

Technical Report for the Las Calandrias Project Santa Cruz, Argentina February 17, 2021



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# Glossary

### Units of Measure

Above mean sea level	amsl
Acre	ас
Ampere	А
Annum (year)	а
Billion	В
Billion tonnes	Bt
Billion years ago	Ga
British thermal unit	BTU
Centimetre	cm
Cubic centimetre	cm3
Cubic feet per minute	cfm
Cubic feet per second	ft3/s
Cubic foot	ft3
Cubic inch	in3
Cubic metre	m3
Cubic yard	yd3
Coefficients of Variation	CVs
Day	d
Days per week	d/wk
Days per year (annum)	d/a
Dead weight tonnes	DWT
Decibel adjusted	dBa
Decibel	dB
Degree	0
Degrees Celsius	°C
Diameter	ø
Dollar (American)	US\$
Dollar (Canadian)	C\$
Dry metric ton	dmt
Foot	ft
Gallon	gal
Gallons per minute (US)	gpm
Gigajoule	GJ
Gigapascal	GPa
Gigawatt	GW
Gram	g
Grams per litre	g/L
Grams per tonne	g/t





Greater than	>
Hectare (10,000 m2)	ha
Hertz	Hz
Horsepower	hp
Hour	h
Hours per day	h/d
Hours per week	h/wk
Hours per year	h/a
Inch	"
Kilo (thousand)	k
Kilogram	kg
Kilograms per cubic metre	kg/m3
Kilograms per hour	kg/h
Kilograms per square metre	kg/m2
Kilometre	km
Kilometres per hour	km/h
Kilopascal	kPa
Kilotonne	kt
Kilovolt	kV
Kilovolt-ampere	kVA
Kilovolts	kV
Kilowatt	kW
Kilowatt hour	kWh
Kilowatt hours per tonne (metric ton)	kWh/t
Kilowatt hours per year	kWh/a
Less than	<
Litre	L
Litres per minute	L/min
Megabytes per second	Mb/sec
Megapascal	MPa
Megavolt-ampere	MVA
Megawatt	MW
Metre	m
Metres above sea level	masl
Metres Baltic sea level	mbsl
Metres per minute	m/min
Metres per second	m/s
Metric ton (tonne)	t
Microns	μm
Milligram	mg
Milligrams per litre	mg/L
Millilitre	mL
Millimetre	mm





Million	Μ
Million bank cubic metres	Mbm3
Million tonnes	Mt
Minute (plane angle)	1
Minute (time)	min
Month	mo
Ounce	oz
Pascal	Ра
Centipoise	mPa∙s
Parts per million	ppm
Parts per billion	ppb
Percent	%
Pound(s)	lb
Pounds per square inch	psi
Revolutions per minute	rpm
Second (plane angle)	"
Second (time)	sec
Specific gravity	SG
Square centimetre	cm2
Square foot	ft2
Square inch	in2
Square kilometre	km2
Square metre	m2
Thousand tonnes	kt
Three Dimensional	3D
Tonne (1,000 kg)	t
Tonnes per day	t/d
Tonnes per hour	t/h
Tonnes per year	t/a
Tonnes seconds per hour metre cubed	ts/hm3
Total	т
Volt	V
Week	wk
Weight/weight	w/w
Wet metric ton	wmt





#### Abbreviations and Acronyms

Absolute Relative Difference	ABRD
Acid Base Accounting	ABA
Acid Rock Drainage	ARD
Alpine Tundra	AT
Atomic Absorption Spectrophotometer	AAS
Atomic Absorption	AA
British Columbia Environmental Assessment Act	BCEAA
British Columbia Environmental Assessment Office	BCEAO
British Columbia Environmental Assessment	BCEA
British Columbia	BC
Canadian Dam Association	CDA
Canadian Environmental Assessment Act	CEA Act
Canadian Environmental Assessment Agency	CEA Agency
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
Canadian National Railway	CNR
Carbon-in-leach	CIL
Caterpillar's <sup>®</sup> Fleet Production and Cost Analysis software	FPC
Closed-circuit Television	CCTV
Coefficient of Variation	CV
Copper equivalent	CuEq
Counter-current decantation	CCD
Cyanide Soluble	CN
Dassault Systemes GEOVIA	Geovia
Direct leach	DL
Digital Elevation Model	DEM
Direct leach	DL
Distributed Control System	DCS
Drilling and Blasting	D&B
Environmental Management System	EMS
Flocculant	floc
Free Carrier	FCA
Geovia International Inc.	Geovia
General and administration	G&A
Gold equivalent	AuEq
Heating, Ventilating, and Air Conditioning	HVAC
High Pressure Grinding Rolls	HPGR
Indicator Kriging	IK
Inductively Coupled Plasma Atomic Emission Spectroscopy	ICP-AES
Inductively Coupled Plasma	ICP
Inspectorate America Corp	Inspectorate
Interior Cedar – Hemlock	ICH





Internal rate of return	IRR
International Congress on Large Dams	ICOLD
Inverse Distance Cubed	ID3
Land and Resource Management Plan	LRMP
Lerchs-Grossman	LG
Life-of-mine	LOM
Load-haul-dump	LHD
Locked cycle tests	LCTs
Loss on Ignition	LOI
Metal Mining Effluent Regulations	MMER
Methyl Isobutyl Carbinol	MIBC
Metres East	mE
Metres North	mN
Mineral Deposits Research Unit	MDRU
Mineral Titles Online	MTO
National Instrument 43-101	NI 43-101
Nearest Neighbour	NN
Net Invoice Value	NIV
Net Present Value	NPV
Net Smelter Prices	NSP
Net Smelter Return	NSR
Neutralization Potential	NP
Northwest Transmission Line	NTL
Official Community Plans	OCPs
Operator Interface Station	OIS
Ordinary Kriging	ОК
Organic Carbon	org
Potassium Amyl Xanthate	PAX
Predictive Ecosystem Mapping	PEM
Preliminary Assessment	PA
Preliminary Economic Assessment	PEA
Qualified Persons	QPs
Quality assurance	QA
Quality control	QC
Rhenium	Re
Rock Mass Rating	RMR '76
Rock Quality Designation	RQD
SAG Mill/Ball Mill/Pebble Crushing	SABC
Semi-autogenous Grinding	SAG
Standards Council of Canada	SCC
Stanford University Geostatistical Software Library	GSLIB
Tailings storage facility	TSF
Terrestrial Ecosystem Mapping	TEM





Total dissolved solids	TDS
Total Suspended Solids	TSS
Tunnel boring machine	TBM
Underflow	U/F
Valued Ecosystem Components	VECs
Waste rock facility	WRF
Water balance model	WBM
Work Breakdown Structure	WBS
Workplace Hazardous Materials Information System	WHMIS
X-Ray Fluorescence Spectrometer	XRF

#### Forward Looking Statements

This Technical Report, including the economics analysis, contains forward-looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995 and forward-looking information within the meaning of applicable Canadian securities laws. While these forward-looking statements are based on expectations about future events as at the effective date of this Report, the statements are not a guarantee of Cerrado Gold Inc. future performance and are subject to risks, uncertainties, assumptions, and other factors, which could cause actual results to differ materially from future results expressed or implied by such forward-looking statements. Such risks, uncertainties, factors, and assumptions include, amongst others but not limited to metal prices, mineral resources, smelter terms, labour rates, consumable costs, and equipment pricing. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements.





## 1 SUMMARY

## 1.1 Introduction and Property Description

Cerrado Gold is a Canadian exploration and development company, based in Toronto, Canada. Cerrado Gold is recently listed on the TSX Venture Exchange under the symbol CERT.TSXV. Cerrado Gold's holdings include the Minera Don Nicolás gold-silver project in Santa Cruz Province, Argentina, which is adjacent to the Las Calandrias Project; and the Monte do Carmo gold project in Tocantins, Brazil.

In October 2020, Cerrado Gold entered into a binding Letter of Intent (LOI) to acquire Minera Mariana Argentina S.A. (Minera Mariana) from New Dimension Resources Ltd. (New Dimension) where Minera Mariana holds a 100% interest in the mining exploitation concession 'Mina Las Calandrias I' (Property). On 25 January 2021, Cerrado Gold acquired Minera Mariana and holds 100% of the mineral rights to the Property.

Please note that on 6 November 2020, New Dimension changed their company name to Capella Minerals Limited (Capella). For clarity, sources of information, historical work and previous ownership in this report are referred to as New Dimension.

This technical report and resource estimate covers the La Calandria Sur and La Calandria Norte deposits. These deposits are currently the most advanced prospects on the project. The Project is located in northeast Santa Cruz Province, situated approximately 250 km south of Comodoro Rivadavia, Chubut Province.

AGP was retained to update this NI 43-101 technical report to demonstrate the change in property ownership to Cerrado Gold. This report is prepared in accordance with disclosure and reporting requirements set forth in the NI 43-101 Reporting Standards. It is understood that there has been no further exploration or drilling activities on the Property since the previous technical report, 31 October 2018. Since the previous technical, there was metallurgical testwork completed by New Dimension in July 2019 and is described in Section 13 of this report.

The Qualified Person (QP) responsible for this report is Mr. Paul Daigle, P.Geo., Senior Associate Geologist with AGP.

Mr. Daigle conducted a site visit to the Property from July 13 to July 17, 2018. The Project site was inspected for two days during the site visit. The 2018 drill program had just been completed on the La Calandria Norte Deposit and there were no drilling activities being conducted at the time of the site visit.

## 1.2 Property Description and Location

The Property is defined by the mineral rights to a Mina (mining exploitation concession), 100% held by Minera Mariana, a wholly owned subsidiary of Cerrado Gold. The Mina covers a total area of approximately 2,300 ha. The Project is situated on the surface rights of the Estancia La





Calandria. The surface rights of the Estancia La Calandria covers an area of approximately 23,430 ha and was purchased by Minera Mariana on 12 October 2012. Cerrado Gold has full access to the mining exploitation concession and the project site.

On 25 January 2021, Cerrado Gold acquired the Argentine holdings of New Dimension (now Capella) that includes the Argentine entity, Minera Mariana.

### 1.3 History

There is no known exploration at La Calandria Sur and La Calandria Norte deposits prior to 2008 when the Property was acquired by Mariana. Mariana completed the majority of exploration activities on the Property that included regional geological mapping, rock and soil sampling, geophysical surveys, trenching, and diamond core drilling. Exploration has been conducted at La Calandria Sur, La Calandria Norte (also known as La Calandria Vein Zone), and the five El Nido exploration targets that make up the El Nido Complex: Nido Norte, Nido Este, Nido Centro, Nido Oeste, Nido Sur.

In 2008, high-grade gold mineralization was first discovered at the La Calandria Norte Deposit. Recognition of the mineralization at La Calandria Norte was followed by discovery of gold and silver mineralization at La Calandria Sur. Between 2009 and 2012, Mariana drilled 348 diamond core drill holes on the Property.

In 2018, New Dimension completed 22 drill holes, totalling 3,477 m, on the La Calandria Norte, Morena and Refugio targets. In July 2019, New Dimension completed metallurgical testwork on two composite samples from La Calandria Norte and Morena drill core, respectively.

### 1.4 Geology

The Las Calandrias property is located in the east-central part of the Deseado Massif. The Deseado Massif is a 60,000 km<sup>2</sup> rigid crustal block in southern Argentina bounded to the north by the Río Deseado, to the south by the Río Chico, to the east by the Atlantic coast, and to the west by the Andean Cordillera. The Deseado Massif is situated entirely in the Province of Santa Cruz.

The main focus on the Property has been on the La Calandria Sur and La Calandria Norte deposits. These deposits are Jurassic-age rhyolite domes in the southeastern part of the Property (also referred to as "Dos Calandrias"), and, to a lesser extent, at the El Nido dome complex situated in the centre and west of the Property. The La Calandria Sur and La Calandria Norte Deposits are low- to intermediate- sulphidation, epithermal, precious-metal quartz vein and vein-breccia deposits.

### 1.5 Exploration and Drilling

Cerrado Gold has not conducted its own exploration activities or drill programs since it acquired the Property. All drilling on the Las Calandrias projects and other targets were completed by Mariana and New Dimension between 2009 – 2012 and 2018, respectively.





### **1.6 Metallurgical Testwork**

Cerrado Gold has not conducted its own metallurgical testwork since it acquired the Property.

Metallurgical investigations commenced in July 2010, followed by a preliminary program of metallurgical testwork that started in September 2010 and concluded in January 2012. All testwork was completed at the time by Metcon Laboratories Pty. Ltd (Metcon), now ALS Global, in Sydney, Australia.

In 2011, Mariana completed preliminary testwork on material from the La Calandria Sur Deposit. The composite samples from La Calandria Sur represented the oxide, transition, and primary zones in the La Calandria Sur Deposit. Based on the results of the preliminary testwork the following alternative processing options exist. These will be investigated in more definitive future testwork.

- (i) Heap leaching; and (ii) CIL processing on the combined oxide and upper transition zones, with heap leaching currently favored because of its lower capital and operating costs.
- (i) Bulk sulphide flotation/concentrate oxidation/cyanidation; and (ii) Selective flotation of a saleable concentrate on the combined primary and lower transition zones, with the latter currently favored, again because of its lower capital and operating costs.

In 2011, a preliminary LeachWell<sup>®</sup> test suggests that all mineralization in the La Calandria Norte Vein, regardless of its degree of oxidation, may be amenable processing by CIL.

In 2019, New Dimension retained Blue Coast Research Ltd. (Blue Coast) to complete metallurgical testwork on two composite samples from La Calandria Norte and Morena drill core. This program evaluated heap leach amenability, and standard tank leach cyanidation under two sets of conditions. Final recoveries for La Calandria Norte and Morena tests were 93% and 94% respectively.

#### **1.7** Mineral Resources

#### La Calandria Sur Resource Statement

The Mineral Resources for the La Calandria Sur Deposit, within an optimized constraining shell, are: Indicated resources of 7.4 Mt at 1.33 gpt Au and 24.65 gpt Ag; and Inferred resources of 1.7 Mt at 0.73 gpt Au and 7.17 gpt Ag. It should be noted that the cut-off grade is variable and based on oxide zones. The effective date of the La Calandria Sur Deposit Mineral Resources is 14 September 2018. Table 1-1 presents the Indicated and Inferred Mineral Resources at the La Calandria Sur Deposit.





			Metal Grades		Contained Metal	
Classification	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Indicated	0.3 (oxide) 0.4 (transition) 0.8 (primary)	7,424	1.33	24.65	318,000	5,884,000
Inferred	0.3 (oxide) 0.4 (transition) 0.8 (primary)	1,739	0.73	7.17	41,000	401,000

Table 1-1: Mineral Resources for the La Calandria Sur Deposit within constraining shell (14 September2018)

Notes:

Summation errors may occur due to rounding.

Mineral Resources are reported within an optimized constraining shell.

Block matrix is 6m x 6m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was interpolated by ID2. Blocks not populated by ID2 were assigned the mean density 2.21.

Cut-off grade of varies by oxide zone (0.3 gpt Au oxide; 0.4 gpt Au transition; and 0.8 gpt Au primary zones) Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

#### La Calandria Norte Resource Statement

The Mineral Resources for the La Calandria Norte Deposit, within an optimized constraining shell, at a 0.8 gpt Au cut-off grade are: Indicated resources of 604,000 t at 3.12 gpt Au and 8.20 gpt Ag; and Inferred resources of 19,000 t at 1.31 gpt Au and 0.69 gpt Ag. The Mineral Resources for the La Calandria Norte Deposit, below the optimized constraining shell, at a 1.5 gpt Au cut-off grade are: Indicated resources 131,000 t at 2.82 gpt Au and 6.30 gpt Ag; and Inferred resources of 2,000 t at 1.71 gpt Au and 2.01 gpt Ag.

The effective date of the La Calandria Norte Deposit Mineral Resources is 14 September 2018. Table 1-2 and Table 1-3 present the Indicated and Inferred Mineral Resources at the La Calandria Norte Deposit.





			Metal G	irades	Containe	ed Metal
Classificati on	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Indicated	0.8	604	3.12	8.20	61,000	159,000
Inferred	0.8	19	1.31	0.69	1,000	400

# Table 1-2: Mineral Resources for the La Calandria Norte Deposit within the constraining shell, at a 0.8gpt Au (14 September 2018)

Notes:

Summation errors may occur due to rounding.

Mineral Resources are reported within an optimized constraining shell.

Block matrix is 5m x 3m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was assigned the mean density 2.41.

Cut-off grade of used for reporting Mineral Resources is 0.8 gpt Au.

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

# Table 1-3: Mineral Resources for the La Calandria Norte Deposit below the constraining shell at a 1.5 gptAu cut-off grade (14 September 2018)

	-	-	Metal Grades			ed Metal
Classification	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Indicated	1.5	131	2.82	6.30	12,000	27,000
Inferred	1.5	2	1.71	2.01	100	100

Notes:

Summation errors may occur due to rounding.

Mineral Resources are reported below the optimized constraining shell.

Block matrix is 5m x 3m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was assigned the mean density 2.41.

Cut-off grade of used for reporting Mineral Resources is 1.5 gpt Au.

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

#### 1.8 Conclusions

The Project is made up of several low to intermediate sulphidation epithermal deposits. Mineralization generally occurs within hydrothermal breccias and breccia zones within the rhyolite domes. The Project area has been the subject of several exploration and drill programs since 2009. The focus of this report is on the La Calandria Sur and La Calandria Norte deposits.

The La Calandria Sur is situated in the southeastern corner of the mining exploitation concession (Mina Las Calandrias I). Gold and silver mineralization occur in veinlets and stringers within the La Calandria Sur rhyolite dome. This dome consists of several oxide zones: oxide, transition, and





primary zones. The mineralization is open to the northeast and east, and possibly south, across the southern limit of the mining exploitation concession boundary.

The La Calandria Norte Deposit is made up of several breccia zones where the majority of the mineralization is situated within a breccia zone. The Morena Vein is situated within the La Calandria Norte rhyolite dome situated approximately 300 m northwest of the La Calandria Norte Deposit. Currently, there are currently no mineral resources on the Morena Vein due to limited drill information.

AGP concludes further exploration and development is warranted and recommended.

#### **1.9** Recommendations

AGP recommends the following:

- approximately 2,000 m of drilling on the La Calandria Sur Deposit targeting higher grade gold mineralization in the northeast and eastern edges of the deposit
- approximately 2,000 m of drilling on the La Calandria Norte Deposit targeting higher grade gold mineralization, near surface and at depth, in the northeastern end of the deposit. Any new drill program should include bulk density measurements
- approximately five trenches and trench sampling to determine the extent of the surface exposure of the breccia zone at La Calandria Norte
- continued drill testing of the Morena Vein and other exploration targets on the Property
- further metallurgical testwork on representative composites should be conducted if additional resources continue to be defined; work should include variability testing across a wide range of potential grades, depths, and locations within the deposit. Additional comminution testwork on samples from all areas of the deposit should also be carried out

The estimated budget for these proposed exploration programs would be approximately \$CDN 1.7 million.





## 2 INTRODUCTION

Cerrado Gold is a Canadian exploration and development company, based in Toronto, Canada. Cerrado Gold is recently listed on the TSX Venture Exchange under the symbol CERT.TSXV Cerrado Gold's holdings include the Minera Don Nicolás gold-silver project in Santa Cruz Province, Argentina, situated 55 km to the south Las Calandrias Project; and the Monte do Carmo gold project in Tocantins, Brazil. Cerrado Gold also holds the mineral rights to the Escondido Project, adjacent to the south of Las Calandrias Project.

In November 2020, Cerrado Gold entered into a binding Letter of Intent (LOI) to acquire Minera Mariana Argentina S.A. (Minera Mariana) from New Dimension Resources Ltd. (New Dimension) where Minera Mariana holds a 100% interest in the mining exploitation concession 'Mina Las Calandrias I' (Property). On 25 January 2021. Cerrado Gold acquired Minera Mariana and its mineral rights.

Please note that on 6 November 2020, New Dimension changed their company name to Capella Minerals Limited (Capella). For clarity, sources of information, historical work and previous ownership in this report are referred to New Dimension.

This technical report and resource estimate covers the La Calandria Norte and La Calandria Sur deposits. These deposits are currently the most advanced prospects on the project. The Project is located in northeast Santa Cruz Province and is situated approximately 250 km south of Comodoro Rivadavia.

Cerrado Gold, through Minera Mariana, also holds the mineral rights to several other properties and projects, including Los Cisnes and Sierra Blanca gold-silver Projects. Additionally, Cerrado Gold holds the mineral rights to the Escondido Project contiguous to the south of the Property and is likely an extension southeast of the La Calandria Sur Deposit.

### 2.1 Terms of Reference

AGP was retained to update this NI 43-101 technical report to demonstrate the change in property ownership to Cerrado Gold. This report is prepared in accordance with disclosure and reporting requirements set forth in the NI 43-101 Reporting Standards. It is understood that there has been no further exploration activities on the Property since the previous technical report, 31 October 2018. However, it is noted that a metallurgical test was completed by New Dimension in July 2019 and is described in Section 13 of this report.

## 2.2 Qualified Person

The QP responsible for this report is Mr. Paul Daigle, P.Geo., Senior Associate Geologist with AGP.





All units of measurement used in this technical report and resource estimate are in metric, unless otherwise stated. All grid references are based on the UTM WGS84 Datum (WGS84) coordinate system. All currency units are in Canadian dollars unless otherwise stated.

### 2.3 Site Visit

Mr. Daigle conducted a site visit to the Property from July 13 to July 17, 2018. The Project site was inspected for two days during the site visit. The 2018 drill program had just been completed on the La Calandria Norte Deposit and there were no further drilling activities being conducted at the time of the site visit.

Drill core logging, sampling, and storage facilities were inspected during the site visit. The site visit also included verifying drill hole collar locations and a review of drill logs against selected drill core. Mr. Daigle was accompanied on the site visit by Sr. Gabriel Gomez, Managing Director for Minera Mariana.

### 2.4 Effective Dates

The effective date of this resource estimate is 14 September 2018.

### 2.5 Information Sources and References

The main sources of information in preparing this report are based on information located within internal reports obtained from New Dimension and Minera Mariana. Information, conclusions, and recommendations contained herein are based on a field examination, including a study of relevant and available technical data, including, and not limited to the numerous reports listed in the Reference section. This report is prepared with the most recent information available at the time of study.





