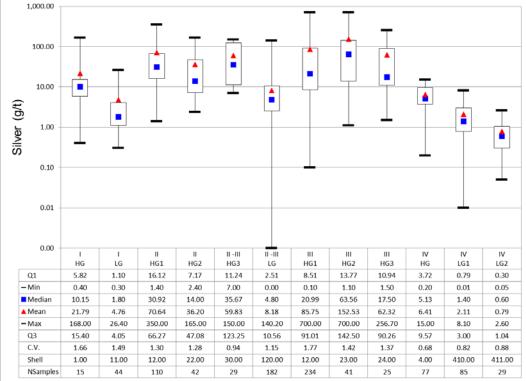
#### FIGURE 14-18 CAPPING ANALYSIS BY RPA WITHIN SECTOR III: HG





#### FIGURE 14-19 DESCRIPTIVE STATISTICS OF COMPOSITE DATA







#### DENSITY

No bulk density determinations were completed by Meridian/Yamana. Cenizas completed 11 bulk density determinations which reported an average density of 2.5 g/cm<sup>3.</sup> Seven additional bulk density determinations were completed by Tecnologia Y Geociencias as part of the geotechnical program completed for Austral Gold in 2015. These seven determinations averaged 2.4 g/cm<sup>3</sup>. Due to the variable composition of the vein, it was decided to use 2.5 g/cm<sup>3</sup> as an average bulk density value.

#### VARIOGRAPHY

The Amancaya project contained insufficient data to produce reliable directional variogram models. An omnidirectional variogram was constructed by RPA in Sectors II and III, and was used to inform classification of the final block model. The total variogram range was modelled at 60 m.

#### BLOCK MODEL CONSTRUCTION

Estimation of gold and silver was performed in Maptek's Vulcan software by Austral Gold within Sector I and by RPA within Sectors II, III and IV. A total of five block models were created to estimate gold and silver on the Amancaya property. Block model parameters are listed in Table 14-26.

	East (X)	North (Y)	Elevation (Z)		
	Sector	I			
Minimum coordinates	418,250	7,170,850	1,400		
Maximum coordinates	419,000	7,172,750	2,000		
Block size	2	2	2		
Minimum block size	0.5	0.5	0.5		
Number of blocks	375 950		300		
Rotation	not rotated				
Sector II	and Secto	r III Open Pi	t		
Minimum coordinates	418,250	7,170,850	1,400		
Maximum coordinates	419,000	7,172,580	2,000		
Block size <sup>1</sup>	1	2	2.5		
Number of blocks	750	1000	240		
Rotation		not rotate	d		

# TABLE 14-26BLOCK MODEL SETUPAustral Gold Limited – Amancaya Mine



	East (X)	North (Y)	Elevation (Z)			
Sect	or II Unde	rground				
Minimum coordinates	418,650	7,170,850	1,490			
Maximum coordinates	418,514	7,171,914	1,940			
Block size	2	2	2			
Minimum block size	0.5	0.5	0.5			
Number of blocks	250	475	225			
Rotation		55				
Sect	or III Unde	rground				
Minimum coordinates	418,230	7,170,840	1,490			
Maximum coordinates	418,960	7,172,731	1,940			
Block size	2	2	2			
Minimum block size	0.5	0.5	0.5			
Number of blocks	225	450	225			
Rotation		110				
	Sector I	V				
Minimum coordinates	417,650	7,170,900	1,400			
Maximum coordinates	418,000	7,171,700	2,000			
Block size	2	2	2			
Minimum block size	0.5	0.5	0.5			
Number of blocks	800	1800	700			
Rotation		not rotate	ed			
Sector IV						
Minimum coordinates	417,650	7,170,900	1,400			
Maximum coordinates	418,000	7,171,700	2,000			
Block size	2	2	2			
Minimum block size	0.5	0.5	0.5			
Number of blocks	175	400	300			
Rotation not rotated						

Notes:

1. Block size limited to two metres within the mineralized zone.

#### **GRADE INTERPOLATION**

Within Sector I, gold and silver were estimated into the high grade domains using Inverse Distance Squared ( $ID^2$ ) in a four pass interpolation run, employing successively fewer composite restrictions. The dimensions of the first three passes were unchanged, and represented a flattened ellipse shape, 60 m x 30 m x 12 m. The fourth pass employed a larger, disc shaped search ellipse, isotropic with respect to the major and semi-major axes, and a relatively short minor axis (120 m x 120 m x 12 m). The search ellipses in all passes within Sector I were oriented north-south and dipped 75° to the west. Gold and silver in the low grade domain in Sector I were estimated in a single pass, using a search ellipse equal in dimensions and orientation to Pass 4 of the high grade domain.



The interpolation approach for the mineralized zones within the Central Vein and Julia Vein for gold and silver included three nested estimation runs, each using a search ellipse oriented parallel to the general vein trend, and hard boundaries. Only blocks occurring wholly or partially within the mineralization wireframes were interpolated. All grades were interpolated using inverse distance cubed (ID<sup>3</sup>). Each subsequent pass employed larger search ellipse dimensions and fewer composite restrictions. Residual composites were included in the grade estimation, all composites were length weighted.

The search ellipse employed in Sector II was oriented 325° (northwest), dipping 85° to the northeast in both the high grade and low grade domains, for both gold and silver. An additional plunge of 20° was added to the search ellipse dimension during the estimation of gold. Estimation of gold was divided within the high grade zone using the boundaries of the high grade gold envelope with hard boundaries.

The search ellipse employed in Sector III was oriented 20° to the northeast and dipped 85° to the southeast.

Within Sector IV, the Julia Vein, the search ellipse were oriented north-south and dipped 70° to the east.

Details of the interpolation approaches are listed in Table 14-27.

				-			osite			
				Sea	rch Elli	ose Dimens			Restri	ctions
Vein Domain (Shell)	Grade Domain	Estimation Run	Bearing (z)	Plunge (y)	Dip (x)	Major Search (m)	Semi - Major Search (m)	Minor Search (m)	Min No. Samples	Max Samples
Sec	tor I									
1,11	HG-LG	1	0	0	75	60	30	12	4	8
1,11	HG-LG	2	0	0	75	60	30	12	3	8
1,11	HG-LG	3	0	0	75	60	30	12	2	8
1,11	HG-LG	4	0	0	75	120	120	12	1	8
Sec	tor II									
12	HG	1	325	-20	-85	40	50	30	4	12
12	HG	2	325	-20	-85	80	100	50	4	12
12	HG	3	325	-20	-85	120	150	50	4	12
120	LG	1	325	-20	-85	40	50	30	4	12

## TABLE 14-27 AMANCAYA INTERPOLATION PARAMETERS Austral Gold Limited – Amancaya Mine

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#### www.rpacan.com

		Composite Restrictions								
Vein Domain (Shell)	Grade Domain	Estimation Run	Bearing (z)	Plunge (y)	Dip (x)	Major Search (m)	Semi - Major Search (m)	Minor Search (m)	Min No. Samples	Max Samples
120	LG	2	325	-20	-85	80	100	50	4	12
120	LG	3	325	-20	-85	120	150	50	4	12
22	HG	1	325	-20	-85	40	50	50	4	12
22	HG	2	325	-20	-85	80	100	50	4	12
22	HG	3	325	-20	-85	120	150	50	4	12
30	HG	1	325	-20	-85	100	50	50	1	5
Sec	tor III									
12	HG	1	20	-25	-85	30	40	30	4	12
12	HG	2	20	-25	-85	50	70	30	4	12
12	HG	3	20	-25	-85	150	200	50	4	12
120	LG	1	20	-25	-85	50	50	30	4	12
120	LG	2	20	-25	-85	100	100	30	4	12
120	LG	3	20	-25	-85	200	200	50	4	12
23	HG	1	20	-25	-85	30	40	30	4	12
23	HG	2	20	-25	-85	50	70	30	4	12
23	HG	3	20	-25	-85	150	200	50	4	12
24	HG	1	20	-25	-85	30	40	30	4	12
24	HG	2	20	-25	-85	50	70	30	4	12
24	HG	3	20	-25	-85	150	200	50	4	12
30	HG	1	0	0	-80	30	80	15	1	5
Sect	or IV									
41	HG	1	5	0	-70	50	50	20	4	12
41	HG	2	5	0	-70	100	100	30	4	12
41	HG	3	5	0	-70	150	150	30	4	12
410	LG	1	5	0	-70	50	50	20	4	12
410	LG	2	5	0	-70	100	100	30	4	12
410	LG	3	5	0	-70	150	150	30	4	12
411	LG	1	5	0	-70	60	60	30	1	5

Notes:

1. Only one hole was required to estimate gold and silver in Sector IV, Pass 2 as the maximum number of composites per drill hole was set to four.

2. Pass 2 was not applied outside the high grade gold envelope of the high grade zone.

A 1 m x 2 m x 2.5 m regular model for Veta Central (Sector II and III) and a 2 m x 2 m x 2 m reblocked model for Cerro Amarillo (Sector I) were used for open pit mine planning and reporting. For the reblocked model, grade variables were averaged into the larger block size and weighted by density, all other variables were assigned based on majority.



#### CLASSIFICATION

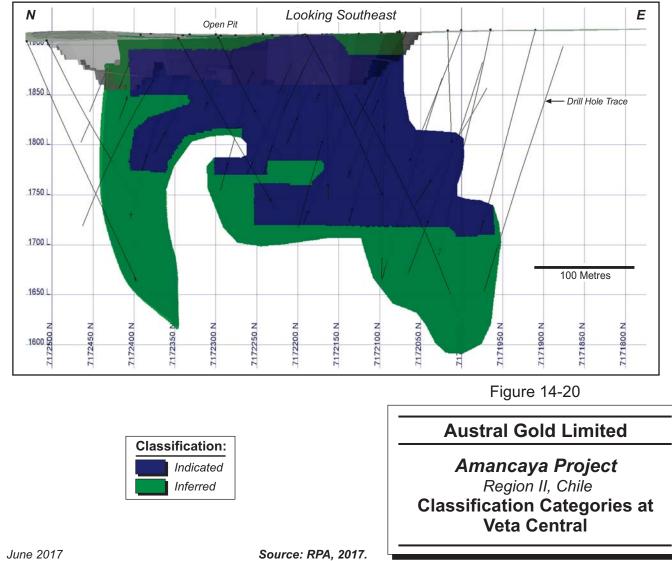
Classification definitions for resource categories used in this report are consistent with those defined by CIM (2014) and adopted by NI 43-101. In the CIM classification, a Mineral Resource is defined as "a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction". Mineral Resources are classified into Measured, Indicated, and Inferred Mineral Resource categories.

Mineral Resource classification within the mineralized zones at Amancaya was based on drill hole spacing, grade continuity, and overall geological continuity. Indicated Mineral Resources were limited to areas with a drill hole spacing equal to or greater than 50 m, equal to approximately 80% of the omnidirectional variogram sill. A polygon was used to create a continuous zone of Indicated Mineral Resources in Sectors II, III and IV. All other areas were limited to a classification of Inferred. There are no Measured Mineral Resources at the Amancaya Project.

Figure 14-20 illustrates the classification distribution at Veta Central.









#### **CUT-OFF GRADE AND OPEN PIT SHELL**

RPA used the Indicated, and Inferred re-blocked resource blocks and a set of input assumptions to create a preliminary Whittle open pit shell. This open pit shell provided a constraint for the reported open pit resources based on the CIM (2014) requirement for Mineral Resources to have "reasonable prospects for economic extraction". Assumptions used in the preparation of the preliminary Whittle open pit shell are stated in Table 14-28.

Input Parameter	Units	Value
Gold Price	US\$/oz	1,300
Silver Price	US\$/oz	20
Recovery-Au	%	92.0
Recovery -Ag	%	80.0
Mining Cost - Ore	US\$/t moved	4.60
Process Cost	US\$/t	28.90
Ore Haul Cost	US\$/t	10.00
G&A Cost	US\$/t	15.00
Pit Wall Slopes	degrees	50

#### TABLE 14-28 CUT-OFF GRADE AND WHITTLE ASSUMPTIONS Austral Gold Limited – Amancaya Mine

RPA notes that the pit discard cut-off grade is only applicable to the resource blocks situated inside the Whittle open pit shell generated with the same input assumptions. Mining costs are incorporated in the Whittle process and are not included in the pit discard cut-off grade calculation. Consequently, it is the Whittle process that defines the approximate pit size and identifies the blocks that will potentially be mined and transported to the pit rim. Blocks with grades above the discard cut-off grade will potentially be processed as ore and the rest will be treated as waste. RPA cautions that open pit discard cut-off grades should not be applied to block models not constrained by a reasonable pit shell.

All classified resource blocks located between the surface and the Whittle open pit shell with a 1.5 g/t AuEq cut-off grade were included in the reported open pit Mineral Resources. There is additional material located outside of the open pit shell but within the wireframe models, and RPA is of the opinion that this material has potential to be excavated using underground mining methods. For this underground material, RPA used a 2.5 g/t AuEq cutoff grade in reporting of Mineral Resources. Underground material is reported from the original sub-blocked models and restricted to areas with geological support and grade continuity.



Metal prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources. For resources, metal prices used are slightly higher than those for reserves.

#### MINERAL RESOURCE STATEMENT

A summary of the estimated Mineral Resources as of August 31, 2015 for Amancaya by extraction method and Sector is detailed in Table 14-29. A cut-off grade of 2.50 g/t AuEq was applied to the underground Mineral Resources and a cut-off grade of 1.50 g/t AuEq was applied to the open pit Mineral Resources based on a "reasonable expectation of eventual economic extraction". The Amancaya Mineral Resources include Mineral Reserves.

In RPA's opinion, the assumptions, parameters, and methodology used for the Amancaya Mineral Resource estimates are appropriate for the style of mineralization and mining methods.

There are no known environmental, permitting, legal, title, taxation, socio-economic, political, or other relevant factors that could significantly affect the Mineral Resources at Amancaya.

#### TABLE 14-29 AMANCAYA MINERAL RESOURCES BY DOMAIN – DECEMBER 31, 2016

#### Austral Gold Limited – Amancaya Mine

		I			Open Pit							Underground	d						Total			
Zone	Category	Tonnes		Grades			Ounces		Tonnes		Grade			Ounces		Tonnes		Grade			Ounces	
		(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t) A	u (koz) A	Ag (koz) A	uEq (koz)	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t) A	u (koz)	Ag (koz) A	uEq (koz)	(kt)	Au (g/t)	Ag (g/t)	AuEq (g/t) /	Au (koz)	Ag (koz) A	u <b>Eq (koz)</b>
	Measured	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerro Amarillo Sector I	Indicated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	M+I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Inferred	18	3.1	42	3.7	1.8	23	2.1	200	7.4	12	7.6	48	79	50	220	7.1	15	7.3	50	100	52
	Measured	_			_		_	_				-	-	_								
	Indicated	38.8	10.52	183.50	12.98	13.1	229.0	16.2	192.5	9.53	52.82	10.24	59.0	326.9	63.4	231.3	9.70	74.75	10.70	72.2	556.0	79.6
Veta Central Sector II	M+I	38.8	10.52	183.50	12.98	13.1	229.0	16.2	192.5	9.53	52.82	10.24	59.0	326.9	63.4	231.3	9.70	74.75	10.70	72.15	556.0	79.6
	Inferred	24	10	165	13	8.2	130	9.9	210	6.8	30	7.2	45	210	47	230	7.2	46	7.8	53	340	57
	inonod			100	10	0.2		0.0	210	0.0	00		10	210		200		.0	1.0	00	0.0	0.
	Measured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veta Central Sector III	Indicated	132.7	11.44	175.75	13.80	48.8	749.9	58.9	308.6	11.12	75.97	12.14	110.3	753.7	120.4	441.3	11.22	105.98	12.64	159.2	1,503.5	179.3
veta Central Sector III	M+I	132.7	11.44	175.75	13.80	48.8	749.9	58.9	308.6	11.12	75.97	12.14	110.3	753.7	120.4	441.3	11.22	105.98	12.64	159.16	1,503.5	179.3
	Inferred	18	8.0	94	9.3	4.6	54	5.3	330	7.7	56	8.5	83	590	90	350	7.8	58	8.5	87	650	96
	Measured		_		_		_			_		_	_	_			_			_		
	Indicated			_					132.1	4.25	6.80	4.34	18.1	28.9	18.4	132.1	4.25	6.80	4.34	18.1	28.9	18.4
Veta Julia Sector IV	M+I								132.1	4.25	6.80	4.34	18.1	28.9	18.4	132.1	4.25	6.80	4.34	18.1	28.9	18.4
	Inferred	-		-		-		-	160	3.7	5.1	8.5	19	26.3	20	160	3.7	5.1	3.8	19	26	20
	Measured								-	-	-	-					-	-	-			
	Indicated	171.5	11.24	177.51	13.61	62.0	978.9	75.1	633.2	9.21	54.50	9.94	187.4	1,109.5	202.3	804.7	9.64	80.72	10.72	249.4	2,088.4	277.4
Total Amancaya	Total M + I	171.5	11.24	177.51	13.61	62.0	978.9	75.1	633.2	9.21	54.50	9.94	187.4	1,109.5	202.3	804.7	9.64	80.72	10.72	249.4	2,088.4	277.4
	Inferred	60	7.6	110	9.0	15	210	20	900	6.7	31	7.2	195	910	210		6.8	36	7.3	210	1,110	220

Notes:

1. Mineral Resources followed CIM definitions and are compliant with the JORC Code.

2. Mineral Resources are reported inclusive of Mineral Reserves.

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

4. Open pit Mineral Resources are reported at a cut-off grade of 1.5 g/t AuEq. Pit optimization shells were used to constrain the resources. Underground Mineral Resources are estimated at a cut-off grade of 2.5 g/t AuEq beneath the open pit shells.

5. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, and a silver price of US\$20 per ounce.

6. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on a gold and silver price of \$1,300/oz and \$20/oz and recoveries of gold and silver of 92% and 80%, respectively.

7. Minimum width for the open pit resource is 1.0 m and 1.5 m for the underground resource.

8. Bulk density is 2.50 t/m<sup>3</sup>.

9. Numbers may not add due to rounding.



#### **BLOCK MODEL VALIDATION**

Austral Gold and RPA carried out a number of block model validation procedures including:

- 1. Validation of the mineralization wireframes in each sector for closure, consistent topology, and crossing triangles.
- 2. Visual comparisons of block and composite grades on cross section, longitudinal section, and in plan.
- 3. Statistical comparisons.
- 4. Drift analysis of block and composite gold grades by elevation and northing.

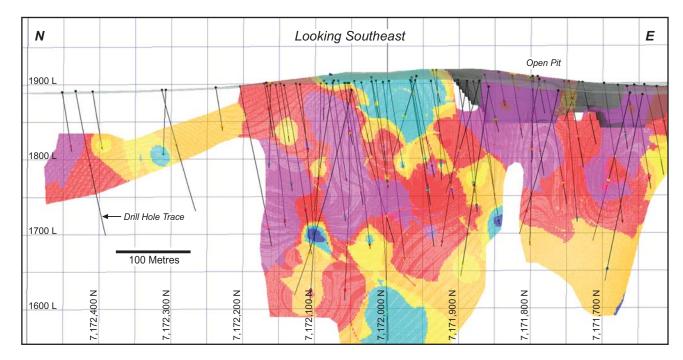
The visual inspection of composite and block grades revealed that the spatial grade correlation is good in Sector II (Figure 14-21) and Sector III and reasonable in Sectors I and IV.

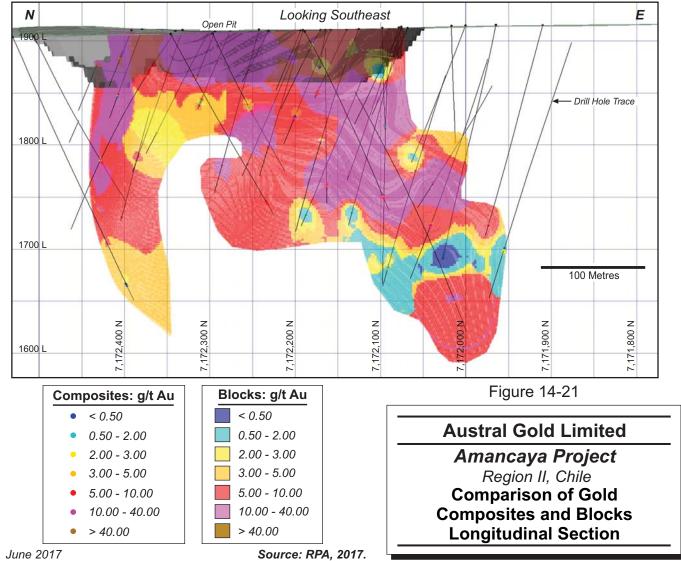
A comparison of the descriptive statistics for the raw assays, composites, and blocks for the three domains modeled are summarized for gold in Table 14-30 and for silver in Table 14-31. It can be seen that the mean grades between the composites and the block grades match reasonably well, suggesting that little bias in present in the estimate.

Drift analysis (Figure 14-22) shows acceptable agreement of composite gold and block grades.

On the basis of its review and validation procedures, RPA is of the opinion that the block model is valid and acceptable for supporting the Mineral Resource estimate.

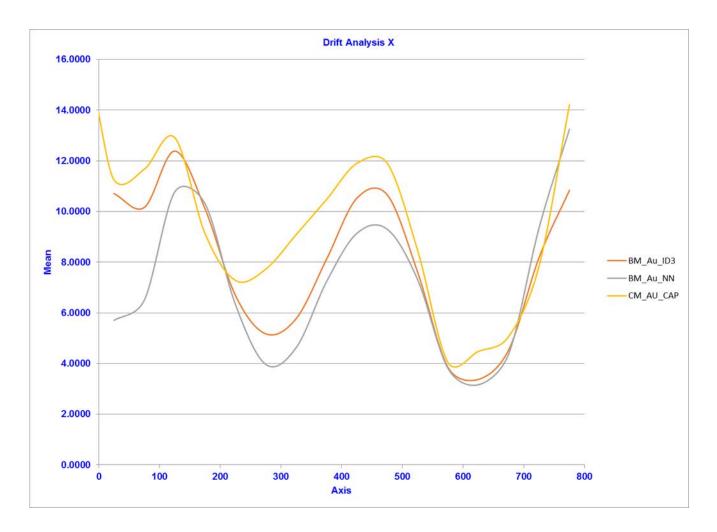












Sector Grade	Vein Domain			Co	mposites		Blocks						
Domain	(Shell)	Min	Max	Mean	Standard Dev.	No. of Samples	Min	Max	Mean	Standard Dev.	No. of Samples		
I HG	1	0.06	30.60	7.98	7.96	15	0.00	30.60	7.06	6.87	91,521		
ILG	11	0.01	1.91	0.88	0.51	44	0.00	1.91	0.83	0.39	199,410		
ll HG1	12	0.17	35.00	9.41	8.86	110	0.01	28.11	8.46	4.57	77,646		
II HG2	22	0.35	35.00	7.15	7.39	42	0.64	34.42	6.74	4.94	43,436		
II HG3	30	2.21	15.00	7.63	4.93	12	2.21	13.41	7.02	3.64	10,353		
II LG	120	0.02	17.88	0.75	1.46	44	0.00	1.99	0.79	0.34	147,991		
III HG1	12	0.00	50.00	10.06	11.78	234	0.00	47.28	8.34	5.81	244,072		
III HG2	23	0.15	50.00	11.94	13.58	41	0.28	49.77	12.78	9.11	15,719		
III HG3	24	0.01	9.47	2.27	2.44	25	0.01	8.97	2.54	2.22	29,695		
III HG4	30	2.38	5.27	3.11	1.08	5	0.00	13.10	4.03	3.07	18,079		
III LG	120	0.01	5.51	0.90	0.49	92	0.00	1.96	0.95	0.31	305,503		
IV HG	41	0.18	10.00	4.31	2.84	77	0.39	10.00	3.77	1.60	78,603		
IV LG1	410	0.01	1.88	0.79	0.51	85	0.00	1.75	0.76	0.24	179,395		
IV LG2	411	0.02	1.49	0.80	0.28	29	0.00	1.49	0.76	0.27	52,989		

### TABLE 14-30 COMPARISON OF COMPOSITE AND BLOCK GOLD GRADES BY DOMAIN Austral Gold Limited – Amancaya Mine

### TABLE 14-31 COMPARISON OF COMPOSITE AND BLOCK SILVER GRADES BY DOMAIN Austral Gold Limited – Amancaya Mine

Sector Grade	Vein Domain			Со	mposites		Blocks						
Domain	(Shell)	Min	Max	Mean	Standard Dev.	No. of Samples	Min	Max	Mean	Standard Dev.	No. of Samples		
I HG	1	0.40	168.00	21.79	36.08	15	0.00	168.00	15.56	24.57	91,521		
I LG	11	0.30	26.40	4.76	7.08	44	0.30	26.40	4.87	6.49	199,410		
II HG1	12	1.40	350.00	70.64	91.96	110	0.06	328.96	67.93	74.02	77,646		
II HG2	22	2.40	165.00	36.20	46.20	42	3.60	164.55	34.96	38.15	43,436		
II HG3	30	7.00	150.00	57.88	65.25	12	7.00	150.00	58.07	50.46	10,353		
ll LG	120	0.47	70.04	9.52	13.21	44	0.00	49.19	8.24	8.74	147,991		
III HG1	12	0.10	700.00	85.75	151.88	234	0.00	699.83	68.95	100.32	244,072		
III HG2	23	1.10	700.00	152.53	216.72	41	1.34	677.25	150.3	138.17	15,719		
III HG3	24	1.50	256.70	62.32	85.24	25	1.77	256.47	45.43	60.94	29,695		
III HG4	30	23.80	150.00	113.08	47.81	5	0.00	150.00	55.98	47.49	18,079		
III LG	120	0.40	140.20	9.90	8.86	92	0.00	49.49	7.70	6.75	305,503		
IV HG	41	0.20	15.00	6.41	4.35	77	0.30	14.77	5.75	2.64	78,603		
IV LG1	410	0.01	8.10	2.11	1.73	85	0.00	8.10	2.25	1.21	179,395		
IV LG2	411	0.05	2.60	0.79	0.70	29	0.00	2.60	0.73	0.50	52,989		



### **15 MINERAL RESERVE ESTIMATE**

Mineral Reserves were estimated for both the Guanaco and Amancaya mines. The Guanaco Mine has independent block models for the Defensa, Perseverancia, Dumbo, and Cachinalito (Central and West) deposits. The Defensa and Perseverancia areas were mined by open pit methods, and as at the end of 2014, the open pits are mined out.

Mining of the Cachinalito Central (Central East and Central West) area by underground methods began in 2012 and Cachinalito West area began in 2016. Mining of the Dumbo area started in October 2015.

The Amancaya Mine contains both open pit and underground Mineral Reserves and uses a full block model for reporting the open pit reserves, and two sub-blocked models for reporting the underground reserves.

Mineral Reserves for the mines were estimated using metal prices of US\$1,300/oz Au and US\$20/oz Ag.

#### SUMMARY

The Mineral Reserves for Guanaco are estimated to be 490 kt containing 2.99 g/t Au and 3.64 g/t Ag with 47 koz of gold and 57 koz of silver and are presented in Table 15-1.



### TABLE 15-1 GUANACO MINERAL RESERVES – DECEMBER 31, 2016 Austral Gold Limited – Guanaco Mine

				Grades		Contained Metal Ounces				
Category	Area	Tonnes	Au	Ag	AuEq	Au	Ag	AuEq		
		(kt)	(g/t)	(g/t)	(g/t)	(koz)	(koz)	(koz)		
Underground										
Proven	Cachinalito West	172	3.47	2.86	3.51	19	16	19		
Probable	Cachinalito West	282	2.77	3.01	2.81	25	27	26		
Total	Cachinalito West	454	3.04	2.96	3.08	44	43	45		
Proven	Dumbo	11	3.38	4.72	3.44	1	2	1		
Probable	Dumbo	14	2.29	7.52	2.39	1	3	1		
Total	Dumbo	25	2.77	6.29	2.85	2	5	2		
Proven	Perseverancia	6	1.67	37.75	2.18	0.3	7	0.5		
Probable	Perseverancia	4	1.43	14.39	1.63	0.2	2	0.2		
Total	Perseverancia	10	1.58	28.67	1.96	0.5	89	0.6		
Total Proven	All	190	3.41	4.07	3.46	21	225	21		
Total Probable	All	300	2.73	3.37	2.78	26	33	26		
Total Reserves	All	490	2.99	3.64	3.04	47	57	48		

Notes:

1. Mineral Reserves followed CIM definitions and are compliant with the JORC Code.

2. Mineral Reserves are estimated at a break-even cut-off grade of 2.0 g/t AuEq for stopes and an

incremental cut-off grade of 1.0 g/t AuEq for drifts.

3. Mineral Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.

4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on prices of \$1,300/oz Au and \$20/oz Ag and recoveries of Au and Ag of 92% and 80%, respectively.

5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.

6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).

7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).

8. Bulk density is 2.5 t/m<sup>3</sup>.

9. Numbers may not add due to rounding.

The Mineral Reserves for Amancaya are estimated to be 948 kt containing 6.77 g/t Au and 63.15 g/t Ag with 206 koz of gold and 1,925 koz of silver and are presented in Table 15-2.



# TABLE 15-2 AMANCAYA MINERAL RESERVES – DECEMBER 31, 2016 Austral Gold Limited –Amancaya Mine

				Grades	5	Contained Metal Ounces				
Category	Area	Tonnage	Au	Ag	AuEq	Au	Ag	AuEq		
		(kt)	(g/t)	(g/t)	(g/t)	(koz)	(koz)	(koz)		
Underground										
Probable	Veta Central Norte	418	6.96	47.93	7.61	94	644	102		
Probable	Veta Central Sur	275	5.74	34.16	6.19	51	302	55		
Total Underground		693	6.48	42.46	7.05	144	947	157		
Open Pit										
Probable	Open Pit	255	7.56	119.49	9.16	62	978	75		
Total	All	948	6.77	63.15	7.61	206	1,925	232		

Notes:

1. Mineral Reserves followed CIM definitions and are compliant with the JORC Code.

2. Underground Mineral Reserves are estimated at a break-even cut-off grade of 2.5 g/t AuEq for stopes and an incremental cut-off grade of 1.5 g/t AuEq for drifts. Open Pit Mineral Reserves are estimated at a cut-off grade of 1.53 g/t AuEq.

3. Mineral Reserves are estimated using an average long-term gold price of US\$1,300 per ounce and silver price of US\$20 per ounce.

4. Gold Equivalents (AuEq) were calculated as AuEq = Au + 0.0134 x Ag, based on prices of \$1,300/oz Au and \$20/oz Ag and recoveries of Au and Ag of 92% and 80%, respectively.

5. A minimum mining width of 1.5 m was used for stopes and 3.5 m for drifts.

6. Stope dilution: 0.5 m in the hanging wall and 0.5 m in the footwall (1.0 m total).

7. Drift dilution: 0.25 m in each of the side walls (0.5 m total).

8. Bulk density is 2.5 t/m<sup>3</sup>.

9. Numbers may not add due to rounding.

RPA is not aware of any mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

#### DILUTION

Dilution studies have been carried out at Guanaco and it is well understood. The dilution during 2016 at Cachinalito is shown in Figures 15-1 and 15-2.



#### FIGURE 15-1 2016 DILUTION IN METRES AT GUANACO (CACHINALITO)

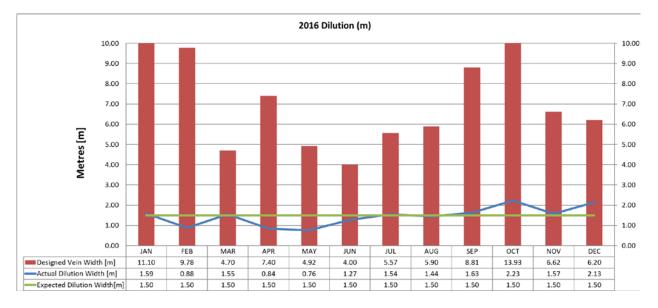
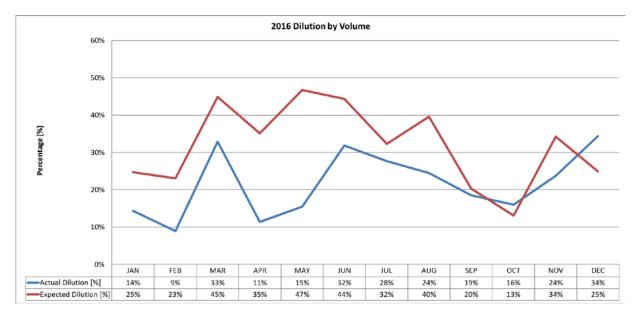


FIGURE 15-2 2016 DILUTION BY VOLUME AT GUANACO (CACHINALITO)



The average dilution by width was planned at 1.50 m versus actual of 1.47 m which resulted in dilution by volume of 25% and 20%, respectively. The dilution assumptions for the mine design account for 0.5 m in the hanging wall and 0.5 m in the footwall for a total of 1.0 m. The mine designs are carried out on wireframes based on an incremental 1.0 g/t AuEq cut-off grade. The assumption is that these wireframes inherently carry some dilution which is estimated to be equivalent to 0.5 m resulting to a total equivalent dilution of 1.5 m which



compares well to the actual dilution experienced at Guanaco. These same dilution assumptions are applied at Amancaya.

#### EXTRACTION

Tonnage losses are calculated on a monthly basis at Guanaco and result in approximately 23% of the designed stope tonnage. The mining losses versus designed tonnages is shown in Figure 15-3.

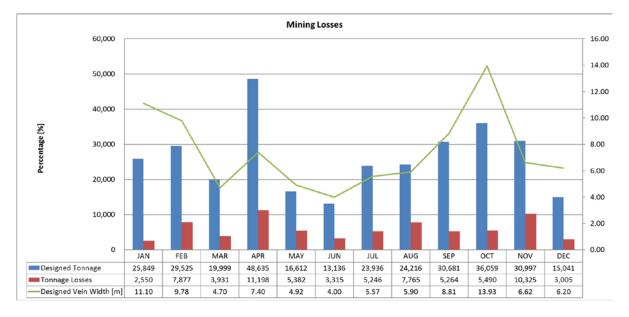


FIGURE 15-3 2016 MINING LOSSES AT GUANACO (CACHINALITO)

There are no mining losses accounted for in the stopes and drifts since there is a positive reconciliation between the reserves model and the mill production as shown in Table 15-5.

Sill pillars are planned every 40 m vertically and are considered non-recoverable, and are excluded from the Mineral Reserve estimate. These pillars were discounted from the reserves by applying a factor to the full height stope in areas where these pillars occur.

Rib pillars are considered non-recoverable, and are excluded from the Mineral Reserve estimate and accounted for by deducting an allowance of 1% of the Mineral Reserves.

RPA recommends that solids be created for rib and sill pillars instead of using factoring to ensure a more accurate estimation material to be excluded from the Mineral Reserves.

## **CUT-OFF GRADE**

Cut-off grades were established using the input parameters shown in Table 15-3.

Parameter	Unit	Guanaco UG	Amancaya UG	Amancaya OP
Mining cost	US\$/t	38.10	40.47	4.60
Processing cost	US\$/t	28.90	28.90	28.90
Additional haulage cost	US\$/t		10.00	10.00
General costs	US\$/t	8.00	16.10	16.10
Sales costs	US\$/oz Au	10.00	10.00	10.00
Gold price	US\$/oz Au	1,300	1,300	1,300
Silver price	US\$/oz Ag	20.00	20.00	20.00
Metallurgical recovery, Au	%	92	92	92
Metallurgical recovery, Ag	%	80	80	80
BE Cut-off grade (Au)	g/t	1.97	2.50	1.56
Marginal Cut-off grade (Au)	g/t	0.97	1.44	1.44

## TABLE 15-3MINE CUT-OFF GRADE PARAMETERSAustral Gold Limited – Guanaco and Amancaya Mine

\*Note: Marginal cut-off grade excludes mining costs

Cut-off grades of 1.0 g/t Au and 1.5 g/t Au (rounded up from 0.97 g/t Au and 1.44 g/t Au) were used for development drift material that must be mined as part of the logical mining sequence when no additional development is required for underground mining at Guanaco and Amancaya, respectively. Cut-off grades of 2.0 g/t Au and 2.5 g/t Au were used for stopes for underground mining at Guanaco and Amancaya, respectively.

Metal prices used for reserves are based on consensus, long term forecasts from banks, financial institutions, and other sources.



## AMANCAYA OPEN PIT OPTIMIZATION

A pit optimization was carried out in Vulcan using the Lerchs-Grossman algorithm to determine the optimum pit. The parameters used in the optimization are presented in Table 15-4.

Austral Gold	Austral Gold Limited – Amancaya Mine							
Parameter	Unit	Value						
Gold Price	US\$/oz	1,145						
Silver Price	US\$/oz	16						
Gold Recovery	%	92						
Silver Recovery	%	80						
Mining Cost	\$/t moved	4.60						
Processing Cost	\$/t processed	28.90						
G&A Cost	\$/t processed	10.00						
Selling Cost	US\$/oz	10						
Dilution	%	15						
Slope Angle	degrees	50						

## TABLE 15-4 PIT OPTIMIZATION PARAMETERS Austral Gold Limited – Amancaya Mine

A gold equivalent was calculated using gold and silver prices and recoveries shown in Table 15-4 and resulted in 82.3 grams of Ag being equivalent to 1 gram of Au.

Several pit shells were generated between \$150/oz Au and \$800/oz Au on a preliminary block model. To determine the final pit shell, the incremental mining cost to move a tonne of ore (between each of the shells) was compared to the cost of mining by underground methods. An all-in mining cost of \$60.00/t was assumed for the underground mining cost which accounts for production and development. The optimum pit shell selected of \$375/oz Au was selected since the incremental cost was \$50.10/t, with the next shell (\$400/oz Au) reaching an incremental cost of \$68.80/t as shown in Figure 15-4.

In May 2017 the Amancaya block model was revised resulting in a slight reduction of material within the pit shell. RPA ran Whittle on the revised block model and was confirm able to confirm that the economics for the pit shells were still economic. RPA also ran an underground trade-off scenario in Whittle which resulted in a pit shell that was smaller than the pit shell used in the design of the Amancaya operating pit. The result indicates that there is material that is being mined by open pit methods that would be more profitable to mine



using underground methods due to the increased stripping ratio. RPA recommends that GCM review the pit design in order to ensure optimal economics are achieved, and implement design adjustments in the next LOM plan update.



FIGURE 15-4 INCREMENTAL OPEN PIT MINING COST

RPA observes that the dilution used in the pit optimization of 15% is considerably lower than the 50% dilution applied in to the Mineral Reserves, however, this would be offset by the use of a lower gold price (\$1,145/oz versus \$1,300/oz) and the application of a fixed mining cost of \$4.60/t moved, regardless of material type. RPA recommends using separate ore and waste mining costs given the significant stripping ratio and difference in mining method for ore versus waste (explained in Section 16). In RPA's estimation, the cost for waste mining would be on the order of \$3.50/t moved, while ore mining would be closer to \$10.00/t moved. At an average strip ratio of 13.4 over the life of the mine, this would result in the average mining cost being \$3.95/t, approximately 15% lower than the \$4.60/t estimated by GCM.

RPA recommends that the pit optimizations should be re-run with final reserve parameters to verify that the optimum pit shell is used as the basis for the next estimate since the pit optimization parameters have been updated during the process of pit design and reserve estimation.



## RECONCILIATION

GCM has carried out reconciliation on the underground mining at Guanaco. The results of the reconciliation are shown in Table 15-5. The total gold ounces processed is approximately 44% to 63% higher than the Reserves Model.

#### **Reserves Model** Grade Control Model Processed Excavation Total Ag Au Ag Area Au Ag Au Total Au Au Total Au (t) (g/t) (g/t) (oz) (t) (g/t) (g/t) (oz) (t) (g/t) (g/t) (oz) Cachinalito West (2630 level) 20,268 17,259 2.69 2,786 17,687 7.60 Stopes 4.46 1.93 2,906 5.02 2.65 4,321 Cachinalito West (2610 level) Stopes 7,272 4.97 2.74 1,162 5,547 9.17 3.25 1,635 6,622 7.86 2.89 1,674 Dumbo (All Levels) 5,804 100,426 2.55 23.49 8,232 91,240 3.22 20.04 Stopes 47,236 3.82 35.07 9,444

TABLE 15-5 GUANACO MINE RECONCILIATION Austral Gold Limited – Guanaco Mine

		G	GC vs. R	eserves	;	М	ill vs. Re	eserves	_	P	rocesse	d vs. GO	0
Area	Excavation	Total	Au	Ag	Au	Total	Au	Ag	Au	Total	Au	Ag	Au
Cachinalito West (2630 level)	Stopes	85%	113%	139%	96%	87%	170%	137%	149%	102%	151%	99%	155%
Cachinalito West (2610 level)	Stopes	76%	184%	119%	141%	91%	158%	105%	144%	119%	86%	89%	102%
Dumbo (All Levels)	Stopes	213%	67%	67%	142%	193%	84%	57%	163%	91%	126%	85%	115%



## **16 MINING METHODS**

The Guanaco and Amancaya operation encompasses the existing Guanaco underground mine, the Amancaya open pit mine, and a proposed Amancaya underground mine.

## **MINE DESIGN**

### **GUANACO UNDERGROUND**

With increased access development in the mine, which has shown additional mineralized veins, the mining strategy has shifted from exploiting Mineral Reserves estimated from exploration drilling from surface, to exploiting mineralization by following the veins; this shift in mining strategy is evidenced by the increased ounce production compared to the Reserves Model as shown in Table 15-5 in the previous section of this report.

The methodology used consists in following the veins with drifts on two levels, separated by 16 m (20 m floor to floor) as shown in Figure 16-1. The drifts are channel-sampled at the face after each blasting round in both levels, under the supervision of a field geologist, and a short-term block model is then constructed by sectors using this information. A section view of the Guanaco Mine design is shown in Figure 16-2.

Using the short-term block models created, stopes are defined and incorporated into the mine plan. Additional production from the short-term model (mineralization discovered outside of Mineral Reserves) can be significant, as shown in Table 16-1.

#### TABLE 16-1 PRODUCTION FROM SHORT TERM MODEL VERSUS RESERVES MODEL Austral Gold Limited – Guanaco Mine

	Units	2014	2015	2016
Production Total	Tonnes	389,834	367,455	535,157
Consumed Reserves	Tonnes	156,407	316,081	419,163
	% of total	40%	86%	78%
Discovered Mineralization	Tonnes	233,427	51,373	115,994
	% of total	60%	14%	22%



GCM has obtained good results to date using this strategy, conserving Proven Mineral Reserves. Nevertheless, the mining plan that follows is based only on the Proven Mineral Reserves.

Guanaco will use the vertical crater retreat (VCR) to connect the upper and lower drifts and create and open face for long hole blasting. The VCR sequence is shown in Figure 16-3.

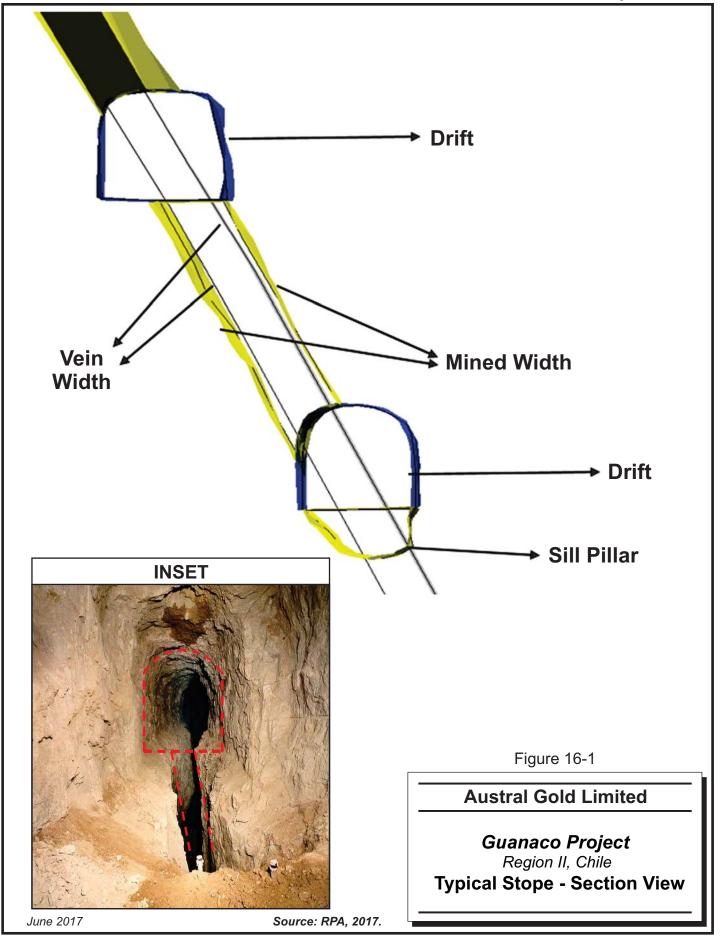
### AMANCAYA UNDERGROUND

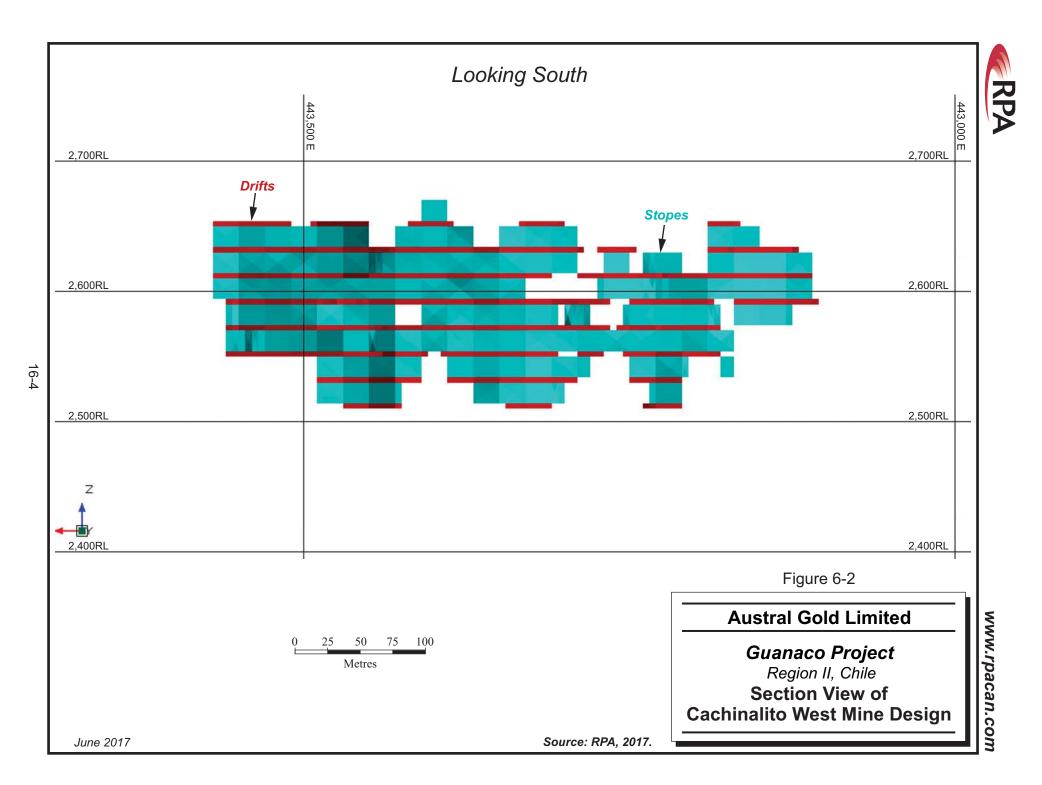
The Amancaya deposit consist of mainly northwest and southeast veins, with dip direction of 70° to 85°. The country rock comprises highly competent dacite-andesite.

The sub-level open stoping (SLOS) mining methods employed are similar to those used at the Guanaco Mine (see Figure 16-4 for mine design). The Amancaya orebody is generally thinner than Guanaco resulting in the use of split-blasting to minimize dilution during drift development. Split blasting involves the separate blasting of ore and waste in the drift face. An example of the split blasting technique is shown in Figure 16-5.

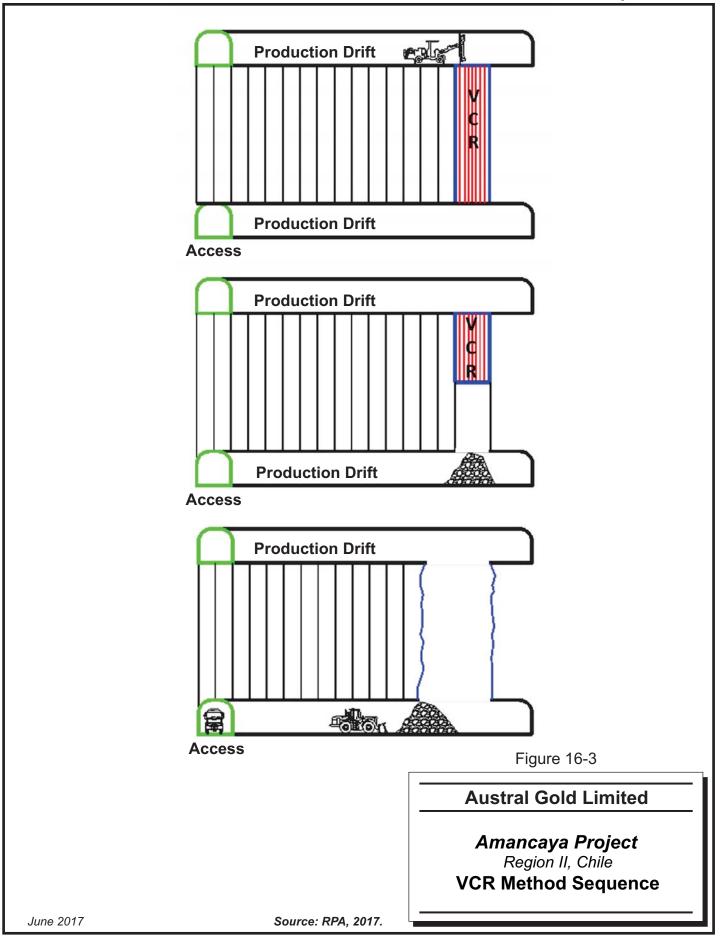
Similar to Guanaco, Amancaya will use the VCR to connect the upper and lower drifts and create and open face for long hole blasting.

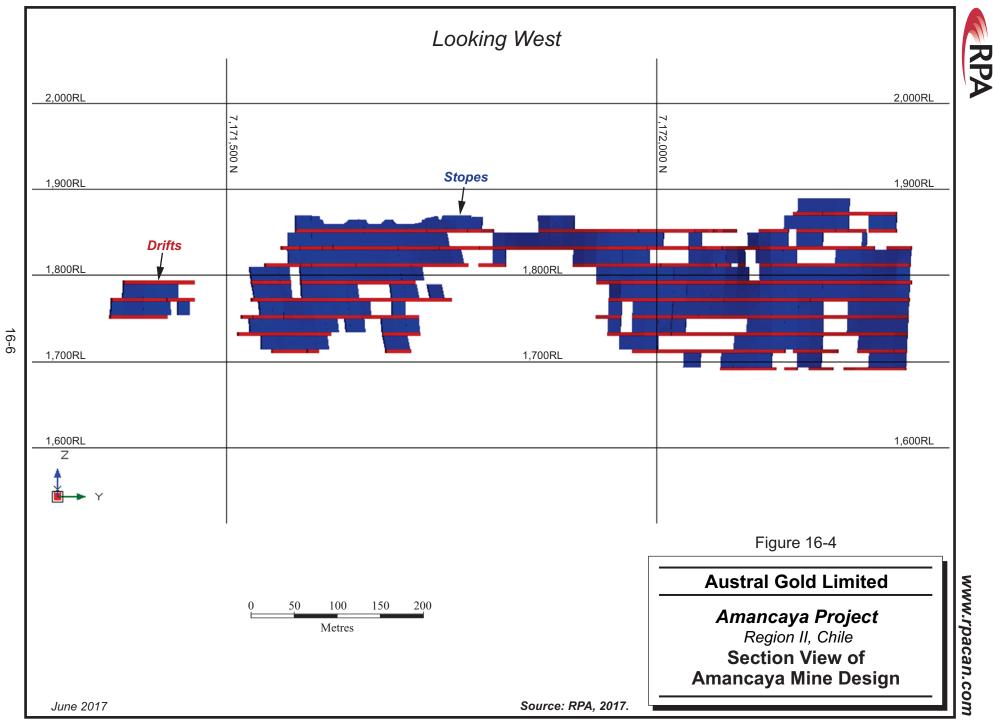




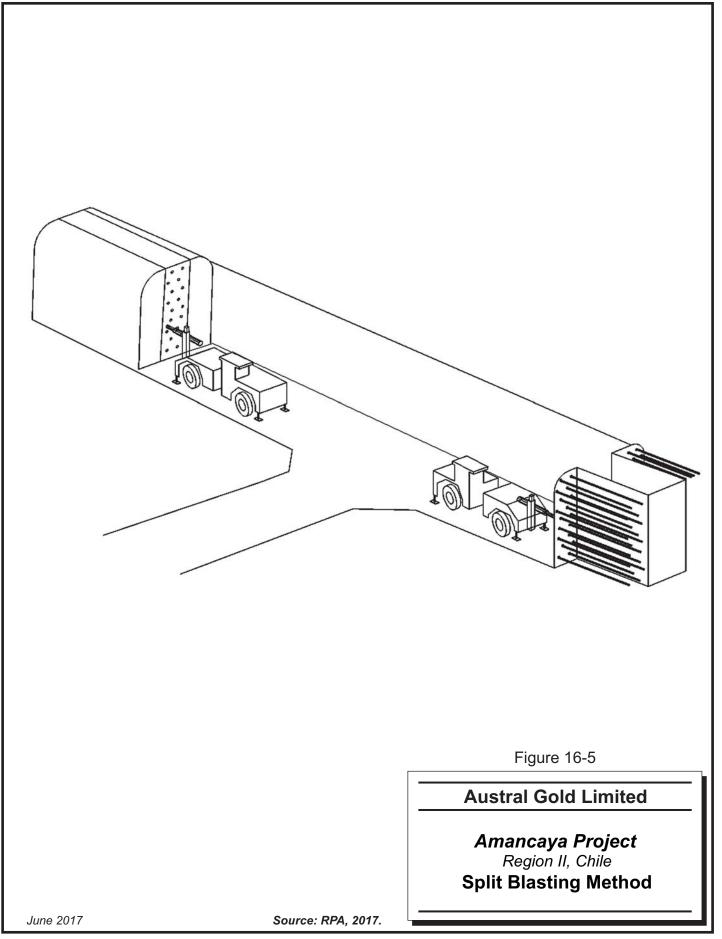














## AMANCAYA OPEN PIT

Open pit mining will be carried out in four phases over a period of approximately 24 months. The pre-stripping for Phase 1 was initiated in February 2017 and first ore was extracted and deposited in a temporary stockpile in March 2017.

The open pit mine designs were guided using the US\$250/oz Au and US\$375/oz Au pit shells generated in Whittle as discussed in Section 15. The parameters used for mine design are shown in Table 16-2.

Parameter	Unit	Value	
Berm Width	m	3	
Bench Height	m	5	
Ramp Width	m	9	
Inter-ramp Angle	0	57	
Bench Face Angle	0	80	
Ramp Grade	%	10	

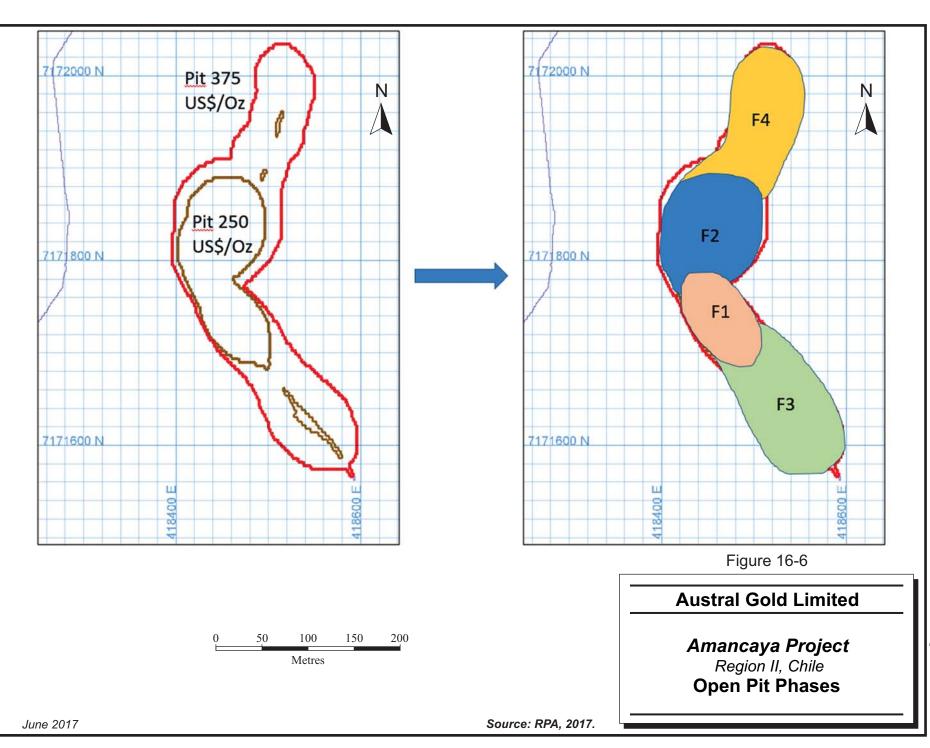
## TABLE 16-2 MINE DESIGN PARAMETERS Austral Gold Limited – Amancaya Mine

Phase 1 and Phase 2 (F1 and F2) are designed within the higher grade US\$250/oz Au pit shell. Phase 3 and Phase 4 (F3 and F4) are designed within the US\$375/oz Au pit shell. The open pit mining phases are shown in Figure 16-6.