## **3 RELIANCE ON OTHER EXPERTS**

AGP has followed standard professional procedures in preparing the content of this report. Data used in this report has been verified where possible, and this report is based upon information believed to be accurate at the time of completion. AGP has no reason to believe the data was not collected in a professional manner.

The author has also relied on several sources of information on the property, including digital geological and assay data. Therefore, in authoring this report, the QP relied on the accuracy as presented in various sources listed in the references section of this report.

AGP has not verified the legal status or legal title to any claims and the legality of any underlying agreements that may exist concerning the Property. Cerrado Gold has supplied a map of the Mining Register (*Catastro Minero*) from the Ministry of Production, Commerce, and Industry (*Ministerio de la Producción, Comercio e Industria*) from the Province of Santa Cruz, in DXF format, showing the mineral rights for the Province of Santa Cruz as of 29 January 2020

The author has reviewed a copy of the granting of the mining exploitation concession (Mina Las Calandrias I; File No. 420.323/MMA/12); and has viewed the online official directory (*Boletín Oficial*) from the government of the Province of Santa Cruz that refers to the granting of the mining exploitation concession (posted on 17 June 2017). The Boletín Oficial was most recently viewed on the 26 October 2020:

http://gobierno.santacruz.gov.ar/boletin/17/junio17/B.O.%205147%2006-06-17.pdf

The author has reviewed the information of the Mina 'Las Calandrias I' through the online GIS website, SIGAM (*Sistema de Información Geológica Ambiental Minera*), managed by the Argentine Geological Mining Service, SegemAR (*Servicio Geológico Minero Argentino*) and was most recently viewed on 28 October 2020:

https://sigam.segemar.gov.ar/visor/





## 4 **PROPERTY DESCRIPTION AND LOCATION**

## 4.1 **Property Location**

The Property is defined by the mineral rights to a mining exploitation concession (Mina), 100% held by Minera Mariana, a wholly owned subsidiary of Cerrado Gold. The Mina covers a total area of approximately 2,300 ha.

The Property is located:

- on 1:250,000 Mapsheet 4766-3
- at approximately 47°37' South and 67°30' west
- at approximately 613700 E; 4,725300 S, Zone 19G (WGS 84 datum) Universal Transverse Mercator (UTM) coordinates
- at approximately 1,650 km south southwest of Buenos Aires, the nation's capital
- at approximately 235 km south (by road) of Comodoro Rivadavia
- at approximately 185 km west (by road) of Puerto Deseado
- at approximately 55 km north (by road) of the Don Nicolas Mine
- in the Province of Santa Cruz
- in the Department of Deseado
- on the Estancia (Ranch) La Calandria
- approximately 30 km west of Deseado River (seasonal)

Figure 4-1 shows the Property location in Argentina.







Figure 4-1: Property Location Map

Source: Cerrado Gold (2020)

### 4.2 Property Description

The Property is comprised of a single Mina, Mina Las Calandrias I, and includes 23 Pertenencias (concessions). The Mina covers an area of approximately 2,300 ha and is 100% held by Minera Mariana (Table 4-1). The Mina was granted on 3 May 2017 (published in the Boletín Oficial on 17 June 2017) by the Province of Santa Cruz and has no effective expiry date and is valid until any mining operation is complete.

The Mina covers the two principal deposits that make up the Project. The La Calandria Sur Deposit is situated almost completely in Pertenencia 4 and abuts the southern boundary of the Mina. The La Calandria Norte Deposit is situated within Pertenencia 3. Other exploration targets are also situated within the Mina include: the Morena Vein, and the El Nido Complex, which includes El Nido Sur, El Nido Norte, El Nido Este, El Nido Oeste, and El Nido Centro targets. These targets are not subject to this report.





Name	Mina Date Granted		Expiry Date	Area (ha)
Las Calandrias I	420.323/MMA/12	3 May 2017	n/a	2,300

#### Table 4-1: Summary Information of the Mineral Rights for the Las Calandrias Project

n/a – not applicable

In order to continue exploration or mining activities, an Environmental Impact Assessment Report (EIA) must be submitted every two years or prior to the beginning of exploration activities on the Property. As of the date of this report, any future exploration or mining activities will require the submission of a new EIA, as the latest EIA was submitted in 2017.

Figure 4-2 shows the 23 Pertenencias that comprise the Mina Las Calandrias I.





	LA: Soli	S CA	E: MINERA M	ARIANA A	ARGENTI	NA S.A.			
	Min	eral: (	Gold, Silver Di	sseminate	ed				
31		26		21	16		11	6	1
	Pert. 21		Pert. 17	Pert.	13	Pert	. 9	Pert. 5	Pert. 1
32_		27	2	2	17		12	7	2
			MINA L	AS CAL	ANDRIA	ASI			
	Pert. 22		Pert. 18	Pert.	14	Pert.	10	Pert. 6	Pert. 2
33		28	2	3	18		13	8	3
									-
	Pert. 23		Pert. 19	Pert.	15	Pert.	. 11	Pert. 7	Pert. 3 Calandria Norte
34	35	29	36 24	4	37 19		38 14	39	9 4
	Pert. 20		Pe	ert. 16	Pe	ert. 12		Pert. 8 Calandr	Pert. 4
	30		25	20			15	10	5
							P.L.L.: x=	2614067, y= 47245	574 /
			Claim coor	dinates	for corr	ner po	ints		
		ID	East	N	orth	ID		East No	orth
		1	2614647.000	4728	8220.000	21	261064	7.000 4728	220.000
		2	2614647.000	472	7220.000	22	261064	7.000 4727	220.000
		3	2614647.000	4726	5220.000	23	261064	7.000 4726	220.000
		4	2614647.000	472	1240.000	24	261064	1 000 4725	220.000
		5	2614647.000	4724	8220.000	25	261008	7 000 4724	220.000
		7	2613647.000	472	7220.000	27	260964	7.000 4720	220.000
		8	2613647.000	4720	5220.000	28	260964	7.000 4726	220.000
		9	2613647.000	4725	5220.000	29	260964	7.000 4725	220.000
		10	2613506.070	4724	4340.000	30	260893	6.000 4724	340.000
		11	2612647.000	4728	8220.000	31	260864	7.000 4728	220.000
		12	2612647.000	472	7220.000	32	260864	7.000 4727	220.000
		13	2612647.000	4726	5220.000	33	260864	7.000 4726	220.000
		14	2612647.000	4725	5220.000	34	260864	7.000 4725	220.000
		15	2612364.000	4724	4340.000	35	260893	6.000 4725	220.000
		16	2611647.000	4728	8220.000	36	261007	8.000 4725	220.000
		17	2611647.000	472	/220.000	37	261122	2.000 4725	220.000
		18	2611647.000	4/20	5220.000	38	261236	4.000 4725	220.000
		20	2611222 380	472	4340.000	39	201550	4/25	220.000
	20 2611222.380 4724340.000								

#### Figure 4-2: Mineral Rights Map of the Mina Las Calandrias I

Source: New Dimension (2018)

P.L.L. – Punto de Labor Legal (Point of Legal Labour)





#### 4.2.1 Mineral Rights in Argentina

Taken from Guzmán et.al. (2012) and Ristorcelli et.al. (2018)

Mineral rights in Argentina are acquired through application to the government for concessions to either explore for, or mine, minerals located within a specified parcel of land (and not through ground staking). Generally, all persons or entities qualified to acquire and possess real estate can obtain mineral rights. There are three main types of mineral rights and titles, these being described in detail below:

#### <u>Cateo</u>

Before work may commence in an area, an exclusive exploration permit known as a 'Cateo' must be obtained. Once an application is granted, the applicant has the exclusive right to explore all minerals as applied. A Cateo is measured in 500 ha units and can range in size from a minimum of 1 unit (500 ha) to a maximum of 20 units (10,000 ha). The approval of a Cateo specifies the area and the term of the Cateo. A one-time fee of \$0.80/ha is due on application for the Cateo. The rights of the Cateo holder are subject to surface rights. During the term of a Cateo, which begins 30 days after approval, periodic relinquishment of ground is made such that after 300 days from the date of approval, 50% of the area in excess of 4 units must be relinquished and after 700 days, 50% of the remaining area must be relinquished. A Cateo of 1 unit has a duration of 150 days and for each additional unit, its duration is increased by an additional 50 days.

#### Manifestación de Descubrimiento

Upon discovery of a mineral occurrence within a Cateo, the owner can apply for a Manifestación de Descubrimiento (MD) to protect the discovery. The application for an MD can be made at any time during the term of the Cateo but must be made before the expiry of the Cateo. The maximum area of one MD is 3,000 ha. Upon verification and approval of the mineral discovery by the authorities, the MD will protect the mineral discovery until such time as the official survey, "mensura" (or measurement), process begins leading to the eventual granting of a Mina (mining exploitation concession).

#### <u>Mina</u>

After the size and configuration of an MD are determined, a part, or all of it is officially surveyed and the area applied for is a 'Mina', a mining exploitation concession. This is usually done after the results of exploration indicate the potential mineralized zone. The Mina still requires that an EIA be submitted every two years, or prior to any exploration activities. The Mina is in effect until the completion of any mining activities.

### 4.3 Ownership

In October 2020, Cerrado Gold announced it had entered into a Binding Letter of Intent with New Dimension (now Capella) to acquire 100% of its Argentine subsidiary, Minera Mariana.





On 25 January 2021, Cerrado Gold officially acquired 100% of Minera Mariana, through several other subsidiaries (Figure 4-3) and now holds the mineral rights to the Property.





Source: Cerrado Gold (2021)

Under the terms of the acquisition, Cerrado Gold will pay the purchase price of \$ 2.25 million, payable by the issuance of 1,125,000 shares of Cerrado Gold (assuming a share price of \$2,00 per share) (Cerrado Gold press release, 25 January 2021).

### 4.4 Surface Rights

The Project is situated within the surface rights of the Estancia La Calandria. The surface rights of the Estancia La Calandria covers an area of approximately 23,430 ha and was purchased by Minera Mariana on 12 October 2012. Cerrado Gold has full access to the Mina and the project site.

Figure 4- shows the surface rights over the La Calandria Sur and La Calandria Norte deposits, and exploration targets, within the Mina Las Calandrias I.









#### 4.4.1 Provincial Restrictions on Mining and Processing in Santa Cruz Province

In November 2009, the Provincial Legislature of Santa Cruz passed new legislation providing for the creation of an Area of Special Interest for Mining. The new Area of Special Interest for Mining defines a perimeter within the Santa Cruz province where mining may occur and establishes a minimum distance from shores, rivers, and towns for mining developments.

According to the Provincial Restrictions, mining activities are allowed beyond a distance of 4 km from the shores of lakes and the axis of major rivers and beyond a distance of 10 km from the city limits of towns. Mining plants and processing of ores should be situated at least 20 km from these major water features.

The Mina Las Calandrias I is within the new Area of Special Interest for Mining.

### 4.5 Environmental Liabilities

Every two years Minera Mariana is required to submit an EIA prior to continuation of any exploration and/or mining activities. All environmental permits have a validity of two years and,



Source: New Dimension (2018)



in order to allow work to continue, must be renewed prior to their respective expiry dates. As of the date of this report, Minera Mariana will require the submission of a new EIA for any future exploration activities.

AGP is unaware of any environmental liabilities or other factors and risks that may affect access, title, or ability that would prevent Cerrado Gold from conducting exploration activities on the Property.





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

## 5.1 Accessibility

The Project is located approximately 250 km, by road, south of Comodoro Rivadavia, Chubut Province. From Comodoro Rivadavia, the Property is easily accessible by driving south on a paved highway, Ruta Nacional 3 (RN 3). The turn-off to the Estancia La Calandria is at approximately highway kilometre marker 'km 2,050' on the west side of the RN 3. The drive is typically 3 to 3.5 hours from Comodoro Rivadavia. The main house on the Estancia is approximately 4 km from the highway turn-off on a well-maintained dirt road. Access to the project site is approximately 11 km, and within the Property, along the same dirt roads.

There are regular scheduled flights from Buenos Aires and other main centres in Argentina to Comodoro Rivadavia. Flights from Buenos Aires to Comodoro Rivadavia are typically 2.5 hours.

### 5.2 Climate

The Property is characterized by a cold arid to semi-arid steppe climate (Bsk; Köppen climate classification) where summers are hot and dry, and winters are moderately cool with some wetter weather.

Temperatures in January (summer) average 17 °C, and in July (winter) average 4 °C, respectively Annual average precipitation is roughly 160 mm with occasional light snow and frost in winter; and very little precipitation during the summer months. Winds in this area are persistent and monthly average wind speeds vary between 20 kilometers per hour (km/h) and 31 km/h (yr. no and weatherbase.com websites: Pico Truncado; most recently viewed 21 September 2018).

Exploration activities may take place all year-round.

### 5.3 Local Resources and Infrastructure

The Project area is sparsely populated. Isolated sheep-grazing farms/ranches (estancias) have been largely abandoned since August 1991, when deposits of ash from the eruption of Vulcan Hudson, in Chile, severely disrupted the industry (Inbar et. al., 1995; Ristorcelli et.al., 2018).

The closest towns of any size to the Property are: Caleta Olivia population 56,612 (2010), roughly 150 km (by road) from the Project; Puerto Deseado population 14,183 (2010), roughly 185 km east of the Project; and Puerto San Julián population 7,894 (2010), a port town roughly 210 km from the Project (Government of the Province of Santa Cruz website; most recently viewed 21 September 2018).





The Property is located approximately 55 km, by road, from the Don Nicolás Mine, operated by Minera Don Nicolás SA and is 100% owned by Cerrado Gold; and approximately 85 km by road from the Cerro Moro Mine, operated by Yamana Gold Inc. (Yamana).

The area and towns around Caleta Olivia are active in oil and gas fields found in and on the margins of the Deseado Massif region. There is access to support services including transport, trucking, and oil-field drill rigs. Heavy equipment contractors are available in Puerto San Julián, Caleta Olivia, and Puerto Deseado. Drill rigs for the Project are sourced from Puerto San Julián. Food supplies have been sourced from the nearby village of Fitz Roy. Unskilled labour may be sourced from the nearby towns and villages.

The nearest electrical power line to the project runs roughly north-south, about 10 km to the west of the Las Calandrias resource. The nearest electrical substation is in Pico Truncado, roughly 141 km by road north of the Property and is serviced by a 500 kV Extra High-Tension line. (CFEE website most recently viewed 25 September 2018).

The San Martín Gas Pipeline is a transnational natural gas pipeline that runs north-south, situated 10 km east of the project site (roughly parallel to RN 3). The San Martín Gas Pipeline is a 4,679 km long, 30-inch diameter pipeline that begins in Tierra del Fuego at the southern tip of Argentina, crosses the Strait of Magellan, and ends near the city of La Plata near Buenos Aires. (TGS website; most recently viewed 25 September 2018).

Water is available on the Property for drill programs. Water is sourced from several small seeps and shallow lakes that intermittently contain water from seasonal runoff. Many of the basins on the Property are dry lakes with internal drainage. A hydrogeological study for Minera Mariana (Ristorcelli et.al. (2018); Giaccardi and Aquilera, 2010) measured the water level at depths of 51.0 to 64.9 m in three of 16 drill holes in La Calandria Sur. The 13 holes not measured were caved above the water depth. Results of water analyses from the three drill holes exceeded levels of fluorine allowed for drinking water, and one of the holes had high chlorine values. The preliminary hydrogeological study by Giaccardi and Aquilera was unable to develop a hydrogeological model due to the limited data available.

The Property has sufficient land for mineral exploration and development purposes.

## 5.4 Physiography

The Project is situated near the Atlantic coast in the gentle rolling plains (steppes) of central Patagonia in southern Argentina. The area is characterized by low relief and hills between 130 and 200 masl. There are numerous small dry lake basins that hold water from rainfall runoff.

Vegetation is sparse due to poor soil development and consists of small scrub and colonies of desert grass (e.g. coirón). Taller vegetation are thorny scrub and brush (e.g. uña de gato) and are mainly found in low lying areas. There are no trees on the project site (Tierras Patagónicas website and Patagonia Natural website; most recently viewed on 21 September 2018).

Some wild fox, rhea (locally named choique), and guanaco are observed in the area.





## 6 HISTORY

There has been no known exploration at La Calandria Sur and La Calandria Norte areas prior to Mariana Resources Ltd. (Mariana) in 2008.

### 6.1 Mariana, 2008 – 2017

Mariana acquired the Property in 2008. Mariana's exploration activities included regional geological mapping, rock and soil sampling, geophysical surveys, trenching, and diamond core drilling. Exploration has been conducted at La Calandria Sur, La Calandria Norte (a.k.a. La Calandria Vein Zone), and the five El Nido exploration targets that make up the El Nido Complex: Nido Norte, Nido Este, Nido Centro, Nido Oeste, and Nido Sur.

In 2008, Mariana Resources Ltd. (Mariana), through its subsidiary Minera Mariana, first discovered quartz-sulphide vein/breccias over two broad zones, about 600 m apart. Based on this discovery, Mariana applied for a Cateo, Cateo 'Pampa del Tongoril II' over what is now the Mina Las Calandrias I.,

High-grade gold mineralization was first discovered at the La Calandria Norte Deposit, previously known as Calandria Norte Vein and La Calandria Vein Zone. Recognition of the mineralization at La Calandria Norte was followed by discovery of gold and silver mineralization at La Calandria Sur (Rodriguez et al., 2010; Ristorcelli et.al., 2018).

Mariana conducted several exploration programs which are summarized in Table 6-1 below.





Activity	Year	Activity	Target	Comments
Soil (Lag) Sampling	2008- 2012	290 samples	Calandria Sur, Calandria Norte, El Abra and Desead and Cristal	
Rock chip sampling	2008- 2009	449 samples	Calandria Sur, El Abra and Desead and Cristal	
	2010- 2011	942 samples	Calandria Sur and Calandria Norte	
Trenching	2008- 2009	24 shallow trenches	Calandria Sur and Calandria Norte	channel sampled
	2010- 2011	27 shallow trenches	Calandria Sur and Calandria Norte	channel sampled
Geological Mapping	2008- 2012		Las Calandrias Project	
Geophysical Survey	2010	IP and Resistivity	Calandria Sur, Calandria Norte, El Nido Norte, El Nido Este	1.4 km x 1.8 km area
Geophysical Survey	2010	pole-dipole- array IP	Calandria Sur, Calandria Norte	5 lines x 1,000 m length
	2010	3D IP survey	El Nido Norte	2.0 km x 2.8 km area
	2010	3D IP survey	El Nido Sur	1.8 km x 2.8 km area
	2010	Magnetic survey	Calandria Sur, Calandria Norte	4.0 km x 4.5 km area North-south lines, 50 m apart, 5 readings/second
	2017	CSMAT	Calandria Sur, Calandria Norte	36.75-line km
Drilling	2009- 2012	326 diamond core holes	Calandria Sur, Calandria Norte, El Nido Complex	
	2011- 2012	1,447 samples	Calandria Sur, Calandria Norte, El Nido Complex	Previously unsampled intervals

#### Table 6-1: Summary of Exploration Activities on the Property, Mariana 2008 - 2012

Notes:

IP = Induced Polarity

CSMAT = Controlled Source Audio Magnetotelluric

Source: Ristorcelli et.al. (2012); Ristorcelli et.al. (2018)

Ashfall from the 1991 volcanic eruption of Vulcan Hudson covered areas of surface mineralization and made soil geochemical prospecting difficult. Mariana used lag sampling, where coarse particles in the range of 2.0 to 6.0 mm are screened on site, from the unconsolidated surface material (Ristorcelli et.al., 2012; Ristorcelli et.al., 2018).




# 6.2 Sandstorm, 2017 – 2018

In July 2017, Mariana was acquired by Sandstorm Gold Ltd., also known as Sandstorm Gold Royalties Ltd. (Sandstorm). Sandstorm did not conduct any exploration or drilling activities on the Property during their period of ownership.

## 6.3 New Dimension, 2018 – 2020

In February 2018, New Dimension entered into an agreement with Sandstorm to acquire the Argentine holdings that include Las Calandrias, Los Cisnes, and Sierra Blanca Properties. In May 2018, New Dimension completed the acquisition that included acquiring a 100% interest in Minera Mariana.

In 2018, New Dimension completed a drill campaign on the La Calandria Norte, Morena and Refugio that included 22 drill holes for a total of 3,475 m. Table 6-2 shows a summary of the drilling completed by New Dimension.

Target	Year	No. Drill Holes	Total Metres (m)
La Calandria Norte	2018	12	2,255
Morena	2018	7	1,015
Refugio	2018	3	205
Total		21	3,475

### Table 6-2: Summary of Drill Holes by New Dimension in 2018

## 6.4 **Previous Mineral Resources**

In 2011, Mariana contracted Mine Development Associates, Inc. (MDA) to complete a resource estimate and technical report on the Project. The technical report was re-issued in March 2018, Ristorcelli et.al. (2018), however, there was no change in the reported mineral resources. The mineral resources had an effective date of 6 March 2011.

The resource estimate was made using a single block model to cover both the La Calandria Sur and La Calandria Norte deposits, with a block matrix of 6m x 6m x 6m. Interpolation of gold and silver grades was by the Inverse Distance cubed (ID<sup>3</sup>) method. No constraining shell was applied to the Mineral Resources. The Mineral Resources were reported using a gold equivalent (AuEQ) cut-off grade and no recoveries were applied, where:

• AuEQ = Au grade + (Ag grade/60)

The mineral resources for both La Calandria Sur and La Calandria Norte deposits were reported at different cut-off grades based on oxide zones. Table 6- and Table 6- summarize the Mineral Resources from 2011.

AGP cautions the reader that the previous mineral resources presented in this section are for historical context only and should not be relied upon. All mineral resource estimates for the Property are superseded by the mineral resource estimates described in Section 14 of this report.





			Metal Grades			Contained Metal		
Classification	Cut-off Grade (gpt AuEQ)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	AuEQ (gpt)	Au (,000 oz.)	Ag (,000 oz.)	
Indicated	0.3 (oxide) 0.3 (transition) 0.7 (primary)	10,955	0.91	18.36	1.21	319,000	6,465,000	
Inferred	0.3 (oxide) 0.3 (transition) 0.7 (primary)	504	0.79	6.51	0.90	12,900	105,000	

#### Table 6-3: 2011 Mineral Resources at the La Calandria Sur Deposit

Notes:

Summation errors may occur due to rounding.