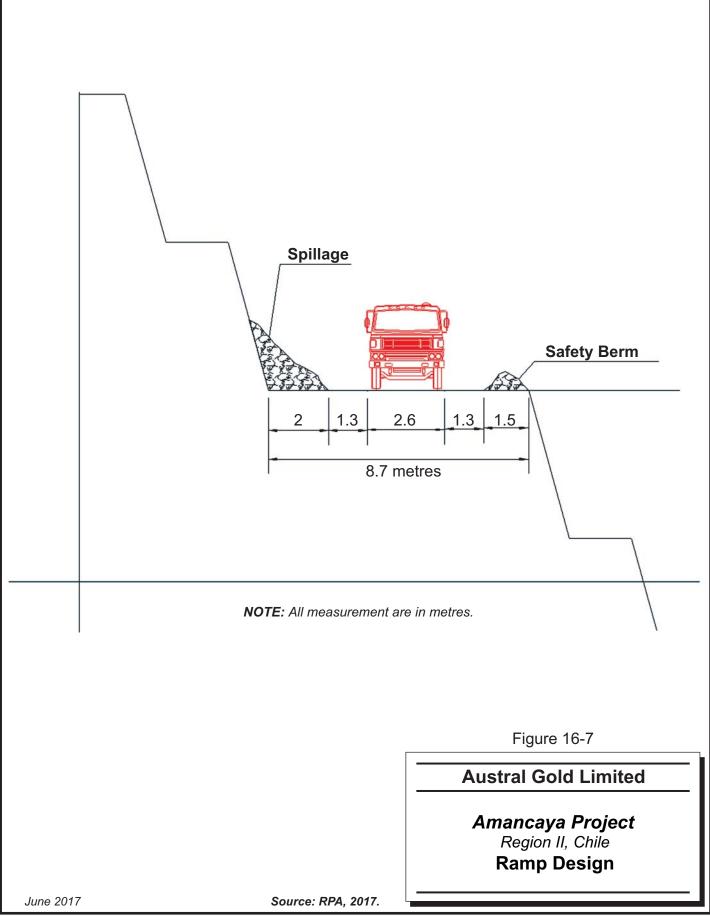
The mine design parameters are supported by the geotechnical work carried out by consultant Tecnologia y Geociencia (T&G) and discussed later in Section 16.

The ramps are designed for single lane truck traffic as shown in Figure 16-7.











## **MINING METHOD**

### **GUANACO UNDERGROUND**

Sub-level open stoping (SLOS) mining is being used with maximum 60 m high stopes and sub-levels every 20 m. The criteria for selecting SLS are outlined as follows.

- The vein-hosted mineralization has an average width of three metres. The pillars left between the mining units of the stopes are at least four metres thick.
- The rock mass has good geomechanical properties. Based on the geometry of the veins, no backfill is required for the majority of stopes, and reasonable stope dilution percentages can be expected. A limited number of stopes that will require backfill were identified during mine planning. The associated costs were included in the supporting cost assessments for Mineral Reserve estimates.
- The haulage area is outside the mineralized area, and the mine operation does not require entry into the stoping area by either personnel or manually-operated machinery.
- Designing the horizontal preparation work, such as drilling levels and the stope base in ore, results in early production which improves the cash flow.

In zones where rock quality is poor or where the vein width is not conducive to bulk mining methods, alternative mining methods will be employed such as "drift and fill", "bench and fill", and "shrinkage stoping".

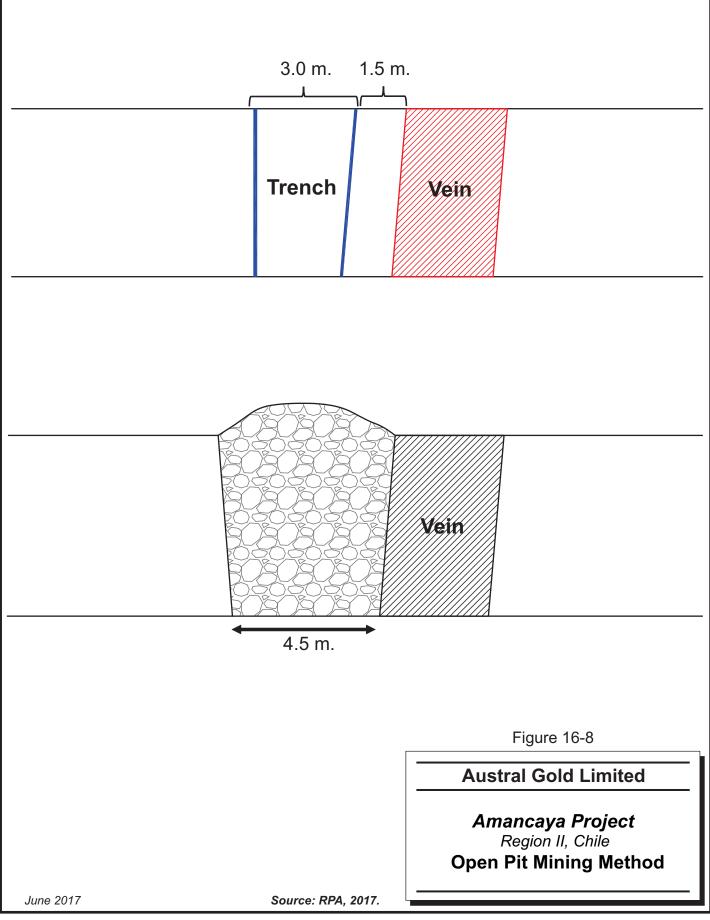
## AMANCAYA UNDERGROUND

Amancaya will employ the same mining methods as used at Guanaco.

### AMANCAYA OPEN PIT

The open pit mine will be carried out as a conventional operation using 30 t trucks and a combination of excavators and front-end loaders. Waste and ore will be blasted and mined separately using a "trenching" method to reduce the amount of dilution as shown in Figure 16-8. A three metre wide trench will be blasted resulting in a 4.5 m wide trench after overbreak is taken into account. This waste material will be mined out from the trench using the excavator. Once the trench has been cleaned out, the vein will be blasted into the open slot and subsequently mined out using an excavator. The remaining waste on the mining bench will be blasted and mined out using front-end loaders.





Open pit mining results in significant dust being produced. Although Amancaya is not located near a populated area, the dust produced is a concern for the safe operation both from a health and a visibility standpoint. RPA recommends that GCM should investigate dust suppression measures to reduce the quantities of dust produced.

## **GEOTECHNICAL AND GROUND SUPPORT**

## **GUANACO UNDERGROUND**

The existing geological–geotechnical information (geological model, drilling, geotechnical mapping) and field work were used to classify the rock mass for the Cachinalito areas. Geotechnical evaluations have been performed by third-party consultants E-Mining Technology (EMT), GeoInvestment (GeoInv) and Tecnologia y Geociencia (T&G).

Four main geotechnical units were defined: silicified rock, argillaceous rock, fresh rock, and alluvium. Characteristics for these units are shown in Table 16-3.

A geotechnical block model was developed for the Cachinalito orebody, as part of the study by T&G (2010). The model contained geotechnical parameters such as rock quality designation (RQD), fracture frequency (FF), rock mass rating (RMR), rock mass classification rating (Q), and geological strength index (GSI). This enables the mine to assess rock mass variability and to design stopes according to local rock mass conditions.

Five main geotechnical domains were identified: alluvium (AL), altered breccias (Bx\_ALT), altered porphyry (PRD\_ALT), breccias (Bx) and porphyry (PRD). The underground stopes at Cachinalito will be predominantly located in porphyry and, to some extent, altered breccias. Stope design for the Cachinalito underground mine was based on empirical design methodologies, such as the Modified Mathews Method (Potvin, 1988). EMT, GeoInv, and T&G undertook separate design analyses to determine stope design parameters.

The following geotechnical design parameters were adopted by Guanaco for Cachinalito:

- Hydraulic radius of between 3.8 m and 4.6 m for stope backs in tuff rock types, and between 4.6 m and 5.2 m for stope backs in porphyry.
- Hydraulic radius of between 7.0 m and 9.3 m for hanging walls.



#### • Hydraulic radius of between 10 m and 14 m for vertical walls

## TABLE 16-3 CHARACTERISTICS OF THE GEOTECHNICAL ROCK UNITS Austral Gold Limited – Guanaco Mine

Zone	Geotechnical Units	Description	Geotechnical Condition	RQD (%)	UCS (MPa)	RMR/Q
I	Silicified Rock	Silicified bodies present in the hydrothermal breccia zones with tabular shapes. In general associated with the presence of mineral.	Solid rock of good quality with a high to medium fracturing with pre-formed blocks less than 0.2 m <sup>3</sup> in a competent rock matrix. Fractures are in general rough.	40-70	50-120	(50-65)/ (3-20)
	Argillaceous Rock	Associated with alteration halos present around the silicified bodies.	Solid rock of regular quality, with a high degree of fracturing and a weak rock matrix. Slightly rough fractures with altered walls.	25-60	25-80	(40-55)/ (1-9)
11	Fresh Rock	Volcanic and intrusive rocks that did not suffer alteration. Present as the host rock for the mineralized structures and hydrothermal breccias.	Solid rock of good to very good quality. Rock mass with low fracturing and competent rock matrix.	75-95	100-250	(70-75)/ (35-6)
III	Alluvium	Material deposited on the surface between 10 m and 15 m thickness.	Low consolidation type soil material.	-	-	-

The GeoInv report (2012) also included recommendations for rib and sill pillar dimensions for each major rock type, based on stope width. These pillars were also designed using empirical methods (Lunder and Pakalnis, 1997; Carter, 1989). These have been used to develop the stope and pillar designs and to estimate the mining reserve recoveries. Sill pillars (horizontal) have been incorporated into the design with pillar thicknesses between 10 m and 12 m. Rib pillars (vertical) have been designed between 10 m and 14 m in thickness.

Recent back analysis studies of stopes mined to date by Guanaco have shown that these design parameters are achievable. Generally speaking, stope backs with hydraulic radius (HR) values less than 5.0 m and walls with HR values less than 9.0 m have performed satisfactorily.

The mine design supporting the Mineral Reserves was reviewed for compliance to the recommended geotechnical design parameters. All mine geometries, such as stope and



pillar widths, lengths, and heights, were found to be compliant with the recommended design parameters. Stopes extracted in the proximity of another stope are backfilled with rock fill prior to mining of neighboring stope to limit the potential for instability or excessive dilution. The cost of backfilling the stopes was incorporated in the current costs supporting the Mineral Reserve estimates.

From the information obtained from drilling in the area and from other background information including measurements in nearby wells, third-party consultant García Consultores determined that the lowest level of the mine will be above the static phreatic level at approximately 2,500 m elevation. The lowest design level for the mine is currently 2,530 m elevation. No water has been encountered to date in the underground mine.

### AMANCAYA

Geotechnical studies were carried out by T&G in July 2015 to understand the rock mass at Amancaya and provide guidance on the underground rock stability and support requirements for underground as well as to provide guidance on pit design to ensure pit wall stability. The following is a brief summary of the findings:

Structural mapping was carried out with a goniometer on holes GTA-3 (149.4 m) and GTA-5 (8.2 m), where the  $\alpha$  and  $\beta$  angles of the structures were measured and transformed according to the orientation of the dip and dip direction. This information was analyzed using stereographs to determine the poles and to establish the predominant sets. Three main structural systems were identified (namely, S1, S2, and S3) that present the characteristics shown in Table 16-4.

## TABLE 16-4 MAIN STRUCTURAL SYSTEMS - AMANCAYA Austral Gold Limited – Amancaya Mine

Structural System	Dip	Dip Direction
S1	47	183
S2	69	346
S3	13	70

Laboratory tests were performed on 24 samples extracted from the geotechnical drilling, to determine the properties of the rock. Four geotechnical units were identified in Amancaya and were labelled as "Vein", "Fresh Breccia Rock", "Weathered Surface Layer", and "Clay-



filled Breccia". A geotechnical block model was generated with 5 m x 5 m x5 m blocks which were assigned the data resulting from interpolation by inverse to distance in the case of the Vein geotechnical unit, and by the Ordinary Kriging method for the remaining units. This process allows for the assignment of the different geotechnical classification systems for rock masses, such as RMR (Rock Mass Rating, Bieniawsky, 1989), GSI (Geological Strength Index: Hoek et al, 1995), and Q' (Barton et al, 1974), for each defined geotechnical unit set forth in the Table 16-5.

## TABLE 16-5 ROCK MASS GEOTECHNICAL CLASSIFICATION PARAMETERS Austral Gold Limited – Amancaya Mine

Structural System	Average RMR	Average GSI	Average Q'
Vein	72.34	67.34	17.19
Fresh Breccia Rock	73.50	68.50	18.59
Weathered Surface Layer	52.09	47.09	1.65
Clay-filled Breccia	76.55	71.55	24.56

After analyzing the results, and according to the classification of Bieniawsky (1989), it was determined that the Vein, Fresh Breccia Rock, and Clay-filled Breccia unit have a "Good" rock classification and the weathered surface layer geotechnical unit has a "Fair" Rock classification.

#### AMANCAYA UNDERGROUND

The Mathews graphical stability method was applied in the stability analysis, for which three stope orientations were determined according to the predominant layout of the stopes (Dip/Dip Direction): orientation  $1 = 81^{\circ}/110^{\circ}$ , orientation  $2 = 86^{\circ}/53^{\circ}$  and orientation  $3 = 70^{\circ}/88^{\circ}$ . In the estimation of the hydraulic radius, the design parameters were used, which considers stopes 100 m long by 38 m high, with a width of four metres (width of the sublevels), which results in hydraulic radii of approximately 14 m for walls and two metres for the backs. The results of this methodology place the design of the walls of the stopes beyond the stable limit zone, while the backs fall on the border between the stable and transition zone.

The numerical modeling of tension and deformation in Map3D, was created from the geometries provided by GCM, in Vulcan format of underground designs, pits, and surface topography. This information was modeled in Map3D as Fictitious Force (FF) elements, which allows for the simulation of mining of the blocks, calculating the deformations and



redistributions of stresses as mining progresses. For the assignment of geomechanical properties of resistance and elasticity in the model, two geotechnical units were used: Fresh Breccia Rock, corresponding to the walls of the stopes, and the Vein, corresponding to the ore. The configuration of the in-situ stresses was determined using Hoek's empirical graphs, the South American force database, and T&G's in-house experience. The 1916 m level (surface topography) was used as a reference, with stress gradients of -0.0405 in the east-west direction, -0.0216 in the north-south direction and -0.027 in the vertical.

The modelling results were evaluated based on the principal stress and the factor of safety (FoS), using the Mohr-Coulomb failure criterion.

The results of the principal major stresses in the main vein sector are approximately 2 MPa for the walls and 40 MPa in the backs, with maximums around 50 MPa in the sill pillars of the deepest stopes. In the Z4 sector, the value of  $\sigma$ 1 is approximately 1.6 MPa in the walls of the stopes, while in the backs it is 22 MPa. The rib pillars average values of  $\sigma$ 1 of between 20 MPa to 23 MPa.

With respect to  $\sigma$ 3, there are halos of deconfinement in the walls of the stopes of approximately 3.5 m, reaching up to five metres in the northern part of the main vein. In the Z4 sector the deconfinement halos are approximately three metres in the walls.

The results of the FoS show a general stability with averages of 7 in the main vein sector and 12 in the Z4 sector. The most critical points under this criterion correspond to the Sill Pillar that form the backs, which have point areas where the resistance is exceeded (SFA <1), but on average the results of SFA in the pillars are greater than 1.

The behavior of the Crown Pillar that is formed in the main vein sector by the interaction of underground mining and surface was also analyzed. In the modeling results, no significant overloading was observed. Values of  $\sigma$ 1 averaged 2.6 MPa in the north zone, 4 MPa in the central zone, and 5 MPa in the southern zone. The results of the minor principal stress indicate that the pillars do not present any deconfinement that would generate instability. The  $\sigma$ 3 values average 1.1 MPa in the north zone, 1.5 MPa in the central zone and 1.7 MPa in the southern zone. The results of the principal stresses  $\sigma$ 1 and  $\sigma$ 3, with respect to the assumed resistance properties, do not generate instability in the Crown Pillar under the



criterion of Mohr-Coulomb failure. The average FoS is 9.6 in the north zone, 7.3 in the center zone, and 6.3 in the south zone.

In general terms, the Mathews graphical stability method and the numerical modeling with Map3D indicate that the Amancaya underground excavations will be stable.

#### AMANCAYA OPEN PIT

Pit wall stability analyses were run on three initial pit designs created for Amancaya. These initial pit designs were subsequently redesigned, however, they are situated in the same area as the final designs. The stability analysis comprised evaluations of a variety of failure mechanisms including: circular, flat, and wedge-shaped as well as overturning and toppling. In addition, safety factors and probability of failure were determined both for static and seismic conditions.

The estimated seismic conditions were of magnitude 7.4 on the Richter scale for an earthquake of operational occurrence, and of 8.2 on the Richter scale, for an earthquake of probable maximum occurrence. The defined acceptability criteria correspond to safety factors greater than 1.40, 1.35 and 1.30 and failure probabilities less than 15%, 25% and 30%, for static condition, operational earthquake, and maximum probable earthquake respectively for both cases.

The evaluation of circular faults, in the form of wedges and flat faults, was performed using software, while the occurrence of toppling is analyzed qualitatively based on the orientation of the structures with respect to the designed pit slopes.

Based on the analysis of all failure mechanisms, all sectors evaluated in the pit designs exhibited good stability on the berm, inter-ramp, and global scale, based on the design parameters used in Table 16-2. Inter-ramp angles evaluated ranged from 47° to 57°, and overall slope angles ranged from 42° to 57°. While these analyses were carried out on preliminary pit designs that differ from the designs presented in this report, the analysis provides support for the pit design parameters in Table 16-2.



## LIFE OF MINE PLAN

The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tpd and 800 tpd, respectively. The open pit at Amancaya is expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018.

Table 16-6 summarizes the tonnes and grades of ore from each area of the mine that are included in the current LOM plan.

	Units	Total	2017	2018	2019	2020	2021
Mill Feed	000 tonnes	1,328	330	323	300	265	110
Au	g/t	5.62	3.77	5.66	7.01	6.15	6.04
Ag	g/t	44	30	62	41	47	33
Contained Au	oz	240,098	39,972	58,823	67,616	52,362	21,325
Contained Ag	oz	1,875,491	319,704	642,352	397,852	399,019	116,564
Heap Leach Feed	000 tonnes	110	110	-	-	-	-
Au	g/t	0.94	3.77	-	-	-	-
Ag	g/t	30	30	-	-	-	-
Contained Au	oz	13,324	13,324	-	-	-	-
Contained Ag	oz	106,568	106,568	-	-	-	-
Recovery Mill							
Au	%	92%	92%	92%	92%	92%	92%
Ag	%	80%	80%	80%	80%	80%	80%
Recovery Heap Leach							
Au	%	77%	77%	77%	77%	77%	77%
Ag	%	63%	63%	63%	63%	63%	63%
Net Recovery							
Au	%	91%	88%	92%	92%	92%	92%
Ag	%	79%	76%	80%	80%	80%	80%
Total Average Recovery	%	80%	77%	81%	82%	81%	82%
Recovery Mill							
Au	oz	220,890	36,774	54,117	62,207	48,173	19,619
Ag	ΟZ	1,500,393	255,764	513,881	318,281	319,215	93,251
Recovery Heap Leach							

# TABLE 16-6 GUANACO AND AMANCAYA LIFE OF MINE PLAN SUMMARY Austral Gold Limited – Guanaco and Amancaya Mines



	Units	Total	2017	2018	2019	2020	2021
Au	oz	10,260	10,260	-	-	-	-
Ag	OZ	67,138	67,138	-	-	-	-
Total Recovered							
Au	oz	231,150	47,034	54,117	62,207	48,173	19,619
Ag	oz	1,567,531	322,901	513,881	318,281	319,215	93,251

GCM uses its own personnel for development, pre-production preparation, and production work. Equipment is rented from Ingenieria y Minería Cachinalito Limitada. As production ceases in the Guanaco underground operation in 2018, equipment and personnel will move to the Amancaya underground mine to continue operations.

The horizontal development plan considers 6,593 m and 1,244 m for Amancaya and Guanaco, respectively, over the LOM and the vertical development plan considers 1,258 m and 127 m for Amancaya and Guanaco, respectively, over the LOM as shown in Table 16-7.

Austral Gold Limited – Guanaco and Amancaya Mines								
Mine	Development	Unit	2017	2018	2019	2020	2021	Total
Amancaya	Ramps	m	-	3,263	2,727	603	-	6,593
	Ventilation Raise	m	-	422	404	432	-	1,258
Guanaco	Ramps	m	1,194	50	-	-	-	1,244

## TABLE 16-7 GUANACO AND AMANCAYA UG DEVELOPMENT SUMMARY Austral Gold Limited – Guanaco and Amancaya Mines

The underground mine design incorporates ramp and haulage level developments, including road widths and grades, crossings, safety and ventilation.

111

16

m

Access ramps to haulage levels are designed with a -12% constant slope with a minimum turning radius of 30 m and have been developed in waste. The haul trucks enter these levels to load the broken rock at the loading stations. These are also developed in waste. Crossings are 20 m long and 4 m wide.

Each mining unit has a raise in order to generate a free face. These raises are 2.4 m in diameter and the length will vary from 60 m to 100 m.

Ventilation Raise

127



## MINE INFRASTRUCTURE

### VENTILATION

### GUANACO

Ventilation is a suction system with three main fans located on surface. Each level has a 2.4 m diameter exhaust raise connected to the extraction system.

There are three fresh air intakes:

- Main mine access ramp portal
- Cachinalito Central West intake 3.1 m diameter raise
- Cachinalito Central East intake 3.1 m diameter raise.

The fresh air requirement for each production area (considering Cachinalito Central as two areas, with a maximum of 700 tpd production for any one area), was estimated to be 69,000 cfm. This air will enter through the main ramp and intake shafts and will be extracted through the two 2.4 m diameter exhaust shafts, assisted by 50 kW fans in series. As the current mine design considers production exceeding 700 tpd in some periods, a review of the ventilation system is currently underway.

The air is forced from the ramp to the production areas (stopes) and extracted through the connections between the stope and the exhaust shaft which takes the used air to the surface.

For development of close-ended drifts, ventilation is provided by ducts and auxiliary fans.

Ventilation will meet the standards specified in Chilean Supreme Mining Safety Decree N°72. The flow required was calculated using standard parameters for cubic meters of gas per kilogram of explosive, gas emissions per horsepower for diesel equipment, maximum velocities allowed for type of development, and cubic meters of air per person inside the mine.

#### AMANCAYA

GCM contracted Ingenieria del Sur Ltda (Ingenieria del Sur) to carry out a ventilation study for Amancaya. The scope of the study was to develop the principle ventilation requirements of the mine and to complete a ventilation design.



The scope refers to the following activities:

- design and calculation of the main ventilation system, considering the fresh air flow required, plus the ventilation infrastructure proposed for the mine;
- construction of the equivalent ventilation circuit to match the simulated circuit; and
- analysis of results and system balance.

The proposed ventilation is a suction system. Each level has a 2.4 m diameter exhaust raise connected to the extraction system and an axial flow extractor fan located on the surface. The total development of the Amancaya Mine will require the construction of nine exhaust raises.

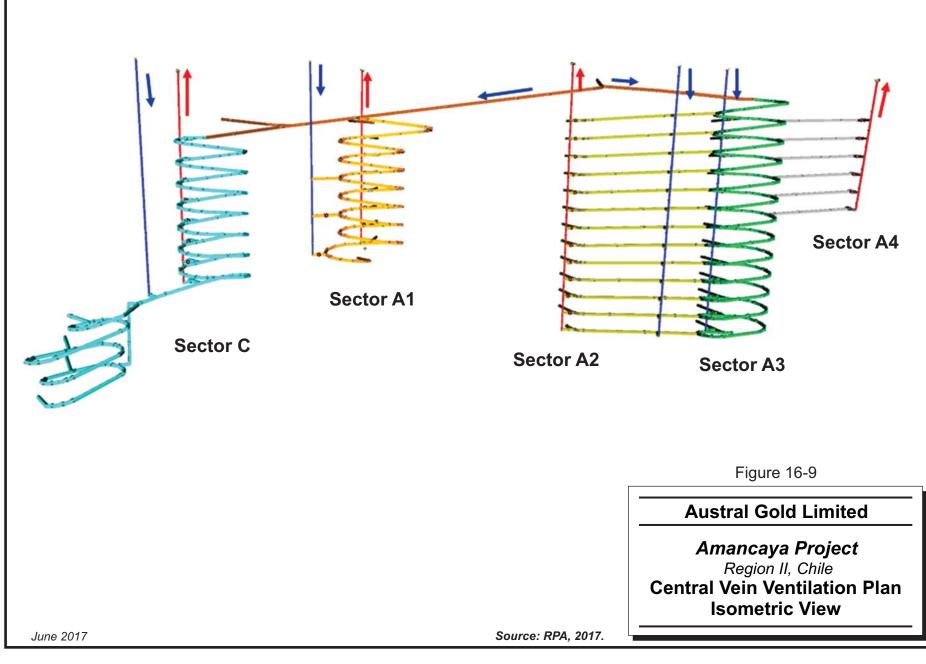
Fresh or replacement air will be supplied from the surface by three different sources:

- the main portal;
- fresh air raises of 2.4 m diameter to be built for each level; and
- the ramp that will connect to the Z4 zone with the surface.

The amount of air required per mining face will be distributed by each secondary access (spiral ramp tunnel) by auxiliary fans at each open level of exploitation.

The ventilation design for a portion of the Amancaya Mine is shown in Figure 16-9.

RPA





### **BLASTING AND EXPLOSIVES**

Blasting operations are performed by GCM. A contractor, Enaex S.A, is responsible for the management of magazine and explosives supplies for both Guanaco and Amancaya. Guanaco and Amancaya each have their own magazine for explosive storage.

### BACKFILL

#### GUANACO

In some cases, stope backfill is required to allow the safe extraction of neighbouring and adjacent stopes. The function of backfill is to prevent local inter-stope pillar instability issues in order to minimise ore loss and dilution. These isolated stopes are filled with blasted waste rock material from development in waste, without addition of cement.

#### AMANCAYA

Similar to Guanaco, in some cases backfill will be required in areas where the rock quality is poorer or where adjacent stopes are nearby.

### UNDERGROUND INFRASTRUCTURE FACILITIES

#### GUANACO

Underground infrastructure is the bare minimum required for the smooth operation of a small mine. There are no underground shops, warehouse, offices, or lunchrooms.

Compressed air is provided by mobile units. There is a water line system. There is no pumping system and the water from drilling is absorbed by the mine.

A leaky feeder radio communication system is used to connect the inside and outside of the mine.

There is a fire alarm system that indicates the location of the zone where the alarm was activated. There are also strategically located mobile refuge stations.

A fire alarm procedure is established by the operation that is supported by the telecommunications system provided in the mine. This procedure regulates the exits, fan operation, rescue procedures, and traffic on haul roads. Fire extinguishers are installed in all



the mine facilities (substations, offices, shelters). All equipment is fitted with automatic fire extinguishing systems.

The mine and the working faces are fitted with an industrial water supply system for drilling, shotcreting and other tasks. There is a 110 mm HDPE piping system fed from 20 m<sup>3</sup> tanks on the surface that is filled by a water truck twice per day with water from the industrial water tanks located in the camp area.

Electrical power is generated by the on-site power house. The power house is located on the surface close to the plant and a line supplies electric energy to the mine. Power is distributed via power distribution panels (PDP) that feed the main ventilation fan on the surface and PDPs inside the mine in the access to the stopes.

The power house with its diesel generator will remain as the emergency power source, once the connection to the Northern Interconnected System (SING) is completed which is expected to be completed by the end of March 2017.

#### AMANCAYA

Underground infrastructure is projected to be the bare minimum required for the smooth operation of a small mine. There will be no underground shops, warehouse, offices, or lunchrooms.

There will be a fire alarm system that indicates the location of the zone where the alarm was activated. There will also be strategically located mobile refuge stations.

Compressed air will be provided by mobile units. There will be a water line system. There will be no pumping system and the water from drilling is absorbed by the mine.

A leaky feeder radio communication system will be used to connect the inside and outside of the mine.

Amancaya will use generators to supply electricity. Although the new SING connection is close by, the cost of connection is not warranted based on the amount of energy required in during the life of the mine.