Mineral Resources not reported within a constraining shell.

Block matrix is 6m x 6m x 6m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was assigned by oxide zone: 2.20 oxide, 2.22 transition and 2.25 primary.

Cut-off grades of used for reporting Mineral Resources varies by oxide zone: 0.3 gpt AuEQ for oxide, 0.3 gpt AuEQ for transition; and 0.7 gpt AuEQ for primary.

#### Table 6-4: 2011 Mineral Resources at La Calandria Norte Deposit

			Metal Grades			Contained Metal	
Classification	Cut-off Grade (gpt AuEQ)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	AuEQ (gpt)	Au (,000 oz.)	Ag (,000 oz.)
Indicated	0.3 (oxide) 0.3 (transition) 0.7 (primary)	886	2.16	5.60	2.26	61,000	159,000
Inferred	0.3 (oxide) 0.3 (transition) 0.7 (primary)	366	1.11	3.32	1.17	13,100	39,000

Notes:

Summation errors may occur due to rounding.

Mineral Resources are unconstrained and not reported within a constraining shell.

Block matrix is 6m x 6m x 6m (length x width x height)

Grades are estimated by ID3 interpolation.

Density was assigned by oxide zone: 2.20 oxide, 2.22 transition and 2.25 primary.

Cut-off grades of used for reporting Mineral Resources varies by oxide zone: 0.3 gpt AuEQ for oxide, 0.3 gpt AuEQ for transition; and 0.7 gpt AuEQ for primary.





# 7 GEOLOGICAL SETTING AND MINERALIZATION

The following description of regional and local geology is taken from Ristorcelli et.al. (2018), Fernandez (2010) and Rodriguez (2009).

# 7.1 Regional Geology

The property is located in the east-central part of the Deseado Massif. The Deseado Massif is a 60,000 km<sup>2</sup> rigid crustal block in southern Argentina bounded to the north by the Río Deseado, to the south by the Río Chico, to the east by the Atlantic coast, and to the west by the Andean Cordillera. The Deseado Massif is situated entirely in the Province of Santa Cruz.

The basement of the Deseado Massif consists of Cambrian metasedimentary rocks (La Modesta Formation) that were intruded by granites and tonalites. Fluvial Permo-Triassic sequences of the La Juanita and La Golondrina formations unconformably overlie the basement rocks; they were deposited in north- to northwest-trending rift basins that formed along older reactivated basement structures. The fluvial units are overlain by continental Triassic sedimentary rocks (arkosic sandstones, shales, conglomerates, and redbeds) of the El Tranquilo Formation (Fernandez, 2010). Deposition of the lower- to middle-Jurassic tuff of the Roca Blanca Formation in angular unconformity on the Triassic sedimentary rocks signaled initiation of extensive Jurassic volcanism on the Deseado Massif. Andesitic and basaltic volcanic and intrusive rocks of the Bajo Pobre Formation were followed by the rhyolitic Bahia Laura Group, including at least 2 km-thick rhyolitic and dacitic ignimbrites of the Chon Aike Formation and tuff, tuffites, and pelites of the La Matilde Formation. Pankhurst et al. (2000) studied the ages of Jurassic volcanism in Patagonia using high-resolution SHRIMP U/Pb ages on zircons and concluded that Jurassic volcanism occurred over more than 30 million years (Ma), with periods of peak activity at 188 Ma to 178 Ma, 172 Ma to 162 Ma, and 157 Ma to 153 Ma.

Cretaceous lake beds cover portions of the Jurassic volcanic plateau. Tertiary and Quaternary alkali basalts were erupted through the older units and form volcanic cones and flood basalts.

One of the most striking features of the Patagonian stratigraphy is that the Permo-Triassic through Cenozoic volcanic-sedimentary sequences are roughly horizontal. Jurassic horsts and grabens trending northwest cut the Paleozoic basement. Northwest- and north-trending regional extensional structures appear to have controlled the locus of Jurassic magmatism and may also have controlled intrusion of Tertiary and Quaternary alkali basalts (Sanders, 2000).

The Deseado Massif hosts numerous low-sulphidation, epithermal, precious-metal, quartz vein deposits, the formation of which appear to have closely followed episodes of the Jurassic felsic volcanism.

Figure 7-1 presents a simplified regional geology map of the Deseado Massif.









Source: New Dimension (2018)

# 7.2 Local Geology

According to Hodder and White (2010), the portion of the Property in the vicinity of the current exploration targets is a window through ash-flow tuff units of the Chon Aike Formation exposing felsic domes, coarse volcaniclastic rocks interbedded with gray-green tuff, lacustrine sedimentary rocks, and mafic dikes. The ash-flow tuffs appear to dip outward from the window, suggesting the window may be exposing a paleo-topographic high. Three irregularly-shaped domes – La Calandria Sur, La Calandria Norte, and El Nido Este – occupy the central area of the window and appear to intrude in the lacustrine sedimentary rocks and the tuff. A fourth dome, or cluster of coalescing domes, called El Nido occupies the northwest portion of the window.

The La Calandria Sur and La Calandria Norte deposits are hosted in two rhyolite domes that cut shallowly dipping, quartz-poor, welded ignimbrites, probably part of the Chon Aike Formation (Sillitoe, 2009a). This suggests that while the domes may be exposed in a window through the Chon Aike Formation, at least some of the intrusive activity was contemporaneous with Chon Aike deposition. The two domes are separated laterally by only 400 to 600 m of the host ignimbrite.





Both are completely devitrified and are characterized, especially in their marginal parts, by welldeveloped spherulitic texture. The La Calandria Norte dome, cut by the La Calandria Norte vein, is distinguished by delicate, highly contorted flow foliation. The La Calandria Sur dome, containing the hydrothermal breccia-hosted mineralization at La Calandria Sur, is largely composed of clastsupported breccia (autobreccia) at the surface. Overburden cover consists of volcanic ash and alluvium.

Figure 7-2 shows the geology of the Property and the overburden cover is shown in white.



Figure 7-2: Property Geology Map

Source: New Dimension (2018)

# 7.3 Project Geology

The following information is from reports by Ristorcelli et.al. (2018), Rodriguez (2009), Sillitoe (2009a, 2009b).

The main focus on the Property has been at the La Calandria Sur and La Calandria Norte deposits. These deposits occur within Jurassic-age rhyolite domes in the southeastern part of the Property (also referred to as "Dos Calandrias"), and to a lesser extent, at the El Nido dome complex situated





in the centre and west of the Property. The El Nido Complex includes the El Nido Sur, El Nido Norte, El Nido Este, and El Nido Centro prospects.

The La Calandria Sur and La Calandria Norte mineralized zones are part of a rhyolite dome complex, within an approximate 3 x 3 km area that intrudes ignimbrite of the Jurassic Chon Aike Formation. The La Calandria Sur and La Calandria Norte domes are centered on an area 1.5 x 1.3 km (see Figure 7-2). An early polymictic breccia, interpreted to be a phreatic or phreatomagmatic vent fill (Sillitoe, 2009b), crops out on the lower ground around the dome margins. The rhyolite domes were emplaced into the breccia fill and exhibit flow banding and total devitrification.

### 7.3.1 La Calandria Sur

The following information is taken from Ristorcelli et.al. (2018), Sillitoe (2009a) and Hodder and White (2010).

Figure 7-3 shows the geology of La Calandria Sur. La Calandria Sur appears to consist of coalescing felsic domes (Hodder and White, 2010). These domes reached the surface and became short lobe flows, leaving septa of ash flow tuff between domes and beneath lobes.



Figure 7-3: La Calandria Sur Geology Map

Source: New Dimension (2018)





The domes and lobe flows have a carapace of autoclastic crackle and jig-saw breccia a few metres thick in which the clasts are generally finely flow banded and the rectangular clasts' long axes are parallel to the flow banding. The clasts are interpreted as devitrified glass. With depth, the flow-banded clasts give way in a few tens of metres to less abundant clasts of massive rhyolite. Abundant and large spherulites and lithophysae fade downward to fewer and smaller ones as the rock becomes more massive.

Figure 7-4 and Figure 7-5 present geological cross-sections of the La Calandria Sur Deposit and show that:

- The upper parts are spherulitic and partially brecciated (clast-supported breccias), typically from the surface to 45 m in depth.
- A central part is composed of flow-banded rhyolite (in part, amygdaloidal).
- A dome breccia (pepperite-like breccia) is close to the dome margin.
- A transition zone contains intercalated dome and volcaniclastic rocks.
- At the base of the dome there are volcaniclastic rocks and quartz-poor, lithic-rich ignimbrites.



### Figure 7-4: Cross-section A-A of the La Calandria Sur Deposit; looking northwest

Source: New Dimension (2018)









In 2011, mapping identified an andesite dike swarm best developed in the northwest part of the La Calandria Sur dome. This area, named La Vieja Herradura (see Figure 7-3), was considered a low-priority target due to the extensive cover and the fact that drill holes along the northern margin of the dome had returned low grades (CSD28, CSD34, CSD109). The dikes strike northwest and are arranged in a braided pattern in plan view. Based on drill-section interpretations, the dikes dip steeply to the southwest (see Figure 7-3**Error! Reference source not found.**). Individual dikes are up to 30 m in width and 600 m in length and are composed of porphyritic cores and fine-grained margins. The cores of the dikes contain phenocrysts of plagioclase up to 1 mm across, and hornblende and biotite. In the La Vieja Herradura area, the dikes intrude both the rhyolite domes or lobes and the volcaniclastic rocks (see Figure 7-4**Error! Reference source not found.**).

### 7.3.2 La Calandria Norte

The following information is taken from Ristorcelli et.al. (2018) and Hodder and White (2010).

Outcrops at La Calandria Norte appear to be of a single dome that intrudes accretionary lapilli tuff, either extending just into or overlain by ash-flow tuff. La Calandria Norte is considered distinct from La Calandria Sur primarily because of intervening low ground in which there is no outcrop. The rock at La Calandria Norte is white, spherulitic, flow-banded, devitrified and clay-rich. It is not significantly brecciated except for a one-metre interval that appears to be a late, silicified fault. Microcrystalline to crystalline quartz in outcrop at La Calandria Norte is mostly confined to structures that appear to dip gently into the dome. This quartz is a lower-temperature variety than that observed at La Calandria Sur.

Figure 7-6 shows the geology of La Calandria Norte, and Figure 7-7 is a cross section through the dome.







### Figure 7-6: La Calandria Norte Geology Map

Source: New Dimension (2018)













# 7.4 Mineralization

The following information is taken from Ristorcelli et.al. (2018), Rodriguez (2009), Rodriguez et.al. (2009, 2010, 2011), and Sillitoe (2009b).

Gold mineralization in the La Calandria Sur and La Calandria Norte deposits is hosted by silicified structures and vein breccias. High-grade gold and silver veins (greater than 3 gpt Au and 50 gpt Ag), veinlets, stringers, and breccias are closely related to subaerial rhyolite flow domes that were emplaced at the junctions of northwest- and northeast-trending fractures.

Although the deposits locally contain abundant sulphides, mainly pyrite and marcasite, the deposits formed in a low-sulphidation epithermal system (Sillitoe, 2009b). The highest gold concentrations occur in arsenic-rich pyrite and electrum that overgrow, or associate with, acicular marcasite embedded in a fine-grained quartz-illite matrix. This mineralizing event was contemporaneous with deposition of arsenopyrite and minor galena, sphalerite, tetrahedrite, argentite, and covellite (Barnett et al., 2010). Alteration of rhyolite consists of pervasive silicification within a broad illite-smectite halo that grades outward into widespread propylitic alteration.

At the surface, the veins of the Project area are composed almost entirely of dense brown chalcedony that is, in part, hydrothermally brecciated. This chalcedony is locally crustiform, and cavities within the veins are filled with massive kaolinite. High levels of arsenic, antimony, and mercury are present which combined with the presence of chalcedony and late vug-filling kaolinite suggests a shallow they are shallowly exposed, possibly near the tops of ore shoots (Sillitoe, 2009b). The veins are irregularly developed but locally are up to 1 m in width. Pyrite and marcasite are found in both brecciated and non-brecciated vein material.

At La Calandria Sur, the Ag:Au ratios are in the range 10 to 130, averaging 25, while at the Calandria Norte vein the ratios are in the range < 1 to 45, averaging 6. Both deposits have relatively low base-metal contents. Mineralization in the two deposits is not restricted to quartz veins but occurs also as disseminations in wall rock and in chalcedonic hydrothermal breccia filling. Some of the mineralized zones in drill-hole intercepts from La Calandria Sur appear to correlate with roughly sub-horizontal zones rather than steeply dipping veins. In contrast, some gold in the La Calandria Norte dome occurs within a breccia that is from a few centimetres up to 1 m wide and strikes northeast, dipping steeply to the north.

### 7.4.1 La Calandria Sur

La Calandria Sur is located in a northwest-trending rhyolite dome which hosts gold and silver mineralization that is cut by steeply dipping structures. The mineralization was originally thought to be almost entirely within the limits of the dome, but later mapping, sampling, and drilling confirm it continues into the surrounding volcaniclastic rocks. In all the cases, the mineralization has poor expression at the surface.

At La Calandria Sur the northwest-trending mineralized zone is 740 m long (artificially restricted by the southern property boundary) by 350 m wide by 120 m thick and is open laterally both to





the northwest and east-southeast. The deposit is shaped like an elongated, shallow-bottomed saucer, or bowl. The long axis of the deposit strikes at approximately N50°W. The mineralization consists of quartz-sulphide stockwork veining with moderately continuous to discontinuous high-grade breccias, stockworks, and disseminations.

Mineralization at La Calandria Sur has three main types of breccias:

- <u>Type A: Monomictic breccia with fine-grained angular fragments with brown chalcedony</u> <u>cement without sulphides; grades are between 0.1 gpt Au and <10 gpt Ag</u>
- <u>Type B: Monomictic breccia with sub-angular to rounded fragments, Microcrystalline</u> <u>quartz to chalcedony cement is low in sulphides (<2%); grades of the breccia are between</u> <u>0.2 gpt Au and 0.6 gpt Au and 5 gpt Ag to 15 gpt Ag</u>
- <u>Type C: Monomictic breccia with pervasively silicified monomictic clasts, sulphide-rich</u> (<20% volume); grades between 1gpt Au and 40 gpt Au and 30 gpt Ag to 400 gpt Ag

Type C breccia is thought to have developed at or near main fluid conduits and to grade upward or laterally to Type B and Type A breccia.

Although pyrite and marcasite are present sporadically with iron oxides in outcrop and to depths of 20 to 30 m in drill core, limonite, hematite, and minor jarosite are most common to these depths. The iron oxides appear to be mostly on planar joints.

The bulk of the mineralization included in the current resource estimate is centered in the core of the La Calandria Sur rhyolite dome and consists of thick zones (up to 90 m) of disseminated sulphides, stockworks, and subordinate breccias. The highest gold and silver grades correlate with an increase in the intensity of silicification and density of stockwork veinlets.

In the northwestern-most part, labelled La Vieja Herradura area (see Figure 7-2**Error! Reference source not found.**), mineralization has characteristics in common with the core of La Calandria Sur, but in some instances, gold and silver increase near the contact of andesite dikes (e.g., drill holes CSD255, CSD109). The timing of intrusion of the andesite dikes is not clearly defined, but drill-hole intersections across the dikes returned no gold and silver values, and pathfinder elements are low (e.g., intervals in holes CSD33, CSD109, CSD115, CSD255, CSD257, CSD264) suggesting they are post-mineralization. However, some high-grade gold and silver intersections are in close spatial relation to andesite dikes.

Extensive zones of pervasive and vein-style silicification have been identified outside of the rhyolite domes on the northeastern margin of La Calandria Sur. These areas, La Picasa and Loma Verde (see Figure 7-2), define an alteration zone up to 400 m wide (ENE-WSW) by 450 m -500 m in length (NW-SE). Individual zones strike northwest and northeast, are up to 25 m wide by up to 350 m in length and are characterized by volcanic rocks replaced by chalcedonic silica and cm-scale quartz veinlets. At Picasa, 2011 drilling results show extensive mineralization in silicified volcaniclastics with 40 m @ 1 gpt Au including 3 m @ 5.1 gpt Au, and 4 m @ 3.1 gpt Au (in drill hole CSD273), or 6 m @ 1.4 gpt Au including 1 m @ 4.5 gpt Au (in drill hole CSD269). At Loma Verde, 2011 drilling also returned interesting results in the volcaniclastics with 22 m @ 0.6 gpt Au,





including 1 m @ 1.92 gpt Au (in drill hole CSD272), or 36 m @ 0.4 gpt Au including 1 m @ 2.21 gpt Au. All lengths are intercepts and do not imply true widths.

### 7.4.2 La Calandria Norte

The La Calandria Norte rhyolite dome, located about 600 m north of La Calandria Sur, hosts northeast-trending veins and vein/breccia mineralization entirely within the circular rhyolite dome. This vein and vein/breccia mineralization lies within a broader area of weak stockwork to disseminated mineralization. At least three distinct vein systems are found within La Calandria Norte rhyolite dome: the Calandria Norte Vein and the Tongoril Vein, lie within an interpreted breccia zone in the southern half of the dome, and La Morena Vein in the northwest part (see Figure 7-5).

At the discovery outcrop of the Calandria Norte Vein, where the mineralization was originally identified by trenching, the vein-breccia is up to 0.7 m wide with multiple parallel veins; the vein-breccia strikes northeast and dips steeply to the northwest. The vein-breccia is filled with brown chalcedony and microcrystalline quartz with black sulphides. This vein has been modelled along a 500 m strike with widths typically between 0.4 and 0.8 m. Assay values returned between 2.3 gpt Au and 20.2 gpt Au, and 8 gpt Ag and 55 gpt Ag, at the surface (Rodriguez et al., 2009).

Detailed logging and assay results allow a better understanding of the structural setting and goldsilver mineralization at La Calandria Vein Zone. The main findings are synthesized below:

### Structural Setting:

- La Calandria Vein Zone (breccia zone) forms a complex system characterized by monomictic (volcanic?) breccias that are up to 1.5 m wide and planar sulphide veinlets up to 0.2 m wide that are better developed in the hanging wall of the main breccia.
- The breccias strike northeast (~40°) and dip to the northwest 65 70°. The halo of planar veinlets trends mostly east-northeast (~70°) and dips steeply opposite to the main breccia.
- The breccias are variably mineralized and range from unmineralized to strongly mineralized with bonanza gold and silver grades. The breccias range from crackle to matrix- to clast-supported, to hydrothermal with rounded clasts and quartz-sulphide-supported breccias.
- The planar quartz sulphide veinlets have sharp contacts and represent mineralized joints.
- Both structural sets intercept in some areas, and the intercepts can be the loci for higher gold grades.

### Mineralization:

• There is a wide range of sulphide textures (massive, colloform-crustiform), but they do not correlate with gold mineralization. An exception is marcasite needles or skeletal marcasite that is ubiquitous in high-grade gold zones at La Calandria Vein Zone.





- There is usually a sharp change in the vein textures along a single structure in section. Gold and silver can also be highly erratic within a single cross section.
- High-grade gold-silver mineralization starts 50 to 60 m below the surface.
- There is a clear difference in the gold-assay pattern in the holes that intercept the veinlet halo, the veinlets-breccia intersection, and the breccia (without associated veinlets or breccia-veinlets intersection). The hanging-wall veinlets carry low silver and copper but high arsenic. The mineralized breccia at the intersection of breccias and veinlets has silver in ratios to gold of 1 to 2, high copper, and high arsenic; the veinlets that form the halo of the breccia (up to 5 m on both sides of the breccia) might carry high to bonanza gold (e.g. CND123) and usually form a high-grade halo around the bonanza breccia. The breccias without signs of mineralization (no silica/sulphide introduction) do not carry gold, but arsenic can be high.

Additional prospecting in the northern part of the La Calandria Norte dome identified float of chalcedonic quartz that returned good gold grades. The nature of float is such that dimensions of mineralization cannot be determined. In spite of the lack of any surface expression, a limited number of drill holes were collared in this area with the best intersect being 19.5 m assaying 3.3 gpt Au and 8 gpt Ag, including 0.6 m at 68.1 gpt Au and 107 gpt Ag. Lengths are intercepts and do not necessarily reflect true widths. Based on section interpretation, it is inferred that this area, named La Morena vein zone, strikes northeast and dips steeply to the east-southeast (Figure 7-5 and Figure 7-6).

# 7.5 Other Exploration Targets

The following are descriptions of other exploration targets on the Property. These targets are not part of the resource estimates subject to this report and are described here for completeness.

## 7.5.1 La Morena Vein

The Morena Vein is situated approximately 300 m northwest of the breccia zone of the La Calandria Norte Deposit (see Figure 7-2**Error! Reference source not found.**). The Morena Vein was drilled in 2011 at the southwest end of an IP chargeability anomaly and additional drilling was carried out in 2018. In 2011, drill hole CND250 intersected a 0.6 m interval returning 68.1 gpt Au and 107 gpt Ag in a vein-breccia at a depth of 59 m within a broad stockwork intercept of 19.5 m averaging 3.3 gpt Au and 8 gpt Ag from a depth of 45 m. In 2018, drill hole CAL18-12, roughly 35 m south of CND250, intersected a 0.8 m interval returning 14.3 gpt Au and 35 gpt Ag at a depth of 20 m. These lengths are downhole drill intercepts, and the true widths are not known.

Drilling to date seems to indicate the vein breccia and stockwork mineralization strikes northnortheast, over 300 m, at approximately 10°Az and dips steeply south-southeast. The Morena Vein currently has no surface expression and is open along strike and down dip.





## 7.5.2 El Nido Complex

El Nido Complex appears to consist of several coalesced or adjacent rhyolite domes aligned on a northeast-trending system of faults or factures that crosses the major regional northwest structural trend of the area. The El Nido Complex is made up of five targets: Nido Norte, Nido Este, Nido Centro, Nido Oeste and Nido Sur. El Nido Norte, Nido Centro and Nido Sur lie along a northeast/southwest strike approximately 3.5 km long and is situated roughly 1.2 km northwest of La Calandria Norte. Nido Este is situated roughly 450 m northwest of the La Calandria Norte Deposit.