The generators will be arranged chronologically according to three phases for the Amancaya Mine:

Construction: In order to supply the facilities of general service areas, the installation of a 250 KVA, 380 Volts, 50 HZ generator is planned.

Development: The initial phase of the underground development includes a generator of 1000 KVA, 380 VOLTS, 50 HZ.

Production: During the operation of the underground project, the installation of a centralized generation system composed of three generators of 500 KVA, 380 VOLTS, 50 HZ capacities is planned.

## MINE EQUIPMENT

#### GUANACO UNDERGROUND

The underground equipment fleet includes the following equipment:

- Five front-end loaders, CAT 962 type
- One load-haul-dump (LHD) unit, Sandvik 7 yd<sup>3</sup>
- One load-haul-dump (LHD) unit, EMSA Bufalo 007 type
- Six trucks, Scania 25 to 30 t capacity
- Two trucks, Volvo 25 to 30 t capacity
- Three development Jumbo, Atlas Copco Boomer 282 type
- One long hole drilling jumbo, Simba H 1254
- One track drill, DTH 5000 type
- One production jumbo, EmRock EMSA 104 type
- Ancillary equipment (explosives truck, water truck, grader, compressors).

Equipment is sufficient for the mine production. It is well maintained and there is no need for equipment replacement due to the short mine life.

#### AMANCAYA UNDERGROUND

Amancaya will utilize the same underground mining equipment fleet from Guanaco.



### AMANCAYA OPEN PIT

GCM currently operates the Amancaya pit with the following major equipment as shown in Table 16-8.

## TABLE 16-8 OPEN PIT MINING EQUIPMENT Austral Gold Limited –Amancaya Mine

Equipment	Model	Units
Wheel Loader	CAT 962H	2
Excavator	CAT 320	1
Haul Truck	Scania 6x4	3
Haul Truck	Scania 8x4	3
Production Drill	Furukawa 910 DS	3
Bulldozer	CAT D8T	1
Grader	John Deere 770G	1
Water Truck	Scania 6x4	1

Equipment quantities for all major equipment were calculated based on first principles by estimating haulage cycles, availabilities, and equipment utilization.



## **17 RECOVERY METHODS**

## INTRODUCTION

The operation at Guanaco was initiated by Amax in 1993 using a permanent leach pad, crushing, cyanide leaching, and a Merrill-Crowe precious metal recovery plant. The operation was placed on care and maintenance in 1997. Between September 2009 and March 2010, the infrastructure, including the process facilities, at Guanaco were refurbished and upgraded by Austral Gold. GCM restarted leach pad stacking in September 2010 and the first gold bar was poured in December 2010. With the acquisition and start of mining at Amancaya, a milling circuit was constructed at Guanaco. The plant began commissioning in March 2017, and is expected to be fully operational by July 2017. The new plant is integrated into the existing operation in order to minimize construction and capital costs as much as possible. The existing Crushing operation will be utilized to prepare feed for the milling circuit. The existing Merrill-Crowe circuit was refurbished to accommodate ore with higher silver concentrations from Amancaya and the zinc precipitate that is produced in the Merrill-Crowe circuit will be processed in the existing refinery.

GCM plans to direct all ore to the milling circuit and stop heap leaching as soon as the plant is operational. Ore that is already stacked on the leach pad will continue leaching as long as it is economic to do so. At the end of leaching, the ore will be rinsed with water to remove residual cyanide that is entrained in the leach pad.

The existing operation includes:

- Three stage crushing to produce a product size that is 80% passing (P<sub>80</sub>) 5.3 mm
- Trucking of ore to the leach pad
- Permanent leach pads
- Intermediate and pregnant solution ponds and pregnant solution pumps
- Carbon-in-column (CIC) precious metal adsorption circuit
- Acid was column
- Anglo American Research Laboratory (AARL) carbon elution circuit
- Electro-winning (EW)
- Barren solution tank and barren pumps



- Drying oven
- Induction furnace

The new construction includes:

- Reversing conveyor to feed either the heap leach operation or the milling circuit
- Covered stockpile
- Single stage ball milling circuit operated in closed circuit with hydro-cyclones
- Pre-leach thickener
- Three-stage agitated leach circuit
- Three-stage counter-current-decantation (CCD) wash circuit
- Filter feed tank and plate and frame pressure filters to recover solution and produce filtered tailings
- Loading with front end loader and truck haulage to dry tailings deposit
- Dry tailings deposit
- Refurbished Merrill-Crowe circuit for precious metal recovery including:
  - o Clarifying filters
  - o De-aeration tower
  - o Zinc cementation (i.e., precipitation)
  - Precipitate filters

## HEAP LEACH OPERATION

The crushing circuit is shown on Figure 17-1. Ore is trucked from the mines and dumped into a coarse ore storage bin. A grizzly is positioned over the bin to prevent oversize rocks (i.e., larger than 750 mm) from entering the bin. A rock breaker is available to reduce the size of large rocks. Ore is transferred from the bin to a grizzly type screen using an apron feeder. Fine material that passes through the screen bypasses the jaw crusher and coarse material (i.e., larger than 150 mm) is fed to the jaw crusher for primary crushing. Discharge from the jaw crusher and the grizzly screen undersize is conveyed to the secondary screen, which is a double deck vibrating screen. Oversize from the secondary screen feeds the two secondary standard cone crushers. Discharge from the secondary crushers as well as discharge from the tertiary crusher feeds two tertiary screens. Oversize from the secondary and tertiary screens is the final product from the crushing circuit. The final product is conveyed to



a bi-directional conveyor which can direct the crushed ore to the truck load out bin. Lime is added to the conveyor that feeds the bin. Trucks are loaded from the bin and transport ore to the permanent leach pad. When the conveyor is operated in the opposite direction, it is conveyed to the covered crushed ore stockpile to be fed to the mill.

The heap leach process flowsheet is provided in Figure 17-2. The leach pad is designed in strips that are stacked to a height of three metres. After ore is dumped onto the pad by trucks, it is leveled using a dozer. Irrigation drip tube is used to apply barren solution to the ore. The solution percolates through the leach pad and is collected in a system of pipes. In the pipes, the pregnant solution flows by gravity to the pregnant solution pond. From the pond, the pregnant solution is pumped to the adsorption, desorption, recovery (ADR) plant. An intermediate pond is available for use as part of a solution enrichment system but it has never been used. An emergency pond is also available to accommodate excess solution that may be generated during extreme storm events or upset conditions.

The ADR plant has a design capacity of approximately 400 m<sup>3</sup>/hr. The adsorption circuit consists of one train of five CIC columns. Solution flows by gravity from column one through column five in sequential order. Solution flowing from column five is barren solution. It is pumped to the barren solution tank. Cyanide is added to the solution and it is pumped to the leach pad for subsequent leaching of ore.

Activated carbon is advanced counter-currently to the solution flow. That is, fresh or reactivated carbon is placed in column five. On a batch basis, carbon is advanced from column five to column four, from column four to column three, and so on until loaded carbon is removed from column one and directed to the desorption circuit. In the desorption circuit, carbon is first acid washed. After acid washing the carbon is moved to a carbon elution column. The desorption circuit consists of two circuits that operate in parallel. One circuit is designed to treat two tonnes of carbon and the second circuit is designed to treat one tonne of carbon. After elution, the activated carbon is regenerated in a gas-fired carbon regeneration kiln. After regeneration, the carbon is returned to the CIC circuit.

The elution circuit is a split AARL circuit. During elution, hot caustic cyanide solution is used to strip the precious metals from the activated carbon producing another pregnant solution that contains higher concentrations of precious metals. In the split AARL circuit, eluate from



the first half of the elution cycle is collected in the electrolyte tank. Solution from the second half of the elution, which has lower concentrations of precious metals, is collected in the eluate mix tank for use in the first half of the next elution cycle.

Solution from the electrolyte tank is pumped to the EW circuit. At Guanaco, three EW cells are operated in parallel. The precious metal is removed from the solution by plating onto steel wool cathodes. A high pressure washer is used to remove the sludge from the cathodes. The sludge is dried, mixed with fluxes, and smelted in an induction furnace to produce doré bars. The bars are shipped off site for further refining.

## MILLING OPERATION

The flowsheet for the milling operation, as it is integrated with the crushing flowsheet, is provided in Figure 17-1. From the covered stockpile, two vibrating feeders are used to remove ore from the bottom of the stockpile and place it on a series of conveyors that are used to feed the ball mill. The plant is designed to process 1,500 tpd.

The grinding circuit includes a single-stage ball mill that operates in closed circuit with hydrocyclones. The crushed ore is conveyed to the ball mill feed bin where it is mixed with water for grinding. The slurry discharges from the mill through a trammel screen and flows by gravity into a pump feed box. From the box, the slurry is pumped to the cyclone cluster. The cyclone underflow is returned to the ball mill for further grinding. The cyclone overflow is the final product from the grinding circuit. The target grind size is  $P_{80}$  150 µm.

Slurry from the cyclone overflow feeds the pre-leach thickener. Underflow from the thickener, which is designed to produce a slurry density of 50% solids by weight, is pumped to the agitated leaching circuit. Overflow from the thickener is returned to the grinding process water tank. The grinding solution contains cyanide so dissolution of the gold and silver begins in the grinding circuit. The leach circuit consists of three leach tanks that are designed to provide 48 hr of residence time. Slurry discharges from the last (i.e., third) leach tank to the CCD washing circuit.

In the CCD circuit, the leach residue is advanced from CCD number one to CCD number two and to CCD number three. Barren solution from the Merrill-Crowe circuit is used as wash



water in the CCD circuit. The solution flows counter current to the slurry flow. It is pumped to the feed well of CCD number three. Overflow from CCD three goes to CCD number two, overflow from CCD number two goes to CCD number one, and the overflow from CCD number one feeds the pregnant solution tank. The pregnant solution feeds the Merrill-Crowe plant.

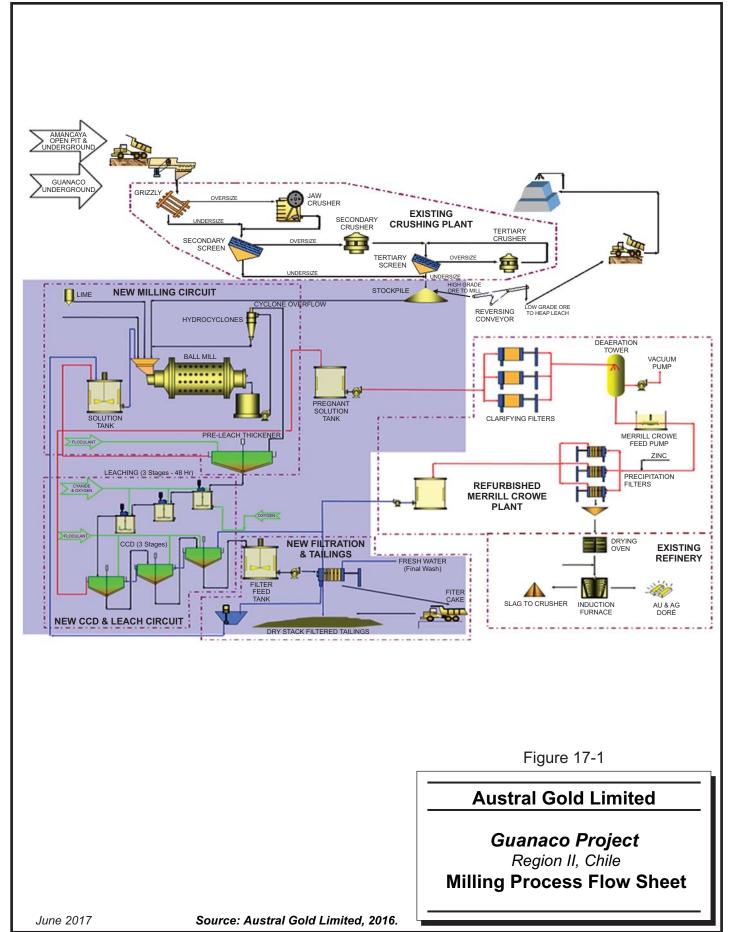
Underflow from CCD number three is washed tailings. The slurry flows to the filter feed tank. Two plate and frame pressure filters are used to wash and dewater the tailings to produce a filter cake that contains less than 20% moisture by weight. Fresh water is used as wash water. It is the primary fresh water addition to the plant. The remainder of the process water is recycled from various circuits in the mill.

The Merrill-Crowe plant is an existing plant that was refurbished for use in the new milling circuit. Since ore from Amancaya contains higher concentrations of silver than the ore from Guanaco, Merrill-Crowe is preferred over activated carbon as the precious metal recovery process. Pregnant solution is pumped through clarifying filters where suspended solids are removed from the solution and on to the de-aeration tower. The de-aeration tower is a packed column that is operated under vacuum to remove oxygen from the solution in order to enhance the zinc cementation (commonly called precipitation) process. Zinc dust is added to the clarified, de-aerated solution where the gold and silver ions are reduced to form solid metal "precipitate". The solids are removed from the solution with plate and frame filter presses. The filter presses will be cleaned manually on a batch basis. The dewatered precipitate will then be dried, mixed with fluxes, and smelted in the existing refinery. Barren solution from the Merrill-Crowe circuit is re-used as wash water in the CCD circuit.

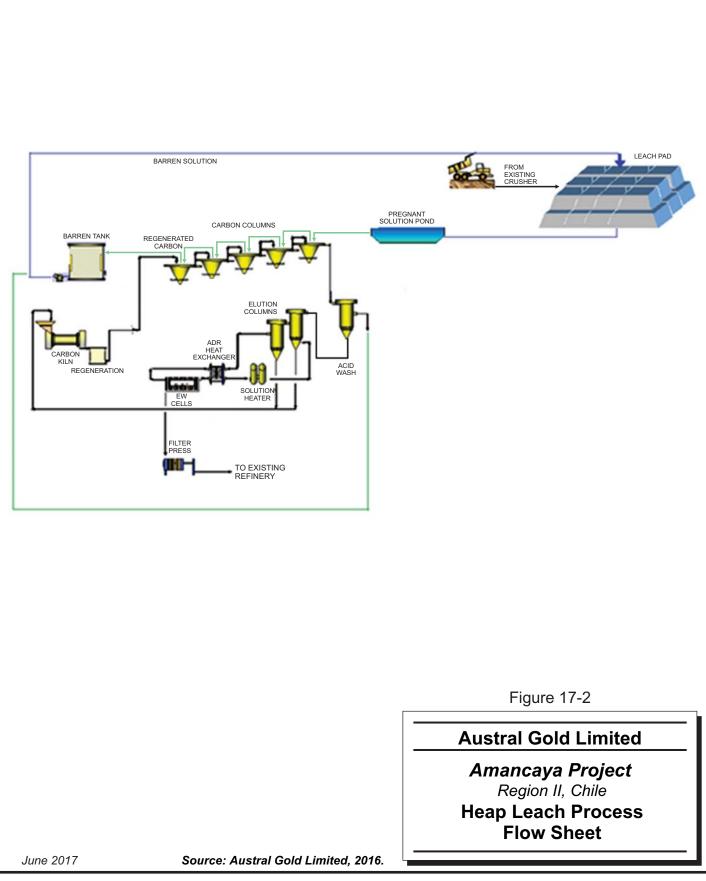
Washed, dewatered tailings from the pressure filters drop by gravity into a concrete lined containment area. From the containment area, a front end loader places the tailings into haul trucks that will transport them to the dry tailings deposition area. The tailings contain residual cyanide that will go through a natural degradation process due to UV from the sun and the dry, windy climate. The tailings will be spread and plowed to help the cyanide degradation process.













# **18 PROJECT INFRASTRUCTURE**

# INTRODUCTION

On-site infrastructure at Guanaco includes a crushing plant, heap leach infrastructure with a Merrill Crowe gold recovery plant, a new milling/agitated leach circuit, administration building, laboratory, warehouse, maintenance facilities, diesel power generating units, water pipeline and tanks, fuel tanks, and an accommodation complex. There is also a fleet of mobile equipment.

The Guanaco overall infrastructure layout is presented in Figure 18-1. The figure shows the current topographic surface and the existing pits, processing areas, tailings and waste rock facilities, and administration infrastructure.

At the time of the RPA 2017 site visit, an administration building, explosives storage facility, and mine offices had been erected at the Amancaya property with plans to construct a truck shop and other facilities. A north-south, high voltage power line has recently been constructed across the eastern side of the property. Food, water, and fuel are available at Agua Verde on the main highway. Ore from Amancaya will be hauled 75 km via a network of roads to the mill at Guanaco.

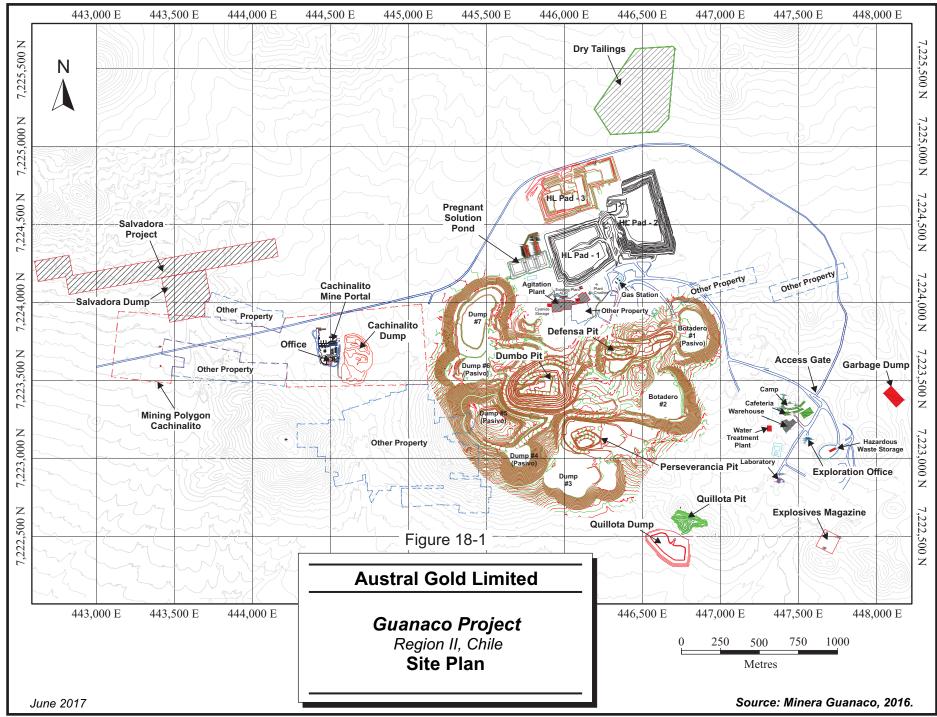
# ACCESS ROADS

The main access to the Guanaco Mine is by an existing private road which connects to Highway 5 North at km 1198. This road (Route B-865) is a good quality 42 km unpaved road on which maintenance is performed by GCM every quarter.

Access to Amancaya from the Guanaco Mine is made through all-weather roads B-855 (24 km) to Catalina and further following B-895-C (26 km) to the intersection to B-905-C (11 km) route, and following route B-905-C to the south until reaching Amancaya.

Figure 18-2 shows the access roads to Guanaco and Amancaya.



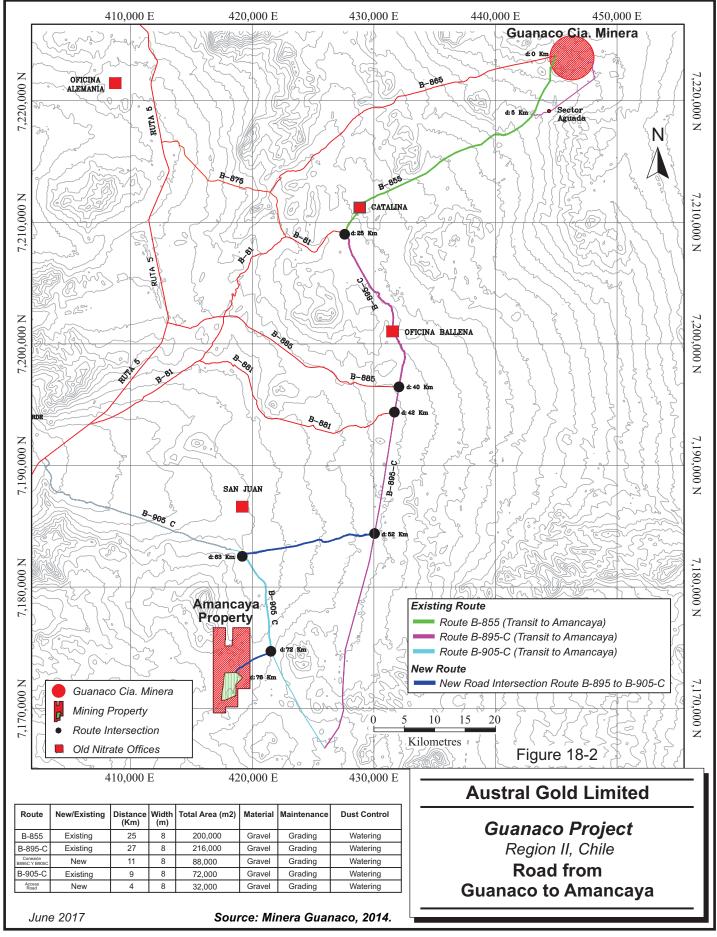


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18-2



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# SITE ROADS

Site roads in the plant, mine and camp area are unpaved, and irrigated frequently with fresh water or treated water from the sewage treatment plant to minimize the quantity of particulate material in suspension. The roads are 12 m or more wide to allow safe circulation of pick-up trucks and cargo trucks between operating areas. Traffic signs and direction signalling are provided on all roads according to Chilean traffic rules.

# LOGISTICS

The doré product is transported from the Guanaco Mine to the airport at Antofagasta by a security transportation company. The doré is air freighted to Canada from the airport at Antofagasta.

Supplies come from different locations. Cyanide is imported from China through the Mejillones port, quicklime comes from Antofagasta, activated carbon and wear parts come from Santiago, and minor supplies and spares come from either Santiago or Antofagasta.

Most of the GCM personnel live in Antofagasta, some live in Taltal or La Serena, and they are transported to and from the site by buses operated by a transportation contractor.

# WASTE ROCK DUMP

The Cachinalito waste rock dump is still in operation, and has been approved by SERNAGEOMIN. The dump has a maximum lift height of 25 m, and an angle of repose for broken waste rock of 37°. The dump has a storage capacity of 900 kt, equating to a volume of 500 m<sup>3</sup> x 1,000, assuming an average density of 1.8 t/m<sup>3</sup>.

The Defensa and Perseverancia open pit waste dumps are in the process of closure, according to the GCM master closure plan.

Part of the underground mine waste is left as mine fill in the underground operation.



# DRY TAILINGS DEPOSITION

A tailings deposit with an approximate area of 235,000 m<sup>2</sup>, with capacity to store approximately 4.1 Mt, which is sufficient to store tailings generated over the 7 year LOM, was constructed. Filtered tailings with a moisture content of approximately 12% to 14% are transported to the dry stack tailings area with trucks. The tailings are spread out, plowed to aerate them and enhance the cyanide degradation, and after they reach a depth of approximately 0.5 m they are compacted. Utilizing dry stack tailings deposition reduces the risk of environmental problems and minimizes the use of water.

## WASTE

#### LIQUID WASTE

Domestic wastewater from the camp and administration offices are delivered to a treatment plant which consists of two sedimentation and clarification chambers, an aeration pond and a treated water storage pond. The treated water is used for road irrigation. Excess water is ground-infiltrated using a fishbone type infiltration pond.

The system was authorized by the Antofagasta Health Service by Exempt Resolution N° 972 dated 12 March 1996, for a flow of 36,288 l/day.

#### SOLID WASTE

The infrastructure for waste management covers approximately 10,012 m<sup>2</sup> and consists of the following facilities:

- Salvage yard for non-hazardous industrial waste: acts as a temporary storage area for solid industrial waste
- Yard for hazardous industrial waste storage: provides temporary storage for solid and liquid industrial hazardous waste (in containers)
- Sanitary landfill for domestic waste and industrial waste similar to domestic waste
- Non-hazardous and hazardous waste materials are removed from site by a contractor



# HEAP LEACH PADS

GCM is currently operating the Phase III heap leach pad, designed for six individual cells with 10 levels or layers, each three metres thick, for a total capacity of 7 Mt of feed in the event that budgeted production levels are exceeded or further resources are discovered and are stacked. The pad is rectangular, and is being stacked to the north of the existing Phase I and II pads.

# WATER MANAGEMENT

The facilities are located in an arid area where there is only sporadic rain and thunderstorms during the "Bolivian Winter" (from November to February). The average rainfall and estimated evapo-transpiration rate are the same which indicates, at the regional level, that the available flow of surface or ground water runoff is zero for years with 50% exceedance probability.

The underground mine development has not encountered water to date and the known water table from neighboring operations is below the lowest planned mine level.

Water for the operation is brought in by a 30 km pipeline from upstream catchments and water wells and stored in 600,000 L water tanks.

# CAMP AND ACCOMMODATIONS

Existing infrastructure was reconditioned between September 2009 and March 2010. This reconditioning consisted of improvements to the buildings and facilities as described in this section.

The camp has accommodation, food, and recreation infrastructure and is located close to the Guanaco Mine site access gatehouse. The reconditioning included minor modifications to the mess hall/cafeteria and kitchen areas to leave them functional and meeting current regulations.



Currently the camp has 167 rooms in two types of modules with a capacity for 333 people. One type of module has rooms with private bathrooms and the other type has rooms with a shared bathroom. The camp facilities meet current legal requirements and the camp has been officially approved by the authorities (Health Service of Antofagasta).

## OFFICES

GCM has a 370 m<sup>2</sup> building in which general management, administration, and the mining and geology management offices are housed. In 2010 these offices were modified and repaired.

A new modular office building was recently erected at Amancaya to provide offices for the personnel who work on site.

# POWER AND ELECTRICAL

To support the operation of the new agitated leach milling circuit, 34.8 km long 33 kV power line and substation were constructed to transport power from the Central Interconnected System (SIC, Sistema Interconectado Central) to the Guanaco Mine site. The diesel-based power generation system that was utilized to support the heap leaching operation will remain as a backup system in case of emergencies and/or failure of the SIC supply.

The power supply at Amancaya is provided by diesel power generators.

# POWER DISTRIBUTION

The power distribution system operates at two voltage levels:

- Low voltage (380 V) for consumers close to the generator building (power plant, crushing plant and ADR plant)
- Medium voltage (13.2 kV) for more distant consumers such as ILS and PLS ponds, underground mine (when connected) and infrastructure (camp, administration, laboratory)

From the 400 V switchgear located in the power plant, five 400 V underground feeders provide power to the load distribution centres located in the crushing plant, ADR plant, power



plant and to a capacitor bank located outside the power plant. Two more 400 V feeders are connected to two 1,000 kVA 400 V/13.8 kV transformers located outside the power plant which feed two overhead power lines.

One line feeds the ILS and PLS ponds area and the Cachinalito mine ramp, ventilation, and workshop facilities. The other line feeds the fuel station, Phase III heap leach equipment, fresh water pumps, administration building, camp and workshop and the laboratory. All facilities fed by the 13.8 kV overhead line have voltage reduction transformers which convert the incoming voltage into 400 V for local loads.

Power distribution for the ADR plant and crushing plant is by underground feeders conducted through cable tray, electrical boxes, and duct banks.

#### ELECTRICAL ROOMS

Power distribution to equipment in each area is from electrical rooms which are fed from the power distribution network. There are electrical rooms for the power plant; ADR plant, crushing plant, and Phase III heap leach ponds.

The electrical rooms are container type (metallic containers) installed 1.5 m above ground level on foundation columns and contain the electrical equipment required for each area. The electrical rooms have the following auxiliary equipment:

- Air conditioning system
- CO<sub>2</sub> portable fire extinguishers
- Normal and emergency lighting system.

Power distribution panels are located in the following facilities:

- Cachinalito mine access and ventilation
- Heap Phase II and fuel station
- Fresh water pumps
- Camp and workshop
- Administration offices
- Laboratory



#### CONTROL ROOM

The process control room is located on top of the crushing area electrical room. The PLC controller and accessories are located in the electrical room. The PLC control station, radio communication system and a television camera display for the carbon adsorption discharge supervision are operated from this room.

# FUEL

The operation requires liquid fuels and gas. Diesel N°5 fuel is used for trucks and for electrical generation. Gasoline of 95 octanes is used in pick-up trucks. The fuel station is located north of the crushing plant and consists of two 50 m<sup>3</sup> above ground horizontal tanks for diesel which feeds the fuel station and the power plant through buried pipelines. The diesel tanks are located in a contained area which is lined with HDPE. In the same area there is also a 20 m<sup>3</sup> underground gasoline tank serving the fuel station. A local supplier (Compañia de Petroleos de Chile, Copec S. A.) holds contracts with GCM for the fuel supply.