El Nido Complex has carapace autobreccias of flow-banded devitrified glass overlying massive coherent rhyolite. The rock is not spherulitic in the north but is in the south. Planar quartz veins follow cooling joints through the breccia. Surface exposures are thoroughly oxidized and have only trace amounts of precious metals.

### <u>Nido Centro – Nido Norte</u>

The Nido Centro and Nido Norte targets are situated approximately 1.2 km northwest of the breccia zone of the La Calandria Norte Deposit. This area consists of a series of rhyolitic domes and lava flows which extend roughly 1.5 km in strike length with a northeast-southwest trend, approximately 30°Az to 40°Az (Figure 7-7**Error! Reference source not found.**). These domes are emplaced in the Chon Aike pyroclastic sequence. Drilling shows the continuity of the domal bodies and the existence of at least four domes. Discernible rhyolitic domal facies alternate with thin pyroclastic deposits. The domes are vertical at depth and sub-horizontal at the surface.

The Chon Aike pyroclastic sequence at Nido Norte is characterized by lithic ignimbrites, ash, and other tuffs, and crops out surrounding the Nido Norte target. The elongated trend of the rhyolitic domes is coincident with a regional lineament which may represent a fault or fracture system that localized the principal rhyolite dome emplacement. Flow banding and micro-spherulite textures are present in the most-developed rhyolitic domes, and vitrophyric textures are present in the lava flows at the surface.

The mineralization at Nido Centro and Nido Norte shows low-sulphidation epithermal features with significant gold and silver anomalies on a main vein-breccia structure called La Despreciada Vein.

La Despreciada vein-breccia extends for a distance of 1.5 km along a northeast-southwest strike direction within the Nido Norte domes and is dominated by brecciated chalcedonic quartz textures. In addition, mineralization occurs along lithologic contacts and contact autobreccias that are found between the edges of adjacent domes and consists of chalcedonic stockworks containing sulphides.

Figure 7-8. Figure 7-9, and Figure 7-10 present cross-sections of the Despreciada Vein within the Nido Norte and Nido Centro area.















Figure 7-9: Cross-section (A-A) of the Nido Norte Target; looking northeast







Figure 7-10: Cross-section (B-B) of the Nido Norte Target; looking northeast

### Nido Este

The Nido Este target is located approximately 450 m northwest of the La Calandria Norte Deposit.

The Nido Este target is a northeast-trending rhyolite dome and northeast-trending veins have been mapped in the northern part of this dome. Nido Este intrudes thinly laminated lacustrine sedimentary rock and crystal-rich ash-flow tuffs. The lacustrine beds contain authigenic marcasite that Hodder and White (2010) interpret as sedimentary rather than hydrothermal. This dome has a very spherulitic margin surrounding massive cryptocrystalline rhyolite with small quartz





phenocrysts. Nido Este is probably the stratigraphically highest dome in the district (Hodder and White, 2010), and in outcrop is the smallest and most circular in shape.

In 2011, two drill holes, NED47 and NED48, were completed to test a strong chargeability anomaly. The drill holes did not return significant gold or silver values; however, anomalous pathfinder elements (particularly arsenic) were encountered. The two drill holes intersected wide zones of disseminated pyrite and marcasite as well as pyrite-marcasite veinlets in the rhyolite dome. The intersections ranged in length from 70 m in NED48 to 120 m in NED47, with zones of higher sulphide concentrations ranging by drill intercept length from 6 to 27 m. This mineralization is similar to that at La Calandria Sur, consisting of opaline chalcedonic quartz veinlets and replacements with pyrite and marcasite and smectite/illite alteration. Later lag and rock-chip sampling indicated that anomalous gold and silver are located to the east of the drill-tested area, suggesting potential mineralization towards La Calandria Norte.





# 8 **DEPOSIT TYPES**

The Deseado Massif hosts numerous low- to intermediate- sulphidation, epithermal, preciousmetal quartz vein and vein-breccia deposits, of which the La Calandria Sur and La Calandria Norte deposits are examples. Hydrothermal activity and formation of these deposits closely followed episodes of the Jurassic magmatism and extension in the Deseado Massif (Ristorcelli et.al., 2018).

The Deseado Massif is host to many similar deposits and has become a significant gold-silver mining province since the discovery and development of the Cerro Vanguardia Mine in the early 1990's. The region hosts over thirty gold-silver mineralized areas and mines including, but not limited to:

- Mina Don Nicolás (Cerrado Gold)
- Mina Cap Oeste (Patagonia Gold PLC)
- Mina Cerro Moro (Yamana Gold Inc.)
- Mina Cerro Negro (Goldcorp Inc.)
- Mina Cerro Vanguardia (AngloGold Ashanti Ltd. Fomicruz S.E.)
- Mina Cose (Pan American Silver Corp.)
- Mina Manantial Espejo (Pan American Silver Corp.)
- Mina Martha (Hunt Mining Corp.)
- Mina San José (Joint Venture (JV) Hochschild Mining plc McEwen Mining Inc.)





# 9 **EXPLORATION**

Cerrado Gold has not yet conducted its own exploration activities since acquiring the Property in November 2020.

A summary of previous exploration activities by Mariana is described in Section 6.1.





# 10 DRILLING

## 10.1 Cerrado Gold

Cerrado Gold has not yet conducted its own drilling activities since acquiring the Property in November 2020.

## 10.2 New Dimension and Mariana

Between 2009 and 2012, Mariana drilled a total of 148 drill holes on the La Calandria Sur Deposit for a total of 18,327 m on the deposit. Between 2009 and 2018, a total of 72 drill holes were completed on the La Calandria Norte Deposit, for a total of 11,347 m, both by Mariana and New Dimension.

In June 2018, New Dimension completed 19 drill holes on the La Calandria Norte Deposit and Morena Vein. Twelve of these drill holes targeted the breccia zone of the Las Calandrias Calandria Norte. The remaining seven drill holes targeted the Morena Vein and the north end of the rhyolite dome that hosts the La Calandria Norte Deposit. Additionally, three Mariana drill holes were extended during this drill program (CND04, CND06 and CND284).

Table 10-1 summarizes the drilling conducted on La Calandria Sur and La Calandria Norte deposits. Figure 10-1 and Figure 10-2 present the drill location maps for La Calandria Sur and La Calandria Norte, respectively.

Company	Year	No. Drill Holes	Total Metres (m)	Drill Holes**
La Calandria Sur				
Mariana	2009	33	4,019	CSD08 – CSD40
Mariana	2010	60	6,870	CSD64 – CSD121
Mariana	2011	43	6,011	CSD210 – CSD290
Mariana	2012	12	1,336	CSD313 – CSD326
Total		148	18,237	
La Calandria Norte				
Mariana	2009	7	729*	CND01 – CND07
Mariana	2010	35	5,278	CND45 – CND150
Mariana	2011	18	3,084*	CND226 – CND251
New Dimension	2018	12	2,255	CAL18-01 – CAL18-
				19
Total		72	11,346	

Notes:

La Calandria Norte summarizes drill holes in breccia zone only.

\*- includes metres from 2018 extended drill holes: CND04, CND06 and CND284.

\*\*- drillhole numbers were assigned in order of completion and the prefix changed depending on target.





Drill holes completed by Mariana on the La Calandria Sur Deposit are prefixed by 'CSD-' and those completed on La Calandria Norte are prefixed by 'CND-', including the drill holes on the Morena Vein. Drill holes completed by New Dimension were prefixed by 'CAL18-' in the La Calandria Norte Deposit and Morena Vein.





Note: black = 2009; blue=2010; red = 2011; orange = 2012 drill holes







Figure 10-2: Drill Hole Location Map for the La Calandria Norte Deposit; plan view 160 m elevation.

Note: blue = 2009 to 2012 drill holes; red = 2018 drill holes





## 10.2.1 Other Exploration Targets, 2009 – 2018

The following is a summary of all other drilling on the Property by Mariana, in 2009 – 2012, and New Dimension in 2018. These drill holes are outside the La Calandria Sur and La Calandria Norte deposits and represent other exploration targets and possible resource opportunities.

Table 10-2 summarizes the drilling conducted on all other exploration targets on the Property.

Target	Company	Year(s)	No. Drill Holes	Total Metres (m)	Drill Hole**
El Clavo	Mariana	2011-2012	18	2,448	ECD279 – ECD314
Gamekeeper	Mariana	2011	1	132	GKD202
La Herradura	Mariana	2010	2	168	LHD116 – LHD117
Morena	Mariana	2010-2011	13	3,499	CND142 – CND297
Morena	New Dimension	2018	7	1,015	CAL18-02 – CAL18-16
Nido Este	Mariana	2011-2012	6	884	NED47 – NED299
Nido Centro	Mariana	2011	50	8,258	NCD191 – NCD228
Nido Norte					NND49 – NND295
Nido Oeste	Mariana	2011	8	1,551	NOD159 – NOD181
Nido Sur	Mariana	2011	18	1,883	NSD183 – NSD207
Refugio	New Dimension	2018	3	207	RED01 – RED03

Table 10-2: Summary of Drill Programs on Other Exploration Targets on the Property

Notes

including drill holes north of La Calandria Norte Deposit

\*\* drillhole numbers were assigned in order of completion and the prefix changed depending on target.

## 10.3 Mariana Drill Program, 2009-2012

The following is taken from Ristorcelli et.al. (2012) and Ristorcelli et.al. (2018).

Mariana contracted Boart-Longyear Argentina S.A., based in Mendoza, Mendoza Province, for the drilling at the Project. The drill rig used was a Boyles 37A drill rig, up to drill hole CSD16. For the 2010 drilling, a 25HH-3 drill rig capable of drilling 300 m depths was used. In February 2011, Mariana contracted ECO Minera, based in San Juan, Argentina, to carry out the drilling where a Sandvik DE710 and an EDM2000 drill rig were used. For the later drilling in 2011 and in 2012, ECO Minera used a used a Sandvik UDR200 core drill. All of the Mariana drill core was of HQ core size (Ristorcelli et.al., 2018).

The core was placed in one metre long, three-row wooden core boxes, and lids were put on the boxes prior to hauling to the core-logging and sampling shed. The core was transported to the core shed at the estancia office, where it was laid out and washed by a technician.

Core recovery and RQD were measured between wood blocks placed at the end of each core run. A technician measured core recovery and performed RQD logging; a geologist verified recovery, position of the core run blocks, and RQD. In general, core recovery appeared to be high. The





length of missing core for the run (if any) was written on the core-box partition at the end of a run. The missing lengths were recorded in the database and core recovery was calculated for each run.

A geologist logged lithology, mineralization, alteration, and oxidation. The core was then marked up in one-meter intervals, taking core recovery into account. Marks were placed on the core-box partition, and the sample number was written on the core-box partition. Sample numbers were consecutive, and standards, blanks, and duplicates were included in the numbered sequence. Placement for standard samples was represented by an empty, marked, and ticketed bags. The core was photographed both dry and wet before sawing. Core is stored in a core shed (galpón) at the estancia.

Drill rigs were set up with collar pegs, and the side of the rig was aligned to azimuth along an offset parallel line marked with lime, pegs, and a shallow trench. Collars were initially located using hand-held GPS units measuring in WGS 84 Datum. The drill rig had a clinometer for setting the mast's inclination. In the field, a geologist checked the Azimuth and inclination of the core hole and progress of the drill.

From the 2009 and 2010 drill programs, a Reflex instrument was used, and the data was manually written on paper. From February 2011, down-hole surveys were carried out with a Reflex EZ-Trac. The practice was for a measurement to be taken about every 50 m and the data downloaded electronically once the instrument was returned to the surface. From April 2011, a Reflex ACT instrument was used, and measurements were made at approximately 75 m or 100 m intervals (Ristorcelli et.al., 2018).

Bulk density measurements were collected during the 2009 and 2010 drill programs.

# 10.4 New Dimension Drill Program, 2018

For the 2018 drill program, New Dimension contracted Macizo del Deseado Perforaciones (MD Perforaciones), a drilling company based in Puerto San Julián, Santa Cruz Province. The drill rig employed was a Sandvik UDR600. All of the 2018 drill core was of HQ core size.

Drill core was recovered at the drill rig and placed in sturdy wood core boxes. Metre markers were placed in the core boxes at the end of the core runs. The markers are wood blocks with the metre depth written in black permanent marker. All core boxes are covered by a Masonite cover, where the boxes are grooved at the top to allow the cover to be inserted. Core boxes were transported to the logging facility by either the drillers or New Dimension staff.

At the core logging facility, the drill core was handled by New Dimension technicians and geologists. The core was washed to remove drill mud and then marked up by sample intervals (nominally on 1 m intervals) where the depth was marked in black on the core and the sample interval on the core box and core box dividers.

The drill core was photographed prior to logging and sampling. The core boxes were photographed, three boxes at a time, on a prefabricated stand. A whiteboard was used in each





photo to indicate the project, drill hole number, core box numbers, and interval photographed (from and to). The drill core was photographed both wet and dry.

The drill core was logged by New Dimension geologists. The drill logs contain information on lithology, mineralization, oxidation, and alteration. In lieu of descriptions, a code is used for each of these categories. Drill core was logged directly onto spreadsheets on a computer. RQD and recovery were recorded on paper logs. Drill core was then sampled by sawing the drill core in half where one half is placed in a sample bag and the other half returned to the core box.

Core boxes are labelled with permanent black marker. At the end of the core box the drill hole number, box number, and metres (from and to) are written in black permanent marker. In the core box, metre markers are wooden blocks with the metre depth written in black permanent marker. Sample intervals in the box are separated by wood block, painted red on top of the block, and the sample number is written on either side of the red marker, on the wood dividers in the core box.

Core boxes are stored in two warehouses (*galpones*) located at the estancia office and core logging and sampling facility. The core racks are made of steel pipe and are quite sturdy. The warehouses are kept clean and organized.

No density measurements were collected during this drill program.

### **Collar Surveys**

Drill hole collar coordinates were initially taken by handheld GPS. Upon completion of the drill campaign, a surveyor, Sr. Relañez from Puerto San Julian, was contracted to measure the collar coordinates more accurately using a Differential GPS (DGPS).

### **Downhole Surveys**

Down hole surveys were conducted using a Reflex ACT instrument. Measurements were taken within the first 9 m of the drill collar, near the base of the drill hole, and at nominally 100 m increments in deeper holes.

## 10.5 AGP Opinion

AGP believes drilling was undertaken in accordance with industry standards and best practices without any major adverse aspects that could have materially impacted the accuracy and reliability of the resource estimate.





# **SAMPLE PREPARATION, ANALYSES, AND SECURITY**

This section discusses the sample preparation and analytical procedures carried out by Mariana during the 2009 – 2012 drill programs and by New Dimension during the 2018 drill program.

# 11.1 Mariana, 2009 – 2012

## 11.1.1 Assay Analysis

The drill core samples were picked up at the estancia by AndesMar trucking company or delivered to the station at Caleta Olivia by Mariana personnel, for transport to the sample preparation laboratory in Mendoza. AndesMar was under contract to ALS Minerals (ALS), now ALS Global, in Mendoza. All sample preparation was carried out at the ALS facilities in Mendoza and assay analysis was completed at their facilities in La Serena, Chile. An employee of Mariana takes the pulps in Mendoza and inserts the standards into the correct sample sequence, prior to air shipment to Chile.

Sample preparation included weighing, drying, and crushing of the entire sample to greater than 70% -2mm, taking a split of 250g and pulverizing the split to greater than 85% passing 75microns (ALS code: PREP-31, DRY-22).

Analyses consisted of gold assays and multi-element ICP (Inductively Coupled Plasma) analysis. Gold analyses for all samples are by fire assay with an atomic absorption (AA) finish (ALS code: Au-AA24, 50 g nominal sample weight). Any gold results over 10 gpt Au are checked using a gravimetric finish (ALS code: Au-GRA22, 50 g). The 34-element ICP analysis (ALS code: ME ICP41 package) uses aqua regia digestion. Silver values exceeding 100 gpt Ag were checked by fire assay with a gravimetric finish (ALS code: Ag-GRA21, 30 g nominal sample weight).

Screen or metallic screening (ALS code: AU-SCR22) consists of preparation of a 1,000 g pulp that is then washed through a 75-micron (200 mesh) screen to separate any course (+75 micron) material. Any +75-micron material remaining on the screen is dried, weighed, and analyzed in its entirety. The 75-micron fraction is dried and homogenized. Duplicate sub-samples are analyzed using standard fire assay procedures. The gold values for both +75 micron and 75-micron fractions are reported together with the weight of each fraction as well as the calculated total gold content of the sample.

The bulk of the silver analyses were obtained using the ICP method. In order to obtain confirmation that the ICP analyses yielded results comparable to AA analysis, Mariana had 114 pulps re-run using AA, and again using ICP.

## 11.1.2 QA/QC, 2009 - 2012

Mariana maintained their own internal Quality Assurance and Quality Control (QA/QC) procedures to assess drilling results. These included, blank materials, field duplicates, and standard reference materials (SRM), also known as certified reference materials (CRM). Eleven





SRMs were used during the 2009 - 2012 drill programs. The protocol used for insertion of these samples was nominally:

- blank (1 in every 25 samples)
- duplicate (1 in every 25 samples)
- standard (SRM) (1 in every 25 samples)

Table 11-1 below shows a summary of the QA/QC samples verified by AGP.

 Table 11-1: Summary of Mariana QA/QC Samples

Description	Number of Samples
Total Number of Samples	28,800
Number of Control Samples	2,866 (10%)
Distribution	
Coarse blanks	699 (2.4%)
Duplicates	714 (2.5%)
SRM samples	1,104 (3.8%)
G301-5	32
G305-5	139
G306-4	12
G310-1	36
G310-4	189
G901-5	177
G902-2	1
G907-6	159
MAR-ST-01	16
GBM310-7	171
GBM906-6	4
GBM908-13	136
GBM997-6	23

Blank material was sourced from an outcrop of granite near the estancia. Mariana assayed the material with results less than 0.005 gpt Au and less than 0.20 gpt Ag.

Field duplicates were cut from the half core length from the core box. The quarter core was then placed in sample bags with a sequential sample tag. The other quarter core was returned to the core box with the duplicate sample tag stapled with the original sample tag.

### <u>Blanks</u>

A total of 699 blanks were inserted during the 2009 – 2012 drill programs. Blanks from this drill program were verified and four failures for gold values, and twelve failures for silver values were noted where the values were three times higher than the detection limit. These represent less than 2% of the total control samples and are not considered significant.





Figure 11-1 and Figure 11-2 present the results of the blank material for gold and silver values, respectively.



Figure 11-1: Gold Results for Blanks (Au gpt)







Figure 11-2: Silver Results for Blanks (Ag gpt)

Ristorcelli et.al. (2018) plotted the results from the blanks against the preceding samples in the analytical batch files as a check on whether a blank analyzed immediately after a high-grade sample tends to have a higher grade itself. This serves as a check against the possibility of sample-to-sample cross-contamination within the lab. AGP reviewed the data and plots for gold and silver values and found there were no significant trends in samples being biased by the preceding sample.

### **Duplicates**

Three types of duplicates and/or checks include:

- Field duplicates, which are second splits of core prepared by Mariana and sent to the same lab as the original splits.
- Core-reject checks, which are second splits of coarse reject material, prepared at the primary lab but sent to a second lab for analysis.
- Pulp checks, which are second splits of pulps prepared at the primary lab but sent to a second lab for analysis.





Mariana collected field duplicates at a nominal rate of one in every 35 samples in 2009, on one in every 39 samples in 2010-2011, and one in every 20 samples in 2011-2012. The results for gold and silver are summarized in Figure 11-3 and Figure 11-4 below.











Figure 11-4: Duplicates - Summary of Silver Values in Duplicates

### **Standards**

Mariana used 12 commercially produced SRMs during the drill programs from 2009 to 2012. These SRMs are summarized with the 'recommended value' in Table 11-2 below.





SRM	Source	Au (gpt)	Ag (gpt)	Year Employed	Failures	Total Analyses
G301-5	Geostats Pty Ltd	4.29	-	2009, 2010	0	32
G305-5	Geostats Pty Ltd	2.43	-	2010	0	139
G306-4	Geostats Pty Ltd	21.57	-	2010, 2011, 2012	0	12
G310-1	Geostats Pty Ltd	4.94	-	2011, 2012	1	36
G310-4	Geostats Pty Ltd	0.43	-	2010	5	189
G901-5	Geostats Pty Ltd	1.65	-	2010, 2011, 2012	3	177
G902-2	Geostats Pty Ltd	22.39	-	2010	0	10
G907-6	Geostats Pty Ltd	7.25	-	2010	1	159
MAR-ST-01	Mariana	2.27	11.225	2009	0	16
GBM310-7	Geostats Pty Ltd	-	50.1	2010, 2011, 2012	2	171
GBM906-6	Geostats Pty Ltd	-	389.7	2009	0	4
GBM908-13	Geostats Pty Ltd	-	151.4	2010, 2011, 2012	2	136
GBM997-6	Geostats Pty Ltd	-	462.7	2010, 2011, 2012	0	23

Table 11-2: Standard Reference Materials (SRMs) and recommended values

Packets of SRMs were sent along with the drill core at a nominal rate of one for every 15, 20 or 25 samples during the 2009 and 2012 drilling, and one for every 40 samples in the 2011 drilling on targets outside of La Calandria Sur and La Calandria Norte. The results of the SRMs were plotted depicting the 'recommended value' and plotted in chronological order on graphs depicting the 'recommended value' as well as plus/minus two and three times the standard deviation of the dataset. The SRM plots were reviewed and several plots were reproduced. There were ten failures of gold values and four failures of silver values, however, these constitute less than 1% of the control samples and are not considered significant.

Figure 11-5 presents an example of an accuracy plots for gold on the SRM G901-5, plotted against the recommended plus/minus manufacturer's tolerance limit to check the accuracy of the assays. Three failures out of 177 samples represent less than 1% of the control samples and are not considered significant.







Figure 11-5: Accuracy Plot – Gold for SRM G905-1

## 11.2 New Dimension, 2018

### 11.2.1 Assay Analysis

For the 2018 drill program, New Dimension had their samples analyzed at Alex Stewart International Argentina S.A. (ASi) based in Mendoza, Argentina. ASi is an ISO 9000 and ISO 14001 certified laboratory.