LPG (liquid pressured gas) is used in ADR regeneration kiln and elution heater, and in the mess hall kitchen. In these locations there are above ground horizontal storage tanks, in a fenced area, feeding the facilities. There are two 4.5 m<sup>3</sup> tanks supplying the ADR plant and one 4.5 m<sup>3</sup> tank at the mess hall. A local supplier (Lipigas S. A.) holds contracts with GCM for LPG supply.

## WATER SUPPLY

GCM has water exploitation rights for 18.79 L/s. Of this total, 4.84 L/s come from surface water catchment areas in the Domeyko Cordillera (approximately 30 km from the Guanaco Mine). The remaining 13.95 L/s comes from wells located at Pampa Yerbas Buenas, Quebrada Guanaco, Quebrada Sandón, the lower part of the Quebrada Pastos Largos and Agua Verde.

Surface water from sources in the Domeyko Cordillera, specifically in Punta del Viento, Las Mulas and Pastos Largos flows by gravity to the Guanaco Mine through 4 in. diameter HDPE pipelines, and is stored in two 600 m<sup>3</sup> tanks located in the administration area. Water is distributed from there to a 2,500 m<sup>3</sup> reservoir located in the mine area. Pipes have isolation



valves at the points of storage and consumption, and are semi-buried to protect them from low temperatures during the night.

In order to provide water for the Phase III heap leach, operation wells PA-2 and WE-26 (located in the Cachinalito area) are used. In total 5.48 L/s are extracted and pumped to the plant by a 60 HP pump through a 110 mm HDPE pipeline.

## WATER USES

The operation requires industrial, fresh, and potable water. The water supply is sufficient to meet the needs of the operation. With the new milling circuit, the water demand will decrease because it uses less water than the existing heap leaching operation.

Potable water is obtained from Pastos Largos and flows to the plant where a line feeds the potable water reservoir located in the camp where chlorine is added. Currently (15 m<sup>3</sup>/día) 1.23 L/s are extracted and used for the potable water needs at the mess hall, showers, administration offices and bedroom units. The excess is used for process purposes. Bottled water is purchased for drinking.

The main use of industrial water is for the leach irrigation of the Phase III heap and for the crushing plant. Industrial water from the reservoir and tanks at the plant are used and distributed through pump stations and pipelines.

Water with low salts and suspended solids is required for the ADR plant and preparation of reagents, hence surface water from Pastos Largos is used preferentially because of the physical-chemical characteristics of this water. In addition to these uses, it will be used to wash the tailings and reduce the cyanide concentration in the new processing plant.

The potable water requirement during operations is approximately 0.89 L/s for a staff of approximately 226 workers with a consumption of 340 L/person/day, including contractors and owner's personnel in the exploration, mine and administration area.



Commercial bottled water is provided for drinking. This water is purchased in sealed 20 L bottles from authorized suppliers in the region who guarantee the quality of the water as required by regulations.

There is no fire water storage or distribution system.

# FIRE PROTECTION

All the GCM facilities are provided with fire extinguishers. The extinguisher types used are: dry chemical agent extinguishers for type A, B and C fires, portable extinguishers in 10 kg and 50 kg wheeled units,  $CO_2$  fire extinguishers in 5 kg portable and 50 kg wheeled units.

# CONCLUSIONS

The power supply, water supply, dry stack tailings deposition area, and fuel supply facilities are considered sufficient for the mine plan and also allow for upside potential should additional mineralization be discovered on the Guanaco mining leases.

Camp and accommodation, roads and logistics, and waste storage facilities are considered sufficient for the existing mine plan. If a substantial increase in the size of the operation is contemplated in the future, the size of those facilities would have to be reviewed.



# **19 MARKET STUDIES AND CONTRACTS**

# MARKETS

The principal commodity produced at Guanaco and Amancaya is gold, which is freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured.

The company has a contract with Asahi Refining Canada Ltd. (ARC, formerly Johnson Matthey Ltd.) for doré bullion refining and the purchase of the products from the doré bullion. The ARC refinery has the capacity, the facilities, and the necessary permits and authorizations to perform the obligations and services under a formal contract in a professional manner and in accordance with generally accepted industry standards. The transport and refining contract terms are similar to those typically used in the industry for the shipment of gold doré.

GCM uses a door-to-door system, in which the refiner is responsible for the transportation and insurance costs once it takes possession of the doré from GCM on site. The refinery arranges the transportation and insurance from the Guanaco Mine to the ARC refinery facilities.

# CONTRACTS

The GCM operation has several active contracts. All contracts have been bid and awarded following a process of preparing technical and administrative bases, tendering, evaluation and award. Most of the contractors are recognized companies in northern Chile and also work for other mining companies. Currently there are no major contracts under negotiation.

The most important contracts for GCM are those related to the operation of the underground mine. The lease of the heavy machinery and equipment was awarded to the firm Cachinalito Engineering and Mining Ltd. The award date is from January 1, 2014 until the completion of underground mining operations in 2018 and includes the following equipment:

• Development drilling equipment



- Transportation equipment and materials
- Haulage trucks and equipment
- Lifting equipment
- Service teams
- Personnel troop carriers
- Light vehicles (trucks)

The contracts at GCM are in line with industry standards.



# 20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

## INTRODUCTION

Chile's Environmental Law (Law Nr 19.300 and modifications) regulates all industrial activities in the country that have the potential to impact on the environment. The law was first passed on 9 March 1994<sup>1</sup>, and its Regulations were approved on December 7, 2002. The Law was later modified through Law Nr 20.417 on January 26, 2010, as well as its Regulations DS Nr. 40, and was current since October 30, 2012<sup>2</sup>. Different criteria are outlined in the regulation for assessment of mining projects under the Environmental Impact Assessment Evaluation System (Sistema de Evaluación de Impacto Ambiental, or SEIA).

The SEIA is administered and coordinated at the regional and the national level by the Environmental Assessment Agency (Servicio de Evaluation Ambiental, or SEA). The initial application is generally made to the Region where the property is located; in cases where the property might affect multiple Regions the application is made directly at the national level. A number of other governmental authorities are also involved in the review process.

There are two types of environmental reviews: Environmental Impact Statement (Declaración de Impacto Ambiental, DIA) and Environmental Impact Study (Estudio de Impacto Ambiental, EIA). Either one of these has to be prepared prior to commencement of any mining and/or development project (including coal, building materials, peat or clays) that falls under the regulation outlined criteria, or where the project concerned will see the processing and disposal of tailings and waste. In summary, the DIA is required when no environmental impacts are expected, and the EIA is required when the project has the potential to produce environmental impacts.

When the environmental permit in the form of a Resolution (RCA) is granted, mine development is allowed to commence. Any subsequent modifications to the project will be

<sup>&</sup>lt;sup>1</sup> Full reference: Ley N° 19.300 sobre Bases Generales del Medio Ambiente. Modificada y complementada por la Ley N° 20.417 del 2 de Enero de 2010 del Ministerio Secretaría General de la Presidencia. Publicada en el Diario Oficial con fecha 26 de enero de 2010. Crea el Ministerio, el Servicio de Evaluación Ambiental y la Superintendencia del Medio Ambiente.
<sup>2</sup> Full reference: Decreto Supremo N° 40, del 30 de Octubre de 2012 del Ministerio del Medio Ambiente. Publicado en el Diario Oficial con fecha 12 de Agosto del 2013. Reglamento del Sistema de Evaluación de Impacto Ambiental.



reviewed depending on the impacts of the modifications, and the extent of the proposed alteration to the previously-permitted project.

In addition to the Environmental permit, there are numerous sectorial permits that need to be obtained from local/regional or national government agencies. These permits are related to mining, water usage, construction of civil works, health, transportation, and storage.

# **ENVIRONMENTAL STUDIES**

Various baseline studies were conducted in support of the environmental submission. The main results obtained are summarized in the following sub-sections.

#### HYDROLOGY AND HYDROGEOLOGY

The regional study area covered a large area known as Quebrada Taltal Watershed, with a surface area of over 4,992 km<sup>2</sup>, located at an average elevation of 3,000 MASL. Hydrographically, the mine is located between La Negra and Pan de Azúcar ravines. The area is characterized by relatively flat reliefs, where there is no permanent surface runoff that could be affected by the location of the mine and surface facilities.

The estimated average rainfall and evapo-transpiration coincide, which indicates, at a regional level, that the flow available for surface or underground run off is close to nil (probability of expedience being 50% calculated based on years in which the rainfall is average or less than average).

The average elevation of the water table in the mine area is 2,540 MASL to 2,530 MASL, based on site investigations. The drilling at the mine site has not detected water to date, therefore it is expected that the water table in this area is located below 2,200 MASL. The underground mine is dry; no groundwater has been encountered to date in the underground ramp, drifts or stopes.

The aquifer used for water supply is located upstream from the property approximately 30 km and it has an estimated area of 90 km<sup>2</sup>. Water depth in the aquifer at the pumping station is from 250 m to 300 m below surface.



#### NOISE

The results of sound pressure surveys indicated that in the vicinity of the mine site the noise levels are relatively low, with values approximately 50 dB(A) inside the operational area. In absolute terms this noise level represents a moderate to low noise.

The maximum permitted sound pressure level in an industrial zone is 70 dB(A) (Supreme Decree No. 146/98). The sound pressure level falls below this threshold not too far from the operational areas, which are more than 700 m from the camp.

For the camp, the maximum sound pressure levels are set by the same regulation and are similar to those levels residential zone (45 dB(A) to 55 dB(A) Zone I). For a rural area the maximum allowable noise level is the background noise level plus 10 dB(A).

#### AIR QUALITY

The results from the modeling carried out in 2008 show that predicted particulate matter 10 micrometers or less in diameter ( $PM_{10}$ ) in the external environment around the mine camp, including the background level, are below 150 µg/m<sup>3</sup> N (the maximum concentration in 24 hours), and below 50 µg/m<sup>3</sup> N as an annual average concentration. The predicted values are lower than the current primary standard of air quality applicable in populated areas (Supreme Decree No. 59/98, as amended by Supreme Decree No. 45/01).

Field data were collected also during 2007–2009 for validation of the modeling, the annual concentrations registered vary between 13  $\mu$ g/m<sup>3</sup>N to 15  $\mu$ g/m<sup>3</sup>N, which are below the 50  $\mu$ g/m<sup>3</sup>N annual average and 150  $\mu$ g/m<sup>3</sup>N daily maximum.

Presently, there are two weather stations functional at the mine. They are installed according to the World Meteorological Station Standards. In the same locations, there are air quality samplers in order to monitoring  $PM_{10}$ . Hi–Vol; this instrumentation is installed according to the US Environmental Protection Agency (USEPA) criteria.

#### FLORA AND FAUNA

The Guanaco Gold Project area is within a transition zone between the Taltal Desert and the Domeyko Mountain Desert of the Cordillera. The area is predominantly arid desert climate



with low botanical diversity, and low flora coverage (less than 5%) which is characterized almost exclusively by formations of patches of annual grass and dispersed bushes.

The March 2006 and February 2007 field campaigns confirmed the biotic diversity of the area as being very low (less than 5%) and that it is characterized exclusively by sporadic patches of vegetation.

The results of the fauna field campaign completed during the same time interval confirmed that the ravines and depressions are preferred sites to encounter animal species in the area. Most fauna were located in the Valley of Paso Largos, Punta del Viento, Varitas and Las Mulas.

The mine operation area, has a much lower diversity than do the ravines, with only eight specimens that were recorded. Fauna noted were reptiles and flocks of granivorous birds (chirihues) that fly across the sector and sparrows (passer domesticus), an introduced species, located in the area of the camp.

Towards the Domeyko Cordillera there is an active cameloid breeding area, for cameloids including guanacos. Bird of prey species can also be present in this area.

During the 2011 field campaign for the update of the baseline information and development of a new application in January 2012, no fauna were found in at the mine site nor were direct or indirect indications of presence of animals observed in the mine site area.

#### HERITAGE AND CULTURE

Archaeological surveys in the area and the area of influence (mine and water sources) detected two types of archaeological evidence which are differentiated by the chronology, pre-Hispanic or historical sites. The pre-Hispanic sites are the most important sites due to the fact that they lead to interpretations of population movement during 1500 BC to 600 AD. Only two findings are considered to be pre-Hispanic.

There are plenty of materials and objects found that indicate human actions in the area that show the use of the valley during such time. These archaeological sites are preserved, and



are not currently impacted by the mining and processing activities, nor is it expected to be any impact over the LOM discussed in this report.

#### BIODIVERSITY

The area of the Guanaco Gold Project has been strongly impacted by human activities since 1886. As the mines are located in a desert arid climate, there is no vegetation cover, just a few sporadic plants. These do not show signs of impact after such a long mining history in the area.

The water sources that the Guanaco Mine is using are located 30 km away towards the Cordillera. Over the years the use of this aquifer has been steady with no signs of impact. The Guanaco Mine will continue to use these water sources in the same way and no significant adverse impacts on the existing vegetation are expected.

At the mine site, fauna proved to be low diversity and low abundance that was confirmed over the years with the surveys conducted. No impact has been observed to date from the operation.

The Guanaco Mine is monitoring the biotic system once a year and has installed drinking troughs for the fauna so that they can easily access the existing water. These locations are remote from the mine in the Cordillera.

## PROJECT PERMITTING

Mining projects in Chile require both environmental approval and numerous sectorial permits prior to construction and operation.

The Guanaco Mine has had numerous owners (Section 4). Some sectorial permits were obtained over the years by different owners of the property. These permits are valid and transferable, unless the new owners change the terms of the permits through a request to the authorities. Section 4.5 of this report titled "Surface Rights" (e.g., surface right, water rights) reviews in detail the surface rights of the mine property.



#### APPROVALS AND PERMITS

In May 2008, GCM submitted the Mina Guanaco Reopening Project for assessment to the SEIA. The project was evaluated by the Antofagasta Regional Commission for the Environment (COREMA, after its Spanish name), and was favourably qualified as per COREMA's Resolución Exenta Nr. 0251/2009, dated July 15, 2009, which authorized the construction of a mineral processing plant with 2,000 tpd capacity.

The purpose of this project was to extend the exploitation of gold mineralization located in areas adjacent to the Guanaco Mine, through the development of open-pit and underground operations, and further processing of the mineralization and obtaining gold doré.

Later, the environmental authority has granted positive environmental qualification to the Mina Amancaya Exploitation Project, after Resolución Exenta Nr. 0319/2015, aimed at open pit and underground mining of the Amancaya deposit to an average rate of 22,500 t/month. The extracted ore will be hauled to a temporary stockpile, and then to the authorized Guanaco Mine process plant. The waste will be disposed in waste dumps in the Amancaya area.

A number of permits and authorizations have been granted over the years. These include but not limited to the permits listed in Tables 20-1 to 20-5.



# TABLE 20-1KEY ENVIRONMENTAL PERMIT LISTAustral Gold Limited – Guanaco and Amancaya Mines

Resolution No.	Date	Project	Туре
RCA-036	October 17, 1997	Modification of the Amax Guanaco Mine	DIA
RCA-0087	March 23, 2007	Exploration of the New Guanaco - Second Stage	DIA
RCA-0098	March 11, 2008	Exploration of the New Guanaco -Third Stage	DIA
RCA-0251	September 15, 2009	Reopening Guanaco Mine	DIA
RCA-0256	RCA-0256 August 20, 2010 Transportation and Storage of Sodium Cyanide		DIA
Res. Exe. 102025	July 6, 2010	Two to Three Cyanide Loads for Reopening Guanaco Mine	Pertinencia
RCA-209	September 7, 2012	Mining the New Rajo Quillota in the Guanaco Mine	DIA
Res. Exenta 227	July 23, 2010	Modification - Reopening the Leach Pad and Plant	Pertinencia
Res. Exenta 303	May 24, 2012	Modification - Reopening the Sanitary Landfill	Pertinencia
Res. Exenta 0052	January 29, 2014	Exploration Tunnel for Dumbo	Pertinencia
RCA-319	August 7, 2015	Mining the Amancaya Deposit	DIA
RCA-0064	February 22, 2016	Modification of the Guanaco Mine 33 kV Electrical Line	DIA
REx-0209	June 16, 2016	Change of Corporate Name	Administrative



# TABLE 20-2SERNAGEOMIN KEY PERMIT LISTAustral Gold Limited – Guanaco and Amancaya Mines

Resolution No.	Date	Project
198	February 24, 2010	Cachinalito Sterile Barrier
320	April 12, 2010	Cachinalito Exploration Ramp
936	October 19, 2010	Leach Pad Phase III
570	October 22, 2010	Emergency Regulations
569	October 22, 2010	Production Drilling Regulation
567	October 22, 2010	Regulation for the Transit of Vehicles, Materials, and Persons
568	October 22, 2010	Regulation of Transport, Handling, Storage, and Use of Explosives
992	November 10, 2010	Reopening Guanaco Mine, Open Operation Rajos
427	February 25, 2011	Extension of Cachinalito Development Mine
1513	June 1, 2011	ADR Plant
Ord. 5242	July 27, 2012	Cachinalito Test Mine
3618	October 17, 2012	Quillota Ballast Dump
3606	October 16, 2012	Rajo Quillota Mining
Prd. 3691	May 22, 2013	Internal Regulations of Underground Mine - Do not Require Resolution
506	April 24, 2013	Cachinalito Mining
687	August 3, 2010	Guanaco Compañía Minera Closure Plan
415	April 10, 2015	Authorization to Carry Explosives by Truck
948	May 4, 2016	Mining the Dumbo Deposit
1541	July 26, 2016	Agitation Leaching Plant
1591	August 1, 2016	Dry Tailings Storage
1979	September 20, 2016	Amancaya Mining Method
1980	September 20, 2016	Amancaya Mine Bays
1938	September 13, 2016	Guanaco Closure Plan Work



# TABLE 20-3 HEALTH KEY PERMIT LIST Austral Gold Limited – Guanaco and Amancaya Mines

Resolution	Ausu	al Gold Elimited – Guanaco and Amaricay	
No.	Date	Project	Comments
2	December 21, 2000	Installation and Operation of Salvage Yard	5,629 m <sup>2</sup>
22	July 25, 2001	Modification of Resolution No. 2	Drums with waste oil and empty plastic drums
3147	October 25, 2006	Temporary Storage of Hazardous Industrial Waste	Specifies types of hazardous waste, 48 m <sup>2</sup>
972	March 12, 1996	Alternative System of Water Treatment	Sedimentation pit, sludge accumulator, stabilization pools. Treatment flow rate of 36.3 m <sup>3</sup> / day
2295	July 12, 2010	Temporary Storage of Hazardous Industrial Waste	Covered storage with perimeter fence and signage 408 m <sup>2</sup>
4770	October 31, 2012	Change of Company Name to Guanaco Compañía Minera	For Resolutions No. 972, 973, 676
973	March 12, 1996	Drinking Water Supply System for Human Consumption	Storage pond, distribution, and sampling points
3050	July 11, 1997	Installation and Operation of Cafeteria and Bakery	Actual Cafeteria in Resolution Update
704	April 11, 2011	Authorization of the Hazardous Waste Management Plan	
676	February 14, 1997	Filling the Sanitary Installation	Final Disposal of Domestic Wastes
1219	March 28, 2012	Approval of Private Wastewater Disposal System	Septic tank, dosing chamber, and drainage system for 450 users
328	August 12, 2014	Technical Industrial Certification	Classification "Nuisance"
3898	June 27, 2014	Operation Authorization for Private Wastewater Disposal	Final Disposal of Waste Water
5563	August 28, 2014	Authorization to Operate Radioactive Installation	X-ray Equipment
8598	December 15, 2014	Expanded Sanitary System	3,000 m <sup>2</sup> and quantity to dispose of 8,900 kg / month
15028078	March 12, 2015	Authorization to Operate the Cafeteria for Food Processing and Consumption	Guanaco Camp
312	April 29, 2016	Authorization to Operate the Expanded Sanitary Landfill	Guanaco Camp

# TABLE 20-4DGA KEY PERMIT LISTAustral Gold Limited – Guanaco and Amancaya Mines

Resolution No.	Date	Well Number	Flow Rate, L/sec	Annual Maximum, m <sup>3</sup>
1	January 10, 2008	WE-47	0.02	631
2	January 10, 2008	WE-3	2.00	63,072
3	January 10, 2008	WE-7	0.17	5,361
4	January 10, 2008	PA-2	2.00	63,072
5	January 10, 2008	WE-9	1.64	51,719
6	January 10, 2008	WE-4	1.00	31,536
7	January 10, 2008	WE-6	0.07	2,208
11	April 18, 2008	WE-26	2.00	63,072
13	September 25, 2008	WE-104 WE-61	2.0 0.85	63,072 26,805
671	December 13, 2013	WE-5	0.60	18,022
656	November 26, 2012	Change of location; WE-4 to PA-2	4.00	



# TABLE 20-5 OTHER KEY PERMIT LIST Austral Gold Limited – Guanaco and Amancaya Mines

Date	Project	Authority
June 20, 2011	Permit to Change Land Use	Ministry of Agriculture Regional Ministerial
June 8, 2011	Report on the Application of Article 55	Secretary
January 20, 2013	Certification of Electrical Installation	SEC
May 2, 2007	Declaration of Fuel Tank Facility	SEC
September 16, 2015	Declaration of Fuel Tank Installation	SEC
June 23, 2016	Ordinary Consumer of Explosives (Renewal)	Chilean Police
June 23, 2016	Authorization of Polvarines (Renovation)	Chilean Police
October 18, 2016	Authorization for Three Explosives Areas	Chilean Police
November 16, 2016	33 kV Electric Line Right of Way	Highway Department
	June 20, 2011 June 8, 2011 January 20, 2013 May 2, 2007 September 16, 2015 June 23, 2016 June 23, 2016 October 18, 2016	ProjectJune 20, 2011Permit to Change Land UseJune 8, 2011Report on the Application of Article 55January 20, 2013Certification of Electrical InstallationMay 2, 2007Declaration of Fuel Tank FacilitySeptember 16, 2015Declaration of Fuel Tank InstallationJune 23, 2016Ordinary Consumer of Explosives (Renewal)June 23, 2016Authorization of Polvarines (Renovation)October 18, 2016Authorization for Three Explosives Areas

## **REQUIRED PERMITS**

#### **ENVIRONMENTAL PERMITS**

A new DIA was prepared and submitted to SEIA, with the purpose of covering the energy requirements for the Guanaco Mine. The DIA included modifications to the power supply requirements and supply generation, proposed gas emission improvements, and a request for permission to treat feed sources other than those from the Guanaco Mine area.

The change to the power supply requires building a 34.8 km long, 33 kV power transmission line, which requires 289 cement structures, and a substation at the Guanaco Mine.

As of February 22, 2016, a Favourable Environmental Resolution was granted by RCA Nr. 0064.

#### SECTORIAL PERMIT GRANTED BY THE MINISTRY OF AGRICULTURE

GCM requested the modification of the change of land use for an area of 135.16 ha, for the Guanaco Mine Re-opening Project. This modification has been approved by the Ministry of Agriculture by Order No. 387 on June 2011 and Resolution Exemption No. 072 on June 2011. The list of authorized areas is presented in Table 20-6.



# TABLE 20-6 APPROVED MODIFICATIONS OF THE LAND USE Austral Gold Limited – Guanaco and Amancaya Mines

Sector	Facility	Surface (ha)
Area 1	Tailings facility	33.69
Area 2	Pad Nr. 3 and pond	39.74
Area 3	Cachinalito portal and waste facility	10.22
Area 4	Defensa-Perseverancia waste facility	14.52
Area 5	Camp, Services and Administration	31.11
Area 6	Explosives depot	5.88
Total		135.16

Similarly, permission has been required to build office facilities, a change house, mess facility, general storage, explosive storage, and maintenance facilities. The list of those areas is presented in Table 20-7.

# TABLE 20-7SURFACE WITH ENVIRONMENTAL APPROVAL FOR<br/>CONSTRUCTION OUTSIDE URBAN LIMITS – AMANCAYA PROJECT<br/>Austral Gold Limited – Guanaco and Amancaya Mines

Sector	Facility	Surface (m <sup>2</sup> )
1	Gate	2,500
3	Explosive storage	28,600
4B	Office space	200
4C	Cloth-change house	200
4D	Restaurant	80
4E	Gabinete	20
4G	General storage	350
6	Maintenance facility	3,000
Total		34,950

GCM can only start the process of obtaining the sectorial permit from the Ministry of Agriculture after the DIA is granted.

The DIA "Modification of Guanaco Mine (currently pending approval) has requested an environmental permit for construction of a 288 m<sup>2</sup> power facility outside urban limits. Once a favourable RCA from the DIA has been obtained, a sectorial permit will have to be requested. Approval is expected in July 2017.



#### SERNAGEOMIN SECTORIAL PERMIT

GCM has a Closure Plan approved by Resolution Nr. 687/2010, according to Title X of D.S. No. 132/02, on which adequate actions are indicated, depending of the characteristic of the mining operation and its adjacent areas.

GCM submitted a new closure plan to SERNAGEOMIN in April 2016. Approval was granted by Resolution Nr. 1938 on September 13, 2016. The total cost is UF\$200,119 (US\$7.9 million).

## SOCIAL OR COMMUNITY REQUIREMENTS

The Guanaco Mining District is located in the northeast part of the land held by the Taltal Community (Antofagasta Province). Historically the inhabitants of the Guanaco area had much more connection with the city of Taltal than with other population centers such as Antofagasta.

Taltal is one of the most isolated communities in the Antofagasta Region. It is located 306 km south of Antofagasta and 25 km from Route 5, with no local public transportation to Antofagasta, and with scarce public transport between other local communities. From the Guanaco Mine to the Taltal community, there is a distance of 170 km. Mining is the main economy of the town followed by fishing, wholesale and retail business, construction, real estate, and rental.

Taltal's mining activity is now focused on metal mining in small and medium size mines, mainly copper mines. These mines work sporadically and the work force is not stable. Taltal's economy is strongly influenced by variation in the mining cycle locally and also internationally.

GCM currently has good relationships with the Taltal community. The company is working with Liceo Politecnico de Taltal and the Colegio Industrial Don Bosco de Antofagasta to develop and implement educational programs and student support in order to develop apprenticeship programs. These programs are both useful to the community and applicable



to mining. A number of courses were developed and implemented in 2012 and 2013. GCM is committed to continue working with the community of Taltal to strengthen their relationship.

## MINE CLOSURE REQUIREMENTS

The first mine closure plan was presented to SERNAGEOMIN in 2010 as required by the Chilean Mining Safety Regulation, Supreme Decree No. 72/1985 of Ministry of Mining which was amended by Supreme Decree No. 132/2002, Ministry of Mines.

The closure plan follows the previsions of the RCA 251/2009 and describes conceptual measures to be taken in order to ensure that at the end of the mining operations the site is in safe, stable fiscal and chemical condition and mining areas have been restored and rehabilitated to a state that will not produce harm to people and the environment.

For the development of the closure plan, the mine operation is divided in six main areas, and conceptual closure measures to be considered for each area are described. For the open pit, consideration is given to slope stability, installations dismantling and access restrictions, removal of any explosive material, and potential monitoring of effluent if that is to be identified.

For the underground mine consideration is given to close/seal access to the ramp and the ventilation shafts, remove equipment and dismantle installations, remove any explosive material and potential monitor subsidence and water infiltration if that appears to be a factor at the time of closure.

For the processing plant consideration is given to demolition and dismantling of the plant infrastructure, restrict access to the area, assess and remediate contaminated soils if they are to be identified as a hazard.

For the heap leach pads consideration is given to flashing of the piles with a diluted barren solution under ultraviolet light, so the content of the cyanide in the pads will decrease considerably, restrict access, remove installations and equipment, and implement measures for slope stability if needed. Implement monitoring program during closure and post closure.



For the waste rock dumps consideration is given to slope stability of the dumps, restrict access to the area. For the auxiliary installations consideration is given to dismantling and demolition of structures and proper disposal of material.

On November 2011, Law 20.551 was passed that regulates mine closure, repealing the existing legislation set forward by the Mining Safety Law. The law established a system by which mining companies must have a closure plan approved by National Service of Geology and Mining (SERNAGEOMIN), according to new requirements and regulations. This closure plan must be planned and implemented progressively throughout the duration of the mining operation. It also requires companies to set aside a financial guarantee that will be held in trust in order to ensure that closure activities are implemented.

GCM received Resolution No. 0687 dated August 2010 from SERNAGEOMIN approving the 2010 Guanaco closure plan.

A new closure plan was submitted and approved by SERNAGEOMIN on September 13, 2016 by Resolution No. 1938. The closure cost is estimated to be UF200,119 (US\$7.9 million).



# **21 CAPITAL AND OPERATING COSTS**

# CAPITAL COSTS

The estimated sustaining capital costs for Amancaya and Guanaco as of December 31, 2016 are summarized in Table 21-1. Since the capital costs for the new mill were incurred in 2016, all costs from 2017 forward are treated as sustaining capital costs. Through December 31, 2016, construction costs for the mill and related infrastructure and for Amancaya were funded by Austral Gold using cash flow from existing operations.

Sustaining Capital Cost	Unit	Value
Amancaya Mine Development	US\$ '000	20,869
Guanaco Mine Development	US\$ '000	3,029
General Sustaining UG Capex	US\$ '000	4,020
Equipment Leases	US\$ '000	18,999
Processing	US\$ '000	2,081
Exploration	US\$ '000	10,559
Other	US\$ '000	552
Reclamation and closure	US\$ '000	6,948
Total Capital Cost	US\$ '000	66,426

# TABLE 21-1 SUMMARY OF CAPITAL COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Austral Gold does not anticipate financing any of the sustaining capital costs, although there is some risk that delays in operation of the new plant could result in insufficient cash flow from the existing heap leach operation to fund all of the sustaining capital and provide the working capital that is required. The company maintains good relationships with banks and funds in Chile and Argentina so, if the need arises, they could potentially secure a credit facility especially since it would be relatively small in relationship to the size of the future operations.

Mine development is based on the LOM plan requirements, and unit rates are shown in Table 21-2. Costs are based on actual expenditures during 2016.



# **TABLE 21-2DEVELOPMENT COST UNIT RATES**Austral Gold Limited – Guanaco and Amancaya Mines

Development Costs	Unit	Value
Ramp (Guanaco)	\$/m	2,129
Ramp (Amancaya)	\$/m	2,593
Ventilation Raise	\$/m	3,000

Some of the required plant and mobile equipment was leased from vendors at an interest rate of 4% and the associated ongoing costs are included in the sustaining capital costs.

GCM has estimated reclamation and closure costs of \$7.9 million to be incurred in 2021.

# **OPERATING COSTS**

Unit operating costs for the LOM plan are shown in Table 21-3. The average operating cost over the life of mine is estimated at US\$111.01 per tonne milled.

Area	Unit	Value
Mining (Amancaya Open Pit)	US\$/t moved	4.10
Mining (Amancaya Open Pit)	US\$/t milled	58.35
Mining (Amancaya Underground)	US\$/t mined	40.30
Mining (Guanaco Underground)	US\$/t mined	47.56
Processing (Mill)	US\$/t milled	35.14
Processing (Heap Leach)	US\$/t milled	20.00
Area	Unit	Value
Mining (Total)	US\$/t milled	44.90
Haul (Amancaya to Guanaco)	US\$/t milled	8.60
Processing (Total)	US\$/t milled	31.66
G&A	US\$/t milled	25.77
Total Unit Operating Cost	US\$/t milled	111.01

# TABLE 21-3 SUMMARY OF LOM UNIT OPERATING COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Total operating costs for the LOM plan are shown in Table 21-4. The total operating cost over the life of mine is estimated at US\$160 million.



Area	Unit	Value
Mining (Amancaya Open Pit)	US\$ '000	14,854
Mining (Amancaya Underground)	US\$ '000	27,943
Mining (Guanaco Underground)	US\$ '000	23,287
Haul (Amancaya to Guanaco)	US\$ '000	8,153
Processing (Mill)	US\$ '000	46,964
Processing (Heap Leach)	US\$ '000	2,022
G&A	US\$ '000	36,369
Total Operating Cost	US\$ '000	159,591

# TABLE 21-4 SUMMARY OF LOM TOTAL OPERATING COSTS Austral Gold Limited – Guanaco and Amancaya Mines

Operating cost estimates include mining, processing, and general and administration (G&A) expenses. Operating costs were budgeted based on costs incurred during previous mining activities and have been compiled by area based on estimated labour requirements, consumables, and other expenditures according to the updated mine plan and process design. An additional haulage cost will be incurred for hauling ore from Amancaya, which is located approximately 75 km from the mill.



# 22 ECONOMIC ANALYSIS

An after-tax Cash Flow Projection has been generated from the LOM production schedule and capital and operating cost estimates, and is summarized in Table 22-1. A summary of the key criteria is provided below.

#### PHYSICALS

- LOM Plan prepared by Austral, based on Mineral Reserves.
- Approximately 1,000 tonnes per day (tpd) mining from Guanaco underground, in 2017 and 2018, and a combined 1,000 tpd from open pit and underground at Amancaya.
- The mine life is five years.
- Metallurgical recovery was estimated to average 92% for gold, 80% for silver for the new mill.
- Average annual production of 53,000 ozs Au, 370,000 ozs Ag.

#### REVENUE

- Gold and silver at refining at 99.9% and 99.0% payable, respectively.
- All revenues and costs are expressed in US\$.
- Metal prices: based on a ramp-up from current prices to reserve prices of \$1,300/oz gold and \$20/oz silver, based on consensus of independent forecasts.
- Net Revenue includes doré refining, transport, and insurance costs.
- Revenue is recognized at the time of production.
- LOM ore value averages \$239 per tonne.

#### COSTS

- Average operating cost over the mine life is \$111 per tonne milled.
- LOM sustaining capital costs total \$66.4 million, including reclamation and closure.
- All-In Sustaining Cost (AISC): \$892/oz Au.

#### TAXES AND ROYALTIES

- Income taxes are 25% in 2017, 25.5% in 2018, and 27% for the remaining years in the LOM plan.
- A royalty of 3% for Guanaco and 2.25% for Amancaya is applied to the net smelter return.



#### TABLE 22-1 AFTER-TAX CASH FLOW SUMMARY Austral Gold Limited - Guanaco and Amancaya Mines

Date:		INPUTS	UNITS	тот	AL	2017 Year 1	2018 Year		2019 Year 3	2020 Year 4		2021 Year 5
MINING Amancaya	a Open Pit											
-	Operating Days Tonnes milled per day Tonnes moved per day	350	days tonnes / day tonnes / day		30 49 51	350 225 5,227	350 427 4,804	7	30 879 3,691			
	Production Au		'000 tonnes g/t	25 7.5	56	79 7.40	149 7.51	1	26 8.36	-		1
	Ag Waste		g/t '000 tonnes	119 3,30		150.3 1,751	106.9 1,532		98.4 84	-		2
	Total Moved Stripping Ratio		'000 tonnes w:o	3,62 13.2	21	1,829 22.19	1,68 <sup>-</sup> 10.26	1	111 3.20	-		2
Amancaya	a <b>Underground</b> Operating Days Tonnes milled per day	350	days tonnes / day	94 73	40 38		60 748		350 782	350 757		180 610
	Production		'000 tonnes	69		-	45		274	265		110
	Au Ag		g/t g/t	6.4 42		-	7.05 80.8		6.88 35.7	6.15 46.8		6.04 33.0
	Waste Total Moved		'000 tonnes '000 tonnes	- 69	93	-	- 4	5	- 274	- 265		- 110
Guanaco I	<b>Underground</b> Operating Days Tonnes milled per day	350	days tonnes / day	47 1,04	70 42	350 1,030	120 1,075					
	Production		'000 tonnes	49	90	361	129	9	-	-		-
	Au Ag		g/t g/t	2.9 3	99 .6	2.98 3.9	3.04 3.0		-	-		2
	Waste Total Moved		'000 tonnes '000 tonnes	- 49	90	- 361	- 129	9	-	-		2
PROCESSI	ING Mill Feed		'000 tonnes	1,33	27	338	323	2	300	265		110
	Au		g/t	5.0	61	3.77	5.66	6	7.01 41.2	6.15		6.04
	Ag Contained Au Contained Ag		g/t oz oz	43 241,10 1,884,0	64	30.2 41,038 328,230	58,823 642,352	3	41.2 67,616 397,852	46.8 52,362 399,019	2	33.0 21,325 16,564
	Heap Leach Feed Au		'000 tonnes g/t	10 0.9		101 3.77	-		-	-		2
	Ag Contained Au		g/t oz	30 12,2	.2	30.2 12,258			-			-
	Contained Ag		oz	98,04		98,043	-		-	-		-
	Recovery Mill Au Ag	92% 80%	% %		2% 0%	92% 80%	92° 80°		92% 80%	92% 80%		92% 80%
	Recovery Heap Leach Au	77%	%		7%	77%	779		77%	77%		77%
	Ag Net Recovery	63%	%		3%	63%	639		63%	63%		63%
	Au Ag		% %		1% 9%	89% 76%	92º 80º		92% 80%	92% 80%		92% 80%
	Recovery Mill		oz	221,8		37,755	54,117		62,207	48,173		19,619
	Ag Recovery Heap Leach Au		oz	1,507,2 <sup>-</sup> 9,4		262,584 9,439	513,88 <sup>-</sup> -	1	318,281	319,215	9	93,251
	Ag Total Recovered		oz	61,70		61,767	-		-	-		-
	Au Ag		oz oz	231,3 <sup>-</sup> 1,568,98		47,194 324,351	54,117 513,881		62,207 318,281	48,173 319,215		19,619 93,251
REVENUE	Metal Prices		Input Units									
	Au Ag	US\$1295 /oz Au US\$19 /oz Ag	US\$/oz Au US\$/oz Ag	\$ 1,294.9 \$ 18.9	90 99	\$ 1,275 \$ 17.50	\$ 1,300 \$ 18.50		1,300 20.00	\$ 1,300 \$ 20.00		1,300 20.00
	Au Payable Percentage Ag Payable Percentage	99.9% 99.0%	US\$ '000 US\$ '000	100 99	0% 9%	100% 99%	100º 99º		100% 99%	100% 99%		100% 99%
	Au Gross Revenue Ag Gross Revenue		US\$ '000 US\$ '000	\$ 299,22 \$ 29,50			\$ 70,282 \$ 9,412		80,788 6,302			25,479 1,846
	Total Gross Revenue		US\$ '000	\$ 328,72					87,090			27,325
	Transport Au & Ag		US\$ '000 US\$ '000	\$ 1,1: \$ -		\$	\$ 266 \$ -	6\$ \$	231	\$ 229 \$ -	\$ \$	182
	Refining cost Au	US\$0.40 /oz Au	US\$ 000		93 3			\$ 2\$		\$- \$19		- 8
	Au Ag	US\$0.40 /oz Au US\$0.40 /oz Ag	US\$ '000 US\$ '000			\$ 19 \$ 130	\$ 200		25 127	\$ 19 \$ 128		8 37
	Total Charges		US\$ '000	\$ 1,8	58 \$	\$ 378	\$ 493	3\$	384	\$ 376	\$	227
	Net Smelter Return		US\$ '000	\$ 326,80	65	\$ 65,353	\$ 79,20	1\$	86,706	\$ 68,507	\$2	27,098
	Royalty NSR (Guanaco) Royalty NSR (Amancaya) Total Royalty	3.00% 2.25%	US\$ '000 US\$ '000 US\$ '000	\$ 2,55 \$ 5,43 \$ 7,99	37 \$	\$ 1,609 \$ 264 \$ 1,873	\$ 949 \$ 1,07 \$ 2,019	1 \$		\$- \$1,541 \$1,541		- 610 610
	Net Revenue		US\$ '000	\$ 318,8	71	\$ 63,481	\$ 77,18 <sup>-</sup>	1\$	84,755	\$ 66,965	\$2	26,488
	Unit NSR		US\$/t milled	ə 2:	39	\$ 188	ə 239	9\$	282	ə 253	\$	241

Austral Gold Limited – Guanaco and Amancaya Mines, Project 2712 Technical Report NI 43-101 - June 16, 2017



Date:	INPUTS	UNITS	TOTAL		2017 Year 1		2018 Year 2		019 ear 3	2	2020 Year 4	202 Yea
OPERATING COST	111010	01113	TOTAL	-	Tear I		Teal 2		cai J	,	Teal 4	100
Mining (Amancaya Open Pit)		US\$/t moved	\$ 4.10	\$	4.10	\$	4.10	\$	4.10	\$	4.10	\$ 4.
Mining (Amancaya Underground)		US\$/t mined	\$ 40.30		-	ŝ	85.27		0.38		34.86	\$ 34.
Mining (Guanaco Underground)	\$ 38.10	US\$/t mined	\$ 47.56		50.95	ŝ	38.10	Ŝ		Š	-	\$ -
Processing (Mill)		US\$/t milled	\$ 35.14	\$	35.14	\$	35.14	\$ 3	5.14	\$	35.14	\$ 35.
Processing (Heap Leach)		US\$/t milled	\$ 20.00	\$	20.00	\$	20.00	\$ 2	0.00	\$	20.00	\$ 20.
Mining (Total)		US\$/t milled	\$ 44.99	\$	58.88	\$	48.38		8.35		34.86	\$ 34.
Haul (Amancaya to Guanaco)	\$ 8.60	US\$/t milled	\$ 8.60		8.60	\$			8.60		8.60	\$ 8.
Processing (Total)		US\$/t milled	\$ 31.66		31.66	\$			1.66		31.66	\$ 31.
G&A		US\$/t milled	\$ 25.77	\$	19.10	\$			7.96		31.68	\$ 25.
Total Unit Operating Cost		US\$/t milled	\$ 111.01	\$	118.23	\$	114.60	\$ 10	6.57	\$	106.79	\$ 100.
Mining (Amancaya Open Pit)		US\$ '000	\$ 14,854		7,503	\$		\$	454			\$ -
Mining (Amancaya Underground)		US\$ '000	\$ 27,943		-	\$			,056		9,236	\$ 3,8
Mining (Guanaco Underground)		US\$ '000	\$ 23,287 \$ 46,964	\$ \$	18,371	\$		\$	-	\$	-	\$ -
Processing (Mill)		US\$ '000 US\$ '000			11,890	\$	11,359		,546		9,309	\$ 3,8 \$ -
Processing (Heap Leach)		05\$ 000	\$ 2,022	\$	2,022	\$	-	\$	-	\$	-	ъ -
Mining (Total)		US\$ '000	\$ 66,084		25,874				,510		9,236	\$ 3,8
Haul (Amancaya to Guanaco)		US\$ '000	\$ 8,153		678	\$			,581		2,279	\$ 9
Processing		US\$ '000 US\$ '000	\$ 48,985		13,911 8,393	\$			,546		9,309	\$ 3,8
G&A Total Operating Cost		US\$ '000 US\$ '000	\$ 36,369 \$ 159,591	\$ \$	8,393 <b>48,857</b>	\$	8,393 37,062		, <mark>393</mark> ,030		8,393	\$ 2,7 \$ 11,4
Total Operating Cost		03\$ 000	. ,		40,007	Þ	37,062	ş 33	,030	φ	29,216	<b>р</b> 11,4
Operating Cashflow		US\$ '000	\$ 159,280	\$	14,624	\$	40,120	\$ 51	,725	\$	37,749	\$ 15,0
CAPITAL COST												
Sustaining Capital Cost												
Amancaya Mine Development		US\$ '000	\$ 20,869		-	\$			,282		2,860	\$ -
Guanaco Mine Development		US\$ '000	\$ 3,029		2,875	\$		\$	-	\$	-	\$ -
General Sustaining UG Capex		US\$ '000	\$ 4,020	\$	1,230	\$	1,190	\$	880		420	\$ 3
Leasing		US\$ '000 US\$ '000	\$ 18,999 \$ 2,081	\$ \$	6,998	\$	6,729 300	\$5 \$	,014 300		258 300	\$- \$3
Processing Exploration		US\$ 000 US\$ 000	\$ 2,081 \$ 9,000		881 1.000	\$ \$			.000		2.000	\$ 2.0
Other		US\$ 000 US\$ 000	\$ 9,000 \$ 552		1,000			⇒ ∠ \$	100		2,000	\$ 2,0 \$ 1
Reclamation and closure		US\$ '000	\$ 7,876	φ	152	φ	100	φ	100	φ	100	\$ 7,8
Total Capital Cost		US\$ '000	\$ 66,426	\$	13,135	\$	20,200	\$ 16	,576	\$	5,938	\$ 10,5
CASH FLOW				-								
Net Pre-Tax Cashflow		US\$ '000	\$ 92,854	\$		\$	19,919	\$ 35	,149	\$	31,811	\$ 4,4
Cumulative Pre-Tax Cashflow		US\$ '000		\$	1,488	\$	21,408	\$ 56	,557	\$	88,368	\$ 92,8
Taxes (from Proforma)	25% to 27%	US\$ '000	\$ 9,459	\$		\$	3,681	¢ /	,642	¢	1,137	s -
	2370 10 21 70		,		-	•						
After-Tax Cashflow		US\$ '000	\$ 83,395		1,488	\$			,507		30,675	
Cumulative After-Tax Cashflow		US\$ '000		\$	1,488	\$	17,727	\$ 48	,234	\$	78,909	\$ 83,3
All-In Sustaining Cost		US\$/oz	\$ 892	\$	1,242	\$	931	\$	734	\$	638	\$ 1,0
PROJECT ECONOMICS												
Pre-tax NPV at 5.0% discounting	5.0%	US\$ '000	\$79,534	1								
Pre-tax NPV at 7.5% discounting	7.5%	US\$ '000	\$73,860	1								
Pre-tax NPV at 10.0% discounting	10.0%	US\$ '000	\$68,736	1								
After-Tax NPV at 5.0% discounting	5.0%	US\$ '000	\$71,251	1								
After-Tax NPV at 7.5% discounting	7.5%	US\$ '000	\$66,088	1								
After-tax NPV at 10.0% discounting	10.0%	US\$ '000	\$61,431	1								



### CASH FLOW ANALYSIS

Considering the Mine on a stand-alone basis, the undiscounted pre-tax cash flow totals \$93 million over the current mine life.

After-Tax Net Present Values (NPV) at various discount rates are:

- 5% discount rate is \$71.3 million.
- 7.5% discount rate is \$66.1 million.
- 10% discount rate is \$61.4 million.

### SENSITIVITY ANALYSIS

Risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Gold price
- Head grade
- Recovery
- Operating costs
- Capital costs

Pre-tax NPV@5% sensitivity over the base case has been calculated for reasonable variations for each input. The sensitivities are shown in Figure 22-1 and Table 22-2.

The cash flow is most sensitive to metal prices, head grades, and recoveries. There is low sensitivity to capital costs due to the limited capital required over the LOM.



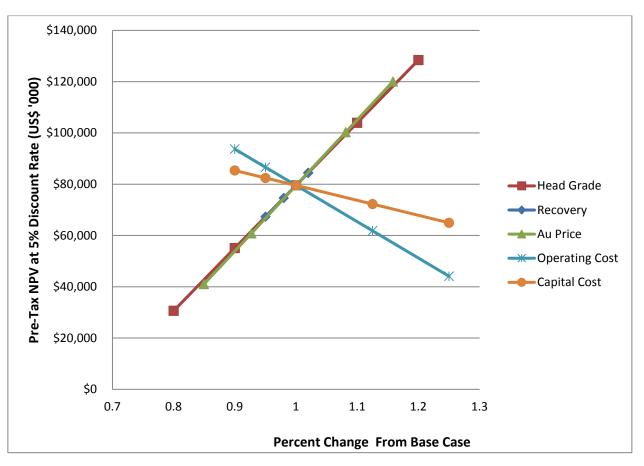


FIGURE 22-1 SENSITIVITY ANALYSIS

# TABLE 22-2 SENSITIVITY ANALYSES Austral Gold Limited – Guanaco and Amancaya Mines

Parameter Variables	Units	Lowest	Lower	Base	Higher	Highest
Gold Price	US\$/oz	1,100	1,200	1,295	1,400	1,500
Recovery	% Au	87%	89%	91%	93%	-
Head Grade	g/t Au	4.49	5.05	5.61	6.17	6.73
Operating Cost	\$ millions	144	152	160	180	200
Capital Cost	\$ millions	60	63	66	75	83
NPV@5%	Units	Lowest	Lower	Base	Higher	Highest
Gold Price	\$ millions	41	62	80	100	120
Recovery	\$ millions	67	75	80	84	-
Head Grade	\$ millions	31	55	80	104	128
Operating Cost	\$ millions	94	87	80	62	44
Capital Cost	\$ millions	85	82	80	72	65



### **23 ADJACENT PROPERTIES**

There are no adjacent properties that are relevant to the Guanaco Gold project.



# 24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.



### **25 INTERPRETATION AND CONCLUSIONS**

RPA offers the following conclusions by area:

### **GEOLOGY AND MINERAL RESOURCES**

### GUANACO

- The Guanaco deposits are considered examples of high-sulphidation epithermal systems. Native gold forming lamellae and coarse and fine grains is the most important economic mineral, although it is rarely visible. Disseminated pyrite is the most common mineral in the non-weathered mineralized material; enargite, luzonite, and minor chalcopyrite are present in the deeper horizons. Chalcocite and covellite, together with Cu carbonates, silicates, and a number of rare Cu arsenates (chenevixite, ceruleite) have been found in secondary-enrichment zones. Pervasive silicification commonly replaces all the primary rocks, whereas vuggy silica resulting from extreme acid leaching is a preferred host of the gold mineralization.
- Deposits at Guanaco include Quillota (200 m long by 500 m wide), Defensa (300 m by 600 m), Perseverancia (300 m by 600 m), Dumbo (250 m by 500 m), Cachinalito (a single, 1,100 m long, east–west-oriented system), and Natalia (200 m by 450 m).
- Sampling and assaying are adequately completed and have been generally carried out using industry standard QA/QC practices. The sample preparation, analysis, and security procedures at Guanaco are adequate for use in the estimation of Mineral Resources.
- In general, the practices and procedures used to generate the Guanaco database are acceptable to support Mineral Resource and Mineral Reserve estimation.
- The assumptions, parameters, and methodology used for the Guanaco Mineral Resource estimates are appropriate for the style of mineralization and mining methods.
- A number of near-mine gold prospects have been outlined that are considered to warrant detailed exploration.

### AMANCAYA

 The Amancaya deposit is a low sulphidation, epithermal gold and silver deposit, hosted in steeply dipping structurally controlled quartz veins. Mineralization comprises disseminations of native gold and silver, electrum, silver sulphosalts, and accessory sphalerite, galena, chalcopyrite, and pyrite occurring with quartz, adularia, carbonates, clay minerals, limonite, and manganese oxides. These minerals were deposited from boiling of dilute saline fluids circulating in a hydrothermal system driven by the Eocene to Paleocene magmatism.



- The main mineralization at Amancaya is hosted in the Central Vein, a steeply dipping quartz vein extending over a length of 1,550 m, of which half is under alluvial cover. The vein comes to surface on a small hill composed of a brecciated dacite-andesite dome. Its main strike is N15°E and dips vary between 59° and 90° to the east. There is an abrupt change in strike to S30°E towards the south part of the vein. The vein has an average thickness of 1.5 m and is currently known to have 300 m of vertical extent. Potentially economic mineralization is also hosted in the subsidiary Cerro Amarillo and Julia veins. Several other veins occur on the property, however, these veins have no economic interest at the current time.
- Sampling and assaying are adequately completed and have been generally carried out using industry standard QA/QC practices. The sample preparation, analysis, and security procedures at Amancaya are adequate for use in the estimation of Mineral Resources.
- The Mineral Resource estimate is appropriate for the style of mineralization and that the resource models are reasonable and acceptable to support the Mineral Resource estimates.
- Exploration potential exists at depth below the Central Vein. Other veins that could be expanded by further drilling include Cerro Amarillo and Julia in the south and Veta Janita in the north part of the property.

### MINING AND MINERAL RESERVES

- The underground Mineral Reserves for Guanaco are estimated to be 490 kt at 2.99 g/t Au and 3.6 g/t Ag containing 47 koz of gold and 57 koz of silver.
- Recent operations at Guanaco include significant production not included in the Mineral Reserves, from mineralization discovered through ongoing development. No allowance for this additional production is included in the LOM plan projections described in this Technical Report.
- The Mineral Reserves for Amancaya are estimated to be 948 kt at 6.77 g/t Au and 63.2 g/t Ag containing 206 koz of gold and 1,925 koz of silver. The conversion rate of AuEq ounces from resources to reserves is approximately 84% reflecting the high-grade nature of the deposit.
- Dilution studies have been carried out at Guanaco and dilution is well understood. The same dilution assumptions will be applied at Amancaya.
- Amancaya is a thinner deposit than Guanaco and therefore higher dilution (on a percentage basis) is expected. GCM plans to reduce dilution by using split blasting in the underground operation and excavator trenching in the open pit operation.
- The underground operations at Guanaco and Amancaya are designed to produce approximately 1,000 tpd and 800 tpd, respectively. The open pit at Amancaya is expected to produce 400 tpd. Each operation will overlap to produce an average mill feed of approximately 1,000 tpd during peak production in 2017 and 2018. The mine life based on current Mineral Reserves extends to 2021.



 In RPA's opinion, further optimization of the split between open pit and underground mining at Amancaya is possible. A smaller pit and larger underground may result in similar Mineral Reserves, at lower cost.

### METALLURGY AND MINERAL PROCESSING

- The metallurgy at Guanaco is well known and understood because Guanaco is a mature operation that has been operating as a heap leach operation for a number of years.
- Limited testwork has been conducted for Guanaco to evaluate how the ore will respond in the milling circuit, however, the ore responds well to cyanide leaching so the process should be effective.
- Limited testwork has been conducted for the Amancaya deposit due to the lack of material available for testing.
- In 2015 and 2016 Amancaya bottle-roll testwork was conducted at the site metallurgical laboratory.
- In 2017, two samples from Amancaya underwent bottle-roll testing at SGS Minerals S.A. The two high-grade samples were composited from drill holes into the main Amancaya vein (i.e., Veta Central).

### **ENVIRONMENTAL CONSIDERATIONS**

• All required permits for operation have been granted, or applied for, with reasonable expectation of being granted in due course.



### **26 RECOMMENDATIONS**

RPA offers the following recommendations.

### **GEOLOGY AND MINERAL RESOURCES**

### GUANACO

- Conduct a check assay program to validate the 2014 to 2015 assays. This program should include adequate proportions of control samples.
- Accompany future drill programs with a coherent QC program, including a higher proportion of gold and silver SRM, covering a broader range of values, more representative of the value ranges present at the deposit.
- Increase the numbers of density samples collected in order to more appropriately determine average bulk densities for ore and for waste/wall rock units.

### AMANCAYA

- Develop and implement a protocol for measuring density in each of the different lithologies, alteration types, and mineralization zones on the property.
- In future drill programs, submit two half core samples, concurrently, to the principal laboratory for analysis, at a rate of one field duplicate for every 20 samples. Review results on an ongoing basis until the natural sample variability of the Amancaya mineralization is understood.
- In future drill programs, develop a protocol for submitting one check assay for every 50 samples submitted to the principal laboratory, modified to ensure that the total number of pulp duplicate samples submitted to an independent laboratory is greater than 25.
- Complete a digital geological model for Amancaya including an oxidation model and investigate the relationship between weathering and metal grades.

### MINING AND MINERAL RESERVES

- Re-run the pit optimizations with final reserve parameters to verify that the optimum pit shell is used as the basis for the next estimate, since the pit optimization parameters have been updated during the process of pit design and reserve estimation.
- Carry out further trade-off studies between open pit and underground mining at Amancaya, to ensure optimal economics are achieved.



• GCM is currently estimating rib and sill pillars quantities by factoring full height stopes. Solids should be constructed for sill and rib pillars to ensure a more accurate representation of the material that will be excluded from the Mineral Reserves.

### METALLURGY AND PROCESSING

- Due to the limited amount of testwork that has been done, especially for Amancaya, the metallurgical response should continue to be evaluated as operating data and more sample material become available.
- The estimated metal recoveries and reagent consumptions should be continually evaluated and updated as new operating data becomes available.

### ENVIRONMENTAL CONSIDERATIONS

• Open pit mining results in significant dust being produced. Although Amancaya is not located near a populated area, the dust produced is a concern for the safe operation both from a health and a visibility standpoint. GCM should investigate dust suppression measures to reduce the quantities of dust produced.