Drill core samples were picked up by ASi transport and brought to their sample preparation lab in Puerto San Julián. Sample preparation included crushing of the rock sample to greater than 80% passing #10 Mesh (< 2 mm), splitting of the sample to 250 g, and pulverizing the split sample to greater than 95% passing 106 microns (ASi code: P1 and P5).

Gold analysis was carried out by fire assay of a 50 g sample, with a final volume of 20 ml, and an AA finish (ASI code: Au4-50). A multi-element analysis, including silver, was also carried out using an Agua Regia digest of the sample and an ICP-OES finish (ASI code: ICP-AR 39).

## 11.2.2 QA/QC, 2018

New Dimension maintained their own internal QA/QC procedures to assess drilling results. These included blank materials, field duplicates, and SRMs. Five SRMs were used during the 2018 drill program on the Property. The protocol used for insertions of these samples were as follows:

• blank (1 in every 25 samples)





- duplicate (1 in every 25 samples)
- standard (SRM) (1 in every 25 samples)

Table 11-3 shows a summary of the QA/QC samples submitted during the drilling program.

### Table 11-3: Summary of New Dimension QA/QC Program

Description	Number of Samples			
Total Number of Samples	2,815			
Number of Control Samples	338 (12 %)			
Distribution				
Coarse blanks	114 (4 %)			
Duplicates	113 (4 %)			
SRM samples	110 (4%)			
G310-4	23			
G901-5	22			
G306-4	22			
GBM310-7	22			
G310-1	21			

Blank material was sourced from an outcrop of granite near the estancia.

Duplicates were cut from the half core length from the core box. The quarter core was then placed in sample bags with a sequential sample tag. The other quarter core was returned to the core box with the duplicate sample tag stapled with the original sample tag.

### <u>Blanks</u>

Coarse blank materials were inserted into the sample stream at a rate of one each for every 25 samples for the 2018 drilling program. The blank reference material was taken from a local barren granite unit. All blanks from the 2018 drill program were verified and no failures were found for gold and silver values. Figure 11-6 and Figure 11-7 present the results of blank materials for gold and silver, respectively.






Figure 11-6: Gold Results for Blanks (Au gpt)

Figure 11-7: Silver Results for Blanks (Ag gpt)







## **Duplicates**

The field duplicates were inserted at a rate of one for every 25 samples. A total of 113 duplicate samples from the 2018 drill core were assayed. Figure 11-8 and Figure 11-9 present Q-Q plots of duplicates for gold and silver, respectively.

The protocol for duplicates of this type generally calls for no more than 10% of samples outside of specification (OOS). The percentage of OOS duplicate pairs for gold and silver were within the 10% limit. It should be noted however, most of these OOS duplicates appear at, or near, detection limit of analysis for both gold and silver and are not considered failures. Only four sample duplicates of greater than 0.3 gpt Au, show as failures.













### **Standards**

New Dimension used five commercially produced SRMs during the drill program. These are summarized with the 'recommended value' in Table 11-4 below.

SRM	Source	Au (gpt)	Ag (gpt)
G310-4	Geostats Pty Ltd	0.43	-
G901-5	Geostats Pty Ltd	1.65	-
G306-4	Geostats Pty Ltd	21.57	-
GBM310-7	Geostats Pty Ltd	-	50.1
G310-1	Geostats Pty Ltd	4.94	-

Table 11-4: Standard Reference Materials (SRMs) and recommended values

The SRMs were chosen to represent different grade ranges for gold and silver in the Las Calandrias deposits. Packets of SRMs were sent along with the drill core to ALI in Mendoza at a rate of one for every 25 samples.

The results of the SRMs were plotted depicting the 'recommended value' based on several round robin analyses. The results were plotted in chronological order on graphs depicting the 'recommended value' as well as plus/minus two and three times the standard deviation of the dataset. This provides a check of the precision of the assays.





Figure 11-10 to Figure 11-14 present the examples of accuracy plots for gold or silver, depending on the SRM, plotted against the recommended plus/minus manufacturer's tolerance limit to check the accuracy of the assays. Only one failure appears in the lowest grade SRM, G310-4 and is not considered significant (see Figure 11-10).











Figure 11-11: Accuracy Plot – Gold for SRM G901-5











Figure 11-13: Accuracy Plot – Silver for SRM GBM310-7









# 11.2.3 QA/QC Program Review

AGP reviewed the QA/QC program and is of the opinion it is in accordance with standard industry practice and CIM Exploration Best Practice Guidelines. New Dimension personnel have taken all reasonable measures to ensure the sampling completed is accurate and precise. AGP considers the assay results acceptable for use in the estimation of Mineral Resources.

## **11.2.4** Density Measurements

There were no density measurements collected during the 2018 drill program.

# 11.3 Security

The sample handling, transport, and storage followed company procedures that provided a wellcontrolled chain of custody at the site. Drill core is stored in two large warehouses on site. The warehouses are kept locked and are accessible only to authorized personnel.

# 11.4 AGP Opinion

AGP believes the sample handling, core logging, sampling, and security protocols during the New Dimension drill program were at industry standard and conform to generally accepted best practices. For the Mariana drill core, AGP believes the sample handling, core logging, sampling, and security protocols were to industry standard at the time the data was collected.

The data is considered representative by AGP for the level of study presented in this report. The author concludes the exploration, sampling practices, and resulting data are suitable for the estimation of mineral resources.

AGP reviewed the density procedures and density results and found the method to determine dry bulk density to be acceptable and appropriate. AGP recommends density measurements continue to be gathered on the most recent and historic drill core for the La Calandria Norte Deposit, and for any future drill programs.





# **12 DATA VERIFICATION**

# 12.1 Assay Database Verification

AGP received the historic database in Microsoft Access format for the Project drill data. The drill holes from New Dimension's 2018 drill program were made available in comma delimited format (csv). AGP verified the assay data provided by the company against the assay certificates provided by the laboratories: ALS (Mendoza) and ASi (Mendoza), as provided by New Dimension. AGP verified approximately 20% of New Dimension's database across all drill campaigns. Only four 'out of sequence' errors were found. These errors were corrected prior to finalizing the drillhole database.

# 12.2 Site Visit, July 2018

A site visit to the Project was conducted by the author from July 14-16 for two days. The 2018 drill program was completed and there were no drilling activities at the time of the site visit. The author was accompanied on the site visit by Sr. Gabriel Gomez, Managing Director for Minera Mariana.

The site visit included an inspection of core logging, sampling, and core storage facilities, checking of drill hole collar coordinates, and reviewing drill core logs against selected drill core.

# **Drill Core Logging and Sampling and Storage Facilities**

Drill core for the Project is logged, sampled, and stored at the Estancia La Calandria. The house on the Estancia serves as an accommodation and exploration office. Near the office, Minera Mariana has three, purpose built, steel and aluminium warehouses near the Estancia (Figure 12-1) that serve as the core logging and sampling facility, and two core storage warehouses.

Figure 12-1 shows the three warehouses used for core logging and core storage. Figure 12-2 shows the interior of the core logging facility.





Figure 12-1: Drill Core Logging and Sampling Facility (foreground); Drill Core Storage (background, two warehouses)



Figure 12-2: Core Logging Facility (interior)







## **Drill Hole Collar Locations**

AGP located 44 drill hole collars and six trenches at La Calandria Sur and La Calandria Norte deposit areas. The locations of diamond drill hole collars were measured in the field using a hand-held Global Positioning System (GPS) device (Garmin GPS map 62s) using WGS 84 datum, the same datum used by New Dimension at the Project.

Most drill hole collars are marked by a cement cast around a 4"-PVC pipe in the collar and capped with a PVC cap. The cement cast is either inscribed with a drill hole number or marked by an aluminium tag with the drill hole number. The PVC cap is labelled with an aluminium tag or written in permanent marker inside the cap. A few of the cement casts are showing signs of weathering but most are still intact (Figure 12-3).

The 2018 drill holes observed had not yet been set with a cast around the PVC pipe and were not yet capped.



Figure 12-3: Drill Hole Collar for CND59 (La Calandria Norte)

The collar coordinates measured by AGP fell within a 5 m tolerance of those reported in the database. It is the QP's opinion the coordinates are acceptable, given the accuracy of the handheld GPS used to review the drill hole collar locations.





Table 12-1 to Table 12-3 present the comparison of the AGP and New Dimension drill hole coordinates for the La Calandria Sur and La Calandria Norte deposits, respectively.

	NDR Easting (m UTM)	NDR Easting (m UTM)	AGP Easting (m UTM)	AGP Easting (m UTM)	Δ Easting (m)	Δ Northing (m)
Drill Holes						
CSD09	613959	4724313	613963	4724314	4	1
CSD17	613787	4724516	613788	4724514	1	-2
CSD19	613837	4724545	613838	4724541	1	-4
CSD20	613888	4724510	613887	4724510	-1	0
CSD21	613742	4724507	613746	4724505	4	-2
CSD29	613487	4724698	613485	4724698	-2	0
CSD30	613492	4724703	613489	4724703	-3	0
CSD31	613565	4724695	613561	4724692	-4	-3
CSD34	613525	4724707	613523	4724708	-2	1
CSD35	613611	4724635	613608	4724633	-3	-2
CSD67	613754	4724519	613759	4724514	5	-5
CSD73	613630	4724595	613627	4724595	-3	0
CSD74	613613	4724546	613613	4724546	0	0
CSD82	613639	4724487	613641	4724485	2	-2
CSD98	613706	4724515	613709	4724513	3	-2
CSD103	613767	4724681	613767	4724680	0	-1
CSD111	613623	4724573	613620	4724571	-3	-2
CSD114	613601	4724658	613598	4724656	-3	-2
CSD120	613989	4724365	613990	4724364	1	-1
CSD256	613586	4724766	613583	4724765	-3	-1
CSD260	614014	4724316	614014	4724319	0	3
CSD263	613492	4724698	613489	4724697	-3	-1
CSD277	613644	4724781	613642.59	4724781	-1	0





	NDR Easting (m UTM)	NDR Easting (m UTM)	AGP Easting (m UTM)	AGP Easting (m UTM)	Δ Easting (m)	Δ Northing (m)
Drill Holes						
CND01	613832	4725277	613832	4725278	0	-1
CND04	614057	4725488	614060	4725490	-3	-2
CND05	614134	4725548	614132	4725547	2	1
CND06	614070	4725514	614074	4725517	-4	-3
CND54	614009	4725428	614012	4725429	-3	-1
CND59	613975	4725433	613977	4725436	-2	-3
CND63	613900	4725403	613900	4725405	0	-2
CND125	613932	4725406	613935	4725407	-3	-1
CND129	613860	4725375	613859	4725377	1	-2
CND132	613770	4725324	613770	4725327	0	-3
CND134	614033	4725478	614036	4725481	-3	-3
CND136	614069	4725512	614072	4725513	-3	-1
CND230	613769	4725371	613769	4725370	0	1
CND233	613830	4725376	613830	4725377	0	-1
CND248	614125	4725589	614126	4725590	-1	-1
CAL18-06	613965	4725380	613968	4725378	-3	2
CAL18-07	613738	4725410	613734	4725414	4	-4
CAL18-08	613730	4725365	613731	4725368	-1	-3
CAL18-10	613752	4725284	613748	4725287	4	-3
CAL18-11	613830	4725376	613833	4725372	-3	4
Trenches						
TPt01	613864	4725263	613859	4725260	5	3
TPt02	614007	4725381	614008	4725381	-1	0
TCn08	613907	4725273	613905	4725273	2	0
TCn09	614144	4725512	614144	4725512	0	0
TCn11	614108	4725459	614108	4725457	0	2
TCn17	614037	4725380	614035	4725380	2	0

## **Drill Core Log Review**

The site visits also included a review of the drill core logs and comparison to selected drill core intervals. The lithology descriptions and sample intervals in the drill logs were consistent with the drill core intervals reviewed. Table 12-3 lists the selected drill core intervals examined during the site visit.





Deposit	Drill Hole	From (m)	To (m)
La Calandria Sur	CSD73	50	70
	CSD105	35	65
	CND46	70	90
La Calandria Norte	CND61	0	138
	CND127	140	155
	CND132	125	145
	CAL18-11	0	140

#### Table 12-3: Selected Drill Core Intervals Examined

#### **Independent Samples**

The collection of independent samples is meant to demonstrate that mineralization exists on the property in similar ranges as reported by the issuer. These samples are not intended to act as duplicate samples. To this end, AGP collected three samples from the available core drill holes during the site visit in July 2018.

The sample intervals were selected from the 2010 and 2018 drilling in the La Calandria Norte Deposit: and from the 2011 and 2012 drilling in the La Calandria Sur Deposit. The samples were collected from the same sample intervals as those of New Dimension for a direct comparison.

AGP supervised the quartering of the selected samples by rock saw and placed each sample in a marked sample bag, sealed with a zip tie. A sample tag was stapled in the core box at the location of the AGP sample. Collected samples were transported by AGP to Canada and couriered to Activation Laboratories Ltd. (ActLabs) in Ancaster, Ontario for analysis.

Once received at ActLabs, samples were prepared by crushing the sample to 80% passing 10 mesh and then a split of 250 g was pulverized to 85% passing 200 mesh (ActLabs code: RX1). Samples were analyzed by four acid digestion and ICP-OES method (ActLabs code UT-1-0.5g Aqua Regia ICP/MS). Gold and silver were analyzed separately by fire assay and atomic absorption (ActLabs Code 1A3-Ag Au, Ag-Fire Assay Gravimetric (QOP AA-Au)). The list of independent samples is shown in Table 12-4 and the comparison of results are presented in Table 12-5.





AGP Sample No.	Minera Mariana Sample No.	Drill Hole	Core Box(es)	Sample Interval (m)	Lithology
La Calandria	a Norte				
163955	61125	CAL-18-11	43+43	111.30 - 111.50	Breccia
163956	32265	CND131	49+50	125 - 126	Breccia
La Calandria	Sur				
163957	22875	CSD23	34	87 - 88	Rhyolite
163958	57115	CSD322	17	44 - 45	Rhyolite

#### Table 12-4: Summary of Independent Samples

 Table 12-5: Independent Sample Results

Sample No.	Drillhole	Au (gpt)	Ag (gpt)			
AGP						
163955	CAL-18-11	1.23	6.4			
163956	CND131	17.50	11.1			
163957	CSD23	11.80	313.0			
163958	CSD322	4.19	20.7			
Minera Mariana						
61125	CAL-18-11	1.24	5.30			
32265	CND131	11.50	10.30			
22875	CSD23	12.00	310.00			
57115	CSD322	6.64	40.40			
		-0.01	1.1			
Diffe	rence	6.00	0.8			
(gpt	: Au)	-0.20	3.0			
		-2.45	-19.7			

AGP considered the grade range of the representative samples to be acceptable and demonstrated the presence of mineralization on the Property in the same tenure as reported by Minera Mariana. AGP interprets the gold grades of two of the independent samples, which have differences greater than 30%, to be due to the degree of variability of the gold mineralization.

# 12.3 QP Opinion

The QP is of the opinion the database is adequate and representative to support the resource estimates for the La Calandria Sur and La Calandria Norte deposits. The QP is also of the opinion the core descriptions, sampling procedures, and data entries were conducted in accordance with industry standards.





# **13 MINERAL PROCESSING AND METALLURGICAL TESTING**

Cerrado Gold has not conducted its own metallurgical testwork since acquiring the Property in November 2020. Historical testwork was conducted by Mariana (2010 to 2012) and New Dimension completed a short metallurgical program on two composites in 2019. This historical testwork is summarized below.

# 13.1 Mariana, 2010-2012

Metallurgical investigations commenced in July 2010, followed by a preliminary program of metallurgical testwork that started in September 2010 and concluded in January 2012. All testwork was completed at the time by Metcon Laboratories Pty. Ltd (Metcon) (now ALS Global) in Sydney, Australia.

# 13.1.1 La Calandria Sur – LeachWell<sup>®</sup> Program

At the beginning of the metallurgical investigations, it had been established the La Calandria Sur deposit consisted of a near-surface oxide zone overlying the main primary or sulphide zone. As is commonly seen in gold deposits containing oxide and sulphide minerals, the efficiency of gold extraction using cyanide solutions can decrease as the level of oxidation decreases. Consequently, an investigation to determine oxide level vs gold recovery relationships for La Calandria Sur was initiated before embarking on any more detailed metallurgical testwork.

First, a more comprehensive assessment of the degree of oxidation within the deposit was completed, by re-logging and giving all samples a specific oxidation code. The rules for categorization of oxidation state are given in Table 13-1.

Oxidation Code (Oxcode)	Oxide Zone	Degree of Oxidation
4	Oxide	Complete oxidation: all sulphides replaced by limonite-jarosite
3	Oxide	Strong oxidation: scarce sulphides, nearly all limonite
2	Oxide	Moderate oxidation: minor sulphides with pervasive limonite
1	Transition	Weak oxidation: sulphides with limonite in fractures
0	Primary	No oxidation: only fresh sulphides

Table 13-1: Oxidation Codes Used for Logging (Metcon, 2011; Ristorcelli et.al., 2018)

After logging, LeachWell<sup>®</sup> tests were completed on 171 samples from continuous intersections within nine separate drill holes, which were located in the center of the deposit. Subsequent to this initial work, further LeachWell<sup>®</sup> test series were completed on a wider range of additional drill holes. A review of the available data indicates that a total of 1,181 samples from 87 separate drill holes within the Calandrias Sur Deposit had LeachWell<sup>®</sup> tests completed on them. The majority of the samples represented a single oxidation code.





The LeachWell<sup>®</sup> test provides an indication of the amount of gold that would be extractable by conventional cyanidation, but it is not definitive. The tests involved mixing 70 g solids with 250 ml water and agitating the pulp for two hours with one LeachWell Assay Tab<sup>™</sup>. The LeachWell Assay Tabs<sup>™</sup> are supplied by Mineral Process Control (MPC) Pty. Ltd., Perth, Australia, and consist of 7.5 g NaCN and 2.5 g LeachWell<sup>®</sup>, the latter being a proprietary component that ensures very rapid gold dissolution.

The resultant solution was assayed for gold and the percentage of gold extracted was then calculated using the assayed gold head grade. The results are shown in Table 13-2 and showed a clear trend towards lower gold extraction with decreasing levels of sample oxidation.

Oxide Zone	Oxide Code	No. of Intercepts Tested	No. of Drill Holes	Total Metres Tested	Average Head Grade (gpt Au)	Average	Range
Oxide	2, 3, 4	325	69	685.16	0.97	91.9	7.84 - 96
Transition	1	236	62	579.43	1.01	68.6	0.4 - 96
Primary	0	620	68	1597.00	1.62	41.4	0.66 - 96

Table 13-2: Summary of LeachWell® Test Results for La Calandria Sur

# 13.1.2 Metallurgical Composites

The results of the oxide code logging and initial 171 LeachWell<sup>®</sup> tests were used to select samples for three metallurgical composites for further metallurgical investigation. Composite information is given in Table 13-3.

Oxide Zone	Oxide Code	No. of Intercepts Tested	No. of Drill Holes	Total Metres Tested	Weigh t (kg)	Grade (gpt Au)	% Au Extraction by LeachWell®
Oxide	2, 3, 4	22	4	56.5	73.9	1.60	94.5
Transition	1	16	5	38.0	51.8	1.67	74.0
Primary	0	51	8	102.2	133.5	1.67	27.6

Table 13-3: Composite Samples for Metallurgical Testwork for La Calandria Sur

Note: all intercepts used for these composites were selected from the same drill holes used for the LeachWell® tests.

# 13.1.3 Metallurgical Testwork – Metcon, 2011

A 2011 metallurgical program consisting of comminution testwork, Carbon in Leach (CIL) and heap leach tests, flotation work, and flotation concentrate oxidation tests was initiated on the three composites.

# **Comminution Tests**

The results of comminution tests completed on each composite are shown in Table 13-4.





Composite	RWi (kWh/t)	BWi (kWh/t) - 75um	BWi (kWh/t) – 106um	Ai (g)
Oxide	18.8	17.3	16.8	0.205
Transition	20.6	17.9	17.7	0.272
Primary	18.7	16.9	16.7	0.298

#### Table 13-4: Comminution Test Results

The results indicate all composites are reasonably hard and somewhat abrasive. The Rod Mill Work Index (RWI) appears to be higher than the Ball Mill Work Index (BWi), which is unusual.

The RWI test uses a closing screen size of 1.18 mm and the BWi tests used closing screens of  $106\mu m$  and  $75\mu m$ .

#### Carbon-in-Leach Tests

A series of CIL tests over 24 hours at a grind size of  $P_{80}$  75µm and with 1 g/l cyanide concentration were completed on each composite with and without a preceding gravity concentration stage.

Gold extractions by gravity were very low at 1.7%, 6.2%, and 0% for the oxide, transition, and primary zone composites, respectively. However, on closer examination, AGP notes the Metcon gravity recovery procedure did not take into account the fine ( $-75\mu$ m) gold, which was returned to the CIL feed stream. The results of the CIL tests are summarized in Table 13-5.

#### Table 13-5: CIL Test Results for La Calandria Sur

	Unit	Ox	ide	Tran	sition	Prin	nary
GOLD							
Gravity Separation		No	Yes	No	Yes	No	Yes
Assay Head	g/t	1.33	1.33	1.28	1.28	1.47	1.47
Calculated Head	g/t	1.50	1.44	2.21	1.35	1.58	1.64
Residue	g/t	0.08	0.11	0.49	0.46	1.15	1.20
Gravity Extraction	%	n/a	1.7	n/a	6.2	n/a	0.0
CIL Extraction	%	94.6	90.7	77.9	60.1	27.1	26.3
Total Test Extraction	%	94.6	92.4	77.9	66.4	27.1	26.3
LeachWell Extraction	%	94.5	94.5	74.0	74.0	27.6	27.6
SILVER							
Assay Head	gpt	16	16	21	21	34	34
Calculated Head	gpt	14.4	16.1	22.3	22.2	34.5	34.7
Residue	gpt	1.5	1.6	4.5	5.1	20.2	21.0
Actual Extraction	%	89.6	90.2	79.8	77.0	41.7	39.5
<b>Reagent Consumptions</b>							
NaCN	kg/t	0.24	0.24	0.33	0.24	0.41	0.60
Lime	kg/t	0.51	0.47	0.65	0.59	0.69	0.61

n/a – not applicable





The discrepancy between the Assay Head value and the Calculated Head value could not be explained in the testwork report, but the calculated heads in general agreed very well with the weighted average sample grades for samples making up each composite. It is thus assumed the Metcon Assay Head sampling method included a bias of some description.