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### **28 DATE AND SIGNATURE PAGE**

This report titled "Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile" and dated June 16, 2017, was prepared and signed by the following authors:

(Signed & Sealed) "Kathleen Ann Altman"

Dated at Denver, Co June 16, 2017

Kathleen Ann Altman, Ph.D., P.E. Principal Metalurgist

(Signed & Sealed) "Jason Cox"

Dated at Toronto, ON June 16, 2017

Jason J. Cox, P.Eng. Principal Mining Engineer

(Signed & Sealed) "Chester Moore"

Dated at Toronto, ON June 16, 2017

Chester Moore, P.Eng. Principal Geologist

(Signed & Sealed) "lan Weir"

Dated at Toronto, ON June 16, 2017

Ian Weir, P.Eng. Principal Mining Engineer



### **29 CERTIFICATE OF QUALIFIED PERSON**

### KATHLEEN ANN ALTMAN

I Kathleen Ann Altman, P.E., as an author of this report entitled "Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile" prepared for Austral Gold Limited and dated June 16, 2017, do hereby certify that:

- 1. I am Principal Metallurgist and Director, Mineral Processing and Metallurgy with RPA (USA) Ltd. of Suite 505, 143 Union Boulevard, Lakewood, Co., USA 80228.
- 2. I am a graduate of the Colorado School of Mines in 1980 with a B.S. in Metallurgical Engineering. I am a graduate of the University of Nevada, Reno Mackay School of Mines with an M.S. in Metallurgical Engineering in 1994 and a Ph.D. in Metallurgical Engineering in 1994.
- I am registered as a Professional Engineer in the State of Colorado (Reg. #37556) and a Qualified Professional Member of the Mining and Metallurgical Society of America (Member #01321QP). I have worked as a metallurgical engineer for a total of 34 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Review and report as a metallurgical consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements.
  - I have worked for operating companies, including the Climax Molybdenum Company, Barrick Goldstrike, and FMC Gold in a series of positions of increasing responsibility.
  - I have worked as a consulting engineer on mining projects for approximately 15 years in roles such a process engineer, process manager, project engineer, area manager, study manager, and project manager. Projects have included scoping, prefeasibility and feasibility studies, basic engineering, detailed engineering and start-up and commissioning of new projects.
  - I was the Newmont Professor for Extractive Mineral Process Engineering in the Mining Engineering Department of the Mackay School of Earth Sciences and Engineering at the University of Nevada, Reno from 2005 to 2009.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited Guanaco and Amancaya from February 27 to March 2, 2017.
- 6. I am responsible for Sections 13, 17, and 20 of the Technical Report and contributed to Sections 1, 25, 26, and 27.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.



10. At 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.

Dated this 16<sup>th</sup> day of June, 2017.

### (Signed & Sealed) "Kathleen Ann Altman"

Kathleen Ann Altman, Ph.D., P.E.



### JASON J. COX

I, Jason J. Cox, P.Eng., as an author of this report entitled "Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile" prepared for Austral Gold Limited and dated June 16, 2017, do hereby certify that:

- I am a Principal Mining Engineer and Executive Vice President, Mine Engineering, with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
- 2. I am a graduate of the Queen's University, Kingston, Ontario, Canada, in 1996 with a Bachelor of Science degree in Mining Engineering.
- 3. I am registered as a Professional Engineer in the Province of Ontario (Reg. #90487158). I have worked as a Mining Engineer for a total of 20 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Review and report as a consultant on many mining operations and projects around the world for due diligence and regulatory requirements
  - Feasibility Study project work on several mining projects, including five North American mines
  - Operational experience as Planning Engineer and Senior Mine Engineer at three North American mines
  - Contract Co-ordinator for underground construction at an American mine
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited Guanaco and Amancaya from February 27 to March 2, 2017.
- 6. I share responsibility with my co-author for the preparation of Sections 15, 16, 18, 21, and 22 and contributed to Sections 1, 25, 26, and 27 of the Technical Report.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 10. At 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.

Dated 16<sup>th</sup> day of June, 2017.

### (Signed & Sealed) "Jason Cox"

Jason J. Cox, P.Eng.



### CHESTER M. MOORE

I, Chester M. Moore, P.Eng., as an author of this report entitled "Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile" prepared for Austral Gold Limited and dated June 16, 2017, do hereby certify that:

- 1. I am Principal Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
- 2. I am a graduate of the University of Toronto, Toronto, Ontario, Canada in 1972 with a Bachelor of Applied Science degree in Geological Engineering.
- I am registered as a Professional Engineer in the Province of Ontario (Reg. #32455016). I have worked as a geologist for 43 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Mineral Resource and Reserve estimation, feasibility studies, due diligence, corporate review and audit on exploration projects and mining operations world wide
  - Various advanced exploration and mine geology positions at base metal and gold mining operations in Ontario, Manitoba and Saskatchewan
  - Director, Mineral Reserve Estimation and Reporting at the corporate offices of a major Canadian base metal producer
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited Guanaco and Amancaya on October 25 to 27, 2016 and previously visited Amancaya from August 5 to 8, 2015, and on August 27 and 28, 2007.
- 6. I am responsible for Sections 2 to 12, 14, and 23 and contributed to Sections 1, 25, 26, and 27 of the Technical Report.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have previously prepared Technical Reports on the Amancaya project that is described in this Technical Report
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 10. At 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.

Dated this 16<sup>th</sup> day of June, 2017.

### (Signed & Sealed) "Chester Moore"

Chester M. Moore, P.Eng.



### IAN WEIR

I, Ian Weir, P.Eng., as an author of this report entitled "Technical Report on the Guanaco and Amancaya Gold Project, Region II, Chile" prepared for Austral Gold Limited and dated June 16, 2017, do hereby certify that:

- 1. I am a Senior Mining Engineer with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
- 2. I am a graduate of Queen's University, Kingston, Ontario, in 2004 with a B.A.Sc. degree in Mining Engineering.
- 3. I am registered as a Professional Engineer in the Province of Ontario (Reg.# 100143218). I have worked as a mining engineer for a total of eight years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Project evaluation, mine planning, and financial analysis for NI 43-101 reporting.
  - Supervision of mine development at a copper mine in Chile from the pre-stripping phase to a fully operational mine.
  - Mining engineer at gold and copper open pit projects in Chile and USA.
- 4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 5. I visited Guanaco and Amancaya from February 27 to March 2, 2017.
- 6. I share responsibility with my co-author for the preparation of Sections 15, 16, 18, 21, and 22 and contributed to Sections 1, 25, 26, and 27 of the Technical Report.
- 7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
- 8. I have had no prior involvement with the property that is the subject of the Technical Report.
- 9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 10. At 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.

Dated this 16<sup>th</sup> day of June, 2017.

### (Signed & Sealed) "lan Weir"

lan Weir, P.Eng.



### **30 APPENDIX 1**

**GUANACO CONCESSIONS** 

Austral Gold Limited – Guanaco and Amancaya Mines, Project 2712 Technical Report NI 43-101 - June 16, 2017



## TABLE 30-1 GUANACO CONCESSIONS Austral Gold Limited – Guanaco and Amancaya Mines

0		Area		National Roll			
Concession Name	Holder	(ha)	Folio	Na	Year	Jurisdiction	No.
A	Guanaco Cía. Minera Ltda.	5	217 vta.	198	2003	Taltal	02205-0827-7
Aconcagua	Guanaco Cía. Minera Ltda.	4	212 vta.	188	2003	Taltal	02205-0815-3
Alemania	Guanaco Cía. Minera Ltda.	5	218	199	2003	Taltal	02205-0828-5
Alfa Uno al Mil	Guanaco Cía. Minera Ltda.	4871	142	51	2003	Taltal	02202-1132-0
Altamira	Guanaco Cía. Minera Ltda.	1	177 vta.	121	2003	Taltal	02205-0300-3
Amalia	Guanaco Cía. Minera Ltda.	2	215 vta.	194	2003	Taltal	02205-0822-6
Amapola	Guanaco Cía. Minera Ltda.	2	215	193	2003	Taltal	02205-0821-8
Amistad	Guanaco Cía. Minera Ltda.	5	219	201	2003	Taltal	02205-0830-7
Amparo	Guanaco Cía. Minera Ltda.	4	216	195	2003	Taltal	02205-0824-2
Andacollo	Guanaco Cía. Minera Ltda.	2	216 vta.	196	2003	Taltal	02205-0825-0
Angela	Guanaco Cía. Minera Ltda.	2	213	189	2003	Taltal	02205-0816-1
Angela	Guanaco Cía. Minera Ltda.	3	220	203	2003	Taltal	02205-0832-3
Araucana	Guanaco Cía. Minera Ltda.	2	213 vta.	190	2003	Taltal	02205-0818-8
Arco Iris	Guanaco Cía. Minera Ltda.	5	219 vta.	202	2003	Taltal	02205-0831-5
Argentina	Guanaco Cía. Minera Ltda.	5	214	191	2003	Taltal	02205-0819-6
Asturiana	Guanaco Cía. Minera Ltda.	5	218 vta.	200	2003	Taltal	02205-0829-3
Augusto	Guanaco Cía. Minera Ltda.	4	220 vta.	204	2003	Taltal	02205-0851-K
Auristela	Guanaco Cía. Minera Ltda.	3	214 vta.	192	2003	Taltal	02205-0820-K
Aurora	Guanaco Cía. Minera Ltda.	3	217	197	2003	Taltal	02205-0826-9
В	Guanaco Cía. Minera Ltda.	5	223	209	2003	Taltal	02205-0904-4
Barcelona	Guanaco Cía. Minera Ltda.	3	176	82	2006	Taltal	02205-0893-5
Bio Bio	Guanaco Cía. Minera Ltda.	2	221 vta.	206	2003	Taltal	02205-0894-3
Blanca Estela	Guanaco Cía. Minera Ltda.	5	21	6	2007	Taltal	02202-1101-0
Boa - K 1, 1 al 25	Guanaco Cía. Minera Ltda.	25	319	95	2007	Taltal	02202-4696-8
Boa A	Guanaco Cía. Minera Ltda.	5	90 vta.	18	1994	Taltal	02202-2480-5
Boa B	Guanaco Cía. Minera Ltda.	5	214	38	1994	Taltal	02202-2481-3
Boa C	Guanaco Cía. Minera Ltda.	5	218	39	1994	Taltal	02202-2482-1
Boa D	Guanaco Cía. Minera Ltda.	5	222	40	1994	Taltal	02202-2483-K
Boa E	Guanaco Cía. Minera Ltda.	5	226	41	1994	Taltal	02202-2484-8
Boa F	Guanaco Cía. Minera Ltda.	5	230	42	1994	Taltal	02202-2485-6
Boa G	Guanaco Cía. Minera Ltda.	5	234	43	1994	Taltal	02202-2486-4
Boa H	Guanaco Cía. Minera Ltda.	5	238	44	1994	Taltal	02202-2487-2
Boa J	Guanaco Cía. Minera Ltda.	5	242	45	1994	Taltal	02202-2489-9
Boa K	Guanaco Cía. Minera Ltda.	5	246	46	1994	Taltal	02202-2490-2
Brilladora	Guanaco Cía. Minera Ltda.	2	222 vta.	208	2003	Taltal	02205-0897-8
Brillante	Guanaco Cía. Minera Ltda.	3	221	205	2003	Taltal	02205-0892-7
Bruna María	Guanaco Cía. Minera Ltda.	5	223 vta.	210	2003	Taltal	02205-0906-0
Buenos Muchachos	Guanaco Cía. Minera Ltda.	5	222	207	2003	Taltal	02205-0896-K
С	Guanaco Cía. Minera Ltda.	5	227 vta.	218	2003	Taltal	02205-0944-3
Cachapoal	Guanaco Cía. Minera Ltda.	2	225 vta.	214	2003	Taltal	02205-0940-0
California	Guanaco Cía. Minera Ltda.	1	226 vta.	216	2003	Taltal	02205-0942-7
Carolina	Guanaco Cía. Minera Ltda.	2	224 vta.	212	2003	Taltal	02205-0936-2
Carolina	Guanaco Cía. Minera Ltda.	4	229	221	2003	Taltal	02205-0947-8
Cata 5 - 1, 1 al 25	Guanaco Cía. Minera Ltda.	25	280	85	2007	Taltal	02202-4697-3
Catalina	Guanaco Cía. Minera Ltda.	3	229 vta.	222	2003	Taltal	02205-0950-8



		Area	F	National Roll			
Concession Name	Holder	(ha)	Folio	N <sup>a</sup>	Registratio Year	Jurisdiction	No.
Chacabuco	Guanaco Cía. Minera Ltda.	2	230	223	2003	Taltal	02205-0951-6
Chancho 1, 1 al 20	Guanaco Cía. Minera Ltda.	200	528	139	2013	Taltal	02202-1134-7
Chancho 10, 1 al 20	Guanaco Cía. Minera Ltda.	200	776	244	2014	Taltal	02202-6607-9
Chancho 11, 1 al 30	Guanaco Cía. Minera Ltda.	300	780	245	2014	Taltal	02202-6608-7
Chancho 12, 1 al 20	Guanaco Cía. Minera Ltda.	200	784	246	2014	Taltal	02202-6609-5
Chancho 13, 1 al 20	Guanaco Cía. Minera Ltda.	200	789	247	2014	Taltal	02202-6610-9
Chancho 14, 1 al 30	Guanaco Cía. Minera Ltda.	300	794	248	2014	Taltal	02202-6611-7
Chancho 15, 1 al 30	Guanaco Cía. Minera Ltda.	300	799	249	2014	Taltal	02202-6612-5
Chancho 16, 1 al 30	Guanaco Cía. Minera Ltda.	300	804	250	2014	Taltal	02202-6613-3
Chancho 2, 1 al 20	Guanaco Cía. Minera Ltda.	200	391	105	2014	Taltal	02202-6599-4
Chancho 3, 1 al 20	Guanaco Cía. Minera Ltda.	200	395	106	2014	Taltal	02202-6600-1
Chancho 4, 1 al 20	Guanaco Cía. Minera Ltda.	200	399	106A	2014	Taltal	02202-6601-K
Chancho 5, 1 al 20	Guanaco Cía. Minera Ltda.	200	403	107	2014	Taltal	02202-6602-8
Chancho 6, 1 al 20	Guanaco Cía. Minera Ltda.	200	524	138	2013	Taltal	02202-6603-6
Chancho 7, 1 al 20	Guanaco Cía. Minera Ltda.	200	764	241	2014	Taltal	02202-6604-4
Chancho 8, 1 al 20	Guanaco Cía. Minera Ltda.	200	768	242	2014	Taltal	02202-6605-2
Chancho 9, 1 al 20	Guanaco Cía. Minera Ltda.	200	772	243	2014	Taltal	02202-6606-0
Chile	Guanaco Cía. Minera Ltda.	3	230 vta.	224	2014	Taltal	02202-0000-0
Chilena	Enami	5	372 vta.	380	1908	Taltal	02205-0953-2
Chinchosa	Guanaco Cía. Minera Ltda.	3	231	225	2003	Taltal	02205-0954-0
Ciclón	Guanaco Cía. Minera Ltda.	5	228	219	2003	Taltal	02205-0945-1
Complemento	Guanaco Cía. Minera Ltda.	4	231 vta.	226	2003	Taltal	02205-0956-7
Convención	Guanaco Cía. Minera Ltda.	2	225	213	2003	Taltal	02205-0938-9
Copiapina	Guanaco Cía. Minera Ltda.	3	227	210	2003	Taltal	02205-0943-5
Crisomega	Guanaco Cía. Minera Ltda.	2	226	217	2003	Taltal	02205-0941-9
Cristina 1 al 397	Guanaco Cía. Minera Ltda.	1985	142 vta.	52	2003	Taltal	02205-1134-7
Cuncuna	Guanaco Cía. Minera Ltda.	2	228 vta.	220	2003	Taltal	02205-0946-K
Cupido	Guanaco Cía. Minera Ltda.	1	224	211	2003	Taltal	02205-0934-6
D	Guanaco Cía. Minera Ltda.	3	198 vta.	160	2003	Taltal	02205-0534-0
Defensa	Guanaco Cía. Minera Ltda.	5	173	79	2006	Taltal	02205-0549-9
Desdicha	Guanaco Cía. Minera Ltda.	1	197	157	2000	Taltal	02205-0543-5
Deslindante	Guanaco Cía. Minera Ltda.	3	195	153	2003	Taltal	02225-0426-K
Diamante	Guanaco Cía. Minera Ltda.	5	199 vta.	162	2003	Taltal	02205-0536-7
Diamante 1	Guanaco Cía. Minera Ltda.	1	766	203	2003	Taltal	02202-4934-4
Domitila	Guanaco Cía. Minera Ltda.	2	195 vta.	154	2007	Taltal	02205-0527-8
Don Eduardo	Guanaco Cía. Minera Ltda.	2	195 via. 196	154	2003	Taltal	02205-0528-6
Don Felipe	Guanaco Cía. Minera Ltda.	2	196 vta.	156	2003	Taltal	02205-0520-0
Don Juan	Guanaco Cía. Minera Ltda.	2	190 via. 198	150	2003	Taltal	02205-0523-4
Dos Amigos	Guanaco Cía. Minera Ltda.	2	197 vta.	159	2003	Taltal	02205-0532-4
Dos Carmelos	Guanaco Cía. Minera Ltda.	3	232 vta.	228	2003	Taltal	02205-0532-4
Duilia	Guanaco Cía. Minera Ltda.	4	199	161	2003	Taltal	02205-0535-9
Dumbo 1 al 4	Guanaco Cía. Minera Ltda.	4 10	199	53	2003	Taltal	02205-0335-9
E	Guanaco Cía. Minera Ltda.	5	201 vta.	- 55 166	2003	Taltal	02205-0584-7
Elba	Guanaco Cía. Minera Ltda.		201 vta. 202 vta.	168	2003	Taltal	02205-0584-7
	Guanaco Cía. Minera Lida.	3				Taltal	
Elquina	Guanaco Cía. Minera Ltda. Guanaco Cía. Minera Ltda.	5 1	203 vta.	170 81	2003 2006	Taltal	02205-0588-K
Elvira Emma	Guanaco Cía. Minera Ltda.	1	175 202	81 167	2008	Taltal	02205-0582-0
		5					02205-0585-5
Emma Luisa	Guanaco Cía. Minera Ltda.	5	201	165	2003	Taltal	02205-0583-9



Concession Name         Holder         (ha)         Folio         N <sup>a</sup> Year         Jurisdiction           Escapada         Guanaco Cia. Minera Ltda.         2         200         163         2003         Taltal           Escondida I, 1 al 30         Guanaco Cia. Minera SpA.         300         2336         639         2015         Antofagasta           Escondida II, 1 al 30         Guanaco Cia. Minera SpA.         300         2348         641         2015         Antofagasta           Escondida V, 1 al 30         Guanaco Cia. Minera SpA.         300         2364         642         2015         Antofagasta           Escondida V, 1 al 30         Guanaco Cia. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cia. Minera SpA.         300         2376         645         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cia. Minera Ltda.         2         200 vta.         164 <th>National Ro No. 02205-0580- 02201-8025- 02201-8026- 02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8032- 02202-7158- 02202-7158- 02202-7159- 02205-0581- 02205-0590- 02205-0597-</th>	National Ro No. 02205-0580- 02201-8025- 02201-8026- 02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8032- 02202-7158- 02202-7158- 02202-7159- 02205-0581- 02205-0590- 02205-0597-
Escondida I, 1 al 30         Guanaco Cia. Minera SpA.         300         2336         639         2015         Antofagasta           Escondida II, 1 al 30         Guanaco Cia. Minera SpA.         300         2342         640         2015         Antofagasta           Escondida IV, 1 al 30         Guanaco Cia. Minera SpA.         300         1574         366         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2366         642         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cia. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cia. Minera SpA.         300         2376         645         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cia. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         1589         369         2015         Taltal           Escondida XI, 1 al 20         Guanaco Cia. Minera Ltda.         5	02201-8025- 02201-8026- 02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida II, 1 al 30         Guanaco Cia. Minera SpA.         300         2342         640         2015         Antofagasta           Escondida III, 1 al 30         Guanaco Cia. Minera SpA.         300         2348         641         2015         Antofagasta           Escondida V, 1 al 30         Guanaco Cia. Minera SpA.         300         2354         642         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2376         646         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cia. Minera Ltda.         2         200         tb84         368         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cia. Minera Ltda.         5         177         83         2006         Taltal           Esperanza         Guanaco Cia. Minera Ltda.         5	02201-8026- 02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida II, 1 al 30         Guanaco Cia. Minera SpA.         300         2342         640         2015         Antofagasta           Escondida III, 1 al 30         Guanaco Cia. Minera SpA.         300         2348         641         2015         Antofagasta           Escondida V, 1 al 30         Guanaco Cia. Minera SpA.         300         2354         642         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2376         646         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cia. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cia. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cia. Minera Ltda.         2         200         tb84         368         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cia. Minera Ltda.         5         177         83         2006         Taltal           Esperanza         Guanaco Cia. Minera Ltda.         5	02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida III, 1 al 30Guanaco Cia. Minera SpA.30023486412015AntofagastaEscondida IV, 1 al 30Guanaco Cia. Minera SpA.30015743662015TaltalEscondida VI, 1 al 30Guanaco Cia. Minera SpA.30023546422015AntofagastaEscondida VI, 1 al 30Guanaco Cia. Minera SpA.30023666442015AntofagastaEscondida VII, 1 al 30Guanaco Cia. Minera SpA.30023726452015AntofagastaEscondida X, 1 al 30Guanaco Cia. Minera SpA.30023726452015AntofagastaEscondida X, 1 al 30Guanaco Cia. Minera SpA.30015793672015TaltalEscondida X, 1 al 30Guanaco Cia. Minera SpA.30015793672015TaltalEscondida XI, 1 al 30Guanaco Cia. Minera SpA.30015893692015TaltalEscondida XI, 1 al 30Guanaco Cia. Minera Ltda.2200 vta.1642003TaltalEsperanzaGuanaco Cia. Minera Ltda.5177832006TaltalEsperanzaGuanaco Cia. Minera Ltda.52031692003TaltalEstrella de Venus 1 al 2Guanaco Cia. Minera Ltda.72052007TaltalFedraGuanaco Cia. Minera Ltda.5207 vta.1782003TaltalFildesGuanaco Cia. Minera Ltda.5207 vta.1782003TaltalFort	02201-8027- 02202-7156- 02201-8028- 02201-8030- 02201-8030- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida IV, 1 al 30         Guanaco Cía. Minera SpA.         300         1574         366         2015         Tatal           Escondida V, 1 al 30         Guanaco Cía. Minera SpA.         300         2354         642         2015         Antofagasta           Escondida VI, 1 al 30         Guanaco Cía. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2372         645         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         367         2015         Tattal           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Tattal           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Tattal           Escondida XI, 1 al 30         Guanaco Cía. Minera Ltda.         5         203         169         2003         Tattal           Escondida XI, 1 al 30         Guanaco Cía. Minera Ltda.         5         2037	02202-7156- 02201-8028- 02201-8030- 02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida V, 1 al 30         Guanaco Cía. Minera SpA.         300         2354         642         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2360         643         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2377         646         2015         Antofagasta           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1579         367         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cía. Minera Ltda.         2         200 vta.         164         2003         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         5         177         83         2006         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         7         20         5         2007         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         7         20         5         2007	02201-8028- 02201-8029- 02201-8030- 02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida VI, 1 al 30         Guanaco Cía. Minera SpA.         300         2360         643         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2372         645         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         2         200 vta.         164         2003         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         5         177         83         2006         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         7         20         5         2007	02201-8029- 02201-8030- 02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida VII, 1 al 30         Guanaco Cía. Minera SpA.         300         2366         644         2015         Antofagasta           Escondida VIII, 1 al 30         Guanaco Cía. Minera SpA.         300         2372         645         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         1579         367         2015         Tattal           Escondida XII, 1 al 30         Guanaco Cía. Minera SpA.         300         1584         368         2015         Tattal           Escondida XII, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Tattal           Esperanza         Guanaco Cía. Minera Ltda.         2         200 vta.         164         2003         Tattal           Esteflanía         Guanaco Cía. Minera Ltda.         7         20         5         2007         Tattal           Esterella de Venus 1 al 2         Guanaco Cía. Minera Ltda.         2         204 vta.         172         2003         Tattal           Fedra         Guanaco Cía. Minera Ltda.         2         205 vta.         174         2	02201-8030- 02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida VIII, 1 al 30         Guanaco Cía. Minera SpA.         300         2372         645         2015         Antofagasta           Escondida IX, 1 al 30         Guanaco Cía. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         2         200 vta.         164         2003         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         5         203         169         2003         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         7         20         5         2007         Taltal           Fedra         Guanaco Cía. Minera Ltda.         2         204 vta.         172         2003         Taltal           Fides         Guanaco Cía. Minera Ltda.         2         205 vta.         174         2003         Taltal <td>02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-</td>	02201-8031- 02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida IX, 1 al 30         Guanaco Cía. Minera SpA.         300         2378         646         2015         Antofagasta           Escondida X, 1 al 30         Guanaco Cía. Minera SpA.         300         1579         367         2015         Taltal           Escondida XI, 1 al 20         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Escondida XII, 1 al 30         Guanaco Cía. Minera SpA.         300         1589         369         2015         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         2         200 vta.         164         2003         Taltal           Esperanza         Guanaco Cía. Minera Ltda.         5         177         83         2006         Taltal           Estefanía         Guanaco Cía. Minera Ltda.         5         203         169         2003         Taltal           F         Guanaco Cía. Minera Ltda.         7         20         5         2007         Taltal           Fides         Guanaco Cía. Minera Ltda.         2         204 vta.         172         2003         Taltal           Florta 1 al 776         Guanaco Cía. Minera Ltda.         2         205 vta.         174         2003         Taltal           <	02201-8032- 02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida X, 1 al 30Guanaco Cía. Minera SpA.30015793672015TaltalEscondida XI, 1 al 20Guanaco Cía. Minera SpA.20015843682015TaltalEscondida XII, 1 al 30Guanaco Cía. Minera SpA.30015893692015TaltalEsperanzaGuanaco Cía. Minera Ltda.2200 vta.1642003TaltalEsperanza TerceraGuanaco Cía. Minera Ltda.5177832006TaltalEstefaníaGuanaco Cía. Minera Ltda.52031692003TaltalEstrella de Venus 1 al 2Guanaco Cía. Minera Ltda.72052007TaltalFGuanaco Cía. Minera Ltda.2204 vta.1722003TaltalFidesGuanaco Cía. Minera Ltda.42071772003TaltalFilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortuna 1, 1 al 30Guanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortuna 1, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna IV, 1 al 20Guanaco Cía. Minera SpA.30015303562015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2	02202-7157- 02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida XI, 1 al 20Guanaco Cía. Minera SpA.20015843682015TaltalEscondida XII, 1 al 30Guanaco Cía. Minera SpA.30015893692015TaltalEsperanzaGuanaco Cía. Minera Ltda.2200 vta.1642003TaltalEsperanza TerceraGuanaco Cía. Minera Ltda.5177832006TaltalEstefaníaGuanaco Cía. Minera Ltda.52031692003TaltalEstrella de Venus 1 al 2Guanaco Cía. Minera Ltda.72052007TaltalFGuanaco Cía. Minera Ltda.2204 vta.1722003TaltalFedraGuanaco Cía. Minera Ltda.42071772003TaltalFidesGuanaco Cía. Minera Ltda.5207 vta.1782003TaltalFlorita 1 al 776Guanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortuna 1, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna III, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009832422015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009832422015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.200	02202-7158- 02202-7159- 02205-0581- 02205-0590-
Escondida XII, 1 al 30Guanaco Cía. Minera SpA.30015893692015TaltalEsperanzaGuanaco Cía. Minera Ltda.2200 vta.1642003TaltalEsperanza TerceraGuanaco Cía. Minera Ltda.5177832006TaltalEstefaníaGuanaco Cía. Minera Ltda.52031692003TaltalEstefaníaGuanaco Cía. Minera Ltda.72052007TaltalFGuanaco Cía. Minera Ltda.2204 vta.1722003TaltalFedraGuanaco Cía. Minera Ltda.42071772003TaltalFidesGuanaco Cía. Minera Ltda.5207 vta.1782003TaltalFilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortunaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortunaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortuna I, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna V, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna V, 1 al 20Guanaco Cía. Minera SpA.2009932422015TaltalFortuna V, 1 al 20Guanaco Cía. Minera SpA.2009852015Taltal<	02202-7159- 02205-0581- 02205-0590-
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Esperanza TerceraGuanaco Cía. Minera Ltda.5177832006TaltalEstefaníaGuanaco Cía. Minera Ltda.52031692003TaltalEstrella de Venus 1 al 2Guanaco Cía. Minera Ltda.72052007TaltalFGuanaco Cía. Minera Ltda.2204 vta.1722003TaltalFedraGuanaco Cía. Minera Ltda.42071772003TaltalFidesGuanaco Cía. Minera Ltda.5207 vta.1782003TaltalFilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortunaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortunaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFortuna 1, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna 1I, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.20016353802015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 30Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 30Guanaco Cía. Minera SpA.200989241<	02205-0590-
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FedraGuanaco Cía. Minera Ltda.42071772003TaltalFidesGuanaco Cía. Minera Ltda.5207 vta.1782003TaltalFilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFlorita 1 al 776Guanaco Cía. Minera Ltda.3767143 vta.542003TaltalFortunaGuanaco Cía. Minera Ltda.22051732003TaltalFortuna 1, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna III, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna IV, 1 al 20Guanaco Cía. Minera SpA.20016353802015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009932422015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.30015343572015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VIII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VIII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015443592015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera	02205-0481-
FidesGuanaco Cía. Minera Ltda.5207 vta.1782003TaltalFilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFlorita 1 al 776Guanaco Cía. Minera Ltda.3767143 vta.542003TaltalFortunaGuanaco Cía. Minera Ltda.22051732003TaltalFortuna I, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.3009852402015TaltalFortuna III, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.20016353802015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.2009932422015TaltalFortuna VII, 1 al 20Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VIII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna IX, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna XII, 1 al 20Guanaco Cía. Minera SpA.20015443592015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015493602015TaltalFortuna XI, 1 al 20Guanac	02205-0620-
FilomenaGuanaco Cía. Minera Ltda.2205 vta.1742003TaltalFlorita 1 al 776Guanaco Cía. Minera Ltda.3767143 vta.542003TaltalFortunaGuanaco Cía. Minera Ltda.22051732003TaltalFortuna I, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.3009852402015TaltalFortuna III, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna IV, 1 al 20Guanaco Cía. Minera SpA.20016353802015TaltalFortuna V, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.2009932422015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VIII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna IX, 1 al 30Guanaco Cía. Minera SpA.20015443592015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015493602015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015493612015TaltalFortuna XI, 1 al 30<	02205-0627-
Florita 1 al 776Guanaco Cía. Minera Ltda.3767143 vta.542003TaltalFortunaGuanaco Cía. Minera Ltda.22051732003TaltalFortuna I, 1 al 30Guanaco Cía. Minera SpA.30015253552015TaltalFortuna II, 1 al 30Guanaco Cía. Minera SpA.3009852402015TaltalFortuna III, 1 al 30Guanaco Cía. Minera SpA.30015303562015TaltalFortuna IV, 1 al 20Guanaco Cía. Minera SpA.20016353802015TaltalFortuna V, 1 al 20Guanaco Cía. Minera SpA.2009892412015TaltalFortuna VI, 1 al 20Guanaco Cía. Minera SpA.2009932422015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VII, 1 al 20Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.20015393582015TaltalFortuna VII, 1 al 30Guanaco Cía. Minera SpA.20015443592015TaltalFortuna X, 1 al 30Guanaco Cía. Minera SpA.20015493602015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015493612015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.20015493612015TaltalFortuna XI, 1 al 3	02205-0628-
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Fortuna VIII, 1 al 20Guanaco Cía. Minera SpA.20015393582015TaltalFortuna IX, 1 al 30Guanaco Cía. Minera SpA.30015443592015TaltalFortuna X, 1 al 20Guanaco Cía. Minera SpA.20015493602015TaltalFortuna XI, 1 al 30Guanaco Cía. Minera SpA.30015533612015TaltalFortuna XI, 1 al 20Guanaco Cía. Minera SpA.20015583622015Taltal	02202-6984-
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Fortuna XI, 1 al 30Guanaco Cía. Minera SpA.30015533612015TaltalFortuna XII, 1 al 20Guanaco Cía. Minera SpA.20015583622015Taltal	02202-7150-
Fortuna XII, 1 al 20Guanaco Cía. Minera SpA.20015583622015Taltal	02202-7151-
	02202-7152-
Fortuna XIII, 1 al 30 Guanaco Cía. Minera SpA. 300 1562 363 2015 Taltal	02202-7153-
	02202-7154-
Fortuna XIV, 1 al 20 Guanaco Cía. Minera SpA. 200 1566 364 2015 Taltal	02202-7155-
Fortuna XV, 1 al 5 Guanaco Cía. Minera SpA. 50 1570 365 2015 Taltal	02202-7351-
Fortunata Guanaco Cía. Minera Ltda. 2 204 171 2003 Taltal	02205-0619-
Fraternidad Guanaco Cía. Minera Ltda. 3 206 175 2003 Taltal	02205-0623-
Fresia Guanaco Cía. Minera Ltda. 3 206 vta. 176 2003 Taltal	02205-0624-
G Guanaco Cía. Minera Ltda. 5 208 179 2003 Taltal	02205-0646-
G - 101 1, 1 al 25 Guanaco Cía. Minera Ltda. 25 300 90 2007 Taltal	02202-4699-
G - 102 1, 1 al 25 Guanaco Cía. Minera Ltda. 25 315 94 2007 Taltal	02202-4099-
G - 23 1, 1 al 25 Guanaco Cía. Minera Ltda. 25 296 89 2007 Taltal	02202-4698-
G-1, 1 al 40 Guanaco Cía. Minera Ltda. 400 712 195 2008 Taltal	02202-4098-
	02202-0200-
G-2, 1 al 40 Guanaco Cía. Minera Ltda. 400 716 196 2008 Taltal	00000 5060
G-3, 1 al 6 Guanaco Cía. Minera Ltda. 55 989 291 2014 Taltal	02202-5263 02202-6807



<b>.</b>		Area		National Roll			
Concession Name	Holder	(ha)	Folio	N <sup>a</sup>	Registratio Year	Jurisdiction	No.
G-4, 1 al 6	Guanaco Cía. Minera Ltda.	60	1042	305	2014	Taltal	02202-6808-K
G-5, 1 al 20	Guanaco Cía. Minera Ltda.	200	969	286	2014	Taltal	02202-6809-8
G-6, 1 al 20	Guanaco Cía. Minera Ltda.	200	973	287	2014	Taltal	02202-6810-1
G-7, 1 al 20	Guanaco Cía. Minera Ltda.	200	977	288	2014	Taltal	02202-6811-K
G-8, 1 al 20	Guanaco Cía. Minera Ltda.	200	981	289	2014	Taltal	02202-6812-8
G-9, 1 al 10	Guanaco Cía. Minera Ltda.	30	413	92	2012	Taltal	02202-6420-3
G-9, 1 al 19	Guanaco Cía. Minera Ltda.	185	985	290	2014	Taltal	02202-6813-6
G-10, 1 al 20	Guanaco Cía. Minera Ltda.	155	246	57	2015	Taltal	02202-6814-4
G-11, 1 al 20	Guanaco Cía. Minera Ltda.	200	251	58	2015	Taltal	02202-6815-2
G-12, 1 al 20	Guanaco Cía. Minera Ltda.	200	299	73	2015	Taltal	02202-6816-0
G-13, 1 al 20	Guanaco Cía. Minera Ltda.	200	303	74	2015	Taltal	02202-6817-9
G-14, 1 al 20	Guanaco Cía. Minera Ltda.	200	307	75	2015	Taltal	02202-6818-7
G-15, 1 al 20	Guanaco Cía. Minera Ltda.	200	1047	306	2010	Taltal	02202-6819-5
G-16, 1 al 20	Guanaco Cía. Minera Ltda.	200	760	240	2014	Taltal	02202-0019-3
G-17, 1 al 20	Guanaco Cía. Minera Ltda.	200	1	1	2014	Taltal	02202-6955-8
G-18, 1 al 10	Guanaco Cía. Minera Ltda.	30				Taltal	02202-6935-8
			416	93 225	2012		
G-18, 1 al 20	Guanaco Cía. Minera Ltda.	200	926	225	2015	Taltal	02202-6956-6
G-19, 1 al 30	Guanaco Cía. Minera Ltda.	298	930	226	2015	Taltal	02202-6957-4
G-20, 1 al 30	Guanaco Cía. Minera Ltda.	296	934	227	2015	Taltal	02202-6958-2
G-21, 1 al 30	Guanaco Cía. Minera Ltda.	292	1512	352	2015	Taltal	02202-6959-0
G-22, 1 al 30	Guanaco Cía. Minera Ltda.	284	938	228	2015	Taltal	02202-6960-4
G-23, 1 al 30	Guanaco Cía. Minera SpA.	300	942	229	2015	Taltal	02202-6961-2
G-24, 1 al 30	Guanaco Cía. Minera SpA.	300	946	230	2015	Taltal	02202-6962-0
G-25, 1 al 20	Guanaco Cía. Minera SpA.	200	950	231	2015	Taltal	02202-6963-9
G-26, 1 al 30	Guanaco Cía. Minera SpA.	300	953	232	2015	Taltal	02202-6964-7
G-27, 1 al 30	Guanaco Cía. Minera SpA.	300	957	233	2015	Taltal	02202-6965-5
G-28, 1 al 20	Guanaco Cía. Minera SpA.	200	961	234	2015	Taltal	02202-6966-3
G-29, 1 al 30	Guanaco Cía. Minera SpA.	300	1517	353	2015	Taltal	02202-6967-1
G-30, 1 al 30	Guanaco Cía. Minera SpA.	300	797	192	2015	Taltal	02202-6968-K
G-31, 1 al 30	Guanaco Cía. Minera SpA.	300	801	193	2015	Taltal	02202-6969-8
G-32, 1 al 30	Guanaco Cía. Minera SpA.	300	805	194	2015	Taltal	02202-6970-1
G-33, 1 al 30	Guanaco Cía. Minera SpA.	300	809	195	2015	Taltal	022026971-K
G-34, 1 al 30	Guanaco Cía. Minera SpA.	300	813	196	2015	Taltal	02202-6972-8
G-35, 1 al 30	Guanaco Cía. Minera SpA.	300	965	235	2015	Taltal	02202-6973-6
G-36, 1 al 20	Guanaco Cía. Minera SpA.	200	969	236	2015	Taltal	02202-6974-4
G-37, 1 al 20	Guanaco Cía. Minera SpA.	200	1521	354	2015	Taltal	02202-6975-2
G-38, 1 al 20	Guanaco Cía. Minera SpA.	200	973	237	2015	Taltal	02202-6976-0
G-39, 1 al 20	Guanaco Cía. Minera SpA.	200	977	238	2015	Taltal	02202-6977-9
G-40, 1 al 20	Guanaco Cía. Minera SpA.	200	981	239	2015	Taltal	02202-6978-7
Graciela	Guanaco Cía. Minera Ltda.	5	210	183	2003	Taltal	02205-0650-9
Guanaco 1 al 168	Guanaco Cía. Minera Ltda.	561	144	55	2003	Taltal	02205-1138-K
Guanajuatos	Guanaco Cía. Minera Ltda.	2	208 vta.	180	2003	Taltal	02205-0645-2
Guicelda	Guanaco Cía. Minera Ltda.	5	209 vta.	182	2003	Taltal	02205-0649-5
Guillermo	Guanaco Cía. Minera Ltda.	1	209	181	2003	Taltal	02205-0647-9
Н	Guanaco Cía. Minera Ltda.	5	211	185	2003	Taltal	02205-0671-1
Herminia	Guanaco Cía. Minera Ltda.	4	211 vta.	186	2003	Taltal	02205-0672-K
Horacio	Guanaco Cía. Minera Ltda.	4	212	187	2003	Taltal	02205-0674-6
Huascar	Guanaco Cía. Minera Ltda.	3	210 vta.	184	2003	Taltal	02205-0667-



Concession No.		Area	F	National Roll			
Concession Name	Holder	(ha)	Folio	N <sup>a</sup>	Year	Jurisdiction	No.
llira	Guanaco Cía. Minera Ltda.	5	180 vta.	126	2003	Taltal	02205-0311-9
Imperial	Guanaco Cía. Minera Ltda.	5	178 vta.	122	2003	Taltal	02205-0307-0
Inés	Guanaco Cía. Minera Ltda.	15	23	8	2007	Taltal	02205-0314-3
Inesperada 1 al 3	Guanaco Cía. Minera Ltda.	15	147 vta.	62	2003	Taltal	02205-0305-4
Isabel Antigua	Guanaco Cía. Minera Ltda.	4	179	123	2003	Taltal	02205-0308-9
Isolina	Guanaco Cía. Minera Ltda.	3	178	121	2003	Taltal	02205-0306-2
Istria	Guanaco Cía. Minera Ltda.	2	189	125	2003	Taltal	02205-0310-0
Ixora	Guanaco Cía. Minera Ltda.	3	179 vta.	124	2003	Taltal	02205-0309-7
J	Guanaco Cía. Minera Ltda.	3	182 vta.	130	2003	Taltal	02205-0329-1
Jenoveva	Guanaco Cía. Minera Ltda.	1	181	127	2003	Taltal	02205-0323-2
Josefina	Guanaco Cía. Minera Ltda.	2	181 vta.	128	2003	Taltal	02205-0324-0
Juana Luisa	Guanaco Cía. Minera Ltda.	5	183 vta.	132	2003	Taltal	02205-0331-3
Juana Maria	Guanaco Cía. Minera Ltda.	3	182	129	2003	Taltal	02205-0325-9
Juanita	Guanaco Cía. Minera Ltda.	2	183	131	2003	Taltal	02205-0330-5
Justicia 1 al 25	Guanaco Cía. Minera SpA.	25	888	213	2005	Taltal	02202-5397-K
K	Guanaco Cía. Minera Utda.	20	464	259	2013	Taltal	02202-3337-K
	Guanaco Cía. Minera Ltda.	2	185 vta.	135	2003	Taltal	02205-0347-R
Laguna Las Pailas I, 1 al 30	Guanaco Cía. Minera Ltda.	300	105 via. 1051	307	2003 2014	Taltal	02203-0350-9
Las Pailas III, 1 al 30	Guanaco Cía. Minera Ltda.	300	956	283	2014	Taltal	
							02202-6796-2
Las Pailas IV, 1 al 30	Guanaco Cía. Minera Ltda.	300	748	237	2014	Taltal	02202-6797-0
Las Pailas IX, 1 al 30	Guanaco Cía. Minera Ltda.	300	242	56	2015	Taltal	02202-6802-0
Las Pailas VI, 1 al 30	Guanaco Cía. Minera Ltda.	300	752	238	2014	Taltal	02202-6799-7
Las Pailas VII, 1 al 30	Guanaco Cía. Minera Ltda.	300	232	54	2015	Taltal	02202-6800-4
Las Pailas VIII, 1 al 30	Guanaco Cía. Minera Ltda.	300	238	55	2015	Taltal	02202-6801-2
Las Pailas IX, 1 al 30	Guanaco Cía. Minera Ltda.	300	242	56	2015	Taltal	02202-6802-0
Las Pailas X, 1 al 20	Guanaco Cía. Minera Ltda.	200	1056	308	2014	Taltal	02202-6803-9
Las Pailas XII, 1 al 20	Guanaco Cía. Minera Ltda.	200	960	284	2014	Taltal	02202-6805-5
Las Pailas XIII, 1 al 20	Guanaco Cía. Minera Ltda.	200	756	239	2014	Taltal	02202-6806-3
Las Pailas XIV, 1 al 30	Guanaco Cía. Minera Ltda.	300	512	135	2013	Taltal	02202-6631-1
Las Pailas XV, 1 al 30	Guanaco Cía. Minera Ltda.	300	516	136	2013	Taltal	02202-6632-K
Las Pailas XVI, 1 al 30	Guanaco Cía. Minera Ltda.	300	520	137	2013	Taltal	02202-6633-8
Lealtad	Guanaco Cía. Minera Ltda.	2	184	133	2003	Taltal	02205-0352-6
Lilita	Guanaco Cía. Minera Ltda.	5	186 vta.	137	2003	Taltal	02205-0364-K
Limbo Uno, 1 al 5	Guanaco Cía. Minera SpA.	25	889	214	2015	Taltal	02202-4509-8
Limbo Dos, 1 al 5	Guanaco Cía. Minera SpA.	25	890	215	2015	Taltal	02202-4510-1
Limbo Tres, 1 al 5	Guanaco Cía. Minera SpA.	25	891	216	2015	Taltal	02202-4511-K
Lira	Guanaco Cía. Minera Ltda.	2	185	134	2003	Taltal	02205-0355-0
Loreto I	Guanaco Cía. Minera SpA.	300	1445	826	2016	Antofagasta	02201-0935-7
Loreto II	Guanaco Cía. Minera SpA.	300	1447	827	2016	Antofagasta	02201-0936-5
Loreto III	Guanaco Cía. Minera SpA.	200	1449	828	2016	Antofagasta	02201-0937-3
Loreto IV	Guanaco Cía. Minera SpA.	200	1451	829	2016	Antofagasta	02201-0938-1
Los Pepes 1 al 2	Guanaco Cía. Minera Ltda.	6	145 vta.	58	2003	Taltal	02205-1239-4
Los Pepes 11 al 13	Guanaco Cía. Minera Ltda.	6	146	59	2003	Taltal	02205-1240-8
Los Pepes 14	Guanaco Cía. Minera Ltda.	1	145	57	2003	Taltal	02205-1238-6
Los Pepes 18 al 19	Guanaco Cía. Minera Ltda.	5	233	229	2003	Taltal	02205-1241-6
Los Pepes 26	Guanaco Cía. Minera Ltda.	2	146 vta.	60	2003	Taltal	02205-1242-4
Los Pepes 3 al 5	Guanaco Cía. Minera Ltda.	3	147	61	2003	Taltal	02205-1243-2
Los Pepes 7	Guanaco Cía. Minera Ltda.	1	144 vta.	56	2003	Taltal	02205-1139-8



<b>.</b>		Area	F	National Roll			
Concession Name	Holder	(ha)	Folio	N <sup>a</sup>	Registratio Year	Jurisdiction	No.
Lucila	Guanaco Cía. Minera Ltda.	5	187	138	2003	Taltal	02205-0368-2
Lucrecia	Guanaco Cía. Minera Ltda.	3	186	136	2003	Taltal	02205-0360-7
Manuel Antonio Matta	Guanaco Cía. Minera Ltda.	2	190 vta.	144	2003	Taltal	02205-0407-7
Mapocho	Guanaco Cía. Minera Ltda.	5	189 vta.	142	2003	Taltal	02205-0403-4
Mar Adriatico	Guanaco Cía. Minera Ltda.	5	193	149	2003	Taltal	02205-0416-6
María Estela	Guanaco Cía. Minera Ltda.	5	232	227	2003	Taltal	02205-1023-9
María Lastenia	Guanaco Cía. Minera Ltda.	3	192 vta.	148	2003	Taltal	02205-0415-8
María Luisa	Guanaco Cía. Minera Ltda.	1	188	139	2003	Taltal	02205-0398-4
María Luisa	Enami	5	15	22	1896	Taltal	02205-0400-K
María Teresa	Guanaco Cía. Minera Ltda.	2	191 vta.	146	2003	Taltal	02205-0410-7
Mateo I, 1 al 30	Guanaco Cía. Minera SpA.	300	1594	370	2000	Taltal	02202-7346-6
Mateo II, 1 al 30	Guanaco Cía. Minera SpA.	300	1599	370	2015	Taltal	02202-7347-4
Mateo III, 1 al 30	Guanaco Cía. Minera SpA.	300	1604	372	2015	Taltal	02202-7348-2
	-					Taltal	
Mateo IV, 1 al 21	Guanaco Cía. Minera SpA.	210	1608	373	2015		02202-7356-3
Mateo V, 1 al 30	Guanaco Cía. Minera SpA.	300	1613	374	2015	Taltal	02202-7349-0
Mateo VI, 1 al 17	Guanaco Cía. Minera SpA.	170	1618	375	2015	Taltal	02202-7350-4
Mauricio	Guanaco Cía. Minera Ltda.	2	177	120	2003	Taltal	02205-0296-1
Mercedes	Guanaco Cía. Minera Ltda.	3	191	145	2003	Taltal	02205-0408-5
Mercedes	Guanaco Cía. Minera Ltda.	4	192	147	2003	Taltal	02205-0413-1
Mercedes	Guanaco Cía. Minera Ltda.	5	193 vta.	150	2003	Taltal	02205-0419-0
Mercedes Segunda	Guanaco Cía. Minera Ltda.	5	190	143	2003	Taltal	02205-0405-0
Milagro	Guanaco Cía. Minera Ltda.	2	189	141	2003	Taltal	02205-0402-6
Mister Meiggs	Guanaco Cía. Minera Ltda.	3	188 vta.	140	2003	Taltal	02205-0401-8
Naciente	Guanaco Cía. Minera Ltda.	3	194	151	2003	Taltal	02205-0447-6
Nebulosa	Guanaco Cía. Minera Ltda.	3	194 vta.	152	2003	Taltal	02205-0449-2
Océano Pacífico	Guanaco Cía. Minera Ltda.	3	165	97	2003	Taltal	02205-0176-0
Oro Escapado	Guanaco Cía. Minera Ltda.	2	166	99	2003	Taltal	02205-0177-9
Oyama	Guanaco Cía. Minera Ltda.	5	166 vta.	100	2003	Taltal	02205-0179-5
Paila Dos, 1 al 29	Guanaco Cía. Minera Ltda.	116	170	76	2006	Taltal	02202-3035-K
Pancha 1 al 2	Guanaco Cía. Minera Ltda.	2	101	35	2006	Taltal	02202-4588-8
Panchita	Guanaco Cía. Minera Ltda.	3	167	101	2003	Taltal	02205-0191-4
Paraguaya	Guanaco Cía. Minera Ltda.	5	170 vta.	107	2003	Taltal	02205-0216-3
Pensilvania Uno al Dos	Guanaco Cía. Minera Ltda.	4	170	106	2003	Taltal	02205-0201-5
Perseverancia	Guanaco Cía. Minera Ltda.	3	169	105	2003	Taltal	02205-0198-1
Pique Wessel	Guanaco Cía. Minera Ltda.	3	167 vta.	102	2003	Taltal	02205-0194-9
Portales	Guanaco Cía. Minera Ltda.	3	168	103	2003	Taltal	02205-0195-7
Progreso	Guanaco Cía. Minera Ltda.	1	168 vta.	104	2003	Taltal	02205-0196-5
Protector I, 1-40	Guanaco Cía. Minera Ltda.	200	965	222	2009	Taltal	02202-5264-7
Protector II, 1-60	Guanaco Cía. Minera Ltda.	300	997	231	2009	Taltal	02202-5265-5
Quillota	Guanaco Cía. Minera Ltda.	5	22	7	2007	Taltal	02205-0240-6
Resguardo Primera	Guanaco Cía. Minera Ltda.	5	175	116	2003	Taltal	02205-0259-7
Resguardo Segunda	Guanaco Cía. Minera Ltda.	5	175 vta.	117	2003	Taltal	02205-0260-0
Resolución	Guanaco Cía. Minera Ltda.	3	148	63	2003	Taltal	02205-1228-9
Restauradora	Guanaco Cía. Minera Ltda.	3	148	118	2003	Taltal	02205-0274-0
Rica	Guanaco Cía. Minera Ltda.	2	176 vta.	119	2003	Taltal	02205-0274-0
Ricardo	Guanaco Cía. Minera Ltda.	2	176 via. 171	108	2003	Taltal	02205-0275-9
Río Huasco	Guanaco Cía. Minera Ltda.		171		2003		
		3		111		Taltal	02205-0244-9
Río Huasco	Guanaco Cía. Minera Ltda.	2	172 vta.	110	2003	Taltal	02205-0250-3



		Area	F	National Roll			
Concession Name	Holder	(ha)	Folio	N <sup>a</sup>	Year	Jurisdiction	No.
Rita	Guanaco Cía. Minera Ltda.	1	174	114	2003	Taltal	02205-0256-2
Rocío 1	Guanaco Cía. Minera Ltda.	1	247	245	2006	Taltal	02202-5252-3
Rocío 2, 1 al 2	Guanaco Cía. Minera Ltda.	2	248	246	2006	Taltal	02202-5253-1
Rocío 3, 1 al 2	Guanaco Cía. Minera Ltda.	2	249	247	2006	Taltal	02202-5254-K
Rosalbita	Guanaco Cía. Minera Ltda.	3	173 vta.	113	2003	Taltal	02205-0252-K
Rosalbita Segunda	Guanaco Cía. Minera Ltda.	2	174 vta.	115	2003	Taltal	02205-0257-0
Rosario del Llano	Guanaco Cía. Minera Ltda.	5	173	112	2003	Taltal	02205-0251-1
Rosita	Guanaco Cía. Minera Ltda.	2	171 vta.	109	2003	Taltal	02205-0243-0
Sabina	Guanaco Cía. Minera Ltda.	4	164	95	2003	Taltal	02205-0163-9
Sajonia	Guanaco Cía. Minera Ltda.	2	164 vta.	96	2003	Taltal	02205-0164-7
Salvadora	Guanaco Cía. Minera Ltda.	5	150	67	2003	Taltal	02205-0016-0
Salvadora 1, 1 al 20	Guanaco Cía. Minera Ltda.	200	423	111	2014	Taltal	02202-6595-1
Salvadora 2, 1 al 20	Guanaco Cía. Minera Ltda.	200	427	112	2014	Taltal	02202-6596-K
Salvadora 3, 1 al 20	Guanaco Cía. Minera Ltda.	165	432	113	2014	Taltal	02202-6597-8
San Andrés	Guanaco Cía. Minera Ltda.	5	163 vta.	94	2003	Taltal	02205-0162-0
San Antonio	Guanaco Cía. Minera Ltda.	5	152	71	2003	Taltal	02205-0020-9
San Benito	Guanaco Cía. Minera Ltda.	5	150 vta.	68	2003	Taltal	02205-0017-9
San Juan	Guanaco Cía. Minera Ltda.	5	163	93	2003	Taltal	02205-0156-6
San Manuel	Guanaco Cía. Minera Ltda.	5	151 vta.	70	2003	Taltal	02205-0019-5
San Roberto	Guanaco Cía. Minera Ltda.	5	161 vta.	90	2003	Taltal	02205-0013-5
Santa Clara	Guanaco Cía. Minera Ltda.	1	148 vta.	50 64	2003	Taltal	02205-0009-8
Santa Rita	Guanaco Cía. Minera Ltda.	4	140 via. 149	65	2003	Taltal	02205-0009-8
	Guanaco Cía. Minera Ltda.	4 5	149	91	2003	Taltal	02205-0010-1
Santo Domingo	Guanaco Cía. Minera Ltda.	5	151	69	2003	Taltal	02205-0141-8
Sapiola Sol	Guanaco Cía. Minera Ltda.		149 vta.	66	2003	Taltal	
Susana	Guanaco Cía. Minera Ltda.	2 5	149 vta. 162 vta.	92	2003	Taltal	02205-0012-8 02205-0142-6
Talca	Guanaco Cía. Minera Ltda.	3	157 vta.	92 82	2003	Taltal	
	Guanaco Cía. Minera Ltda.						02205-0075-6
Talita Teresa		5	160 159 vta.	87	2003	Taltal	02205-0084-5
	Guanaco Cía. Minera Ltda.	2		86	2003	Taltal	02205-0083-7
Todos Santos	Guanaco Cía. Minera Ltda.	5	161	89	2003	Taltal	02205-0090-K
Toribio	Guanaco Cía. Minera Ltda.	4	160 vta.	88	2003	Taltal	02205-0085-3
Trinchera	Guanaco Cía. Minera Ltda.	2	158 vta.	84	2003	Taltal	02205-0081-0
Tropezón	Guanaco Cía. Minera Ltda.	1	158	83	2003	Taltal	02205-0080-2
Tulipan Negro	Guanaco Cía. Minera Ltda.	2	159	85	2003	Taltal	02205-0082-9
Unión	Guanaco Cía. Minera Ltda.	3	154 vta.	76	2003	Taltal	02205-0063-2
Universal	Guanaco Cía. Minera Ltda.	5	155	77	2003	Taltal	02205-0064-0
Vallenarina	Guanaco Cía. Minera Ltda.	3	157	81	2003	Taltal	02205-0071-3
Valparaíso	Guanaco Cía. Minera Ltda.	3	156	79	2003	Taltal	02205-0069-1
Veintiuno de Mayo	Guanaco Cía. Minera Ltda.	1	153 vta.	74	2003	Taltal	02205-0038-1
Ventura	Guanaco Cía. Minera Ltda.	3	153	73	2003	Taltal	02205-0037-3
Verónica	Guanaco Cía. Minera Ltda.	3	155 vta.	78	2003	Taltal	02205-0066-7
Victoria ó Victorina	Guanaco Cía. Minera Ltda.	5	156 vta.	80	2003	Taltal	02205-0070-5
Vino 2, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	i	Taltal	02202-5742-8
Vino 3, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	i	Taltal	02202-5743-6
Vino 4, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	;	Taltal	02202-5744-4
Vino 6, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	;	Taltal	02202-5746-0
Vino 7, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	;	Taltal	02202-5747-9
Vino 9, 1 al 60	Guanaco Cía. Minera SpA.	300	h	n progress	;	Taltal	02202-5749-5

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Concession Name		Area	F	National Roll			
	Holder	(ha)	Folio	N <sup>a</sup>	Year	Jurisdiction	No.
WE - 49 1, 1 al 25	Guanaco Cía. Minera Ltda.	25	284	86	2007	Taltal	02202-4701-8
WE - 61 1, 1 al 25	Guanaco Cía. Minera Ltda.	25	288	87	2007	Taltal	02202-4702-3
WE - 62 1, 1 al 25	Guanaco Cía. Minera Ltda.	25	292	88	2007	Taltal	02202-4703-1
WE - 64 B, 1 al 25	Guanaco Cía. Minera Ltda.	25	720	197	2008	Taltal	02202-5256-6
Wolney	Guanaco Cía. Minera Ltda.	2	154	75	2003	Taltal	02205-0039-K
Yolita 1 al 7	Guanaco Cía. Minera Ltda.	35	171	77	2006	Taltal	02201-1327-2
Zelmira	Guanaco Cía. Minera Ltda.	2	152 vta.	72	2003	Taltal	02205-0030-6
Zunilda	Guanaco Cía. Minera Ltda.	2	174	80	2006	Taltal	02205-0029-2
Total	343	41,951					