In general, the total test gold extractions and those predicted from the LeachWell<sup>®</sup> tests are quite close, indicating that LeachWell<sup>®</sup> testing is a reliable method of assessing potential gold extraction for this deposit.

### **Diagnostic Leach Tests**

As the CIL tests on transition and primary zone composites were lower than for the oxide composite, a rudimentary diagnostic leach test on the residues from each of the "no gravity" CIL tests was carried out. In this test, the residue samples were roasted and then digested using aqua regia. The gold measured in solution was then taken as sulphide-encapsulated gold, and the remainder was taken as silicate-encapsulated gold. The results were used to provide a basic gold deportment, as shown in Table 13-6.

#### Table 13-6: Gold Deportment

Composite	% CN Soluble	% Locked in Sulphide	% Locked in Silicate
Oxide	94.6	4.3	1.1
Transition	77.9	21.9	0.2
Primary	27.1	71.7	1.2

Note that the cyanide soluble fraction includes the gravity component.

The fact that in each composite, little gold is locked in silicate minerals means that a gravity + sulphide flotation process should, in principle, provide a good means to recovering gold. In particular, the primary zone composite showed 98% of the gold unrecovered by CIL was locked in sulphide minerals, which consist mainly of pyrite.

### Heap Leach Test

A 38-day column leach test was completed on the oxide composite at a crush size of minus 6.3 mm as an initial means to predicting the likely performance of a heap leach operation. The results of the column leach test are summarized in Table 13-7.





ltem	Res	ults	
Sample	Ox	ide	
Crush, P100 mm	6.3		
Days of Leach	38		
	Au	Ag	
Head Assay (gpt)	1.33	16.0	
Calculated Head (gpt)	1.56	13.8	
Extracted (%)	79.5	54.5	
Consumption (kg/t)	0.	21	
Cement Addition (kg/t)	5	.0	

#### Table 13-7: Column Leach Test Results for La Calandria Sur

An extraction of almost 80% in 38 days is reasonable, and this process option certainly warrants further examination.

#### **Testwork on Primary Zone Composite**

As the diagnostic leaching tests on CIL residue samples showed 98% of unrecovered gold was in sulphides, two further processing options for the Primary Zone were examined:

- Bulk sulphide flotation followed by ultra fine grinding of the flotation concentrate and then cyanidation of the finely-ground product.
- Bulk sulphide flotation followed by oxidation of the flotation concentrate (roasting and/or POX) and then cyanidation of the oxidized product.
- Selective flotation of a gold and silver rich pyrite concentrate for sale to a smelter.

Bulk sulphide flotation of the primary composite was somewhat disappointing, characterised by an inability to achieve greater than 90% rougher recovery of sulphides and gold. Silver recovery to rougher concentrate was no higher than 80%. This was true even of samples ground to  $80\% - 45\mu$ m, which is a relatively fine primary grind. Cleaner flotation testwork resulted in higher grade concentrates, but with lower recoveries still (generally the cleaner circuit will lose 2-3% recovery, depending on conditions).

Upon mineralogical examination of the rougher flotation tailing, it became apparent that much of the non-recovered sulphur (and likely gold) was ultra-fine pyrite encapsulated within silicate minerals.

Three different methods of pre-treatment of the flotation concentrate prior to leaching with cyanide were tested. The technologies tested were:

- ultra-fine grinding
- roasting
- pressure oxidation (POX)





Ultra-fine grinding (UFG) of flotation concentrate can, in certain cases, unlock very fine gold from its host, rendering it amenable to recovery by cyanidation. For La Calandria Sur, the cyanidation post UFG resulted in gold and silver extractions from the concentrate of only 31% and 50% respectively.

Oxidation of the sulphides within a flotation concentrate can convert the sulphide minerals to oxide, thereby rendering the contained gold more amenable to cyanidation. Oxidation can be achieved with roasting or pressure oxidation. For La Calandria Sur, the cyanidation post-roasting resulted in maximum gold and silver extractions from the concentrate of 77% and 55% respectively. The reasons for the relatively poor extraction rates are unclear, but Metcon believed that Arsenic compounds formed during the roast may have interfered with the cyanidation process.

Cyanidation post-POX gave much better results, with up to 97.3% extraction of gold and 92.2% extraction of silver from the flotation concentrate.

Noting the POX process would be conducted on a flotation concentrate, the overall recovery results (the product of flotation and post-POX cyanidation recoveries) are given below:

- Gold = 85.6% flotation x 97.3% cyanidation, or 83.3% overall
- Silver = 81.1% flotation x 92.2% cyanidation, or 74.8% overall

Selective flotation of the primary composite was attempted to produce a high-grade concentrate for sale to smelters. However, given the close and fine-grained (if not solid solution) relationship between gold and pyrite, Metcon experienced difficulty improving the bulk sulphide flotation test results. In summary, the work produced a concentrate of 3.3% weight assaying 40.7 gpt Au, 884 gpt Ag, and 40.2% S at gold and silver recoveries of 82.1 and 82.9%, respectively.

# **13.1.4** Potential Processing Options

Based on the results of the preliminary testwork the following alternative processing options exist. These will be investigated in more definitive future testwork.

- (i) heap leaching; and (ii) CIL processing on the combined oxide and upper transition zones, with heap leaching currently favored because of its lower capital and operating costs.
- (i) bulk sulphide flotation/concentrate oxidation/cyanidation; and (ii) selective flotation of a saleable concentrate on the combined primary and lower transition zones, with the latter currently favored, again because of its lower capital and operating costs.

# 13.1.5 La Calandria Norte– LeachWell<sup>®</sup> Program

There has been no metallurgical test work completed on the Calandria Norte Vein. However, a total of 236 La Calandria Norte samples from 50 separate drill holes, have had LeachWell<sup>®</sup> tests completed on them. In contrast to La Calandria Sur, these limited results suggest the gold mineralization in the oxide, transition and primary zones may be amenable to processing by cyanidation.





The LeachWell® results for La Calandria Norte are summarized in Table 13-8.

Oxide Zone	Oxide Code	No. of Intercepts Tested	No. of Drill Holes	Total Metres Tested	Average Head Grade (gpt Au)	Average	Range
Oxide	2, 3, 4	26	12	66.17	2.01	94.0	30.5 - 96
Transition	1	17	13	31.55	2.01	86.3	25.6 - 96
Primary	0	178	40	244.37	6.45	54.5	1.0 - 96

 Table 13-8:
 Summary of LeachWell Results for La Calandria Norte

# 13.2 New Dimension, 2019

In 2019, New Dimension retained Blue Coast Research Inc. (Blue Coast) to carry out a metallurgical analysis on two composite samples from selected drill holes in the La Calandria Norte and Morena drilling. The following is taken from the metallurgical test work report by Blue Coast (Hall, 2019).

The testwork program was based on two composites, La Calandria Norte and Morena, with head grades of 15.0 g/t Au and 15.2 g/t Au, respectively. This program evaluated heap leach amenability (via coarse bottle roll), and standard tank leach cyanidation under two sets of conditions. A summary of results is shown in Table 13-9.

CN Test ID	Feed	Purpose	Final Recovery (%)	Residue Grade (g/t Au)	Residue p80 (µm)	Leach Time (hours)
CN-1	La Calandria Norte	Heap Leach Amenability	66.1	5.56	846	96
CN-2	Morena	Heap Leach Amenability	62.2	6.09	934	96
CN-3	La Calandria Norte	100μm Baseline	92.2	1.35	93	48
CN-4	Morena	100μm Baseline	92.7	1.14	98	48
CN-5	La Calandria Norte	75μm, Pre-Aeration, High NaCN	93.2	0.96	79	72
CN-6	Morena	75μm, Pre-Aeration, High NaCN	93.5	0.93	80	72

Table 13-9: Summary of Cyanidation for La Calandria Norte and Morena

A coarse bottle roll was conducted at 100% passing 1.7 mm, and a control size of 80% passing 100 $\mu$ m on each composite. Gold recovery increased by 26-30% at the finer grind, suggesting that standard agitated tank leaching would yield significantly better performance than heap leaching. Final gold recoveries for La Calandria Norte and Morena heap leach amenability tests were 66% and 62%, respectively.





Standard bottle rolls at baseline conditions, and a more aggressive set of conditions, were conducted on each composite. The baseline conditions employed were ~100  $\mu$ m primary grind size, 1 g/L NaCN and 48 hours retention time. The more aggressive conditions employed were ~75 $\mu$ m primary grind size, 2 g/L NaCN and 72 hours retention time. Minor improvements in recovery (0.9-1%) were observed under the more aggressive cyanidation conditions, however initial leach kinetics were significantly improved. Final recoveries for La Calandria Norte and Morena tests were 93% and 94% respectively.





# 14 MINERAL RESOURCE ESTIMATES

# 14.1 Introduction

This section describes and discloses the results of a new resource estimate for the La Calandria Sur and La Calandria Norte deposits for the Project completed by AGP. The Mineral Resources are prepared and disclosed in accordance with the Canadian Institute of Mining (CIM) Standards and Definitions for Mineral Resources and Reserves (2014). The effective date of these resource estimates is 14 September 2018.

The resource estimate for the La Calandria Sur and La Calandria Norte deposits have been prepared using interpreted domains within constraining shells. In the La Calandria Sur Deposit, the cut-off grades vary between 0.3 gpt Au to 0.8 gpt Au, depending on oxide zones. In the La Calandria Norte, a cut-off grade of 0.8 gpt Au was used within the constraining shell, and 1.5 gpt Au below the constraining shell, based on considerations for open pit and underground extraction scenarios.

# 14.1.1 Database

New Dimension supplied all of the digital data for the resource estimate update. This data was compiled from the assay analyses, which came directly to Minera Mariana from ALS (Mendoza) and Alex Stewart Laboratories (Mendoza) in Microsoft Excel<sup>®</sup> format. The data was verified, formatted, and imported into Geovia GEMS<sup>™</sup>.

The entire drillhole dataset included the header, survey, assay, and lithology files for 349 drill holes which include exploration drill holes from other exploration targets. From this database, 148 drillholes were used in estimating the La Calandria Sur Deposit and 72 drillholes for the La Calandria Norte Deposit.

A manual check on the header, survey, and assay data tables was made to search for obvious errors, such as negative values and overlapping sample intervals prior to statistical treatments. There were four 'Out of Sequence' errors found and corrected prior to importing the data.

# 14.1.2 Block Model Parameters

The La Calandria Sur and La Calandria Norte deposits were modeled and estimated separately in two different block models. For the La Calandria Sur, an unrotated block model was set up on a block matrix of 6x6x5 m. The La Calandria Norte Deposit lies mainly in a narrow breccia zone with an approximate strike of 055°Az, with a dip of roughly -60° to the northwest. Therefore, a rotated block was set up with a block matrix of 5x3x5 m, to align with the preferred strike of the deposit. Variables included capped and uncapped grade, rock type, density, percent, and resource class models. A multiple folder approach was used in the La Calandria Norte block model to estimate each domain separately.





Table 14-1 shows the block model parameters and Figure 14-1 presents the block model over the interpreted domains.

Table 14-1: Block Model Parameters

	Block Size (m)	Minimum	Maximum	No. of Blocks
La Calandria Sur				
Easting	6	613298	614252	Columns = 159
Northing	6	4724280	4725000	Rows = 120
Elevation	5	-100	200	Levels = 60
La Calandria Norte				
Easting	5	613800		Columns = 220
Northing	3	4724800		Rows = 330
Elevation	5	-100	200	Levels = 60
Rotation	*35°			

\*GEMS convention: positive rotation angle is counter-clockwise.



Figure 14-1: Block Models Perspective View looking NE, showing La Calandria Sur & La Calandria Norte Deposits





# 14.2 La Calandria Sur Deposit

# 14.2.1 Domain Modeling

Domain modelling is considered the first step in estimating resources for a mineral deposit. It consists of separating the mineralized material into different domains with distinct geological characteristics, grade distributions, and spatial continuity of grade. In practice, each domain takes the form of a three-dimensional (3D) envelope often interpreted on sections or levels by a geologist.

A 3D wireframe was developed for the rhyolite dome for La Calandria Sur, in Leapfrog Edge, by New Dimension. AGP reviewed the wireframe and found no issues. AGP created a country rock 3D wireframe to represent the material surrounding the rhyolite dome. To capture the highergrade core of the deposit, AGP employed an indicator kriged model that used a 1 gpt Au indicator cut-off.

Table 14-2 presents the domains and rock codes used for the La Calandria Sur Deposit. Figure 14-2 shows the interpreted domains for the Calandria Sur Deposit.

Domain	Rock Code	Rock Type
La Calandria Sur Core	CS_CORE	41
La Calandria Sur Dome	CS_DOME	40
La Calandria Sur Country Rock	CS_CR	39

Table 14-2: Calandria Sur Interpreted Domains and Rock Codes







Figure 14-2: La Calandria Sur Interpreted Domains; perspective view, looking northeast

### **Oxide Zones**

Based on the oxidation of the sulphides, the drill core was logged as primary, transition, and oxide. 3D wireframe solids were created from an oxide surface, capturing oxide codes 2, 3, and 4; and a transition layer, capturing oxide codes 1. All codes below this transition layer were captured within a primary layer, although there appears to be some transition (or weak oxidization) at depth. As described in Section 13, these oxide layers show distinct recoveries based on metallurgical test work and are therefore used in the reporting of Mineral Resources.

Table 14-3 presents the oxide domains and codes (Oxcodes) used for the La Calandria Sur Deposit. Figure 14-3 shows the interpreted domains for the La Calandria Sur Deposit.

Table 14-3:	La Calandria	Sur Interpreted	<b>Oxide Domains and</b>	Oxcodes
			•	

Domain	Oxide	Oxcode
Oxide	2, 3, 4	1002
Transition	1	1001
Primary	0	1000







Figure 14-3: La Calandria Sur Interpreted Oxide Domains; perspective view, looking northeast

# 14.2.2 Exploratory Data Analysis

### Raw Assays

A total of 12,955 assay results, from 148 drill holes, for gold and silver were used for the La Calandria Sur resource estimate. AGP converted assay values reported as less than detection limit to half the detection limit for statistical analysis and grade estimation. Any missing values were assigned a zero. Descriptive statistics of the raw sample data used in the resource are presented in Table 14-4. Only those values greater than zero were used in the statistical analysis.

Statistic	Au (gpt)	Ag (gpt)	Length (m)
Count	12,955	12,950	12,955
Minimum	0.002	0.10	0.30
Maximum	154.50	2,250	4.50
Mean	0.45	9.47	1.12
Std. Deviation	1.81	35.81	0.25
CV	4.00	3.78	0.23

Table 14-4: Descriptive Statistics on the La Calandria Sur Drill Hole Dataset (no zeroes)

### **Domain Boundary Analysis**

AGP tested the validity of the domains using boundary analysis (contact plots) for the gold and silver values. The boundary between the core and the dome are considered semi-soft boundary





and between the dome and country rock is considered a soft boundary. Due to the few values in contact with the core and the country rock domain, this boundary is considered as a hard boundary.

Figure 14-4 to Figure 14-6 show the contact plots between each of the three domains for gold.



Figure 14-4: Contact Plot between CS\_CORE and CS\_DOME Domains; gpt Au









Figure 14-6: Contact Plot between CS\_CORE and CS\_CR Domains; gpt Au







## Raw Assays by Domain

The raw assay values were back-tagged to the core, dome, and country rock domains and the descriptive statistics for gold and silver in the three domains are presented in Table 14-5.

	Statistic	Au (gpt)	Ag (gpt)	Length (m)
	Count	1,464	1,464	1,464
	Minimum	0.006	0.30	0.50
	Maximum	40.2	773.00	3.00
C3_CORE	Mean	1.65	32.62	1.08
	Std. Deviation	2.52	50.75	0.24
	CV	1.52	1.56	0.22
66 DOM5	Count	6,699	6,699	6,699
	Minimum	0.002	0.10	0.30
	Maximum	154.50	2,520.00	4.50
	Mean	0.35	9.42	1.11
	Std. Deviation	2.02	40.54	0.26
	CV	5.74	4.30	0.23
	Count	4,786	4,781	4,786
	Minimum	0.002	0.10	0.35
	Maximum	32.40	565.00	2.90
LS_LK	Mean	0.23	2.45	1.15
	Std. Deviation	0.89	12.99	0.25
	CV	3.84	5.30	0.22

Table 14-5:	Descriptive St	tatistics on the	Las Calandrias	Drill Hole Dat	aset by Domair	n (no zeroes)
	Descriptive S		Eus culuitatius	Dim noic Duc	aset by bonnan	1 (110 201000)

### Specific Gravity

A total of 410 samples were collected from 83 drillholes for specific gravity (SG) determination during the 2011 drill program. The SG readings for all domains are similar and due to the well distributed readings. The density values were interpolated for the La Calandria Sur Deposit by  $ID^2$ . Any blocks not populated were assigned the mean density of 2.21 (Table 14-6).

 Table 14-6: Descriptive Statistics for Bulk Density on the La Calandria Sur Drill Hole Dataset

	Total
Count	410
Minimum	1.58
Maximum	2.86
Mean	2.21
Std. Deviation	0.16
CV	0.07





## **Capping Analysis**

When estimating resources, high-grade outliers may contribute to a bias in the total metal content of the estimate. In a geologic context, outliers may represent a separate grade population characterized by its own continuity; generally, the physical continuity of high grade is much less than those of the more prevalent lower grades. Thus, an overestimation of both tonnage and average grade above a cut-off grade can result if a block model, normally dominated by the lower more continuous grades, is applied to very high-grade values. The problem is further exaggerated when the high-grade samples are isolated in a field of lower grade samples (Sinclair, 2002).

Histograms and probability plots were reviewed, and a disintegration analysis was used to determine the potential risk of grade distortion from higher-grade composites. The raw assay values were analyzed by domain. Since the dome and country rock are considered as a soft boundary, these two domains were combined for the capping analysis. Table 14-7 shows the levels of capping for gold and silver by domain, and the number of values affected.

Metal	CS_CORE	No. of Affected Assays	CS_DOME CS_CR	No. of Affected Assays
Gold (gpt)	28.6	2	12.05	7
Silver (gpt)	602	1	208	5

Table 14-7.	Capping Levels for	Gold and Silver	Values by	Domain
Table 14-7:	Capping Levels for	Gold and Sliver	values by	Domain

### **Composites**

In order to normalize the assay data, samples are often composited to a standard length. For La Calandria Sur, the raw sample values were composited to 2 m intervals. Since most of the boundaries are considered soft or semi-soft, composites were made on equal length and then back tagged to the domain in which they reside. Composites with less than 1.0 m in length were removed.

Descriptive statistics of the composited metal grades are presented in Table 14-8.





	Statistic	Au (gpt)	Ag (gpt)	Length (m)
	Count	732	789	789
	Minimum	0.10	0.45	1.00
	Maximum	17.50	373.50	2.00
CS_CORE	Mean	1.68	30.06	1.99
	Std. Deviation	1.85	19.15	0.09
	CV	1.10	1.25	0.05
	Count	2960	3732	3732
CS_DOME	Minimum	0.10	0.05	1.00
	Maximum	18.20	182.50	2.00
	Mean	0.39	8.27	1.99
	Std. Deviation	0.54	4.96	0.10
	CV	1.36	1.40	0.05
	Count	1517	2827	2827
CS_CR	Minimum	0.10	0.05	1.00
	Maximum	10.00	158.77	2.00
	Mean	0.38	2.22	1.95
	Std. Deviation	0.61	7.04	0.21
	CV	1.62	3.18	0.11

#### Table 14-8: Descriptive Statistics on the Las Calandrias Drill Hole Dataset by Domain (no zeroes)

# 14.2.3 Block Modelling

The La Calandria Sur block model was setup on a regular block matrix of 6x6x5 m. Variables included capped and uncapped grade models, rock type, density, percent, and resource class models.

Table 14-9 shows the block model parameters and Figure 14-7 presents the block model over the interpreted domains.

#### Table 14-9: Block Model Parameters

	Block Size (m)	Minimum	Maximum	No. of Blocks
La Calandria Sur				
Easting	6	613298	614252	Columns = 159
Northing	6	4724280	4725000	Rows = 120
Elevation	5	-100	200	Levels = 60







Figure 14-7: Contact Plot between CS\_CORE and CS\_CR Domains; gpt Au

# **Spatial Analysis**

Geostatisticians use a variety of tools to describe the pattern of spatial continuity, or strength of the spatial similarity, of a variable with separation distance and direction. The correlogram measures the correlation between data values as a function of their separation distance and direction. The distance at which the correlogram reaches the maximum variance is called the 'range of correlation' or simply the range. The range of the correlogram corresponds roughly to the more qualitative notion of the 'range of influence' of a sample; it is the distance over which sample values show some persistence or covariance.

Spatial analysis and variography was carried out for gold and silver values but did not result in any robust variograms. Therefore, due to the high variability of gold and silver values, an ID cubed interpolation was selected for block model interpolation.

### **Search Ellipse Parameters**

The search ellipse parameters used for the block model interpolation by domain are presented in Table 14-10 below.





Domain	Search Anisotropy	Az (°)	Dip (°)	Az (°)	X Range (m)	Y Range (m)	Z Range (m)	Search Type
CS_CORE								
Pass 1	Az.Dip.Az.	290	5	0	25	10	25	Ellipsoidal
Pass 2	Az.Dip.Az.	290	5	0	80	15	70	Ellipsoidal
CS_DOME								
Pass 1	Az.Dip.Az.	290	5	0	25	15	25	Ellipsoidal
Pass 2	Az.Dip.Az.	290	5	0	80	20	70	Ellipsoidal
CS_CR								
Pass 1	Az.Dip.Az.	290	5	0	25	15	25	Ellipsoidal
Pass 2	Az.Dip.Az.	290	5	0	80	20	70	Ellipsoidal

#### Table 14-10: La Calandria Sur Search Ellipse Parameters

#### **Block Model Interpolation**

The interpolation method used for the mineral resource estimate is  $ID^3$  on capped values.  $ID^2$  and Nearest Neighbour (NN) interpolation methods were also run for validation purposes.

For all interpolation methods, two passes were used. For each domain, on the first pass, a minimum of 4 and a maximum of 15 composite samples were used to interpolate a block: with a maximum of three composites per drillhole. This allows the grade for each block to be interpolated by using composite assay values from at least two drillholes. The second pass used a minimum of 3 and a maximum of 15 composite samples (with three composites per drillhole) to allow blocks to be estimated using a minimum of one drillhole. A summary of the interpolation passes is described in Table 14-11.

Profiles	Comps	Interpolation	Min No. Samples	Max. No. Samples	Max. No. Samples per Drillhole
SxxxI3P1	2m	ID3	4	15	3
SxxxI3P2	2m	ID3	3	15	3
SxxxI2P1	2m	ID2	4	15	3
SxxxI2P2	2m	ID2	3	15	3
SxxxNN	2m	NN	1	1	1

 Table 14-11: Interpolation Parameters for the La Calandria Sur Deposit (all Domains)

xxx = AU, AUC, AG, AGC

# 14.2.4 Block Model Validation

### Visual Validation

The block model was validated by visually inspecting the block model results on section in order to compare with the drillhole composite data. The grades of the blocks by section agreed well with the composite data used in the interpolation. Figure 14-8 illustrates a north-south section at 613840E (looking east) showing gold grades in blocks and in 2 m composites.







Figure 14-8: Cross-section 613840E of La Calandria Sur, looking east; showing gold grades in 2m composites (points) and block model (blocks)

Grid size is 20 m x 20 m. Block Size is 6 m x 5 m.

# Mean Grades

AGP reviewed the overall statistics for each of the domains and found no bias from the composite points to the ID<sup>3</sup> grade estimation. Table 14-12 shows the statistics for the mean block grades for gold by domain.





Domains	CS_CORE	CS_DOME,	CS_CR
ID3	1.26	0.26	0.11
ID2	1.26	0.26	0.11
NN	1.35	0.26	0.11
2m Comps	1.68	0.39	0.38

 Table 14-12: Descriptive Statistics for gold (gpt Au) on the La Calandria Sur Drill Hole Dataset by Domain (no zeroes)

#### Swath Plots

AGP interpolated gold and silver grades by the  $ID^2$  and NN interpolation methods and compared the grades of blocks to the composite values used along a particular swath of the block model. The swath plots show no bias in the grade estimation for the La Calandria Sur Deposit.

Figure 14-9 to Figure 14-11 present the swath plots for gold along the easting, northing, and elevation for capped gold grades.



Figure 14-9: Swath Plots for Gold Grades in the La Calandria Sur Deposit by Easting






Figure 14-10: Swath Plots for Gold Grades in the La Calandria Sur Deposit by Northing









# 14.3 La Calandria Norte Deposit

# 14.3.1 Domain Modeling

Domain modelling is considered the first step in estimating resources for a mineral deposit. It consists of separating the mineralized material into different domains with distinct geological characteristics, grade distributions, and spatial continuity of grade. In practice, each domain takes the form of a 3D envelope often interpreted on sections or levels by a geologist. Table 14-13 presents the domains and rock codes used for the La Calandria Norte Deposit. Figure 14-12 shows the interpreted domains for the La Calandria Norte Deposit.

Table 14-13: Calandria Sur Interpreted Domains and Rock Co	des
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Domain	Rock Code	Rock Type
Calandria Norte Breccia Zone	CN_BZ	51
Calandria Norte Dome	CN_DOME	50
Calandria Norte Country Rock	CN_CR	99









# 14.3.2 Exploratory Data Analysis

#### Raw Assays

A total of 5,959 assay results for gold and silver were used for the La Calandria Norte resource estimate. AGP converted assay values reported as less than detection limit to half the detection limit for statistical analysis and grade estimation. Descriptive statistics of the raw sample data used in the resource are presented in Table 14-14. Only those values greater than zero were used in the statistical analysis.

	Au (gpt	Ag (gpt)	Length (m)
Count	5,959	5,959	5,959
Minimum	0.002	0.10	0.20
Maximum	450.28	417.00	2.50
Mean	0.59	2.15	1.10
Std. Deviation	8.60	12.08	0.30
CV	14.64	5.62	0.28

#### Table 14-14: Descriptive Statistics on the La Calandria Norte Drill Hole Dataset

#### **Domain Boundary Conditions**

AGP tested the validity of the domains using contact plots for the gold and silver values. The boundary between the breccia zone [CN\_BZ] and the dome [CN\_DOME] domains are considered a hard boundary. There is very limited data in the country rock domain wireframe. This data is included in the dome domain. Figure 14-13 and Figure 14-14 show the contact plots between each of the three domains for gold.







Figure 14-13: Contact Plot between CN\_BZ and CN\_DOME Domains; Au gpt









### Raw Assays by Domain

Descriptive statistics of the raw sample data for gold and silver in the two domains are presented in Table 14-15 and Table 14-16, respectively.

Table 14-15: Descriptive Statistics for the CN	_BZ Domain – Raw Sample Data
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	Au (gpt)	Ag (gpt)	Length (m)
Count	998	998	998
Minimum	0.002	0.10	0.20
Maximum	450.28	417.00	2.00
Mean	2.62	6.62	0.97
Std. Deviation	20.85	27.57	0.29
CV	7.97	4.17	0.30

Table 14-16:	Descriptive	Statistics for the CN	DOME Domain	– Raw Sample Data
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	Au (gpt)	Ag (gpt)	Length (m)
Count	4,961	4,961	4,961
Minimum	0.002	0.10	0.20
Maximum	30.50	145.00	2.50
Mean	0.18	1.25	1.12
Std. Deviation	0.66	4.21	0.30
CV	3.70	3.36	0.27

#### Specific Gravity

A total of 41 samples were collected from 21 drillholes for bulk SG determination in the 2010-2011 drill campaigns. The number of density readings is relatively low and concentrated in the northeast end of the deposit area. For the La Calandria Norte Deposit a density of 2.41 was assigned to the block model.

Table 14-17 presents the statistics for all density data in La Calandria Norte.

Table 14-17: Descriptive Statistics for Bulk Density on the La Calandria Norte Drill Hole Dataset

	Total
Count	41
Minimum	2.09
Maximum	2.71
Mean	2.41
Std. Deviation	0.14
CV	0.06

#### **Capping Analysis**

Histograms and probability plots were reviewed, and a disintegration analysis was used to determine the potential risk of grade distortion from higher-grade composites. The raw assay





values were analyzed by domain. Table 14-18 shows the levels of capping for gold and silver by domain, and the number of values affected.

Metal	CN_BZ	No. of Affected Assays	CN_DOME CN_CR	No. of Affected Assays
Gold (gpt)	64.00	7	9.78	2
Silver (gpt)	93.60	8	47.50	5

#### **Composites**

In order to normalize the assay data, samples are often composited to a standard length. The raw sample values were composited to 2 m intervals. Since the boundaries between the CN\_BZ and CN\_DOME is considered hard, composites were adjusted based on the intersection of the interpreted domain wireframes. Composites with less than 1 m in length were deleted.

Descriptive statistics of the composited gold and silver grades are presented in Table 14-19 and Table 14-20, respectively.

	Au (gpt	Ag (gpt)	Length (m)
Count	488	498	544
Minimum	0.10	0.04	1.85
Maximum	42.02	79.79	2.26
Mean	1.32	4.05	1.98
Std. Deviation	4.47	8.25	0.07
CV	3.40	2.04	0.04

Table 14-19: Descriptive Statistics of 2 m Composites in the CN\_BZ Domain (capped values, no zeroes)

Table 14-20: Descriptive Statistics of 2 m Composites in the CN\_DOME Domain (capped values, no zeroes)

	Au (gpt	Ag (gpt)	Length (m)
Count	2,751	2,889	2,751
Minimum	0.10	0.01	1.80
Maximum	7.16	40.16	2.55
Mean	0.16	1.03	2.00
Std. Deviation	0.31	1.93	0.03
CV	1.88	1.93	0.01

## 14.3.3 Block Modelling

The mineralization at the La Calandria Norte Deposit lies mainly in a narrow breccia zone with an approximate strike of 055°Az, with a dip of roughly -60° to the northwest. Therefore, a rotated block was set up with a block matrix of 5x3x5 m, to align with the strike of the deposit. A multiple folder approach was used in the La Calandria Norte block model to estimate each domain





separately. Variables included capped and uncapped grade models, rock type, density, percent, and resource class models.

Table 14-21 shows the block model parameters and Figure 14-15 presents the block model over the interpreted domains.

#### Table 14-21: Block Model Parameters

	Block Size (m)	Minimum	Maximum	No. of Blocks
La Calandria Norte				
Easting	5	613800		Columns = 220
Northing	3	4724800		Rows = 330
Elevation	5	-100	200	Levels = 60
Rotation	35° counter-cl	ockwise		



#### Figure 14-15: Block Model over the La Calandria Norte Dome and Breccia Zone

## **Spatial Analysis**

Spatial analysis and variography was carried out for gold and silver values for all domains but did not result in any robust variograms. Therefore, due to the high variability of gold and silver values, an ID<sup>3</sup> cubed interpolation was selected for block model interpolation.





## Search Ellipse Parameters

The search ellipses for La Calandria Norte were aligned to the breccia zone for all domains. In the breccia zone, there is a slight change in orientation and the distinct search ellipse was used for selected blocks in this area.

The search ellipse parameters used for the block model interpolation by domain are presented in Table 14-22 below.

Profiles	Search Anisotropy	Az (°)	Dip (°)	Az (°)	X Range (m)	Y Range (m)	Z Range (m)	Search Type
CN_BZ								
51_P1	Az.Dip.Az.	58	17	0	60	60	10	Ellipsoidal
51_P2	Az.Dip.Az.	58	17	0	100	100	15	Ellipsoidal
CN_BZ(NE)								
51NE_P1	Az.Dip.Az.	62	11	0	60	60	10	Ellipsoidal
51NE_P2	Az.Dip.Az.	62	11	0	100	100	15	Ellipsoidal
CN_DOME								
50_P1	Az.Dip.Az.	58	17	0	60	60	20	Ellipsoidal
50_P2	Az.Dip.Az.	58	17	0	100	100	30	Ellipsoidal
CN_CR								
50_P1	Az.Dip.Az.	58	17	0	60	60	20	Ellipsoidal
50_P2	Az.Dip.Az.	58	17	0	100	100	30	Ellipsoidal

#### Table 14-22: La Calandria Norte Search Ellipse Parameters

#### **Block Model Interpolation**

The interpolation method used for the mineral resource estimate is  $ID^3$  on capped values.  $ID^2$  and NN interpolation methods were also run for validation purposes.

For all interpolation methods, two passes were used. For all domains, a minimum of 3 and a maximum of 15 composite samples were used on the first pass to interpolate a block: with a maximum of two composites per drillhole. This allows the grade for each block to be interpolated by using composite assay values from at least two drillholes. The second pass used a minimum of 3 and a maximum of 15 composite samples (with two composites per drillhole) but within a larger search ellipse. A summary of the interpolation passes is described in Table 14-23.





Profiles	Comps	Interpolation	Min No. Samples	Max. No. Samples	Max. No. Samples per Drillhole
CN_BZ					
N1xxx3P1	2m	ID3	3	15	2
N1xxx3P1	2m	ID3	3	15	2
N1xxx2P1	2m	ID2	3	15	2
N1xxx2P1	2m	ID2	3	15	2
N1_xxxNN	2m	NN	1	1	1
CN_DOME					
Nxxx3P1	2m	ID3	3	15	2
Nxxx3P1	2m	ID3	3	15	2
Nxxx2P1	2m	ID2	3	15	2
Nxxx2P1	2m	ID2	3	15	2
CN_CR	<u> </u>				
N9xxxP1	2m	ID3	3	15	2
N9xxxP1	2m	ID3	3	15	2

#### Table 14-23: Interpolation Parameters for the La Calandria Norte Deposit (all Domains)

xxx = AU, AUC, AG, AGC

#### 14.3.4 Block Model Validation

#### **Visual Validation**

The block model was validated by visually inspecting the block model results on section in order to compare with the drillhole composite data. The grades of the blocks by section agreed well with the composite data used in the interpolation. Figure 14-16 illustrates a cross-section at column 98 of the block model showing gold grades in blocks and in 2 m composites.







Figure 14-16: Cross-section Column 98 of La Calandria Norte Block Model, looking northeast; showing gold grades in 2m composites (points) and block model (blocks)

Grid size is 20 m x 20 m. Block Size is 5 m x 3 m

#### Mean Grades

AGP reviewed the overall statistics for each of the domains in La Calandria Norte and found no bias from the composite points to the ID<sup>3</sup> grade estimation. Table 14-24 shows the statistics for the mean block grades for gold by domain.





Domains	CN_BZ	CN_DOME,
ID3	0.70	0.11
ID2	0.71	0.11
NN	0.65	0.11
2m Comps	1.32	0.16

#### Table 14-24: Mean Gold Grades (gpt Au) for the La Calandria Norte Deposit

#### Swath Plots

AGP interpolated gold and silver grades by the  $ID^2$  and NN interpolation methods and compared the grades of blocks to the composite values used along a particular swath of the block model. The swath plots show no bias in the grade estimation for the La Calandria Norte Deposit.

Figure 14-17 to Figure 14-19 present the swath plots for gold along the easting, northing, and elevation for capped gold grades within the breccia zone of the La Calandria Norte Deposit.



Figure 14-17: Swath Plots for Gold Grades in the Breccia Zone by Easting







Figure 14-18: Swath Plots for Gold Grades in the Breccia Zone by Northing









# 14.4 Mineral Resource Statement

# 14.4.1 Cut-off Grade Calculation

For the La Calandria Sur Deposit, AGP has determined resource cut-off grades by oxide zone for reporting of the mineral resources, and within a constraining shell for the material amenable to open pit extraction. Cut-off grades used for reporting mineral resources are of 0.3 gpt Au in the Oxide Zone, 0.4 gpt Au in the Transition Zone, and 0.8 gpt Au in the Primary Zone.

For the La Calandria Norte Deposit, AGP used a cut-off grade of 0.8 gpt Au within a constraining shell, and 1.5 gpt Au for material below the constraining shell for reporting of mineral resources for material that may be amenable to open pit and underground extraction, respectively. The cut-off grades and constraining shells were determined based on the parameters below.

## 14.4.2 Constraining Shell Parameters

To report the mineral resources with 'reasonable prospects for eventual extraction', a constraining shell was developed by AGP for both the La Calandria Sur and La Calandria Norte deposits. The block models for both deposits were exported in ASCII format and imported into Hexagon MineSight<sup>®</sup> for use in developing the constraining shell for the reported mineral resources.

Table 14-25 shows the assumptions made to constrain the reported mineral resources at the La Calandria Sur and La Calandria Norte deposits.

Input Parameter	Units	Value
Metal Prices		
Gold	US\$/oz	1,400
Silver	US\$/oz	18.50
Metallurgical Recoveries		
Gold	%	73 – 94
Silver	%	78 – 90
Mining Rate	tpa	1,000,000
Mining Cost	\$/t total	2.50
Processing, General and Administrative Cost	\$/t mill feed	11 – 25
Wall Slope Angle	degrees	45

#### Table 14-25: Parameters for the La Calandria Sur and La Calandria Norte Constraining Shells

## 14.4.3 Mineral Resource Classification

Mineral resources were classified in accordance with definitions provided by CIM (2014) Standards and Definitions. The mineral resources for the La Calandria Sur and La Calandria Norte deposits were classified as Indicated and Inferred mineral resources and captured within optimized constraining shells.





Indicated resources are classified where estimated blocks are situated within the 50x50 m drillhole grid, interpolated with a minimum of two drillholes, and nominally within 25 m for the last drillhole. A wireframe was created to capture the Indicated resources to remove isolated blocks of Inferred material. Inferred resources are classified as blocks estimated nominally with a minimum of two drillholes and a distance to the closest composite of less than 70 m.

## 14.4.4 Calandria Sur Mineral Resources

The mineral resources for the La Calandria Sur Deposit, within a constraining shell, are: Indicated resources of 7.4 Mt at 1.33 gpt Au and 24.65 gpt Ag; and Inferred resources of 1.7 Mt at 0.73 gpt Au and 7.17 gpt Ag. It should be noted the cut-off grade is variable and based on oxide zones. The effective date of the La Calandria Sur Deposit Mineral Resources is 14 September 2018.

Table 14-26 presents the Indicated and Inferred mineral resources at the La Calandria Sur Deposit. Table 14-27 and Table 14-28 present the Indicated and Inferred mineral resources by oxide zone, respectively.

	-	-	Metal Grades			ed Metal
Classification	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Indicated	0.3 (oxide) 0.4 (transition) 0.8 (primary)	7,424	1.33	24.65	318,000	5,884,000
Inferred	0.3 (oxide) 0.4 (transition) 0.8 (primary)	1,739	0.73	7.17	41,000	401,000

# Table 14-26: Mineral Resources for the La Calandria Sur Deposit within a constraining shell (14 September2018)

Notes:

Summation errors may occur due to rounding.

Mineral resources are reported within an optimized constraining shell.

Block matrix is 6m x 6m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was interpolated by ID2. Blocks not populated by ID2 were assigned the mean density 2.21.

Cut-off grade of varies by oxide zone (0.3 gpt Au oxide; 0.4 gpt Au transition; and 0.8 gpt Au primary zones). Mineral resources that are not mineral reserves do not have demonstrated economic viability.





		Metal Grades			Contain	ed Metal
Indicated	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Oxide	0.3	2,267	0.77	9.56	56,000	696,000
Transition	0.4	996	0.94	17.32	30,000	555,000
Primary	0.8	4,162	1.73	34.62	232,000	4,633,000
TOTAL		7,424	1.33	24.65	318,000	5,884,000

# Table 14-27: Indicated Mineral Resources for the La Calandria Sur Deposit by Oxide Zone (14 September2018)

Notes:

Summation errors may occur due to rounding.

Mineral resources are reported within an optimized constraining shell.

Block matrix is 6m x 6m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was interpolated by ID2. Blocks not populated by ID2 were assigned the mean density 2.21.

Cut-off grade of varies by oxide zone (0.3 gpt Au oxide; 0.4 gpt Au transition; and 0.8 gpt Au primary zones). Mineral resources that are not mineral reserves do not have demonstrated economic viability.

# Table 14-28: Inferred Mineral Resources for the La Calandria Sur Deposit by Oxide Zone (14 September 2018)

			Metal Grades		Contained Metal	
Indicated	Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Oxide	0.3	1,275	0.68	7.69	28,000	315,000
Transition	0.4	262	0.60	5.46	5,000	46,000
Primary	0.8	202	1.21	6.08	8,000	40,000
TOTAL		1,739	0.73	7.17	41,000	401,000

Notes:

Summation errors may occur due to rounding.

Mineral resources are reported within an optimized constraining shell.

Block matrix is 6m x 6m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was interpolated by ID2. Blocks not populated by ID2 were assigned the mean density 2.21.

Cut-off grade of varies by oxide zone (0.3 gpt Au oxide; 0.4 gpt Au transition; and 0.8 gpt Au primary zones). Mineral resources that are not mineral reserves do not have demonstrated economic viability.

#### La Calandria Sur Cut-off Grade Sensitivity

Table 14-29 and Table 14-30 below show the La Calandria Sur Deposit sensitivity to various gold cut-off grades for the Indicated and Inferred mineral resources, within the constraining shell.





		Metal	Grades	Contain	ed Metal
Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
> 0.8	5,173	1.70	30.98	282,000	5,153,000
> 0.7	6,003	1.56	28.66	302,000	5,531,000
> 0.6	7,091	1.42	26.15	324,000	5,961,000
> 0.5	8,584	1.27	23.56	351,000	6,503,000
> 0.4	10,692	1.11	20.74	381,000	7,130,000
> 0.3	13,667	0.94	17.96	414,000	7,893,000

#### Table 14-29: Indicated Mineral Resources for the La Calandria Sur Deposit (14 September 2018)

Table 14-30	: Inferred Minera	Resources fo	or the La Ca	alandria Sur	Deposit (	14 September	2018)
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		Metal	Grades	Contain	ed Metal
Cut-off Grade (gpt Au)	Tonnage ('000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
> 0.8	506	1.41	7.81	23,000	127,000
> 0.7	650	1.20	7.75	25,000	162,000
> 0.6	876	1.10	7.74	31,000	218,000
> 0.5	1,268	0.91	7.43	37,000	303,000
> 0.4	1,972	0.74	6.97	47,000	442,000
> 0.3	3,218	0.59	6.61	61,000	684,000

#### 14.4.5 La Calandria Norte Mineral Resources

The mineral resources for the La Calandria Norte Deposit, within an optimized constraining shell, at a 0.8 gpt Au cut-off grade are: Indicated resources of 604,000 t at 3.12 gpt Au and 8.20 gpt Ag; and Inferred resources of 19,000 t at 1.31 gpt Au and 0.69 gpt Ag. The mineral resources for the La Calandria Norte Deposit, below the optimized constraining shell, at a 1.5 gpt Au cut-off grade are: Indicated resources of 131,000 t at 2.82 gpt Au and 6.30 gpt Ag; and Inferred resources of 2,000 t at 1.71 gpt Au and 2.01 gpt Ag.

The effective date of the La Calandria Norte Deposit Mineral Resources is 14 September 2018. Table 14-31 and Table 14-32 present the Indicated and Inferred mineral resources at the La Calandria Norte Deposit.





			Metal G	Grades	Containe	ed Metal
Classificati on	Cut-off Grade (gpt Au)	Tonnage (,000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)
Indicated	0.8	604	3.12	8.20	61,000	159,000
Inferred	0.8	19	1.31	0.69	1,000	400

# Table 14-31: Mineral Resources for the La Calandria Norte Deposit within the constraining shell, at a 0.8gpt Au (14 September 2018)

Notes:

Summation errors may occur due to rounding.

Mineral resources are reported within an optimized constraining shell.

Block matrix is 5m x 3m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was assigned the mean density 2.41.

Cut-off grade of used for reporting Mineral Resources is 0.8 gpt Au.

Mineral resources that are not mineral reserves do not have demonstrated economic viability.

# Table 14-32: Mineral Resources for the La Calandria Norte Deposit below the constraining shell at a 1.5gpt Au cut-off grade (14 September 2018)

	-	-	Metal	Grades	Contained Metal		
Classification	Cut-off Grade (gpt Au)	Tonnage (,000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)	
Indicated	1.5	131	2.82	6.30	12,000	27,000	
Inferred	1.5	2	1.71	2.01	100	100	

Notes:

Summation errors may occur due to rounding.

Mineral resources are reported below the optimized constraining shell.

Block matrix is 5m x 3m x 5m (length x width x height).

Grades are estimated by ID3 interpolation.

Density was assigned the mean density 2.41.

Cut-off grade of used for reporting Mineral Resources is 1.5 gpt Au.

Mineral resources that are not mineral reserves do not have demonstrated economic viability.

#### La Calandria Norte Cut-off Grade Sensitivity

Table 14-33 and Table 14-34 below show the La Calandria Norte Deposit sensitivity to various gold cut-off grades for the Indicated and Inferred mineral resources. No constraining shell is applied for these comparisons.





		Metal	Grades	Contained Metal		
Cut-off Grade (gpt Au)	Tonnage (,000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)	
> 5.0	110	9.50	18.87	33,000	66,000	
> 4.0	144	8.29	16.53	38,000	77,000	
> 3.0	211	6.76	13.55	46,000	92,000	
> 2.0	339	5.12	10.90	56,000	119,000	
> 1.5	474	4.16	9.40	63,000	143,000	
> 1.0	742	3.09	7.94	74,000	189,000	
> 0.8	939	2.63	7.14	79,000	216,000	

#### Table 14-33: Indicated Mineral Resources for the La Calandria Norte Deposit (14 September 2018)

	-	Metal	Grades	<b>Contained Metal</b>		
Cut-off Grade (gpt Au)	Tonnage (,000 t)	Au (gpt)	Ag (gpt)	Au (oz.)	Ag (oz.)	
> 5.0	-	-	-	-	-	
> 4.0	-	-	-	-	-	
> 3.0	-	-	-	-	-	
> 2.0	-	-	-	-	-	
> 1.5	8	1.59	0.91	400	200	
> 1.0	36	1.30	1.23	1,500	1,000	
> 0.8	57	1.16	1.85	2,000	3,000	

# 14.5 Previous Mineral Resource Estimates

The previous mineral resources had an effective date of the 6 March 2011 and were reported at a gold equivalent cut-off grade. The gold equivalent was calculated considering long-term average silver and gold metal-price ratios; where a ratio of 60:1, respectively, is used. Gold-equivalent calculations reflected gross metal content and were not adjusted for metallurgical recoveries or relative processing and smelting costs.

The current mineral resources are reported at a gold cut-off grade. For purposes of a direct comparison, the 2011 mineral resources were reported out at a gold grade cut-off and within the same constraining shells used for the La Calandria Sur and La Calandria Norte deposits. For reporting the 2011 Calandria Sur resources, the 2011 model uses the 2011 oxide zones.

## 14.5.1 La Calandria Sur Mineral Resource Comparison

For the La Calandria Sur mineral resources, there has been a change in interpretation of the deposit and oxide zones as well as a change in classification. The 2018 model used an indicator model to establish a higher-grade core. The oxide zones have been updated to snap to the drill hole intercepts to differentiate the oxide, transition, and the primary zones. The updated zones do not deviate greatly from the previous oxide zones and locally vary slightly upwards or





downward. Density in the 2018 model was interpolated instead of assigning a value by oxide zone and may have the effect of locally changing the tonnages of the blocks.

Overall, the 2018 model shows an increase in both Indicated and Inferred categories based on the differences noted above. Inferred resources have increased due to the inclusion of previously uncategorized material. However, much of this previously unclassified material is of lower grade and, at the fringes of the model where there is little sample support, the grade tends to be lower.

Table 14-35 presents the comparison of the 2011 and 2018 mineral resources for material within the 2018 constraining shell.

Table 14-35: Comparison of March 2011 and September 2018 Mineral Resources for the La Calandria SurDeposit; within the 2018 constraining shell.

	6 March 2011 Resources oxide COG > 0.3 gpt Au transition COG > 0.4 gpt Au primary COG > 0.8 gpt Au			14 Sept. 2018 Resources oxide COG > 0.3 gpt Au transition COG > 0.4 gpt Au primary COG > 0.8 gpt Au			-		
Classification	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage (% diff)	Grade (% diff)	Contained Au (% diff)
Indicated	6,755	1.21	262,000	7,424	1.33	318,000	9%	9%	18%
Inferred	228	1.13	8,500	1,739	0.73	41,000	87%	-55%	79%

Note: 2011 Resources reported in 2011 Oxide Zones; 2018 Resources reported in 2018 Oxide Zones

## 14.5.2 La Calandria Norte Mineral Resource Comparison

For the La Calandria Norte model, there has been changes in the interpretation of the mineralized zones, removal of the oxide zones, and in the classification of resources. The current model was estimated within an interpreted breccia zone, in lieu of multiple grade domains. Also, the current mineral resources are not reported by oxide zones as all material is considered as primary.

Compared to the previous mineral resources there has been an increase in the Indicated resource tonnes and contained gold ounces. As the tonnes have increased, more lower grades are reported at the same cut-off grades and, therefore, show a decrease in the reported gold grades. As the current Inferred resource blocks are situated at the fringes of the model and breccia zone, where there are lower grades and lower sample support, much of the Inferred material is not included at the reported cut-off grades.

Table 14-36 and Table 14-37 present the comparison of the 2011 and 2018 mineral resources for material within the 2018 constraining shell (at a 0.8 gpt Au cut-off grade) and for material below the constraining shell (at a 1.5 gpt Au cut-off grade), respectively.





	14 September 20186 March 2011 ResourcesResourcesCOG > 0.8 gpt AuCOG > 0.8 gpt Au								
Classification	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage (% diff)	Grade (% diff)	Contained Au (% diff)
Indicated	366	4.09	48,000	604	3.12	61,000	39%	-31%	21%
Inferred	101	2.14	7,000	19	1.31	1,000	-424%	-63%	-600%

Table 14-36: Comparison of March 2011 and September 2018 Mineral Resources for the La CalandriaNorte Deposit; within the 2018 constraining shell.

 Table 14-37:
 Comparison of March 2011 and September 2018 Mineral Resources for the La Calandria

 Norte Deposit; below the 2018 constraining shell.

Classification	14 September 20186 March 2011 ResourcesResourcesnCOG > 1.5 gpt AuCOG > 1.5 gpt Au								
	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage ('000 t)	Au (gpt)	Contained Au (oz Au)	Tonnage (% diff)	Grade (% diff)	Contained Au (% diff)
Indicated	44	2.92	4,000	131	2.82	12,000	66%	-3%	67%
Inferred	20	2.90	2,000	2	1.71	100	-1091%	-70%	-1900%





# **15 MINERAL RESERVE ESTIMATES**

Section 15 is not relevant to this report.





# 16 MINING METHODS

Section 16 is not relevant to this report.





# 17 RECOVERY METHODS

Section 17 is not relevant to this report.





# **18 PROJECT INFRASTRUCTURE**

Section 18 is not relevant to this report.





# **19 MARKET STUDIES AND CONTRACTS**

Section 19 is not relevant to this report.





# 20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

Section 20 is not relevant to this report.





# 21 CAPITAL AND OPERATING COSTS

Section 21 is not relevant to this report.





# 22 ECONOMIC ANALYSIS

Section 22 is not relevant to this report.





# **23 ADJACENT PROPERTIES**

The Property is surrounded by other mineral rights: Cateos, Manifestaciones de Descubrimientos (M.D.) and Minas (Figure 23-1). C.M. Piuquenes S.A. holds the mineral rights to the M.D. Coiron 1, Coiron 2 and Coiron 3, to the east of the Property. To the north, Australis S.A. holds the mineral rights to the Mina Tulipan. Both C.M. Piquenes S.A. and Australias S.A. are privately held Argentine companies. As most of these mineral rights are held by private companies, information on these properties was not available at the time of writing.

Cerrado Gold, through its subsidiary Minera Don Nicolás, holds the mineral rights to Mina La Paloma IV, situated to the east and southeast, and the Mina Escondido I, adjacent to the south, of the Property where Cerrado Gold's Escondido Project is located.



Figure 23-1: Adjacent Properties to the Las Calandrias Project

Source: New Dimension (2018)





# 24 OTHER RELEVANT DATA AND INFORMATION

# 24.1 Cerrado Gold – Mina Escondido I

As of November 2020, Cerrado Gold, through its 100% held subsidiaries' Minera Mariana and Minera Don Nicolás now hold mineral rights to the La Calandria Sur Project and the Escondido Project. Both these Projects are situated on the boundary of their respective mining concessions and Cerrado Gold anticipates further investigation to determine the continuity between them.

In March 2019, Cerrado Gold acquired from the private Argentine company Compañía Inversora en Minas (CIMINAS). CIMINAS acquired the mineral rights to Mina Escondido 2014. Prior to 2014, the mineral rights were held by Minera IRL Ltd. (Minera IRL), a publicly listed company on the Canadian Securities Exchange (CSE) and the Peru stock exchange (BVP).

Information on any activities from CIMINAS were not available at the time of writing. However, the following information was taken from press releases (PR) posted on the System for Electronic Document Analysis and Retrieval (SEDAR.com).

The author cautions he has not independently verified any of the information about the Escondido Exploration Project and that excerpts from historic press releases are for information purposes only. The author also cautions that information from adjacent properties may not be indicative of mineralization on the property which is the subject of the report.

The author has observed evidence of drilling and trenching up to the southern limit of the Mina Las Calandrias I during his site inspection. It should also be noted, according to the press releases, that several drill holes were drilled within 200 m of the La Calandria Sur Deposit.

## **Escondido Exploration Project**

On May 20, 2010, Minera IRL announced "of the 22 outcropping rock samples taken, 11 returned values above 0.1 gpt Au of which 7 were above 0.2 gpt Au. Twelve samples analysed also assayed above 4 gpt Au. The highest-grade sample assayed 2.4 gpt Au and 84 gpt Ag". (Minera IRL PR, 2010a). On June 30, 2010, Minera IRL announced "a large breccia body was identified and named Escondido. Surface sampling on Escondido returned anomalous gold values over a strike length of some 700 m." (Minera IRL PR, 2010b).

Between 2010 and 2011, Minera IRL conducted several drill programs and airborne geophysical (magnetic and radiometric) surveys.

Table 24-1 summarizes the results of the drill programs released by Minera IRL.





7000	Turno		Erom (m)	To (m)	Interval	Au (ant)	Ag (get)
20110	Type	Drill Hole	FIOIII (III)	10 (11)	(11)	Au (gpt)	Ag (gpt)
Minera IRL Press	Release, 15	September 2010	)			r	
		E-D10-02	-	-	25.38	1.45	9.62
		including	-	-	13.75	2.39	14.56
		E-D10-03	-	-	100.00	1.19	7.77
		including	-	-	48.00	1.71	9.18
		E-D10-07	-	-	120.40	0.65	5.70
		including	-	-	14.70	1.30	11.86
		including	-	-	8.40	2.45	8.31
Minera IRL Press	Release, 3 N	March 2011					
		E-D10-020	51.00	84.50	33.50	0.89	2.83
		including	56.15	66.35	10.20	1.83	4.45
		E-D10-022	10.00	62.45	52.45	0.64	9.51
		including	26.00	29.45	3.45	3.53	26.37
		E-D10-024	15.00	32.00	17.00	1.13	8.23
		E-D10-027	20.60	65.00	44.40	0.52	1.79
			86.25	90.70	4.45	0.82	59.02
Minera IRL Press	Release, 11	July 2011					
NW	Vein	E-D10-026	89.30	90.00	0.70	136.00	157.00
NW	Bulk	E-D11-052	24.80	41.00	16.20	2.05	7.40
		including	38.35	40.30	1.95	10.00	14.40
NW	Bulk	E-D11-053	38.95	58.60	19.65	2.43	10.40
		including	38.95	41.50	2.55	9.55	51.60
NW	Bulk	E-D11-055	42.80	67.00	24.20	1.16	6.10
		including	48.80	54.10	5.30	2.48	8.10
NW	Bulk	E-D11-057	28.40	72.00	43.60	0.84	6.80
SE	Vein	E-D11-036	68.70	78.90	10.20	0.17	76.10
SE	Vein	E-D11-037	54.00	58.20	4.20	1.63	663.00
		including	56.00	56.55	0.55	4.16	1250.00
SE	Vein	E-D11-039	37.60	41.00	3.40	0.71	193.00
NW	Vein	including	40.00	41.00	1.00	1.19	509.00
		E-D11-058	130.00	146.00	16.00	0.28	63.70

#### Table 24-1: Highlighted Drill Intercepts for the Escondido Exploration Project

Source: Minera IRL Press Release, (2010b), (2011a), (2011b), (2013)





# **25** INTERPRETATION AND CONCLUSIONS

The Project is made up of several low to intermediate sulphidation epithermal deposits. Mineralization generally occurs within hydrothermal breccias and breccia zones within the rhyolite domes. The Project area has been the subject to several exploration and drill programs since 2009. The focus of this report is on the La Calandria Sur and La Calandria Norte deposits.

The La Calandria Sur is situated in the southeastern corner of the mining exploitation concession (Mina Las Calandrias I). Gold and silver mineralization occur in veinlets and stringers within the La Calandria Sur rhyolite dome. This dome consists of several oxide zones: oxide, transition, and primary zones. The mineralization is open to the northeast and east, and possibly south, across the southern limit of the mining exploitation concession boundary.

The La Calandria Norte Deposit is made up of several breccia zones where the majority of the mineralization is situated within a breccia zone. The Morena Vein is situated within the La Calandria Norte rhyolite dome situated approximately 300 m northwest of the La Calandria Norte Deposit. Currently, there are no mineral resources on the Morena Vein due to limited drill information.

In June and July 2018, New Dimension completed a diamond drill core program consisting of 19 drill holes and three extensions of previous drill holes targeting the La Calandria Norte Deposit and Morena Vein. Three other drill holes were completed on the Refugio exploration target. AGP is satisfied the drill programs conducted by New Dimension on the Project to date meet industry standards and norms. Further drilling is warranted to develop the northeast extension of the La Calandria Norte Deposit (breccia zone) and to determine the continuity of the Morena Vein.

The mineral resources for the La Calandria Sur Deposit, within an optimized constraining shell, are: Indicated resources 7.4 Mt at 1.33 gpt Au and 24.65 gpt Ag; and Inferred resources of 1.7 Mt at 0.73 gpt Au and 7.17 gpt Ag.

The mineral resources for the La Calandria Norte Deposit, within an optimized constraining shell, at a 0.8 gpt Au cut-off grade are: Indicated resources of 604,000 t at 3.12 gpt Au and 8.20 gpt Ag; and Inferred resources of 19,000 t at 1.31 gpt Au and 0.69 gpt Ag. The mineral resources for the La Calandria Norte Deposit, below the optimized constraining shell, at a 1.5 gpt Au cut-off grade are: Indicated resources of 131,000 t at 2.82 gpt Au and 6.30 gpt Ag; and of Inferred resources of 2,000 t at 1.71 gpt Au and 2.01 gpt Ag.

The effective date of the La Calandria Sur and the La Calandria Norte Deposit Mineral Resources is 14 September 2018.

AGP concludes that further exploration and development is warranted and recommended.





# 26 **RECOMMENDATIONS**

# 26.1 Geology

AGP recommends the following exploration programs for the Project. Pending positive results from these proposed work programs further studies may be proposed.

# 26.1.1 La Calandria Sur

## Drilling

It is recommended further drilling continue at the La Calandria Sur Deposit. The deposit seems to show continued mineralization to the northeast and east, where grades greater than 1 gpt Au are found, and to upgrade the resources around this mineralization to an Indicated category. It is proposed an additional 2,000 m (from 8 – 10 drill holes).

# 26.1.2 La Calandria Norte

## **Trench Sampling**

Historic trench sampling has intersected the breccia zone in several places at surface in the La Calandria Norte Deposit. It is recommended further trenches and trench sampling be carried out along strike of the known deposit. It is proposed a further five trenches, approximately 10 m long, be completed to expose and sample the breccia zone at surface.

## Drilling

It is recommended further drilling be carried out on the La Calandria Norte Deposit. The deposit appears open in the northeast, both near surface and depth. It is proposed further drilling test the deposit laterally and to study the plunge of the mineralization, an additional 2,000 m (8 - 10 drill holes).

## **Bulk Density**

Bulk density measurements should continue to be collected on all drill core in the La Calandria Norte Deposit. The measurements should be taken at regular intervals throughout the drill core within the mineralized Breccia zone, the hanging wall, and the foot wall. If the bulk density measurements are collected internally, it is recommended an external check of the measurements be carried out. It is suggested a minimum of 10% of measured samples be sent to an external lab for density measurements.

#### Morena Vein

It is recommended trench sampling be carried out and drilling continue on the Morena Vein to establish the continuity of the vein and gold mineralization of this zone.





# 26.2 Metallurgical Testwork

The work conducted at Metcon in 2011 and at Blue Coast in 2019 provides a good framework for metallurgical development. Based on the results of these testwork programs, the following processing options are considered most likely for La Calandria Sur:

For the oxide and upper transition zones:

- crushing followed by heap leaching, or possibly vat leaching due to favourable capital/operating costs, or
- crushing, grinding, and CIL processing due to the improved recovery of gold and silver

For the lower transition and primary zones:

- selective flotation and sale of a gold-laden pyrite concentrate due to favourable capital/operating costs, or
- bulk sulphide flotation followed by concentrate oxidation and cyanidation due to the improved recovery of gold and silver.

In addition to metallurgical efficiencies, the final selection of processing options will be influenced by factors such as the cost of power, transportation costs, the availability of skilled labour, and site topography, but also upon the results of more comprehensive testwork. In particular, further testwork should focus on the collection of larger, more representative sample sets and should include tests to understand variability within the zones. This is especially true of the comminution work, as the preliminary results are not intuitive.

The testwork should re-evaluate each process route in more detail to enable a more definitive trade off. In particular, the optimization of conditions (crush size etc...) for heap leaching the oxide and upper transitional material should be examined. The option of vat leaching at 2-6 mm should be included in the work as this represents an economic mid-point between heap leach and CIL or CIP.

The LeachWell<sup>®</sup> work that has been conducted thus far suggests this method is a good predictor of CIL performance, and this could be used as a basis for more comprehensive geomet mapping within zones as the project progresses.

The preliminary program completed at Metcon and follow up work at Blue Coast is a good outline of the work necessary for La Calandria Norte, although LeachWell<sup>®</sup> tests suggest that all zones of this deposit may be amenable to cyanidation and thus structure may be slightly different.

Further metallurgical work should consider the mixing of Norte and Sur mineralization through a common processing flowsheet.

AGP recommends the following testwork, which should include the following:





#### La Calandria Sur

- more comprehensive grindability testwork on all mineralization types, including abrasion index, rod, ball, and crusher work indices
- optimization of heap leach & CIL conditions for oxide and transition material; initial column tests
- initial CN detoxification tests
- limited variability CIL testwork on oxide and transition material
- development of flotation processes for the sulphide material

#### La Calandria Norte

- testwork on individual composites of oxide, transition, and sulphide material
- initial grindability studies (Bond Ball/Rod Work Index, Abrasion Index)
- assessment of gravity concentration
- cyanidation testing:
  - o further coarse bottle rolls (heap leach amenability).
  - CIL Studies optimizing mesh of grind, cyanide addition rates and leach time.
  - CIP vs CIL assessment.
  - o amenability to co-processing with Calandrias Sur oxide and transition material
  - o initial CN detoxification tests
  - o diagnostic leach studies to identify nature of losses to residue
  - o optional flotation tests on sulphide mineralization
- bulk flotation
- cyanidation of flotation concentrate

# 26.3 Estimated Budget

The following is the estimated budget for the proposed exploration programs. The programs have been broken out into several phases that may be completed independently of the other. The estimated budget for these proposed exploration programs would be approximately \$1.7 million.

Additional metallurgical testwork should be only completed after a larger resource is outlined, and samples for the program should represent identified zones and oxidation levels.

Table 26-1 presents an estimated budget of the proposed exploration and development work.





# Table 26-1: Estimated Budget of Proposed Work

Proposed Work		Approximate Cost (\$Cad)
Phase I		
La Calandria Sur and La Calandria Norte		
Diamond Drilling (4,000 m)	\$182/m	728,000
Sample Analysis	\$50/sample	200,000
Bulk Density (check ~30 samples)	\$20/sample	1,000
Trenches (5)		20,000
Trench Sampling (5 x 10 m)	\$50/sample	2,500
Phase II		
Other Targets		
Diamond Drilling (2,000 m)	\$182/m	364,000
Sample Analysis	\$50/sample	100,000
Phase III		
Metallurgical Testwork and Review		150,000
Subtotal		1,656,500
Contingency	~10%	160,000
TOTAL		1,725,000




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# **28 C**ERTIFICATE OF AUTHORS

### 28.1 Paul Daigle, P.Geo.

I, Paul Daigle of Toronto, Canada, as one of the authors of this technical report titled "Technical Report for the Las Calandrias Project, Santa Cruz, Argentina", dated 17 February 2021, do hereby certify that, and make the following statements:

- I am an Associate Senior Geologist with AGP Mining Consultants Inc., with a business address at Toronto, Ontario, Canada.
- I am a graduate of Concordia University, Montreal, Canada (B.Sc. Geology) in 1989.
- I am a member in good standing of the Association of Professional Geoscientists of Ontario (No. 1592).
- I have practiced my profession in the mining industry continuously since graduation.
- My relevant experience includes over 30 years in the mining sector in the exploration and diamond drill programs, managing data, and estimating resources. I have been involved in numerous precious metal projects including the Troilus Au-Cu Project, Canada and Detour Gold Deposit, Canada.
- I am responsible for all Sections of this technical report, titled "Technical Report for the Las Calandrias Project (the Project), Santa Cruz, Argentina", and dated 31 October 2018.
- I have had no prior involvement with the Property that is the subject of the Technical Report.
- My most recent site visit to the property described in this report was from the 13 to 17 of July 2018 for two days.
- As of the date of this Certificate, to my knowledge, information, and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
- I am independent of the Issuer as defined by Section 1.5 of the Instrument.

Signed and dated this 17<sup>th</sup> day of February 2021, at Toronto, Ontario.

"Electronic Signature"

Paul Daigle, P. Geo

